

Native birds and their habitat needs on Canterbury rivers



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2006

Outline

- Wildlife context – communities of birds and conservation status on Canterbury rivers
- Critical rivers
- Key habitat drivers
- Ability to sustain bird populations based on scientific modelling:
 - PVA modelling
 - Habitat modelling
- Impacts and mitigation measures
- Information needs in future planning: Hurunui, Ashburton, etc

Communities of birds (guilds) on Canterbury rivers

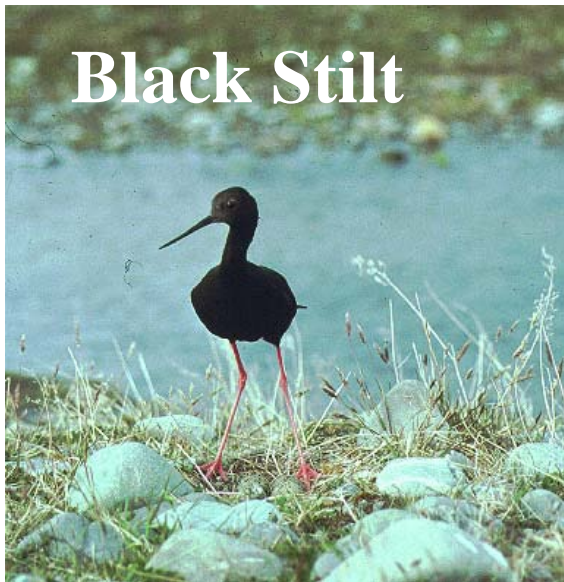
- (i) **Open water divers.** Cormorants and diving waterfowl that usually forage in open, deep waters on both lakes and rivers.
- (ii) **Deep water waders.** Waders with medium-long legs that allow them to forage in water depths of >200 mm as well as shallow water (e.g., stilts, herons, oystercatchers).
- (iii) **Shallow water waders.** Waders with short legs that restrict them to feeding in water <80 mm, and most use is of water <40 mm deep (e.g. plovers, sandpipers).
- (iv) **Dabbling waterfowl.** Ducks and swans (e.g., NZ shoveler, paradise shelduck)
- (v) **Aerial hunting gulls and terns** e.g., black-fronted tern, black-billed gull). They nest on open shingle bars and islands.
- (vi) **Swamp specialists.** Rails, such as marsh crake and pukeko, and bittern that dwell in dense swamp vegetation associated with wetlands.
- (vii) **Riparian wetland species.** Species that do not exclusively depend on either terrestrial or aquatic habitats (e.g., swallows, pipits, kingfishers).



Black-fronted tern



Male Wrybill Plover on nest



Black Stilt



Banded dotterel



Black-billed gull

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Conservation status of key species

- Wrybill: 3-4,000 – nationally vulnerable
- Banded dotterel: 30-50,000 – gradual decline
- Black-fronted tern: 5-10,000 – serious decline
- Black-billed gull: 95,000 – serious decline

(Source: Hitchmough and Bull in press)

