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Integrating ecological impacts into evaluations of the effectiveness of environmental regimes: the example of CITES

A thesis
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by
Wendy L. Jackson

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Abstract of a thesis submitted in partial fulfilment of the
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**Integrating ecological impacts into evaluations of the effectiveness of environmental
regimes: the example of CITES**

by

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The proliferation of multilateral environmental agreements has resulted in an increased interest, from academics and others, in questions regarding the effectiveness of such agreements. Much if not all attention has focused on the institutional aspects of regime functioning, specifically behaviour change. Relatively less attention has been given to the actual ecological or biophysical aspects of regime effectiveness. The focus on institutional effectiveness is for sound reasons, such as challenges associated with incorporating ecological factors into any evaluation, measuring effectiveness, and establishing causality. However, these challenges do not diminish the importance of assessing ecological effectiveness and its relationships with institutional functioning. Does political, legal or behaviour change consistently lead to improvement in environmental quality? Can it be assumed that “institutional effectiveness” is an accurate and appropriate proxy for “ecological effectiveness”? Are the challenges associated with using ecological data insurmountable?

This thesis aims to advance understanding of the linkages between institutional and ecological effectiveness and to explore how an integrated assessment of both can be undertaken. Putting forward a model for an integrated assessment of institutional and ecological effectiveness, and using a mixed methods approach, this study analyses a compliance mechanism under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) as a case study to evaluate both the institutional and the ecological effectiveness of this regime, and how these are linked with variables that may be intervening in the relationship.

The results suggest that, although CITES is widely considered to be institutionally effective, its ecological effectiveness is questionable. The discrepancy can, to a large extent, be explained by two main categories of intervening variables: the complexity and nature of the problem, and domestic or national-level factors. The integrated assessment uses ecological and quantitative data to help increase our understanding of the nature and extent of institutional and ecological effectiveness, and illuminates any gaps between them. The analysis demonstrates that extending evaluations to include environmental impacts can provide a more accurate picture of overall effectiveness of regimes, and offers researchers and practitioners a basis for developing ideas and actions aimed at improving regime functioning.

Keywords: effectiveness, international regimes, CITES, evaluation, regime, analysis, endangered species, MEA

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ACRONYMS

AC	Animals Committee
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species (of Wild Fauna and Flora)
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CoP	Conference of the Parties
ERM	Environmental Resources Management (consultancy group)
IATA	International Air Transport Association
IUCN	World Conservation Union
MEA	multilateral environmental agreement
MOU	Memorandum of Understanding
NGO	non-governmental organisation
OECD	Organisation for Economic Cooperation and Development
SC	Scientific Committee
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
UNEP-WCMC	United Nations Environment Programme World Conservation Monitoring Centre

CHAPTER 1: INTRODUCTION

1.1 Overall context

The proliferation of multilateral environmental agreements over the past few decades has resulted in an increased focus on how to solve global or collective-action problems. With this diverse and growing arsenal of tools available, the following questions arise: Have these agreements had a positive impact on the global environment? Have ecological conditions improved? In other words, how effectively have these initiatives addressed environmental issues?

There have been (and are) various efforts to answer these questions. The UN system itself has initiated some self-assessment exercises to investigate progress on environmental issues. Some examples are the 2002 World Summit on Sustainable Development that followed up the 1992 Rio Earth Summit, and agreements such as the Stockholm Convention on Persistent Organic Pollutants, which requires evaluations of its effectiveness.

However, although interest in these assessments is growing – especially in the environmental field – built-in evaluations are still the exception rather than the rule. At this point, there has been more activity and progress in the academic realm than by the international organisations that manage these agreements. The field of international relations has taken a particular interest in the impacts of international organisations, institutions and agreements (generally referred to as international regimes). A diverse body of literature about international regimes has developed, and over the past two decades a body of studies has emerged in the area of so-called ‘regime effectiveness’.

1.2 The world of regime effectiveness (according to academia)

Within international relations, the environmental ‘subsector’ has been particularly active in examining regime effectiveness. Studies in this area have been largely focused on identification or explanation of the sources (or “determinants”) of regime effectiveness, i.e. those factors that make a regime more or less effective. For example, one of the

earliest studies pinpoints three conditions for regimes to be effective.¹ A later study looks at the role of participation in the implementation of regimes.² In 1999, Young identified six “behaviour pathways”, or ways in which behaviour change can influence implementation of and compliance with regimes.³ Brown Weiss and Jacobson (2002) examined four factors that affect compliance with international environmental regimes.⁴

More recently, researchers in the regime effectiveness field have been exploring methods to measure and compare effectiveness using quantitative data and modelling techniques.⁵ To date, the majority of research in this vein has investigated the use of regression analysis (examining the relationship between relevant variables) and by quantitatively establishing “counterfactuals” (i.e. existence of the regime vs. no-regime scenario).

Interest in the effectiveness of environmental policy is not restricted to international relations; similar work is also being undertaken in other fields. Researchers and practitioners in the conservation field have also recognised the need for evaluation of policy effectiveness: there has been a recent surge of materials on the evaluation of conservation projects and programmes. Leading conservation publications regularly publish articles about methods and strategies through which such initiatives can be evaluated.⁶ Many of the same issues are raised in the regime effectiveness literature: How can effectiveness or impacts be measured? How can causality be established?

¹ Peter M. Haas, Robert O. Keohane, and Marc A. Levy (1993). *Institutions for the Earth: Sources of Effective International Environmental Protection*. Cambridge, MA: MIT Press.

² David G. Victor, Kal Raustiala, and Eugene B. Skolnikoff (1998). *The Implementation and Effectiveness of International Environmental Commitments: Theory and Practice*. Cambridge, MA: MIT Press, 1998.

³ Oran R. Young, ed. (1999a). *The Effectiveness of International Environmental Regimes: Causal Connections and Behavioral Mechanisms*. Cambridge, MA: MIT Press.

⁴ All of these studies are discussed in detail in the Literature Review chapter.

⁵ See for example: Carsten Helm and Detlef Sprinz (2000). “Measuring the Effectiveness of International Environmental Regimes,” *Journal of Conflict Resolution*. Volume 44:5, p. 630-652; and Ronald B. Mitchell (2002a). “A Quantitative Approach to Evaluating International Environmental Regimes,” *Global Environmental Politics*. Volume 2:4, p. 58-83.

⁶ See for example: Valerie Kapos *et al.* (2009). “Outcomes, not implementation, predict conservation success”, in *Oryx*. Volume 43:3, p. 336-342; Elizabeth O’Neill (2007). *Conservation Audits: Auditing the Conservation Process –Lessons Learned, 2003-2007*. Bethesda, MA: Conservation Measures Partnership; Nick Salafsky *et al.* (2002). “Improving the Practice of Conservation: a Conceptual Framework and Research Agenda for Conservation Science”, in *Conservation Biology*. Volume 16:6, p. 1469-1479; and Kathryn A. Saterson *et al.* (2004). “Disconnects in Evaluating the Relative Effectiveness of Conservation Strategies”, in *Conservation Biology*. Volume 18:3, p. 597-599.

1.3 This sounds like progress – what’s the problem?

Yet, for all of this interest in the effectiveness of environmental policies, programmes, agreements, organisations, and performance, less attention has been given to the actual ecological or biophysical aspects of effectiveness. Many studies may use the term “effectiveness” in their approach, and “there is wide agreement that the effectiveness of international regimes must be related to their results or consequences.”⁷ However, most analyses have tended to focus on rules and regulations, the role of institutions, or behaviour change.⁸ Indeed, it can be said that most focus is on implementation and compliance; in this sense, research has been limited to what can be called “institutional effectiveness”, as opposed to “ecological effectiveness”. Depending on the regime under scrutiny, ecological effectiveness may be exhibited through, *inter alia*, positive conservation impacts, improvements in the air quality, reductions in atmospheric emissions, or expansion of protected areas.

Limiting research to institutional effectiveness is not without reason. In terms of the academic literature, researchers have cited three primary challenges associated with incorporating ecological factors into any evaluation of effectiveness: availability and reliability of environmental data; difficulty with establishing causality between policies and ecological activity; and problems associated with measuring effectiveness. Moreover, some researchers claim that because effectiveness emerges from compliance, behaviour change can provide a limited but “useful initial metric”.⁹ In other words, the view of many has been: “For international [regimes] to make a difference environmentally, they must spawn political change, and therefore it is appropriate to judge them according to how well they do so.”¹⁰

⁷ Olav Schram Stokke and Davor Vidas (1996). *Governing the Antarctic: The effectiveness and legitimacy of the Antarctic treaty system*. Cambridge, UK: Cambridge University Press, p.15.

⁸ Ronald B. Mitchell (2008). “Evaluating the Performance of Environmental Institutions: What to Evaluate and How to Evaluate It?” in *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers*, edited by Oran R. Young, Leslie A. King, and Heike Schroeder. (Cambridge, MA: MIT Press, p. 79-114) 83-84.

⁹ Ronald B. Mitchell (2003). “International Environmental Agreements: A Survey of Their Features, Formation, and Effects”, in *Annual Review of Environment and Resources*. Volume 28: 429-461, p. 445.

¹⁰ Haas, Keohane and Levy (1993), p. 397.

However, what remains unclear is the relationship between behaviour change and improvements in environmental quality. Does political, legal or behaviour change consistently lead to such improvement? Are the challenges associated with using ecological data insurmountable? When looking at regimes, can it be assumed that “institutional effectiveness” is an accurate and appropriate proxy for “ecological effectiveness”? What is the relationship between institutional effectiveness and ecological effectiveness and can variables intervene in this relationship? Can insights about this relationship help us understand overall effectiveness and identify gaps at the institutional level or in terms of problem definition?

1.4 Aim, objectives and significance of this study

The aim of this study is to examine whether or not including quantitative and/or ecological data in assessments of effectiveness can provide a more accurate depiction of overall regime effectiveness and in doing so, facilitate the identification of ways to improve regime functioning. Institutional effectiveness and ecological effectiveness are definitely related: addressing environmental problems (i.e. being “ecologically effective”) depends upon effective institutional arrangements.

In order to achieve this aim, the study has the following objectives:

- Understand why quantitative and/or ecological data have been largely left out of the literature on environmental regime effectiveness.
- Approach the research using both qualitative and quantitative data and methods.
- Assess whether or not qualitative institutional data are an adequate proxy for quantitative ecological data, i.e. testing whether or not the findings of each converge.¹¹
- Examine the role of intervening variables that may mitigate or enhance the relationship between institutional and ecological effectiveness.
- Examine ways that regime functioning might be improved and facilitated with a better understanding of overall (institutional and ecological) effectiveness.

These objectives are achieved through the development of a conceptual framework that explores the relationship between institutional and ecological effectiveness by using both qualitative and quantitative ecological data, and a mixed methods approach to data

¹¹ Question adapted from Abbas Tashakkori and John W. Creswell (2007b). “Exploring the Nature of Research Questions in Mixed Methods Research”, in *Journal of Mixed Methods Research*. Volume 1:3, p. 207-211.

analysis. The research is correlational in nature, as opposed to experimental, as the independent variables can not be manipulated.

Incorporating quantitative and ecological data into the analysis of an environmental regime may improve answers to concrete questions such as: Does compliance with regime rules help solve the problem? Can environmental data indicate illegal, unreported, or unregulated activity, or regulated items being substituted for other items? Has the regulated activity moved to non-parties? It is argued that by extending analysis to include ecological effectiveness, it is possible to better identify gaps in regime functioning – at the institutional level (e.g. legislation, institutions or systems) or even at the level of problem definition or structure.

A conceptual framework has been developed to investigate the relationship between institutional and ecological effectiveness. The model to be used in this research is based on the hypothesis that both institutional and ecological effectiveness can be better understood (and thereby improved) by using quantitative data and identifying variables that may be ‘intervening’ and disrupting the flow between institutional and ecological effectiveness. Use of quantitative data help distinguish the nature and extent of these intervening variables.

One compliance mechanism within the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) will be used as a case study to explore the links, interactions and gaps between institutional and ecological effectiveness. In the words of some, CITES has been deemed “as the flagship of the fauna and flora preservation treaties”¹² since its inception.

¹² John Lanchbery (1998). “Long-term Trends in Systems for Implementation Review in International Agreements on Fauna and Flora,” in Victor, Raustiala, and Skolnikoff (1998), p. 69. The US Congressional Research Service has argued that: “The success of CITES can be summarized with the fact that no species listed under CITES within the last 30 years has gone extinct.” Pervaze A. Sheikh and M. Lynne Corn (2005) *The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): Background and Issues*. Washington DC: Library of Congress, p. 11.

As an international environmental agreement that has been functional for over 35 years, it provides an excellent opportunity to examine the incorporation of time-series quantitative data in an analysis of institutional and ecological effectiveness.

1.5 Central concepts and operational definitions

Three concepts central to this study are implementation, compliance, and effectiveness. These three concepts are viewed on a procedural continuum, and it is important that they are precisely defined from the outset. Previous researchers on regime effectiveness have already provided appropriate definitions, which are the basis of this study's approach.

Implementation: Brown Weiss and Jacobson (1998) stated that implementation refers to measures that states take to make international accords effective in their domestic law.¹³ Victor, *et al.* defined implementation as the process by which intent gets translated into action, stating that it comprises “the myriad acts of governments, such as promulgating regulations and new laws.”¹⁴ This study adhered to the nature of these definitions, in terms of implementation as the creation of regulations, rules or laws, and actions such as the establishment of national focal points.¹⁵

Compliance: The most concise definition of compliance also came from Brown Weiss and Jacobson, who defined it as whether or not countries adhere to the provisions of the accord and to the implementing measures that they have instituted. Victor *et al.* suggested that compliance refers to behaviour that conforms with an international commitment. Both of these definitions encompass behavioural aspects, which is how compliance is approached in this study. Compliance, behaviour change, and institutional effectiveness are deemed to be synonymous.

¹³ Edith Brown Weiss and Harold K. Jacobson, eds. (1998). *Engaging Countries: Strengthening Compliance with International Environmental Accords*. Cambridge, MA: MIT Press.

¹⁴ Victor, Raustiala, and Skolnikoff (1998), p. 4.

¹⁵ There are other actions related to implementation, such as mobilisation of funds. Looking at this at the individual country level would be complicated for a regime such as CITES, the implementation of which involves political/administrative functions, biological studies, enforcement, border controls, etc. Therefore the focus was on promulgation of legislation and creation of appropriate agencies.

Effectiveness: Effectiveness is less clearly defined in the literature. Victor *et al.* stated that effectiveness is the degree to which international environmental accords lead to changes in behaviour, which in turn solves environmental problems. This definition looked at effectiveness in terms of two steps – one being behaviour change (i.e. institutional effectiveness), and the other referring to actual improvement in environmental conditions. Young suggested five different ways of approaching effectiveness: problem-solving, legal, economic, normative and political.¹⁶ This approach was comprehensive; however, just like Victor *et al.*, behaviour change is an integral part of his definition. Because four of his five approaches (all except “problem-solving”) were more behaviour-oriented, they are considered as concepts related to compliance or institutional effectiveness. In this study, the approach to effectiveness is based on Young’s “problem-solving” approach, and more specifically, biophysical change and improvement. The term “ecological effectiveness” is employed in this study to be explicit about this conceptualisation. The term is also broad enough to capture the differences among different environmental regimes.

1.6 Structure of thesis

This study follows the standard format of most doctoral theses. Chapter 2 is a review of the literature relevant to regime effectiveness, with emphasis on how researchers have approached the concept of ‘ecological effectiveness’. Possible explanations are put forth as to why the focus of this field has been on institutional effectiveness. Finally, developments and contributions from other fields of study are also described.

Chapter 3 outlines the conceptual framework used in this study. This conceptual framework is a model used to describe and explain the relationship between institutional and ecological effectiveness, to identify any gaps that may exist between these two concepts. Quantitative data are used to: (a) understand the nature and extent of ecological effectiveness, and (b) ‘tease out’ gaps between behaviour change (institutional effectiveness) and biophysical change (ecological effectiveness). Gaps between institutional and ecological effectiveness are attributed to intervening variables, which can be discerned by examining quantitative data and linking these to institutional functioning.

¹⁶ Oran R. Young and Marc A. Levy (1999). “The Effectiveness of International Environmental Regimes,” in *The Effectiveness of International Environmental Regimes: Causal Connections and Behavioral Mechanisms*, edited by Oran R. Young. Cambridge, MA: MIT Press, p. 4-5.

Chapter 4 presents research methods, including a description of the research philosophy and strategy, which are based on a mixed methods approach. The chapter also contains an explanation of the various steps taken undertaken for this study.

Chapter 5 describes the case study used in this research project, investigating an operational aspect of CITES. An overview of the Convention is provided, as well as details of the compliance mechanism that was explored – the Review of Significant Trade process. A rationale for the selection of the Review of Significant Trade process as a case study is also given.

The first step in the analysis is undertaken in Chapter 6 – an assessment of the institutional effectiveness of the CITES Review of Significant Trade process. The examination of institutional effectiveness includes factors related to the characteristics of the regime, as well as those related to national implementation and national compliance. Quantitative trade data relating to species in the Review process are assessed and discussed in detail.

The second step of the analysis – an examination of the ecological effectiveness of the Review of Significant Trade under CITES – is in Chapter 7. Specifically, the chapter examines changes in conservation status of a sample of 65 bird species that have been part of the Review process.

Chapter 8 contains the last step of the analysis – examination of two categories of variables that may intervene between institutional effectiveness and ecological effectiveness. These categories are associated with the nature of the problem and domestic or national level factors. An examination and discussion of how these variables may be intervening between institutional and ecological effectiveness of the CITES Review process is provided.

Chapter 9 discusses of the results, observations and conclusions to be gathered from the research, based on the aims and objectives set out earlier in this chapter.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter will examine the idea of effectiveness as described and analysed in the literature on international environmental regimes. While the starting place for discussion is the international relations literature, other sources are also included, such as practical evaluations of environmental regimes and contributions from conservation-focused literature.

The analysis starts with a brief overview of Easton's systems analysis model, elements of which relate to regime analysis. Following this, the discussion moves onto regime effectiveness literature. A summary of practical evaluations of regime effectiveness is also included. Three subsidiary questions guide the discussion:

- (1) How is effectiveness defined and interpreted?
- (2) What does the literature see as the main determinants, sources and conditions for effectiveness?
- (3) What criteria and indicators have been used to evaluate effectiveness?

2.2 International relations theory and conceptual foundations

In the international relations field, the conventional focus has been the role of states, with the predominant view suggesting that state behaviour can be explained by the pursuit of power and self-interest.¹⁷ In this so-called 'realist' approach to explaining behaviour, states try to maximise their power and protect their interests, regardless of the context – domestic security, economic dominance, or ideological influence.

In response to this state-centric approach, alternative approaches to international relations emerged. These approaches take into consideration other aspects of the international system. As one researcher noted, "Increasingly the possibility is being taken seriously that

¹⁷ See, for example, Hans Morgenthau (1948). *Politics Among Nations: The Struggle for Power and Peace*. New York, NY: Alfred A. Knopf. Morgenthau is generally recognised as the primary exponent of realism.

sovereign states are not the only entities capable of fulfilling governance functions.”¹⁸ For example, neorealism looks at the structure of this system, though again states remain the unit of analysis and power is still their primary objective. Other theories (such as liberal institutionalism) are more optimistic about the prospects for cooperation in the international system, and point to the existence of international law and institutions as a means of balancing the power and self-interest of states.¹⁹ Achieving effective global governance – through agreements, organisations, and other non-state actors – is the main interest of what is generally called regime theory or regime analysis.²⁰

Krasner’s definition of regimes is that most often cited in the international relations literature, and provides the conceptual basis for this study. In the early 1980s, Krasner pointed to international regimes to explain increased global cooperation on a wide range of issues, defining them as “sets of implicit and explicit principles, norms, rules and decision-making procedures around which actors’ expectations converge in a given area of international relations.”²¹ Krasner’s definition continues to be the basis of extensive research on this topic.

Regime analyses can be divided into four streams: how regimes are formed; how regimes are maintained; the consequences of particular regimes; and whether or not regimes are effective.²² Regime effectiveness has become a popular topic for researchers; in 1998, Zürn observed that regime effectiveness had become a “driving force in the analysis of international relations.”²³ Much of the research on regime effectiveness originates in the environmental field.²⁴ The remainder of this chapter will survey the evolution of literature

¹⁸ Matthew Paterson (2000). *Understanding Global Environmental Politics: Domination, Accumulation, Resistance*. Basingstoke, UK: Palgrave, p. 17.

¹⁹ Stephen D. Krasner (2000). “International law and international relations: Together, apart, together?”, *Chicago Journal of International Law*. Volume 1:1, p. 93-99.

²⁰ Given the large volume of literature on regimes in general, this chapter will focus on the subset of literature specifically pertaining to regime effectiveness.

²¹ Stephen D. Krasner (1983). “Structural Causes and Regime Consequences: Regimes as Intervening Variables”, in *International Regimes*, edited by Stephen D. Krasner. Ithaca, NY: Cornell University Press, p. 1.

²² Olav Schram Stokke (1997), paraphrased in Patterson (2000), p. 13.

²³ Michael Zürn (1998). “The rise of international environmental politics: A review of current research,” *World Politics*, Volume 50:4, p. 617-649, quoted in Carsten Helm and Detlef F. Sprinz (2000). “Measuring the Effectiveness of International Environmental Regimes,” *Journal of Conflict Resolution*. Volume 44:5, p. 630-652.

²⁴ Detlef F. Sprinz and Carsten Helm (1999). “The Effect of Global Environmental Regimes: A Measurement Concept,” *International Political Science Review*. Volume 20:4, p. 359-369.

on regime effectiveness, with the objective of providing context for the main research question: Can including ecological data in assessments of effectiveness provide a more accurate depiction of overall regime effectiveness?

There are as many definitions and interpretations of effectiveness as there are studies of this topic.²⁵ Before embarking on any meaningful discussion of the relationship between institutional and ecological effectiveness, these terms must be explained. Von Moltke (2000) clearly articulated the research difficulties that arise from the various ways of defining effectiveness:

In truth there are several ways in which ‘effectiveness’ can be defined. Depending on the definition of ‘effectiveness’ that is chosen, different research strategies may prove more or less promising; and while research may show an agreement to be ‘effective’ according to one definition of effectiveness, that same research may provide little or no information about other dimensions or may even prove that the agreement is not effective in some respect.²⁶

2.3 Regime effectiveness – a multitude of definitions and interpretations

This section provides a discussion of the various definitions and interpretations of regime effectiveness. The definition of effectiveness used in this study is also clarified.

In order to understand the theoretical basis of much of the regime effectiveness literature, one must precede Krasner’s 1983 definition and go back to 1965. At that time, Easton first elaborated his systems analysis model in his observations about public policy.²⁷ According to his model, there is a critical distinction to be made among outputs, outcomes and impacts. Outputs are the norms and rules that constitute the regime, outcomes are changes in human behaviour, and impacts are changes in the biophysical environment. Outputs lead to outcomes, which in turn lead to impacts. While Easton himself was not a regime

²⁵ This observation was also made by Ronald B. Mitchell (2002b). “International Environment”, in *Handbook of International Relations*, edited by Walter Carlsnaes, Thomas Risse and Beth A. Simmons. (London, UK: Sage Publications, p. 500-516) 508.

²⁶ Konrad von Moltke (2000). “Research on the Effectiveness of International Environmental Agreements: Lessons for Policy Makers?”, part of the proceedings of the Final Conference within the EU-financed Concerted Action Programme on the Effectiveness of International Environmental Agreements and EU Legislation, held in Barcelona from 9-11 November 2000.

²⁷ David Easton (1965). *A Systems Analysis of Political Life*. New York, NY: John Wiley.

theorist, his taxonomy – originally pertaining to the stability of political systems – has been applied to studies of international regimes, and in particular, studies of “regime effectiveness”, as indicated in Table 2.1.

Table 2.1: Parallels between Easton’s model and regime literature designations

Easton’s systems theory model	Regime literature	Parallel definitions
Outputs	Implementation	Norms, rules, regulations
Outcomes	Compliance	Behaviour change
Impacts	Effectiveness	Biophysical/ecological change

Easton’s model has been integrated into “the mainstream of research on regime effectiveness.”²⁸ Some researchers that use Easton’s model equate his three elements with the three so-called ‘consequences’ of regimes: implementation, compliance, and effectiveness.²⁹ While it is agreed that regimes should lead to these consequences, there is no agreement as to what these terms mean.

...Effectiveness proves rather difficult to define. It can be taken to mean the resolution of the problem for which the regime was established. Alternatively, it can be interpreted in terms of its effects on actors’ behaviour, and interpretation which again has a number of ways of being put into practice.³⁰

Authors in the field are specific and provide categorical definitions of effectiveness. For example, Young’s 1991 study investigated how regimes successfully (or effectively) elicit behaviour change.³¹ This study provided a typology of approaches to effectiveness, and five are described:

²⁸ Oran R. Young (2002a). “Evaluating the success of international environmental regimes: where are we now?”, *Global Environmental Change*. Volume 12: 73-77, p. 74.

²⁹ See for example: Steinar Andresen (2007). “The effectiveness of UN environmental institutions,” *International Environmental Agreements*. Volume 7:4, p. 317-336; Frank Biermann and Steffen Bauer (2004). “Assessing the effectiveness of intergovernmental organisations in international environmental politics,” *Global Environmental Change*. Volume 14, p. 189-193; Sonja Boehmer-Christiansen and Aynsley Kellow (2002). *International Environmental Policy: Interests and the Failure of the Kyoto Process*. (Cheltenham, UK: Edward Elgar); Edward L. Miles, et al. (2002). *Environmental Regime Effectiveness: Confronting Theory With Evidence*. Cambridge, Massachusetts: MIT Press; Arild Underdal (1992). “The Concept of Regime Effectiveness,” *Cooperation and Conflict*. Volume 27:3, p. 227-240; and Oran R. Young (1999b). *Governance in World Affairs*. Ithaca, NY: Cornell University Press.

³⁰ Patterson (2000), p. 13.

³¹ See Young (1999a).

- problem-solving approach – the degree to which a regime eliminates or alleviates the problem that prompts its creation;
- legal approach – obligations written into treaty language;
- economic approach – the legal approach with a cost efficiency criterion;
- normative approach – achievement of values such as fairness, justice, stewardship, participation, etc.; and
- political approach – changes in behaviour or in the policies and performance of institutions in ways that contribute to positive management of the targeted problem.³²

While Young acknowledged a “problem-solving” aspect analogous to Easton’s impacts, he contended that because an effective political approach leads to problem-solving, analysis can be limited to political factors. Based on this assumption, his book focused solely on institutional or political elements of effectiveness.

Similarly, Levy (1996) identified three strategies for defining effectiveness, all which pertain to institutional functioning. He grouped these strategies under the headings compliance, behaviour change, and policy suitability.³³ The strategies are described in the table below.

Table 2.2: Levy’s strategies for defining effectiveness

Compliance	Rules and how they have been followed
Behaviour change	Any behaviour impacts (i.e. those beyond rules) that affect the regime
Policy suitability	Identification of appropriate responses for the collective problem (i.e. is the problem being solved)

Effectiveness is often defined in contrast to compliance and implementation, with compliance understood as changes in behaviour. For example, Mitchell defined compliance as “an actor’s behaviour that conforms to a treaty’s explicit rules,”³⁴ though he emphasised that treaty-induced compliance is only one form of effectiveness. Brown Weiss and Jacobson (1995) stated that implementation “refers to measures that states take to make international accords effective in their domestic law” and that compliance “refers to whether countries in fact adhere to the provisions of the accord and to the implementing

³² Young and Levy (1999), p. 4-5.

³³ Marc Levy (1996). “Assessing the effectiveness of international environmental institutions,” *Global Environmental Change*. Volume 6:4, p. 395-397.

³⁴ Ronald B. Mitchell (1993). “Compliance Theory: A Synthesis,” *Review of European Community and International Environmental Law*. Volume 2:4, p. 327-334. A distinction has also been made between ‘good faith’ (attempting but not achieving) and ‘bad faith’ (wilful) non-compliance. Abram Chayes and Antonia Handler Chayes (1993). “On compliance”, *International Organization*. Volume 47:2, p. 175-205.

measures that they have instituted.”³⁵ Effectiveness was viewed as achieving the stated objectives of the treaty and/or addressing the problems that led to the treaty. These descriptions follow those in Easton’s model. Yet, while the definition of effectiveness implies an ecological sense of the concept, the analysis did not examine ecological factors in any details.

In their study on effectiveness, Haas *et al.* (1993) asked if international institutions promote change in national behaviour that is substantial enough to have a positive impact on the quality of the natural environment.³⁶ Although this question addresses biophysical impacts, the study understood effectiveness primarily on institutional grounds. The authors clearly stated, “[Effectiveness] does not mean that problems are solved, merely that the international institutions had a positive contribution on the treatment of shared problems.”³⁷ The authors observed that because international environmental institutions are relatively new phenomena, there were not yet enough data on changes in environmental quality, and therefore they must “focus on observable political effects of institutions rather than directly on environmental impact.”³⁸

In 2002, a comprehensive study on regime effectiveness based on numerous case studies was published by Miles *et al.*³⁹ This project used both qualitative and quantitative analyses, and investigated why some efforts at developing and implementing regimes succeed, while others fail. The case studies looked at regime effectiveness as the dependent variable of the analysis, and the authors stated that “a regime can be considered effective to the extent that it successfully performs a certain (set of) function(s) or solves the problem(s) that motivated its establishment.”⁴⁰ With some of the case studies making rudimentary mention of biophysical impacts, this work went further than most others in discussing actual environmental effectiveness.

³⁵ Harold K. Jacobson and Edith Brown Weiss (1995). “Strengthening Compliance with International Environmental Accords: Preliminary Observations from a Collaborative Project,” *Global Governance*. Volume 1: 119-148, p. 123.

³⁶ As described by Mitchell (1993).

³⁷ Haas, Keohane, and Levy (1993), p. 7.

³⁸ *Ibid.*

³⁹ See Miles *et al.* (2002).

⁴⁰ *Ibid.*, p. 4.

Biermann and the Global Governance Project at the Potsdam Institute for Climate Impact Research in Germany also provided an interpretation of effectiveness through their work on international environmental organisations.⁴¹ They asserted that effectiveness of organisations can be assessed along the three dimensions specified by Easton. Yet, they pointed out that impact indicators – i.e. the effect of organisations on the biophysical environment – “are highly difficult to pin down,” and that “linking observable environmental improvements to the specific influence of an international regime in a meaningful way is virtually impossible.”⁴² Instead, the research project focuses on policy outcomes.⁴³ The approach was the same with Boehmer-Christiansen and Kellow (2002): they refer to the distinction between policy outputs and policy outcomes, and within that, environmental outcomes and non-environmental outcomes.⁴⁴ Nonetheless, there was no follow-up in the literature they analysed, in terms of evaluating the different types of outcomes.

The 1996 International Institute for Applied Systems Analysis (IIASA) study – coordinated by Victor *et al.* – stated that “the relationship between compliance and effectiveness is neither direct nor simple: high compliance is not equivalent to effectiveness.”⁴⁵ Less clear were their interpretations of effectiveness – e.g. “effectiveness is a function of implementation, compliance and institutional persistence”⁴⁶ – that conflate the various concepts. Nonetheless, these researchers were very explicit in pointing out that “we do not equate an accord’s effectiveness with its ability to eliminate the environmental threat at hand.”⁴⁷ A similar approach was taken by Levy (1996), who pointed out that defining effectiveness as “solving the problem that motivated the regime’s creation” has been “of limited utility.”⁴⁸ He gave two reasons why this utility is limited: few environmental problems actually get solved in the long term; and environmental problems have a range of influences (biological, physical and social) that have nothing to do with the regime.

⁴¹ See <http://www.glogov.org> for the project’s website.

⁴² Biermann and Bauer (2004), p. 191.

⁴³ Ibid.

⁴⁴ See Boehmer-Christiansen and Kellow (2002), p. 15.

⁴⁵ Victor, Raustiala, and Skolnikoff (1998), p. 692.

⁴⁶ Oran R. Young (1992). “Global Environmental Change and International Governance,” in *Global Environmental Change and International Relations*, edited by Ian H Rowlands and Malory Greene. (London, UK: Macmillan, p. 6-18), p. 13.

⁴⁷ Victor, Raustiala, and Skolnikoff (1998), p. 6.

In her study of regime effectiveness *Environment, Society and International Relations: Towards More Effective International Environmental Agreements*,⁴⁹ Kütting reiterated that the focus in academic literature has been on institutional factors, and that environmental elements had been essentially neglected. Echoing what previous researchers have said, and quoting Young, she stated:

As it turns out, however, empirically demonstrating effectiveness in [the environmental] sense is extremely difficult, which has led to a variety of other perspectives that emphasise variables such a goal attainment, implementation and compliance, behavioural change, social learning and the initiation of social practices.⁵⁰

Kütting distinguished between institutional and environmental effectiveness, defining the latter as “the degree to which the degrading or polluting processes and consequences are arrested or reversed.”⁵¹ However, as the title of her book implies, her main interest with environmental regime effectiveness was the social element.

Other researchers have left the notion of effectiveness broad or vague, without pinning down a specific definition. For example, Stokke and Vidas (1996) in their appraisal of the Antarctic treaty system stated that effectiveness is the impact on “certain basic problems... whether they are conceived of in economic, environmental, or any other terms.”⁵² The definition of effectiveness was therefore left open and flexible.

All of the studies described above are valuable and provide insight into numerous regimes. Some have been explicit in defining effectiveness as the ability of a regime to theoretically solve a given environmental problem, yet dismiss the utility or possibility of conducting analysis on this basis. Most studies worked with definitions based on institutional elements. While institutional arrangements are central to a regime’s problem-solving ability, defining effectiveness on primarily institutional grounds may result in a ‘missed target’ in terms of assessing the overall impacts of the regime. The distinction between

⁴⁸ Levy (1996), p. 395.

⁴⁹ Gabriela Kütting (2000). *Environment, Society and International Relations: Towards More Effective International Environmental Agreements*. (London, UK: Routledge), p. 4.

⁵⁰ Oran R. Young (1997). *Global governance – drawing insights from the environmental experience*. Cambridge, MA: MIT Press, quoted in Kütting, p. 32.

⁵¹ Kütting (2000), p. 36.

institutional effectiveness (implementation and compliance) and ecological effectiveness (positive biophysical impacts) must be made. Moreover, it is only through including ecological data and assessing biophysical impacts that a complete and accurate understanding of overall regime effectiveness can be obtained.

2.4 Sources, determinants and conditions of regime effectiveness

The main focus of regime effectiveness literature has been on its determinants, sources and conditions. The variation of contributions on this issue is wide, and the nature of these variables also indicates the institutional interest of researchers. Researchers in the field point to determinants, sources and conditions that range from exogenous factors (e.g. international environment, etc.) to endogenous factors (e.g. administration of the institutions, etc.). The rationale underlying the focus on these factors is that once they are better understood, efforts toward improving regime effectiveness are possible.

Young (2002) suggested these factors could be divided into two branches: one examining “the relative importance of factors relating to power, interests, and knowledge,” and the other involving “problem structure, institutional attributes, and socio-economic settings.”⁵³ Kütting divides the literature into the same two branches, though she uses the terms “American school” to describe the authors who research the former and “Norwegian school” to describe the latter. These branches are described in Table 2.3 below.

Table 2.3: Schools of thought on sources, determinants and conditions of effectiveness⁵⁴

Branch	Authors	Description
“American school”	-Young -Levy, Young and Zürn -Haas, Keohane and Levy	-importance of power -configurations of interest among key actors -role of knowledge
“Norwegian school”	-Wettestad and Andresen -Underdal -Mitchell -Miles <i>et al.</i>	-nature of the problem -attributes of regimes -socio-economic settings

⁵² Schram Stokke and Vidas (1996), p. 15.

⁵³ Young (2002a), p. 73-77.

⁵⁴ The branches described in this table are an amalgamation of information from Young (2002a) and Kütting (2000).

2.4.1 *American school*

Young is one of the most prolific researchers in the American school. His contributions to the regime effectiveness field have consistently emphasised the importance of actor behaviour. His study was based on the political approach and focused on behaviour changes: “A regime that channels behaviour in such a way as to eliminate or substantially ameliorate the problem that led to its creation is an effective regime. A regime that has little behavioural impact, by contrast, is an ineffective regime.”⁵⁵ Six ‘pathways’ through which a regime can impact behaviour were identified, with effectiveness depending on the nature and extent of how these pathways influenced the regime.⁵⁶

Levy *et al.* undertook a comprehensive enquiry into regimes (environmental and other), looking at four elements: the formation of regimes; whether or not regimes make a difference; regime consequences; and the broader effects of regimes. Their research was grounded in an interest in the interaction among actors and how their behaviour can be influenced. To this end, the researchers explicitly pointed to both endogenous and exogenous factors. Endogenous factors included elements such as design features and programmatic activities. Exogenous factors referred to elements such as the configuration of interests, distribution of influence, and nature of the issue area.

A more general line of enquiry has also investigated the effectiveness of international institutions. This study, undertaken by Haas *et al.*, concludes that three conditions must be met for effective action on environmental problems: governmental concern must be enough to prompt states to devote resources to solving the problem; there must be a hospitable contractual environment in which agreements can be made and kept; and states must possess sufficient political and administrative capacity to make domestic adjustments necessary for implementation.⁵⁷

2.4.2 *Norwegian school*

Adherents of the Norwegian school focus on the nature of the problem and on regime design. For example Miles *et al.* emphasised the character of the problem (benign vs.

⁵⁵ Young and Levy (1999), p. 1.

⁵⁶ *Ibid.*, p. 22-27.

⁵⁷ Haas, Keohane, and Levy (1993), p. 5.

malign), and the problem-solving capacity of the regime (institutional setting, power distribution, resources for finding solutions).⁵⁸ Quantitative analyses were undertaken by assigning numeric values to items usually described qualitatively, and placing them on a nominal scale. The analyses revealed that the probability of regime effectiveness was highest when a system of high capacity encountered a benign problem, especially one that was well-understood.⁵⁹ Based on results from the analyses, regimes were divided into the following categories: effective regimes; mixed-performance regimes; and regimes of low effectiveness.⁶⁰

Despite the discouraging results, the authors concluded that regimes do indeed make a difference, as “most of the regimes studied...succeeded in changing actor behaviour in the directions intended” and “that in the absence of regimes, things would have been worse.”⁶¹ Indeed, the authors were encouraged with indications that some regimes could enjoy a certain degree of effectiveness even with malign problems.

Another study focusing on these attributes emerged from Social Science Research Council’s Committee on Research on the Human Dimensions of Global Environmental Change.⁶² The goal of the study was to discover factors that lead to improved implementation and compliance with treaties that cover environmental issues. The studies investigated nine political units and five environmental agreements, and used an analytical framework comprised of four factors that affect implementation and compliance. These four factors were: characteristics of the activity that the accord deals with; characteristics of the accord; characteristics of the country, or political unit, that is a party to the accord; and factors in the international environment.

In analysing the environmental agreements using the four influencing factors, Brown Weiss and Jacobson focused only on implementation and compliance, and not on effectiveness. The authors stated that “effectiveness is very important, but until

⁵⁸ Miles *et al.* (2002).

⁵⁹ Uncertainty about the seriousness and causes of the problem was a component of the “character of the problem” determinant, and in some cases, was disaggregated in the analyses.

⁶⁰ Of the 14 case studies: four were considered effective; five had mixed performance; and five had low effectiveness.

⁶¹ Miles *et al.* (2002), p. 467.

⁶² The results of this project are contained in Brown Weiss and Jacobson (1998).

implementation and compliance are better understood, the contribution of treaties to solving international environmental problems cannot be known.”⁶³ They observed that:

Countries may be in compliance with a treaty, but the treaty may nevertheless be ineffective in attaining its objectives. And even treaties that are effective in attaining their stated objectives may not be effective in addressing the problems they were intended to address.⁶⁴

Research undertaken by Biermann’s project examined the effectiveness of international organisations in international environmental politics. Arguing that the current debate on international environmental politics focuses either on the role of the state, or on regimes as a whole, they narrowed their analysis to the role of organisations. Biermann and Bauer outlined two sets of variables that can determine organisational effectiveness – structural variables and contextual variables.⁶⁵ Structural variables include: formal competencies, degree of regime embeddedness, organisational structure, problem of fit, availability of resources, and stakeholder involvement. Contextual variables generally related to factors such as economic conditions, international events, and technological innovations. However, they stated internal contextual elements may also be germane, such as leadership and institutional morale.

Also in keeping with the focus of the Norwegian school, the Victor *et al.* study investigated 14 environmental regime case studies.⁶⁶ The analyses were based on the premise that implementation impacts behaviour, which in turn determines effectiveness. The study focused on two elements of implementation: the design and operation of systems of implementation review and domestic implementation processes.

Kütting progressed thought in the field by examining factors from both the American and Norwegian schools. She deemed conventional literature on regime effectiveness inadequate because of its sole focus on the regime and/or actors as the unit of analysis. Her framework took into consideration social factors related to effectiveness, and sought to address “the failure [of traditional effectiveness debates] to use the environmental problem and its social and structural origins as a standard against which to pitch

⁶³ Jacobson and Brown Weiss (1995), p. 124.

⁶⁴ *Ibid.*

⁶⁵ Biermann and Bauer (2004), p. 192-193.

⁶⁶ The results of this project are contained in Victor, Raustiala, and Skolnikoff (1998).

effectiveness.”⁶⁷ She directed her research efforts to environmental effectiveness, and pointed to four determinants: economic structures; time; the role of science in agreement-making; and regulatory structures. Kütting’s ultimate contribution is limited because of the sole focus on institutional effectiveness.

Together, the American and Norwegian schools of thought have forwarded a range of possible factors to explain regime effectiveness. While the sources, determinants and conditions put forth by each school diverge in their focus, they converge on one major factor: their view of effectiveness tends toward the institutional. Some of the studies may include some aspects of “problem-solving” in their analyses, but any links to ecological aspects of effectiveness are cursory. Extending analysis to include ecological impacts is essential, because “administrative provisions are...only superficial indicators of success.”⁶⁸ Thus the question – as posed by DeSombre – remains: “What most people would really like to know about an international regime’s effectiveness, however, is whether it actually has a positive impact on the environment: is the natural environment better because of international regulatory efforts than it would have been otherwise?”⁶⁹ Challenges to linking institutional and ecological effectiveness certainly exist (and are discussed in detail in Section 2.5), but they do not preclude the integration of environmental factors into the investigation of regime effectiveness.

2.5 Criteria and indicators for evaluating regime effectiveness

Two essential elements of practical evaluations are criteria and indicators to assess effectiveness. It is through the development and use of criteria and indicators that institutional and ecological aspects of regime effectiveness can be understood. Both must be linked to a clearly specified definition of effectiveness; moreover, in order to understand and improve effectiveness, they must be relevant to sources, determinants and conditions.

⁶⁷ Kütting (2000), p. 135.

⁶⁸ Laura H. Kosloff and Mark C. Trexler (1987). “The Convention on International Trade in Endangered Species: Enforcement Theory and Practice in the United States,” *Environmental Law Reporter*, Volume 17, p. 10228.

⁶⁹ Elizabeth R. DeSombre (2002). *The Global Environment and World Politics*. London, UK: Continuum Books, p. 25.

There is an important distinction to be made between (a) sources, determinants and conditions of effectiveness; and (b) criteria and indicators for evaluating effectiveness. Academia has identified the former to provide lines of explanation regarding regime effectiveness. These lines of explanation have led to suggestions about regime design and operation, with the objective of improving effectiveness.

On the other hand, criteria establish a requirement or test by which effectiveness can be assessed. Indicators measure the extent of effectiveness. Given the number of studies on regime effectiveness, criteria and indicators have been provided in relatively few. A handful of evaluations clearly articulate criteria and indicators to be used; in others, these are more implicit. The most observable feature of criteria and indicators articulated in the various studies is that they largely pertain to the institutional elements of regimes.

An early exercise undertaken in 1992 by Sand evaluated a number of environmental regimes in preparation for the 1992 United Nations Conference on Environment and Development (“Rio Summit”). He specified criteria such as: objectives/achievements; participation; implementation; information; and operation, review and adjustment. Under each of these categories, more specific criteria were listed (e.g. under participation he looked at issues such as membership, developing country⁷⁰ participation, systems of reservation, etc.).

Lyster (1996) also identified a number of institutional evaluation criteria. His criteria included: nature and structure of the Secretariat; timing and support for meetings; establishment of national focal points; legislative and administrative measures; funding; technical assistance; and involvement of non-governmental organisations.⁷¹

⁷⁰ The term ‘developing country’ is consistent with UN terminology and usage: “The designations ‘developed’ and ‘developing’ are intended for statistical convenience and do not necessarily express a judgement about the stage reached by a particular country or area in the development process.” See website of UN Statistics Division - <http://unstats.un.org/unsd/methods/m49/m49.htm>. Accessed 10 July 2009.

⁷¹ Simon Lyster (1996). “Effectiveness of International Regimes Dealing with Biological Diversity from the Perspective of the North,” *Global Environmental Change and International Governance*, edited by Oran R. Young, George J. Demko and Kiliparti Ramakrishna. Hanover, NH: University Press of New England, p. 188-216.

In their evaluation of five international treaties, Brown Weiss and Jacobson used the following criteria: nature of negotiations; nature of obligations; implementation and compliance mechanisms; number of Parties; treatment of non-Parties; involvement of intergovernmental organisations; financing trends; and receipt of annual reports.

As opposed to selecting criteria and assessing regimes based on them, researchers have tended to approach evaluation from a different angle. The components of most studies have been: a theoretical overview of sources, determinants and conditions; a brief description of one or more regimes and a review of characteristics or attributes; and finally, an assessment of effectiveness based on existence of these sources, determinants and conditions. While some researchers recognised that “problem-solving” is an important regime consequence, most studies have not included any criteria or indicators to evaluate this aspect.

2.6 Observations and discussion

There are three major observations that can be made of research and practice thus far on evaluations of regime effectiveness. First, there is no consistent definition of the term “effectiveness”. Studies on regime effectiveness provide a multitude of interpretations. Similarly, the range of sources, determinants and conditions of regime effectiveness that have been identified is also extensive. Institutional factors are prominent in both areas.

The second observation is that while institutional aspects have been emphasised, use of ecological criteria and quantitative indicators is scarce. Although researchers may use the term regime “effectiveness”, the focus has been on what is more accurately called implementation and compliance. Most researchers have not assessed impacts in the sense of ecological or biophysical changes. One of the perceived obstacles of using ecological criteria and indicators in evaluations may relate to the nature of criteria and indicators that would be necessary to conduct a useful assessment. While some regimes may have common institutional features, the ‘problem to be solved’ – and therefore the criteria and indicators to be employed – will be distinctive. Even among regimes that have a similar problem (for example, atmospheric pollution), the criteria and indicators could vary immensely (mobile vs. stationary source emissions, the specific pollutant to be measured, etc.).

If international regimes are intended to regulate or mitigate activities that have negative ecological consequences, it is logical that ecological data are needed to understand the impact of these regimes. Relevant ecological factors should be included in any definition of effectiveness, and furthermore, in any evaluation of overall regime effectiveness. This is not counter-intuitive: in fact, it seems illogical to make an assessment of ecological effectiveness without including any meaningful ecological data, criteria or indicators.

The last observation relates to the relationship between institutional and ecological effectiveness. Because definitions of effectiveness have focused on institutional elements, and because ecological criteria have been left out of evaluations, there is very little understanding of how institutional effectiveness relates to ecological effectiveness. While various researchers have made assumptions on this point, these assumptions have not been tested. Young truncated his analysis at political effectiveness. The study that most explicitly referenced both institutional and ecological effectiveness was that conducted by Miles *et al.* They identified “problem-solving” as an important element of effectiveness, and in some of their evaluations, mentioned ecological trends. However, in the case studies where there are references to these trends, only one or two sentences were provided. In their final analysis, effectiveness was indicated by factors such as decision rules, existence of epistemic communities, power distribution, and leadership. These factors were not directly linked to any ecological data – however limited – that may have been provided.

Research on some regimes has made progress in terms of linking institutional and ecological effectiveness. For example, some assessments of the Vienna Convention and the Montreal Protocol have noted the success of the regime at drastically reducing (or completely stopping) production and consumption of ozone-depleting substances. This success has been attributed to various factors, such as: the role of the United Nations Environment Programme as a regime administrator⁷²; widespread participation and availability of technical and financial assistance⁷³; and the role of science in policy

⁷² See David L. Downie (1995), “UNEP and the Montreal Protocol,” *Contributions in Political Science*. Volume 355, p. 171-186.

⁷³ See: Edward Parson (2003). *Protecting the Ozone Layer: Science and Strategy*. Oxford, UK: Oxford University Press; and Laura Thoms (2003). “A Comparative Analysis of International Regimes on Ozone and Climate Change with Implications for Regime Design,” *Columbia Journal of Transnational Law*. Volume 41:3, p. 795-860.

making.⁷⁴ While atmospheric scientists have studied the evolving state of the ozone layer, political analysts writing about the regime have focused on trade impacts. This may be due to the assumption that recovery (i.e. positive ecological impacts) automatically emerges from the institutional success of limiting/stopping production and consumption of ozone-depleting substances.⁷⁵

Three challenges to evaluating the ecological effectiveness of regimes are often cited in the academic literature: there is limited availability and questionable reliability of data; measuring effectiveness is difficult and may be arbitrary; and establishing causality between regime operation and biophysical change is unlikely.⁷⁶ These challenges derive from complexities in linking institutional and ecological effectiveness, which are not insurmountable. The three challenges are discussed below, along with approaches to overcoming them.

2.6.1 Data availability and reliability

In a number of studies, data availability has been identified as an obstacle to evaluating ecological impacts.⁷⁷ Lack of data availability can have a number of dimensions: general lack of data; lack of baseline data; or lack of time-series data. Increasingly, regimes have requirements for submission of relevant data, usually in the form of annual reports. It has been observed that in some cases, data collection may only commence once an agreement has been adopted, and in addition, regime reporting will initially be sporadic and of poor quality.⁷⁸

⁷⁴ See Penelope Canan and Nancy Reichman (2002). *Ozone Connections: Expert Networks in Global Environmental Governance*. Sheffield, UK: Greenleaf Publishing.

⁷⁵ Trade patterns of controlled substances may be a useful indicator, but a problem arises with uncontrolled substances (i.e. illegal trade). See for example: Jonathan Krueger and Ian Rowland (1996). "Protecting the Earth's Ozone Layer," *Global Environmental Change*. Volume 6:3, p. 245-247.

⁷⁶ Other reasons have been put forward, such as in Martin List and Volker Rittberger (1992). "Regime Theory and International Environmental Management", in *The International Politics of the Environment*, edited by Andrew Hurrell and Benedict Kingsbury. Oxford, UK: Clarendon Press, p. 85-109. They suggested explanations such as the difficult and time-consuming task of obtaining scientific information and the politicisation of assessments.

⁷⁷ Brown Weiss and Jacobson (1998), p. 17; Haas, Keohane, and Levy (1993) p. 7; Young and Levy (1999), p. 4.

⁷⁸ Mitchell (2003), p. 446; Victor, Raustiala, and Skolnikoff (1998), p. x.

However, for some regimes, recognition of this problem – and of the importance of collecting data – has resulted in the creation of incentives to ensure better reporting. For example, the Multilateral Fund of the Montreal Protocol provides financial assistance toward national reporting, and the Global Environment Facility also assists developing countries with preparation of national reports for the Convention on Biological Diversity. Rates and quality of reporting rates are therefore improving for these regimes.

Other factors are also increasing the availability of data, such as increased participation of NGOs and other stakeholders and the demand for transparency. NGOs are instrumental in providing data for many regimes (such as CITES and the Montreal Protocol), and disclosure of environmental data is continuously increasing. This does not mean that collating and interpreting these data is an easy task; however, with some MEAs, data availability is not an obstacle.

Data reliability, however, is a bigger challenge. In order to make meaningful analyses, there must be reasonable certainty that the data are accurate when available. There are effective ways to address data reliability. Initiatives that build capacity in the production of data will have spillover effects in terms of improving the quality of data. The focus of funding such as that provided by the Montreal Protocol's Multilateral Fund is toward timely and accurate data. In addition, where countries are producing data (though poor quality), only a nominal amount of training or assistance may be necessary to improve this quality. Regimes may also have mechanisms in place to verify data that are submitted. For example, in the CITES regime, trade data for most species can be cross-referenced by comparing import and export numbers or customs data, which can assist with determining discrepancies.

2.6.2 Measuring effectiveness

Measuring effectiveness has also proven to be a challenge in the field, though progress is being made. For example, one of the studies outlined above – that by Miles *et al.* – devised a nominal scale for measurement. Quantitative data for the scale were obtained by taking the qualitative descriptions of the regime case studies, and translating them into numerical values for the variables. Using this method, the authors were able to numerically compare the 14 case studies, and come up with conclusions based on these

figures. Although this provided a basis upon which to compare the regimes, the variables were based on institutional aspects, without any environmental analysis.

Two other researchers – Sprinz and Helm – have also devised a method to measure regime effectiveness.⁷⁹ Their model is based on the premise that one can establish a “no-regime” scenario (called a counterfactual) and a “collective optimum” (if the marginal collective costs of using the instrument equate to the collective benefits). These two factors comprise the lower and upper bounds for very technical cost/benefit analyses. Their initial article presented the methodology and did not employ it, but rather provided guidance for future research. A later article employed their methodology to a European transboundary air pollution regime.⁸⁰ The lower bound was the no-regime scenario, and the upper bound was a “perfect regime” scenario. The measurement was based on actual policies (not resulting environmental impacts) assessed within these bounds. Through this exercise, the researchers calculated a numerical value for the effectiveness of the regime, both in terms of aggregate effectiveness and that at a national level.

However, the approach by Sprinz and Helm (termed ‘the Oslo-Potsdam solution’) has been subject to some criticism. Young (2001; 2004) pointed out that analyses of regimes have employed discretionary selection techniques, and that categorisations of regimes have been simplistic and subjective (e.g. high/medium/low).⁸¹ Nonetheless, work along this vein has continued in the field. Mitchell (2002) looked at how the effectiveness of international environmental regimes can be measured quantitatively.⁸² He explored the contribution of statistical analysis in evaluating the effectiveness of environmental regimes and discussed possible challenges related to a number of operational issues, such as defining dependent and independent variables. Mitchell pointed out the trade-offs with using quantitative analyses, the primary one being accuracy for generalisability.⁸³ He looked briefly at a model to evaluate a single regime’s effects, then devised a more

⁷⁹ Sprinz and Helm (1999).

⁸⁰ Helm and Sprinz (2000).

⁸¹ Oran R. Young (2001). “Inferences and Indices: Evaluating the Effectiveness of International Environmental Regimes”, *Global Environmental Politics*. (Volume 1:1, p. 99-121) 103.

⁸² Mitchell (2002).

⁸³ *Ibid.*, p. 66.

generalisable model to compare several regimes' effects. For the more complex model, he set the dependent variable as changes in regulated behaviour, and looked at this in light of independent variables such as convention membership, existence of rules supported by sanctions, depth of cooperation, annual changes in gross national product, annual changes in population, and other factors. His conclusion was that although conducting valuable quantitative analyses is difficult, it is worth pursuing.

Another foray into the measurement and analysis of regimes was based upon the creation of a comprehensive international regime database, into which various elements of 23 regimes were coded and then analysed.⁸⁴ Elements of regimes that were coded included, *inter alia*: regime formation; regime components; important actors; economic setting; cognitive setting; agenda formation; regime outputs; regime consequences; and regime dynamics. Creation of the database is meant to contribute to “a transition from the case study to the relational database in research on international regimes.”⁸⁵ The study exceeded previous ones in terms of its scope and focus on environmental effectiveness; nonetheless, ecological data and analysis were absent. The only element that referred to actual regime impacts (coded in the form of a question) was: “How did the state of the world change during this period with respect to the problems addressed by the regime?” This query was too vague to be meaningful. Moreover, the analysis of the impacts was limited to a comparison between consensual, unanimous and majority decision rules on the regime impacts.

Advancement in the measurement of regime effects indicates progress in the evolution of literature in this field. Nevertheless, if the dependent variable is behaviour change, questions regarding actual ecological impacts still remain. Once environmental trends are assessed, it is important that their correlation to the regime – and aspects of the regime – is understood.

⁸³ Helmut Breitmeier, Oran R. Young, and Michael Zürn (2006). *Analyzing International Environmental Regimes: From Case Study to Database*. Cambridge, MA: MIT Press.

⁸⁴ Oran R. Young and Michael Zürn (2006). “The International Regimes Database: Designing and Using a Sophisticated Tool for Institutional Analysis”, *Global Environmental Politics*. (Volume 6:3, p. 121-143) 122.

2.6.3 *Establishing causality*

Establishing causality between regimes and environmental change is probably the most challenging aspect to address in evaluations of regime effectiveness. Nature's inherent complexity makes it difficult to attribute biophysical change to one factor or policy. Changes in a particular environmental trend may be due to a number of causes, including other policies (domestic or international), natural processes, or economic factors.⁸⁶ Young and his collaborators stated that:

It is often difficult to ascribe observed changes in [environmental] systems to the operation of international regimes... Most problems serious enough to justify the creation of an international regime motivate actors to pursue solutions through a variety of initiatives, including some that do not involve the regime directly.⁸⁷

Complexity is an issue also identified in the conservation field. For example, the study by Kleiman *et al.* noted that "conservation programs involving several geographic or political areas (different states, different nations, different continents) may be especially difficult to review because the more agencies and actors involved, the more complex the organization and process."⁸⁸ The challenge of establishing causality between environmental trends and a regime is complicated if specific elements of the regime (or conservation programme) are to be disaggregated for analysis.

Another complicating element is the fact that "a decrease in environmental quality does not necessarily indicate that cooperative efforts are not succeeding."⁸⁹ For example, in examining the results of the self-commissioned study of CITES, the OECD pointed out that:

... This situation cannot establish a causality link between the use of the instrument (trade measures) and the change in the environmental externality (species loss) and even less the nature or strength of such a link. However it does properly draw attention to the facts of the situation and it is implausible to advance that this is a matter of pure coincidence to which CITES cannot be associated. On the contrary

⁸⁶ Mitchell (2004); Young (1999a).

⁸⁷ Young (1999a), p. 4. See also DeSombre (2002), p. 26, and Marc A. Levy, Oran R. Young and Michael Zurn (1994). *The Study of International Regimes*. Working Paper WP-94-113. Laxenburg, Austria: International Institute for Applied Systems Analysis, p. 20.

⁸⁸ Devra Kleiman *et al.* (2000). "Improving the Evaluation of Conservation Programs", *Conservation Biology*. (Volume 14:2, p. 356-365) 358-359.

⁸⁹ DeSombre (2002), p. 26.

(and this is underlined by the fact that CITES continues to attract membership and clearly has effectively curtailed trade in a number of cases) it is more plausible to presume that, at the overall level, the status of species conservation is better than it would have been had CITES not existed at all.⁹⁰

Parties to an agreement may be achieving high levels of cooperation and fulfilling their commitments, but because of factors such as time lags in the impacts of environmental improvement, these efforts may not be immediately evident.

Limiting analysis to behaviour change is therefore appealing: drawing a causal pathway between an international regime and a subsequent policy action is much more straightforward than going another step to attributing ecological change to the policy action and therefore to the regime.⁹¹ DeSombre pointed out that, "...if international cooperation cannot succeed in changing the behaviour of actors whose original behaviour has been causing environmental problems, it is reasonable to consider it ineffective. Behavioural effectiveness also has the advantage of being relatively easy to measure."⁹² Here, DeSombre is making the assumption – implicit in virtually all regimes – that behaviour of actors is the sole or primary cause of the environmental problem, and that changing the behaviour can therefore solve the problem.

Even where the ecological aspect of effectiveness is recognised, there may still be a reliance on drawing causal links to behaviour change. In his research, Greene stressed effectiveness as it pertains to resolution of the environmental problem it was designed to address.⁹³ Nonetheless, even though Greene recognised ecological impacts as the essence of effectiveness, he relied on behaviour change as his method of examination since "the causes of environmental change are often poorly understood."⁹⁴

⁹⁰ OECD (1997). *Experience With the Use of Trade Measures in the Convention on International Trade in Endangered Species (CITES)*. Paris: OECD, p. 47. Available from the OECD website (www.oecd.org). The report is document OECD/GD(97)106.

⁹¹ Mitchell (2008), p. 84.

⁹² DeSombre (2002), p. 25.

⁹³ Owen Greene (1996). "Environmental regimes: Effectiveness and implementation review," in *The Environment and International Relations*, edited by John Vogler and Mark F. Imber. (London, UK: Routledge, p. 196-214), p. 199. Elements of his study are contained in the study by Victor, Raustiala, and Skolnikoff (1998).

⁹⁴ Greene (1996), p. 2000.

Definite causality is a cornerstone of sound science, but some would suggest it is impossible to establish. Oreskes has observed that, "...Science does not produce logically indisputable proofs about the natural world. At best it produces a robust consensus based on a process of inquiry that allows for continued scrutiny, re-examination, and revision."⁹⁵ Relying on causality and scientific certainty – or using it as a reason to limit action or decision-making on environmental issues – can only lead to limited results and progress. Furthermore, as Herrick and Sarewitz pointed out about this approach, "the practical outcome...is that scientific uncertainty becomes a ready-made dodge for what is in reality just a difficult political decision."⁹⁶

Therefore, a more practicable method to addressing the linkages between institutional and ecological effectiveness is not to aim for definite causality, but to look for plausible correlations. By taking this approach, there is more opportunity to find multiple and competing lines of explanation. The pressure, time, and resources involved with establishing causality – which is exceedingly difficult – can be used to better explore a wide range of possible factors that define or influence the relationship between institutional and ecological effectiveness.

2.7 Other developments

As academic approaches to effectiveness evolve to include factors from both the American and Norwegian schools of thought, practitioners have also been responding to challenges associated with evaluating regimes. Two areas where there has been considerable development of evaluation techniques are self-assessment procedures of MEAs, and the field of conservation biology.

2.7.1 Self-assessments in MEAs

Early indications of the use of evaluation in MEAs can be seen in the 1992 report compiled by Sand for the UN Conference on Environment and Development. In his overview of agreements existing at the time, he noted that "a number of attempts have

⁹⁵ Naomi Oreskes (2004). "Science and public policy: what's proof got to do with it?", *Environmental Science and Policy*. (Volume 7, p. 369-383) 369-370.

⁹⁶ Charles Herrick and Daniel Sarewitz (2000). "Ex post evaluation: a more effective role for scientific assessments in environmental policy," *Science, Technology and Human Values*. (Volume 25:3, p. 309-331) 309.

been made to evaluate the overall effectiveness of international environmental agreements and instruments, either by the Parties, by the secretariats, or by independent observers.”⁹⁷ Examples he gave include: an evaluation of the London Dumping Convention; an evaluation of the Montreal Guidelines on Land-based Sources of Marine Pollution; and an evaluation by UNEP of the Principles on Shared Natural Resources and the Guidelines on Offshore Mining. Also, at the time of publication of the report, he cited an ongoing assessment of the International Code of Conduct on the Distribution and Use of Pesticides. Sand did not indicate the nature and extent of these evaluations.

Since then, review procedures have also been initiated by a number of MEAs. The UN Framework Convention on Climate Change has an implementation review procedure integrated into the Convention text (Article 7.2). Paragraph (e) of this Article calls on the Conference of the Parties to:

Assess, on the basis of all information made available to it in accordance with the provisions of the Convention, the implementation of the Convention by the Parties, the overall effects of the measures taken pursuant to the Convention, in particular environmental, economic and social effects as well as their cumulative impacts and the extent to which progress towards the objective of the Convention is being achieved.⁹⁸

The Stockholm Convention on Persistent Organic Pollutants is more explicit about the need for an effectiveness evaluation, and in fact, Article 16 specifically mandates one to be carried out four years after entry into force of the Convention (and periodically thereafter).⁹⁹ Article 16 stipulates that the evaluation is to examine results of monitoring activities, submission of national reports, and non-compliance information.

Evaluations of effectiveness figure into elements of the Convention on Biological Diversity (CBD). The only reference to effectiveness in the actual text of the CBD pertains to evaluation of financial resource mechanisms. However, a number of decisions have been taken regarding evaluations of various elements of the Convention, such as

⁹⁷ Peter H. Sand (1992). *Effectiveness of International Environmental Agreements: Survey of Existing Legal Instruments*. Cambridge, UK: Grotius Publications Ltd., p. 9.

⁹⁸ UN Framework Convention on Climate Change. Article 7.2 (e). Convention text accessed from UNFCCC website on 12 November 2007.

⁹⁹ For text of the Stockholm Convention, please go to:

http://www.pops.int/documents/convtext/convtext_en.pdf. Accessed on 14 November 2007.

national systems of protected areas, and domestic implementation of the Programme of Work. The CBD also has started a process to review of implementation toward improving efficiency and compliance within the regime.

The Cartagena Protocol on Biosafety has gone much further than its parent convention (CBD) in mandating effectiveness evaluations. Written into the text is a requirement for an overall evaluation, which is to be conducted five years after entry into force of the Protocol (i.e. in September 2008), and at least every five years thereafter. In March 2006, this matter was discussed at the third meeting of the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety. A discussion paper about the evaluation released at the meeting noted that, “the effectiveness of an international environmental agreement may be measured in terms of the impact of the agreement in preventing, eliminating or mitigating of the actual or potential problem(s) that led to its creation.”¹⁰⁰ Yet the document also acknowledged that practical experiences of Parties in the implementation of the Protocol would form the primary basis for evaluating its effectiveness.¹⁰¹

The Ramsar Convention on Wetlands has also initiated a process of assessing effectiveness. Indicators have been developed for this exercise, which include ecological data (e.g. trends in water quality, conservation status of wetlands, population trends of wetland taxa, etc). The Ramsar scientific body that is undertaking the review (underway, but not completed, as of June 2010) is working with the UNEP World Conservation Monitoring Centre (UNEP-WCMC), which has extensive experience with collecting, managing and analysing ecological data.¹⁰²

¹⁰⁰ United Nations Environment Programme (2006). *Assessment and Review (Article 35): Initiating a process of evaluation of the effectiveness of the Protocol*. Document UNEP/CBD/BS/COP-MOP/3/13. Accessed at <http://www.cbd.int/doc/meetings/bs/mop-03/official/mop-03-13-en.pdf> on 14 November 2007.

¹⁰¹ Results from the COP/MOP-3 are enumerated on the CBD website. See <http://www.cbd.int/meetings/cop8mop3/mop-03--summary.shtml>. Accessed on 14 November 2007.

¹⁰² Ramsar Secretariat (2009). *Progress with the assessment of the ecological “outcome-oriented” indicators for assessing the implementation effectiveness of the Ramsar Convention (Resolution IX.1 Annex D), and the 2010 biodiversity target*. Document Ramsar SC40-18. Accessed on 25 June 2010.

Another such evaluation was the 1996 self-commissioned study under the CITES regime. This study incorporated all major elements of the Convention, from institutional factors (all elements of implementation and compliance), as well as ecological factors. The ecological element of the CITES evaluation was limited, but this was recognised by the consultants, who called for a more comprehensive investigation into conservation impacts of the Convention. Links between ecological data and the institutional structure were weak at best, with the sole observation made that “implementation of the provisions of CITES is being limited by a lack of information as well as limited human and financial resources available to Range States.”¹⁰³

The Montreal Protocol on Substances that Deplete the Ozone Layer has undertaken some comprehensive assessments as well. In June 2007, the Secretariat released a document that synthesised the results from a number of their assessment panels. Although the document contains valuable ecological data in terms of impacts from the Protocol, these are not linked back to the institutional elements. While the data are interesting, without linking them to factors associated with the regime’s functioning, institutional learning is limited.¹⁰⁴

Despite the limited use of ecological data in MEA evaluations, the fact that evaluation requirements are being integrated into the design of regimes or added to subsequent protocols is a positive step. This indicates recognition of the importance of these exercises, and as experience with these evaluations grows, practice may improve.

2.7.2 Contributions from conservation-based literature

Evaluation of environmental regimes that address issues such as endangered species, water quality or wetlands protection may improve through use of methodologies and approaches extracted from other disciplines. As von Moltke has pointed out, “effectiveness is a multidimensional concept that requires multiple research strategies.”¹⁰⁵ For example, the

¹⁰³ CITES Secretariat (1996). *Study on How to Improve the Effectiveness of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*. Geneva: CITES Secretariat, p. 41.

¹⁰⁴ United Nations Environment Programme (2007). *Presentation of the synthesis report of the 2006 assessments of the Scientific Assessment Panel, the Environmental Effects Assessment Panel, and the Technology and Economic Assessment Panel*. Nairobi, Kenya. UNEP/OzL.Pro.WG.1/27/3.

¹⁰⁵ Von Moltke (2000), p. 3.

focus of CITES on conservation of endangered species means that the Convention is, in essence, a comprehensive, global conservation programme. Accordingly, regimes such as CITES have been the subject of research in the conservation field. Researchers in this field are asking the similar questions to those who study regimes: Have conservation programmes and initiatives been effective? How can progress in reaching the goals of these programmes and initiatives be measured?¹⁰⁶

Noting the benefits of evaluative exercises, conservation practitioners have observed that, “the results of evaluations at a variety of levels and time frames can permit the refinement of parts of conservation programs, the alteration of whole programs, or even a change in the entire approach to conservation problems.”¹⁰⁷ Others have stressed the importance of performance measurement: “In addition to being an important tool for accountability, measuring and auditing can be powerful tools for continuous learning and improvement.”¹⁰⁸ Yet despite these observations, evaluation of effectiveness is still in its nascent form in the conservation field.

Challenges that have been faced by researchers and practitioners working in the international relations field have also been experienced in the conservation field. For example, difficulties associated with obtaining reliable and accurate data also exist in the conservation field. Researchers have responded in the same manner: using proxy data. In one case, practitioners employed a threat-reduction assessment instead of actual biophysical data, which “often take longer to collect and respond only slowly to threat reductions.”¹⁰⁹

Other challenges to evaluating the effectiveness of conservation programmes have also been identified, such as: institutional incentives to exaggerate threats or successes,

¹⁰⁶ See for example, Nick Salafsky, *et al.* (2002) “Improving the Practice of Conservation: A Conceptual Framework and Research Agenda for Conservation Science,” *Conservation Biology*. Volume 16:6,, p. 1469-1479.

¹⁰⁷ Kleiman *et al.* (2000), p. 357.

¹⁰⁸ Jon Christensen (2003). “Auditing conservation in an age of accountability,” *Conservation in Practice*. (Volume 4:3, p. 12-19), p. 14.

¹⁰⁹ Kenneth F. D. Hughey *et al.* (2003). “Integrating Economics into Priority Setting and Evaluation in Conservation Management,” in *Conservation Biology*. (Volume 17:1, p. 93-103) 99.

depending on the situation; lack of defined targets in conservation policies; and pressure to direct funding to conservation efforts, and not to valuation exercises.¹¹⁰

Nonetheless, the past decade has seen the conservation field dedicate more time and research to the development of assessment techniques, with evaluation slowly integrated into programmes and projects. For example, in the past few years, The Nature Conservancy has established a conservation audit scheme, which requires measurement of goal achievement, and verification of the results for donors and managers.¹¹¹ This initiative is being integrated into their project planning approach, which also looks at ecological systems, stresses, sources of stresses, and conservation strategies. The Nature Conservancy defines conservation success as the combination of three outcomes: “the maintenance of viable biodiversity, abatement of critical threats, and effective protection and management of places where we take action with partners.”¹¹² With this initiative, the focus is extended from organisational performance into ecological impacts.

Another example of work on effectiveness in the conservation field is a collaborative group of non-governmental organisations promoting the idea of audits. The Conservation Measures Partnership is an initiative that aims to measure progress toward conservation goals. In a recent evaluation of conservation audits they have undertaken since 2003, it was revealed that less than one-third of the 40 projects assessed had mechanisms to evaluate ecological effectiveness. The focus on such assessments had centred on education, outreach and fundraising. The study found that although “conservation projects and organizations may feel confident that their actions are leading to the mitigation of threats and the improvement in status of conservation targets, it appears that it is rare that projects have the data necessary to credibly demonstrate their impact.”¹¹³ Progress is being made on ensuring that evaluations take into account ecological factors; however, the practice is still not as widespread as might be expected or required.

¹¹⁰ Kathryn A. Saterson *et al.* (2004). “Disconnects in Evaluating the Relative Effectiveness of Conservation Strategies,” *Conservation Biology*. Volume 18:3, p. 597-599.

¹¹¹ Christensen (2003), p. 14.

¹¹² The Nature Conservancy (2004). *Conservation by Design: A Framework for Mission Success*. Arlington, VA: The Nature Conservancy, p. 7.

¹¹³ Elizabeth O’Neill (2007). *Conservation Audits: Auditing the Conservation Process – Lessons Learned, 2003-2007*. Bethesda, MA: Conservation Measures Partnership, p. i-ii.

Although interest in building effectiveness evaluations into conservation programmes is growing, it is still not widespread and a certain amount of resistance exists to these initiatives. Kleiman *et al.* observed that, “conservation programs rarely receive comprehensive, in-depth, external, peer-reviewed evaluations. The paucity of such reviews exists because they are costly and difficult, they may provide unwanted suggestions, and their recommendations may be difficult to implement.”¹¹⁴

2.8 Conclusions and ways forward

What emerges from these studies and evaluations is the primacy of implementation and compliance as indicators of overall effectiveness. Implementation and compliance relate to Easton’s outputs and outcomes, and are defined and interpreted using factors related to norms, rules, and regulations, as well as behaviour change. Researchers in the field have closely examined the sources, determinants and conditions of effectiveness, which is essential if improved regime consequences are the objective. The two main schools of thought (American and Norwegian) have investigated exogenous and endogenous factors, leading to a diverse array of explanatory variables. The use of criteria and indicators has not been explored as comprehensively, though the range of specific case studies has been broad.

Those evaluating the effectiveness of regimes are faced by numerous challenges, such as ensuring data are available and reliable, measuring effectiveness, and establishing causality. However, as the knowledge and practice of regime evaluation further develop, the methods of addressing these challenges become more sophisticated. In addition, advancements in knowledge and practice can be made by other disciplines, since the question of and need for effectiveness extends beyond the field of regime studies.

With this better understanding of the state of the art of evaluations of regime effectiveness, how can the discussion be propelled forward to give us a more accurate and helpful

¹¹⁴ Kleiman *et al.* (2000), p. 357. See also Thomas M. Brooks, S. Joseph Wright, and Douglas Sheil (1999). “Evaluating the Success of Conservation Actions in Safeguarding Tropical Forest Biodiversity”, *Conservation Biology*. Volume 23:6, p. 1448-1457; and Andrew S. Pullin and Teri M. Knight.(2001). “Effectiveness in Conservation Practice: Pointers from Medicine and Public Health”, *Conservation Biology*. Volume 15:1, p. 5-54.

definition of effectiveness? What tools and methods can be adopted to advance our understanding of overall regime effectiveness, and with that, can it be improved?

One of the prevailing notions that emerged from the literature is that political/legal changes lead to environmental improvement, and following that assumption, that institutional effectiveness is a logical indicator or proxy for ecological effectiveness. Consequently, analyses have rarely included ecological factors, and understanding of the nature and extent of ecological impacts remains weak. There is recognition by some researchers and practitioners that assessing biophysical change is important. Indeed, the most recent and the most comprehensive evaluations of regimes are starting to include biological criteria. While the premise that ecological effectiveness can emerge from institutional effectiveness is plausible, there is a need to better understand the linkages between these two types of effectiveness. What is going on if institutional effectiveness is not resulting in ecological effectiveness? If causality can not be established, what is the correlation between institutional and ecological effectiveness? What variables are operating that impact the relationship between institutional and ecological effectiveness?

The strategy to address the linkage (or possible gap) between institutional and ecological effectiveness in this research will be to explore intervening variables that are similar in nature to the sources, determinants and conditions identified by researchers in the field. These variables generally fall into two categories: the nature of the problem, and national-level factors.

Brown Weiss and Jacobson (1998), Miles *et al.* (2002), and Mitchell (2006) placed heavy emphasis on the “nature of the problem” or “problem structure” as a determinant of regime effectiveness.¹¹⁵ Miles *et al.* viewed the nature of the problem as a function of its malignancy or benignancy. The malign or benign nature of a problem could manifest in two ways: intellectually or politically. From an intellectual standpoint, Miles *et al.* maintained that some problems “are substantially more intricate or complicated than others, implying that more intellectual capital and energy are needed to arrive at an accurate description and diagnosis and to develop good solutions.”¹¹⁶ Political malignancy

¹¹⁵ Wettestad also included “problem characteristics” as one of his conditions for effectiveness; he was a contributor to the book by Miles *et al.*, and so his view is subsumed in that larger study.

¹¹⁶ Miles *et al.* (2002), p. 15.

was viewed as the configuration of actor interests and preferences; i.e. the more consensus among actors on the issue, the more benign it could be considered.

Brown Weiss and Jacobson referred to this issue as “characteristics of the activity”, and pointed to elements such as: the economic value of the activity; how easily it could be monitored; and the organisation of the activities (i.e. by multinational organisations or small firms or individuals).¹¹⁷ Mitchell (2006) identified various reasons as to why the nature of the problem (or problem structure) is important in studies of effectiveness, including its role as an explanation for institutional influence, and its effects on institutional design and behavioural outcomes.¹¹⁸ Victor *et al.* identified three separate aspects of “the nature of the problem” in terms of how effectiveness of a regime is influenced. They highlighted the importance of: the ratio of costs to benefits; the distribution of those costs and benefits; and strategic considerations such as international economic competitiveness.¹¹⁹ Although these factors certainly can and do impact effectiveness, whether or not they are exogenous to the institutional structure of a regime is debatable. Regimes can be designed to address these issues; for example, the Clean Development Mechanism of the Kyoto Protocol might be considered a mechanism by which the costs and benefits of regime implementation are redistributed among actors.

National-level circumstances are also cited as a major influencing factor outside of the scope of institutional considerations. Martin was explicit when he observed that CITES was likely to be effective in countries “where wildlife control is strongly centralized and efficiently managed, where citizens have the legal rights to use wildlife only as permitted by government agencies and where this central control is popularly accepted.”¹²⁰

Variations in the implementation and compliance of regimes among countries indicate how much these factors can impact overall effectiveness.

Brown Weiss and Jacobson also emphasised the importance of factors involving the country, pointing to general aspects such as the broad political culture, level of economic

¹¹⁷ Brown Weiss and Jacobson (1998), p. 6.

¹¹⁸ Ronald B. Mitchell (2006). “Problem Structure, Institutional Design, and the Relative Effectiveness of International Environmental Agreements”, *Global Environmental Politics*. (Volume 6:3, p. 72-89), 75-76.

¹¹⁹ Victor, Raustiala, and Skolnikoff (1998), p. 9.

¹²⁰ Martin (2000), p. 31.

development, and cultural traditions. More specifically, Brown Weiss and Jacobson asked questions such as: What difference does it make if the country has a market or planned economy? Is the country democratic? What is the nature of the legal system? Is there a culture of compliance in the country? What is the strength of non-governmental groups?¹²¹ In their evaluations of the various regimes, the authors focused primarily on national political factors that affected compliance/effectiveness.

The self-commissioned assessment of CITES also referred directly to national-level circumstances that impact the effectiveness of the Convention. Although it was not part of a direct area of inquiry, the consultants recognised the capacity of Parties to manage species and protect habitat as an important factor (and indeed, limitation). While CITES requires certain legislative and political actions by governments, issues such as species and habitat protection are under domestic jurisdiction and beyond the scope of the agreement.

Despite general awareness of the institutional nature of effectiveness and the factors that can influence it, it is uncertain whether or not institutional effectiveness directly results in ecological effectiveness. While a positive relationship between institutional and ecological effectiveness is implicit in the studies and evaluations that have been outlined in this chapter, it has not been tested. Use of ecological data, criteria and indicators has been sporadic and fleeting; when they have been used, they are not linked directly to institutional factors. Nonetheless, the existence and proliferation of regimes to address environmental problems suggests a correlation between institutional and ecological phenomena.

Therefore, in order to examine the nature and strength of the relationship between the institutional and ecological effectiveness of a regime, a more comprehensive analysis is required, and will be undertaken in this research. The analysis will be based on the current understanding of institutional effectiveness, and – using relevant data, tools and methods from other disciplines – will seek to improve knowledge about overall effectiveness. Intervening variables may provide a potential line of explanation for any gaps that may exist between implementation/compliance and ecological effectiveness.

¹²¹ Brown Weiss and Jacobson (1998), p. 7-8.

In the next chapter, an analytic framework is described that explores this relationship, taking into account both institutional and ecological effectiveness, as well as possible intervening variables.

CHAPTER 3: ASSESSING EFFECTIVENESS – AN INTEGRATED APPROACH

3.1 Introduction

This chapter describes the analytical framework used to examine and assess the relationship between institutional and ecological effectiveness, and the possible role of intervening variables. For this study, the definition of institutional effectiveness is based on factors related to regime characteristics and to national implementation and compliance. The definition of ecological effectiveness used here is based on “problem-solving” (Young 1991; Miles *et al.* 2002; Levy 1996). Ecological effectiveness implies improvement of the environmental issue in question, which will be different depending on the focus and objectives of the regime.

The hypothesis guiding this work is that while institutional effectiveness is important, it may not always lead to ecological effectiveness. Accordingly, the relationship between institutional and ecological effectiveness must be examined in order to make any conclusions about overall effectiveness of the regime. The relationship between institutional functioning (a set of independent variables) and ecological effectiveness (dependent variable) may be impeded by intervening variables.

The next section of the chapter describes how the analytical framework used in this study differs from previous work on regime effectiveness. Following that is a description of the assumptions that underlie the framework, and how criteria used in the framework were selected. Most of the chapter is devoted to a comprehensive overview of the four-step framework, which includes a description of the criteria and associated research questions. An explanation of how overall effectiveness will be calculated and measured is also provided.

3.2 A new approach to effectiveness

This research differs from previous work on regime effectiveness in three main respects: (1) it does not assume that institutional effectiveness leads to ecological effectiveness, and that therefore analysis of regime effectiveness can be limited to institutional factors; (2) use of ecological criteria and measurement using quantitative data are considered essential for assessing overall regime effectiveness; (3) some of the sources, determinants and

conditions identified by previous researchers are also understood to be potential intervening variables that, while important to institutional effectiveness, directly influence ecological effectiveness. The ways in which this research is similar to and differs from previous approaches is articulated in Table 3.1.

Table 3.1: Similarities and differences to previous research

	Approach of previous researchers	Integrated approach (this study)	
		Similarities	Differences
Underlying assumption	-institutional effectiveness leads to or is a proxy for ecological effectiveness	-institutional effectiveness is important	-institutional effectiveness may not lead to ecological effectiveness
Definitions/interpretations of effectiveness	-mostly based on institutional elements -some mentioning of “problem solving”	-incorporation of “problem-solving”, which is fundamental to my approach	-clear distinction between institutional and ecological effectiveness
Sources, determinants and conditions of effectiveness	-two schools of thought, both emphasise institutional elements	-elements of both schools are integrated	-introduction of intervening variables
Criteria for evaluation of overall effectiveness	-minimal use of criteria; any use has been based on institutional elements	-use of some institutional criteria specified	-specific and separate criteria for institutional and ecological effectiveness

In their examinations of regime effectiveness, previous researchers either explicitly or implicitly made the assumption that ecological effectiveness follows from institutional effectiveness. However, this relationship has not been tested, even where the concept of problem-solving was a part of the analytical framework.

Ecological or biophysical criteria are essential components of any evaluation of overall regime effectiveness. While the criteria used will vary depending on the regime, as well as the particular interest of the researcher, understanding the regime’s biophysical impacts requires the use of relevant criteria. For most regimes, improved approaches to monitoring have resulted in a body of scientific data that can be used for evaluations. Datasets may not always be complete or as accurate as would be ideal; however, using available data for even basic analyses is valuable.

3.2 Analytical framework

To achieve the research objectives outlined in the introduction of the study (Chapter 1), a four-part framework was designed. This framework evaluated the overall effectiveness of

a regime, and through that process, clarified the relationship between institutional and ecological effectiveness for the case study used. This integrated framework was designed to make Young's "causal chain" as clear and short as possible, and followed Easton's sequence of policy consequences, i.e. outputs, outcomes, and impacts. In addition, the framework went one step further and looked at variables that may intervene between institutional and ecological effectiveness, and how they may be addressed.

3.2.1 Assumptions underlying the framework

This model or framework is based on a number of assumptions. Underpinning this approach to regime effectiveness is the assertion that understanding ecological effectiveness is essential. While behaviour change or compliance is a critical element of regime functioning, biophysical impacts of the regime are an integral part of overall effectiveness.

The second assumption of this model is that it is possible to include ecological effectiveness in evaluations. Previous researchers have limited their studies to institutional effectiveness on the basis that extending the analysis to ecological factors is too fraught with difficulties, and that behaviour change is an accurate and adequate indicator of environmental change. However, numerous regimes have compiled enough reliable environmental data so that impact assessments are possible (e.g. CITES, Montreal Protocol, Ramsar, etc.).

A third assumption of this model is that there is a relationship between (a) regime characteristics and (b) implementation and compliance. The impacts of regime characteristics on implementation and compliance may vary; indeed, implementation and compliance may occur in the absence of some regime characteristics. Nonetheless, a correlation between the structure and design of a regime and its ability to influence the behaviour (i.e. implementation and compliance) of national actors is assumed.

A fourth assumption is that institutional effectiveness can be correlated with ecological effectiveness. However, this study parts ways with previous research in that it does not assume that institutional effectiveness is equivalent or a proxy for ecological effectiveness. In cases where behaviour change definitely translates into environmental improvements,

this proxy relationship is appropriate. However, this relationship must be tested or illustrated before it is established as a given.

A last assumption of this model is that it is possible to improve overall regime effectiveness by understanding the relationship between institutional and ecological effectiveness. By understanding this relationship – especially vis-à-vis the role of intervening variables – inefficiencies or problems can be identified and remedied.

3.2.2 Selection of criteria for the framework

Kleiman *et al.* made the following suggestions to improve the evaluation of conservation programmes by identifying some ‘criteria for developing criteria’ for such evaluations¹²²:

- criteria should be based on the goals defined by the conservation programme
- a distinction should be made between process and substance criteria
- criteria must cover more than just biological considerations (socioeconomic and political considerations must be addressed)
- criteria should also allow evaluation of progress toward goals
- understanding organisational structure is critical to evaluation
- criteria should measure the degree to which learning has occurred within the programme or project

Using some of these suggestions, criteria under each step of the framework were extracted from regime effectiveness literature and evaluations of international environmental regimes.

Kleiman’s first suggestion is the most relevant, and the objective of CITES – to ensure that international trade does not threaten the long-term survival of endangered species in the wild – was the basis for the selection of all criteria. Process and substance criteria were distinguished through the separation of institutional and ecological criteria. By designing the evaluation in this way, Kleiman’s next suggestion is covered – as is her suggestion regarding organisational structure. Evaluating progress toward goals is something that will emerge from the overall exercise. Lastly, the degree to which learning has occurred is included within certain criteria that reference processes such as internal reviews or capacity for the regime to change.

¹²² Kleiman *et al.* (2000), p. 359-361.

The framework has been designed specifically for the Review of Significant Trade process within the CITES regime. The CITES regime was selected given that it has been operational for over 35 years, and its reporting system has resulted in the availability of comprehensive quantitative data pertaining to the Convention.¹²³ While most institutional criteria were general enough to apply to virtually any international agreement or institution, there are specific criteria that were directly related to the Review process. It is believed that this framework could be easily adapted to apply to other environmental regimes, or processes within those regimes.

3.2.3 Overview of the steps

The first step in the framework involves evaluating institutional effectiveness, which is assessed based on three factors: general characteristics indicating regime functioning; national-level implementation; and national-level compliance. A range of characteristics will be examined using qualitative and quantitative data about the regime. As discussed in Chapter 2, these characteristics have also been studied as determinants of institutional functioning. For this study, it is understood that these characteristics also provide context and can provide a standard to judge regime functioning. National-level implementation refers specifically to promulgation of relevant national legislation. Evaluating national-level compliance is more complicated, because the Review of Significant Trade process is a compliance mechanism in itself. Therefore, two ‘layers’ of compliance are to be examined: compliance with general CITES requirements; and compliance with Review recommendations and procedures.

The second step of the framework involves an evaluation of ecological trends pertinent to the regime. CITES was established to address the effects of international trade on the long-term survival of species in the wild, and therefore conservation status (of species that have been selected for the Review process) is the overall criterion used for this element of the evaluation.

The third part of the framework is an examination of intervening variables that may explain any discrepancies between institutional and ecological effectiveness. While these variables may also be considered sources, determinants and conditions of institutional

¹²³ More information on case selection is provided in Chapter 5.

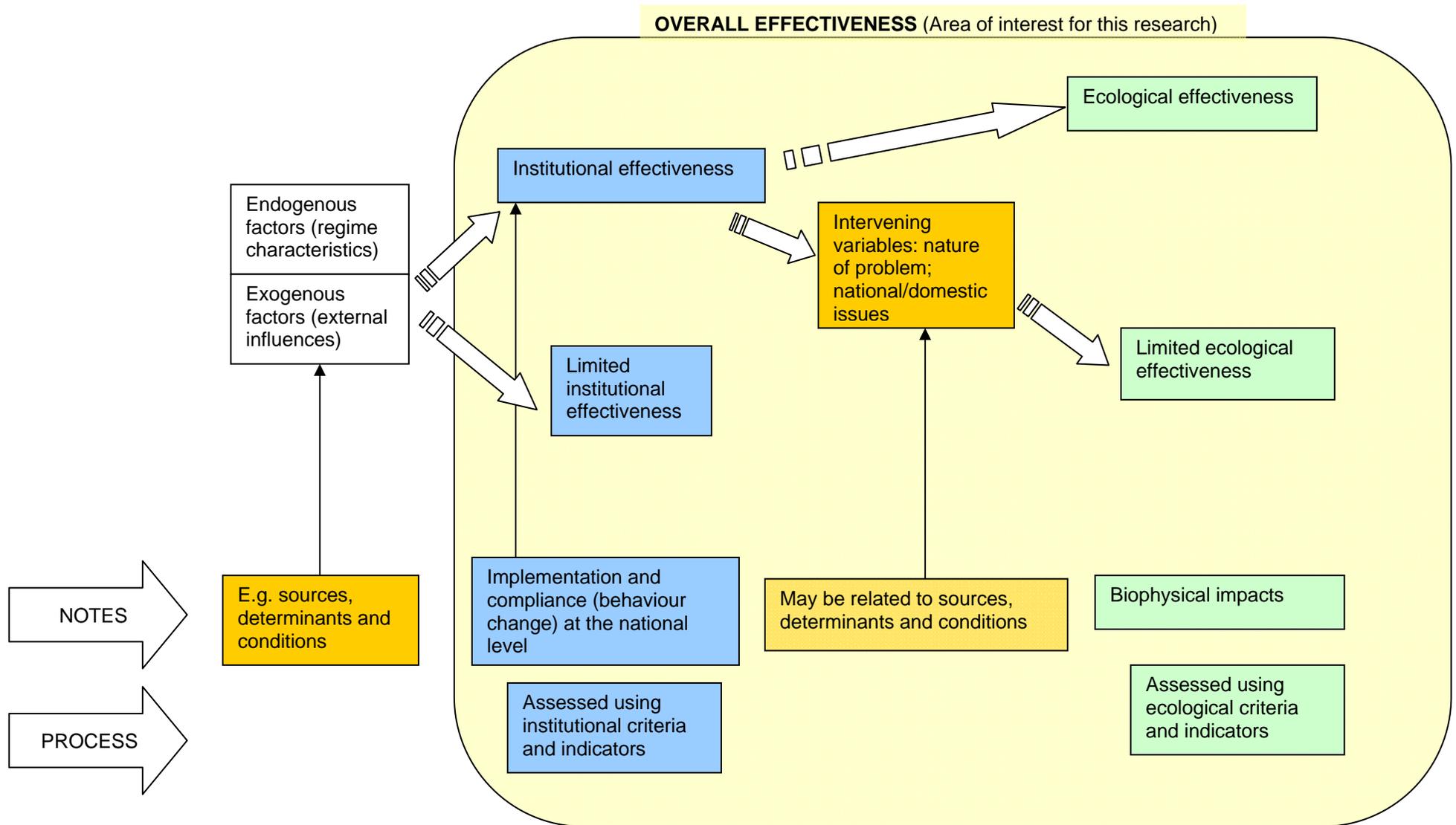
effectiveness, they also emerge as issues that can impede ecological effectiveness. Two categories of intervening variables are examined: the nature of the problem, and national-level issues.

The last part of the framework involves examining ways in which these intervening variables can be addressed, thereby improving the relationship between institutional and ecological effectiveness, and theoretically, overall effectiveness. Relating these intervening variables back to the institutional elements of the regime is essential. As Mitchell stated, “regime design matters.”¹²⁴

Figure 3.1 below illustrates how evaluations of overall regime effectiveness are approached for this study. At the very left of the diagram are endogenous and exogenous factors (e.g. sources, determinants and conditions) that have an impact on institutional effectiveness. The impact on institutional effectiveness may be limited, depending on these factors. According to the literature, institutional effectiveness follows from ecological effectiveness. However, this may be limited if there are intervening variables. These intervening variables may be similar to the sources, determinants and conditions that impact institutional effectiveness. Together, institutional and ecological effectiveness comprise overall regime effectiveness.

¹²⁴ Ronald B. Mitchell (1994). “Regime design matters: intentional oil pollution and treaty compliance,” *International Organization*. (Volume 48:3, p. 425-458) 425.

Figure 3.1: Diagram indicating relationship between institutional and ecological effectiveness in terms of overall effectiveness



3.3 The framework: integrating institutional and ecological effectiveness

3.3.1 Step one: evaluating institutional effectiveness

In the model developed for this research, the first step is an examination of the nature and extent of institutional effectiveness. The criteria have been extrapolated from two main sources: academic literature pertaining to regime effectiveness; and practical evaluations of regimes. This is to ensure that the criteria reflect the most diverse range of institutional factors possible. Most criteria are general and can apply to any regime.¹²⁵ However, the last two are specific to the CITES regime.

The taxonomy of factors used to evaluate institutional effectiveness is largely derived from a 1992 evaluation of environmental agreements by Sand, which was undertaken in preparation for the UN Conference on Environment and Development. Unfortunately, Sand's document does not indicate the rationale for selection of these criteria; they are based on negotiations of the UNCED Preparatory Committee during 1991 and 1992. Detailed proceedings of the Preparatory Committee are not available to assess how these criteria were selected.

Characteristics of regime functioning

Clear rationale and objectives that are measurable and quantifiable: A regime should ensure that its rationale and objectives are explicitly articulated. In addition, the rationale and objectives for any procedures within the regime should correspond with the overall rationale and objectives. The rationale provides a justification for the existence of the regime, while objectives provide a broad explanation of what it is intended to achieve. A questionable rationale and murky objectives may hamper the regime's appeal and functioning. Lyster stressed this point, observing that, "not surprisingly, conventions having a clear and simple objective, together with political will from the countries concerned, are generally effective."¹²⁶ Moreover, a party's progress toward the objectives should be clear; this can be facilitated by ensuring that objectives are measurable and quantifiable.

¹²⁵ Mitchell (2008) has also proposed a set of 'leading indicators' for institutional performance. Although not included in this study, analysis of CITES based on these indicators would be valuable.

¹²⁶ Lyster (1996), p. 209.

Clear duties/obligations: The duties and obligations of Parties must be clearly stated. As Brown Weiss and Jacobson (1998) have pointed out, duties/obligations may be general or precise, binding or hortatory. This view is widespread in the literature (see Curlier and Anderson 1992; Lyster 1996; Sand 1992), as well as in evaluations by practitioners, such as that conducted by Environmental Resources Management (ERM) on CITES. Victor *et al.* (1998) enumerated a number of factors about the nature of obligations that can impact effectiveness. They stressed that the obligations and their “scope, clarity, application” can impact on how it is implemented.¹²⁷ While considerable literature exists on design principles for effective institutions and conditions for effective regimes,¹²⁸ the emphasis here is on the resulting commitments.

Robust Secretariat: Another important characteristic is the administrative structure of the regime. For most regimes, this structure is comprised of a Secretariat. The nature and range of Secretariat activities varies immensely: some Secretariats play a more coordinating background role, others are active and vocal in all aspects of regime functioning. Sand’s (1992) criteria were vague, referring to the institutional arrangements for international administration of the agreement and to costs of the administration.

Wettestad (2001) suggested that Secretariats should have a “financially strong and relatively autonomous and active position”, though he stipulated that this is not as necessary in regimes that have parties with high capacity.¹²⁹ Lyster emphasised the importance of Secretariats in ensuring implementation. He was prescriptive in outlining determinants of effective regimes, stating that, “the existence of an active, well-funded secretariat with a clear mandate to improve implementation of a convention is a great advantage to its chances of effectiveness.”¹³⁰ Lyster did not indicate what constitutes “well-funded”. Given that Secretariats vary immensely in size, mandate, and location (e.g. Geneva vs. Nairobi), any criterion based on funding would be ambiguous and not useful.

¹²⁷ Victor, Raustiala, and Skolnikoff (1998), p. 12.

¹²⁸ See for example: Jørgen Wettestad (1999). *Designing Effectiveness Environmental Regimes: The Key Conditions*. Northampton, MA: Edward Elgar; and Elinor Ostrom (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. New York, NY: Cambridge University Press.

¹²⁹ Wettestad (2001), p. 320.

¹³⁰ Lyster (1996), p. 207.

Participation: Participation is often used as a criterion. Sand included extensive and comprehensive criteria pertaining to participation in his evaluation, using questions on participation related to issues such as: limited or open-ended membership; geographic distribution of membership; developing country¹³¹ representation and participation; and factors that influenced participation (e.g. financial resources, scientific assistance, role of other stakeholders, etc.).

At the most basic level, membership may indicate the extent of concern about an environmental issue, and any interest in mitigating or resolving the problem. As Andresen observed, “the assumption is that the greater the number of participants; the broader participation is; and the more high-level participation there is, the greater will potential effectiveness be.”¹³² On the other hand, scepticism has been raised about this premise, with detractors suggesting that governments may have underlying and unrelated motives, such as leveraging power in other fora.¹³³ In regimes with wide membership, the motives for accession will vary.¹³⁴

References to the role of key players and hegemonies are less numerous than those regarding participation and membership. Young has discussed the role of leadership in institutional bargaining, and more recently, Falkner has examined the role of hegemonies in environmental regimes.¹³⁵ These discussions were confined to the regime formation stage,

¹³¹ See footnote 70.

¹³² Andresen (2007), p. 320. The extent of high-level participation at meetings is taken up in the section on operation, review and adjustment.

¹³³ The view that governments are motivated primarily by their interest in maximising power is forwarded by the realist school of international relations theory. In the context of effectiveness, see Kütting (2000), p. 12.

¹³⁴ For example, one study has investigated the correlation between development aid assistance from Japan and participation in the International Whaling Commission by developing countries. See Andrew R. Miller and Nives Dolsak (2007). “Issue Linkages in International Environmental Policy: The International Whaling Commission and Japanese Development Aid,” *Global Environmental Politics*. Volume 7:1, p. 69-96.

¹³⁵ See for example: Oran Young (1991). “Political leadership and regime formation: On the development of institutions in international society,” *International Organization*. Volume 45:3, p. 281-308; Robert Falkner (2005). “American Hegemony and the Global Environment,” *International Studies Review*. Volume 7:4, p. 585-599; and Robert Falkner (2006). *Environmental regime-building without – and against – the hegemon: The case of the Cartagena Protocol on Biosafety*. Paper prepared for the Annual Meeting of the International Studies Association. 22-25 March 2006, San Diego, California.

and analyses about the role of leadership and/or hegemony has not extended to their impact on regime effectiveness.

Some researchers and practitioners are unequivocal about the importance of stakeholder participation in an effective regime.¹³⁶ Haas has written extensively on the impact of what he calls “epistemic communities,” defined as “transnational networks of knowledge based communities that are both politically empowered through their claims to exercise authoritative knowledge and motivated by shared causal and principled beliefs.”¹³⁷ Lyster advised that regimes should “foster and encourage NGOs, particularly national NGOs that can build up public awareness, support, and concern, as well as media interest within the context of a country... NGOs are far more effective enforcement weapons than any observer scheme or infractions procedure that a convention may set up.”¹³⁸ Lyster also specified that NGOs can have the greatest impact in situations where they can participate in meetings and meaningfully express their views.

This evaluation examines whether or not there are specific provisions to permit stakeholder engagement, as well as actual participation levels in regime processes. Various elements of participation (membership, developing country participation, etc.) are considered separately.

Information availability: Mitchell observed that “promoting transparency – fostering the acquisition, analysis, and dissemination of regular, prompt, and accurate regime-relevant information – is often one of the most important functions regimes perform.”¹³⁹ Lyster was more explicit: “information is critical to the effectiveness of a convention.”¹⁴⁰ Sand’s framework emphasised the importance of information availability, and asks how

¹³⁶ For this study, the term “stakeholder” is understood as any non-State actor, since only States can accede to the regime to be evaluated (CITES).

¹³⁷ Peter M. Haas (1992). “Obtaining International Environmental Protection through Epistemic Communities,” *Global Environmental Change and International Relations*, edited by Ian H. Rowlands and Malory Greene. (London, UK: Macmillan, p. 38-59) 41.

¹³⁸ Lyster (1996), p. 216.

¹³⁹ Ronald B. Mitchell (1998). “Sources of Transparency: Information Systems in International Regimes,” *International Studies Quarterly*. (Volume 42:1, p. 109-130) 109. This article looks at the determinants of transparency within regimes, as opposed to transparency as a determinant of regime effectiveness.

¹⁴⁰ Lyster (1996), p. 208.

information on the operation and implementation of the agreements is made available to governments and other stakeholders. Another criterion under this framework pertained to the availability of additional materials to provide guidance for implementation. Some researchers (Brown Weiss and Jacobson 1998; Chayes *et al.* 1998) emphasised the necessity of having a transparent information system, with transparency referring to adequacy, accuracy, availability and accessibility of knowledge and information about the agreement.¹⁴¹ Victor *et al.* echoed this contention, noting that “the need for greater transparency, openness and participation in the policy process is virtually a mantra of modern governance.”¹⁴²

Scientific input: This element has been disaggregated from general stakeholder involvement to focus specifically on scientific (or biological/ecological) data. Sand’s (1992) criteria included mechanisms available to ensure that scientific knowledge and advice were taken into account in policy-making decisions in the agreements. Kütting (2000) also placed importance upon science in her investigation into policy processes, and specifically in terms of ecological effectiveness. However, she put greater emphasis on the social aspects of science, such as on communication between scientists and policy-makers.

Jasanoff highlighted one of the benefits of scientific input into international environmental processes, pointing out that “the possibility of defining environmental obligations in scientific or technical terms offers an inviting way out of conflict and possible political stalemate.”¹⁴³ However, this is not to state that scientific information is policy neutral; environmental regimes experience the divisive and contentious nature of scientific data. A 1993 article from the *New Scientist* about the multiple interpretations of climate change modelling described this situation: “...The interpretation of uncertainties in and around such scientific models has been seen as a scientific matter, for scientists alone to resolve, when actually it is a process riddled with social and political implications, and requires wider debate.”¹⁴⁴ It is nonetheless important that scientific data are fed into the policy system. Policy processes may assist in the generation of scientific data, as those in the

¹⁴¹ Brown Weiss and Jacobson (1998), p. 43.

¹⁴² Victor, Raustiala and Skolnikoff (1998), p. 663.

¹⁴³ Brown Weiss and Jacobson (1998), p. 63.

¹⁴⁴ Brian Wynne and Sue Mayer (1993). “How science fails the environment,” *New Scientist*. 5 June 1993, p. 33-35.

field make demands for improved and more technical knowledge.¹⁴⁵ The criterion for this study examines whether or not there are mechanisms for scientific input into the regime.

Review and compliance mechanisms: Review and compliance mechanisms in conventions have received attention from researchers, and have been included in various evaluations by practitioners. In general, review mechanisms can be divided into two categories: regular review procedures that are integrated into the regime process; and specially commissioned reviews. Regular review procedures generally focus on implementation and compliance, e.g. legislative implementation, submission of annual reports, etc. Reviews of these activities take place on a regular basis and are mandated within the agreement text or by the relevant organisations. Special reviews, on the other hand, are irregular and may be required by temporary provisions, such as through resolutions or decisions.

In their study, Victor *et al.* (1998) placed particular importance on review mechanisms. The study focused on systems of implementation review, and they found that “international agreements that include procedures for gathering and reviewing information on implementation and handling implementation problems are more likely to be effective than those where little effort has been given to developing the functions of implementation review.”¹⁴⁶ Greene also looked at implementation review systems. He suggested these systems can help with identifying where poor compliance is taking place, and allow parties to identify multilateral responses to poor compliance.¹⁴⁷

Compliance mechanisms aim to ensure that actors change their behaviour to comply with a regime’s commitments and obligations. Brown Weiss and Jacobson (1998) focus solely on compliance, highlighting its different dimensions, such as specific provisions for procedural commitments (e.g. reporting) and for substantive actions (e.g. regulating an activity).

¹⁴⁵ Joanne Depledge (2006). “The Opposite of Learning: Ossification in the Climate Change Regime,” *Global Environmental Politics*. Volume 6:1, p. 1-22.

¹⁴⁶ David G. Victor and Eugene B. Skolnikoff (1999). “Translating intent into action: Implementing environmental commitments,” *Environment*. (Volume 41:s2: 16-20, 39-43) 39.

¹⁴⁷ Greene (1996) in Vogler and Imber, p. 203.

They also pointed out that compliance can be less straightforward, such as in fulfilment of the “spirit of the treaty.”¹⁴⁸ Brown Weiss and Jacobson also stressed that in many cases, compliance is largely a question of judgement, and so precise measurement is difficult, if not impossible. Criteria in Sand’s 1992 study refer to compliance mechanisms, asking what possibilities exist within the agreement to promote compliance and to follow up on non-compliance.

Technical and financial assistance and capacity-building initiatives: Accession to a regime does not necessary imply capacity for implementation. Researchers have noted that, “states with weak administrative and legal institutions often cannot comply with an institution’s directives, even when they have an interest in doing so.”¹⁴⁹ Lack of capacity or resources can result in what can be called unintentional non-compliers (as opposed to intentional non-compliers). Lyster (1996) has observed that the need for assistance and capacity-building provisions has in some cases been an accession condition for disproportionately impacted countries (e.g. developing countries):

There is a growing feeling among developing countries that they cannot and should not undertake and implement conservation commitments without a *quid pro quo* from the richer nations... It is not surprising that many developing countries, backed into a corner by debt burdens and other problems, are suspicious of ‘eco-imperialistic’ developed nations that have destroyed their own biodiversity in the course of development but now expect developing countries to refrain from doing what they did.¹⁵⁰

Criteria regarding technical and financial assistance and capacity-building initiatives have been used by numerous researchers and practitioners. Lyster was prescriptive, suggesting that regimes should “establish a fund large enough to enhance significantly the capacity of countries to comply with the convention, especially for those countries least able to do so.”¹⁵¹ Sand’s framework included two criteria regarding financial and technical assistance: one directed toward participation, and the second toward implementation. Reeve (2006) also emphasised the roles of technical assistance and capacity building as key methods in facilitating compliance. She discussed the various modes of delivering

¹⁴⁸ Brown Weiss and Jacobson (1998), p. 4.

¹⁴⁹ Levy, Young, and Zurn (1994), p. 25.

¹⁵⁰ Lyster (1996), p. 213.

¹⁵¹ *Ibid.*, p. 216.

assistance and promoting capacity-building under the CITES regime. My study examines the availability of technical and financial assistance and capacity-building initiatives for Parties who are subject to the Review process.

Links to other regimes: Ecological problems tend to be tied to more than one activity or source of behaviour, which may cut across geographic, economic or political issue areas. For example, the decline in international frog populations has been traced to habitat alteration, climate variations, disease, and pesticide use.¹⁵² If the decline is to be mitigated, all threats must be mitigated, and responses should be linked. Due to this complexity, regimes invest effort into forging meaningful links with each other. Sand's 1992 framework referenced links to other regimes.

More recently, scholars in the field have turned their attention to what they are terming "institutional interplay" or "institutional interaction". Young described this in 2002, noting that "interplay is a force to be reckoned with in evaluating whether regimes produce outcomes that are sustainable."¹⁵³ Work in this area has continued with a 2006 publication by Oberthür and Gehring that looks at interaction between institutions and how policy instruments can affect each other, either by enhancing or undermining effectiveness.¹⁵⁴ For this evaluation, the criteria encompassed any mechanism whereby the Review process is linked with other regimes. Some basic elements of institutional interplay are also described.

¹⁵² Robin Meadows and Nick Atkinson (2007). "Long-distance killer: pesticides are the latest suspect in Costa Rica's mysterious frog decline," *Conservation Magazine*. Volume 8:3, p. 7-8. Meadows and Atkinson's article is an overview of: G.L. Daly *et al.* (2007). "Accumulation of current-use pesticides in neotropical montane forests," *Environmental Science and Technology*. Volume 41:4, p. 1118-1123.

¹⁵³ Oran R. Young (2002b). "Institutional Interplay: The Environmental Consequences of Cross-scale Interactions", in *The Drama of the Commons*, edited by Elinor Ostrom, *et al.* Washington, DC: National Academy Press, p. 263.

¹⁵⁴ Sebastian Oberthür and Thomas Gehring (2006). *Institutional Interaction in Global Environmental Governance: Synergy and Conflict among International and EU Policies*. Cambridge, MA: MIT Press.

Flexibility for change¹⁵⁵: Flexibility for change has been cited by a number of researchers and practitioners as being essential to regime effectiveness. Lyster (1996) is again prescriptive with his view, advising that regimes should “make the convention flexible, so that it can respond appropriately in the face of changing circumstances.”¹⁵⁶ The self-commissioned report of CITES by ERM suggested that international agreements must “be able to adjust to changes over time.”¹⁵⁷ Greene noted that flexibility is important as “patterns of power, interest, influence, knowledge, capacity and concern develop.”¹⁵⁸ Greene’s view of flexibility takes into consideration the changing nature of general circumstances surrounding the regime and the capacity and interests of the parties involved.

Sand’s framework contained a question regarding mechanisms to ensure periodic review and adjustment of the agreement in order to meet new requirements. His criteria also examined the extent to which these mechanisms have been used. Sand mentioned the importance of flexibility again in his 1996 article, referring to “deviation tolerance” of a regime. Deviation tolerance refers both to a system of reservations, as well as “loopholes” that are intentionally included to address “exceptional situations.”¹⁵⁹ Barrett has also written about non-uniformity of obligations, suggesting that these types of flexibility may adversely affect participation and compliance, or “raise the cost of achieving a given environmental outcome.”¹⁶⁰

Implementation and compliance at the national level

Legislative commitments: In general, the result of the duties and obligations stipulated in an environmental agreement is a set of legislative commitments to be undertaken by Parties who accede to the regime. Implementation of legislation is often included in

¹⁵⁵ The convention/protocol approach to environmental regimes is an in-built mechanism to encourage flexibility for change. Because this research is on one aspect of CITES functioning – which does not use the convention/protocol approach – the discussion will focus on its flexibility options relevant to the Review process, i.e. resolutions and decisions, as well as reservations.

¹⁵⁶ Lyster (1996), p. 215.

¹⁵⁷ ERM (1996), p. 19.

¹⁵⁸ Greene (1996) in Vogler and Imber, p. 208.

¹⁵⁹ Peter H. Sand (1996). “Whither CITES: The Evolution of a Treaty Regime in the Borderland of Trade and Environment,” in *European Journal of International Law*. (Volume 8:1, p. 29-58), p. 40.

¹⁶⁰ Scott Barrett (2003). *Environment and Statecraft: The Strategy of Environmental Treaty-Making*. Oxford, UK: Oxford University Press, p. 161-162.

discussions of effectiveness or regime evaluations. Sand's 1992 framework looked at commitments imposed on parties, although his criteria did not specify legislative aspects, but rather general commitments. Lyster (1996) advised that a regime should "require each party to take such legislative and administrative measures as are necessary to give full effect to the convention" in order to be effective.¹⁶¹

National focal points: The attention given to national-level institutional structures as a criterion of regime effectiveness has been minimal. Sand's 1996 report looked at national-level institutional arrangements in the context of regime effectiveness. Although referring directly to CITES, he noted that the empowerment of "suitable national administrative agencies...is a crucial first step" for making the Convention work.¹⁶² Lyster was more explicit in his evaluation. In prescribing the conditions necessary for effectiveness, he advised that a regime should "require each party to designate a body responsible for implementation of the convention within its territory... [This] also provides other parties with a contact point in each party, which can greatly assist international cooperation."¹⁶³ The important – and arguably essential – role of designated national institutions merits the inclusion of national focal points as a criterion for effectiveness in this evaluation.

Submission of reports: In some evaluations (ERM 1996; Lyster 1996; Reeve 2006), levels of reporting are used as an indicator for compliance with the regime. Lyster indicated in his study, "if a country is not doing what it should do, but nobody knows about it, the chances of the country's [*sic*] getting away with it are greatly increased."¹⁶⁴ Mitchell made a similar point in his article about the importance of transparency in regime functioning. He stated that, "to effectively alter the behavior of states and substate actors, regimes (or the states that compose them) must either have – or create – information about the activities they seek to regulate and the impact of those activities on the ultimate goals of the regime."¹⁶⁵ Mitchell acknowledged the difference between information produced by the regime and that produced by the parties. Sand's framework assessed reporting commitments, asking how parties report on their performance in the implementation of

¹⁶¹ Lyster (1996), p. 215.

¹⁶² Sand, (1996), p. 46.

¹⁶³ Lyster (1996), p. 215.

¹⁶⁴ *Ibid.*, p. 208.

¹⁶⁵ Mitchell (1998), p. 111.

agreements. His criteria also called for an examination of the extent to which parties have complied with their reporting duties.

Payment of contributions: Political will and capacity to implement and comply with international regimes were identified by some researchers – from the American school in particular – as an influence on effectiveness. While some pointed more generally to factors such as governmental concern (Haas *et al.* 1993), others were specific in identifying issues such as the form of rules (Levy *et al.* 1994). Many regimes – including CITES – therefore have an active capacity-building component to assist members or Parties meet their obligations. The criterion “Technical and financial assistance and capacity-building initiatives” described earlier measures the general (external) environment that exists toward building capacity for implementation. This criterion looks at country-specific (internal) capacity.

Capacity at a national level is difficult to calculate because it involves a detailed assessment of government expenditures and activities in a range of areas. With regard to CITES, capacity is related to political administration, related scientific decision-making, border controls, enforcement initiatives, etc. Detailed national-level data on resources (human, financial, and other) toward regime implementation are general not available for most CITES Parties, and therefore this factor can not be accurately calculated or measured. Therefore, a basic indicator of political will or governmental concern within CITES is whether or not a Party has made its required financial contribution. Countries that do not pay their contributions will likely have no interest in implementing CITES at any level. CITES contributions are based on the United Nations scale of assessment, which is calculated by looking at the country’s income and population size.

Response to recommendations from the Review process: This criterion is specific to this case study, and addresses one particular element of the Review of Significant Trade process. Under the Review process, countries are issued recommendations if deemed necessary by the CITES Animals Committee.¹⁶⁶ The nature of recommendations varies among the different phases of the Review. Initially recommendations focused on countries

¹⁶⁶ More information about the Review process is provided in Chapter 5.

establishing export controls. In later phases the focus moved to provision of information to the Secretariat. More recently, both types of recommendations have been issued. It is expected that countries will react to the recommendations by responding to the Secretariat – either providing information or informing them about remedial actions taken. Under this criterion, the extent to which countries have responded to the Secretariat is assessed.

Trade effects: This criterion is also specific to the CITES regime. The Convention sets out to regulate international trade of endangered species, so an examination of actual trade trends must be included. The Review of Significant Trade is designed to assess how Parties have implemented a specific provision of the Convention (i.e. the requirement for CITES authorities to ensure export of species is non-detrimental to their survival). At a simplistic level, implementation of that provision is an administrative task. However, because the aim of CITES (and the Review process) is to ensure trade is non-detrimental for species, it is essential to understand how the Review process affects trade levels. Indeed, the effect on trade is arguably the key criterion when assessing the institutional effectiveness of the Review process and arguably, CITES in general, given that regulation of trade is the focus of CITES.

It is through an examination of trade data that institutional effectiveness of the Review process becomes apparent. While variations in trade levels may be caused by a number of factors (e.g. other national initiatives, changes in consumer preference, etc.), if they coincide with Convention-related activity, a probable line of explanation is that the regime is influencing trade. This is particularly true where specific CITES processes – such as the Review of Significant Trade process – require Parties to undertake special trade controls for particular species.

Table 3.2 below provides an overview of the 15 criteria, as well as research question(s) associated with each criterion.

Table 3.2: Criteria for evaluating institutional effectiveness

Criteria	Related questions
Characteristics of regime functioning	
Clear rationale/objectives	1. Are the rationale and objectives clearly stated and are they measurable and/or quantifiable?
Clear duties/obligations	2. Are the duties/obligations of Parties clearly stated and are they binding?
Robust Secretariat	3. Is the Secretariat adequately staffed?
Participation	<i>Membership:</i> 4. Is membership widespread? <i>Developing country participation</i> 5. Are developing countries well-represented? <i>Stakeholder participation</i> 6. Can and do stakeholders participate at meetings?
Information availability	7. Are relevant materials and documents readily accessible?
Scientific input	8. Are there mechanisms for scientific input?
Review and compliance mechanisms	9. Are there clearly stated provisions for regular reviews and for special reviews of the Convention in addition to the Review of Significant Trade process?
Technical/financial assistance	10. Are there technical/financial assistance and/or capacity-building opportunities available for Parties in the Review?
Links to other regimes	11. Are there links to other related regimes?
Flexibility for change	12. Are there provisions to allow for the evolution of the Convention and of the Review?
National implementation and compliance	
Promulgation of legislation	13. Have Parties fulfilled legislative requirements?
Designation of focal points	14. Have Parties designated national focal points?
Submission of reports	15. Have Parties fulfilled reporting requirements?
Payment of contributions	16. Have Parties made their required financial contributions?
Response to recommendations	17. Have Parties in the Review process responded to recommendations?
Trade effects	18. Have trade levels of species in the Review been affected by the process?

3.3.2 *Step two: evaluating ecological effectiveness*

The next step in the process involves examining ecological data. The approach to the analysis of ecological effectiveness will vary depending on the nature of the regime.¹⁶⁷ What is uniform, however, is the focus on biophysical impacts; this will generally involve the use of quantitative data. Examining ecological or biophysical trends might involve tracking a natural attribute (e.g. tree cover, coral reef integrity), natural resource (e.g. cetacean populations, freshwater availability), or regulated substance (e.g. sulphur emissions, hazardous waste production). It may also be relevant to assess similar or substitute attributes, resources or substances. Tracking these elements across countries, ranges or regions is another aspect of assessing ecological trends.

Given the focus of this study, the most germane biophysical impact is change in the conservation status of species in question. With conservation status serving as the criterion for evaluating effectiveness, the aim is to answer the question: has the Review process under CITES had positive impacts on the conservation status of species? The response to this question must be understood within the context of overall regime functioning and the objectives of this research exercise – to improve ecological effectiveness. Consequently, the three challenges associated with assessing ecological effectiveness (i.e. those outlined in Chapter 2: data availability/reliability; measuring effectiveness; establishing causality) must be addressed. Selection of conservation status as a criterion for tracking and evaluating ecological trends must take these challenges into consideration. The following sections discuss the various challenges and how they will be addressed in this study.

Data availability and data reliability: The availability of data can be a major challenge in evaluating environmental regimes. However, regime design is improving such that incentives for accurate reporting are being integrated from the outset. There is also increased emphasis on verification of data, and accountability that arises from these exercises. In addition, better understanding of ecological systems is resulting in improved baseline data, upon which regimes may be structured.

¹⁶⁷ The term “ecological effectiveness” is used rather than “environmental effectiveness”, given the use of IUCN Red List assessments as an indicator. The IUCN Red List system takes a holistic approach to conservation status, which is assessed using a wide range of ecological criteria such as habitat loss/degradation, human disturbance, changes in species dynamics, pollution, etc. Chapter 7 has a full discussion of the IUCN Red List Index system.

Within the CITES regime, there have been issues with asserting data reliability.¹⁶⁸ CITES Parties may count and report specimens in different ways (e.g. total weight vs. number of specimens), which makes comparing trade data difficult. The CITES Secretariat and other organisations have addressed disparate counting methods by providing reporting guidelines, and by working with Parties to build their capacity for achieving reporting requirements. Within the CITES regime, some data can be verified by cross-checking trade data as reported by importing and exporting countries. The concept of verifying information or data has been emphasised in other fora as well, such as the UN Framework Convention on Climate Change discussions of REDD (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries) during the Copenhagen conference held in December 2010.¹⁶⁹

Measurement of effectiveness: Biodiversity-related regimes that address species issues tend to use conservation status and threatened species lists as ecological measures. These measures are based on statistics regarding: “the number of threatened/extinct species per taxon; the total number of threatened/extinct species; the proportion of threatened/extinct species per taxon; and changes in the number of threatened species per taxon.”¹⁷⁰

The use of conservation status and threatened species lists is also evident in evaluations of conservation programmes. Quayle and Ramsay (2005) report on an Australian study into environmental indicators, which found that “‘conservation status of species’ was the most popular state indicator of biodiversity reported, appearing in 16 of the 20 reports reviewed.”¹⁷¹ Past evaluations of CITES that have incorporated ecological criteria have tended to use one primary indicator: conservation status. The study by ERM (1996) used

¹⁶⁸ See for example, Arthur G. Blundell and Michael B. Mascia (2005). “Discrepancies in Reported Levels of International Wildlife Trade,” *Conservation Biology*. Volume 19:6, p. 2020-2025.

¹⁶⁹ See for example, Centre for People and Forests (2010). *Forests and climate change after Copenhagen: An Asia-Pacific perspective*. Bangkok: RECOFTC. Report accessible on the UNFCCC website: <http://unfccc.int>.

¹⁷⁰ Hugh P. Possingham *et al.* (2002). “Limits to the use of threatened species lists,” *Trends in Ecology and Evolution*. (Volume 17:11, p. 503-507) 505.

¹⁷¹ James E. Quayle and Leah R. Ramsay (2005). “Conservation Status as a Biodiversity Trend Indicator: Recommendations from a Decade of Listing Species at Risk in British Columbia,” *Conservation Biology*. (Volume 19:4, p. 1306-1311) 1307. The Australian study from which information is sourced is: Denis Saunders, Chris Margules and Burke Hill (1998). *Environmental indicators for national state of the environment reporting*. Canberra, AU: Department of the Environment.

expert opinion in the field to determine the conservation status of species it covered in its evaluation. The BirdLife International (2006) study used the IUCN Red List Index, an internationally recognised list of threatened species, which has “for more than four decades been assessing the conservation status of species, subspecies, varieties and even selected subpopulations on a global scale in order to highlight taxa threatened with extinction, and therefore promote their conservation.”¹⁷²

Despite their widespread use, the limitations of threatened species lists or conservation status to measure ecological effectiveness have been documented. It has been pointed out that the “state of the art” of biodiversity indicators is not very advanced. Quayle and Ramsay noted, “broad-scale indicators of trends in biodiversity tend to be poorly developed.”¹⁷³ More specifically, Possingham *et al.* (2002) observed that these indicators have limited value due to: “uneven taxonomic treatment; variation in observational effort; and the fact that changes in the lists more often reflect changes in knowledge of status than change in status itself.”¹⁷⁴

The concerns about using conservation status as a criterion have been addressed. One of the first steps in the BirdLife International evaluation was to ascertain that the change in status of the birds studied was not due to new or additional information. All category changes for the birds studied were assigned a code indicating “reason for change.” Indeed, BirdLife International’s approach to evaluating CITES falls in line with what Possingham *et al.* have suggested in terms of addressing issues associated with the use of threatened species lists, i.e. that it is essential to “record changes in knowledge and trends in populations and range separately from changes in status.”¹⁷⁵ Once this distinction has been made, the utility of the threatened list increases for measurement of ecological impact.¹⁷⁶

Causality: Another criticism of biodiversity indicators is based on the difficulty of establishing a causal relationship between a regime and any subsequent ecological or

¹⁷² IUCN Red List Index website. See <http://www.iucnredlist.org/info/introduction>. Accessed on 26 November 2007.

¹⁷³ Quayle and Ramsay (2005), p. 1307.

¹⁷⁴ Possingham, *et al.* (2002), p. 505.

¹⁷⁵ *Ibid.*, p. 506.

¹⁷⁶ Threatened species lists also provide information on possible effects on other species, i.e. if the trade shifts from one species to similar ones. This ‘substitutability’ is discussed in Chapter 8.

biophysical change. Saterson *et al.* have advised that, in linking policies or programmes with ecological trends, it is important to distinguish between correlation and causality.¹⁷⁷ This point is important, especially when taken in conjunction with what Young has observed about causal chains in his studies of environmental regimes. Young stressed that shorter and more direct causal chains can result in reasonable conclusions about regime consequences. In the same sense, the understanding of the relationship between specific policies and biophysical change is better served by presenting them in the context of correlation or possible lines of explanation, as opposed to firm conclusions.

With regard to CITES, Sand suggested that “there is no simple mono-causal link between trade and the conservation status of a species according to its IUCN Red List Category.”¹⁷⁸ He added that, “it seems somewhat hazardous, therefore, to correlate the effectiveness of the Convention directly with the actual (positive or negative) conservation status of a species in its natural habitat.”¹⁷⁹ For this study, a short and direct “correlation chain” is examined. This chain is based on the impact that CITES regulations have on harvest/trade in species (independent variable), which in turn impact their conservation status (dependent variable). Insofar as trade is a primary threat to the endangered species in question, addressing this trade (i.e. legal trade, as this is CITES’ remit) should theoretically have some impact on its conservation outlook. The research question guiding the use of conservation status as a criterion is indicated below in Table 3.3.

Table 3.3: Criteria for evaluating ecological effectiveness

Criteria	Related questions
Conservation status	1. Has there been change to conservation status – as defined through the IUCN Red List Index – in species that have been subject to the Review process?

3.3.3 Step three: evaluating the role of intervening variables

Following the examination of ecological trends, both institutional and ecological effectiveness will be looked at together. Any variance between institutional and ecological effectiveness may be due to a number of intervening factors that influence this

¹⁷⁷ Saterson, *et al.* (2004), p. 598.

¹⁷⁸ Sand (1996), p. 30-31.

¹⁷⁹ *Ibid.*, p. 53.

relationship.¹⁸⁰ If it appears that institutional effectiveness is not leading to ecological effectiveness, why is this the case? Using the criteria outlined below in Table 3.4 regarding intervening variables, an examination of what factors may be impeding or influencing the link between outputs/outcomes and impacts will be undertaken. Another scenario – though less likely – is if ecological effectiveness is higher than institutional effectiveness. What might this suggest? What would improving ecological trends in the face of dismal institutional performance indicate? What would this say about the relationship between institutional and ecological effectiveness?

The two primary categories of intervening variables examined for this research are: specific factors associated with the nature of the environmental problem; and national- or domestic-level issues. Although described separately, these factors are related and impact each other. These two categories of variables were selected because their impact on institutional functioning is well understood, but there may be additional intervening properties in terms of ecological effectiveness. Accordingly, once their impact on ecological effectiveness is understood, the design of the regime may be adjusted to take them into consideration. A regime will never be able to fully control for these variables: the challenge is to find out which aspect(s) of the regime may be modified to maximise the impact that the institutional arrangements have on ecological processes or characteristics. The research questions guiding the examination of intervening variables are indicated below in Table 3.4.

Table 3.4: Criteria for examining intervening variables

Criteria	Related questions
Nature of the problem	1. Has trade moved to different range States? 2. Are species or their derivatives easily substituted? Can the regulated species be bred in captivity? 3. How easy can the species be regulated? Are the species or their derivatives easily hidden or transported? Are species and derivatives easy to identify?
Domestic factors	4. Are there indications that political will and capacity are lacking? E.g. Is there an increasing level of illegal trade in the species? 5. Are there economic or socio-cultural factors associated with the species? 6. Are there are other domestic factors that could be intervening?

¹⁸⁰ Krasner has written about regimes as an intervening variable between power/interests and outcomes/behaviour. See Krasner (1983).

3.3.4 Step four: linking intervening variables with institutional and ecological effectiveness

In the last step of the framework, the intervening variables are related back to institutional elements that were initially evaluated: e.g. regime characteristics, national implementation, and compliance. The goal is to assess and explore ways in which the regime can be improved based on what has been learned about the role of intervening variables. In other words: how do ‘the nature of the problem’ and ‘domestic issues’ impact on regime characteristics and national implementation/compliance? Can clarification of this relationship improve ecological effectiveness? These questions are answered by examining the categories of intervening variables within the context of the 18 institutional criteria outlined in Table 3.2

New information about the relationships between intervening variables, institutional effectiveness and ecological effectiveness should illuminate the ways in which overall functioning of the regime may be improved. While any improved understanding may not be necessarily integrated (because of cost or other viability issues) into the regime apparatus, it adds to the general body of knowledge regarding the regime.

3.4 Operation of the framework

A challenging aspect of the framework is ‘drawing the line’ between effectiveness and ineffectiveness. In qualitative research, this is a discretionary decision. Even with clear questions that have binary response options (“yes/no”), where does one draw the line? For this study, a 5-point Likert scale was devised to provide a relative idea of effectiveness in regards to the variables and criteria described above. In each general variable or for each indicator, the responses are divided into five possible fields ranging from very effective to very ineffective (see Table 3.5 below). This approach is similar to one used by Miles, *et al.* (2002).¹⁸¹

¹⁸¹ See for example, the ordinal scale of collaboration on p. 7 and the scale for problem malignancy on p. 56.

Table 3.5: Calculating institutional and ecological effectiveness

	Very effective	Somewhat effective	Neutral	Somewhat ineffective	Very ineffective
Institutional effectiveness					
Characteristics / functioning	11-12 “yes” responses	9-10 “yes” responses	4-8 “yes” responses	2-3 “yes” responses	0-1 “yes” responses
Legislation	80-100% of Parties are in Category 1 of NLP ¹⁸²	60-79% of Parties are in Category 1 of NLP	40-59% of Parties are in Category 1 of NLP	20-39% of Parties are in Category 1 of NLP	0-19% of Parties are in Category 1 of NLP
Focal points	80-100% of Parties have focal points	60-79% of Parties have focal points	40-59% of Parties have focal points	20-39% of Parties have focal points	0-19% of Parties have focal points
Reports	80-100% of Parties submitted reports on time for more than 3 years between 2002-2006 ¹⁸³	60-79% of Parties submitted reports on time for more than 3 years between 2002-2006	40-59% of Parties submitted reports on time for more than 3 years between 2002-2006	20-39% of Parties submitted reports on time for more than 3 years between 2002-2006	0-19% of Parties submitted reports on time for more than 3 years between 2002-2006
Payment of contributions	80-100% of Parties have fully paid contributions during last three COP year calculations	60-79% of Parties have fully paid contributions during last three COP year calculations	40-59% of Parties have fully paid contributions during last three COP year calculations	20-39% of Parties have fully paid contributions during last three COP year calculations	0-19% of Parties have fully paid contributions during last three COP year calculations
Recommendations	80-100% of recs implemented	60-79% of recs implemented	40-59% of recs implemented	20-39% of recs implemented	0-19% of recs implemented
Trade effects	80-100% of species show trade effects	60-79% of species show trade effects	40-59% of species show trade effects	20-39% of species show trade effects	0-19% of species show trade effects
Ecological effectiveness					
Conservation status of species	80-100% of species improve or stay the same	60-79% of species improve or stay the same	40-59% of species improve or stay the same	20-39% of species improve or stay the same	0-19% of species improve or stay the same

In terms of overall institutional effectiveness, the Review process can be deemed effective if the results for all indicators (i.e. characteristics, legislation, reports, focal points and recommendations) suggest inclusion in the “Very effective” or “Somewhat effective” categories. Conversely, the Review process can be deemed institutionally ineffective overall if the results for these indicators fall in the “Very ineffective” or “Somewhat ineffective” categories. Where the analysis becomes less clear is if results vary widely. In this scenario, certain aspects of the process may be institutionally effective, while others are not. While no firm conclusions can be made if this scenario arises, it will still yield important information about the process.

In terms of ecological effectiveness, the Review process will be deemed effective if the results of the species assessments (i.e. changes in conservation status) also fall into the

¹⁸² See Chapter 6 for more details on Categories in the National Legislation Project.

¹⁸³ That is, out of the five years between 2002 and 2006, Parties must have submitted reports on time for at least three years to be counted.

“Very effective” or “Somewhat effective” categories. Similar to institutional effectiveness, the process can be deemed to be ecologically ineffective if the results of the assessments fall into the “Very ineffective” or “Somewhat ineffective categories”.

The assessment of intervening variables (i.e. steps three and four of the framework) is not based on a Likert scale. Rather, the assessment is a mix of qualitative and quantitative analyses. While some quantitative data (e.g. domestic funding, etc.) could be evaluated with regard to the intervening variables, most aspects of the analysis are qualitative. There are researchers who have been developing techniques to quantify elements associated with regime effectiveness (described in Chapter 2). Their methodologies are based on establishing two polarities (e.g. “no regime” and “perfect regime”) and assessing the costs and benefits. However, in the various quantitative exercises, effectiveness is measured but not explained, or the effectiveness of various regimes is compared.

While it is possible to use multivariate statistical analyses, the research questions pertaining to the role of intervening variables (and their links with institutional and ecological effectiveness) are suited more for descriptive qualitative examination.

3.5 Conclusions

This chapter described criteria and indicators within an analytical framework that can be used to assess both institutional and ecological effectiveness of regimes, as well as any intervening variables that may be influencing their relationship. The use of intervening variables in this framework can facilitate investigation of the institutional/ecological relationship: they provide a link so that the “where/when/what” questions associated with institutional and ecological effectiveness can be understood in the context of “why/how” questions: Why is there a gap between institutional and ecological effectiveness? How can it be addressed? How can institutional effectiveness (and therefore ecological effectiveness) be improved?

This framework seeks to explore the interaction between institutional and ecological effectiveness, and test the implicit assumption by previous researcher that the former leads to the latter. Both institutional and ecological criteria have been incorporated into the framework, which can accommodate use of both qualitative and quantitative data.

Previous assessments have not undertaken this sort of integrated approach – in terms of looking at both institutional and ecological factors in detail, and using both qualitative and quantitative data – which will provide additional insights into and a more accurate depiction of overall regime effectiveness. The next chapter describes the methodology and methods used toward this end.

CHAPTER 4: METHODS AND METHODOLOGY

4.1 Introduction

The main objective of this research is to examine whether or not the inclusion of ecological data in assessments of effectiveness can provide a more accurate depiction of overall regime effectiveness. The methodology used to achieve this objective is to fully explore the nature of institutional and ecological effectiveness via a thorough review of the literature – that within the realm of regime studies as well as in other disciplines. Based on the results of this exploration, an analytical framework that accommodates the use of qualitative and quantitative data was devised and applied to a particular case study to: test the relationship between institutional and ecological effectiveness; explore the role of intervening variables; and improve the understanding of overall regime effectiveness.

The methods used in this research are based on an approach that allows for the collection and collation of qualitative and quantitative data, and for analysis using qualitative and quantitative methods. This approach is generally referred to as mixed methods research, which has emerged from the “paradigm war” between qualitative and quantitative approaches.¹⁸⁴ Additional description of methods used for the various analyses (Chapters 6-8) is included in each respective chapter.

4.2 Ontology, epistemology and methodology

Traditionally, the philosophy of knowledge and approaches to research have been divided into two main camps. These camps diverged based on interpretations of their ontological and epistemological stances. One of these approaches, ‘positivism’ or ‘empiricism’, is based on the idea of a single and measurable reality. This approach focuses on the use of objective measures and views the knowledge-seeker (i.e. researcher) with “value

¹⁸⁴ R. Burke Johnson and Anthony J. Onwuegbuzie (2004). “Mixed Methods Research: A Research Paradigm Whose Time Has Come,” *Educational Researcher*. Volume 33:7, p. 14-26. Use of the term ‘paradigm’ derives from Thomas Kuhn’s 1962 book *The Structure of Scientific Revolutions*. However, agreement among researchers on what Kuhn meant by the term is elusive. Burke Johnson and Onwuegbuzie clarified that: “Later, when [Kuhn] was asked to explain more precisely what he meant by the term, he pointed out that it was a general concept and that it included a group of researchers having a common education and an agreement on exemplars of high quality research or thinking.” Burke Johnson and Onwuegbuzie (2004), p. 24.

neutrality.”¹⁸⁵ From an epistemological perspective, there is a separation between the researcher and the object being researched. The positivist paradigm is the basis of the scientific method, which emphasises the importance of observation, measurement, and positive verification in research. The impact of subjectivity on the part of the researcher is mitigated by ensuring that studies can be replicated.

The other approach is based on a ‘constructivist’ or ‘interpretivist’ philosophy, which assumes multiple constructed realities, and the subjective and culture-based nature of knowledge. In the view of constructivists, researchers have inherent biases, and will approach and perceive the research topic through the lens of their experience. This subjectivity is acknowledged and the interpretive nature of the research is accepted.

Mixed methods research is often linked with a ‘pragmatist’ philosophy. This pragmatist philosophy does not fixate on divergent views of reality and truth, but rather accepts that “there is no problem with asserting both that there is a single ‘real world’ and that all individuals have their own unique interpretations of that world.”¹⁸⁶ Based on this, it “orients itself toward solving practical problems in the ‘real world’.”¹⁸⁷ The emphasis is on action, practicality, and consequences. Accordingly, the role of theory in pragmatism is utilitarian: “[Theories] are true to different degrees based on how well they currently work; workability is judged especially on the criteria of predictability and applicability.”¹⁸⁸

¹⁸⁵ Abbas Tashakkori and Charles Teddlie, eds. (2003). *Handbook of mixed methods in the social and behavioral sciences*. Thousand Oaks, CA: Sage Publications, p. ix. Other labels have also been suggested, such as post-positivism (see Burke Johnson and Onwuegbuzie, 2004), though this latter term is also described as a subsequent phase in the history of research methodology (see Anthony J. Onwuegbuzie and Nancy L. Leech (2005). “Taking the “Q” Out of Research: Teaching Research Methodology Courses Without the Divide Between Quantitative and Qualitative Paradigms,” *Quality and Quantity*. Volume 39, p. 267-296.)

¹⁸⁶ David L. Morgan (2007). “Paradigms Lost and Pragmatism Regained: Methodological Implications of Combining Qualitative and Quantitative Methods,” *Journal of Mixed Methods Research*. (Volume 1:1, p. 48-76) 72.

¹⁸⁷ Martina Yvonne Feilzer (2010). “Doing Mixed Methods Research Pragmatically: Implications for the Rediscovery of Pragmatism as a Research Paradigm,” *Journal of Mixed Methods Research*. (Volume 4:1, p. 6-16) 8.

¹⁸⁸ Burke Johnson and Onwuegbuzie (2004), p. 18. Presumably replicability and validation of results are also important to this concept of workability.

The assumption underlying the pragmatist philosophy, as well as that of this research, is that reality can be known and measured objectively, although this does not discount the possibility of researcher bias, and the value of subjective observation and explanation. However, the aim of this research is, in the words of one advocate of pragmatism, to “produce socially useful knowledge.”¹⁸⁹ Pragmatism also offers the benefit of combining “empirical precision with descriptive precision.”¹⁹⁰

4.3 Methods

4.3.1 *Quantitative and qualitative methods*

Epistemological approaches tend to be associated with particular sets of methodologies and research methods.¹⁹¹ Very generally (as there are exceptions), the positivist paradigm underlies quantitative research. This type of research, which tends to use tools such as laboratory experiments, field studies, and statistical analysis, is based on the assertion of an objective reality and the separation of the researcher from knowledge/truth. There is an emphasis on the measurement of data, and the replicable nature of research results.

Constructivism/interpretivism, on the other hand, tends to be associated with qualitative research. This type of research is associated with methods such as ethnographies, interviews, or content/document analysis. In contrast with quantitative research, the emphasis of qualitative research is on context-dependent understanding, which may not be replicable, but is considered equally valid. Table 4.1 indicates the differences between qualitative and quantitative research.

¹⁸⁹ Feilzer (2010), p. 6.

¹⁹⁰ Onwuegbuzie and Leech (2005), p. 291.

¹⁹¹ Some researchers reject these associations, such as Burke Johnson and Onwuegbuzie. They argue that epistemological beliefs do not preclude use of any particular research method. However, most literature in the field follows the positivist/quantitative and constructivist/qualitative divide.

Table 4.1: Differences between qualitative and quantitative research¹⁹²

Quantitative	Qualitative
Test hypothesis that the researcher begins with.	Capture and discover meaning once the researcher becomes immersed in the data.
Concepts are in the form of distinct variables.	Concepts are in the form of themes, motifs, generalizations, taxonomies.
Measures are systematically created before data collection and are standardized.	Measures are created in an <i>ad hoc</i> manner and are often specific to the individual setting or researcher.
Data are in the form of numbers from precise measurement.	Data are in the form of words from documents, observations, transcripts.
Theory is largely causal and is deductive.	Theory can be causal or noncausal and is often inductive.
Procedures are standard, and replication is assumed.	Research procedures are particular, and replication is very rare.
Analysis proceeds by using statistics, tables, or charts and discussing how what they show relates to hypotheses.	Analysis proceeds by extracting themes or generalizations from evidence and organizing data to present a coherent, consistent picture.

4.3.2 Mixed methods research

Mixed methods research is becoming increasingly popular in the social sciences, and researchers in this field have defined mixed methods in various ways.¹⁹³ The definition proffered in the editorial of the first edition of the *Journal of Mixed Methods Research* encapsulates its main elements. The authors define mixed methods as “research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a program of inquiry.”¹⁹⁴

Mixed methods research tends to be presented as a “third paradigm”, amalgamating the advantages of quantitative and qualitative research. There has been some resistance to combining quantitative and qualitative research, on the grounds that the epistemological foundations are too different.¹⁹⁵ Nonetheless, recent literature has moved away from the

¹⁹² W. Lawrence Neuman (1997). *Social Research Methods: Qualitative and Quantitative Approaches, Third Edition*. Boston, MA: Allyn & Bacon.

¹⁹³ See for example: Tashakkori and Teddlie (2003); and Johnson and Onwuegbuzie (2004). The *Journal of Mixed Methods Research* was initiated in 2007 to address issues and developments in this field.

¹⁹⁴ Abbas Tashakkori and John W. Creswell (2007a). “The New Era of Mixed Methods”, *Journal of Mixed Methods Research*. (Volume 1:1, p. 3-6), p. 4.

¹⁹⁵ Morgan (2007), p. 63; and Jane Ritchie and Jane Lewis (2003). *Qualitative Research Practice: A Guide for Social Science Students and Researchers*. Thousand Oaks, CA: Sage Publications, p. 38.

dichotomous view of these two streams, and places mixed methods in the middle on the continuum between quantitative and qualitative approaches.¹⁹⁶ There is recognition that “each of the two research approaches provides a distinctive kind of evidence and used together they can offer a powerful resource to inform and illuminate policy or practice.”¹⁹⁷ However, Burke Johnson and Onwuegbuzie recognised that: “Much work remains to be undertaken in the area of mixed methods research regarding its philosophical positions, designs, data analysis, validity strategies, mixing and integration procedures, and rationales, among other things.”¹⁹⁸ With increased application of this approach and its potential value in areas such as interdisciplinary research, these remaining questions will be addressed.

Researchers using mixed methods as their approach have articulated various ways in which research can be mixed. In general, variation is based on the time ordering or ‘paradigm emphasis’ of the exercise. Describing variation from their qualitative research standpoint, Ritchie and Lewis gave three categories: qualitative research that either precedes statistical enquiry, is alongside statistical enquiry, or that is a follow-up to statistical enquiry.¹⁹⁹ Burke Johnson and Onwuegbuzie also suggested that there is variation in the prominence of qualitative or quantitative elements. The bottom line for those practising mixed methods research is that the approach “should be mixed in ways that offer the best opportunities for answering important research questions.”²⁰⁰

Given this bottom line, the mixed methods approach was used for this study because of the nature of the research questions as articulated in the first chapter. Responses to the research questions will require both quantitative and qualitative data. Moreover, there is a need for both quantitative and qualitative analyses to extract meaning from these data. Some qualitative data will require quantitative analysis (e.g. coding of institutional

¹⁹⁶ See for example: Patricia Bazeley (2009), “Integrating Data Analyses in Mixed Methods Research”, *Journal of Mixed Methods Research*. Volume 3:3, p. 203-207; Burke Johnson and Onwuegbuzie (2004), p.15; and Abbas Tashakkori and John W. Creswell (2007b). “Exploring the Nature of Research Questions in Mixed Methods Research,” in *Journal of Mixed Methods Research*. Volume 1:3, p. 207-211.

¹⁹⁷ Ritchie and Lewis (2003), p. 38.

¹⁹⁸ Burke Johnson and Onwuegbuzie (2004), p.15.

¹⁹⁹ Ritchie and Lewis (2003), p. 42. See also John W. Creswell (2003). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, Second Edition*. Thousand Oaks, CA: Sage Publications, p. 213-219.

²⁰⁰ Burke Johnson and Onwuegbuzie (2004), p. 16.

characteristics into a Likert scale), and conversely, some quantitative data will require qualitative analysis. Unlike the more uni-dimensional approaches, mixed methods research allows this flexibility.

Through mixed methods research, a ‘concurrent triangulation strategy’ is possible, and is used for this study.²⁰¹ This strategy “uses two different methods in an attempt to confirm, cross-validate, or corroborate findings within a single study.”²⁰² Both types of data are collected concurrently, with results integrated during the interpretation and analysis stage. This study is aiming to test assumptions about the relationship between institutional and ecological effectiveness, therefore a robust approach that integrates qualitative and quantitative data and analysis was required.

Another benefit of using mixed methods research is that it facilitates the triangulation of different sources of data. This study uses qualitative and quantitative data that relate to each other. The qualitative data include text taken from documentary sources, or numerical data that were calculated based on text from those sources. The quantitative data are numerical figures extracted from various species databases. However, both sets of data reflect different elements of the research topic; they are “different ways of recording observations of the same world.”²⁰³

Some previous evaluations of environmental regimes have used mixed methods research (although not necessarily defining the methods as such). For example, the approach taken by Miles *et al.* (2002) in their study of environmental regime effectiveness used both quantitative and qualitative methods. As the authors stated, “we take the ecumenical view that these two sets of techniques are largely complementary, each providing opportunities that the other does not offer, at least not to the same degree.”²⁰⁴

²⁰¹ This strategy is one of six as described by Creswell (2003), p. 213-219. Young (2001) also noted that converging results of two different analytical procedure can increase confidence in conclusions. Young (2001), p. 103.

²⁰² Ibid. p. 217. See also Janice M. Morse and Lyn Richards (2002). *Readme First for a User's Guide to Qualitative Methods*. Thousand Oaks, CA: Sage Publications, p.78.

²⁰³ Lyn Richards (2005). *Handling Qualitative Data: A Practical Guide*. Thousand Oaks, CA: Sage Publications, p. 36.

²⁰⁴ Arild Underdal (2002). “Methods of Analysis”, in Miles and Underdal (2002), p. 47.

Mixed method research lends itself well to exploratory and evaluative work. While qualitative methods have been the predominant strategy in evaluations of policy²⁰⁵, use of quantitative data collection and analysis can provide additional value. Qualitative research that evaluates policy has generally been divided into two modes of enquiry: formative and summative.²⁰⁶ While these distinctions were initially based on the educational context, the terms have been used more broadly to describe evaluations in other fields. In short, formative evaluation occurs while a process is ongoing, and operates a sort of adaptive measure. Summative evaluation, on the other hand, occurs once the process has concluded. A simpler portrayal of the distinction was provided by Robert Stake, who has observed, “When the cook tastes the soup, that's formative. When the guests taste the soup, that's summative.”²⁰⁷ The evaluation used in this study is summative.

4.4 Data Collection

To achieve the objectives of this research (see Chapter 1), both qualitative and quantitative data were collected. The rationale for using both types of data was to compile a more comprehensive view of regime effectiveness, as well as its related aspects (i.e. implementation and compliance). The nature of the regime under investigation – i.e. wildlife trade – also lent itself well to the use of both qualitative and quantitative data. Generally, regime analyses are qualitative, but given the availability of quantitative trade and wildlife data, it is logical to include these. Using qualitative and quantitative data may reveal more about the research subject than just one approach.

In addition, using qualitative and quantitative data allowed the researcher to corroborate findings that emerge from each type. Assumptions about the relationship between institutional effectiveness (generally something that is analysed qualitatively) and ecological effectiveness (generally analysed quantitatively) were tested by linking the two datasets, and analysing them together.

²⁰⁵ Ritchie and Lewis (2003), p. 30.

²⁰⁶ This distinction was originally made by Michael Scriven in 1967, “The methodology of evaluation,” in *Perspectives of curriculum evaluation*, edited by R.E. Stake. Chicago, IL: Rand McNally, p. 39-55.

²⁰⁷ Reported in Michael Quinn Patton (1997). *Utilization-Focused Evaluation: The New Century Text. Edition 3*. Thousand Oaks, CA: Sage, p. 69.

Qualitative data for the study came from primary and secondary document sources. The primary sources used for this research were various institutional documents, such as reports, official notifications, meeting documents, and procedural materials such as meeting reports. The secondary sources used include journal articles and magazine or newspaper articles. The primary and secondary sources provide detailed information about the regime investigated for this research.

Quantitative data were extracted from two databases: the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) Global Trade Database, and the IUCN Red List. The UNEP-WCMC Database is a compilation of more than 35 years of import and export statistics (legal, reported trade, as well as seizures) from countries that are party to CITES.

The IUCN Red List contains data on over 45,000 species that are at risk of global extinction. The database provides details on relevant aspects of extinction risks for species, such as biological profile, distribution, conservation status, threats, and protection measures.

4.5 Data Analysis

Mixed methods research not only provides for the collection of both qualitative and quantitative data, but also for qualitative and quantitative methods to analyse those data. For this research, quantitative and qualitative analysis were used on both types of data.

4.5.1 Qualitative Analysis

Qualitative analysis for this research focused on content/document analysis, and analysis of the qualitative data was concurrent with data collection.²⁰⁸ As data were collected, patterns started emerging, which led to further refinement of the research objectives, as well as ‘signposts’ of where to go for more information. Qualitative data were coded based on the criteria included in the analytical framework (described in Chapter 3).

²⁰⁸ Morse and Richards (2002) and David Silverman (2005). *Doing Qualitative Research: Second Edition*. Thousand Oaks, CA: Sage Publications.

Quantitative data were also analysed using qualitative methods. While in some respects quantitative data can be ‘self-explanatory’, interpretation is necessary, and is therefore provided in the form of description.

4.5.2 *Quantitative Analysis*

Quantitative analysis for this research focused on basic statistical analysis of trade data. The purposes of using quantitative analysis were to: use the available and relevant empirical ecological data; measure and quantify trade trends; and relate this back to the institutional aspects of the regime.

Trade figures, as interval scale data, were measured and compared in a relatively straightforward manner. More qualitative aspects of regimes were coded into ordinal systems that facilitated assessment and comparison. The interaction in this study between qualitative and quantitative data and qualitative and quantitative analysis is articulated in Table 4.2 below.

Table 4.2: Mixed data and mixed methods used for this study

	Quantitative analysis	Qualitative analysis
Quantitative data	Basic statistical analysis of trade data	Description and interpretation of trade data
Qualitative data	Coding of regime characteristics onto a 5-point Likert scale for comparison	Description and interpretation of regime characteristics

4.6 **Data validation**

Mixed methods research presents additional challenges and opportunities in terms of validation of data. The use of two different ‘types’ of data and analyses in this study necessitated and allowed two levels of data validation. One level comprised the inherent ‘validation’ of the measure of institutional effectiveness against the measure of ecological effectiveness, in terms of assessing overall effectiveness. In assessing overall effectiveness, the study was essentially testing assumptions of a proxy relationship between the two concepts. If the data indicated that institutional effectiveness was strongly correlated with ecological effectiveness, this suggested that, in terms of overall effectiveness, the results of each analysis are valid.

The second level of data validation occurred within each analysis, i.e. institutional and ecological. Results of the institutional analysis were validated by ensuring a wide range of

criteria were used. Use of diverse criteria ensured that more than one indicator was used to measure institutional effectiveness. Moreover, the results of any assessments using those criteria were taken into account. The results of one assessment could therefore validate (or repudiate) the results of other assessments. Theoretically, multiple assessments with the same results strongly indicated the validity of the finding.

Results of the quantitative analysis were validated by using two sources of data, where practicable. With regard to trade data as reported by CITES Parties, both import data and export data were often available. These figures were cross-checked to improve the validity and reliability of these data.

To test overall validity of research in the study, deviant-case analyses were undertaken.²⁰⁹ For this research, these deviant cases were comprised of species that did not undergo the same ‘treatment’ (i.e. the operational process in CITES to be used as the case study) as the ones that are the subject of the investigation. Looking at these deviant cases allowed a comparison of whether or not the ‘treatment’ impacted trade, or if there were other possible explanations.

4.7 Conclusions

This chapter discussed the two traditional approaches to research, i.e. those based on qualitative and quantitative methods. Recently, a ‘third way’ has emerged – mixed methods research – that incorporates the advantages of both approaches. Mixed methods research lends itself well to interdisciplinary research, and in particular, that related to international environmental regimes. Regime studies have largely been based on qualitative methods; however, the integration of quantitative data and analysis can add value when assessing changes in environmental quality or ecological processes. The need for descriptive precision in the evaluation of the CITES regime as well as use of quantitative trade data and ecological data in this study make mixed methods research an

²⁰⁹ Silverman (2005), p. 215-216. Deviant cases refer to those that were not used in the sample, but that may provide some context and basis for comparison. These cases were not selected because they deviated in some way from the sample. In this study, deviant cases include: taxa other than birds; taxa in another Phase of the Review process; and taxa screened but not selected for the Review process.

appropriate tool, and may help advance the state of the art of evaluations of regime effectiveness.

The use of quantitative trade data and ecological data in this study also promote objectivity of the author. I have had a working relationship with the CITES Secretariat for approximately 10 years, and have worked for them as a consultant on a number of occasions. In addition, I am currently working directly in the CITES field as Management Authority of New Zealand, so have frequent direct contact with them on CITES-related issues. Knowing that I was undertaking this independent research on this topic, the Secretariat has provided administrative support in the form of office space at the Secretariat offices and access to all internal files and documents. The content of the study was pursued with complete independence of (but cooperation with) the Secretariat, and use of trade and conservation data provide an empirical perspective to the evaluation.

The next chapter provides a detailed description of the case study, the CITES Review of Significant Trade process, as well as its context within the entire regime. The benefit of using a mixed methods approach is evident given the nature of the issue.

CHAPTER 5: CASE STUDY – CITES

5.1 Introduction

This chapter provides a brief overview of CITES, in terms of its operation and the species it covers. Next is a description of the Review of Significant process, an important compliance mechanism of the Convention. The last substantive section contains a summary of previous evaluations of CITES, in order to contextualise this research.

CITES is an international agreement that aims to ensure that international trade in wild animals and plants is controlled so to minimise threats to their survival. Although there are many threats to the long-term survival of species – such as habitat loss and domestic consumption – the Convention has been designed to address those species whose existence is threatened by international trade. CITES was agreed in 1973 and entered into force in 1975. Because CITES has been in force for over 35 years, it has evolved into a comprehensive agreement. Not only are there a number of distinct processes under the Convention itself, but subsequent decisions and resolutions have further interpreted its mandate. In addition, there is a considerable amount of literature on how this Convention has functioned.

Currently, over 34,000 species are regulated under the CITES; about 29,000 are plant species, and about 5000 are animal species.²¹⁰ There are 175 member states (called “Parties”) to CITES.²¹¹

5.2 How CITES works

Under CITES, species whose survival is threatened due to trade are listed in three Appendices. The CITES website describes the Appendices as follows:

- Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances.
- Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilisation incompatible with their survival.

²¹⁰ The figure for plant species is much higher than that for animals because it contains the entire orchid family (Orchidaceae), which has about 24,780 species.

²¹¹ As of June 2010.

- Appendix III contains species that are protected in at least one country that has asked other CITES Parties for assistance in controlling the trade.

Table 5.1 below provides details on the number of species listed on each Appendix²¹².

While some species have been on CITES since it entered into force in 1975, many have been added since then, and others have been deleted.²¹³

Table 5.1: Overview of species covered by CITES

	Appendix I	Appendix II	Appendix III	Totals
Mammals	277 species 16 sub-species 14 populations	295 species 12 sub-species 12 populations	45 species 8 sub-species	617 species 36 sub-species 26 populations
Birds	152 species 11 sub-species 2 populations	1268 species 6 subspecies 1 population	35 species	1455 species 17 sub-species 3 populations
Reptiles	75 species 5 sub-species 6 populations	527 species 4 sub-species 4 populations	55 species	657 species 9 sub-species 10 populations
Amphibians	16 species	98 species	-	114 species
Fish	15 species	71 species	-	86 species
Invertebrates	62 species 4 sub-species	2100 species 1 sub-species	17 species	2179 species 5 sub-species
Plants	295 species 3 sub-species	28,674 species 3 sub-species 2 populations	8 species 1 sub-species 1 population	28,977 species 7 sub-species 3 populations
Totals	892 species 39 sub-species 22 populations	33,033 species 26 sub-species 19 populations	160 species 9 sub-species 1 population	34,085 species 74 sub-species 42 populations

After a few years of CITES operation, it became apparent that trade in some Appendix-II species was occurring at levels that were adversely affecting their conservation status.²¹⁴

According to the Convention, trade of Appendix-II species must be consistent with conditions laid out in Article IV, “Regulation of Trade in Specimens of Species Included in Appendix II” (see Appendix 1 for text of Article IV). The most important aspect of Article IV is a paragraph requiring trade to be non-detrimental to the species. In other words, before an Appendix-II species can be exported, it must be shown that export will not be detrimental to the long-term survival of that species in the wild. For many species,

²¹² See <http://www.cites.org>. These data accessed on 24 June 2010.

²¹³ All additions and deletions are made through decisions of the Conference of the Parties – see Resolution Conf. 9.24 (Rev. CoP14) for more detail on this process.

²¹⁴ Robert W. G. Jenkins (2000). “The Significant Trade Process: Making Appendix II Work,” in *Endangered Species, Threatened Convention: The Past, Present and Future of CITES*, edited by Jon Hutton and Barnabas Dickson. London, UK: Earthscan Publications, p. 47-56.

significant (and usually detrimental) levels of trade constitute a threat to long-term survival. This may also indicate that CITES Article IV is not being properly implemented.

With trade in some Appendix-II species appearing to be significant, a mechanism was established within the CITES regime. This mechanism, referred to as the Review of Significant Trade, was designed to promote Article IV compliance by ensuring that trade in these species does not threaten their long-term survival, regardless of trade levels.

5.3 A brief history of the Review of Significant Trade process

The initial version of the Review of Significant Trade process was introduced at CoP4 in 1983 (Gaborone, Botswana), when Parties adopted Resolution Conf. 4.7 (“Regulation of Trade in Appendix II Wildlife and Implementation of Article IV, paragraph 3, of the Convention”). Through this mechanism, significant levels of trade in Appendix-II species were addressed through ‘remedial actions’. This first version of the Review process was rudimentary, and the three operative paragraphs of the Resolution were not sufficiently detailed. During the operational period of this resolution, a number of species (approximately 150) were discussed in terms of their significant trade, but no recommendations were made.

The Review mechanism was then formalised at CoP8 in 1992 (Kyoto, Japan), with adoption of Resolution Conf. 8.9 (“Trade in specimens of Appendix-II species taken from the wild”). This Resolution outlined the Review process much more clearly, and provided specific steps to be followed in assessing and categorising species. It also has clear provisions regarding recommendations. It is from this Resolution that the first robust reviews emerged, starting with the 27 species selected for Phase I.

Resolution Conf. 8.9 was amended at CoP11 in 2000 (Nairobi, Kenya), in order to provide for reviews of flora. A new process, described in Resolution Conf. 12.8 (“Review of Significant Trade in Specimens of Appendix-II Species”), was agreed at CoP12 in 2002 (Santiago, Chile). Changes made at CoP12 reflect Parties’ aim to: simplify the process; consolidate fragmented provisions guiding its implementation; and enable countries undergoing the Review process to have a clearer understanding of the process and of their responsibilities. A minor amendment was made to Resolution Conf. 12.8 at CoP13 in

2004.²¹⁵ This amended resolution (officially, Resolution Conf. 12.8 (Rev.CoP13)) is the current operational process.

The concept of ‘significant’ has evolved along with the process. Under the current process, ‘significant’ trade levels are different for every species; whether or not trade is deemed ‘significant’ depends on a number of factors. The initial indication of ‘significant’ comes from trade data that is compiled by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC). Once the CITES Animals or Plants Committee look at this data in light of other factors – such as current status, range, captive breeding activities, quota limits, artificial propagation methods, and other management systems – they select “species of priority concern”.

5.4 How the Review of Significant Trade process operates

The basic Review procedure involves: selecting species for review based on trade data; consulting with range States regarding Article IV implementation; compilation of information; and formulation and transmission of recommendations to range States. The general approach of the Review process is based on consultation. The stages are set to: establish that there is significant trade; provide advice on how to address this trade; and evaluate if significant trade is being addressed by the countries concerned.

As set out in the resolution, the six stages are as follows²¹⁶:

1. Selection of species to be reviewed
2. Consultation with range States concerning implementation of Article IV
3. Compilation of information and preliminary categorisation
4. Review of information and confirming of categorisation by the Animals or Plants Committee
5. Formulation of recommendations and their transmission to the range States
6. Measures to be taken regarding the implementation of recommendations

²¹⁵ This amendment was integration of a previous CITES decision on coordination and funding of field studies required for Appendix-II species identified as being subject to significant levels of trade.

²¹⁶ A detailed description of the process is included in Appendix 2.

5.5 Selection of the CITES Review of Significant Trade process as a case study

The Review of Significant Trade was selected as the case study for examining the role of ecological data in evaluations of the relationship between institutional and ecological effectiveness. Focusing on the Review process sufficiently narrows the scope of materials on CITES to a manageable size, yet allows a variety of examples for comparative analysis. Other reasons for selecting this element of CITES include:

1. CITES has been in force for over 35 years, and therefore establishing long-term data trends for both trade and conservation status are possible.
2. CITES has a relatively well-functioning reporting system, and so availability and access of trade and conservation data is not as problematic as with other regimes.
3. The Review of Significant Trade process is considered an essential part of CITES, providing a safety net for implementation. Therefore, its effectiveness is integral to proper Convention functioning.²¹⁷
4. I have worked with the CITES Secretariat in the past, and have already established a relationship with them whereby they are comfortable providing me with sensitive data and information. I am also in personal contact with many people involved in CITES processes.

Most importantly, according to CITES Decision 12.75, the Review of Significant Trade is subject to an evaluation following a decision made at CoP14 in 2007. According to the decision, the evaluation will, *inter alia*, assess the impact of the Review process on trade and conservation status of the species selected for review. The decision provides excellent context for an examination of the use of ecological data in assessments of regime effectiveness and if results of effectiveness reviews can be integrated into existing institutional processes, and therefore, into the policy loop.²¹⁸

²¹⁷ Even possible listing on CITES can impact the conservation status of species. For example, Australia proposed listing Patagonian Toothfish (*Dissostichus eleginoides*) on CITES Appendix II; although the proposal was not successful, the CoP did take decisions to link CITES and toothfish monitoring scheme under the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), putting increased attention on harvesting and trade. Another example is the increased efforts by some Regional Fisheries Management Organisations to improve shark conservation after failed CITES listing proposals (see for example:

<http://news.discovery.com/earth/hammerhead-sharks-protected-paris.html>. Accessed on 16 October 2011.

²¹⁸ Only some preliminary steps of the evaluation have been taken thus far (September 2010).

5.6 Selection of species from within the Review process for analysis

Approximately 420 plant and animal taxa have gone through the Review process since 1983.²¹⁹ However, the sample for this research was delimited to the animal class *Aves* (birds). The rationale for only looking at birds is twofold. First, among all classes, birds are disproportionately represented in the Review process. Out of more than 360 animal species reviewed, a quarter (N=89) are birds. Over 95% of these birds are Psittacines (parrots, macaws, and parakeets), traded mainly for the pet trade.

Reptiles are also highly represented in the Review process (42%). However, the reason they were not included relates to the second reason why birds were selected – the availability of IUCN Red List assessment data. The IUCN Red List has conducted more frequent assessments of birds than of other taxa. Global assessments are undertaken regularly for various classes, and birds have undergone this assessment process more often than others. Therefore, there are more time-series data for this class than for others. Some or all birds were assessed in 1988, 1994, 2000, 2004, 2008 and 2010. For the purpose of this research, only categorisations based on the first five assessments were used for this study.

Not all bird species that have been reviewed (N=89) were included in the sample. This analysis focused on those selected in the early 1990s and reviewed in Phases I, II and III of the process (N=74). Analysis of bird species in these phases allowed almost twenty years of trade and conservation data for analysis.²²⁰ With longer timeframes in mind, species from later phases (Phase IV and beyond) were therefore omitted from the sample.

While there were 74 bird species reviewed in Phases I-III, only 65 were included in the sample for analysis.²²¹ In some cases, species were excluded because Red List information was inadequate – the species were either not on the Red List, had only been assessed once, or were assessed more than once, but at least one assessment was “Insufficiently Known” or “Data Deficient”.

²¹⁹ Figures calculated by author using various Standing Committee, Animals Committee and CoP documents relating to the Review of Significant Trade.

²²⁰ Phase I species were selected in August 1991, Phase II species were selected in March 1992, and Phase II species were selected in May 1994.

²²¹ See Appendix 3 for an overview of the species selected.

In other cases, species had only negligible trade data, and were therefore excluded. Species excluded for this reason had less than 100 specimens in trade over the period of analysis, making definite statements about trade trends impossible (and indicating that trade was not significant). In total, nine species were eliminated for reasons associated either with inadequate Red List or trade data. Table 5.2 below provides detail on what species were eliminated and on what grounds.

Table 5.2: Overview of species selected for assessment

Phase	Total species in Phase	Total birds	Birds included in analysis	Comments on eliminated species
I	27	13 (48%)	12 (44%)	-1 species - negligible trade data ²²²
II	180	53 (29%)	46 (25%)	-1 species - inadequate Red List data ²²³ -6 species - negligible trade data ²²⁴
III	24	8 (33%)	7 (29%)	-1 species - negligible trade data ²²⁵
Total	231	74 (32%)	65 (28%)	

More detail about species evaluated in the different analyses is provided in the relevant sections.

It is possible that the results obtained from analyses of birds might be specific to that taxon, and not be generalisable to other animal classes or to plant species. The bird species in the sample tend to be traded in live form (vs. bodies or other types of specimens) and for the pet trade, so this may be a factor that influences trade patterns. Further analyses would be required to assess whether or not the results are related to the nature of the taxon or the specimens.

5.7 Previous evaluations of CITES

There is a considerable amount of literature on how this Convention has functioned over the past 35 years. Deemed by some as one of the more successful MEAs²²⁶, its operation is of interest to academics, endangered species specialists, and those working within the

²²² *Amazona oratrix* (Yellow-headed Amazon)

²²³ *Aratinga holochlora* (Green Conure)

²²⁴ *Aratinga auricapillus* (Golden-capped Conure), *Aratinga jandaya* (Jandaya Conure), *Eos bornea* (Moluccan Lory), *Goura cristata* (Western Crowned-pigeon), *Loriculus flosculus* (Flores Hanging Parrot), *Pyrrhura perlata* (Crimson-bellied Parakeet)

²²⁵ *Psittacula finschii* (Grey-headed Parakeet)

²²⁶ See Barzdo and Wells (1991), p. 151; Lyster (1996), p. 192; Kosloff and Trexler (1987).

context of international environmental policy. It has also been the subject of numerous evaluations. Table 5.3 at the end of the chapter provides an overview of these evaluations.

Some evaluations of CITES have been undertaken by academics. A comprehensive search of various databases reveals a number of dissertations that assess CITES and its effectiveness. Some dissertations were focused more on implementation and governance (Protko 2001; Solin 1996). Trexler (1990) included some quantitative trade data in his assessment, concluding that CITES is a conservation failure. However, he did not include any conservation data: the criterion used for his assessment was the number of species being added to and removed from the Appendices.

CITES has also been evaluated by those working within the regime, e.g. by NGO personnel. Two studies undertaken by CITES specialists scrutinised higher taxa (Wells and Barzdo 1991, who looked at marine species; Green and Hendry 1999, who looked at hard corals). While both studies made good use of trade data as indicators of compliance – with CITES indicating mixed impacts on trade levels – neither study used any specific ecological data pertaining to the taxa examined.

A former Secretary-General of CITES (Sand) evaluated the Convention in anticipation of CoP11 to be held in 1997.²²⁷ He discussed various institutional aspects of CITES, such as: functioning of the Secretariat and the various subsidiary Committees; use of sanctions; flexibility of the Convention; establishment of Management Authorities; reporting requirements; and technical assistance toward compliance. He examined some of these elements in light of two case studies (vicuña and ivory). The case studies were brief, with only passing reference to the population trends of vicuña.

Sand did include a section specifically on the environmental impact of CITES. Stating that the “jury is still out” on CITES, he pointed out that CITES “is not a general wildlife management treaty” and “does not even control the actual taking of wildlife.”²²⁸ He also noted that the decline of species can be due to a number of factors, and warned against

²²⁷ Sand also assessed CITES in 1992 as part of a larger study of multilateral environmental agreements. This is discussed later in the chapter.

²²⁸ Sand (1996), p. 52-53.

directly correlating effectiveness of CITES with the conservation status of species.²²⁹

Despite emphasising the importance of effectiveness, he did not suggest any means by which this should be assessed.

In a book written by practitioners who have worked extensively on endangered species issues, Martin (2000) observed that, “the direct test of the performance of CITES [is whether or not] the convention improved the status of the species of wild fauna and flora that it sets out to protect.”²³⁰ Although he advocated the use of conservation status (i.e.. ecological impact) as a way of assessing CITES, he acknowledged that there is no clear-cut answer for this question, and that to indicate an improvement of species would require that:

...The population was declining to the point that it was threatened with extinction immediately before it was listed on Appendix I and that the decline was definitely caused by unsustainable international commercial trade. Secondly, it would have to be shown that the population increased in numbers after the listing to the point where the population could be deemed to have recovered and could be transferred to Appendix II... Moreover, the figures would have to demonstrate that the increase was due to the listing and not to other factors such as intrinsic population increase or improved law enforcement.²³¹

Martin also suggested that CITES is more successful in situations where: wildlife control in countries is centralised and accepted by citizens²³²; citizens can only use wildlife as permitted by government agencies; CITES works with countries; there are incentives for conservation; the Appendices can be used flexibly; and species are listed for the right reasons.

More recently, Reeve (2006) looked at a range of institutional aspects related to compliance with CITES.²³³ She evaluated the effectiveness of compliance mechanisms

²²⁹ Ibid., p. 53.

²³⁰ R.B. Martin (2000). “When CITES Works and When it Does Not,” in *Endangered Species, Threatened Convention: The Past, Present and Future of CITES*, edited by Jon Hutton and Barnabas Dickson. (London, UK: Earthscan, p. 29-37) 30.

²³¹ Martin (2000), p. 30.

²³² Other researchers would differ on this matter, pointing to studies that indicate decentralized structures are more effective and efficient at environmental management. See, for example, James Fielding Smith (1998). “Does Decentralization Matter in Environmental Management?”, *Environmental Management*. Volume 22:2, p. 263-276.

²³³ Rosalind Reeve (2006). “Wildlife trade, sanctions and compliance: Lessons from the CITES regime,” in *International Affairs*. Volume 82:5, p. 881-897. See also Rosalind Reeve (2002).

such as technical assistance and the use of sanctions, particularly in terms of how they have affected reporting and legislative requirements. She observed that, “it is apparent that countries dislike being targeted with recommended trade sanctions and generally appear to respond positively, even if they initially object.”²³⁴ Her study concluded that CITES’ compliance procedures have been effective, with most Parties moving toward compliance.

Some evaluations of CITES were conducted as part of academic enquiries into regime effectiveness. The first of such assessments was conducted by Lyster (1996), who examined a number of regimes addressing biological diversity. He proposed specific attributes that improved regime effectiveness, such as funding, NGO involvement, secretariat functioning, etc. Lyster’s assessment of CITES was positive; he stated that “from the point of view of institutional arrangements, [CITES] would be hard to beat.”²³⁵ This statement was supported with detailed descriptions of the Convention’s structure and operation, pointing to its experience as an example for other regimes.

Brown Weiss and Jacobson’s (1998) assessment of CITES is largely descriptive, with discussion of factors such as: treaty commitments, implementing institutions, the Secretariat, the role of NGOs, financing, dispute settlement, and monitoring/compliance. The authors concluded that the merit of CITES is difficult to assess, and that conservation of species can not be assured without addressing other threats such as domestic consumption.

Lanchbery’s (1998) examination of CITES was part of a larger study investigating systems of implementation review, and his focus is how scientific data are fed into the system and how treaty design allows adjustments to ensure proper implementation.²³⁶ His only evaluative statement in the review referred to the role of NGOs in providing information on implementation; otherwise, this work is limited to description of some basic aspects of CITES’ operation.

Policing International Trade in Endangered Species: The CITES Treaty and Compliance. London, UK: Earthscan.

²³⁴ Reeve (2006), p. 892.

²³⁵ Lyster (1996), p. 192.

²³⁶ Lanchbery (1998). in Victor, Raustiala, and Skolnikoff (1998).

The evaluation undertaken by Curlier and Andresen (2002) articulated two major challenges to assessing CITES' effectiveness: the impossible task of examining the effect on all listed species; and the difficulty in establishing causality between international trade and species extinction.²³⁷ Despite these challenges, the authors evaluated CITES within the context of two phases of its evolution – from the early 1970s until the mid-1980s (“institution building”) and from the mid-1980s to the present (“more conflict and new perceptions”). The authors focused on conflicts regarding issues such as sustainable utilisation vs. bans, problems with Parties meeting reporting requirements, financial constraints of the Secretariat, and species listing procedures. In conclusion, Curlier and Andresen made the following overall assessment:

If we were to assess effectiveness on the basis of output, it would deserve a high score, as a number of far-reaching decisions to protect endangered species through restricting trade have been passed... Assessed in terms of its success in improving target-group behaviour and achieving functionally good solutions, the picture is different.²³⁸

The authors also stated that CITES has responded only to a modest degree: to species loss caused by international trade, although they note that the flexible nature of the Convention does bode well for future problem solving.

Some of the most comprehensive evaluations of CITES were conducted as part of official policy assessment initiatives, such as those mandated under UN processes. One of the first CITES evaluations of this type was conducted in 1992 by Sand in preparation for the 1992 UN Conference on Environment and Development. The foundation of his assessment of CITES was based on the number of species that have moved on, off and between Appendices I and II. Because trade of Appendix-I species is more tightly controlled Sand contended that these movements could be a measure of the Convention's success. He pointed out limitations to this approach, namely that international trade is not the only threat to species survival, and that populations may be impacted by factors such as habitat destruction, introduced species, etc.

²³⁷ Maaria Curlier and Steinar Andresen (2002). “International Trade in Endangered Species: The CITES Regime,” in Miles, *et al.*, p. 357-378.

²³⁸ *Ibid.*, p. 357.

Sand also noted that the CITES CoP may waive the normal criteria for inclusion on the Appendices, and that movement between the Appendices may be because of improved knowledge of their conservation status. Nevertheless, his study revealed the following about fauna:

- 82 species transferred from Appendix II to I
- 34 species transferred from Appendix I to II
- 18 species deleted from Appendix I²³⁹

Having made this observation, Sand did not make any actual assessment of what these numbers mean in terms of effectiveness. No conservation data were provided, and no scale of measurement was given, even in terms of the ratio of transferred species to total number of species in each Appendix at the time of the evaluation.

Väkevä undertook an assessment of the CBD and CITES as part of a research project on MEA effectiveness conducted by the Nordic Council of Ministers. He looked at the economic aspects of biological resources, such as valuations of the benefits and costs of biodiversity conservation and market-based instruments and incentives. With regard to CITES, Väkevä directed his attention to trade measures, making scant reference to trade trends for rhinoceros horn and ivory. No firm conclusions about the effectiveness of CITES were given in the report.

Raustiala also examined the effectiveness of CITES as part of a larger UNEP study on the reporting and review mechanisms within 10 MEAs.²⁴⁰ He described the Convention in terms of its requirements for national reporting, and – parallel to Easton’s model – also discussed its systems for implementation review, compliance review, and effectiveness review. Raustiala’s approach is not evaluative, but purely descriptive. No indication was given about how well these mechanisms function in practice.

CITES was also the subject of an OECD report (1997) on the effectiveness of the Convention’s trade provisions. The report explicitly stated that evaluating effectiveness is “more an art than a science.”²⁴¹ Nonetheless, its assessment was based on two types of

²³⁹ Sand (1992), p. 80.

²⁴⁰ Kal Raustiala (2001). *Reporting and Review Institutions in 10 Multilateral Environmental Agreements*. Nairobi, Kenya: UNEP.

²⁴¹ OECD (1997), p. 38.

considerations: primary considerations, such as institutional effectiveness, compliance, and environmental change; and other considerations, such as international cooperation. In terms of the primary considerations, the report was largely descriptive of factors such as Convention membership and participation, implementation of obligations, compliance, reporting, and monitoring. In most cases, discussion of these factors was within the context of multilateral trade obligations (particularly those pertaining to various World Trade Organisation agreements). In looking at environmental change that could be attributed to CITES, the OECD used a study commissioned by the Conference of the Parties as the basis of its discussion.

The findings of the OECD study were focused first on factors related to the use of trade measures, and second on the results of the results of the study commissioned by the Conference of the Parties. However, additional observations were made, such as: the need for stronger enforcement to address illegal trade; the contributions that CITES can make to inter-convention collaboration, based on its experience and technical expertise; and the possibility of using more flexible mechanisms (e.g. trade in captive-bred species) to enhance conservation.²⁴²

The study referenced by the OECD was commissioned by the CITES Secretariat in 1996, and undertaken by the consultancy Environmental Resources Management (ERM). The primary aim of the exercise was to “assess the effectiveness and efficiency of the current provisions of CITES and the way they are implemented to achieve the objective of the Convention.”²⁴³ To this end, the evaluation was divided into four distinct elements: fundamental policy issues; scientific issues; administrative and implementation issues; and institutional issues. Based on results under each of these four elements, ERM proposed a number of recommendations to the Standing Committee of CITES, with indications of the feasibility and cost of each of the recommendations.

The study also assessed ecological effectiveness, and the consultants acknowledged two challenges in undertaking this exercise: the improbability of obtaining biological and trade

²⁴² Ibid., p. 54-55.

²⁴³ Environmental Resources Management (1996). *Study on How to Improve the Effectiveness of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*. London, UK: ERM, p. i.

data for the 30,000 species covered by CITES²⁴⁴; and the difficulty of establishing causality between trade controls and conservation status. These challenges were addressed by selecting twelve case studies for evaluation.²⁴⁵ The case studies were chosen to represent species covered by CITES, ensuring a range of geographic origin, Appendix listings, flora and fauna, and live vs. parts/derivatives.

ERM's evaluation of the 12 species concluded that CITES: was effective for two species; was "moderately effective" for four species; and was minimally effective for the remaining six species.²⁴⁶ In their findings and conclusions regarding the evaluation, the consultants called for a wider review of species covered by CITES and further support to range States in order to improve effectiveness.

The most recent evaluation of CITES was carried out in 2006 by BirdLife International. This study was commissioned to address the need for indicators to track trends in biodiversity status as it relates to the impact of use (including international trade). The IUCN Red List Index was selected as the indicator, with analysis focused on trends in international trade for over 3000 species.

Out of these 3020 species of birds in trade, only 262 experienced changes in Red List Index categorisation in the time period studied (1988-2004). Within this smaller subset, only 18 changes in Red List Index category were due to impacts from trade controls. Of these, only three species showed improvement in status due to successful control of unsustainable trapping and trade and improved harvest and trade management. The preliminary report also observed that "these improvements have been outweighed by the number of species [15] that have deteriorated in status owing to inadequate trade management or lax implementation of trade controls and conservation measures."²⁴⁷

²⁴⁴ There were 30,000 species at the time. Currently there are around 34,000.

²⁴⁵ However, the consultants acknowledge that the small sample size precluded them from drawing clear conclusions from the study.

²⁴⁶ The report also noted that responses from the Parties revealed that, "Many examples of the effectiveness of CITES in enhancing the conservation status of particular taxa were cited...including crocodylians, primates, various reptiles, birds of prey, orchids, giant clams, parrots and macaws." ERM (1996), p. C4.

²⁴⁷ Birdlife International (2006). *A Red List Index for internationally traded bird species: a potential measure of the impact of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*. Preliminary report to the CITES Secretariat. Cambridge, UK: Birdlife International.

The use of the IUCN Red List Index as an indicator for the impact of CITES is a notable departure from previous evaluations, as there is a shift from institutional analysis (i.e. effects on trade) to ecological analysis (i.e. effects on conservation status). The BirdLife International study provides a more definitive idea of the ecological effectiveness of CITES on the species that were examined.

What the BirdLife International study is missing, however, is a discussion of institutional factors and their influence on ecological impacts. In other words, if the extent of the ecological impact of CITES on these species is understood, can the institution be modified to augment these impacts? If it can be modified, how so?

5.8 Conclusions

This chapter described the basic operation of CITES and the Review of Significant Trade process, and provided a summary of previous evaluations of CITES. Looking at the numerous evaluations of CITES, there appears to be good understanding of the institutional nature of the Convention. However, its ecological impact is not well understood. Most of the evaluations to date have been qualitative and based on description, with minimal (or no) use of actual trade or species data. The only evaluation that used extensive trade and conservation data was a recent one by BirdLife International.

While these previous studies provide good background to the case study and context in terms of the institutional functioning of the Convention, there is little indication of the relationship between institutional and ecological effectiveness – i.e. the overall effectiveness of CITES is unknown. The abundance of time-series quantitative trade data that are available for CITES species, as well as information about their conservation status (if listed on the IUCN Red List), this Convention is an appropriate case study for this research. In addition, CITES has been operational for over 35 years, and therefore the impact of any intervening variables on its operation may be better observed and understood.

The next chapter employs the analytical framework described in Chapter 3 to examine institutional effectiveness of CITES. This comprises the first step in understanding the

relationship between institutional and ecological effectiveness, and if this could be improved through the use of ecological data.

Table 5.3: Overview of evaluations of CITES

Evaluation	Year	Institutional Criteria?	Trade Data?	Ecological Data?	Results/Comments
Academic					
Trexler	1990	Implementation, decision-making	yes	no	Looked at movement of species between Appendices; CITES is conservation failure
Solin	1996	Implementation, governance	?	?	n/a*
Protko	2001	Implementation, governance	?	?	n/a*
Non-academic					
Nordic Council of Ministers	?	Trade measures in CITES	minimal	no	Scant reference made to trade trends for rhino horn and ivory
Wells and Barzdo	1991	None – some general comments on CITES implementation	yes	no	Focus on marine species; only description
Sand	1992	Objectives/achievements, participation, implementation, information, operations, review and adjustment, codification programming	no	no	Looked at movement of species between Appendices; no overall conclusion
Sand	1996	Secretariat, use of sanctions, flexibility, establishment of MAs, reporting, technical assistance	no	no	Some reference to vicuna and ivory; “jury is still out” on CITES
ERM study (self-commissioned)	1996	Policy issues; scientific issues; administrative and implementation issues; institutional issues	yes (varied)	no	Ecological evaluation part of study was based on responses to questionnaire sent to CITES Parties;
Lyster	1996	Funding, NGO involvement, Secretariat functioning, etc.	no	no	CITES “hard to beat” on institutional arrangements
OECD	1997	Institutional effectiveness, compliance and environmental change	no	no	“Environmental change” aspect was taken from another report; largely descriptive and focused on trade measures

Brown Weiss and Jacobson	1998	Treaty commitments, implementing institutions, Secretariat, NGO role, financing, dispute settlement, monitoring/compliance	no	no	“The merit of CITES is difficult to assess”
Lanchbery	1998	Systems of implementation review	no	no	Only evaluative statement on role of NGOs
Green and Hendry	1999	None	yes	no	Focus on hard corals; only description
Martin	2000	None	no	no	Advocated use of conservation status as a way of assessing CITES
Raustiala	2001	Reporting mechanisms	no	no	No overall conclusion
Curlier and Andresen	2002	Institutional elements; conflict resolution (bans, reporting requirements, financial constraints, species listing procedures)	no	no	Based on outputs, CITES is effective. Based on improving target-group behaviour, “the picture is different.”
Reeve	2006	Compliance mechanisms	no	no	CITES’ compliance procedures have been effective
BirdLife International	2006	Looking at use of indicators to track biodiversity trends as they relate to impact of use/trade	yes	yes	No institutional data used

*Text of these papers not available.

CHAPTER 6: INSTITUTIONAL ANALYSIS OF CITES

6.1 Introduction

This chapter evaluates the institutional effectiveness of the Review of Significant Trade process within the CITES regime.²⁴⁸ The definition of institutional effectiveness is based on factors relating to regime characteristics, as well as to national implementation and compliance.

The first section of this chapter looks at regime characteristics, as described in Chapter 3. These characteristics can also be viewed as independent variables that influence institutional effectiveness; this is an approach taken in some of the regime literature described in Chapter 2. While these characteristics are understood in this study in the same way, they can also be used as a standard by which to assess effectiveness, and to provide context for the more comprehensive discussions on national implementation and compliance. Following the detailed examination of these facets of institutional effectiveness, an overall assessment is made, using the Likert scale contained in Table 3.5 (Calculating institutional and ecological effectiveness). The Likert scale contains specific parameters for determining institutional effectiveness (or lack thereof).

Information and data used for analysis were extracted from the extensive range of documents produced by the CITES regime. The main sources of information are: Articles of the Convention; Resolutions and Decisions that have emerged from the CoP meetings; and proceedings from CoP, Standing Committee, and Scientific Committee meetings. In addition, general data about various aspects of the CITES regime – such as numbers of Parties, deposition of reservations, etc. – were taken from the CITES Secretariat website. In some cases, adequate details on the various criteria were not available from any of these sources, and therefore relevant staff members at the Secretariat were contacted, who provided this information.

Trade data were extracted from a comprehensive database maintained by UNEP-WCMC. According to CITES obligations, Parties must submit these data to the Secretariat on an

²⁴⁸ There have been no evaluations of the Review of Significant Trade process, so previous evaluations of CITES as a whole were included to provide context for the more specific elements of the Review process.

annual basis. These data are subsequently transmitted to UNEP-WCMC to be uploaded into the global database.

6.2 Institutional analysis: characteristics of regime functioning

Clear rationale/objectives

I: Are the rationale and objectives clearly stated and are they measurable and/or quantifiable?

Rationale for CITES regime: The rationale of CITES has been explicit since the negotiation of the agreement in 1975, when Article II (“Fundamental principles”) was included in the text. Article II indicates the species to be included under each of the three Appendices, and provides the rationale for each Appendix listing. The first paragraph, which refers to Appendix I, states that: “Trade in specimens of these species must be subject to particularly strict regulation in order not to endanger further their survival and must only be authorized in exceptional circumstances.” Subsequent paragraphs, which discuss Appendices II and III, have similar explanations. The second paragraph says trade in Appendix-II species will be regulated “in order to avoid utilization incompatible with their survival”, and the third paragraph states that Appendix III will include species that need to be regulated “for the purpose of preventing or restricting exploitation”. The rationale of the Review process is clearly delineated in the preambular paragraphs of the resolution that outlines the process (Resolution Conf. 12.8 (Rev. CoP13)). The resolution states that there is concern that some Parties are not effectively implementing certain obligations under the Convention, and emphasises the importance of Article IV implementation to conservation and sustainable use of Appendix-II species.

CITES objectives: The objectives of the Convention have been specified through the development and evolution of various strategic and/or action plans. The first of these plans – a long-term “Strategic Plan for the Secretariat” – was adopted at CITES CoP7 in October 1989. A process to create a strategic plan for CITES itself started after CoP11 in April 2000. The result of this process was a comprehensive *Strategic Vision Through 2005* and an Action Plan indicating how the Vision was to be operationalised.²⁴⁹ The Action Plan that was developed along with the *Strategic Vision* enumerated a series of action

²⁴⁹ CITES Secretariat (April 2000). *Strategic Plan for the Convention*. CoP11, Doc. 12.2.

points to be taken by various actors (the Secretariat, the Scientific Committees, etc.) to fulfil the objectives in the *Strategic Vision*. The Action Plan was updated in 2002 and extended until end-2007. A new Strategic Vision was agreed at CoP14 in 2007, which also included indicators for the objectives. These indicators have increased measurability of the objectives.

As one particular element of CITES functioning, the objectives for the Review process are not as explicitly stated as those for the Convention. The Review process is based on implementation of Article IV; therefore it can be surmised that its objectives are based on those of the Convention. To date, objectives of the Review process have not been measured to date, although the Secretariat has contracted an organisation to create a system that tracks country cases in the Review process.²⁵⁰

Nature of Parties duties or obligations

2: Are the duties of Parties clearly stated and are they binding?

The fundamental duties and obligations of Parties under the CITES regime are explicitly stated through the Articles of the Convention. A system of Resolutions and Decisions is used in the CITES regime to provide more detail on the interpretation of the Convention, and to facilitate its operation and implementation.

Resolutions provide long-term guidance on CITES implementation and the duty of Parties, and may be very specific, in terms of providing standard operating procedures for certain issues. The Review of Significant Trade is contained in one of these resolutions, and has been drafted to provide guidance on the duties of Parties vis-à-vis Article IV implementation.

Decisions are pointed, specific and time-bound activities that are specifically directed (i.e. to Parties, the Secretariat, the Standing Committee, etc.). Most Decisions are reviewed at each CoP in order to assess whether or not they have been implemented and can therefore be “deleted” by the Secretariat. The division between Resolutions and Decisions provides a streamlined system whereby long-term guidance and short-term actions are clearly

²⁵⁰ UNEP-WCMC, personal communication, 19 August 2010.

distinguished, which ensures that the functioning of CITES is not impeded by redundant or outdated directives.

The extent to which these commitments are binding or hortatory varies among CITES documents. The text of the Convention states that the subject (e.g. Parties, the Secretariat, the provisions of the Convention, etc.) “shall” (or “shall not”) undertake a specific action. Use of this language implies commitments that are binding. The operative language used in Resolutions – including Resolution Conf. 12.8 (Rev. CoP13) – is varied. Some Resolutions use operative words such as “directs” or “instructs”, which imply clear obligations that must be fulfilled. However, the language most used in Resolutions is more of a prodding nature, with extensive use of words such as “recommends”, “urges”, “encourages”, and “notes”. The elements of the Resolutions that start with this language are therefore requests – as opposed to requirements – for any action.

The variation in language is the same for Decisions: the language ranges from use of the obligatory “shall”, to entreaties such as “should”, “is encouraged to”, and “may”. Out of 160 Decisions still valid following CoP14 in 2007, approximately 65% use binding language. The remaining 35% use words such as “should”, “is encouraged to”, “are invited to”, and “are called upon”.²⁵¹ What is most notable is that in the vast majority of cases, binding language is directed to the Secretariat, Standing Committee, or the Scientific Committees, while hortatory language is directed at the Parties.

The actual impact of this depends on the subject of the Decision. Decisions directed at the Parties are in fact intended to be non-binding, and so in most cases are drafted with hortatory language. Yet, despite the variation in language used in Decisions, all Decisions are deemed to be binding.²⁵² Even if a Decision states that a task “should” be undertaken, the relevant body treats the Decision as obligatory. There are no penalties for not carrying out these tasks, though this must be reported back to the CoP.

²⁵¹ Textual analysis conducted by author of thesis.

²⁵² CITES Secretariat, personal communication, 16 October 2007.

The result of this system is that while the official bodies of the Convention are accountable for their actions and therefore endeavour to fulfil their commitments, there are minimal requirements for Parties.

Robust Secretariat

3: Is the Secretariat adequately staffed?

Stipulations for the establishment of the Secretariat are outlined in Article XII of the Convention. While the Article does not provide any detail in terms of the size, structure or operation of the Secretariat, Paragraph 2 specifies its nine functions. In brief, these functions are:

- arranging and servicing meetings of the Parties;
- performing functions outlined under Articles XV and XVI (i.e. Amendments to the Appendices);
- undertaking scientific and technical studies;
- studying reports of the Parties and getting further information from Parties as necessary;
- inviting the attention of Parties to aims of the Convention;
- publishing and distributing to Parties current editions of the Appendices and other information that will help with species identification;
- preparing annual reports on its work and on implementation of the Convention;
- making recommendations for implementation of the Convention; and
- performing other functions that may be entrusted to it.

Additional functions are assigned to the Secretariat through the adoption of Resolutions and Decisions. While there has been no comprehensive assessment of the Secretariat thus far, various researchers have made observations on its strong and effective role.²⁵³

However, not all view this role as appropriate.²⁵⁴ For example, Reeve described past controversies involving the Secretariat and its staff, including: accusations that the Secretariat was biased in the ivory trade dispute and it had played “a questionable role in the 1986 registration of large quantities of ivory”²⁵⁵; questionable sources of external

²⁵³ See Thomas Gehring and Eva Ruffing (2008). “When Arguments Prevail Over Power: The CITES Procedure for the Listing of Endangered Species”, *Global Environmental Politics* Volume 8:2, p. 123-148; Lyster (1996); and the ERM assessment (1996).

²⁵⁴ Reeve (2002).

²⁵⁵ *Ibid.*, p. 259.

funding between 1994 and 1999²⁵⁶; and the political nature of its assessment of species listing proposals.²⁵⁷

Looking strictly at the research question, an assessment of staffing adequacy is complicated. There is no standard by which one can assess staffing levels. Comparison of staffing of the Secretariats of other MEAs does not provide much enlightenment. The Secretariats vary in size, from less than 20 (Ozone Secretariat – 17 staff members) to over 100 (Framework Convention on Climate Change). The other biodiversity-related conventions vary too: the Convention on Migratory Species has about 20 staff members, while the Convention on Biological Diversity has about 90 staff members.²⁵⁸

Nonetheless, there are some observations that can be made. First, the CITES Secretariat's staff levels have been declining over the past five years. Whereas in 2005 the Secretariat had approximately 34 staff members, it currently has 26. A number of vacancies have not been filled – and will not be filled – due to budget cuts. While this represents a reduction of more than 20%, the work of the Secretariat has not decreased by this amount. Indeed, as the Convention continually attracts new Parties, and as issues get more complicated, the work of the Secretariat increases. Regardless of the absolute numbers, this reduction in staff may present serious capacity issues.

In terms of the Review process, the staff component dedicates a considerable amount of time to this task. A 2006 workplan of the unit within CITES that oversees the Review process (i.e. the Scientific Support Unit) indicates that out of 1074 person-days of work, the Review process is allotted 177 days.²⁵⁹ This amounts to approximately 16% of the total amount of working days. The Review process is one of 54 overarching tasks assigned to the Scientific Support Unit, so this represents a significant proportion.

Participation: Membership

4: Is membership widespread?

²⁵⁶ Ibid., p. 262.

²⁵⁷ Ibid., p. 264.

²⁵⁸ Information based on desk-based research by the author in February 2009.

²⁵⁹ This document was provided by the Chief of the Scientific Support Unit while the author was based at the CITES Secretariat in August-October 2006.

Looking at CITES as a regime, participation can be assessed in a number of ways. The starting point of many evaluations is: How many Parties are there? Table 6.1 below gives an indication of the membership of CITES (as of August 2010 and organised by official CITES geographic region) and trends over the years.

Table 6.1: Number of Parties by region and year

Region	As of end-1975	As of end-1985	As of end-1995	As of Aug. 2010	TOTAL
Africa	8	23	15	6	52
Asia	1	14	5	14	34
Central and South America and the Caribbean	6	15	7	3	31
Europe	3	15	11	18	46
North America	2		1		3
Oceania	1	1	2	4	8
<i>Subtotal</i>	<i>21</i>	<i>68</i>	<i>41</i>	<i>43</i>	
TOTAL	21	89	130	175	175

By the end of 1975, the year in which CITES was negotiated and agreed, there were 21 Parties with representation from all geographic regions. Membership increased fourfold over the next decade, with the biggest jump in membership coming from the Asia region. Membership from Europe has been increased steadily as new countries emerge from processes of political evolution. There are now 175 Parties to CITES, and the website lists only 24 non-Parties, which represents nearly 91% coverage (i.e. of 192 UN countries).²⁶⁰ Of most significance is the fact that the most important wildlife-producing and wildlife-consuming countries are Parties to the Convention, described in more detail in the next section.

Membership: Developing country participation

5: Are developing countries well-represented?

Another benchmark by which to assess membership to CITES is the range of developing country Parties, which tend to be the producer (as opposed to consumer) countries of wildlife products. Looking at designations such as “Megadiverse Countries” or countries with “Biodiversity Hotspots”, these tend to be developing countries as well.²⁶¹ Using the World Bank classification of countries described as “low income”, “lower middle

²⁶⁰ Most non-Parties are islands in the Oceania region. See footnote 381.

²⁶¹ See Mittermeier (1986) and Brooks *et al.* (2002).

income”, or “upper middle income” – i.e. all categories except for “high income” – the developing country membership of CITES is described below.²⁶²

Table 6.2: CITES membership – developing and emerging countries

World Bank Country Designation	Number as of August 2010	As percentage of total
Low income	48	27%
Lower middle income	45	26%
Upper middle income	37	21%
Subtotal	130	74%
<i>High income</i>	<i>45</i>	<i>26%</i>
TOTAL PARTIES	175	100%

With CITES membership at 175 Parties, the developing country contingent makes up about three-quarters of total membership. However, it is important to point out that developing country membership is not equivalent to developing country participation. Although developing countries make up three-quarters of the membership, is their participation in meetings and other CITES processes equivalent to this? This question is particularly germane to the Review of Significant Trade, as developing countries tend to be subject to the Review more often than developed countries.

A problem common to many international regimes is that developing countries may not have adequate funding to send delegates to the multitude of meetings that take place throughout the year. Moreover, even if countries can send representation, in many cases there are too few delegates to cover the various committees and working groups that may be formed at these meetings. Recognising this challenge for developing country Parties, the CITES Secretariat has – since 1986 – operated the Sponsored Delegates Project to increase developing country representation and participation at meetings of the CoP. The Secretariat solicits funds from various countries and organisations to support the costs of developing country delegate attendance.

Another indicator of how well developing countries can participate in CITES’ meetings is the size of their delegation. CITES CoPs are divided into two Committees that operate

²⁶² For more on the World Bank classification system, go to: <http://data.worldbank.org/about/country-classifications>. Accessed on 20 August 2010. According to the website, economies are divided according to 2007 GNI per capita, calculated using the World Bank Atlas method. Low income is considered GNI per capita of \$935 or less; lower middle income, \$936 - \$3705; upper middle income, \$3706 - \$11,455; and high income, \$11,456 or more.

concurrently for the majority of the two-week meeting period. Therefore, it is important that delegations have at least two people in order to be properly represented. Given that the most mega-diverse countries are developing countries, their full representation at CoP meetings is essential for equitable and balanced outcomes. The table below illustrates trends in the size of delegations to CoP meetings since CoP11 in 2000.

Table 6.3: Trends in delegation size

COP	Lower income		Lower middle income		Upper middle income		Totals	
	1 person	2 or more	1 person	2 or more	1 person	2 or more	Total 1 person	Total as %age
CoP11 (2000)	1	38	2	30	0	28	3	3%
CoP12 (2002)	14	21	7	27	3	25	24	33%
CoP13 (2004)	10	31	7	31	4	27	21	24%
CoP14 (2007)	8	33	2	34	3	26	13	14%
CoP15 (2010)	10	25	12	27	7	31	29	35%

The ratio of single person delegations at CoP11 was low (3%). This may be explained by the fact that the meeting was held in Nairobi, Kenya. UNEP headquarters are located in Nairobi, so most countries have a permanent mission there (or another form of permanent presence, such as an embassy or consulate). Consequently, providing adequate representation at meetings in Nairobi is relatively easy and inexpensive, even for developing countries.

From CoP12 onward, the number of single-person delegations as a percentage of the total steadily decreased until CoP15. While 33% of developing country delegations consisted of a single person at CoP12 in 2002, by CoP14 in 2007, only 14% of developing countries had one-person delegations. However, the percentage jumped to 35% for CoP15 in 2010. This is most likely due to the location of the meeting in Doha, Qatar: the costs of flights and accommodation to this city are exorbitant, which may have restricted the number of people on delegations.

Participation: Stakeholder participation

6: Can and do stakeholders participate in meetings?

Another measure by which to assess CITES participation is the participation in CITES' processes by various stakeholders. The Convention is very clear about stakeholder engagement: Article XII explicitly states that the Secretariat may be assisted by NGOs or

other agencies as appropriate. Accordingly, there is an active “epistemic community”²⁶³ in the CITES regime. This community is comprised of a wide range of actors, from environmental organisations to wildlife trade associations. The participation and engagement of these stakeholders is particularly important with the Review process because of the expertise and knowledge they have about species under review.

One method of assessing the participation of these stakeholders is to examine their representation at various CITES meetings. The nature of participation at CITES meetings is governed by Party or observer status. Under the CITES regime, observers comprise international organisations, international NGOs, and national NGOs (including environmental advocacy groups, consumer organisations, trade associations, etc.).

The tables below illustrate the extent of observer attendance at Animals Committee, Standing Committee, and CoP meetings (for which participant information was available).

Table 6.4: Animals Committee observers

AC Meeting	Year	Total Participants	Total Observers	Observers as %age
AC18	2002	116	42	36%
AC19	2003	142	51	36%
AC20	2004	134	41	31%
AC21	2005	128	36	28%
AC22	2006	163	50	31%
AC23	2008	164	53	32%
AC24	2009	149	45	30%
<i>Average</i>		<i>137</i>	<i>44</i>	<i>32%</i>

Table 6.5: Standing Committee observers

SC Meeting	Year	Total Participants	Total Observers	Observers as %age
SC50	2004	208	36	17%
SC53	2005	185	31	17%
SC54	2006	257	59	23%
SC57	2008	255	60	24%
<i>Average</i>		<i>217</i>	<i>42</i>	<i>19%</i>

²⁶³ The term is used in the same sense as Peter M. Haas, whereby an epistemic community is defined as a network of professionals or knowledge-based experts with recognised competence or an authoritative claim to policy-relevant knowledge in a particular domain or issue-area. See Peter M. Haas (1989). "Do Regimes Matter? Epistemic Communities and Mediterranean Pollution Control," *International Organization*. Volume 43:3, p. 377-403.

Table 6.6: Conference of the Parties observers

CoP	Year	Total Participants	Total Observers	Observers as %age
CoP11	2000	1238	449	36%
CoP12	2002	1129	414	37%
CoP13	2004	1138	339	30%
CoP14	2007	1248	403	32%
CoP15	2010	1188	350	29%
<i>Average</i>		1188	401	34%

The range in attendance by observers at CITES meetings is quite wide – from 17% (SC50 and SC53) to 37% (CoP12). Although absolute numbers of participants and observers have fluctuated considerably over the years, figures in the last column suggest that the proportion of observers has decreased at the Animals Committee and CoP meetings, and has increased at the Standing Committee meetings. There are a number of explanations as to why decreases at the Animals Committee and CoP meetings may be the case. It may simply be that the absolute number of Parties attending these meetings is increasing. Membership to CITES is continuously growing, and therefore attendance from Parties will also increase. Another explanation may be that Parties are sending bigger delegations, - leading to an increase in absolute numbers of Party delegates – though observer delegations are remaining the same. It may also be that like-minded organisations are consolidating their representation, and sending fewer participants to speak on their collective behalf. For example, the Species Survival Network is a coalition of over eighty NGOs working on wildlife trade as it relates to CITES operation. NGOs that are members of the Species Survival Network may choose not to attend a meeting and allow the Network to speak on their behalf. Lastly, given the rise in observer attendance at the most recent Standing Committee meeting, it could be that observers are prioritising attendance at these meetings.

Accordingly, decreased attendance does not necessarily mean decreased participation. If more observers are consolidating their representation into coalitions, participation and input into the process will remain the same. Nevertheless, the effect from decreased ratios of observers at the Animals Committee and CoP meetings – and the impact on CITES processes such as the Review of Significant Trade – requires further study.

Information availability

7: *Are materials and documents readily accessible?*

The Convention contains specific provisions regarding meeting documentation. For example, the Rules of Procedure for the Animals Committee stipulate that any documents to be considered by the Committee must be submitted 75 days before the start of the meeting. There are similar provisions for documents for the Standing Committee and the CoP. These deadlines exist so the Secretariat can have the documents translated into the official languages and distributed to Parties and Committee members in due time to be reviewed before the meetings.

An extensive range of documents are also kept on the CITES website. These include:

- CoP meetings dating back to 1992 (CoP8)
- Standing Committee meetings back to 1992 (SC28)
- Animals Committee meetings back to 1995 (AC12)
- Plants Committee meetings back to 1999 (PC9)

The website also maintains other materials such as, *inter alia*: currently valid Resolutions, as well as those adopted since 1992 (CoP8); currently valid Decisions, as well as those adopted since 1994 (CoP9); various species and trade databases; various guideline documents; and official Notifications to the Parties. The Secretariat has also, when necessary, sent documents and materials in hard copy to Parties when requested.

While all official documents relevant to the Review process are publicly available, there are some materials that are not distributed to Parties. For example, materials that are not available include those sent directly to the Secretariat (other than trade data received as part of reporting requirements), and correspondence between the Secretariat and Parties. However, at times these are distributed. For example, if Parties are requested to provide species information under the Review of Significant Trade process, responses may be circulated at Animals Committee meetings for perusal by participants. In general, however, most documents of this nature remain at the Secretariat offices in Geneva.

Scientific input

8: Are there mechanisms for scientific input?

There are numerous mechanisms for scientific input to CITES processes. The most official mechanism is through the Scientific Committees, of which there are three: the Animals Committee, the Plants Committee, and the Nomenclature Committee. The

Animals and Plants Committees are comprised of regional representatives, who tend to be technically knowledgeable government representatives with scientific backgrounds. The Nomenclature Committee is comprised of two individuals – one zoologist to address nomenclatural issues for animal taxa and one botanist for plant taxa.

Moreover, the mechanisms that exist for stakeholder participation also augment the level and quality of scientific input into CITES processes. The range of stakeholders who participate and contribute at CITES meetings ensure that a diverse range of views and information are fed into the system. Indeed, Peter Sand, in his 1996 evaluation of CITES, observed that cooperation with the NGO network “has not only given CITES a high degree of transparency, but has also facilitated one of the best operational information sources available to any environmental treaty.”²⁶⁴ While there is often disagreement as to the nature or veracity of information that may be presented (for example, conservation-oriented NGOs and trade promotion organisations may have conflicting data), the CITES system supports and encourages input from all perspectives.

The nature and extent of scientific input into the Animals/Plants Committees is essential for the proper functioning of the Review of Significant Trade process. Although Resolution Conf. 12.8 (Rev. CoP13) only provides for the input of scientific advice provided by actual Committee members, in practice the other scientific experts (i.e. that of observers) is a component of the Review. At each Animals and Plants Committee, a working group is established to discuss the reviews underway. Observers with extensive species knowledge actively participate in the group. Observers can not be part of any formal decision-making, but their expertise influences the proceedings and outcomes.

Review and compliance mechanisms

9: Are there clearly stated provisions for regular or special reviews of the Convention, in addition to the Review of Significant Trade process?

While the text of the Convention itself does not contain any specific provisions for reviews, they are an integral part of CITES’ operations. For example, at any given Conference of the Parties, a considerable amount of time is spent reviewing Resolutions and Decisions that have emerged from previous meetings. As mentioned earlier, these

²⁶⁴ Sand (1996), p. 49.

Resolutions and Decisions are an essential element of implementation, and regular reviews ensure that guidance (from Resolutions) is still relevant and specific activities (from Decisions) have taken place.

Other types of regular review that also occur under CITES are those regarding implementation and compliance. In terms of implementation, there is a system of evaluating national legislation to ensure the Parties are promulgating adequate controls vis-à-vis the Convention. Two elements of compliance are germane in this regard: submission of annual reports and establishment of national focal points. The reviews of these aspects of implementation and compliance are discussed in detail later.

There have been a number of special reviews (i.e. those outside of what is required under the text of the Convention) that have taken place in the CITES realm. More than twenty years after CITES entered into force, a self-commissioned evaluation by the consulting group Environmental Resources Management (ERM) was undertaken. Many of the recommendations become official Decisions, such as those related to: creation of a Strategic Plan; pursuit of an agreement with the CBD; and simplification of the numbering system for official documents.²⁶⁵ These various Decisions were implemented in the years following the result of the special review.

A more recent example is the national wildlife trade policy review exercise that is currently underway. This review process is looking at CITES implementation from a wider policy perspective by examining the role of national wildlife trade policies and how they impact CITES implementation and effectiveness. The idea is to assess wildlife trade from a multidisciplinary perspective, recognising that there are various dimensions and influences on wildlife management and conservation. The project is in its pilot phase, with an evaluation of four countries (Madagascar, Nicaragua, Viet Nam, Uganda) having been completed as of end-2010.²⁶⁶

²⁶⁵ A number of official CITES documents refer to the outcomes of the evaluation. See for example, CITES Secretariat (2000). *Action Plan to Improve the Effectiveness of the Convention*. CoP11, Doc. 11.12.1.

²⁶⁶ Only Madagascar is considered a “Megadiverse Country” (see section on Membership), but the other countries are major wildlife exporters.

One of the reasons that CITES is viewed as one of the more effective environmental agreements is because it has mechanisms in place for compliance. Raustiala observed that, “the convention has gone the furthest of the MEAs surveyed in this report in using an enforcement approach to address non-compliance and implementation problems.”²⁶⁷ A number of compliance mechanisms exist within the CITES regime.²⁶⁸ Both Reeve and Raustiala have looked at the two primary compliance mechanisms operating under the Convention: trade suspensions and the Review of Significant Trade process.

Trade suspensions are used as a way of bringing Parties into alignment with obligations of the Convention. If a Party is found to be non-compliant with these obligations, the Secretariat makes a recommendation to other Parties to suspend trade (in CITES species) with that Party. Parties may be subject to a recommendation to suspend all CITES-related trade, to suspend only commercial CITES trade, or to suspend trade in a particular CITES species.

The obligations that are most relevant in this regard are those regarding: adequate national legislation; submission of annual reports; and recommendations under the Review of Significant Trade process. However, there are other instances in which countries may be subject to trade suspensions. For example, Nigeria was subject to a complete suspension in trade of CITES species on the basis of a lack of enforcement, and Gabon and Somalia are subject to trade suspensions because they have not responded to Secretariat requests for information toward the creation of an action plan to control trade in ivory.²⁶⁹

There are numerous successful past applications of trade suspensions in the CITES regime. Raustiala and Reeve gave the example of Bolivia: in 1985, CoP5 recommended that all Parties suspend trade with that country until it had demonstrated that it had adopted all necessary measures to implement CITES. Bolivia moved from non-compliance to compliance in 1987, and the trade suspension was lifted.²⁷⁰ Similar experiences with trade suspensions – and the move from non-compliance to compliance –

²⁶⁷ Raustiala (2001), p. 28.

²⁶⁸ For example, reporting requirements – however, because they are considered elsewhere in this report, this section will be confined to compliance mechanisms other than reporting.

²⁶⁹ See http://www.cites.org/eng/news/sundry/trade_suspension.shtml for a list of all countries subject to a recommendation to suspend trade.

²⁷⁰ See Raustiala (2001), p. 27 and Reeve (2002), p. 98.

also exist for Guyana, Thailand, and United Arab Emirates. Raustiala, in his evaluation of such compliance mechanisms across multilateral environmental agreements, has deemed this system “an effective deterrent and remedy.”²⁷¹

Review of Significant Trade process

The Review of Significant Trade process is a compliance mechanism directed to a specific aspect of CITES functioning. The Review process is a way to examine whether or not trade of Appendix-II species is occurring at non-detrimental (i.e. sustainable) levels. When trade of these species appears to be unsustainable (i.e. “significant”), actions are taken to mitigate the situation. The Review process has more conventionally been viewed as a ‘safety net’ for CITES functioning; it is only relatively recently that it has been understood as an effective compliance mechanism.²⁷²

The Review of Significant Trade process has existed in some format since the early 1980s. It has had a number of iterations, and during its evolution, the steps in the process have become more formalised. Table 6.7 gives an indication of what taxa have been examined under the process. Early groups of species reviewed were called “phases”; later, the groups of species were identified by when they were selected for review (i.e. following CoP meetings).

Table 6.7: Total number of animal species reviewed by higher taxa

Note: some species reviewed twice

Taxa	Phase I	Phase II	Phase III	Phase IV	Post CoP11	Post CoP12	Post CoP13	Post CoP14	Total
Amphibia	2			7			15	1	25
Arthropoda		8		4					12
Aves	13	53	8	11		4			89
Mammalia	7		3	17	4		1	1	33
Mollusca		22	10		1	6			39
Pisces					14				14
Reptilia	5	97	3	9	5	10	1	23	153
TOTAL	27	180	24	48	24	20	17	25	365

²⁷¹ Raustiala (2001), p. 27.

²⁷² Reeve devoted a chapter of her 2002 book on CITES compliance to the Review process. A personal discussion with a staff member from the Legal Affairs Unit in 2005 indicated their interest in the Review process as a compliance mechanism burgeoned only in the past few years. CITES Secretariat, personal communication, 2 June 2005.

The primary compliance response under the Review process is the use of recommendations to address what is deemed to be significant (i.e. unsustainable) trade. Recommendations issued under the process vary considerably. Most recommendations have involved submission of information to the Secretariat to elucidate the conditions surrounding trade in the species implicated, such as the existence of harvest or export controls, or other conservation measures. Other recommendations have been for specific action, such as setting export quotas, establishing population-monitoring schemes, or initiating population surveys.

Technical/financial assistance

10: Are there technical/financial assistance and/or capacity-building opportunities available for Parties?

A number of technical and financial assistance and capacity-building opportunities are available for Parties in the CITES regime. At the most basic level, the CITES Secretariat maintains a number of databases and registers that are useful for proper CITES implementation. There is a database containing comprehensive information about all species covered by CITES, as well as one with extensive records on the imports/exports of all CITES-listed species. In addition, the Secretariat maintains a number of registers that are also important for CITES implementation, such as those for: captive-breeding operations; registered scientific institutions; and nurseries.

Some of the most valuable resources the Secretariat provides are identification manuals. The main CITES identification manual consists of a series of data sheets for each species; each sheet has information about the species, distribution maps, and some have photographs. These are available electronically through the CITES website, or in hard copy if requested. The Secretariat also produces interactive (generally electronic) training materials for a number of purposes: currently there are training courses for Customs officials and for enforcement officers; an information module for the judiciary; an introductory e-course on CITES; as well as interactive training courses for both Management and Scientific Authorities. The most comprehensive guide to CITES (*The Evolution of CITES*), written by the Secretary-General and regularly updated, is now also available in e-book format.

Every year, numerous workshops are held to address specific CITES-related issues and to build capacity in different areas of CITES implementation. Workshops may be geared to address trade issues associated with particular species – previous workshops include those on sharks, queen conch, African elephant, sturgeon, big-leaf mahogany, and freshwater turtles and tortoises. Workshops may also be to assist countries or regions with particular issues.

Overall, capacity building is a significant element of Secretariat functioning. Indeed, direct capacity-building activities comprised about 8% of the total budget in 2007 and 12% of the total budget in 2008.²⁷³ Even where the capacity-building activity is not direct, there is usually some other underlying capacity-building component. For example, there is an element of capacity building in the compliance mechanisms (e.g. helping countries collect information, etc.), or with funding their participation at meetings.

Links to other regimes

11: Are there links to other related regimes?

CITES has links to related regimes, which are operationalised through Memorandums of Understanding (MOUs). The CITES Secretariat has signed a number of these MOUs with the Secretariats of other multilateral environmental agreements (such as the Convention on Biological Diversity and the Convention on Migratory Species), conservation organisations (such as the World Conservation Union – IUCN), and other related organisations (such as the Food and Agriculture Organisation, Interpol, and the World Customs Organisation).

These MOUs generally contain similar provisions, which refer to activities such as: sharing information; encouraging participation and representation at meetings; joint training opportunities; coordinating certain aspects of research; and establishing points of contact within the organisations. At times, specific tasks may emerge from these MOUs, for which both organisations are accountable.

²⁷³ 2007 figure calculated using information in a CITES report on expenditures in 2007 by category of service: <http://www.cites.org/eng/cop/15/doc/E15-06-02A01.pdf>. 2008 figure calculated using information in a CITES report on expenditures in 2008 by category of service: <http://www.cites.org/eng/cop/15/doc/E15-06-02A02.pdf>.

In addition, a Liaison Group of Biodiversity-related Conventions (known as the Biodiversity Liaison Group, or BLG) has been operational since 2004 to “explore opportunities for synergistic activities and increased coordination, and to exchange information.”²⁷⁴ The BLG meets regularly and is undertaking work such as exploring ways to harmonise and streamline national-level reporting and ways in which the scientific committees of the various conventions can collaborate on cross-cutting issues.

Flexibility for change

12: Are there provisions to allow for the evolution of the Convention?

Under CITES, there are three mechanisms by which flexibility can be exercised: through Resolutions, amendment of the Convention, and by lodging reservations. Resolutions were discussed in an earlier section, so are not covered here.

The Convention contains an article allowing for amendment (Article XVII). There have been two proposed changes to the Convention (one in 1979 to adopt financial provisions, the other in 1983 to allow accession by regional economic integration organisations, i.e. the European Union). However, the process is onerous and political, and not necessarily successful. The 1979 amendment was passed in 1987, and the 1983 amendment has not been accepted by enough Parties.

Establishing a system of reservations within a convention is viewed as providing the flexibility necessary to make accession more appealing to potential Parties.²⁷⁵ The use of reservations in the CITES regime is robust, and in many ways, is an essential component of the Convention. Under the CITES regime, Parties do not have to give a justification for the deposit of a reservation. Possible reasons for depositing reservations include: the Party disagrees with the listing on scientific grounds; the Party disagrees with the listing on the grounds that it will not be beneficial to species management; the Party believes that implementation would be impossible; the Party believes listing is incompatible with CITES’ role in endangered species conservation; or the Party is concerned about

²⁷⁴ See the CBD webpage on the BLG: <http://www.cbd.int/blg/>.

²⁷⁵ Sand (1992).

economic impacts of listing.²⁷⁶ As of October 2007, there were over 100 reservations deposited for the Convention. Approximately 55 of these were deposited for Appendix-I species, approximately 45 deposited for Appendix-II species, and nine reservations deposited for Appendix-III species. However, this inventory of reservations is dynamic; reservations for species can be withdrawn, so the list changes periodically.

Some more recent conventions have provisions that allow for the adoption of protocols. For example, Article 17 of the UN Framework Convention on Climate Change, and Article 28 of the Convention on Biological Diversity explicit allow for protocols, which have been adopted under each framework convention. The Convention for the Conservation of Migratory Species of Wild Animals was also designed as a framework convention; Article IV explicitly calls for species-focused agreements to be concluded by range States. CITES does not contain a provision for adoption of protocols, so this option can not be exercised. Inclusion of a provision to allow adoption of protocols would require amendment of CITES (pursuant to Article XVII) – as noted above, this process is onerous and not all amendments to date have been accepted.

6.3 Institutional analysis: national implementation

Promulgation of legislation

13: Have Parties fulfilled these requirements?

Legislative requirements are clearly stated in a number of Articles of the Convention, and are clarified in numerous Resolutions. The extent to which Parties have fulfilled these commitments varies considerably, and has been examined under the auspices of a CITES initiative to bring all Parties into alignment with CITES legislative requirements. The National Legislation Project was established in 1992, and since then, has regularly been assessing implementation by Parties. The Project focuses on four elements of legislation: prohibition of trade; penalisation of trade; confiscation of species; and the designation of Management and Scientific Authorities. The designation of Management and Scientific Authorities is discussed in more detail later.

²⁷⁶ CITES Secretariat, personal communication, 18 September 2007.

Initially, the National Legislation Project operated by selecting a sample of Parties and undertaking an assessment of their legislation. Now the legislation of all Parties is examined and categorised. Three categories were designated based on the extent to which Parties had enacted legislation pertaining to CITES:

Category 1: Legislation is believed generally to meet the requirements for the implementation of CITES;

Category 2: Legislation is believed generally not to meet all requirements for the implementation of CITES; and

Category 3: Legislation is believed generally not to meet the requirements for the implementation of CITES.²⁷⁷

Table 6.8 provides an overview of the relative proportions of Parties falling into each category.

Table 6.8: CITES National Legislation Project (as of June 2007)

	Category 1 (as %age)	Category 2 (as %age)	Category 3 (as %age)	Pending/ Under review (as %age)	Total in project	Total Parties
CoP8-CoP9 (1992-1994)	15 (19%)	39 (48%)	27 (33%)		81	128
CoP9-CoP10 (1994-1997)	9 (21%)	15 (34%)	20 (45%)		44	139
CoP10-CoP11 (1997-2000)			18 (100%)		18	151
SYSTEM CHANGED AT CoP11						
CoP11 overview (April 2000)	37 (25%)	52 (36%)	47 (32%)	10 (7%)	146	151
CoP12 Doc. 28 (Nov 2002)	45 (28%)	44 (28%)	46 (29%)	23 (15%)	158	159
CoP13 Doc. 22 (Oct 2004)	57 (35%)	51 (31%)	43 (26%)	14 (8%)	165	165
CoP14 Doc. 24 (June 2007)	76 (45%)	52 (31%)	37 (22%)	4 (2%)	169	169
CoP15 Doc. 20 (March 2010)	85 (49%)	49 (28%)	40 (23%)	1 (negl.)	175	175

Not only does the National Legislation Project function as an effective mechanism by which compliance with the Convention can be measured, but while assessing Parties' legislation, the Secretariat also assists non-compliant Parties when requested. The Secretariat can assist Parties by helping them draft or revise legislation, as well as by providing guidance documents, sample legislation, written comments, or advice. The

²⁷⁷ CITES Secretariat (June 1997). *National Laws for Implementation of the Convention*. CoP10, Doc. 31 (Rev.).

Secretariat can also undertake country missions and workshops to assist in this regard. Reeve (2006) has studied the National Legislation Project through her examinations of compliance within the CITES regime, and concluded that the Project “provides a particularly good example of the effectiveness of technical assistance backed by sanctions.”²⁷⁸ Nonetheless, as the numbers in Table 6.8 indicate, there are currently only about half of CITES Parties in Category 1 of the National Legislation Project. Yet, in both absolute and relative terms, the number of Parties in Category 1 is increasing. Given that legislation is the bedrock upon which CITES implementation is built, progress on this front is an essential element to improving effectiveness of the Convention.

Designation of focal points

14: Have Parties established national focal points?

Article IX of the Convention explicitly articulates the requirement for Parties to designate a Management Authority and a Scientific Authority. The Article states that at the time of accession, Parties must provide the name and address of the Management Authority at that time. Therefore, all current Parties to CITES have designated Management Authorities. However, there is no parallel requirement for designation of a Scientific Authority at the time of accession, which may explain why some countries have not established one. Nonetheless, the vast majority of Parties have established Scientific Authorities. As of October 2008, all but three Parties had done so; the only countries that had not were Cape Verde, Eritrea, and Montenegro. Montenegro was previously Party to CITES through Yugoslavia’s accession, and after that as Serbia and Montenegro. It only became Party to CITES on its own in early 2007, and it is probable that political transitions are still underway.

6.4 Institutional analysis: national compliance

Submission of reports

15: Have Parties fulfilled reporting requirements?

²⁷⁸ Reeve (2006), p. 895.

Submission of reports by Parties to CITES is an integral element of the obligations laid out in the Convention. Article VIII (paragraph 7) identifies the two types of reports to be submitted, as well as their periodicity. The Article states that each Party must submit to the Secretariat an annual report and a biennial report.

The importance of annual reports within the CITES regime has been observed by previous researchers and evaluations of CITES. While Raustiala acknowledged that “CITES has an extensive and well-functioning data gathering system,”²⁷⁹ Lyster (1996) was less enthusiastic: “The annual reports required of CITES parties, for example, are a useful source of information on wildlife trade, although the lack of reporting by some parties and deficient reporting by others mean that they are not as valuable as they could be.”²⁸⁰ Indeed, the Conference of the Parties in a Resolution on “National Reports” has recognised the “importance of the annual reports and biennial reports as the only available means of monitoring the implementation of the Convention and the level of international trade in specimens of species included in the Appendices.”²⁸¹

The CITES reporting system is constantly evolving, and additional guidance on the submission of annual reports has been provided through various Resolutions. The Secretariat has been encouraging new initiatives that ease the submission and analysis of national reports, such as promoting the use of electronic reports, standardised reporting formats, consistent deadlines, and coordinated annual and biennial reports. Table 6.9 provides information on the punctual submission of annual reports by CITES Parties.

Table 6.9: Submission of Annual Reports

Year	Total number of Parties at beginning of calendar year	Parties that submitted Reports by year deadline	Number of on-time reports as a %age	Reports still outstanding (2010)
2003	159	83	52%	10
2004	163	77	47%	12
2005	165	71	43%	7
2006	168	67	40%	19
2007	170	69	41%	21
2008	172	81	47%	50

²⁷⁹ Raustiala (2001), p. 25.

²⁸⁰ Lyster (1996), p. 208. In this regard, Phelps *et al.* (2010) called for “clear rules and progressive standards for data collection, analysis, and review” in CITES. Jacob Phelps, *et al.* (2010) “Boosting CITES”, in *Science*. (Volume 330: 24 December 2010, p. 752-753) 753.

²⁸¹ CITES Secretariat (2007). *National Reports*. Res. Conf. 11.17 (Rev. CoP14).

Despite the measures taken by the Secretariat to support and assist Parties and to make the annual reporting provisions as straightforward as possible, reporting trends are not promising. Indeed, the number of Parties that are submitting their reports on time has been decreasing every year since 2003. A Resolution has been agreed that has provisions for non-compliance mechanisms in this regard: Resolution Conf. 11.17 (Rev.CoP14) recommends that Parties suspend trade with any Party that has not submitted annual reports for three consecutive years without providing adequate justification. Currently there are two Parties that are subject to such a recommendation: Mauritania and Somalia.

Even though compliance seems to be decreasing, what is encouraging is that the vast majority of Parties do eventually submit their reports. Only 10 reports are outstanding from 2003, 12 from 2004, and nine from 2005. While this does make other processes within the CITES regime difficult (i.e. tabulating import/export figures for processes such as the Review of Significant Trade), it is clear that in fact, Parties tend to submit reports late, as opposed to not submitting them at all.

Payment of contributions

16. Have Parties made their required financial contributions?

Compliance was also measured by looking at whether or not Parties have made their required financial contributions to CITES. Table 6.10 provides an overview of payment of contributions by CITES Parties based on information included in documents submitted by the Secretariat at the last three Conference of the Parties.

Table 6.10: Payment of contributions

CoP	Year	Total Parties	Parties owing	Parties paid
CoP13	2004	157	76 (48%)	81 (52%)
CoP14	2007	166	77 (46%)	89 (54%)
CoP15	2010	173	89 (51%)	84 (49%)

The table indicates that the split of Parties owing for contributions and the Parties that have paid contributions is quite even throughout the years for which there are data available.

These data can be disaggregated by 113 country cases in the Review process.²⁸² Out of the 113 cases: there were 21 that fully paid their contributions in every CoP year calculation; there were 21 that owed funds in every CoP year calculation; and there were 71 that had a mix over the three CoPs. However, because a country could be implicated for multiple species, the number of cases does not represent the number of countries. Table 6.11 provides information on how many countries are represented in each case.

Table 6.11: Number of countries in each category of contribution payment

Category of contribution	Total cases	Countries represented
Nothing owed in every CoP calculation	21	10 (25%)
Funds owed in every CoP calculation	21	13 (32.5%)
Mix over the CoP calculations	71	17 (42.5%)
Total	113	40

Table 6.11 indicates that only 25% of Parties that were implicated in the Review process had fully paid their contributions in each of the CoP year calculations. The remaining 75% were either in full or partial arrears to the UN for these payments.

Response to recommendations

17. Have Parties in the Review process responded to recommendations?

Out of the 65 species in the Review process that were selected for overall analysis (see Appendix 3), 56 species received recommendations from the Animals Committee. Where recommendations were not formulated, sufficient information about the species was obtained by the Animals Committee in earlier stages that indicated that either trade was not significant or there were reasons explaining the significance (e.g. population increases, exports of captive-bred specimens, etc.). The Review process addresses exports from individual countries, and therefore recommendations are assigned individually. Accordingly, while there were 56 species that received recommendations, there were actually 69 ‘country cases’. To give an example, recommendations to address significant trade of *Psittacus erithacus* (African Grey Parrot) were formulated for five countries, which constitutes five cases for that one species. Table 6.12 provides information on:

²⁸² The number of country cases derives from the fact that there were 65 species examined in this evaluation. For some species, more than one country was included in Review, and so trade data were extracted for each one. With multiple countries for 65 species, there are 113 country cases included in this analysis (20 in Phase I, 74 in Phase II, and 19 in Phase III).

total number of birds in Phases I-III; birds included in sample; species that received recommendations from Animals Committee; total countries affected by recommendations; and in terms of responses, indefinite cases, cases pending, and those where countries have responded to the recommendations.

Table 6.12: Overview of responses to recommendations

Phase	Total birds in Phase	Total birds in sample	Total birds w/ recs	Country cases w/ recs	Indefinite cases	Cases still in process	Cases w/ response to recs
Phase I	13	14	11	15	2	1	12
Phase II	53	46	43	49	5	0	44
Phase III	8	7	2	5	1	0	4
<i>Total</i>	<i>74</i>	<i>65</i>	<i>56</i>	<i>69</i>	<i>8</i>	<i>1</i>	<i>60</i>

Looking at these 69 country cases, eight have indefinite information about the country's progress through the Review process. Although the countries were issued recommendations by the Animals Committee, there is no record of a response to the recommendations or subsequent action by the Animals or Standing Committees. Without this information, there is nothing to assess. With the Secretariat commissioning a system to track cases through the Review process, it is expected that incidents of indefinite progress will decline.

Also, within the 69 country cases, there is one where the species/country is still in the process: *Agapornis fischeri* (Fischer's Lovebird) from Tanzania. This species – included in Phase I – was subject to a trade restriction in April 1993.²⁸³ Therefore, out of the 69 country cases, there was a response to recommendations in 60 cases (87%), which are now considered out of the Review process. The average length of time (in months) that country cases were in the Review process varied between Phase I and Phases II and III. The average length of time in the process for country cases in Phase I was 65 months, whereas the average duration for Phases II and III was 49-50 months. However, the inclusion of *Agapornis fischeri* in Phase I (228 months) is skewing the results, which go down to 51 without this species.

What requires further analysis is the quality and veracity of responses to recommendations from Parties. While in most cases Parties were fairly quick in responding to the Secretariat

²⁸³ This trade suspension was still in place as of end-2010. See http://www.cites.org/eng/disc/trade_suspension.shtml.

with information to satisfy the recommendations, the nature of the information is not known. In many cases – particularly during earlier phases of the Review process – responses have been kept confidential. Recently responses have been circulated to scientific committee members, which makes for more transparent proceedings. Full disclosure of the responses to recommendations is necessary to answer questions like: Did Parties take the action they alleged? Is the information accurate? In addition, the criteria to assess responses are also unknown (for the earlier stages of the Review process). Because this study focuses on the first three phases of the Review process, an analysis of responses is not possible.²⁸⁴

Trade effects

18: Have trade levels of species in the Review been affected by the process?

Surprisingly, trade trends have only been included in a few of the previous assessments of CITES, and is hardly mentioned at all in the academic literature. In the handful of assessments that have included trade data (Wells and Barzdo 1991; Lyster 1996; BirdLife International 2006), it is only the BirdLife International study that provided detailed trade data. It must be borne in mind, however, that CITES only monitors and regulates legal trade in listed species. The use of permits as a monitoring mechanism encompasses only those specimens that are legally traded: smuggled specimens are not reflected in the trade data. Rough estimates of illegal trade in wildlife indicate the value at approximately USD 5-8 billion.²⁸⁵ Therefore, the data used by CITES in its processes may not be an accurate indication of the total amount of trade taking place. Nonetheless, an examination of trends in legal trade can be an important indicator of how well the Convention is being implemented at the national level.

For this study, trade trends for all 65 species were tabulated and analysed. For some species, more than one country was included in Review, and therefore trade data were extracted for each one, with a total of 113 country cases included in this analysis.

²⁸⁴ Some responses to recommendations issued in the first three phases were extracted from the CITES Secretariat archives, but not enough were assessed to provide insight into the overall nature of response quality for those phases.

²⁸⁵ UNEP (1998). Various organisations have estimated the total value of illegal trade in wildlife, but it is difficult to tabulate because of the nature of illegal commerce.

Export data were extracted from the UNEP-WCMC Global Trade Database, starting from the year when CITES coverage started, up until 2008. The data were disaggregated to include only wild and ranched specimens²⁸⁶, since harvesting of these has a direct impact on conservation status. In addition, the data were disaggregated so that only ‘bodies’ and ‘live’ specimens were included, as opposed to other forms, such as feathers or scientific samples. In general, very few other specimens were represented in the trade data, as live specimens tend to be exported for the pet trade.²⁸⁷

For the analysis, trade figures were extracted from the Database. The time-series trade data were divided into time blocks, which followed the trajectory of the species’ history on CITES.²⁸⁸ Most species followed a similar trajectory, with time blocks divided into: before Review; transition/during Review; after Review. In this sense, the ‘before Review’ time block establishes a counterfactual for the Review process.²⁸⁹ Some species needed additional blocks, such as: trade restriction (if one was recommended by the Standing Committee, as per the Review process); Appendix-I listing (in the event that the species was uplisted from Appendix II to Appendix I); and future selection (if a species was later selected for another phase). Allotting annual trade data into these segments provided a picture of export figures during each time block, and assessed as a whole, indicated longer-term trends.

Five different trade trends were identified:

²⁸⁶ Under CITES, ranched specimens are those that are taken from the wild as eggs or juveniles, and raised in a controlled environment. This is as opposed to captive-bred specimens, which are born and raised in a controlled environment. Analysis of the trends in captive-bred specimens is included in Chapter 8.

²⁸⁷ See Steven R. Beissinger (2001). “Trade of live wild birds: potentials, principles and practices of sustainable use” in *Conservation of Exploited Species*, edited by John D. Reynolds *et al.* Cambridge, UK: Cambridge University Press. He notes that legal trade data for birds intended for the pet trade can be underestimated, due to mortality that occurs during harvest and transport.

²⁸⁸ Using time segments as a method to assess trade patterns was also adopted by Rivalan *et al.* in their study of the impacts of uplisting on CITES. See Philippe Rivalan *et al.* (2007). “Can bans stimulate wildlife trade?”, *Nature*. Volume 447:31, p. 529-530.

²⁸⁹ For a discussion of counterfactuals as they relate to wildlife data, see Ronald B. Mitchell (2004). “Methodological Challenges in Evaluating the Effects of Wildlife Management Regimes”. Paper presented at the Christopher H. Browne Center for International Politics, University of Pennsylvania. 4 March 2004.

1. Steady: Trade levels remained stable before, during, and after the Review process.
2. Trade decrease: Trade in specimens decreased once the species was selected for review.
3. Trade increase: Trade in specimens increased once the species was selected for review.
4. Spike during transition: Trade in specimens increased once the species was selected for review, but then decreased after the country was out of the process.
5. Varied trend: Trade in specimens varied with no discernable pattern.

Table 6.13 indicates how trade trends varied among the country cases in each of the three phases covered in this analysis. Appendix 5 contains detailed trade information for the various species.

Table 6.13: Trade trends in the 113 country cases selected for analysis

	Steady	Trade decrease	Trade increase	Spike during transition	Varied trend	Total country cases
Phase I	1	15	3	1	0	20
Phase II	2	41	12	17	2	74
Phase III	1	11	5	2	0	19
Total	4	67	20	20	2	113

Looking at Table 6.13, the most striking observation was that nearly all cases indicated a change in the pattern of reported, legal trade (i.e. decrease/increase/spike). The timing of the change was associated with selection for the Review process (95% or 107 cases). This suggests that the Review process has had some sort of effect on trade trends in these Phases. What is also encouraging is that of the 107 cases where there was a visible change in trade patterns, the majority indicated a decline in trade (67 of 107, or about 63%). If one also considers the ‘spike during transition’ figure – which eventuates in a decline – this proportion goes up to 81% (87 cases). Less than 20% of the cases examined indicated an increase in trade after selection by the Review process.

Among the three phases, Phase I had a bigger proportion of trade decreases than the other two phases (75% cf. approximately 50%). Phase II had a much larger proportion of cases experience a trade spike during the transition phase (23% cf. 5-10%). These discrepancies may be related to the difference in the nature of recommendations that were formulated in each phase. In Phase I, virtually all recommendations included some element of trade or export control, such as establishing a moratorium or setting a quota. However, in Phases II and III, recommendations focused heavily on provision of information from the country to the Secretariat – for example, providing population data, providing information on the

basis of decision-making, etc. The higher number of trade decrease cases in Phase I and the provision of recommendations calling for export controls – as well as the converse case in Phases II and III – suggests that there could be a correlation between the nature of the recommendations and subsequent trade trends.

Interestingly, although many of the country cases in Phase II required information or other recommendations such as establishment of a management programme, in the majority of situations, countries responded to the Secretariat stating they had set a moratorium or a low/zero export quota. Even when export controls were not recommended, many countries still took this sort of action. This may help explain why so many country cases in Phase II had an increase in trade, and then a subsequent decline.

However, another factor suggests that there may not be any relationship between recommendations and trade trends. The high proportion of cases showing a trade decrease is the same whether or not the species/country was subject to recommendations by the Animals Committee. In the nine cases where recommendations were not issued, trade declined for every case.

There are some possible lines of explanation for why there is no difference between species that received recommendations and those that did not. First of all, the Review of Significant Trade process puts the spotlight onto certain species and countries. This additional attention may stem both demand and supply for the species in question. Another explanation could be that because the Review process is a compliance mechanism within CITES, countries may want to be seen to be immediately compliant by not importing/exporting species selected for review. Implementing export controls – even in the absence of such a recommendation – may be viewed as a proactive measure.

Deviant case analysis for trade trends

In order to ascertain the frequency and representativeness of trade trends seen for the birds selected from Phases I-III of the Review process, 32 other species were selected from the Review process (see Appendix 4 for an overview of these deviant cases). Eighteen of these species were in the Review process and went through the same procedures as the 65 bird species. However, 14 species that were screened for Phase III – but that were not

selected – are also included in this deviant case analysis. With multiple countries associated with some species, the number of country cases in the deviant analysis is 95. The trade trends for the deviant cases are presented below in Table 6.14.

Table 6.14: Deviant case analysis

	Steady	Trade decrease	Trade increase	Transition spike	Varied trend	Negligible specimens ²⁹⁰	Total cases
Phase I mammals	1	7	1		1	19	29
Phase II other species	2	1	1	1		3	8
Phase III other species	2	3	7			15	27
Phase IV species	4	2			4	4	14
Phase III – screened, not selected	2	3	3			9	17
Total	11 (11.7%)	16 (16.8%)	12 (12.6%)	1 (1%)	5 (5.3%)	50 (52.6%)	95

Looking at Table 6.14, some variances in trends between the bird species analysed and the deviant cases are evident. The foremost difference is that the percentage of species indicating a decrease in trade is much lower in the deviant cases. 59% of the species in the sample declined in trade, whereas the deviant cases only had about 17%. Even if the ‘negligible specimens’ cases are eliminated from the deviant cases (as they were from the analysed bird species), the proportion goes to 35%, which is almost half the amount of the sample.

With regard to cases that had steady or increased trade, the bird sample had 21% in these categories, whereas the deviant cases had 24%. Most of the deviant cases that increased in trade or maintained a steady level are represented by the “Phase III other species”, and in particular one species of chameleon (*Chamaeleo gracilis* – Graceful chameleon).

Overall, the variances between the species in the sample and the deviant cases would suggest that the Review process has some bearing on the trade levels of species, and may have particular bearing on bird species. Trade decreases are less pronounced in the deviant cases, even when ‘negligible specimen’ cases are eliminated. Although there are more

²⁹⁰ ‘Negligible specimens’ were eliminated from the Phase I-III bird sample (N=8, out of a total of 75 species), but were included in the deviant case analysis.

cases of increase trade in the deviant case selection, these can be accounted for by one species with numerous range states. Therefore, while there are some variations between the deviant cases and the bird species, they are explicable.

6.5 Overview of institutional effectiveness based on criteria

Using the analytical framework described in Chapter 3, it is possible to evaluate how effectiveness CITES has been in terms of its regime characteristics, national implementation, and national compliance. Table 6.15 below gives an overview of the criteria and the results of the evaluation.

Table 6.15: Overview of institutional effectiveness based on criteria

Criteria	Institutional effectiveness Based on criteria	Assessment	
Characteristics of regime functioning			
Clear rationale/objectives	1. YES the rationale/objectives and objectives are clearly stated and are measurable/quantifiable.	11/12 “yes” responses = Very effective	
Clear duties/obligations	2. YES the duties/obligations of Parties are clearly stated and are binding.		
Robust Secretariat	3. NO the Secretariat is not adequately staffed.		
Participation	<i>Membership</i> 4. YES membership is widespread and representative. <i>Developing country participation</i> 5. YES developing countries are well-represented. <i>Stakeholder participation</i> 6. YES there are specific provisions for stakeholder participation and stakeholders participate at meetings.		
Information availability	7. YES materials and documents are readily accessible.		
Scientific input	8. YES there are mechanisms for scientific input.		
Review and compliance mechanisms	9. YES there are clearly stated provisions for regular and special reviews of the Convention.		
Technical/financial assistance	10. YES there are technical/financial assistance and capacity-building opportunities available for Parties.		
Links to other regimes	11. YES there are links to other related regimes.		
Flexibility for change	12. YES there are provisions to allow for the evolution of the Convention and related processes.		
National implementation and compliance			
Promulgation of legislation	13. NO – 49% of Parties are in Category 1.		49% = Neutral
Designation of focal points	14. YES – All Parties have established Management Authorities. All but three Parties (i.e. 98%) have established Scientific Authorities.	All / 98% = Very effective	
Submission of reports	15. NO – Between 40-52% of Parties submitted their Annual Reports on time between 2003 and 2007. The trend is decreasing.	40-52% = Neutral	
Payment of contributions	16. NO – Only 25% of Parties had fully paid their contributions in the past three CoP year calculations.	25% - Somewhat ineffective	
Response to recommendations	17. YES – In 60 out of 69 cases (87%), Parties responded to recommendations issued by the Animals Committee.	87% = Very effective	
Trade effects	18. YES – Out of a total of 113 country cases, 81% (87 cases) indicated a decline in trade, either immediately or eventually.	81% = Very effective	

Given the Likert scale described in Chapter 3, the 11 “yes” responses (to the 12 questions regarding characteristics) suggest that for this element of institutional effectiveness, CITES can be considered to be “very effective”. The criteria, which were selected based on their use in previous assessments, refer to numerous aspects of regime functioning. The CITES regime may have highly effective institutional effectiveness in terms of its regime characteristics because it has been operating for over 35 years. This may have given the

regime time to improve its processes and address any problems. CITES has a good capacity (or flexibility) for change, and it has been exercised to a great extent over the past three decades: this has allowed it to adapt its policies and to better interpret the Convention when necessary. Moreover, the regime has been around long enough to design efficient assistance and capacity-building programmes, and also to foster good links with other regimes.

Looking at national implementation, the results of the evaluation are not as encouraging. The Secretariat's programme to assess implementing legislation is very thorough, and at the most recent count, only 49% of Parties met all of the requirements to implement CITES. On the Likert scale used for this evaluation, this would suggest that national implementation of CITES has been neither effective nor ineffective, but neutral. What is promising is that this rate is increasing, and at every CoP, the percentage of Parties that are in Category 1 is growing. At the current rate of increase, it will be at CoP17 (scheduled for 2016) that the percentage will be close to 80%. On the other hand, all Parties have established Management Authorities and virtually all Parties have established Scientific Authorities. This result is not surprising: it is a straightforward process to establish a Management or Scientific Authority and send that information to the Secretariat.

In terms of national compliance, the results of the evaluation are mixed. Despite a range of initiatives undertaken by the CITES Secretariat to facilitate the submission of annual reports, the number of Parties who submit their reports before the deadline is decreasing. Parties do end up submitting these reports, but they are generally late. Systems to accurately track imports and exports of wildlife are difficult to design, operate, and maintain. While the Secretariat has made the reporting system easier, it is not an easy process, even for well-resourced Parties.

Payment of financial contributions is also poor, with three-quarters of Parties in the Review process in some level of arrears. This rate of non-arrears is much higher than the overall rate for all CITES Parties (i.e. 48.6% in partial or full arrears, and 51.4% fully paid). The lower proportion of Parties in the Review process that have paid all annual

contributions may indicate that overall tendency to comply with Convention requirements is less for these Parties.

Looking at criteria and indicators specific to the Review process, the results are mixed. Although the response rate to recommendations was quite high (87%) – and under the Likert scale this reflects a “very effective” assessment – the analysis revealed that the nature of the responses is not clear. The scant information about the responses that is available suggests that the responses were ‘to the satisfaction’ of the Secretariat, but the content of the responses is unknown. Does satisfaction mean that the Secretariat received the response? Does it mean that all recommendations were fully implemented? While the response rate is good (especially compared with other response rates, such as those for submission of annual reports), the actual quality and veracity of responses can not be discerned without further analysis. Therefore, the “very effective” assessment should not be used as a reliable indicator.

On the other hand, export trends of species in the Review process strongly suggest that the Review process has a discernable influence on trade. In 107 of the 113 cases (95%), there was a visible change in trade patterns, regardless of increases or declines in trade (though in 67 cases, it was an immediate decline). There was an impact whether or not there were recommendations issued for the species, which may suggest that while the Review process has an effect, the recommendations may be less influential on the trade levels.

What is not clear is whether or not selection for Review or receipt of recommendations solves the problem, i.e. that countries ensure exports are non-detrimental to species. Indeed, most of the recommendations (particularly those in Phase I) do not address how countries are conducting non-detriment findings. Moreover, when countries have responded to recommendations by establishing a moratorium or low export quota, it is not evident this is because the non-detriment finding has been done, or to give the impression that it has been done.

Lastly, the trade trends are an indication of legal, reported trade in wild specimens. To get a better idea of the dynamic behind the changes in trade patterns that follow selection for the Review process, it is essential to look at other factors, such as trade in captive-bred

specimens, exports from other range States, as well as any indication of illegal trade. These factors will be examined in the chapter on intervening variables.

6.6 Conclusions

Based on the results of the evaluation, the conclusion that can be reached is that the CITES regime is generally effective (i.e. in terms of ranging from ‘neutral’ to ‘very effective’) in an institutional sense. It is clear that the more ‘international operational’ aspects of the regime – in terms of the Secretariat (albeit understaffed) and the various functions that exist at that level – function very effectively. The roles, duties, and objectives of all stakeholders in the regime are explicit, and at that institutional level, operations are very smooth. More than thirty years of operation has given the CITES apparatus adequate time to iron out major problems and improve its systems. The results of this assessment converge with those of previous evaluations of CITES, which have tended to focus on institutional elements of the regime. Looking strictly at these regime characteristics, it is easy to see why some researchers view CITES as a ‘flagship’ or ‘more successful’ of the MEAs.

A more meaningful but less encouraging picture of CITES emerges when national-level implementation and compliance are assessed. While there is an improving trend in terms of numbers of CITES Parties that are promulgating adequate domestic legislation, numbers are still low. Virtually all Parties have designated national focal points, but it is unclear how effective and active these focal points are (which requires further analysis). The proportion of Parties who submit annual reports on time is also low (and getting lower), though it is encouraging that data indicate Parties eventually submit their reports, albeit late. Rates of payment of financial contributions are also low, and many countries remain in arrears. Together, these results suggest that – from an institutional perspective – CITES as a whole is only partially effective. Operations at the international level (i.e. those related to Secretariat functioning and activities) can be deemed effective, but factors pertaining to national-level implementation and compliance suggest low effectiveness. Some of the previous assessments of CITES have alluded to this partial effectiveness (e.g. ERM, Sand, Curlier and Andresen), though most did not include extensive data to support their claims.

Mixed results also emerged from the evaluation of factors related specifically to the Review process. The analysis revealed that although response to recommendations is high, the quality of responses in the early phases of the Review is unknown. Therefore the ‘very effective’ assessment of this factor is qualified, and the nature of recommendations needs to be further investigated. Yet, trade trends indicate that the Review process has a strong and usually immediate effect on most species. Trade in species tends to decline when species are selected for Review, although the cause of this (i.e. from the supply or demand side of trade) is unknown. This outcome is surprising, given the partial effectiveness of related factors. If promulgation of legislation, submission of annual reports, and payment of contributions are so varied among Parties, why would there be such strong impacts on trade itself? The trade aspect of institutional effectiveness is the most important in terms of CITES objectives. While the others provide indicators about a country’s implementation and compliance, this one has direct impact on species conservation. What does it mean if Parties are complying with this important aspect of CITES, but then not with others?

These mixed results complicate the analysis of overall effectiveness: regardless of the results from the assessment of ecological effectiveness, it will be challenging to discern the implications in terms of the relationship to institutional effectiveness. Nonetheless, the effectiveness of the key criterion (actual effects on trade in the species) provides a good basis for the next step in the framework. It is clear that there are direct effects on trade in the species, and the next step is to understand whether or not there are subsequent effects on species’ conservation status. What will need to be investigated in later chapters is how the ineffective elements of implementation and compliance interact with overall effectiveness and the role of intervening variables.

CHAPTER 7: ASSESSING ECOLOGICAL EFFECTIVENESS

7.1 Introduction

This chapter investigates whether or not ecological data can provide any additional insight into the overall effectiveness of the Review of Significant Trade process. Ecological data are used to assess the ecological effectiveness of the Review process, in terms of changes in conservation status of bird species included in the process. Conservation status (as assessed in the IUCN Red List) assesses extinction risk. Because it takes into account a number of factors such as population size, range and distribution in the context of threats and conservation actions, it provides a comprehensive indicator (cf. a measure such as population status). In theory, if trade is a primary threat to species listed on CITES, changes in trade trends that were identified and quantified in Chapter 6 should have a subsequent biophysical impact. In other words, if trade in the species has decreased, extinction risks should be lower and conservation status should improve. This would suggest that some ecological effectiveness has emerged from the partial institutional effectiveness of the Review process. Together, the institutional and ecological assessments should provide a meaningful picture of the overall effectiveness of the Review process.

The IUCN Red List system is discussed in the next section of the chapter. Following the discussion of the IUCN system is an overview of results of the analysis of changes in conservation status of the species selected for Review.

7.2 IUCN Red List Index as an indicator

One of the most commonly used and well-respected indicators of conservation status is the IUCN Red List Index.²⁹¹ The IUCN has been assessing species in the form of Red Lists or Red Data Books since 1963, though it is only in the last decade or so that the procedure for making these assessments has evolved into the powerful conservation tool it is now considered to be.

²⁹¹ See for example: Stuart H. M. Butchart, *et al.* (2004). "Measuring Global Trends in the Status of Biodiversity: Red List Indices for Birds," *PLoS Biology*. Volume 2:12. Accessed at [doi:10.1371/journal.pbio.0020383](https://doi.org/10.1371/journal.pbio.0020383) on 28 August 2008; John Lamoreux, *et al.* (2003). "Value of the IUCN Red List," *Trends in Ecology and Evolution*. Volume 18:5, p. 214-215; and A.S.L. Rodrigues, *et al.* (2006). "The value of the IUCN Red List for conservation," *Trends in Ecology and Evolution*. Volume 21:2, p. 71-76.

The criteria and categorisations of the Red List Index have not been static, and revisions aim to improve the procedure. The initial methodology for conducting assessments – which was employed for almost 30 years – was deemed to be subjective and not rigorous enough. Therefore, in 1984, deliberations and drafting of a more formalised set of criteria and categorisations started; this was completed in 1994.²⁹² This new process, while using the knowledge and skills of conservation and species experts, did not use opinions as the basis for categorisation. The assessment process was yet again improved and new criteria and categorisations were released in 2001 (Version 3.1), which is the version currently used.

Once species have been evaluated, there are eight categories under which they can be placed in the Red List Index. These categories range from Data Deficient to Extinct (see Figure 7.1). As the IUCN guidance on the Red List Index states, “a listing in a higher extinction risk category implies a higher expectation of extinction.”²⁹³ However, the guidelines also note that where species have not been evaluated or they have been deemed as “Data Deficient”, it should not be assumed that they are not threatened.

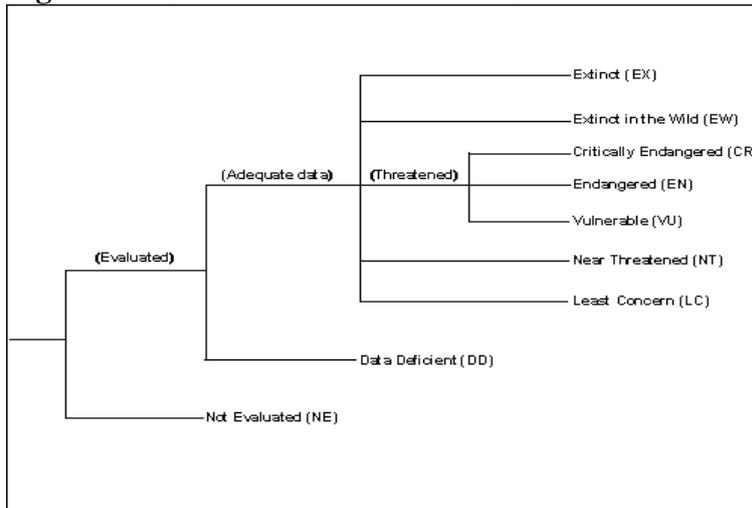
There are specific criteria that are used for the various categories in the Red List Index. These criteria are comprehensive and very complex, yet have been designed to handle the uncertainty that naturally occurs in scientific endeavours.²⁹⁴ Indeed, the Red List Index process has recommendations on how to handle different types of uncertainty, and recommends that when uncertainty is high, that species be categorised as Data Deficient. Assessments must also “be backed up by data, justifications, sources and estimates of uncertainty and data quality”, and are peer-reviewed by relevant Red List Authorities.²⁹⁵ These Red List Authorities are usually Species Specialist Groups, though BirdLife International is the authority for avian species.

²⁹² IUCN (1994). *IUCN Red List Categories*. Prepared by the IUCN Species Survival Commission. Gland, Switzerland: IUCN.

²⁹³ See IUCN Red List Index website.

²⁹⁴ Rodrigues *et al.* (2006), p. 71.

²⁹⁵ *Ibid.*

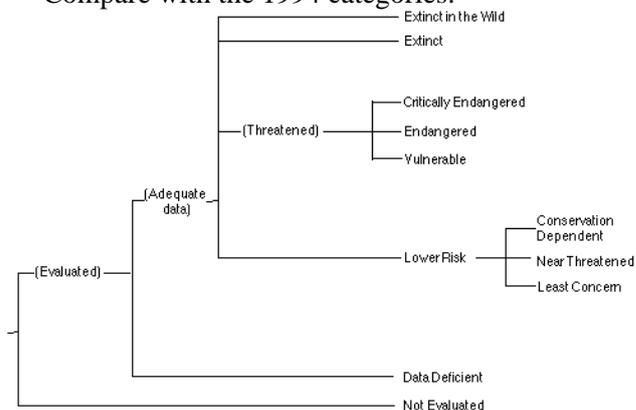
Figure 7.1: Structure of the 2001 IUCN Red List Index categories

Source: IUCN website (http://www.iucnredlist.org/info/categories_criteria2001)²⁹⁶

There are five primary criteria, and each has sub-criteria. How the criteria are applied varies depending on the categorisation of the species. In simple terms, the criteria relate to: the speed of reductions in population size; the range of the species, in terms of area of occupancy or the extent of occurrence; the number and rate of decline of mature individuals; and quantitative analysis regarding extinction risk (using tools such as population viability analyses).²⁹⁷ Definitions of the various terms (such as population, mature individuals, continuing decline, area of occupancy, etc.) are also given, to ensure assessors are working within the same parameters and with the same understanding of the science behind assessments. One benefit of the Red List system is that species assessments are not based only on population size, but a range of other relevant factors.

One newer and important element to the Red List Index is the description of threats to the species assessed. In the species assessments where threats have been analysed, a

²⁹⁶ Compare with the 1994 categories:



²⁹⁷ Based on information from Rodrigues *et al.* (2006) and the Red List Index website.

taxonomy exists to provide substance to this analysis. The taxonomy is based on 12 major categories, with additional levels providing detail about the threats in question. Figure 7.2 illustrates the first two levels of this taxonomy. International trade as a threat to species is included under the various subcategories included in the “Harvesting” (i.e. harvesting for international food trade, harvesting for international medicine trade, etc.).

Figure 7.2: Taxonomy of threats under the IUCN Red List Index²⁹⁸

<p>0. No Threats</p> <p>1. Habitat Loss/Degradation (human induced)</p> <ul style="list-style-type: none"> 1.1. Agriculture 1.2. Land mgmt of non-agricultural areas 1.3. Extraction 1.4. Infrastructure development 1.5. Invasive alien species (directly impacting habitat) 1.6. Change in native species dynamics (directly impacting habitat) 1.7. Fires 1.8. Other causes 1.9. Unknown causes <p>2. Invasive alien species (directly affecting the species)</p> <ul style="list-style-type: none"> 2.1. Competitors 2.2. Predators 2.3. Hybridizers 2.4. Pathogens/parasites 2.5. Other 2.6. Unknown <p>3. Harvesting [hunting/gathering]</p> <ul style="list-style-type: none"> 3.1. Food 3.2. Medicine 3.3. Fuel 3.4. Materials 3.5. Cultural/scientific/leisure activities 3.6. Other 3.7. Unknown <p>4. Accidental mortality</p> <ul style="list-style-type: none"> 4.1. Bycatch 4.2. Collision 4.3. Other 4.4. Unknown <p>5. Persecution</p> <ul style="list-style-type: none"> 5.1. Pest control 5.2. Other 5.3. Unknown <p>6. Pollution (affecting habitat and/or species)</p> <ul style="list-style-type: none"> 6.1. Atmospheric pollution 6.2. Land pollution 	<p>7. Natural disasters</p> <ul style="list-style-type: none"> 7.1. Drought 7.2. Storms/flooding 7.3. Temperature extremes 7.4. Wildfire 7.5. Volcanoes 7.6. Avalanches/landslides 7.7. Other 7.8. Unknown <p>8. Changes in native species dynamics</p> <ul style="list-style-type: none"> 8.1. Competitors 8.2. Predators 8.3. Prey/food base 8.4. Hybridizers 8.5. Pathogens/parasites 8.6. Mutualisms 8.7. Other 8.8. Unknown <p>9. Intrinsic Factors</p> <ul style="list-style-type: none"> 9.1. Limited dispersal 9.2. Poor recruitment/ reproduction/ regeneration 9.3. High juvenile mortality 9.4. Inbreeding 9.5. Low densities 9.6. Skewed sex ratios 9.7. Slow growth rates 9.8. Population fluctuations 9.9. Restricted range 9.10. Other 9.11. Unknown <p>10. Human disturbance</p> <ul style="list-style-type: none"> 10.1. Recreation/tourism 10.2. Research 10.3. War/civil unrest 10.4. Transport 10.5. Fire 10.6. Other 10.7. Unknown <p>11. Other</p> <p>12. Unknown</p>
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²⁹⁸ Adapted from the IUCN Red List Index Threat Classification Scheme (Version 2.1). See http://www.iucnredlist.org/info/major_threats. Accessed 28 August 2008. Note that some of these threats relate to intervening variables discussed in Chapter 8.

7.3 Weaknesses and criticisms of the IUCN Red List system

Mitchell (2004) has enumerated advantages and disadvantages to using population status as an indicator for the effectiveness of wildlife agreements.²⁹⁹ In terms of advantages, he suggested population status may correspond with explicit goals of the regime and can be “interpreted quite unambiguously.”³⁰⁰ He cited disadvantages such as lack of data availability and reliability, and other non-regime impacts on populations. Conservation status (in this case, as designated by the IUCN Red List) is a more nuanced indicator, in that it includes a range of factors that include, but are not exclusive to, population status.

Nonetheless, using the IUCN Red List for this research revealed some of its weaknesses for use in assessments of this type. First, not all species are included on the Red List, and therefore comparison among all CITES species was not possible. Second, the criteria and categories have changed since the inception of the list, so it was difficult to compare between different versions of the Red List. Third, some species have been assessed only once, and so it was not possible to obtain a sense of any conservation trend. Lastly, conservation status does not necessarily indicate the actual population trend of species. Many species had the same conservation status although their populations had declined (i.e. the rates of decline were not enough to warrant a change in conservation status).

At a more abstract level, some researchers have levelled criticism at the whole exercise of assessing species and habitats and designating them into threat categories. In their eyes, this exercise is pointless:

Those who have the simplistic and pretentious idea that we can save species and habitats simply by reporting accurately on their status and developing conservation plans are wrong. There are huge forces out there that are sweeping biodiversity away, and these forces are blind and deaf to our science.³⁰¹

These forces definitely exist, but arguably not all are completely ‘blind and deaf’ to science. Indeed, there would not be any environmental successes if this were the case.

²⁹⁹ Mitchell (2004).

³⁰⁰ *Ibid.*, p. 4.

³⁰¹ David Ehrenfeld (2000). “War and Peace and Conservation Biology,” *Conservation Biology*. Volume 14:1, p. 105-112.

Although it is evident that trade is a threat for many species, the magnitude and proportion of this threat are unclear. This makes assessing progress in addressing the threat difficult, and may necessitate the use of proxy data. For example, a common indicator of the success of conservation programmes (or conventions, such as CITES) is the population status of species.

However, as Beier has observed: “Threat reduction is usually a better measure of conservation success than population size...”³⁰² Hayward has advocated that IUCN put as much emphasis on listing and ranking threats, “...because conservation managers aiming to improve the status of biodiversity are likely to do this by addressing the threats in the IUCN Red List – as evidenced by the association of threats with conservation actions.”³⁰³ He noted that knowledge and understanding of threats has ‘lagged behind’ work on conservation status, and suggested that advanced threat models “could also categorize threats into species-, regional-, or population-level risks to inform conservation managers about their relative importance.”³⁰⁴ These are important steps that could further illuminate the magnitude and proportion of threats to species, and make the IUCN Red List more valuable as a tool for researchers.

Despite these issues, the IUCN Red List is the most comprehensive system available, and has evolved into one of the most well-regarded and useful tools available to researchers working on species decline issues.

7.4 Results

General comments on trends in conservation status

Species analysed for changes in conservation status were those that were reviewed in the first three phases and were not eliminated based on lack of Red List or trade data. The remaining 65 species were analysed based on their categorisations following Red List assessments.

³⁰² Paul Beier (2003). “Adaptive Management and SCB’s Evaluation of Species Recovery Plans,” in *Conservation Biology*. Volume 17:3, p. 653-655.

³⁰³ Matt W. Hayward (2009). “The Need to Rationalize and Prioritize Threatening Processes Used to Determine Threat Status in the IUCN Red List,” *Conservation Biology*. Volume 23:6, p. 1568-1576. See also Nick Salafsky *et al.* (2008). “A Standard Lexicon for Biodiversity Conservation: United Classifications of Threats and Actions”, in *Conservation Biology*. Volume 22:4, p 897-911.

³⁰⁴ *Ibid.*

All species were assessed starting from the baseline of the 1988 IUCN Red List assessment. It must be pointed out that the Red List criteria had not been formalised at that time, and they may vary from later/current categorisations. Therefore, the 1988 categories are considered to be more indicative and not necessarily as accurate as assessments in later years. Research was undertaken to eliminate species that had non-genuine changes in Red List category (e.g. due to new information); no species in the sample had changed category due to non-genuine reasons.³⁰⁵

The table below provides an overview of the frequency of Red List categorisations for the 65 bird species after the 1988, 1994 and 2008 assessments.

Table 7.1: Frequency of Red List categories for 65 bird species (1988 and 2004)

1988		1994 – Vers. 3.0		2008 – Vers. 3.1		Legend
LR/lc	52	LR/lc	44	LC	40	LR/lc or LC = Lower Risk / Least Concern
NT	5	LR/nt	12	NT	15	LR/nt or NT = Lower Risk / Near Threatened
TH	8	VU	6	VU	5	TH = Threatened
		EN	2	EN	3	VU = Vulnerable
		CR	1	CR	2	EN = Endangered
Total	65	Total	65	Total	65	CR = Critically Endangered

What can be seen from Table 7.1 is that in each assessment, the majority of species were placed in the category indicating a minimal risk of extinction (i.e. Lower Risk/Least Concern or Least Concern). In 1988, about 80% of species were considered Least Concern. By 1994, the percentage of species in the Least Concern category was 67%, and in 2008, 61% were assessed as Least Concern. Although the proportion of species in the Least Concern category has remained over 50%, it has decreased by about 20% over the twenty-year period. This suggests that more species are in higher risk categories with each assessment.

What is important for this research is the change in conservation status or Red List category. The table below illustrates movement in categories between the 1988 and 2008 assessments.

³⁰⁵ Information on non-genuine changes can be found on the IUCN and Birdlife International websites. See http://www.iucnredlist.org/documents/summarystatistics/2010_4RL_Stats_Table_7.pdf and http://www.birdlife.org/action/science/species/global_species_programme/whats_new.html. Accessed on 7 February 2011.

Table 7.2: Categorical movement of species between 1988 and 2008

RLI: 1988	2008: Version 3.1					Grand Total - 1988
	LC	NT	VU	EN	CR	
LR/lc	<i>40</i>	10	2			52
NT		<i>3</i>	1	1		5
TH		2	<i>2</i>	<i>2</i>	<i>2</i>	8
Grand Total - 2008	40	15	5	3	2	65

The categorisations from the 1988 assessment are in the green boxes (rows), whereas the categorisations from the 2008 assessment are in the orange boxes (columns). Intersections in the rows and columns indicate where species' conservation status remained the same. For example, looking at the 'Grand Total – 1988' column, there were 52 bird species categorised as Lower Risk/Least Concern (LR/lc). In 2008, there were 40 species categorised as Least Concern (see row 'Grand Total – 2008'). The intersection of these columns shows that all 40 of the species stayed in that category. Similarly, looking at the 'Grand Total – 1988' column, there were 5 bird species categorised as Near Threatened (NT). In 2008, there were 15 species categorised as Near Threatened (see row 'Grand Total – 2008'). The intersection of those columns shows that three of those species stayed in the same category.

With the data presented as they are, the following can be observed: species that maintained the same category; species that improved in conservation status; and species that declined. The species that are in bold italics stayed in the same category. The 1988 Threatened category encompasses three subcategories (Vulnerable, Endangered, and Critically Endangered), so these are all in bold italics in that row. In total, out of the 65 bird species, 75% (49 species) remained in the same Red List category.

The numbers above the bold italics 'line' indicate species that declined in conservation status. For example, the intersection of the 1988 Lower Risk/Least Concern row and the 2008 Near Threatened column indicates 10 species. This means that there were 10 species that declined from Lower Risk/Least Concern in 1988 to Near Threatened in 2008. Similarly, there were two species that declined from Lower Risk/Least Concern in 1988 to Vulnerable in 2008. Altogether, there were 14 species that declined between 1988 and 2008. The numbers below the bold italics 'line' indicate species that improved in conservation status. For example, the intersection of the 1988 Threatened row and the

2008 Near Threatened column indicates two species: these two improved between 1988 and 2008.

Unfortunately, the comparison between 1988 and 2008 does not tell us much about changes in the higher risk categories. The 1988 category Threatened encompasses the three subcategories, and the IUCN Red List website does not provide subcategorical information for the 1988 assessments. Therefore, where species have moved from Threatened in 1988 to a category such as Endangered in later years, it is not clear if that indicates a worsening conservation status.

Based on the data in Table 7.2, it can be surmised that although there were six species in the 1988 Threatened category (which encompasses the three subcategories), by the 2008 assessment there were 10 species in the combined categories of Vulnerable, Endangered and Critically Endangered. As percentages, this represents an increase from 9% in 1988 to about 16% in 2008: the proportion of species in these higher risk categories has increased.

Overall, between 1988 and 2008, there were two species that improved in conservation status, 14 that declined, and – without detailed knowledge of the movement within the Threatened category – 49 species that were assessed as the same. The species that improved and declined were:

The declines and improvements were as follows:

Decline from Lower Risk/least concern to Near Threatened

Phase I: *Agapornis fischeri* (Fischer's Lovebird), *Aratinga erythrogastris* (Red-masked Conure); *Psittacus erithacus* (African Grey Parrot)

Phase II: *Agapornis lilianae* (Lilian's Lovebird), *Agapornis personatus* (Masked Lovebird), *Aprosmictus jonquillaceus* (Olive-shouldered Parrot), *Phoenicopterus chilensis* (Chilean Flamingo), *Psittacula longicauda* (Long-tailed Parakeet), *Psittinus cyanurus* (Blue-rumped Parrot), *Tauraco fischeri* (Fischer's Turaco)

Decline from Lower Risk/Least Concern to Vulnerable:

Phase II: *Amazona finschi* (Lilac-crowned Amazon); *Forpus xanthops* (Yellow-faced Parrotlet)

Decline from Near Threatened to Vulnerable:

Phase II – *Eos cyanogenia* (Biak Red Lory)

Decline from Near Threatened to Endangered:

Phase II: *Lorius garrulus* (Chattering Lory)

Improve from Threatened to Near Threatened:

Phase I: *Cacatua goffini*³⁰⁶ (Goffin's Cockatoo); *Eos reticulata* (Blue-streaked Lory)

An alternate view of movement between categories is possible by looking at the data for the 1994 and 2008 assessments. The categories used in these two assessments are similar, so the data are more comparable. Table 7.3 below illustrates the trade data using the same format as Table 7.2.

Table 7.3: Categorical movement of species between 1994 and 2008

1994: Version 3.0	2008: Version 3.1					Grand Total - 1994
	LC	NT	VU	EN	CR	
LR/lc	39	5				44
LR/nt	1	9	1	1		12
VU		1	4	1		6
EN				1	1	2
CR					1	1
Grand Total - 2008	40	15	5	3	2	65

Looking at the data in Table 7.3, the tabulations indicate that more species stayed in the same category between 1994 and 2008 than between 1988 and 2008 (54 species, cf. 49 species as indicated in Table 7.2). At the same time, between 1994 and 2008 there were fewer species that declined (N=9) than in the 1988-2008 period (N=14).

Although Table 7.3 indicates the categorical movement of species between 1994 and 2008, it is of limited utility for this particular research. Trade data for species were analysed using time segments based on progress through the Review process (i.e. before, during, after Review process, etc.). Given that the 'before Review' time segment for all phases is prior to 1994, the comparison of 1994 and 2008 Red List assessments is not useful.

Trade trends and conservation status

Trade trends and conservation status will therefore be examined using the 1988 to 2008 period. Do the declines or improvements in Red List categories correlate to trade trends? What were the trade patterns of the species that experienced no change?

³⁰⁶ Now *Cacatua goffiniana*, but this paper will continue to use *Cacatua goffini* for consistency.

The two species that improved (*Cacatua goffini* and *Eos reticulata*) from Threatened to Near Threatened experienced declines in trade after the species was selected for the Review process. In the case of *Cacatua goffini*, the species was moved to Appendix I in June 1992 (soon after recommendations were sent to Indonesia), so the decline in trade could be due to increased trade restrictions from the uplisting.

Table 7.4 below outlines the trade trends for the fourteen species that declined in conservation status between 1988 and 2008.

Table 7.4: Frequency of trade trends in species with a decline in conservation status

Change in Red List category	Decrease	Spike during transition	Mix	Total
LR/lc to NT	7	2	1	10
LR/lc to VU	2			2
NT to VU	1			1
NT to EN	1			1
<i>Total</i>	<i>11</i>	<i>2</i>	<i>1</i>	<i>14</i>

The data show that 11 out of 14 species (79%) had a decline in both conservation status and trade trends. In other words, the decline in trade for these species does not appear to translate to improvement in conservation status. However, it must be pointed out that the sample sizes for the species that improved and declined are too small (N=2 and N=14, respectively) to make any definitive statements about the links to trade trends. The sample size of species with no change in conservation status is larger (N=49), which may provide more information about trade trends. Table 7.5 contains this information.

Table 7.5: Frequency of trade trends in species with no change in conservation status

Red List category	Decrease	Spike during transition	Increase	Mix	Steady	Total
LR/lc or LC	20	6	1	12	1	40
LR/nt or NT	3					3
TH/VU/EN/CR	6					6
<i>Total</i>	<i>29</i>	<i>6</i>	<i>1</i>	<i>12</i>	<i>1</i>	<i>49</i>

Comparing this table with the information contained in Table 7.4, it is evident that there is more variation in trade trends for species with no change in conservation status. The proportion of species that had a decrease in trade is still high (28 species, or 58%), but it is much less than those with a decline in conservation status.

7.5 Discussion

The analysis of conservation status for the species selected for this research (dependent variable) must be within the context of the independent variables, and in particular, trade trends. Examined together, the relationship gives us an idea of overall effectiveness of the Review process, and whether or not ecological effectiveness (i.e. an improvement in conservation status) has followed from the institutional effectiveness that was suggested through the analysis undertaken in Chapter 6.

The results in Chapter 6 indicated that out of the 113 country cases analysed for trade trends, 95% (N=107) had a change in the pattern of reported, legal trade that coincided closely with selection for the Review process. Furthermore, out of the 113 cases, 59% (N=67) indicated a decline in trade. These declines were sustained: for all cases, trade never picked up again.

One of the criteria for inclusion on CITES is that species must be affected by international trade (this is true for Appendix I or II species). Indeed, the trade figures (see Appendix 5) indicate that trade levels were high for many species. Harvesting for trade has also been taken into consideration in the Red List assessments: in later stages it falls under a number of the threat classifications.

However, looking at the trends in conservation status between 1988 and 2008, there seems to be no relationship between trade in the selected species and their conservation status. Species for which conservation status remained the same experienced a range of trade trends. Moreover, species with trade declines comprised a high proportion of those that indicated worsening conservation status (i.e. 11 species out of 14), which might even suggest that a decline in trade can lead to a decline in conservation status!

There are a number of reasons why there is no apparent link between conservation status and trade trends for the species that have been through the Review process. The foremost reason is that even if trade is a threat to the species, it may not be the primary threat. Other threats may overtake trade as the main threat to the species. These other threats are discussed in Chapter 8 in the context of intervening variables.

Another reason trade trends are not correlating with trends in conservation status relates to the nature of the trade data. The trade data extracted from the UNEP-WCMC Global Trade Database reflect legal, reported trade. It is very probable that not only is there unreported trade in the species reviewed, but also illegal trade. The nature and extent of illegal trade is largely unknown, and therefore it is difficult to estimate the proportion of illegal to legal trade.

Moreover, although trade is taken into consideration in the Red List assessments as one of the threats, it is not clear how legal and reported trade data feed into the actual species assessments. There has been at least one analysis of trade trends and conservation status of species (Birdlife International 2006 – described in Chapter 5), but it is unclear how consistently and comprehensively trade data are integrated into assessments. Trade data are easily obtained via a database accessible to the public, so inclusion of this information in Red List assessments is viable.

Another reason it is difficult to establish a correlation between trade trends and conservation status is the nature of the Red List categories and assessment process. In 1988 the Red List categories were not formalised. Yet, with the timing of the early phases of the Review process, the 1988 assessment has to be the baseline conservation status. The 1994 assessment is more consistent with later versions, but this is not useful for early phases of the process. The capacity to assess later stages of the Review process against the 3.1 version of the Red List does exist, though the time duration is not as long.

Furthermore, information on the Red List website can appear confusing or even contradictory. For example, for species that indicated an improved conservation status, the detailed explanation indicates that both have a declining population trend (species in the same category almost always had a declining population trend). What this suggests is that although the population is declining, it may not be at a rate fast enough to qualify the species for a higher risk categorisation.³⁰⁷ Fortunately birds are assessed often (there were

³⁰⁷ Similarly, an improved population trend may not be adequate for a lower risk categorisation. For a discussion of the recovery of one subspecies of Sulphur-crested Cockatoos due to international trade controls, see Alexis J. Cahill, Jonathan S. Walker and Stuart J. Morrison. (2006) “Recovery within a population of the Critically Endangered citron-crested cockatoo *Cacatua sulphurea citrinocristata* in Indonesia after 10 years of international trade control”, in *Oryx*. Volume 40:2, p. 161-167.

assessments in 2006, 2008, and 2009) and so changes in conservation status may emerge relatively quickly.

7.6 Deviant case analysis

Conservation status data were extracted for the 95 deviant cases used to compare with the 113 trade trend cases. However, deviant case analysis for the assessment of conservation status is much more difficult, and would be of limited utility. First, the sample is half the size: the bird sample contained 64 species, whereas the deviant case sample contained 32. Any result based on an assessment of 32 cases would not be significant or indicative of larger trends.

Second, many of the other taxa that were not included in this research (e.g. Mammalia, Reptilia) have not been extensively assessed in the same way as birds have been. Indeed many mammals had their first assessment under the Red List in 1996. Some species included in the deviant cases were not listed, and some were only assessed once. If these species are excluded, the sample size goes from 32 to 19.

7.7 Conclusions

The question driving the analysis behind this chapter was: Has there been change to conservation status – as defined through the IUCN Red List Index – in species that have been subject to the Review process? Of the sample, 75% of the species maintained the same conservation status and 22% moved to a higher-risk category. For many species that stayed in the same category, the Red List website stated the species are undergoing a population decline (though not enough to warrant a higher risk category). These results suggest that the Review process is not ecologically effective.

Yet, it is clear from the trade data that legal trade is decreasing significantly for most species in the sample. Despite the dismal conservation status trend of species analysed, the decrease in legal trade may be having a mitigating effect – albeit nominal – on populations. In other words, although populations are declining, it might be happening at a slower rate than if there were no trade reductions.

What requires further attention is the gap between institutional effectiveness of the Review process and the apparent lack of ecological effectiveness. Why is institutional effectiveness not translating to ecological effectiveness? With the Review process, what are the variables that might be intervening between reduced levels of trade and conservation status? The next chapter ties together the trade and conservation assessments, and addresses these questions.

CHAPTER 8: ANALYSIS OF INTERVENING VARIABLES

8.1 Introduction

Using both qualitative and quantitative data and analysis, the evaluations undertaken in Chapters 6 and 7 revealed a discrepancy between institutional and ecological effectiveness of the CITES Review of Significant Trade process. An assessment of independent variables (regime characteristics, legislative and compliance factors, as well as trade data for species that have been through the Review process) was undertaken, with the results suggesting that CITES and the Review process are partially effective. The assessment indicated that international or multilateral processes are operating effectively, but national-level implementation and compliance vary. One of the key indicators – change in trade levels – was shown to be highly effective, in that trade was directly and immediately affected for most species in the sample.

The analysis of ecological data for the species in the sample (i.e. the dependent variable, or conservation status) indicated that there have been no discernable impacts that can be correlated to the limited institutional functioning. For most species reviewed, there were no changes in conservation status, even where trade levels decreased. This would suggest that CITES and the Review process have not solved the problem of species decline through trade, and have had minimal observable biophysical impacts.

For this case study, there are at least two possible lines of explanation for the discrepancy between limited institutional effectiveness and minimal ecological effectiveness: (1) the institutional weaknesses that emerged in Chapter 6 (i.e. variable national-level implementation and compliance) are preventing any impacts on conservation status of species; and (2) the existence of variables that intervene between the limited institutional effectiveness and the possibility of there being any impacts on conservation status. This study set out to explore the role of intervening variables, and so this chapter will examine this second line of explanation. The first line of explanation will be discussed in the final chapter.

The following section provides a description of two categories of intervening variables and a discussion of how these variables may have intervened between institutional and

ecological effectiveness in the case study of the Review process. The research questions guiding the analysis are in Table 8.1 below.

Table 8.1: Questions for examining intervening variables

Variable	Related questions
Nature of the problem	1. Has trade moved to different range States? 2. Are species or their derivatives easily substituted? Can the regulated species be bred in captivity? 3. How easy can the species be regulated? Are the species or their derivatives easily hidden or transported? Are species and derivatives easy to identify?
Domestic factors	4. Are there indications that political will and capacity are lacking? E.g. Is there an increasing level of illegal trade in the species? 5. Are there economic or socio-cultural factors associated with the species? 6. Are there are other domestic factors that could be intervening?

8.2 Two categories of intervening variables: description and analysis

The two categories of intervening variable selected for this study were those associated with: (a) the nature of the problem; and (b) domestic or national level factors. These categories of variables were selected because together they encompass a wide range of possible factors that can reduce overall effectiveness of regimes. In addition, although these variables can not be directly controlled by the regime itself, certain regime functions may be modified to mitigate effects of these variables.

8.2.1 *Nature of the problem*

This category was selected because the complexity of an environmental issue will impact the overall effectiveness of a regime. As discussed in section 2.8, the role of complexity has been identified by previous researchers as a source, determinant or condition for effectiveness. However, aspects of the nature and complexity of the problem may also intervene at a later point in regime functioning. Even if a regime is designed with the ‘problem structure’ taken into account, there are additional complexities that can arise and impact overall regime effectiveness. There are a number of such complexities that are specific to CITES and the Review of Significant Trade process.

Range

At a most basic level, the geographic range of species can impact the effectiveness of trade controls. If a regulated species is endemic in only one country, CITES may have a more pronounced effect on its conservation status. If implemented properly, trade controls may benefit the species' conservation status. Conversely, species that occur in only one range State may be more adversely affected if the regime is not adequately implemented. Species that occur across wide ranges are much more difficult to regulate, yet may be less vulnerable to mismanagement in one of the specific jurisdictions.

Looking at CITES and species trade, export trends that were tabulated in Chapter 6 can be disaggregated by geographic range of species to assess differences between the two range groups (single country and multiple countries). Table 8.2 presents the trade trend data as disaggregated by range.

Table 8.2: Comparison of trade trends based on species geographic range

Species	Total number	Trade decrease	Transition spike	Mix	Increase	Steady
Single range State	19 (29.2%)	16/19 (84.2%)	3/19 (15.8%)	n/a*	-	-
Multiple range States	46 (70.7%)	25/46 (54.3%)	5/46 (10.8%)	14/46 (30.5%)	1/46 (2.2%)	1/46 (2.2%)
Total	65	41	8	14	1	1

*Not possible to have mixed results with only one country.

Looking at the data, it is evident that species that occur in a single range State had higher proportion of trade decreases: 84.2% of single range State species, compared to 54.3% of multiple range State species. This result is not surprising: it is logical that a species can be better regulated if only exported out of one country. If a species can be found only in one country, there is no question about the source of wild specimens. On the other hand, species with multiple range States may derive from multiple sources. If demand remains the same, there are other sources from which specimens can be supplied.

Again, using range of species as an intervening variable, trends in conservation status can be disaggregated to assess differences between the two range groups. Table 8.3 presents the conservation status data disaggregated by range.

Table 8.3: Comparison of conservation trends (using RLI) based on range

	RLI improve	RLI steady	RLI decline	Total
Single range State	2 (10.5%)	11 (57.9%)	6 (31.6%)	19
Multiple range State	-	38 (82.6%)	8 (17.4%)	46
Total	2	49	14	65

Disaggregating the conservation status trends by range indicates that both improvements and declines in the Red List Index category are more pronounced for single range States. This may indicate two related phenomena. First, it suggests that single range States have more ability to regulate and conserve species, thereby leading to improved conservation status for those species. At the same time, the larger proportion of declining conservation status (31.6% compared to 17.4% for multiple range States) for single range States may also suggest that a smaller range makes some species more susceptible to threats. Where there are multiple States, populations may be less vulnerable to bad management by one authority. If occurring across multiple States, good management in at least one may benefit the overall population.³⁰⁸

Fungibility of specimens and species

Another important factor with regard to CITES and the Review process is the fungibility of the species or specimen. In this sense, fungibility has a number of aspects: can the same species be obtained from more sustainable sources? Or, can similar species be obtained in a sustainable manner?

Looking at the first aspect of fungibility, there are two possible alternatives: (1) the same species can be sourced from a different wild population that is less threatened; or (2) the same species can be sourced from a captive-bred populations. With regard to the first alternative, the discussion above on the impact of range provides some context. Table 8.2 indicates that of the 46 species that have multiple range States, 14 (about 30%) had a mix of trade trends. In other words, while exports of wild-caught species increased from some range States increased, it declined in others. This means that trade did not vary for the

³⁰⁸ Extent and area of occupancy are two criteria used to assess species under the IUCN Red List. See also Andy Purvis *et al.* (2000) "Predicting extinction risk in declining species", *Proceedings of the Royal Society B: Biological Sciences*. Volume 267, p. 1947-1952. Purvis *et al.* conclude that along with other factors, "species tend to have a higher risk of extinction if they occupy a small geographic range" (p. 1949).

remaining 32 (about 70%) of species in the sample. For the majority of species, exports from all range States declined – either immediately or after an initial spike during the transition phase. One explanation as to why alternative sources of wild-caught specimens were not used more often could be that the inclusion of the species in the Review process resulted in an overall ‘export chill’, whereby all range States behaved as though implicated by the Review, even if not explicitly included.

Another explanation is that the market shifted to specimens of the same species, but from a source that does not result in detrimental impacts on wild populations. Trade in captive-bred animals (or artificially propagated plants) may take pressure off wild populations, by providing an equivalent alternative. Sourcing of captive-bred specimens may come from range States or from non-range States. Trade data were extracted from the UNEP-WCMC Global Trade Database for captive-bred specimens of the 65 species in the sample (i.e. all those with trade data). The search criteria included all possible countries, to ensure that both range State and non-range State sources were included. Table 8.4 contains the data extracted.

Table 8.4: Species with trade records for captive-bred specimens

Phase	Species in sample	Species with trade records for captive-bred specimens ³⁰⁹
Phase I	12	9 (75%)
Phase II	46	20 (43%)
Phase III	7	4 (57%)
Total	65	33 (51%)

Out of the 65 species included in the sample, only about half had records indicating exports of captive-bred specimens (i.e. following inclusion in the Review process). The proportion is higher in Phases I and III, but the sample sizes are small, so the importance of this factor is unknown. Nonetheless, captive-bred specimens are available as a substitute for about half of the species in the sample.

Did the species with captive-bred specimens available as a substitute have better outcomes in terms of conservation status? Table 8.5 compares the conservation status trends of

³⁰⁹ In order to minimise the possibility of using erroneous data, and also to exclude countries with minimal specimens, the threshold for inclusion was a minimum of five consecutive years of exports after inclusion in the Review process, and a minimum of ten specimens in each of those years.

species that had exports of captive-bred specimens against those without exports of captive-bred specimens.

Table 8.5: Conservation status trends and availability of substitutes

RLI Trend	Species with exports of captive-bred spec.	Species with no exports of captive bred spec.	Total
RLI steady	25	24	49
RLI decline	7	7	14
RLI improve	1	1	2
Total	33	32	65

The data in Table 8.5 indicate that there is virtually no difference in the conservation status trends between species that had substitutes available and those that did not. In all three possible conservation status scenarios – steady, decline, and improvement – the numbers were similar or the same. Looking at the data, it appears that the availability of captive-bred specimens did not alleviate any pressure on the population for harvesting from trade.

In terms of the availability of similar but less-threatened substitute species, the pre-eminence of parrots in the sample provide a good basis for analysis. All but three species in the sample are in the order Psittaciformes, which is estimated to have around 330 species.³¹⁰ However, fungibility among all Psittaciformes may not be the case, given the differences among parrots in this family (e.g. true parrots, macaws, cockatoos, lorries, etc.). Trade in these species is primarily for the pet industry, so particular breed preferences may exist.³¹¹

The 65 species that have been reviewed in Phases I-III represent 30 genera (27 in the Psittaciformes order). Fungibility is analysed within the bounds of each genus: in other words, were there other taxa in the genus that could have substituted for the species in the Review process? Table 8.6 assesses the 30 genera based on the availability of substitute taxa.

³¹⁰ The exemptions are *Phoenicopterus chilensis*, *Rhea americana albescens*, and *Tauraco fischeri*. Virtually all trade records extracted from the UNEP-WCMC Global Database for *Rhea americana albescens* are for leather items, skins, watchstraps, etc.

³¹¹ Virtually all records for the 72 parrot species were “live” specimens. Some records for feathers or scientific samples were present, but very few.

Table 8.6: Availability of other taxa in genus

Availability of other taxa in genus	Number
No substitute taxa available in genus	8 (27%)
Substitute taxa available in genus	22 (73%)
Total	30

For eight species in the analysis, no substitute taxa were available, as all species in the genera were included in the Review process (*Aprosmictus*, *Cyanoliseus*, *Deroptylus*, *Nandayus*, *Psittaculirostris*, *Psittacus*, *Psittinus*, and *Rhea*). All of these genera had a smaller number of taxa (i.e. 1-3 species). For the rest of the species in the sample (N=22), it is possible that other taxa in the genera can provide substitutes.

Where other taxa were available as substitutes, did trade in these other taxa increase? Trade trends for other species in the genera were extracted from the UNEP-WCMC Global Trade Database to assess the presence of specimens in trade during and after the time the targeted species were being reviewed. These data are presented in Table 8.7.

Table 8.7: Trade activity in genera with substitute taxa

Trade activity in genera	Number
No trade activity in substitute taxa in genus	1 (5%)
Trade activity in substitute taxa in genus	19 (86%)
All trade in genus declined or stopped	2 (9%)
Total genera	22

In only one case (*Alisterus*) did trade not appear to move to other taxa, even if available. There are three species in this genus, and two were included in the Review process. Although trade declined for those two, it did not move to the third. There were two cases in which trade declined or stopped (*Coracopsis*, *Tanygnthus*) altogether, for all taxa in the genus. While there were other taxa available in each genus, trade did not move to them.

For the majority of genera, trade took place in the available taxa. This was the case regardless of the number of taxa within the genera (the number of taxa in the genera ranged from three to 30). In most cases, trade was primarily in specimens of one or two other species in the genus, even in the larger genera where up to a dozen were available. Moreover, trade in other taxa was generally the case regardless of the trade trends. In cases where trade in reviewed species remained steady, or where there were mixed results among range States, there was still trade in other taxa in the genus.

How did the availability of substitutes affect conservation status of reviewed species?

Table 8.8 disaggregates trends in conservation status (Red List Index categorisation) by the availability of substitute taxa.

Table 8.8: Comparison of RLI trends based on availability of substitute taxa in genus

	All RLI improved	All RLI steady	All RLI declined	Mix of RLI changes	Total
No substitute taxa available	-	5	2	1	8
Substitute taxa available – no trade in these taxa	-	1	-	-	1
Substitute taxa available – trade activity in these taxa	-	8	4	7	19
Substitute taxa available – all trade in genus declined or stopped	-	2	-	-	2
<i>Total</i>	-	16 (53%)	6 (20%)	8 (27%)	30

The sample size of genera is too small to draw definite conclusions about the impact of availability of substitute taxa on conservation status of species that have been reviewed. The biggest group represented is species that have substitute taxa available, and for which trade took place in these substitutes. Within this group, the proportion of genera with all species showing a decline in conservation status is the smallest (4/19, or about 20%). With substitute taxa available and trade activity taking place in these substitutes, this is an encouraging figure.

Looking at the data from the other direction, the two taxa that had improvements in conservation status (*Cacatua goffini* and *Eos reticulata*) are in genera where there were substitute species available (*Cacatua* has 12 taxa, *Eos* has seven). With other taxa available, harvesting pressures on these species may have been mitigated sufficiently to result in an improvement in conservation status. However, given that the majority of species had a decline in trade (i.e. 80%, as described in Chapter 6), questions remain as to why so few species have had an improvement in conservation status.

Regulation of specimens

The nature of the specimen has an impact on its regulation. Even if a CITES Party has adequate legislation and ensures compliance and enforcement with the legislation, there may be aspects about certain specimens that make them more difficult to regulate. As Brown Weiss and Jacobson (1998) pointed out, some commodities are easier to monitor;

in wildlife trade, this may be associated with the ability to conceal specimens. At the most obvious level, detecting a concealed elephant tusk or tiger skin is easier than powdered products such as *Hoodia gordonii* (Hoodia) or ground rhinoceros horn.

Regulation of manufactured products that contain CITES species is especially difficult. For example, there are thousands of traditional Asian medicines that contain CITES species. These species are known by a range of names (English and other languages), so it is not always evident if a product contains them. This is especially true in cases where these products are manufactured in countries without tight controls over medicines, and ingredient lists are not included or are not accurate. Moreover, ingredients of these medicines can and do change often, making regulation difficult.³¹²

When traded legally, import or export of live birds is not always a straightforward process. In addition to CITES documentation requirements, live birds are subject to other international regulations – such as the International Air Transport Association (IATA) Live Animal Regulations. These IATA regulations provide strict guidelines as to all aspects of live animal transport, such as the size of containers, food and water requirements, and air ventilation.

Mortality rates for live birds are also high: it has been estimated the survival rate for smuggled birds is only 10%, and for legally traded birds is 30-50%.³¹³ The trade figures included in this study only reflect numbers of reported and legally traded bird specimens. Given that there is likely to be a sizeable illegal and unreported trade in these specimens, the number of birds being harvested for even a 50% survival rate would be much larger

³¹² At CoP14 in 2007, Australia and New Zealand proposed amendments to strengthen Resolution Conf. 10.19 on Traditional Medicines (see <http://www.cites.org/eng/res/all/10/E10-19R14C15.pdf> and <http://www.cites.org/eng/cop/14/doc/E14-63.pdf>), but the proposal was not successful.

³¹³ However, given the nature of illicit trade, obtaining accurate figures are not possible. See Donovan Webster (1997). “The Looting and Smuggling and Fencing and Hoarding of Impossibly Precious, Feathered and Scaly Wild Things”, *New York Times Magazine*. 16 February 1997. Available on <http://www.nytimes.com/1997/02/16/magazine/looting-smuggling-fencing-hoarding-impossibly-precious-feathered-scaly-wild.html>. Accessed on 8 November 2010; and Parliament of the Commonwealth of Australia (1976). *Report on trafficking in fauna in Australia*. Second Report of the House of Representatives Standing Committee on Environment and Conservation. Canberra: Australian Government Printing Service.

than what is reported here. Accordingly, some reports indicate international trade in birds is in the millions each year.³¹⁴

Reporting of the bird species included in this sample may also be incorrect due to identification issues. With over 300 species of parrot in the Psittaciformes order, accurate identification by border control officials may be difficult. As an order, Psittaciformes are readily identifiable by their physiology; however, individual species are difficult to identify for non-experts. Some species have only minor distinctions from others in their genus. Difficulties in identification are complicated by illegal traders applying colour dyes to bird specimens in order to conceal colouration.³¹⁵

While no accurate data are available, use of fraudulent documentation to move CITES species is also well-recognised as an enforcement issue.³¹⁶ Documentation can be tampered with to change the species, source (wild vs. captive bred) or validity of the permit. Documents may also have been forged or illegally obtained from legal sources (e.g. stolen from Management Authorities). However, the use of fraudulent documentation can occur with any CITES species, and not only live birds.

While anecdotal reports are available, accurate data sets on specimen mortality, misidentification, and use of fraudulent documentation are not available. These data are not available because they are difficult to obtain. The data are not collected by border officials for legal transactions, and even if collected, it is by a handful of CITES Parties. In addition, there are no global mechanisms for collating any available information into a cohesive set of data.³¹⁷

Another reason for the paucity of data relates to the nature of the information. Information with an enforcement interest is generally not available to the public and is kept confidential. Whether or not the information is a set of data or an anecdotal case, if

³¹⁴ Beissinger (2001), p. 182.

³¹⁵ Abrar Ahmed (1999). *Fraudulence in Indian Live Bird Trade: An Identification Monograph for Control of Illegal Trade*. New Delhi: TRAFFIC India.

³¹⁶ See CITES Secretariat (2002). *Verification of the authenticity and the veracity of CITES permits and certificates*. CITES Conference of the Parties. CoP12 Doc.28. <http://www.cites.org/eng/cop/12/doc/E12-29.pdf>.

³¹⁷ A CITES Working Group was established at CoP15 in March 2010 to look at the feasibility of creating a global database on illegal wildlife trade transactions.

distributed to inappropriate audiences, it could formulate a ‘how-to’ guide for illegal wildlife trade. Therefore, while general statements can be made about these aspects of regulation, no quantitative data are available for analysis.

Although hard data are not available to investigate the exact nature of this intervening variable, it is likely that regulation-related issues are one of the factors that are mitigating translation of institutional effectiveness of CITES and the Review process into improvements in conservation status.

8.2.2 National-level or domestic factors

This category of intervening variable was selected to address national-level factors that may inhibit translation of international institutional arrangements into environmental improvements. These domestic factors can be divided into three categories: political, economic and socio-cultural, and other factors. These factors can be difficult to assess, as in-depth national-level data may not be available for examination. In some cases proxy data are used, or anecdotal information will be discussed.

Political factors

Political will and capacity are difficult to assess because they can operate as factors of institutional effectiveness or as variables that intervene between institutional and ecological effectiveness. Indeed, elements of political will and capacity are reflected in the national implementation and compliance factors examined for the institutional analysis in Chapter 6. Yet, aspects of political will and capacity that are not directly linked to regime obligations can influence effectiveness. For example, although CITES does not have explicit obligations for enforcement, inadequate enforcement may intervene between institutional functioning and any biophysical impacts.³¹⁸ A country may have implemented policies and laws associated with an international regime, and may be compliant with their obligations and duties, but enforcement on the ground should also occur.

³¹⁸ This level of compliance refers to actions of communities and individuals in a country that is Party to CITES, as opposed to a Party’s compliance with the Convention.

In the CITES regime, there are many countries that have adequate implementing legislation and that comply with the Convention's requirements for submitting national reports, establishing focal points, etc. However, without enforcement of national legislation, ecological effectiveness will be adversely affected. Enforcement of CITES can be undertaken by a range of domestic actors, though because of the Convention's trade focus, they tend to be customs or border control agencies. CITES enforcement tends to involve activities such as: assessment of CITES documentation; inspections of passengers, vehicles, and consignments that are crossing borders; and legal actions against offenders.

However, enforcement requires a substantial commitment of human and financial resources. There must be personnel to check incoming and outgoing documentation, as well as an effective border presence for inspections. Although all CITES Parties have border control agencies, wildlife trade is not always a part of their training. Moreover, considerable resources are required to undertake legal actions. Given this situation, the commitment of adequate resources to enforce CITES may not be possible for all Parties.³¹⁹

Where strong enforcement exists, there could be illicit activity taking place. Even if rare or valuable specimens are protected under numerous domestic regulations, trade is prohibited, and border agencies are vigilant, they can still be found on international markets. New Zealand has restrictions on export of domestic species and active border control agencies, yet *Sphenodon punctatus* (Tuatara) have been available on the international market for up to US\$30,000 per specimen.³²⁰

Wildlife trade is also an activity that may be adopted by crime syndicates or other organised criminal groups. Naim (2005) suggested that while reductions in trade barriers (i.e. through the World Trade Organisation and multilateral trade agreements) have facilitated and increased legal international trade, it has also made illicit activity much easier.³²¹ Naim described illicit trade in a range of commodities – drugs, small arms, people and their organs, toxic waste, intellectual property, and wildlife – that has

³¹⁹ Reeve (2002), p. 206.

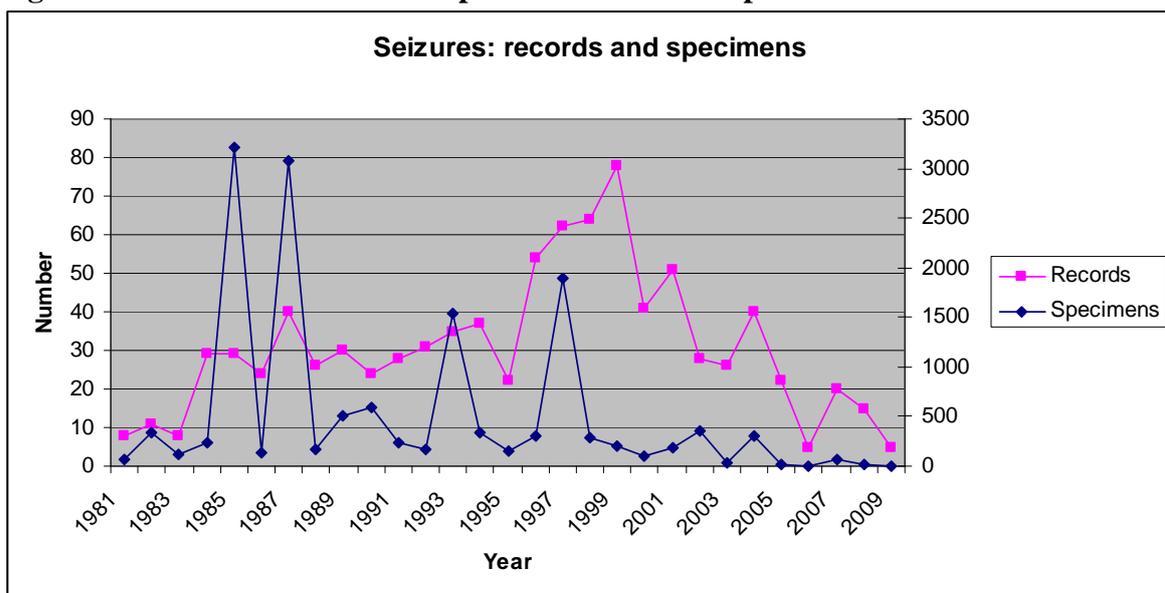
³²⁰ Raymond E. Kendall (2000). "Interpol Alert," in *Our Planet*. Volume 105. Nairobi, Kenya: United Nations Environment Programme.

³²¹ Moises Naim (2005). *Illicit: How Smugglers, Traffickers, and Copycats are Hijacking the Global Economy*. New York, NY: Doubleday.

increased where border controls have reduced. In many cases, the high profits and low risk of wildlife smuggling has made this activity an attractive one for organised crime syndicates.

This study looks at enforcement efforts, as measured by the incidence of seizures for species that were included in the first three phases of the Review process. Data on all Psittaciformes seizures were extracted from the UNEP-WCMC Global Trade Database for the years 1981 (when the order was listed) to 2009 (latest year available). The total number of records for the order was 2030.³²² Out of those 2030 records, 893 were for species included in the first three phases of the Review process. Figure 8.1 provides a visual representation of seizure records and specimens for species in Phases I to III between 1981 and 2009.

Figure 8.1: Seizures of reviewed species: records and specimens



The two highest spikes in the number of individual specimens occurred before the Review process was initiated for any of the phases. However, there does not appear to be a pattern in either the record or specimen numbers that correspond with any aspect of the phase operation (selection, issuing of recommendations, etc.). The number of trade records has increased – peaking in 1999 – and then has subsequently declined. Low numbers in the past five years may be due to the fact that not all Annual Reports have been submitted. It

³²² The number of records does not indicate total number of species or specimens, but rather individual seizure records submitted by CITES Parties. For example, in 1991, there were 28 records, representing 18 species and 241 live specimens.

is likely that these numbers will increase as Annual Reports continue to be submitted. However, given the rate of Annual Report submission (see Table 6.9), it is unlikely that the data will accurately reflect the actual number of seizures.

Although full and accurate data on the total number of seizures for the birds selected for the analysis are not available, a comparison with reported legal trade figures may provide perspective on the proportions of illegal trade. Table 8.9 below compares legal reported trade in each genus with reported seized specimens.

Table 8.9: Legal reported trade vs. reported seized specimens (1981-2007)

Genus	Number of taxa reviewed	Reported seized specimens	Reported legal specimens	Illegal trade as %age of legal trade
Agapornis	4	25	687,165	0.00%
Alisterus	2	0	23,965	-
Amazona	4	146	439,495	0.03%
Aprosmictus	2	2	10,963	0.02%
Ara	2	105	95,235	0.11%
Aratinga	4	54	515,157	0.01%
Brotogeris	3	6	57,493	0.01%
Cacatua	6	87	305,162	0.03%
Chalcopsitta	2	1	14,088	0.01%
Chamosyna	2	0	12,767	-
Coracopsis	1	1	3988	0.03%
Cyanoliseus	1	7	126,850	0.01%
Deroptyus	1	9	9910	0.09%
Eos	3	3	24,054	0.01%
Forpus	1	2	893	0.22%
Loriculus	3	2	4607	0.04%
Lorius	1	1	58,584	0.00%
Nandayus	1	7	267,862	0.00%
Phoenicopterus	1	0	1309	-
Pionus	2	2	124,315	0.00%
Poicephalus	5	53	966,058	0.01%
Psittacula	3	14	172,798	0.01%
Psittaculirostris	3	0	18,013	0.00%
Psittacus	1	343	1,004,069	0.03%
Psitteuteles	1	0	2051	-
Psittinus	1	1	21,028	0.00%
Pyrrhura	1	3	51,877	0.01%
Rhea	1	0	354,866	-
Tanygnathus	2	1	8982	0.00%
Tauraco	1	0	593	-

Overall, the seizure record and specimen data indicate that there have not been many seizures associated with species in the Review process. For all genera represented in the analysis sample, seized specimens that were reported to the Secretariat comprised less

than half a percent.³²³ However, these data record only reported seizures, and not unreported illegal trade. Without knowledge of what illicit movements are taking place, the information from UNEP-WCMC does not provide a complete picture of trade in live wild birds.

Economic and socio-cultural factors

Although it is recognised that economic and socio-cultural factors impact wildlife trade, there is “poor understanding” of these drivers.³²⁴ Nonetheless, this study explores these two factors, dividing them into two categories: factors associated with the production of wildlife (supply); and factors associated with the consumption of wildlife (demand).

In terms of the production of wildlife, harvesting and selling of wildlife may be the most efficient and reliable way of securing an income for some communities.³²⁵ This is true whether or not species are being traded internationally or domestically. It is unclear if decisions to harvest and use a species for either subsistence or income are influenced by its conservation status. Given the fact that many endangered species listed on CITES are harvested for subsistence or income generation, it is likely that conservation status is not taken into consideration.

Incentive to harvest and trade wildlife is increased when benefits to be gained by engaging in illegal activity surpass any risk of being caught or the penalties if caught. Indeed, much of illicit trade is said to be driven by high profits and low risks.³²⁶ The value of wildlife specimens may exceed maximum fines for smuggling. For example, the current market price of rhinoceros horn exceeds most wildlife smuggling fines, and the fines given to various smugglers of 60 New Zealand reptiles in early 2010 were a fraction of their value

³²³ *Amazona oratrix* (Yellow-headed Amazon) had the largest proportion of illegal specimens – about 15%.

³²⁴ TRAFFIC (2008). *What’s Driving the Wildlife Trade? A Review of Expert Opinion on Economic and Social Drivers of the Wildlife Trade and Trade Control Efforts in Cambodia, Indonesia, Lao PDR and Vietnam*. East Asia and Pacific Region Sustainable Development Discussion Papers. Washington, DC: World Bank.

³²⁵ See Dilys Roe *et al.* (2002). *Making a killing or making a living: Wildlife trade, trade controls and rural livelihoods*. Biodiversity and Livelihoods Issues No. 6. Cambridge, UK: TRAFFIC/IIED.

³²⁶ Peyton Ferrier (2010). “The economics of agricultural and wildlife smuggling”, *Trends in Organized Crime*. Volume 13, p. 219-230.

on international markets.³²⁷ The ratio of specimen value to maximum fine can provide a strong economic incentive for the smuggling of many wildlife specimens.

The contribution of wildlife trade to subsistence is not necessarily driving the activity. While there are benefits to providing a supply, underlying this there must be demand for consumption. Duffy (2010) noted that wealth is a driver of trade, and “without demand from rich countries, poorer people would not engage in poaching, smuggling and trading.”³²⁸ This trade is what Fuchs has described as “mainly a South-to-North phenomenon”.³²⁹ The general flows of wildlife exports and imports support these observations, with money-rich “North” countries doing most of the consuming and biodiversity-rich “South” countries doing most of the production of wildlife.

Studies of the price elasticity of wildlife have indicated that growth in household wealth can increase consumption of wildlife.³³⁰ It is therefore not only rich countries that are consuming wildlife, but also populations or communities with rising incomes. The study by Wilkie, *et al.* on rising incomes and bushmeat consumption in Gabon is an example of this phenomenon. Zhang *et al.* also found that regular consumers of wildlife in southwest China tended to have regular, high incomes.³³¹

³²⁷ For estimates of the value of rhinoceros horn, see BBC News Website (2010) “Airport rhino horn smuggler jailed for 12 months”, on *BBC News*. 5 October 2010. Accessed at <http://www.bbc.co.uk/news/uk-england-11477508> on 6 October 2010. The New Zealand reptiles were valued at approximately \$2000 each, while the fine paid by one smuggler was \$5000. The other two smugglers did not get fines. Alanah May Eriksen (2010). “Thousands for stolen geckos on European black market”, in *New Zealand Herald*. 30 June 2010. Accessed at <http://www.nzherald.co.nz> on 30 June 2010; and Jarrod Booker (2010) “Tougher penalties on cards to fight wildlife smugglers”, *New Zealand Herald*. 7 July 2010. Accessed at <http://www.nzherald.co.nz> on 7 July 2010.

³²⁸ Rosaleen Duffy (2010). “Your role in wildlife crime”, *New Scientist*. 11 September 2010, p. 28.

³²⁹ Christine Fuchs (2010). “Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) – Conservation Efforts Undermine the Legality Principle,” *German Law Journal*. Volume 9:11, p. 1566.

³³⁰ See David S. Wilkie *et al.* (2005). “Role of Prices and Wealth in Consumer Demand for Bushmeat in Gabon, Central Africa”, *Conservation Biology*. Volume 19:1, p. 268-274; R. Godoy *et al.* (2010) “The effect of wealth and real income on wildlife consumption among native Amazonians in Bolivia: estimates of annual trends with longitudinal household data (2002-2006)”, *Animal Conservation*. Volume 13:3, p. 265-274; Bettina Wassener (2010) “As Incomes Rise, So Does Animal Trade”, *New York Times*. 19 December 2010. Accessed at <http://www.nytimes.com/2010/12/20/business/energy-environment/20green.html> on 20 December 2010.

³³¹ Li Zhang *et al.* (2008). “Wildlife trade, consumption and conservation awareness in southwest China”, *Biodiversity and Conservation*. Volume 17:6, p. 1493-1510.

These production and consumption elements of wildlife harvesting and trade are closely related to socio-cultural factors. Endangered wildlife may be harvested and consumed as an important source of food for some communities, such as *Strombus gigas* (Queen conch) in the Caribbean and Tridacnidae (Giant clams) in the Pacific Islands.³³² Some species (e.g. tuna³³³, sharks) are harvested globally as a food source. Regulation and controlling the harvesting and export of wildlife that is important as a food source is controversial and difficult.³³⁴

Another use of wildlife that relates both to production and consumption is for traditional medicine. For many species that occur in medicine, harvesting for this use is not problematic. However, there are numerous CITES species that are part of the Chinese *Materia Medica*. Accordingly, these species are harvested for domestic consumption and traded. While exact figures are not available for global trends, the increasing trade (or recognition of the trade) in traditional medicines motivated CITES Parties to create special initiatives to address this issue.³³⁵

Some species – or their parts and derivatives – are consumed as luxury commodities. This is especially true for endangered species, which tend to be rare and therefore may be more valuable. Studies examining this have linked rarity of species with consumers' willingness to pay for specimens.³³⁶ For example, the luxury status associated with caviar

³³² *Strombus gigas*: For a full description of threats and status of this species, see CITES Animals Committee document AC19 Doc. 8.3 (<http://www.cites.org/eng/com/ac/19/E19-08-3.pdf>).

Tridacnidae: See Gerald A. Heslinga, and William K. Fitt. (1987) "The Domestication of Reef-Dwelling Clams", *Bioscience*. Volume 37:1, p.332.

³³³ While there is recognition that tuna species around the world are threatened, they have not been listed on CITES. In March 2010, Monaco proposed listing of *Thunnus thynnus* (Northern bluefin tuna) on CITES, but the proposal was rejected. The proposal and summaries of the debates are available on the CITES website – <http://www.cites.org>.

³³⁴ The April 1995 edition of the journal *Biodiversity and Conservation* (Volume 4:3) is dedicated to the issue of wildlife and food.

³³⁵ Interpol ran a special international operation to intercept traditional medicines in early 2010 (see <http://www.interpol.int/Public/ICPO/PressReleases/PR2010/PR014.asp>. Accessed April 2010).

³³⁶ See John B. Loomis and Douglas S. White. (1996) "Economic benefits of rare and endangered species: summary and meta-analysis", *Ecological Economics*. Volume 18, p. 197-206.

(Acipenseriformes – sturgeon) consumption³³⁷ outstrips any conservation concerns; accordingly, efforts to control trade have been limited.

Unfortunately, extensive data on the economic and socio-cultural aspects of wildlife trade are unavailable. As Roe (2002) has indicated, “few attempts have been made to investigate the effects that restricting trade in wildlife can have on local livelihoods.”³³⁸ Cooney and Jepson (2006) investigated some aspects of the bird trade and suggested that the contribution of trade to income varies from being “an important or only source of cash in times of hardship or to pay for commodities or needs such as schooling for children”.³³⁹ The sources they provide to substantiate this finding come from more general reports on trade where the financial element is peripheral.³⁴⁰

As Roe (2001) has suggested, wildlife trade may be one of the most viable forms of income in rural and poor communities. The suppliers or producers of bird species included in the Review process are generally from countries that are considered low income by World Bank standards.³⁴¹ Out of 82 countries represented in Phases I-III of the process (i.e. for birds only), 58 are designated by the World Bank as low income or low-middle income (about 70%). Given that these are species that have been significantly traded, harvest and export of birds may be an essential source of income for some communities in these biodiversity-rich countries.

The high prices of some birds on international markets may provide an incentive to harvest and export species for income. The price of bird specimens varies depending on a number of factors: species rarity, colouration of individuals, availability in the consuming country, and source of specimen (wild vs. captive-bred).³⁴² In their article looking at poaching of Neotropical parrots, Wright, *et al.* (2001) provided retail price information on

³³⁷ Reportedly, displaying caviar in a shop is “said to create a reputation for quality for the retailer and generate repeat sales.” See James MacGregor *et al.* (2004). *Using economic incentives to conserve CITES-listed species: A scoping study on ITQs for sturgeon in the Caspian Sea*. London, UK: International Institute for Environment and Development.

³³⁸ Roe (2002), p. vi.

³³⁹ Rosie Cooney and Paul Jepson (2006). “The international wild bird trade: what’s wrong with blanket bans?” *Oryx*. Volume 40:1, p. 20.

³⁴⁰ *Ibid.*, 22-23.

³⁴¹ See footnote 252.

³⁴² Timothy F. Wright *et al.* (2001). “Nest Poaching in Neotropical Parrots”, *Conservation Biology*. Volume 15:3; p. 710-720.

various bird species found in US markets. The authors obtained price data for some species included in the Review process; the mean price for these species ranged from US\$ 308 (*Pionus senilis* – White-crowned Parrot) to US\$ 1426 (*Ara chloropterus* – Green-winged Macaw) per individual, as sold in the United States. Although the authors do not indicate if specimens were wild-caught or captive-bred, a relationship to endemic populations in range States was observed: they found that “poaching rates are significantly lower for species valued under \$500 (U.S. retail price) than for those priced above this value.”³⁴³ Their study suggested that more expensive bird species were more likely to be poached.

One of the most commonly traded parrot species – which has been included twice in the Review of Significant Trade – is *Poicephalus senegalus* (Senegal Parrot). Gilardi reported that over 100,000 wild-caught individuals of this species were exported from Africa between 2000 and 2003.³⁴⁴ Specific data are not available on the ‘wholesale’ cost these birds.³⁴⁵ Nonetheless, capture and sale are likely to be one source of revenue for those engaged in the trade.³⁴⁶

Where sustainability of trade has been a concern, there have been a few examples of countries setting up captive-breeding operations for endemic species. For example, Cooney and Jepson discussed a management programme to captive breed and export *Amazona aestiva* (Blue-fronted Amazon) from Argentina, a species that was deemed an agricultural pest. Revenues from this programme are now supporting protected areas for the bird as well as providing some income for local landowners.³⁴⁷ In his response to Cooney and Jepson, Gilardi pointed out that there were objections to the Argentinian methodology underpinning the alleged ‘sustainability’ of the exports. Either way, the

³⁴³ Ibid., p. 718. Prices are likely to be higher in countries where availability is limited; e.g. the article by Wright, *et al.* indicated that the mean price for specimens of *Amazona finschi* (Lilac-crowned Parrot) was USD 625. In Australia, a pair of these Amazon parrots sells for over USD 7000 (see <http://www.parrotbreeding.com.au/category/parrots-for-sale/>). Accessed 23 December 2010.

³⁴⁴ James D. Gilardi (2006). “Captured for conservation: will cages save wild birds? A response to Cooney & Jepson”, *Oryx*. Volume 40:1; p. 25.

³⁴⁵ A 2004 BBC report indicated that specimens of *Psittacus erithacus* (African Grey Parrot) were bought by traders for US\$10. See Anna Borzello (2006). “Concerns mount over parrot trade”, BBC News Website. <http://news.bbc.co.uk/2/hi/africa/3509707.stm>. Accessed 30 December 2010.

³⁴⁶ Nigel Leader-Williams and R.K. Tibanyenda, editors. (1996) *The Live Bird Trade in Tanzania*, Gland, Switzerland: IUCN.

³⁴⁷ Cooney and Jepson (2006), p. 21.

establishment of programmes such as this one suggests that bird exports are considered an economically important activity. Whether or not exports are from wild-caught or captive-bred specimens, they may comprise an essential component of income streams.

Not all trade in these species is reported or legal. Enforcement groups that work on preventing illegal trade in endangered species report that organised crime syndicates are involved in the bird trade, with numerous seizures of birds in Eastern Europe, Southeast Asia, and Southern Africa suggesting the involvement of organised crime.³⁴⁸ Those working in the field have observed that, “Poachers, smugglers, and dealers are likely to be better armed, better equipped, better educated, better paid, and better organized than many wildlife law enforcement officers.”³⁴⁹ Parrots are a species often seen in these organised crime activities because of their high per-specimen value.

Other endangered species are also targeted by organised crime groups.³⁵⁰ For example, recent reports have surfaced that Madagascar rosewoods are being harvested and traded by gangs in contravention of national legislation and CITES regulations.³⁵¹ The involvement of cartels has also been a factor with trade in other CITES species, such as caviar, big-leaf mahogany, and rhinoceros horn.³⁵² This trade would not be recorded in global databases,

³⁴⁸ New Zealand Wildlife Enforcement Group, personal communication, 7 February 2011.

³⁴⁹ John M. Sellar (2009). “Illegal Trade and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)”, in *Wildlife Forensic Investigation*, edited by Adrian M. Linacre. (London, UK: Taylor and Francis; p. 11–18) 18.

³⁵⁰ See for example Greg L. Walchol, *et al.* (2003) “Transnational Criminality: An Analysis of the Illegal Wildlife Market in Southern Africa”, *International Criminal Justice Review*. Volume 13:1, p. 1-27.

³⁵¹ See Robert Draper (2010). “Madagascar’s Pierced Heart”, *National Geographic*. September 2010. Accessed at <http://ngm.nationalgeographic.com/print/2010/09/madagascar/draper-text> on 5 October 2010; and David Braun (2009). “Lemur Forests Pillaged by “Gangs” as Madagascar Reels”, *National Geographic News*. 24 March 2009. Accessed online at <http://news.nationalgeographic.com/news/2009/03/090324-lemurs-looting-madagascar.html> on 5 October 2010.

³⁵² For a general overview of the situation from the perspective of the CITES Chief Enforcement Officer, see: Matt Bendoris (2009). “Law of the jungle”, *The Scottish Sun*. Accessed at <http://www.thesun.co.uk/scotsol/homepage/news/2573756/Interview-with-John-Sellar-of-UN-agency-CITES.html> on 8 November 2010. On caviar see: Antony Barnet (2003). “London raids expose mafia caviar racket”, *The Observer*. 9 November 2003. Accessed online at <http://www.guardian.co.uk/uk/2003/nov/09/ukcrime.london> on 8 November 2010. On big-leaf mahogany, see the proposal to list big-leaf mahogany on CITES: CITES Secretariat (2002). Accessed at <http://www.cites.org/eng/cop/12/prop/E12-P50.pdf> on 8 November 2010. On rhinoceros horn, see: Anna Mudeva (2007). “Crime gangs, horns demand threaten African rhinos”. Accessed at <http://uk.reuters.com/article/idUKL0630589520070606> on 8 November 2010.

and income may not be recorded in official statistics. Therefore, the nature and extent of illegal activity is unknown, as are the impacts on incomes.

Some bird species have an important socio-cultural significance that may intervene between institutional and ecological effectiveness. CITES may be implemented and enforced effectively, yet domestic bird populations may still be subject to harvesting for purposes other than international trade.

For example, most of the birds in this sample (parrots) are known for their appeal as pets.³⁵³ Parrots are generally exported from producer countries for the pet trade in consumer countries; however, they are also maintained as pets in some producer countries. For example, a proportion of the trapping of birds in Indonesia is for the domestic market.³⁵⁴ Shepherd reported that, “While some of the birds are intended for international export, the bulk of the trade supplies local demand. This trade involves large volumes of birds, with the vast majority of them being wild-caught.”³⁵⁵ A large proportion of the species included in the analysis are endemic to Indonesia (N=30, or 46%). Given this proportion, even if international trade in birds from Indonesia (as one example) is stemmed, harvesting from the wild population is still going to occur. Consumption for domestic purposes is not included in trade records, but if unsustainable, would have adverse impacts on species populations.

Bird species may be consumed domestically for other purposes. For example, raptors are sought in many countries (e.g. in the Middle East) for traditional use in falconry activities.³⁵⁶ Some birds are also consumed for sustenance (e.g. game birds), although parrots generally are not consumed for this purpose.

³⁵³ See Beissinger (2001); J.E. Carey (1999). “Improving the Efficacy of CITES by Providing the Proper Incentives to Protect Endangered Species” in *Washington University Law Quarterly*. Volume 77, p. 1291-1322; Cooney and Jepson (2006); and Jepson and Ladle (2005).

³⁵⁴ Chris R. Shepherd (2006). “The bird trade in Medan, north Sumatra: an overview”, *BirdingASIA*. Volume 5, p. 16-24.

³⁵⁵ *Ibid*, p. 16.

³⁵⁶ See BBC News (19 August 2010). “Smuggler jailed for £70k peregrine falcon egg theft”. Accessed at <http://www.bbc.co.uk/news/uk-england-birmingham-11024315> on 30 December 2010.

Other factors

There are a host of other domestic factors that may intervene between institutional and ecological effectiveness of CITES and the Review process. Chapter 2 delineated various domestic factors that could impact regime effectiveness, including political attributes such as centralisation and citizen rights (Martin), cultures of compliance and strength of NGOs (Brown Weiss and Jacobson), and ability to protect habitats (ERM). There is a multitude of circumstances in or attributes of any country that can prevent an institutionally effective regime from actually solving a particular environmental problem. While Parties to CITES have unique and customised national legislation to implement the Convention, the regulations may not necessarily take into account all domestic factors that influence wildlife trade.

Looking at the list of threats that exist for species (see Table 7.2 in Chapter 7), there are a number of other factors that could be intervening between the institutional effectiveness of CITES and the Review process and conservation status of birds in the sample. These other possible factors were examined using threat information on the IUCN Red List Index as well as Birdlife International factsheets.³⁵⁷

One factor that is relevant to the international bird trade was the outbreak of influenza and other similar diseases. Concerns about spread of diseases such as avian influenza can have a strong impact on exports and imports of bird species. For example, in 2005, the EU implemented a ban on live captive birds in response to an avian flu scare.³⁵⁸ As the EU is one of the primary importers of live birds, this had an immense impact on global trade (although it was late enough not to have a major impact on the trade trends calculated for this research).

³⁵⁷ BirdLife International (2010). *IUCN Red List for Birds*. Accessed at <http://www.birdlife.org> on multiple dates.

³⁵⁸ See CITES Press Advisory “Controlling avian influenza is critical, but let’s not muddle the reasons for a ban on commercial imports of wild birds”, accessed at http://www.cites.org/eng/news/press/2005/051028_bird_flu.shtml on 11 January 2011. Vincent Nijman also discusses this in his paper: Vincent Nijman (2009). “An overview of international wildlife trade from Southeast Asia”, in *Biodiversity Conservation*. Volume 19:4, p. 1101-1114.

One of the threats most often cited in the Red List and factsheets was habitat loss. Habitat loss can be due to a range of factors: the IUCN Red List specifies seven causes of habitat loss (e.g. agriculture, extraction, infrastructure development, etc.), and the Birdlife International factsheets described in detail the causes of habitat loss (e.g. logging, mining, irrigation, etc.). It is likely that habitat loss is a factor intervening between the effectiveness of CITES and the Review process and conservation status. Looking at Indonesian birds (N=30 or 46% of sample) provides a good example. Indonesia had some of the highest net loss of forest in the 1990s.³⁵⁹ Many factors drove this loss, including logging, fires, and conversion to oil palm plantations. Koh and Wilcove (2008) reported that between 1990 and 2005, the oil palm cultivated area in Indonesia increased by 3,017,000 ha, making that country the largest producer of palm oil.³⁶⁰

These forests provided habitat for many species, and loss of this habitat has impacts – generally adverse – on bird populations.³⁶¹ Although Indonesia was successful at curbing legal trade in wild-caught specimens of all endemic species included in the Review process, the conservation status of the birds did not improve for most of these species.³⁶² Loss of habitat may have ‘offset’ any gains that were made in trade declines.

Other countries were also well-represented in the first three phases of the Review process, e.g. Argentina and Tanzania (the former implicated with 10 species reviews, and the latter for eight species reviews). Indonesia, Argentina and Tanzania have been deemed “Biodiversity Hotspots” by Conservation International.³⁶³ These hotspots comprise areas with high levels of species endemism, but are also among the most threatened regions in

³⁵⁹ The rate of deforestation has reportedly decreased in recent years, though is still very high. See UN Food and Agriculture Organisation (2010). *Global Forest Resources Assessment 2010*. Rome, Italy: FAO.

³⁶⁰ Lian Pin Koh and David S. Wilcove. (2008) “Is oil palm agriculture really destroying tropical biodiversity?”, *Conservation Letters*. Volume 1: p. 60-64.

³⁶¹ See for example: Matthias Waltert, *et al.* (2004). “Effects of Land Use on Bird Species Richness in Sulawesi, Indonesia”, *Conservation Biology*. Volume 18:5, p. 1339-1346; and Thomas M. Brooks *et al.* (2002). “Habitat Loss and Extinction in the Hotspots of Biodiversity”, *Conservation Biology*. Volume 16:4, p. 909-923. However, Birdlife International factsheets reported that two species in the sample had increasing populations in degraded habitat (*Cacatua sanguinea* and *Nandayus nenday*).

³⁶² While conservation status did improve for two of Indonesia’s endemics (*Cacatua goffini* and *Eos reticulata*), total populations of those birds still declined.

³⁶³ See Norman Myers *et al.* (2000) “Biodiversity hotspots for conservation priorities,” *Nature*. Volume 403, p. 853-858, and <http://www.biodiversityhotspots.org/>.

the world in terms of habitat loss. Given these two characteristics, it is plausible that habitat loss may be intervening between institutional effectiveness and conservation status.

For the species included in the sample, other threats identified by the IUCN Red List and Birdlife International factsheets – such as predation, pollution, or intrinsic factors – did not play a role. Only two categories of threats were relevant to birds in the sample: habitat destruction (for various purposes), and exploitation (for domestic or international trade).

8.3 Conclusions

This chapter explored one possible line of explanation regarding the discrepancy between institutional and ecological effectiveness: the existence of variables that may be intervening between the institutional functioning and biophysical impacts of the Review process. Looking only at this factor, the two categories of intervening variables appear to have a role in influencing (and possibly preventing) translation of the limited institutional effectiveness into any ecological effectiveness (i.e. improved conservation status of species). There are numerous facets to the nature of the problem and a range of domestic level issues that may be affecting the relationship between institutional and ecological effectiveness; the effects on this relationship can adversely impact overall effectiveness. Use of qualitative and quantitative data, as well as a mixed methods approach, allowed a more comprehensive exploration of the intervening variables and their impacts on regime functioning.

Although the examination of intervening variables has enhanced our understanding of the relationship between institutional and ecological effectiveness, what is unclear is the degree to which ecological effectiveness has been directly affected by the limited nature of institutional effectiveness. In other words, has limited institutional effectiveness had a bigger impact on overall effectiveness than the influence of intervening variables?

Disaggregating these two possible influences on overall effectiveness is fraught. Indeed, one of the only possible ways to do so may be via analysis of a regime that is shown to be fully effective in an institutional sense, so that any impact of intervening variables can be explored without the complication of competing lines of explanation. However, as mentioned in Chapter 2 (Literature Review), there are numerous definitions of

institutional effectiveness, and very few criteria have been applied to the concept. Moreover, such an analysis would require finding an environmental regime with a confirmed and high level of institutional effectiveness.

Taking into consideration these challenges, the next chapter examines the nature of overall effectiveness and offers a range of recommendations to improve the relationship between institutional and ecological effectiveness. The discussion focuses on the role of intervening variables, but comments are also offered about the influence of limited institutional effectiveness.

CHAPTER 9: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

9.1 Introduction

The aim of this research was to examine whether or not inclusion of ecological data in assessments of effectiveness can provide a more accurate depiction of overall regime effectiveness, and in doing so, facilitate the identification of ways to improve regime functioning. The research objectives underlying this aim were to: (1) understand why ecological data have been largely left out of the literature on environmental regime effectiveness; (2) approach the research using both qualitative and quantitative data and methods; (3) assess whether or not qualitative institutional data are an adequate proxy for quantitative ecological data, i.e. testing whether or not the findings of each converge; (4) examine the role of intervening variables that may mitigate or enhance the relationship between institutional and ecological effectiveness; and (5) examine ways that regime functioning might be improved and facilitated with a better understanding of overall effectiveness.

Based on these objectives, there have been five key findings of this study:

- (1) there is immense value in using ecological data in assessments of regime effectiveness, and the obstacles to undertaking ecological analysis that have been cited in the past can be addressed;
- (2) assessments of environmental regimes can greatly benefit from a mixed methods research approach that integrates qualitative and quantitative data and analysis;
- (3) it can not be assumed that ecological effectiveness follows from institutional effectiveness – there is much to be learned from testing this relationship;
- (4) a wide range of variables may be intervening between institutional and ecological effectiveness; and
- (5) understanding these variables can help us understand overall regime functioning and effectiveness, which can facilitate actions to improve the situation.

The following sections in this chapter describe these findings in more detail. Observations on and recommendations about the CITES Review of Significant Trade process are also put forward.

9.2 Ecological data – can they be used in assessments of effectiveness?

With the focus on compliance and behaviour change in the regime effectiveness field, ecological data and analysis have had a marginal role in the literature. Despite the challenges associated with use of ecological data, Mitchell (2003) has noted, “available data would allow analysis of far more agreements than scholars usually assume.”³⁶⁴ Moreover, the results of this study suggest that using the ecological data that are available can improve our understanding of both institutional and ecological effectiveness (i.e. overall effectiveness).

This research has highlighted the importance of collecting and collating data relating to the ecological problems that regimes set out to solve. Use of quantitative trade data from the UNEP-WCMC Global Trade Database in concert with the IUCN Red List data were essential in providing a comprehensive understanding of how successfully the Review of Significant Trade process affects exports of species threatened by trade. Looking at trade data across species and countries, and disaggregating data based on factors such as wild vs. captive-bred specimens, provided a detailed view of trade trends for these species. Moreover, the use of IUCN Red List data for the species in the sample added more context to the trade picture. Together, these data improved our understanding of trade and conservation consequences arising from the Review process.

For CITES and other regimes, a clear understanding of the current and ongoing ecological situation addressed by the institution and its regulations is necessary to ensure that strategies, policies, and activities are relevant and effective. This understanding can be improved through examination and analysis of relevant quantitative environmental data relevant to the regime. It is therefore imperative that required data are submitted by all relevant stakeholders. Incentives toward accurate and timely data submission should be integral to all environmental regimes. Mitchell has suggested concrete ideas for such interventions, such as: “Regular self-reporting, and allowing access to otherwise sensitive information, can become a precondition for receiving technical assistance and advice, as in the FCCC, LRTAP, and Montreal Protocol non-compliance procedures.”³⁶⁵ Submission

³⁶⁴ Mitchell (2003), p. 447.

³⁶⁵ Mitchell (1998), p. 124.

of regime-relevant data (ecological and otherwise) is essential – not only to ensure that regimes are doing what they set out to do, but also to provide guidance in what remedial or additional measures may be necessary.

In addition, these data must be synthesised and analysed to understand better the operations and impacts of regimes. For example, organisations such as UNEP-WCMC hold data for a number of environmental regimes (CITES, CMS, Ramsar, World Heritage Convention, etc.). One of UNEP-WCMC's strategic objectives is “to support the development and adoption of policies and practices that will contribute to the conservation and sustainable use of biodiversity.”³⁶⁶ To this end, the organisation undertakes comprehensive analyses of these data and hosts tools such as the Global Biodiversity Information Facility.³⁶⁷ Central data repositories may facilitate use of these data to feed into institutional processes at all levels.

Similarly, these data collected within the regime context should be accessible for use by any interested Parties. Pullin and Salafsky have observed a number of problems with data accessibility and quality:

Unfortunately, today most raw data generated by researchers and practitioners are inaccessible (either protected, poorly recorded and archived, or simply lost)... Development of incentives and tools to create a solid base of data from which rigorous systematic reviews can be derived is key to improving the effectiveness of conservation interventions.³⁶⁸

Researchers are developing new and better ways of dealing with these issues associated with data discrepancies, availability/accessibility, and accuracy. For example, researchers are adapting data-gathering techniques from one field for use in another. An example of this is the use of occupancy methods, which have traditionally been used for wildlife field studies, but have recently been applied to wildlife market surveys.³⁶⁹ Moreover, as technological tools become more powerful, opportunity to use them toward improved conservation practice increases. For example, computational tools (e.g. Wolfram Alpha)

³⁶⁶ United Nations Environment Programme – World Conservation Monitoring Centre (2006) *Strategic Plan 2006-2011*. Cambridge, UK: UNEP-WCMC, p. 9.

³⁶⁷ See <http://www.gbif.org/>.

³⁶⁸ Andrew S. Pullin and Nick Salafsky (2010). “Save the Whales? Save the Rainforest? Save the Data!”, *Conservation Biology*. Volume 24:4, p. 915.

³⁶⁹ Shannon M. Barber-Meyer (2010). “Dealing with the Clandestine Nature of Wildlife-Trade Market Surveys,” *Conservation Biology*. Volume 24:4, p. 918-923.

and applications that amalgamate multiple databases (Kirix Strata) can link resources, thereby allowing more comprehensive analysis.³⁷⁰ These functions are particularly important for sets (or multiple sets) of complex ecological data. Lastly, regime-specific resources such as DNA databases for wildlife may also offer opportunities to improve CITES implementation through better enforcement.³⁷¹

While the examples above relate specifically to biodiversity-related regimes or to CITES in particular, other regime areas can adopt the technologies and processes. Data are available for most regimes, and tools for analyses are becoming more sophisticated. It can be argued that whereas before inclusion of relevant ecological data in regime assessments was risky, exclusion of any data now is remiss.

9.3 Use of mixed methods research in regime effectiveness

This study employed an approach to research that transcends the usual dichotomy between qualitative and quantitative methods, called “mixed methods research.” This approach incorporates both qualitative and quantitative data, as well as qualitative and quantitative methods of analysis. Mixed methods research allowed comprehensive analysis of the overall effectiveness of the CITES and the Review process, and was appropriate given the focus on both institutional and ecological factors.

Qualitative and quantitative data were used in both the institutional and ecological analyses. Diverse institutional criteria were included, and the assessment was based on information from multiple sources, as well as content from previous studies. In addition, quantitative data on species exports were tabulated to learn more about the actual effects of the Review process on legal trade. The study also used ecological information to evaluate impacts on species in terms of their designated conservation status. Data were extracted from the IUCN Red List, the assessments of which are based on a range of quantitative data (range size, population size, rates of decline, etc.).

³⁷⁰ See <http://www.wolframalpha.com/> and <http://www.kirix.com/>.

³⁷¹ Rob Ogden *et al.* (2009). “Wildlife DNA forensics – bridging the gap between conservation genetics and law enforcement”, *Endangered Species Research*. Published online 2 January 2009. Accessed at <http://www.int-res.com/articles/esr2008/theme/Forensic/forensicpp5.pdf> on 11 January 2011.

There has been limited application of research methods that integrate qualitative and quantitative data and analysis into regime assessments. However, regime effectiveness is best understood when both types of data are included, and so these methods are a good match for the subject area. With increasing scrutiny of regime effectiveness as well as improvements in quantitative data collection and collation, use of mixed methods research in this area can be facilitated. In my opinion, a sensible way forward is to increase the number of case studies in which qualitative and quantitative data and analysis are used to understand the relationship between institutional and ecological effectiveness. While theoretical development in the field is advanced by research undertaken at the individual regime level, the ability to conduct comparative studies adds considerable knowledge and understanding about regime effectiveness.³⁷² Accordingly, more research that examines the relationship between institutional and ecological effectiveness is needed. With hundreds of environmental regimes available for analysis, the range of possible case studies is extensive.

9.4 Did the findings of the two analyses converge?

The first part of the analysis undertaken for this study looked at institutional effectiveness of the CITES Review of Significant Trade process. Three main elements of institutional functioning were examined: regime characteristics, national-level implementation, and national-level compliance. A wide array of qualitative and quantitative data were used in the analysis, and based on the criteria and the Likert scale developed for this research, results suggested that CITES and the Review process exhibit partial institutional effectiveness. The analysis of regime characteristics suggested that they were “very effective”. National-level implementation and compliance, which comprised several criteria, had mixed results. Of note in the compliance area were results from the analysis of trade data for species in the sample, which indicated that trade tended to decline concurrently with entry of species into the Review process. This immediate change of trade levels suggests that the process has a direct effect on trade in these species, even where other indicators (e.g. legislation and submission of annual reports) showed poor effectiveness.

³⁷² Mitchell (2006), p. 74.

The second part of the analysis looked at possible ecological consequences (i.e. impacts on conservation status) that could be attributed or related to the Review process and its direct effects on trade in selected species. Changes in conservation status were examined over a 20+ year period. The analysis took into account (to the extent possible) other reasons for changes in conservation status (e.g. new information about the species, changes in the categories). The results of this analysis indicated that most species had maintained the same conservation status or had declined during the 20+ year period. There were two species that had an improvement in conservation status, yet detailed IUCN data indicated that populations of these species were still declining. These findings suggest that the trade reductions evident in the first part of the analysis have had no observable impacts on conservation status of species.

The findings of these two analyses did not converge, and the overall results of this study suggest that institutional effectiveness and ecological effectiveness are not related for this regime. However, the robustness of the findings is limited because the institutional analysis suggested partial effectiveness, resulting in two possible lines of explanation. One line of explanation is that the limited institutional effectiveness is preventing ecological effectiveness, and therefore influencing overall effectiveness. Whereas virtually all of the more 'international' elements of institutional functioning were shown to be effective, three elements related to national-level functioning were shown to be ineffective, i.e. promulgation of legislation, submission of annual reports, and payment of contributions. It is probable that the weaknesses in these areas are preventing better conservation outcomes for the CITES species assessed for this study. It may also be that weaknesses in these areas reflect bigger problems with political will and capacity at the national level. Yet, while the institutional analysis indicated ineffectiveness in these three areas, the key indicator (trade trends) showed a high level of effectiveness. It is not clear why there would be a strong trade response in the face of relatively weak implementation and compliance. One possible explanation is that countries view legislation, annual reports and contributions as unimportant facets of regime participation, but adhere to the core functions (in the case of CITES, trade in species). Another possible explanation is that decreased trade in reviewed species is related more to reduced demand in consumer

countries, as opposed to deliberate controls in supplier countries. Additional research of trade trends would be necessary to explore these alternative explanations.

The other possible line of explanation to account for the divergent findings of the two analyses is the existence of variables that intervene between institutional and ecological effectiveness. This is discussed in the next section.

9.5 The role of intervening variables

This research explored the role of intervening variables in the relationship between institutional and ecological effectiveness. Two categories of intervening variables were examined: those associated with the nature of the problem; and those associated with domestic or national-level factors. In the regime effectiveness literature, these categories have been identified as factors crucial to institutional design, and therefore have been analysed earlier in the causal chain of effectiveness. However, this study has observed that specific elements of the problem can intervene between institutional and ecological effectiveness, as can various national-level factors. If the problem to be solved has been accurately identified, the institutional design reflects the problem, and the institutional functioning is high, there can still be aspects of the problem or domestic factors that mitigate any positive ecological impacts of the regime.

In the case of the CITES Review of Significant Trade, particular aspects of the bird trade have been shown to intervene between institutional and ecological effectiveness. The range of species appeared to impact how trade controls translated to changes in conservation status: improvements and declines in conservation status were more pronounced for species that occur in a single range State. This suggests that a small range makes species more vulnerable to significant trade levels, but also more likely to do well where there are effective trade controls.

On the other hand, results of the analysis indicated that substitutability of species (similar species or captive-bred specimens) did not impact how trade controls translated to changes in conservation status. Even where other substitutes were available and trade moved to those specimens, conservation status of reviewed species did not necessarily improve, as might have been expected.

Intervening variables related to domestic or national-level factors may have had a bigger influence. Unfortunately, the nature and extent of the impact of these variables are difficult to measure and assess. Data on enforcement elements of species trade are sparse and not reflective of the true extent of illegal activity.³⁷³ While anecdotal information exists, there are not enough data to provide an accurate picture of the overall situation. At the same time, any progress made on enforcing CITES provisions may be undercut by powerful economic or socio-cultural incentives to engage in wildlife trade. Where species have a considerable value on international markets, or are important sources of food, compliance with trade restrictions may be reduced.

The single biggest domestic factor that may be intervening between the institutional and ecological effectiveness of CITES and the Review process is the increased prominence of other threats to species. In particular, habitat loss has emerged as the primary threats to most species in the sample. Even where compliance with trade controls was evident, species still declined. CITES and the Review process can only be ecologically effective insofar as trade is the primary threat facing species.

The presence and influence of these intervening variables may exist in the operation of other regimes as well. Specific elements of the species trade problem and national-level factors apply in the case of CITES and the Review process; however, these may have other permutations in different regimes. That is, the particular elements of problems such as land-based sources of marine pollution or transboundary movement of hazardous waste will be unique to those regimes, as will national-level factors that impact the translation of any institutional effectiveness into ecological effectiveness. Researchers with expertise on a particular regime could best identify what possible intervening variables may exist.

The existence of multiple threats suggests that regimes such as CITES can not operate in a vacuum: the complexity of ecological problems requires a cohesive or coordinated approach. Bodansky (2009) has suggested that: “If international law is to address not merely the surface manifestations but the root causes of environmental degradation, then our understanding of what constitutes an environmental issue must grow to encompass

³⁷³ New Zealand Wildlife Enforcement Group, personal communication, 7 February 2011.

economic, social and trade policy.”³⁷⁴ Even if a regime focuses on a narrow aspect of an ecological problem, nevertheless it must ensure that its institutional actions coalesce with related initiatives. To this end, the administering body of the biodiversity MEAs (UNEP) is undertaking work in the area of cohesion among these conventions. For example, progress has been made to streamline reporting under the biodiversity MEAs, and there is an initiative to harmonise data and information related to the conventions.³⁷⁵ The analysis in Chapter 8 also discussed the benefits that emerge from a cohesive approach and joint activities.

The need for regimes to engage with each other – within the environmental realm and also beyond it – is also underscored by the context and drivers of ecological problems.

Ehrenfeld (2000) has pointed out that ecological issues are subject to the same variables or “forces” as global systems in general:

The extinction of species and degradation of habitat are occurring in an enormously larger context than is defined by our science – a world of vast and complex forces, many of which extend far beyond biology. These forces include: (1) global movement of capital; (2) the dominance and consolidation of multinational corporations; (3) the paralyzing inertia and lack of functional feedback mechanisms in large, modern organizations, including universities, governments, and first-world armies; (4) extremely rapid technological and organizational changes that constantly alter the conservation playing field; and (5) the myriad social and environmental effects of war.³⁷⁶

At the same time as these global forces influence species and habitats, it is recognised that local communities and their interests and capacity have a profound impact on regime functioning and effectiveness. With regard to CITES, the ‘intervening’ role of these communities was illustrated through the socio-cultural significance of some species, i.e. the importance of species trade for incomes and sustenance.

Accordingly, increased consideration has been given to the impact and role of species trade on the socio-economic well-being of local communities. It has been recognised by those working on such issues that “a high degree of community involvement does seem to be a precondition for long-term success in areas where livelihood security is linked with

³⁷⁴ Daniel M. Bodansky (2009). “What is International Environmental Law?” University of Georgia School of Law Research Paper Series. Paper No. 09-012. August 2009.

³⁷⁵ See the UNEP Department of Environmental Law and Conventions website. Accessed at <http://www.unep.org/dec/support/interlinkages.html> on 11 January 2011.

the use of natural resources for a large number of people.”³⁷⁷ This assertion has been supported by studies that have looked specifically at the relationship between wildlife trade and rural livelihoods. The International Institute for Environment and Development concluded that, “wild species are important to development, should be used sustainably, are best conserved at the local level and national level, and international cooperation is required in this regard.”³⁷⁸ Further recognising this relationship, Swanson and Johnston have stated that CITES requires the following changes: “The developed countries must learn to appreciate the perspective of the developing countries; wildlife utilisation need not be inconsistent with wildlife conservation. Then, CITES must be reformed to discriminate between the constructive and unconstructive use of the wildlife trade.”³⁷⁹ While global forces have adverse impacts on ecosystems and their resources, it is these same forces that can provide local communities with networks, knowledge, and ultimately, power.³⁸⁰

9.6 Reducing the impact of intervening variables to improve regime functioning

With a better understanding of intervening variables and how they influence the relationship between institutional and ecological effectiveness, the question becomes: can the institutional elements of regimes be manipulated so as to reduce the impact of intervening variables and improve regime functioning? How can institutional effectiveness be better translated into ecological effectiveness (i.e. better overall effectiveness)?

9.6.1 The nature of the problem

There are limited options available in terms of modifying institutional elements of regimes so that they better address the nature of the problem. Many of the elements that fall under this category of intervening variable are immutable: in the case of CITES, the geography of range States can not be changed; species populations may only be viable in particular

³⁷⁶ Ehrenfeld (2000), p. 107.

³⁷⁷ Kamaljit S. Bawa, Reinmar Seidler, and Peter H. Raven (2004). “Reconciling Conservation Paradigms,” *Conservation Biology*. (Volume 18:4, p. 859-560), p. 860.

³⁷⁸ Roe (2002), p. vi.

³⁷⁹ Timothy Swanson and Sam Johnston (1999). *Global Environmental Problems and International Environmental Agreements: The Economics of International Institution Building*. Cheltenham, UK: Edward Elgar, p. 200.

³⁸⁰ Naim (2005) discusses in detail the local networking capacity that globalisation allows.

habitats; there are limits to how many substitute species that may be available; and some types of specimens may not be able to be substituted at all.

However, some institutional elements may be fine-tuned to promote maximum flexibility to address the nature of the problem. For example, it is impractical to change the rationale, objectives, duties and obligations of regimes to integrate more detailed information about species characteristics – this would make convention text complicated and unwieldy.

However, it is possible to establish specific sub-agreements or protocols. While there is no such system in the case of CITES, these protocols and sub-agreements exist in other fora (though are not specifically on species trade). For example, the Convention on Migratory Species (CMS) – with which CITES has a Memorandum of Understanding – has a number of agreements on species in different regions, e.g. Pacific Cetaceans, West African Marine Mammals, etc.³⁸¹ Where taxa are well-represented in the Review process (e.g. Amazon parrots, monitor lizards, giant clams, etc.), specific work programmes could be developed or CITES could collaborate with existing initiatives.

Where participation and membership are issues, the goal should be to expand these to the extent possible. However, if regimes have widespread membership, there are limited options for this to be improved so as to mitigate the effect of intervening variables associated the nature of the problem. Looking at CITES, there are very few countries that are non-Parties to CITES³⁸², and legal trade with or through non-Parties did not emerge as an intervening variable. However, seizures and other forms of illegal trade are not reported by non-Parties, and therefore it is hard to estimate the role of non-Parties in the bird trade.³⁸³

Some non-state entities (such as NGOs) may be interested in contributing to improving regime implementation or operations in countries that need assistance. Indeed, many NGOs are already providing this sort of assistance, and expanding the use of scientific input by and expertise of epistemic communities may reduce the adverse impact of some

³⁸¹ See <http://www.cms.int>.

³⁸² As of March 2011: Andorra, Angola, Bahrain, Cook Islands, Haiti, Holy See, Iraq, Kiribati, Lebanon, Maldives, Marshall Islands, Federated States of Micronesia, Nauru, Niue, North Korea, Tajikistan, Timor-Leste, Tokelau, Tonga, Turkmenistan, Turks and Caicos Islands, Tuvalu.

³⁸³ New Zealand Wildlife Enforcement Group, personal communication, 7 February 2011.

intervening variables. In the CITES regime, additional information about species' populations and threats may increase understanding of the wildlife trade and improve decision-making processes. For example, aviculture organisations could offer technical assistance and information on issues associated with captive breeding of parrots and other bird species.³⁸⁴ Medical associations for practitioners of traditional Asian medicine could help raise public awareness of products or materials that are appropriate substitutes for endangered species ingredients. Non-state entities may have an important role to play in the implementation of CITES, with positive impacts on overall effectiveness of the regime.

Compliance mechanisms are unique to each regime (if indeed they have them), and may focus strictly on agreement provisions, which do not necessarily relate to specific characteristics of the problem. However, aspects of the nature of the problem (e.g. species range, substitutability, etc.) are taken into account in compliance discussions. In CITES, discussion of species in the Review process includes consideration of range and issues such as trade in captive-bred specimens. There should be explicit instructions in the Review process to ensure that intervening variables are examined in detail, so that compliance mechanisms are as effective as possible.

Improving links to other regimes may offer the most scope for addressing these intervening variables and bolstering ecological effectiveness. Where the remit of a particular convention or agreement is narrow, links to other regimes can promote a more cohesive approach to the problem. In the case of CITES, reduction of species' range is a major threat to many of the species that have been reviewed (as well as those that have not been reviewed). This threat falls within the jurisdiction of other regimes such as the Ramsar Convention and the Convention on Biological Diversity. Focusing efforts on species and habitats using a collaborative approach may help achieve better outcomes for all regimes. CITES has signed Memoranda of Understanding with these other Conventions, and cooperation on species- and habitat-related activities should be comprehensive and targeted. Information about CITES species that are extant in these

³⁸⁴ Technical assistance on this front would be especially beneficial where expertise is limited, and captive-breeding operations are sourcing stock from the wild. See Jeremy Hance (2009). "Vietnam's commercial wildlife farms threaten Asia's species". Article accessed online at http://news.mongabay.com/2009/0522-hance_wildlifefarms.html on 25 May 2009.

ecosystems are integral to any activity undertaken by other regimes, and conversely, any improvements that come out of these activities may be beneficial for CITES species.

9.6.2 National-level or domestic factors

There are more opportunities to address intervening variables that occur at the national level. However, given that international conventions have a limited mandate to intervene in domestic affairs, the onus is on Parties to seize these opportunities. For example, the CITES Secretariat does not have the mandate to get involved in domestic issues unless invited by a Party. However, Parties routinely invite the Secretariat to provide assistance and guidance on some domestic matters, though it is limited to matters related to CITES implementation. For example, in 2007 there was an enforcement-oriented mission to Egypt to examine imports of ivory and primates.³⁸⁵ The mission resulted in a series of specific recommendations to address various aspects of domestic CITES implementation, ivory trade, and management of some live CITES species. Without any invitation, however, the Secretariat's powers under the relevant Resolution are limited. The only other 'external' impetus to take action occurs when Parties in the Review process do not comply with recommendations, and become subject to a trade suspension (i.e. through decision of the CITES Standing Committee).

Enforcement efforts might also be improved through secretariat support or Party-initiated research on tools that assist with enforcement. For example in CITES, forensic techniques can be adapted to apply to wildlife crime, which can assist with enforcement of wildlife trade laws. These forensic techniques can improve species identification and origins of specimens.³⁸⁶

Domestic factors that intervene between institutional and ecological effectiveness may also be addressed through improved channels of input and participation from non-state entities. Many of these entities have experience working with Parties on political, economic or socio-cultural elements of the problem the regime is trying to solve. In CITES, NGOs have provided enforcement training in regions where capacity building is

³⁸⁵ For a report of this mission, see <http://www.cites.org/common/com/SC/57/E57-20A.pdf>.

³⁸⁶ See Ogden *et al.* (2009).

required to prevent illegal wildlife trade.³⁸⁷ These NGOs may have more funding to provide such training, and are not as restricted by political sensitivities.

The majority of countries that have been subject to CITES' compliance mechanisms have responded quickly and in most cases have taken action to move toward compliance. In the case of the Review process, the historical response rate to recommendations has been high – about 87% in Phases I to III.³⁸⁸ Discussions about species and countries in the Review take into consideration domestic factors, which may provide lines of explanation as to why there has been significant trade in selected species. However, recommendations that address compliance tend to focus on issues directly related to implementation of CITES provisions, and do not include other factors that may be adversely impacting species.

Technical and financial assistance are focused on issues related to regime implementation, and these can be improved and targeted so as to assist with domestic implementation. In terms of the Review process, the view of the Secretariat is that inadequate implementation of Article IV (non-detriment findings) is the main problem to be solved. Accordingly, the Secretariat has been increasing training to improve the ability of Parties to conduct non-detriment findings. A current initiative is focused on five regions (East/Southern Africa, South/Southeast Asia, West/Central Africa, Central/South America, and West/Central Asia), which includes workshops that emerge from regional needs assessments.³⁸⁹

Efforts are made to ensure technical and financial assistance is effective and has been valuable for Parties. The Chief of the Capacity Building Unit at the CITES Secretariat notes that:

We are in touch with Authorities, agencies and persons after training initiatives, and collect informal information for monitoring and evaluation purposes. I am far more interested in training providing good results, than simply cataloguing the number of participants, etc. We also keep track of authorities and

³⁸⁷ The International Fund for Animal Welfare has funded a number of enforcement training workshops in regions around the world. See http://www.ifaw.org/ifaw_european_union/media_center/press_releases/10_12_2010_68357.php and http://www.ifaw.org/ifaw_united_states/media_center/press_releases/5_1_2009_54556.php. Accessed 31 December 2010.

³⁸⁸ Calculation by author based on data obtained from CITES Secretariat.

³⁸⁹ CITES Secretariat, personal communication, 13 November 2010.

organizations requesting and using our training materials, as a rough indication of interest.³⁹⁰

While assistance from the Secretariat is focused on specific implementation issues, current initiatives may indirectly address some domestic factors that are intervening between institutional and ecological effectiveness. For example, training CITES authorities to improve monitoring and reporting of legal trade (in order to meet CITES obligations) may heighten awareness of and help prevent illegal trade.

Links to other regimes can mitigate the impact of domestic factors that contribute to the problem to be solved by the regime. This is not only true for related environmental regimes, but also for those that address other sectors. As noted above, the international trade regime (i.e. World Trade Organisation and related agreements) has affected import/export restrictions and the movement of commodities – including wildlife – across borders. Agreements between and among states have reduced numerous barriers to trade, such as regulations and some types of border checks.³⁹¹ Improvements in internet connectivity and international banking have also made international wildlife trade easier. Initiatives that pull together all relevant actors may be more effective at addressing wildlife trade issues. For example, a recent cooperative effort to harness the expertise of agencies on this matter is the International Consortium on Combating Wildlife Crime (ICCWC). The ICCWC was established in early 2010, with the following agencies agreeing to, *inter alia*, create a joint work programme on wildlife crime: CITES, Interpol, United Nations Office on Drugs and Crime, World Bank, and the World Customs Organization.³⁹²

The implementation of CITES has evolved to adapt to the reality of important domestic factors. CITES' system of Resolutions and Decisions allows an iterative approach to interpretation of the Convention. For example, recent work on CITES and livelihoods is

³⁹⁰ CITES Secretariat, personal communication, 14 November 2010.

³⁹¹ Although no MEA-related trade restriction has ever been contested through the World Trade Organisation Dispute Settlement Mechanism, the interface between WTO regulations and MEA restrictions has been the focus of several studies. See UNEP and IISD (2005). *Environment and Trade: A Handbook – Second Edition*. Geneva, Switzerland: UNEP; and OECD (1999). *Trade Measures in Multilateral Environmental Agreements: Synthesis Report of Three Case Studies*. Report of the Joint Working Party on Trade and Environment. Paris, France: OECD.

³⁹² See the Letter of Understanding at

http://www.cites.org/eng/news/press/2010/ICCWC_memo.pdf. Accessed 31 December 2010.

intended to address the impact of the implementation of CITES listings on the poor.³⁹³ Given that the majority of wildlife-producing countries fall into the World Bank's low-income and low-middle-income categories, it is essential to consider the socio-economic impacts of trade. Implementation of listings has always had impacts on livelihoods. However, recent and explicit recognition of the relationship between ecosystems and poverty reduction has generated additional discussion and action on this particular intervening variable.

Domestic implementing legislation for CITES reflects the provisions of the Convention; nonetheless, legislation varies among Parties because the legal system and tradition in each country is unique. In addition, because legislation is based on the static provisions of the Convention, there is little scope for it to reflect the more dynamic elements of the species decline problem. In some countries, CITES legislation is included in wider regulations (e.g. Australia's Environmental Protection and Biodiversity Conservation Act, which covers numerous issues), while in others it is stand-alone legislation (e.g. New Zealand's Trade In Endangered Species Act). Where CITES regulations are embedded in broader wildlife protection legislation, there may be scope for addressing some of the intervening variables that pertain to species or to domestic factors. Some countries have implemented stricter domestic regulations for certain species of 'national' importance. For example, because conservation of cetaceans is a priority for Australia, it has stricter domestic measures for this taxon.³⁹⁴ While there have been no comprehensive studies done on how differences in domestic legislation affect CITES implementation, the Secretariat does have an ongoing project to review national wildlife trade policies.³⁹⁵ One of outcomes of this initiative will be a synthesis report that looks at all four of the pilot studies, though it is not clear if it will include a comparative analysis.

³⁹³ See Barney Dickson (2008). "CITES and the livelihoods of the poor", *Oryx*. Volume 42:4, p. 548-553. See also UK Department for International Development (2002). *Wildlife and Poverty Study*. Accessed at

<http://webarchive.nationalarchives.gov.uk/+/http://www.dfid.gov.uk/pubs/files/wildlifepovertystudy.pdf> on 10 January 2011.

³⁹⁴ See <http://www.environment.gov.au/coasts/species/cetaceans/conservation/index.html>.

Accessed 10 January 2011.

³⁹⁵ See <http://www.cites.org/eng/prog/policy/index.shtml>.

Inclusion of CITES provisions in legislation does not necessarily mean they are properly implemented. The continued existence of the Review process is evidence that Parties are not conducting adequate non-detriment findings, as required by the Convention. A major barrier to consistent non-detriment findings is lack of agreement about what this constitutes. Therefore, the nature and quality of these exercises vary. This has been a long-standing issue within CITES, and there have been ongoing efforts to improve the consistency and quality of non-detriment findings. The CITES Secretariat commissioned work on this, resulting in a 'non-detriment finding checklist', which was circulated to Parties in 2000. Since then, there has been a comprehensive initiative led by Mexico to create a set of methodologies for different taxa, and the Secretariat has provided technical assistance on this matter.

While in theory non-detriment findings should include analysis of the intervening variables, some countries have expressed resistance to extensive work on this issue, as it is viewed as overly prescriptive and may infringe on Parties' sovereignty.³⁹⁶ Intervening variables that relate to the nature of the problem are not likely to be contentious in terms of inclusion in non-detriment findings. However, the category relating to domestic factors may be more controversial. Objections related to Party sovereignty may be based specifically on sensitivities associated with political or economic factors.

With 175 Parties, the nature and extent of engagement by national focal points varies. While some countries have whole agencies that are designated focal points, for others it is a single person. Indeed, for some countries, that individual is also the focal point for other MEAs. While this may promote a better understanding and cohesion of MEA implementation, it also creates a substantial workload for these individuals, who may not be able to devote adequate time to implementation. In other cases, focal points may be in departments that deal with other elements of the problem (such as habitat loss) but may not have the mandate or power to address these other issues. There are benefits and disadvantages to each of these situations; the most effective system to ensure optimal

³⁹⁶ See discussions from the 24th Meeting of the Animals Committee and 18th Meeting of the Plants Committee, covered by IISD-Reporting Services. Accessed <http://www.iisd.ca/vol21/enb2164e.html> and <http://www.iisd.ca/vol21/enb2165e.html> on 15 November 2010.

CITES effectiveness will depend not only on the individual country, but the individuals involved with implementation and resources available to the agency in question.

Recommendations that emerge from the Review process reflect the most immediate institutional problem – i.e. implementation of Article IV(2)(a) – but not necessarily the underlying problem of species decline due to trade. By addressing implementation of Article IV(2)(a), a portion of the species decline issue might be mitigated (i.e. that related specifically to wildlife trade); however, decline due to intervening variables may be ignored. While there are no official mechanisms under CITES to address these types of issues, it may be possible for non-state entities (such as NGOs) to engage with Parties and provide technical assistance. The role of intervening variables – as well as remedial action that is or could be taken by non-CITES actors – should be taken into consideration in the formulation of recommendations under the Review process. Collaborative mechanisms with other fora should be extensively employed to take any action necessary (e.g. sharing information, establishing joint work programmes, etc.) to mitigate all causes of species decline. While there have been some resources devoted to undertaking special programmes to address specific species – such as secondments from the Management Authorities of Parties and project funding for a consultant to work on a joint work programme – these need be financed in such a way as to be a permanent part of the ongoing Secretariat work programme.

9.7 Observations on and recommendations for CITES and the Review process

Using a mixed methods research approach and including both qualitative and quantitative data in this study provided a comprehensive picture of the institutional functioning of CITES and the Review process and their relationship to species decline. At a superficial level, the conclusions of this research on CITES parallel those of a study conducted by Kosloff and Trexler in 1987: “The net result...is an approach to the species extinction problem that in the vast majority of cases can only partially alleviate the threat facing a species, rather than solving the problem and restoring the species.”³⁹⁷

³⁹⁷ Kosloff and Trexler (1987), p. 10226.

However, although data indicated the decline of both legal trade *and* conservation status of threatened species, it is impossible to know how many more species would have declined without CITES in place. In other words, while specific goals may not have been achieved, reductions in the levels of exports indicate an improvement in the situation; it is likely that the counterfactual would have been a more serious decline of conservation status. In addition, CITES has an essential role in addressing this aspect of species decline. As previous assessments of CITES have noted, the Convention has been “instrumental in advancing global conservation efforts, beyond what was accomplished under CITES.”³⁹⁸ Sand also made the same observation: “Paradoxically, frequent news reports about CITES infringements (as well as the prosecutions, confiscations and fines ensuing) turned out to be the most effective way of raising public awareness and acceptance of the treaty, thus strengthening legitimacy of the regime.”³⁹⁹

The Review of Significant Trade process is also valuable in this regard. Reductions in exports of species as soon as they are included in the Review – even before they are assessed by the scientific committee – suggest that the process has an immediate impact on either supply of or demand for species. While these declines in trade are not the goal of the Review process, this phenomenon indicates that it is taken seriously by Parties. The Review process could be further strengthened by ensuring all recommendations and actions support its goal – to ensure proper implementation of Article IV (non-detriment of exports). Parsons *et al.* have observed that: “Parties are not held accountable for [non-detriment findings – NDFs] they issue or accept; they do not need to demonstrate the scientific basis of any NDFs issued or accepted.”⁴⁰⁰ Although these actions are not necessary to comply with the letter of CITES, meeting these standards could lead to improved effectiveness.

Overall, the effectiveness of CITES and the Review process may increase through consideration of some of the intervening variables that were discussed in this study. To this end, three recommendations are offered based on findings of this research.

³⁹⁸ ERM (1996), p. 84. See also the reviews referenced in Chapter 5, Table 5.3.

³⁹⁹ Sand (1996), p. 48.

⁴⁰⁰ E.C.M. Parsons, N.A. Rose, and T.M. Telecky (2010) “The trade in live Indo-Pacific bottlenose dolphins from Solomon Islands – A CITES decision implementation case study”, in *Marine Policy*. (Volume 34, p. 384-388) 385.

1. Improve current processes to account for intervening variables

CITES processes may benefit from taking a broader approach, in terms of looking at multiple issues, multiple countries, or multiple threats. For example, in 2001 the Animals Committee adopted a recommendation calling for a ‘country-based Review’, with the aim of “establishing a broader and more cost-effective approach concerning the implementation of Article IV at the national level rather than at a species-specific level.”⁴⁰¹ Madagascar was chosen as the pilot country for this initiative – an appropriate choice given the number of their species that have been included in the Review process. The main output from the country-based Review of Madagascar was an action plan that included activities for various issues, such as national policy and legislation, management and control procedures, communications, and financing. These activities address many institutional elements of the Review process, but focus on the mechanisms necessary to solve the problem of Article IV(2)(a) (the need for non-detriment findings), and not the wider problem of species decline due to unsustainable trade. Although a broader approach was envisaged with this country-based Review, intervening variables (such as those discussed in this study) were not directly addressed – this was a lost opportunity, given the significant impact that intervening variables can have on ecological effectiveness. Undertaken in a systematic and comprehensive manner, country-based Reviews may be a means by which intervening variables that affect trade and conservation status of species can be examined. So far there have been no other countries selected for a country-based Review of trade, so it is not clear whether or not the Madagascar case provides a template for any future use.

In addition, the country-based Review – as part of the overall Review process – is currently undergoing a process of evaluation to assess its effectiveness.⁴⁰² The terms of reference for this exercise state that the objectives are to evaluate the contribution of the Review to the implementation of the relevant articles of the Convention, and to assess the impact over time of the process on the trade and conservation status of species selected for

⁴⁰¹ CITES Secretariat (August 2001). *Summary Report of the 17th Meeting of the Animals Committee*. Accessed at http://www.cites.org/eng/com/AC/17/AC17_Summary_Record.pdf on 11 January 2011.

⁴⁰² See http://www.cites.org/eng/dec/valid15/13_67.shtml and <http://www.cites.org/eng/dec/valid15/annex1.shtml>. Accessed 1 February 2011.

review.⁴⁰³ The evaluation presents an excellent opportunity for the Secretariat to examine the institutional functioning of the Review process as well as the ecological impacts. Additional insights could be gained if the evaluation also examines the role of intervening variables. The Review has been through various iterations – all of them improving its operation – and hopefully this evaluation will further benefit the process.⁴⁰⁴

2. Undertake more comprehensive collaboration with other regimes

As mentioned in earlier sections, there are opportunities for CITES to engage in more comprehensive collaboration with other regimes, particularly those that work on species-related issues. For example, CITES has engaged in joint work programmes with CMS on programmes related to *Saiga tatarica* (Saiga antelope). This species is listed on both conventions and both regimes were undertaking initiatives toward its conservation and management. Collaborative projects with other regimes may also be a means by which intervening variables can be addressed. An example related to CMS is their work undertaken on flyways, which is at a scale beyond the species level and addresses intervening variables related to habitat loss. Flyways are migratory routes for birds that include their breeding and wintering grounds, and which may span continents and oceans. Where these flyways are used by CITES-listed species, it makes sense for CITES to be part of any discussions, initiatives and activities to protect and conserve them. CITES involvement in these types of initiatives may also improve inter-agency collaboration in the range States, where agencies or stakeholders who work on species issues may not be in meaningful contact with those who work on habitat. In addition, providing trade-relevant and species-specific expertise into the flyways process can improve overall understanding of the issue, and may offer insights into multiple threats to species and habitats.

In the past few years, CITES has also made inroads into collaborating with international bodies that look after illicit border activity – such as the World Customs Organisation and Interpol. Not only does CITES have individual MOUs with many of these agencies, but it has also created multi-agency partnerships, such as the ICCWC (described in section

⁴⁰³ CITES Secretariat (2008). *Evaluation of the Review of Significant Trade*. Accessed at <http://www.cites.org/eng/com/AC/23/E23-08-01.pdf> on 11 January 2011.

⁴⁰⁴ As of early 2011, the preparatory work for the evaluation had been completed, as well as selection of members of the advisory group.

9.6.2). Ensuring collaboration among regimes may help address intervening variables by: preventing unforeseen impacts of new regulations; encouraging information sharing and coordination of activities; and improving overall understanding of the context around species decline.

Another area for collaboration is between CITES, UNEP-WCMC, and IUCN. The extent to which the valuable trade data collected under CITES (and held by UNEP-WCMC in their Global Trade Database) are used in IUCN Red List assessments is not clear. While trade is included in the Red List Threat Classification Scheme, and some species assessments have rudimentary comments about trade levels, there does not appear to be any detailed data, even when it is available. Comprehensive use of the CITES/UNEP-WCMC data may better inform Red List assessments and our understanding of the conservation status of species.

3. Get more value out of bilateral and regional activities

My experience working for a national CITES authority has elucidated the importance of bilateral and regional approaches to the overall effectiveness of regimes. In the Pacific region at least, there is regular contact among CITES Parties (and in some cases, between Parties and non-Parties) to improve CITES implementation, operations, and enforcement. While some of the contact is more informal (e.g. one-off questions regarding consignments, passengers, etc.), there are formal mechanisms by which contact and activities take place (e.g. Interpol operations, coordination meetings prior to CoPs, capacity building initiatives, etc.). Specific bilateral or regional activities may be able to address some of the intervening variables that may be working against effective CITES implementation at the national level. For example, in-country workshops that attract the attention of higher-level officials may bring attention to the Convention and increase political will to implement it. At the same time, training that targets border control officers increases their understanding of CITES and can reduce incidents of illegal trade by improving awareness of concealment techniques, species identification skills, and ability to detect fraudulent documentation. Improvements in CITES effectiveness may be accelerated if these initiatives target countries that are having major implementation problems (such as those well-represented in the Review of Significant Trade process).

In my view, there is scope for increasing the advantages that emerge from bilateral and regional activities. For example, many of the initiatives that are currently undertaken by individual Parties or groups of Parties may be occurring ‘under the radar’ of other Parties. The Secretariat may be made aware of the details of these initiatives, but only scant information is available to the public or Parties (through regional reports). Detailed information about these initiatives – such as methodologies and outcomes – could be collated and analysed, to get a sense of best practices in these capacity building and other partnership activities. Numerous resources are created or published for these bilateral and regional initiatives – such as species identification guides, ‘cheat sheets’ to provide easy instructions on checking permits, etc. – and these could be made available on the CITES website for access by other regions or Parties. A wider array of resources for Parties, coupled with a set of best practices for CITES implementation, could help in improving overall effectiveness of CITES.

What is clear is that CITES was negotiated in a different era than it currently operates. As Favre has noted, “the treaty is based upon 1960s perceptions of wildlife issues, as seen by North American and European drafters.”⁴⁰⁵ What is evident is that CITES is continuing to evolve in its approach to species trade. This evolution aligns with Wettestad’s suggestion that regimes go through various phases:

Certain institutional options go more naturally together with certain phases in the development. Take for instance what may be termed the early, institutional “warm-up” phase after the initial conventions have been established. This phase generally calls for inclusive access, bureaucratic footwork, the building of consensual decision-making, and nonintrusive confidence-building verification and compliance mechanisms. Over time, when knowledge increases and the parties’ ambitions also increase, there is a greater need for higher decision-making and aggregation capacity, perhaps enhanced by the temporary and vitalizing participation of ministers and politicians in the process. When regulations become more ambitious and specific, the need for sharper verification and compliance instruments also increases.⁴⁰⁶

⁴⁰⁵ David Favre (1993). “Debate within the CITES Community: What Direction for the Future?”, *Natural Resources Journal*. (Volume 33, p. 785-918) 876. Dilys Roe (2006) also notes some actions taken under CITES “can smack of Northern imperialism.” See Dilys Roe (2006). “Blanket bans – conservation or imperialism? A response to Cooney & Jepson”, in *Oryx*. (Volume 40:1, p. 27-28) 27; and Inés Arroyo-Quiroz, Ramón Perez-Gil and Nigel Leader-Williams (2005). “Developing Countries and the Implementation of CITES: The Mexican Experience”, in *Journal of International Wildlife Law and Policy*. Volume 8:1, p. 13-49.

⁴⁰⁶ Wettestad (2001), p. 337.

After 35 years of operation, it is arguable that CITES is far beyond the initial “warm-up” stages, and is now in a phase where there is a need for ‘higher-decision making’ based on current knowledge and understanding of biodiversity loss. Looking at the results of this research, a logical focus of this higher decision-making for CITES may be intervening variables related to the nature of the species decline problem and domestic factors. Not all aspects of the intervening variables can be integrated into CITES operations and implementation, but where there are improvements to be made – such as through improvements to current processes, increased collaboration with other regimes, and getting more value out of bilateral and regional activities – CITES stands to benefit. These improvements may be informed using the growing knowledge base in the academic field, practical developments in the field, as well as lessons from other areas such as conservation biology. In this way, the institutional effectiveness of CITES and the Review process may better translate into ecological effectiveness and go a lot farther toward solving the problem.

9.8 Conclusions

The diversity of theoretical work on regime effectiveness is rich and growing, resulting in a wide range of interpretations of effectiveness. Even though effectiveness can be understood in different ways, researchers in the field must ensure that definitions are explicit and consistent – both in what they include and what they exclude. Moreover, given that ecological effectiveness may not follow from institutional effectiveness, these terms must not be seen as being equivalent. Similarly, institutional effectiveness should not be deemed a proxy for ecological effectiveness. Using vague or broad terms around the concept of effectiveness inhibits the understanding of regime consequences, and may slow progress on how environmental issues are addressed in practical terms. Institutional and ecological effectiveness have been shown to be distinct – and in some cases may be unrelated. Limited institutional effectiveness may reduce ecological effectiveness, or intervening variables may be playing a role in this regard. In reality, overall effectiveness may be affected by both factors. What implications does this have for our understanding of overall effectiveness?

One implication is the need to ensure that researchers need to be unambiguous about what type of effectiveness is being assessed, using an explicit definition of effectiveness. If analysis is on implementation and compliance (outputs and outcomes), researchers should clear they are focusing on institutional effectiveness. It has been shown in this case (and it may be true for other regimes) that institutional effectiveness or behaviour change does not necessarily lead to ecological improvements, and so this assumption should not be made. Moreover, if an understanding of overall effectiveness is sought, ecological data should be included in the analysis.

When ecological factors are integrated into the effectiveness definition, the ecological nature of the problem to be solved is clear. However, when these are excluded, it suggests that the problem is strictly an institutional one. In other words, behaviour change is the sole problem to be solved. Behaviour change is an essential element of effectiveness and should also be part of any definition and evaluation. Nonetheless, these evaluations are only half the task – the other half is examining if behavioural outcomes have resulted in any ecological impacts.

A second implication arising from the research is the need for further work on understanding the relationship between institutional and ecological effectiveness, using other regimes as case studies. Establishing the causal chain from behaviour change to ecological impacts is challenging. As this case study indicated, there are a number of other factors causing the same ecological impacts, and disaggregating the influence of the regime is difficult. Environmental processes can not be observed or controlled in laboratory-like conditions, so any expectation of establishing clear causal chains (as one might get in a laboratory setting) is unfounded. Nonetheless, comprehensive exploration of the causal chain can provide more insights on regime functioning and overall effectiveness.

The framework used in this study provides a good basis for assessing the relationship between institutional and ecological effectiveness and for exploring factors that may be affecting it. Part of that exploration involves examining the interlinkages between regime functioning (i.e. general characteristics), institutional effectiveness in the form of behaviour change, and ecological effectiveness. To what extent do well-functioning

regimes bring about the behaviour change desired? Is basic regime functioning and behaviour change more likely to lead to ecological effectiveness? These relationships require further study. Despite the analytical complications in this study that emerged from the institutional analysis (i.e. the ability to reach conclusions when effectiveness is ‘partial’), the research still generated more knowledge and improved our understanding of overall effectiveness. As the number of environmental regimes increases along with the complexity of environmental problems, the importance of understanding overall effectiveness of these regimes is vital. In terms of work in the academic realm, the framework used in this study could be adapted for evaluations of other regimes. In addition, self-assessments should be an essential element of any regime design and structure, and if not already included in convention text, should emerge from resolutions or other decisions. Institutional learning can also be augmented through the importation of evaluation methods in other areas, such as conservation biology. However, having a firm grasp of how regimes are functioning at an institutional level is not enough: we also must understand their actual impacts on our world. If these impacts are not visible – or other threats and issues are emerging – regimes must adapt to these to ensure their relevance and responsiveness. Right now, international regimes are one of the best tools available to address global environmental issues, and it is imperative that they are both institutionally and ecologically effective.

APPENDIX 1: CITES Article IV

Article IV: Regulation of Trade in Specimens of Species Included in Appendix II

Note: Paragraphs relevant to Resolution Conf. 12.8 (Rev. CoP13) are in italics.

1. All trade in specimens of species included in Appendix II shall be in accordance with the provisions of this Article.

2. The export of any specimen of a species included in Appendix II shall require the prior grant and presentation of an export permit. An export permit shall only be granted when the following conditions have been met:

(a) a Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of that species;

(b) a Management Authority of the State of export is satisfied that the specimen was not obtained in contravention of the laws of that State for the protection of fauna and flora; and

(c) a Management Authority of the State of export is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment.

3. A Scientific Authority in each Party shall monitor both the export permits granted by that State for specimens of species included in Appendix II and the actual exports of such specimens. Whenever a Scientific Authority determines that the export of specimens of any such species should be limited in order to maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs and well above the level at which that species might become eligible for inclusion in Appendix I, the Scientific Authority shall advise the appropriate Management Authority of suitable measures to be taken to limit the grant of export permits for specimens of that species.

4. The import of any specimen of a species included in Appendix II shall require the prior presentation of either an export permit or a re-export certificate.

5. The re-export of any specimen of a species included in Appendix II shall require the prior grant and presentation of a re-export certificate. A re-export certificate shall only be granted when the following conditions have been met:

(a) a Management Authority of the State of re-export is satisfied that the specimen was imported into that State in accordance with the provisions of the present Convention; and

(b) a Management Authority of the State of re-export is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment.

6. The introduction from the sea of any specimen of a species included in Appendix II shall require the prior grant of a certificate from a Management Authority of the State of

introduction. A certificate shall only be granted when the following conditions have been met:

(a) a Scientific Authority of the State of introduction advises that the introduction will not be detrimental to the survival of the species involved; and

(b) a Management Authority of the State of introduction is satisfied that any living specimen will be so handled as to minimize the risk of injury, damage to health or cruel treatment.

7. Certificates referred to in paragraph 6 of this Article may be granted on the advice of a Scientific Authority, in consultation with other national scientific authorities or, when appropriate, international scientific authorities, in respect of periods not exceeding one year for total numbers of specimens to be introduced in such periods.

APPENDIX 2: Detailed description of Review of Significant Trade process

This description is based on Resolution Conf. 12.8 (Rev. CoP13).

1. Selection of species to be reviewed

Step A: Within 90 days after the COP, the Secretariat asks UNEP-WCMC to produce a summary of the annual trade data submitted by Parties. The data contained in this report are statistics showing the recorded net level of exports for Appendix II species over the five most recent years.

Step B: On the basis of the report produced by UNEP-WCMC, the Animals or Plants Committee selects 'species of priority concern' (see Step 3 for more information on categories). This is usually done at the first Animals or Plants Committee meeting to be convened after the COP. Species can be selected even if they have already been subject to a previous review.

(Species can be added to the list of 'species of priority concern' if new information indicates that there is an urgent concern.)

2. Consultation with the range States concerning implementation of Article IV

Step A: Within 30 days of the Animals or Plants Committee meeting, the Secretariat notifies the range States about the selection of the species. The Secretariat also provides an explanation for this selection, and requests comments regarding possible problems with implementing Article IV.

Step B: Within 60 days, range States respond.

Step C: The Secretariat reports the responses of the range States (as well as any other information) to the Animals or Plants Committee.

Step D: If the Animals or Plants Committee is satisfied that the export of the species is non-detrimental to its long-term survival, the species will be removed from the Review for the Party concerned. However, it is possible that populations in the territories of other Parties may remain in the Review process, if those Parties have not adequately implemented Article IV. If the species (or certain populations) are removed from the Review, the Secretariat will inform relevant Parties within 60 days.

3. Compilation of information and preliminary categorization

Step A: If the Animals or Plants Committee is not satisfied that Article IV has been correctly implemented, the Secretariat proceeds with the compilation of information, such as the biology and management of and trade in the species. Consultants may be engaged for this process. The range States or relevant experts may also be contacted for information.

Step B: Based upon this information, the Secretariat (or consultants) provisionally divides the selected species into three categories.

- (i) *Species of urgent concern*: species for which the available information indicates that Article IV is not being implemented
- (ii) *Species of possible concern*: species for which the available information is not adequate to determine whether Article IV is being implemented
- (iii) *Species of least concern*: species for which the available information indicates that Article IV is being implemented

Species that have multiple range States may be put into different categories; i.e. for country A, the species may be of urgent concern, but for country B, the species may be of least concern.

Step C: The Secretariat transmits the categorisation report to the range States for comment and, if necessary, additional information. Range States have 60 days to respond.

4. Review of information and confirming of categorisation by the Animals or Plants Committee

Step A: The Animals or Plants Committee reviews the Secretariat's report, as well as the responses received by the States. If appropriate, the Animals or Plants Committee can revise the categorisation proposed.

Step B(i): Species of least concern are eliminated from the review.

OR

Step B(ii): The Secretariat addresses issues not related to Article IV implementation.

5. Formulation of recommendations and their transmission to the range States

Step A: The Animals or Plants Committee, in consultation with the Secretariat, formulates recommendations for the species still in the Review process. These recommendations are for the range States to implement.

(i) *Species of urgent concern*: Recommendations propose specific actions related to Article IV implementation, and differentiate between short- and long-term actions. Examples of recommendations include:

- establishing administrative procedures;
- setting cautious export quotas or temporary restrictions on exports;
- establishing adaptive management procedures; or
- conducting population status assessments, field studies or evaluations of threats to populations.

Deadlines are determined by the Animals or Plants Committee meeting, but are usually not less than 90 days or more than two years after the date of transmission to the State.

(ii) *Species of possible concern*: Recommendations specify the information required in order to enable the Animals or Plants Committee to determine how the species should be categorised (either of urgent concern or least concern). Interim measures should also be recommended, where appropriate. Examples of recommendations include:

- conducting population status assessments, field studies or evaluations of threats to populations, or
- setting cautious export quotas or temporary restrictions on exports, as an interim measure.

Deadlines are determined by the Animals or Plants Committee meeting, but are usually not less than 90 days or more than two years after the date of transmission to the State.

Step B: The Secretariat transmits the recommendations to the range States.

6. Measures to be taken regarding the implementation of recommendations

Step A: The Secretariat, in consultation with the Animals or Plants Committee Chair, determines whether the recommendations have been implemented. The Secretariat reports this to the Standing Committee.

Step B(i): When recommendations have been met (i.e. Article IV is being correctly implemented), the Secretariat - after consulting with the Standing Committee Chair - notifies Parties that the species is removed from the process.

Step B(ii): When recommendations have not been met, the Secretariat recommends to the Standing Committee appropriate action (such as a suspension of trade, as a last resort).

Step C: On the basis of the Secretariat's report, the Standing Committee makes recommendations to the State concerned, or to all Parties.

Step D: The Secretariat informs the Parties of any recommendations or actions by the Standing Committee.

Step E: The Standing Committee, in consultation with the Secretariat and the Animals or Plants Committee Chair, reviews recommendations to suspend trade that have been in place for longer than two years. If appropriate, measures may be taken to address the situation.

(A recommendation to suspend trade in a certain species may be withdrawn only when a State demonstrates compliance with Article IV to the satisfaction of the Standing Committee.)

APPENDIX 3: Overview of bird species in Phases I-III

Latin name	Common name	Countries (bold = with recommendations)	RLI trend: 88 – 04	Trade trends	Comments	
Phase I						
1	<i>Agapornis canus</i>	Madagascar Lovebird	MG	LR/lc – LC	decrease	
2	<i>Agapornis fischeri</i>	Fischer's Lovebird	TZ	LR/lc – NT	decrease	Trade susp since April 1993
3	<i>Amazona aestiva</i>	Blue-fronted Amazon	AR, BO, BR, PY	LR/lc – LC	mix	
4	<i>Amazona oratrix</i>	Yellow-headed Amazon	BZ, GT, MX	(LR/lc – EN)		Excluded - negligible trade data
5	<i>Amazona viridigenalis</i>	Green-cheeked Amazon	MX, US	TH – EN	decrease	
6	<i>Aratinga erythrogyne</i>	Red-masked Conure	PE, EC	LR/lc – NT	decrease	
7	<i>Brotogeris pyrrhoptera</i>	Grey-cheeked Parakeet	PE, EC	TH – EN	decrease	
8	<i>Cacatua alba</i>	White Cockatoo	ID	TH – VU	decrease	
9	<i>Cacatua goffini</i>	Goffin's Cockatoo	ID	TH – NT	decrease	Appendix I in Jun 1992
10	<i>Cacatua haematuropygia</i>	Philippine Cockatoo	PH	TH – CR	decrease	Appendix I in Jun 1992
11	<i>Cacatua sulphurea</i>	Lesser Sulphur-crested Cockatoo	ID	TH – CR	decrease	Appendix I in Jan 2005
12	<i>Eos reticulata</i>	Blue-streaked Lory	ID	TH – NT	decrease	
13	<i>Psittacus erithacus</i>	African Grey Parrot	CM, GH, GN, LR, TG	LR/lc – NT	mix	
Phase II						
1	<i>Agapornis lilianae</i>	Lilian's Lovebird	MW, MZ, TZ, ZM, ZW	LR/lc – NT	decrease	
2	<i>Agapornis personatus</i>	Masked Lovebird	BI, KE, TZ	LR/lc – NT	decrease	
3	<i>Alisterus amboinensis</i>	Ambon King-parrot	ID	LR/lc – LC	t-spike	
4	<i>Amazona auropalliata</i>	Yellow-naped Parrot	CR, SV, GT, HN, NI	LR/lc – LC	t-spike	
5	<i>Amazona finschi</i>	Lilac-crowned Amazon	MX	LR/lc – VU	decrease	
6	<i>Aprosmictus erythropterus</i>	Red-winged Parrot	AU, ID, PG	LR/lc – LC	decrease	
7	<i>Aprosmictus jonquillaceus</i>	Olive-shouldered Parrot	ID	LR/lc – NT	decrease	
8	* <i>Ara ararauna</i>	Blue-and-gold Macaw	BO, BR, CO, EC, FG, GY, PA, PE, SR, TT, VE	LR/lc – LC	mix	
9	* <i>Ara chloropterus</i>	Green-winged Macaw	AR, BO, BR, CO, EC, FG, GY, PA, PY, PE, SR, VE	LR/lc – LC	mix	
10	<i>Aratinga acuticaudata</i>	Blue-crowned Conure	AR, BO, BR, CO, PY, UY, VE	LR/lc – LC	decrease	
11	<i>Aratinga auricapillus</i>	Golden-capped Conure	BR	(TH – NT)		Excluded - negligible trade data
12	<i>Aratinga holochlora</i>	Green Conure	SV, GT, HN, MX, NI		(mix)	Excluded - not on Red List
13	<i>Aratinga jandaya</i>	Jandaya Conure	BR	(LR/lc – LC)		Excluded - negligible trade data
14	<i>Aratinga mitrata</i>	Mitred Conure	AR, BO, PE	LR/lc – LC	decrease	
15	<i>Brotogeris chiriri</i>	Yellow-chevroned Parakeet	AR, BO, BR	LR/lc – LC	decrease	

16	<i>Brotogeris versicolurus</i>	Canary-winged Parakeet	BR, CO, EC, FG, PE , SR, US	LR/lc – LC	increase	
17	<i>Cacatua galerita</i>	Greater Sulphur-crested Cockatoo	AU, ID , NZ, PG, SG	LR/lc – LC	mix	
18	<i>Cacatua sanguinea</i>	Bare-eyed Cockatoo	AU, ID , PG, SG	LR/lc – LC	mix	
19	<i>Chalcopsitta atra</i>	Black Lory	ID	LR/lc – LC	t-spike	
20	<i>Charmosyna josefinae</i>	Josephine's Lorikeet	ID , PG	LR/lc – LC	decrease	
21	<i>Coracopsis vasa</i>	Vasa Parrot	MG , KM	LR/lc – LC	decrease	
22	<i>Cyanoliseus patagonus</i>	Burrowing Parakeet	AR , CL, UY	LR/lc – LC	steady	
23	<i>Deroytyus accipitrinus</i>	Red-fan Parrot	BR, CO, EC, FG, GY , PE, SU, VE	LR/lc – LC	mix	
24	<i>Eos bornea</i>	Moluccan Lory	ID	(NT – LC)		Excluded - negligible trade data
25	<i>Eos cyanogenia</i>	Biak Red Lory	ID	NT – VU	decrease	
26	<i>Eos squamata</i>	Moluccan Red Lory	ID	LR/lc – LC	t-spike	
27	<i>Forpus xanthops</i>	Yellow-faced Parrotlet	PE	LR/lc – VU	decrease	
28	<i>Goura cristata</i>	Western Crowned-pigeon	ID	(TH – VU)		Excluded - negligible trade data
29	<i>Loriculus flosculus</i>	Flores Hanging Parrot	ID	(NT – EN)		Excluded - negligible trade data
30	<i>Loriculus galgulus</i>	Blue-crowned Hanging Parrot	BN, ID , MY , SG, TH	LR/lc – LC	mix	
31	<i>Loriculus philippensis</i>	Colasisi	PH	LR/lc – LC	decrease	
32	<i>Lorius garrulus</i>	Chattering Lory	ID	NT – EN	decrease	
33	<i>Nandayus nenday</i>	Nanday Parakeet	AR , BO, BR, PY, US	LR/lc – LC	decrease	
34	<i>Phoenicopterus chilensis</i>	Chilean Flamingo	AR , BO, BR, CL, EC, PY, PE, UY	LR/lc – NT	decrease	
35	<i>Pionus maximiliani</i>	Scaly-headed Parrot	AR , BO, BR, PY	LR/lc – LC	decrease	
36	<i>Pionus senilis</i>	White-crowned Parrot	BZ, CR, GT, HN , NI , MX, PA	LR/lc – LC	mix	
37	<i>Poicephalus cryptoxanthus</i>	Brown-headed Parrot	KE, MW, MZ , TZ , ZA, SW, ZW	LR/lc – LC	mix	
38	<i>Poicephalus meyeri</i>	Meyer's Parrot	AO, BW, BI, CF, TD, CD, ER, ET, KE, MW, MZ , NA, RW, TZ , ZA, SD, UG, ZM, ZW	LR/lc – LC	decrease	
39	<i>Poicephalus rufiventris</i>	Red-bellied Parrot	ET, KE, SO, TZ	LR/lc – LC	t-spike	
40	* <i>Poicephalus senegalus</i>	Senegal Parrot	BJ, BF, CM, CF, TD, CI, GM, GH, GN, GW, LB, ML, MR, NE, NG, SN , SL, TG	LR/lc – LC	mix	
41	<i>Psittacula longicauda</i>	Long-tailed Parakeet	BN, IN, ID , MY , MM, SG, TH	LR/lc – NT	mix	
42	<i>Psittacula roseata</i>	Blossom-headed Parakeet	BD, BT, KH, CN, IN, LA, MM, NP, TH, VN	LR/lc – LC	mix	
43	<i>Psittaculirostris desmarestii</i>	Large F-parrot	ID , PG	LR/lc – LC	decrease	
44	<i>Psittaculirostris edwardsii</i>	Edwards's Fig-parrot	ID , PG	LR/lc – LC	decrease	

45	<i>Psittaculirostris salvadorii</i>	Salvadori's Fig-parrot	ID	TH – VU	decrease	
46	<i>Psitteuteles iris</i>	Iris Lorikeet	ID	NT – NT	decrease	
47	<i>Psittinus cyanurus</i>	Blue-rumped Parrot	BN, ID, MY, MM, SG, TH	LR/lc – NT	t-spike	
48	<i>Pyrrhura frontalis</i>	Maroon-bellied Parakeet	AR, BR, PY, UY	LR/lc – LC	decrease	
49	<i>Pyrrhura perlata</i>	Crimson-bellied Parakeet	BO, BR	(LR/lc – LC)		Excluded - negligible trade data
50	<i>Rhea americana albescens</i>	Common Rhea	AR, BO, BR, PY, UY	NT – NT	decrease	
51	<i>Tanygnathus heterurus</i> = <i>Tanygnathus sumatranus</i>	Blue-backed Parrot	ID, PH	LR/lc – LC	decrease	
52	<i>Tanygnathus megalorynchos</i>	Great-billed Parrot	ID, PH	LR/lc – LC	decrease	
53	<i>Tauraco fischeri</i>	Fischer's Turaco	KE, SO, TZ	LR/lc – NT	t-spike	
Phase III						
1	<i>Alisterus chloropterus</i>	Papuan King-parrot	ID, PG	LR/lc – LC	decrease	
2	<i>Aratinga wagleri</i>	Scarlet-fronted Parakeet	CO, EC, PE, VE	LR/lc – LC	t-spike	
3	<i>Chalcopsitta duivenbodei</i>	Brown Lory	ID, PG	LR/lc – LC	decrease	
4	<i>Charmosyna papou</i>	Papuan Lorikeet	ID, PG	LR/lc – LC	decrease	
5	<i>Loriculus pusillus</i>	Yellow-throated Hanging Parrot	ID	NT – NT	decrease	
6	<i>Poicephalus gulielmi</i>	Red-fronted Parrot	AO, CM, CF, CG, CD, CI , GQ, GA, GH, GN , KE, LR, NG, TZ, UG	LR/lc – LC	mix	
7	<i>Psittacula alexandri</i>	Red-breasted Parakeet	BD, BT, KH, CN, IN, ID, LA, MY, MM , NP, TH, VN	LR/lc – LC	decrease	
8	<i>Psittacula finschii</i>	Grey-headed Parakeet	BD, BT, KH, CN, IN, ID, LA, MM , TH, VN	(LR/lc – LC)		Excluded - negligible trade data

APPENDIX 4: Deviant cases used in analysis

Latin name	Common name	Countries (bold = with recs)	RLI trend	Trade trends	Comments	
Phase I mammals						
1	<i>Lama guanicoe</i>	Guanaco	AR	96 LR/lc – 08 LC	decrease	
2	<i>Lama guanicoe</i>	Guanaco	CL		mix	
3	<i>Lynx lynx</i>	Eurasian Lynx	AM	96 LR/lc – 08 LC	negligible	
4	<i>Lynx lynx</i>	Eurasian Lynx	AZ		negligible	
5	<i>Lynx lynx</i>	Eurasian Lynx	BY		negligible	
6	<i>Lynx lynx</i>	Eurasian Lynx	CN		decrease	
7	<i>Lynx lynx</i>	Eurasian Lynx	EE		increase	
8	<i>Lynx lynx</i>	Eurasian Lynx	GE		negligible	
9	<i>Lynx lynx</i>	Eurasian Lynx	KZ		negligible	
10	<i>Lynx lynx</i>	Eurasian Lynx	KG		negligible	
11	<i>Lynx lynx</i>	Eurasian Lynx	LV		negligible	
12	<i>Lynx lynx</i>	Eurasian Lynx	LT		negligible	
13	<i>Lynx lynx</i>	Eurasian Lynx	MD		negligible	
14	<i>Lynx lynx</i>	Eurasian Lynx	RU		decrease	
15	<i>Lynx lynx</i>	Eurasian Lynx	TJ		negligible	
16	<i>Lynx lynx</i>	Eurasian Lynx	TM		negligible	
17	<i>Lynx lynx</i>	Eurasian Lynx	UA		negligible	
18	<i>Lynx lynx</i>	Eurasian Lynx	UZ		negligible	
19	<i>Manis crassicaudata</i>	Indian Pangolin	BD	96 LR/nt – 08 NT	negligible	Rampant illegal trade
20	<i>Manis crassicaudata</i>	Indian Pangolin	IN		negligible	
21	<i>Manis crassicaudata</i>	Indian Pangolin	PK		negligible	
22	<i>Manis crassicaudata</i>	Indian Pangolin	SG		negligible	
23	<i>Manis crassicaudata</i>	Indian Pangolin	LK		negligible	
24	<i>Manis javanica</i>	Malayan Pangolin	MY	96 LR/nt – 08 EN	decrease	Rampant illegal trade
25	<i>Manis javanica</i>	Malayan Pangolin	SG		decrease	
26	<i>Manis pentadactyla</i>	Chinese Pangolin	CN	96 LR/nt – 08 EN	decrease	Rampant illegal trade

27	<i>Manis pentadactyla</i>	Chinese Pangolin	SG		decrease	
28	<i>Prionailurus bengalensis</i>	Leopard Cat	CN	96 LR/lc – 08 LC	steady	
29	<i>Tarsius syrichta</i>	Philippine Tarsier	PH	86 EN – 08 NT	negligible	
Phase II other species						
30	<i>Ailurus fulgens</i>	Red Panda	CN	94 VU – 08 VU	decrease	
31	<i>Moschus chrysogaster</i>	Alpine Musk Deer	CN	86 EN – 08 EN	negligible	CN popn App II, others App I
32	<i>Pseudalopex griseus</i> = <i>Lycalopex griseus</i>	Argentina Grey Fox	AR	90 VU – 08 LC	steady	
33	<i>Crocodylus novaeguineae</i>	New Guinea Crocodile	ID	82 VU – 96 LR/lc	increase	
34	<i>Crocodylus novaeguineae</i>	New Guinea Crocodile	PG		steady	
35	<i>Testudo kleinmanni</i>	Egyptian Tortoise	EG	88 VU – 03 CR	t-spike	
36	<i>Testudo kleinmanni</i>	Egyptian Tortoise	IL		negligible	
37	<i>Testudo kleinmanni</i>	Egyptian Tortoise	LY		negligible	
Phase III other species						
38	<i>Monodon monoceros</i>	Narwhal	CA	88 IK – 08 NT	steady	RL – insufficiently known from 99 until 94; 96 DD
39	<i>Monodon monoceros</i>	Narwhal	DK		decrease	
40	<i>Tridacna gigas</i>	Giant Clam	PH	83 VU – 96 VU	decrease	
41	<i>Tridacna gigas</i>	Giant Clam	SB		increase	
42	<i>Chamaeleo gracilis</i>	Graceful Chameleon	AO	not listed	negligible	Non-Party
43	<i>Chamaeleo gracilis</i>	Graceful Chameleon	BJ		increase	
44	<i>Chamaeleo gracilis</i>	Graceful Chameleon	CM		increase	
45	<i>Chamaeleo gracilis</i>	Graceful Chameleon	CF		negligible	
46	<i>Chamaeleo gracilis</i>	Graceful Chameleon	CG		negligible	
47	<i>Chamaeleo gracilis</i>	Graceful Chameleon	CI		negligible	
48	<i>Chamaeleo gracilis</i>	Graceful Chameleon	CD		increase	
49	<i>Chamaeleo gracilis</i>	Graceful Chameleon	ER		negligible	
50	<i>Chamaeleo gracilis</i>	Graceful Chameleon	ET		negligible	

51	<i>Chamaeleo gracilis</i>	Graceful Chameleon	GA	not listed	negligible	
52	<i>Chamaeleo gracilis</i>	Graceful Chameleon	GM		negligible	
53	<i>Chamaeleo gracilis</i>	Graceful Chameleon	GH		steady	
54	<i>Chamaeleo gracilis</i>	Graceful Chameleon	GN		negligible	
55	<i>Chamaeleo gracilis</i>	Graceful Chameleon	KE		decrease	
56	<i>Chamaeleo gracilis</i>	Graceful Chameleon	LR		negligible	
57	<i>Chamaeleo gracilis</i>	Graceful Chameleon	NG		negligible	
58	<i>Chamaeleo gracilis</i>	Graceful Chameleon	SN		negligible	
59	<i>Chamaeleo gracilis</i>	Graceful Chameleon	SL		negligible	
60	<i>Chamaeleo gracilis</i>	Graceful Chameleon	SO		negligible	
61	<i>Chamaeleo gracilis</i>	Graceful Chameleon	SD		negligible	
62	<i>Chamaeleo gracilis</i>	Graceful Chameleon	TG		increase	
63	<i>Chamaeleo gracilis</i>	Graceful Chameleon	TZ		increase	
64	<i>Chamaeleo gracilis</i>	Graceful Chameleon	UG		increase	
Phase III – species in initial screen but not selected for review						
65	<i>Amazona albifrons</i>	White-fronted Amazon	-	88 LR/lc – 08 LC	varied	Trade for range states (BZ, CR, SV, HN, MX, NI)
66	<i>Amazona autumnalis</i>	Red-lored Amazon	-	88 LR/lc – 08 LC	decrease	Trade for range states (BZ, BR, CO, CR, EC, HN, MX, NI, PA, VE)
67	<i>Ara manilata</i> = <i>Orthopsittaca manilata</i>	Red-bellied Macaw	-	88 LR/lc – 08 LC	steady	Trade for range states (BZ, BR, CO, EC, GF, GY, PE, SR, TT, VE)
68	<i>Aratinga aurea</i>	Golden-crowned Conure / Peach-fronted Parakeet	-	88 LR/lc – 08 LC	varied	Trade for range states (AR, BO, BR, PY, PE, SR)
69	<i>Eunymphicus cornutus</i>	Horned Parakeet	-	88 NR* – 08 VU	steady	Trade for range state (NC)
70	<i>Lophotis ruficrista</i>	Red-crested Korhaan	-	not listed	negligible	Trade for range state (ZA)
71	<i>Lorius domicella</i>	Purple-naped Lory	-	88 TH – 08 VU	negligible	Trade for range states (ID)
72	<i>Neopsittacus pullicauda</i>	Orange-billed Lorikeet	-	88 LR/lc – 08 LC	steady	Trade for range states (ID, PG)
73	<i>Oreopsittacus arfaki</i>	Plum-faced Lorikeet	-	88 LR/lc – 08 LC	varied	Trade for range states (ID, PG)

74	<i>Prioniturus flavicans</i>	Yellow-breasted Racket-tail	-	88 NT – 08 NT	negligible	Trade for range state (ID)
75	<i>Prioniturus mada</i>	Buru Racket-tail		88 TH – 08 LC	negligible	Trade for range state (ID)
76	<i>Psilopsiagon aymara</i>	Grey-hooded Parakeet	-	88 LR/lc – 08 LC	steady	Trade for range states (AR, BO, CH)
77	<i>Phelsuma laticauda</i>	Flat-tailed Day Gecko	-	06 LC	varied	Trade for range states (KM, MG, SC)
78	<i>Phelsuma madagascariensis</i>	Madagascar Day Gecko	-	not listed	decrease	Trade for range states (KM, MG)
Phase IV species						
79	<i>Amazona amazonica</i>	Orange-winged Amazon	BO	88 LR/lc – 08 LC	negligible	
80	<i>Amazona amazonica</i>	Orange-winged Amazon	BR		negligible	
81	<i>Amazona amazonica</i>	Orange-winged Amazon	CO		negligible	
82	<i>Amazona amazonica</i>	Orange-winged Amazon	EC		negligible	
83	<i>Amazona amazonica</i>	Orange-winged Amazon	GF		negligible	
84	<i>Amazona amazonica</i>	Orange-winged Amazon	GY		decrease	
85	<i>Amazona amazonica</i>	Orange-winged Amazon	PE		negligible	
86	<i>Amazona amazonica</i>	Orange-winged Amazon	PR		negligible	
87	<i>Amazona amazonica</i>	Orange-winged Amazon	SR		increase	
88	<i>Amazona amazonica</i>	Orange-winged Amazon	TT		steady	
89	<i>Amazona amazonica</i>	Orange-winged Amazon	VZ		increase	
90	<i>Cacatua ducorpsii</i>	Ducorps's Cockatoo	PG	88 LR/lc – 08 LC	steady	
91	<i>Cacatua ducorpsii</i>	Ducorps's Cockatoo	SB		increase	
92	<i>Galago demidoff</i>	Demidoff's Dwarf Galago	CM	88 NT – 08 LC	negligible	
93	<i>Galago demidoff</i>	Demidoff's Dwarf Galago	GN		decrease	
94	<i>Galago demidoff</i>	Demidoff's Dwarf Galago	NG		negligible	
95	<i>Galago demidoff</i>	Demidoff's Dwarf Galago	TG		decrease	

APPENDIX 5: Trade tables**Phase I species***Agapornis canus* – live wild from Madagascar

RST Timing	Total	RLI
Before	5,547	88 LR/lc
Transition	1,225	94 LR/lc
After	3,983	04, 08 LC

Agapornis fischeri – live wild from Tanzania

RST Timing	Total	RLI
Before	52,063	88 LR/lc
Transition	8,743	94 LR/nt
Trade restr.	27	04 NT

Amazona oratrix – live wild from Belize + Mexico

Timing	Total	RLI
before	0	88 LR/lc
transition	0	94 EN
after	1	
App I	5	00, 04 EN

Aratinga erythrogenys – live wild from Peru

RST Timing	Total	RLI
Before	6,670	99 LR/lc
Transition	7,994	
Trade rest	109	94 LR/nt; 00, 04, 08 NT

Amazona aestiva – live wild specimens

Country	RST Timing	Total	RLI
Argentina	Before	35,126	88 LR/lc
	Transition	4,989	94 LR/lc
	After	2,101	00, 04, 08 LC
Bolivia	Before	1,513	88 LR/lc
	Transition	1	94 LR/lc
	After	0	00, 04, 08 LC
Paraguay	Before	88	88 LR/lc
	Transition	8	94 LR/lc
	After	198	00, 04, 08 LC

Amazona viridigenalis – live wild from Mexico

Country	Timing	Total	RLI
Mexico + US*	Before	238	88 TH
	Transition	1	
	After	4	94, 00 EN
	App I	1	04 EN

*Amalgamated as trends were similar and numbers low.

Brotogeris pyrrhoptera – live wild specimens

Country	Timing	Total	RLI
Ecuador	Before	471	88 TH
	Transition	0	
	After	0	94 LR/nt 00, 04, 08 EN
Peru	Before	10,784	88 TH
	Transition	4,101	
	After	0	94 LR/nt 00, 04, 08 EN

Cacatua alba – live wild from Indonesia

RST Timing	Total	RLI
Before	8,774	88 TH
Transition	5,385	
After	378	94, 00, 04, 08 VU

Cacatua goffini – live wild from Indonesia

RST Timing	Total	RLI
Before	8,975	88 TH
Transition	6,595	
App I	76	94, 00 LR/nt 04, 08 NT

Cacatua sulphurea – live wild from Indonesia

RST Timing	Total	RLI
Before	6,951	88 TH
Transition	3,118	
Trade rest	111	94 EN 00, 04 CR
App I	0	08 CR

Cacatua haematuropygia – live wild from Philippines

RST Timing	Total	RLI
Before	146	88 TH
Transition	4	
App I	0	94, 00, 04, 08 CR

Eos reticulata – live wild from Indonesia

RST Timing	Total	RLI
Before	2,438	88 TH
Transition	749	
After	0	94, 00 LR/nt 04, 08 NT

Psittacus erithacus – live wild specimens

Country	RST Timing	Total	RLI
Cameroon	Before	11,445	88 LR/lc
	Transition	19,525	94 LR/lc
	After	21,602	
	Quota: 12000	13,789	00 LR/lc
	Post CoP12	9,881	04, 06 LC 07, 08 NT
Congo	Before	35	88 LR/lc
	Transition	36	94 LR/lc
	After	2,916	
	Post CoP12	4,523	04, 06 LC 07, 08 NT
DR Congo	Before	1,027	88 LR/lc
	Transition	10,800	94 LR/lc
	After	10,868	
	Quota: 10000	12,081	00 LR/lc
	Post CoP12	12,399	04, 06 LC 07, 08 NT
Ghana	Before	4,698	88 LR/lc
	Transition	3	94 LR/lc
	After	2	
Togo	Before	4,910	88 LR/lc
	Transition	2,755	94 LR/lc
	After	17	
	Transition	277	94 LR/lc
	After	954	
	Post CoP12	438	04, 06 LC 07, 08 NT

Phase II species*Agapornis lilliana* – live wild specimens

Country	RST Timing	Total	RLI
Mozambique	Before	100	88 LR/lc
	Transition	0	94 LR/lc
	After	2	00, 04, 08 NT
Zambia	Before	220	88 LR/lc
	Transition	0	94 LR/lc
	After	0	00, 04, 08 NT
Zimbabwe	Before	123	88 LR/lc
	Transition	147	94 LR/lc
	After	8	00, 04, 08 NT

Agapornis personatus – live wild from Tanzania

RST Timing	Total	RLI
Before	2862	88 LR/lc
Transition	2	
After	8	94, 00 LR/lc 04, 08 NT

Amazona finschi – live wild from Mexico

RST Timing	Total	RLI
Before	232	88 LR/lc
Transition	4	
After	79	94, 00 LR/nt 04 LC
Appendix I	5	06, 08 VU

Alisterus amboinensis – live wild from Indonesia

RST Timing	Total	RLI
Before	975	88 LR/lc
Transition	1384	94 LR/nt
After	20	00 LR/lc 04, 08 LC

Aprosmictus erythropterus – live wild from Indonesia

RST Timing	Total	RLI
Before	639	88 LR/lc
Transition	270	94 LR/lc
After	61	00 LR/lc 04, 08 LC

Amazona auropalliata – live wild from Nicaragua

RST Timing	Total	RLI
Before	221	88 LR/lc
Transition	779	94 LR/lc
After	726	00 LR/lc
Appendix I	16	04, 08 LC

Aprosmictus jonquillaceus – live wild from Indonesia

RST Timing	Total	RLI
Before	193	88 LR/lc
Transition	110	94 LR/lc
After	0	00 LR/nt 04, 08 NT

Aratinga holochlora – live wild specimens

Country	RST Timing	Total	RLI
Honduras	before	328	
	transition	0	
	after	0	07, 08 LC
Nicaragua	before	4	
	transition	76	
	after	32	07, 08 LC

Ara ararauna – live wild specimens

Country	RST Timing	Total	RLI
Guyana	Before	1718	88 LR/lc
	Transition	856	94 LR/lc
	Phase IV	840	00 LR/lc 04, 08 LC
Suriname	Before	124	88 LR/lc
	Transition	531	94 LR/lc
	Phase IV	535	00 LR/lc 04, 08 LC
Bolivia	Before	1824	88 LR/lc
	Transition	0	94 LR/lc
	Phase IV	0	00 LR/lc 04, 08 LC
Venezuela	Before	1	88 LR/lc
	Transition	2	94 LR/lc
	Phase IV	142	00 LR/lc 04, 08 LC

Ara chloropterus – live wild specimens

Country	RST Timing	Total	RLI
Guyana	Before	1380	88 LR/lc
	Transition	829	94 LR/lc
	Phase IV	1043	00 LR/lc 04, 08 LC
Suriname	Before	22	88 LR/lc
	Transition	178	94 LR/lc
	Phase IV	218	00 LR/lc 04, 08 LC

Aratinga acuticaudata – live wild from Argentina

RST Timing	Total	RLI
Before	13225	88 LR/lc
Transition	5148	94 LR/lc
After	1868	00 LR/lc 04, 08 LC

Aratinga mitrata – live wild specimens

Countries	RST Timing	Total	RLI
Argentina	Before	10825	88 LR/lc
	Transition	1920	94 LR/lc
	After	483	00 LR/lc 04, 08 LC
Bolivia	Before	3510	88 LR/lc
	Transition	0	94 LR/lc
	After	0	00 LR/lc 04, 08 LC
Peru	Before	27	88 LR/lc
	Transition	221	94 LR/lc
	After	441	00 LR/lc 04, 08 LC

Brotogeris chiriri – live wild from Argentina

RST Timing	Total	RLI
Before	5148	88 LR/lc
Transition	8	94 LR/lc
After	0	00 LR/lc 04, 08 LC

Brotogeris versicolurus – live wild from Peru

RST Timing	Total	RLI
Before	0	88 LR/lc
Transition	2	94 LR/lc
After	459	00 LR/lc 04, 08 LC

Cacatua galerita – live wild specimens

Country	RST Timing	Total	RLI
Indonesia	Before	988	88 LR/lc
	Transition	2	94 LR/lc
	After	0	00 LR/lc 04, 08 LC
Australia	Before	26	88 LR/lc
	Transition	29	94 LR/lc
	After	3	00 LR/lc 04, 08 LC
New Zealand	Before	15	88 LR/lc
	Transition	53	94 LR/lc
	After	117	00 LR/lc 04, 08 LC
Singapore	Before	131	88 LR/lc
	Transition	44	94 LR/lc
	After	4	00 LR/lc 04, 08 LC

Cacatua sanguinea – live wild specimens

Country	RST Timing	Total	RLI
Indonesia	Before	299	88 LR/lc
	Transition	145	94 LR/lc
	After	13	00 LR/lc 04, 08 LC
Singapore	Before	32	88 LR/lc
	Transition	85	94 LR/lc
	After	9	00 LR/lc 04, 08 LC

Chalcopsitta atra – live wild from Indonesia

RST Timing	Total	RLI
Before	429	88 LR/lc
Transition	554	94 LR/lc
After	15	00 LR/lc 04, 08 LC

Chamosyna josefinae – live wild from Indonesia

RST Timing	Total	RLI
Before	175	88 LR/lc
Transition	0	94 LR/lc
After	41	00 LR/lc 04, 08 LC

Coracopsis vasa – live wild from Madagascar

RST Timing	Total	RLI
Before	308	88 LR/lc
Transition	220	94 LR/lc
Trade rest	27	-
After	0	00 LR/lc 04, 08 LC

Cyanoliseus patagonus – live wild from Argentina

RST Timing	Total	RLI
Before	5794	88 LR/lc
Transition	3964	94 LR/lc
After	4063	
Quota: 7000	6017	00 LR/lc
Quota: 7500	2082	04 LC
Quota: 3000	600	

Deropterus accipitrinus – live wild specimens

Country	RST Timing	Total	RLI
Guyana	Before	314	88 LR/lc
	Transition	217	94 LR/lc
	After	0	
	Quota - 0	2	
	Quota - 780	343	00 LR/lc 04, 08 LC
Suriname	Before	56	88 LR/lc
	Transition	107	94 LR/lc
	After	279	
	Quota	146	00 LR/lc 04, 08 LC

Eos cyanogenia – live wild from Indonesia

RST Timing	Total	RLI
Before	298	88 NT
Transition	54	94 VU
After	0	00, 04, 08 VU

Eos squamata – live wild from Indonesia

RST Timing	Total	RLI
Before	994	88 LR/lc
Transition	2292	94 LR/lc
After	135	00 LR/lc 04, 08 LC

Forpus xanthops – live wild from Peru

RST Timing	Total	RLI
Before	88	88 LR/lc
Transition	0	94 VU
After	1	00, 04, 08 VU

Loriculus galgulus – live wild specimens

Country	RST Timing	Total	RLI
Malaysia	Before	4177	88 LR/lc
	Transition	3644	94 LR/lc
	After	702	00 LR/lc 04, 08 LC
Indonesia	Before	297	88 LR/lc
	Transition	855	94 LR/lc
	After	328	00 LR/lc 04, 08 LC
Singapore	Before	626	88 LR/lc
	Transition	1079	94 LR/lc
	After	201	00 LR/lc 04, 08 LC
Thailand	Before	134	88 LR/lc
	Transition	0	94 LR/lc
	After	0	00 LR/lc 04, 08 LC

Loriculus philippensis – live wild from Philippines

RST Timing	Total	RLI
Before	268	88 LR/lc
Transition	1	94 LR/lc
After	0	00 LR/lc 04, 08 LC

Lorius garrulus – live wild from Indonesia

RST Timing	Total	RLI
Before	4220	88 NT
Transition	3906	94 VU
After	58	00, 04, 08 EN

Nandayus nenday – live wild specimens

Country	RST Timing	Total	RLI
Argentina	Before	21636	88 LR/lc
	Transition	5933	94 LR/lc
	After	2893	
	Quota	1746	00 LR/lc 04, 08 LC
US	Before	272	88 LR/lc
	Transition	13	94 LR/lc
	After	1	00 LR/lc 04, 08 LC

Phoenicopterus chilensis – live wild from Argentina

RST Timing	Total	RLI
Before	76	88 LR/lc
Transition	18	94 LR/lc
After	0	00 LR/nt 04, 06 NT

Pionus maximiliani – live wild from Argentina

RST Timing	Total	RLI
Before	7785	88 LR/lc
Transition	2318	94 LR/lc
After	1549	00 LR/lc 04, 08 LC

Pionus senilis – live wild/ranched specimens

Country	RST Timing	Total	RLI
Honduras	Before	873	88 LR/lc
	Transition	38	94 LR/lc
	After	0	00 LR/lc 04, 08 LC
Nicaragua	Before	21	88 LR/lc
	Transition	222	94 LR/lc
	After	91	00 LR/lc 04, 08 LC
Nicaragua	Before	0	88 LR/lc
	Transition	103	94 LR/lc
	After	363	00 LR/lc 04, 08 LC

Poicephalus cryptoxanthus – live wild specimens

Country	RST Timing	Total	RLI
Mozambique	Before	112	88 LR/lc
	Transition	104	94 LR/lc
	After	73	00 LR/lc 04, 08 LC
Tanzania	Before	567	88 LR/lc
	Transition	1082	94 LR/lc
	Trade rest	23	00 LR/lc 04, 08 LC

Poicephalus meyeri – live wild from Tanzania

RST Timing	Total	RLI
Before	5312	88 LR/lc
Transition	4542	94 LR/lc
Trade rest	140	00 LR/lc 04, 08 LC

Poicephalus rufiventris – live wild from Tanzania

RST Timing	Total	RLI
Before	1685	88 LR/lc
Transition	1837	94 LR/lc
Trade rest	32	00 LR/lc 04, 08 LC

Poicephalus senegalus – live wild specimens

Country	RST Timing	Total	RLI
Senegal	Before	20640	88 LR/lc
	Transition	26160	94 LR/lc
	After	15213	00 LR/lc
	Post CoP12	4924	04, 06 LC
Cote d'Ivoire	Before	0	88 LR/lc
	Transition	202	94 LR/lc
	After	149	00 LR/lc
	Post CoP12	50	04, 06 LC
Guinea	Before	690	88 LR/lc
	Transition	8310	94 LR/lc
	After	18108	00 LR/lc
	Post CoP12	5475	04, 06 LC
Liberia	Before	96	88 LR/lc
	Transition	0	94 LR/lc
	After	608	00 LR/lc
	Post CoP12	0	04, 06 LC
Mali	Before	1460	88 LR/lc
	Transition	948	94 LR/lc
	After	8357	00 LR/lc
	Post CoP12	4752	04, 06 LC
Togo	Before	14	88 LR/lc
	Transition	37	94 LR/lc
	After	395	00 LR/lc
	Post CoP12	56	04, 06 LC

Psittacula longicauda – live wild specimens

Country	RST Timing	Total	RLI
Malaysia	Before	1203	88 LR/lc
	Transition	1268	94 LR/lc
	After	374	00 LR/nt 04, 08 NT
Indonesia	Before	41	88 LR/lc
	Transition	158	94 LR/lc
	After	99	00 LR/nt 04, 08 NT
Singapore	Before	356	88 LR/lc
	Transition	359	94 LR/lc
	After	127	00 LR/nt 04, 08 NT

Psittacula roseata – live wild specimens

Country	RST Timing	Total	RLI
Viet Nam	Before	401	88 LR/lc
	Transition	2933	94 LR/lc
	After	0	00 LR/lc 04, 08 LC
Myanmar	Before	45	88 LR/lc
	Transition	118	94 LR/lc
	After	0	00 LR/lc 04, 08 LC
Thailand	Before	157	88 LR/lc
	Transition	0	94 LR/lc
	After	0	00 LR/lc 04, 08 LC

Psittaculirostris desmarestii – live wild from Indonesia

RST Timing	Total	RLI
Before	549	88 LR/lc
Transition	472	94 LR/lc
After	2	00 LR/lc 04, 08 LC

Psittaculirostris salvadorii – live wild from Indonesia

RST Timing	Total	RLI
Before	171	88 TH
Transition	155	94 VU
After	3	00, 04, 08 VU

Psittaculirostris edwardsii – live wild from Indonesia

RST Timing	Total	RLI
Before	461	88 LR/lc
Transition	381	94 LR/lc
After	0	00 LR/lc 04, 08 LC

Psitteuteles iris – live wild from Indonesia

RST Timing	Total	RLI
Before	160	88 NT
Transition	113	94 VU
After	0	00 LR/nt 04, 08 NT

Psittinus cyanurus – live wild specimens

Country	RST Timing	Total	RLI
Malaysia	Before	688	88 LR/lc
	Transition	1706	94 LR/nt
	After	290	00 LR/nt 04, 08 NT
Singapore	Before	165	88 LR/lc
	Transition	305	94 LR/nt
	After	53	00 LR/nt 04, 08 NT

Pyrrhura frontalis – live wild from Argentina

RST Timing	Total	RLI
Before	4898	88 LR/lc
Transition	724	94 LR/lc
After	0	00 LR/lc 04, 08 LC

Rhea americana albescens – wild specimens

Specimens	RST Timing	Total	RLI
Argentina (skins)	App III	7511	88 NT
	Transition	23885	94 LR/nt
	Transition - App II	18002	
	After	2336	94, 00 LR/nt 04, 08 NT
Argentina (skin pieces)	App III	0	88 NT
	Transition	35409	94 LR/nt
	Transition - App II	7887	
	After	7032	94, 00 LR/nt 04, 08 NT

Tanygnathus megalorynchos – live wild from Indonesia

RST Timing	Total	RLI
Before	581	88 LR/lc
Transition	595	94 LR/lc
After	2	00 LR/lc 04, 08 LC

Tanygnathus heterurus (=sumatranus) – live wild from Indonesia

RST Timing	Total	RLI
before	70	NL
transition	0	NL
after	0	NL

Tauraco fischeri – live wild from Tanzania

RST Timing	Total	RLI
Before	12	88 LR/lc
Transition	96	94 LR/nt
Trade rest	7	00 LR/nt 04, 08 NT

Phase III species

Alisterus chloropterus – live wild from Indonesia

RST Timing	Total	RLI
Before	453	88 LR/lc
Transition	307	94 LR/lc
After	160	00 LR/lc 04, 08 LC

Aratinga wagleri – live wild from Peru

RST Timing	Total	RLI
Before	4324	88 LR/lc
Transition	5421	94 LR/lc
After	1138	00 LR/lc 04, 08 LC

Chalcopsitta duivenbodei – live wild from Indonesia

RST Timing	Total	RLI
Before	451	88 LR/lc
Transition	7	94 LR/lc
After	126	00 LR/lc 04, 08 LC

Charmosyna papou – live wild from Indonesia

RST Timing	Total	RLI
Before	648	88 LR/lc
Transition	10	94 LR/lc
After	171	00 LR/lc 04, 08 LC

Loriculus pusillus – live wild from Indonesia

RST Timing	Total	RLI
Before	302	88 NT
Transition	0	94 LR/nt
After	40	00 LR/nt 04, 08 NT

Psittacula alexandri – live wild specimens

Country	RST Timing	Total	RLI
Myanmar	Before	258	88 LR/lc
	Transition	0	94 LR/lc 00 LR/lc
	After	50	04, 08 LC
Viet Nam	Before	2416	88 LR/lc
	Transition	1694	94 LR/lc 00 LR/lc
	After	0	04, 08 LC
India	Before	2262	88 LR/lc
	Transition	0	94 LR/lc 00 LR/lc
	After	0	04, 08 LC
Indonesia	Before	1924	88 LR/lc
	Transition	298	94 LR/lc 00 LR/lc
	After	0	04, 08 LC
Malaysia	Before	268	88 LR/lc
	Transition	31	94 LR/lc 00 LR/lc
	After	0	04, 08 LC
Thailand	Before	1266	88 LR/lc
	Transition	0	94 LR/lc 00 LR/lc
	After	0	04, 08 LC

Poicephalus gulielmi – live wild specimens

Country	RST Timing	Total	RLI
Cote d'Ivoire	Before	46	88 LR/Lc
	Transition	0	94 LR/lc
	After	63	00 LR/lc 04, 08 LC
Guinea	Before	229	88 LR/Lc
	Transition	50	94 LR/lc
	After	217	00 LR/lc 04, 08 LC
DR Congo	Before	183	88 LR/Lc
	Transition	1707	94 LR/lc
	After	1125	00 LR/lc 04, 08 LC
Cameroon	Before	81	88 LR/Lc
	Transition	308	94 LR/lc
	After	171	00 LR/lc 04, 08 LC
Congo	Before	0	88 LR/Lc
	Transition	0	94 LR/lc
	After	113	00 LR/lc 04, 08 LC
Ghana	Before	120	88 LR/Lc
	Transition	0	94 LR/lc
	After	0	00 LR/lc 04, 08 LC
Liberia	Before	0	88 LR/Lc
	Transition	0	94 LR/lc
	After	67	00 LR/lc 04, 08 LC
Tanzania	Before	632	88 LR/Lc
	Transition	713	94 LR/lc
	After	11	00 LR/lc 04, 08 LC

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