Distribution of key braided river wildlife in Canterbury

Waimakariri – wrybill,
black-fronted tern

Mackenzie
Basin: black
stilt, wrybill,
black-fronted
tern

Kaikoura

Hurunui – black-
fronted tern

Christchurch

Ashburton

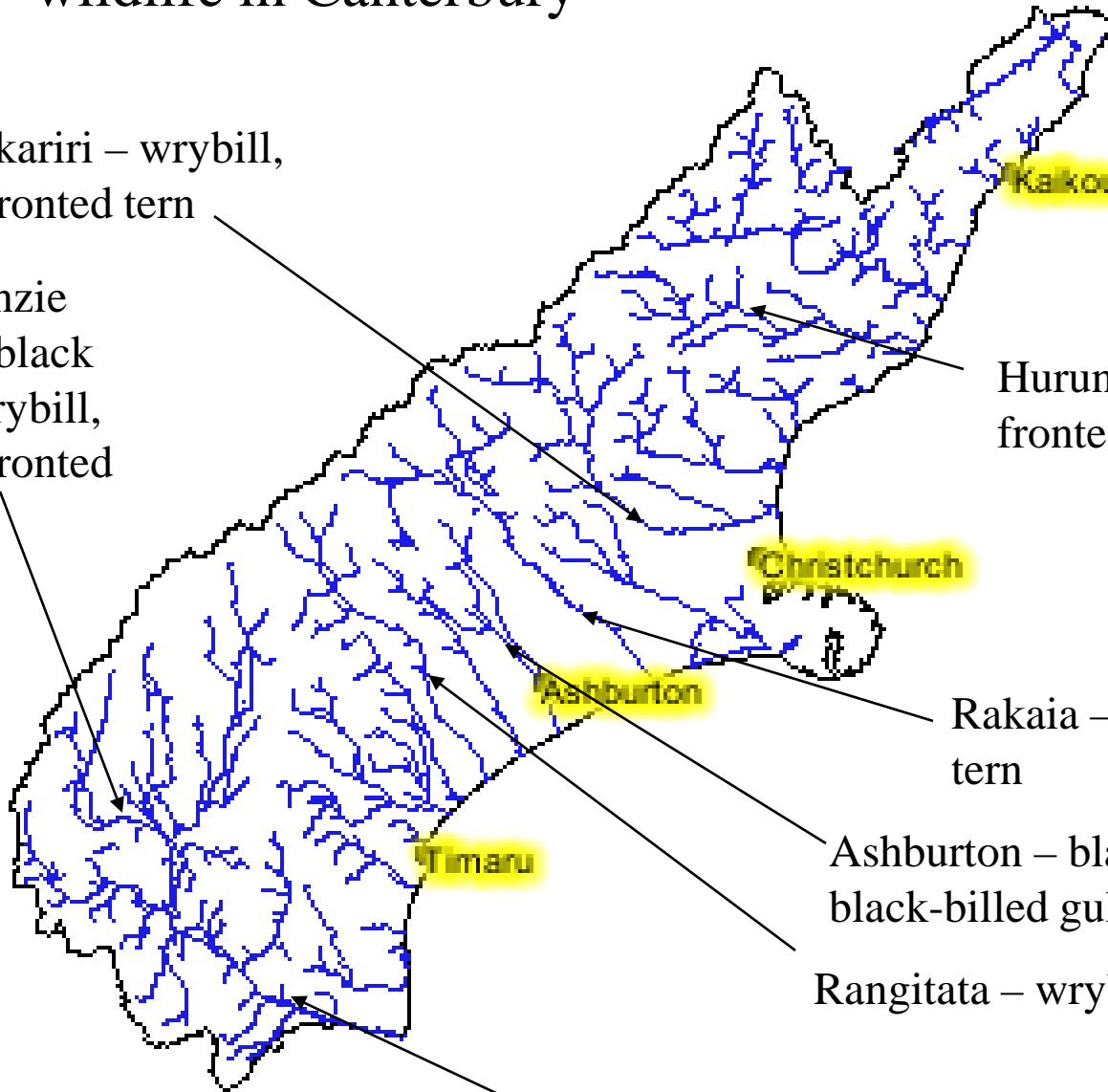
Rakaia – wrybill, black-fronted
tern

Timaru

Ashburton – black-fronted tern,
black-billed gull


Rangitata – wrybill, black-fronted tern

Lower Waitaki – black-fronted tern




Canterbury's key rivers for particular birdlife

- Canterbury's braided rivers are unique on a world wide basis - they are large, wide, unstable, in relatively low lying areas, instream value laden, and in demand for extractive uses.
- Key rivers and catchments are, from north to south (noting that most contain birdlife of some importance but the following are the key rivers; also note the single best river outside Canterbury is the Wairau):
 - Hurunui: black-fronted terns (BFT)
 - Waimakariri: BFTs, wrybills (WB), banded dotterel (BD)
 - Rakaia: BFTs, WBs, BDs
 - Ashburton: BFTs, BDs, black-billed gulls (BBG)
 - Rangitata: BFTs, WBs, BDs
 - Waitaki and catchment rivers: BFTs, WBs, BBGs, BDs, black stilt

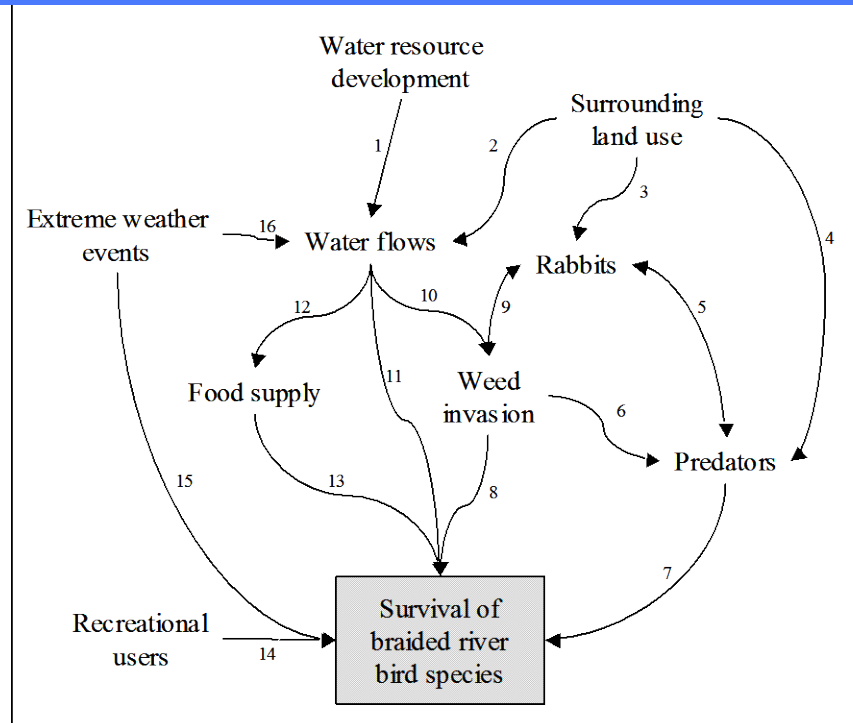


Key habitat needs and drivers of change

The bird community and individual species have synergistic and sometimes overlapping needs:

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- multiple channels – for feeding in/over and for providing protection on islands from invading predators
 - suitable flow regime – as above
 - ‘bare’ shingle islands – for nesting
 - large areas of habitat for territorial species – for wrybills up to several hectares per pair.

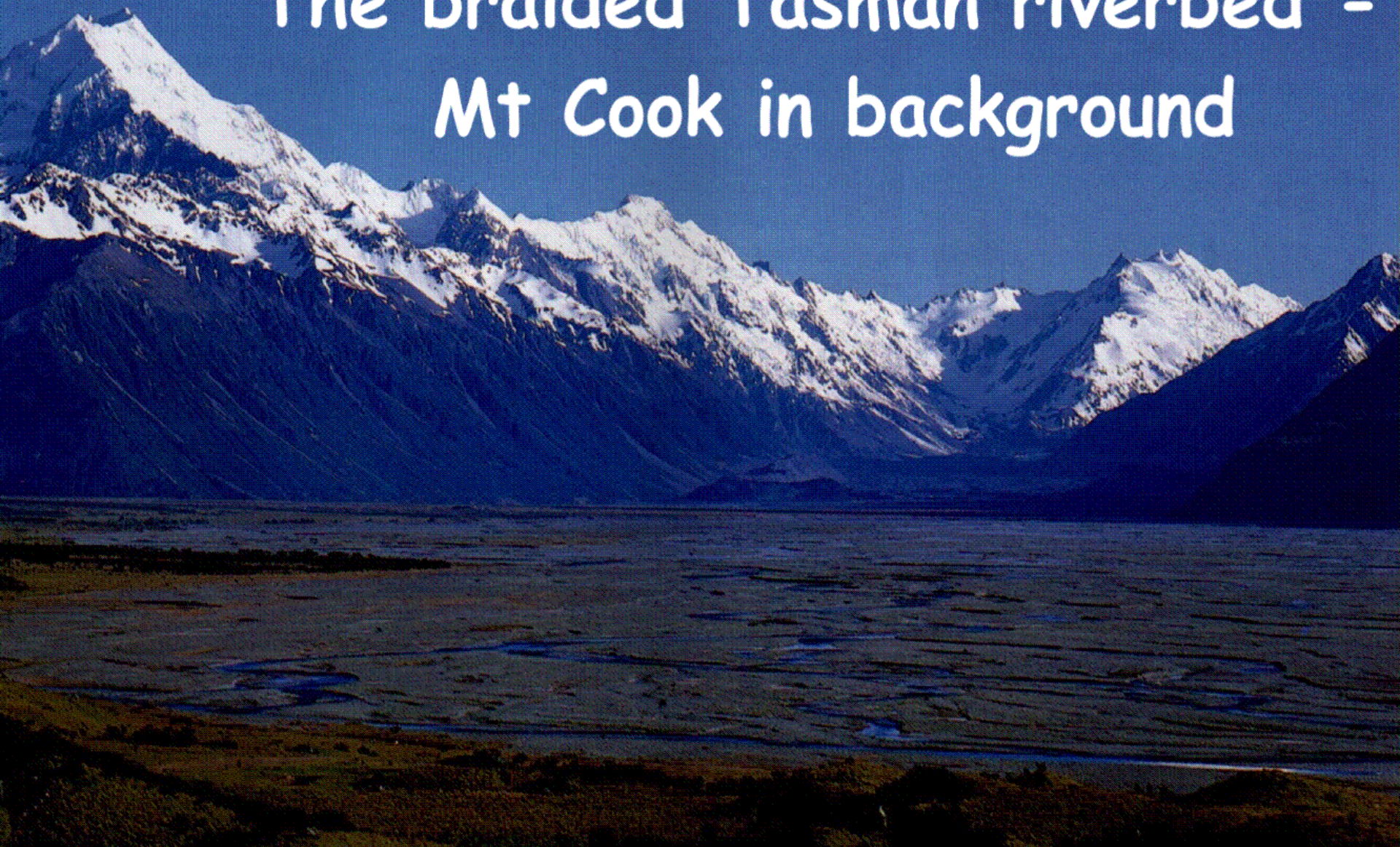
Factors impacting on survival of braided river birds (Adapted from Keedwell 2004)



Examples of hypothesised interactions between the different factors include:

- 1 – river flow is modified by abstraction, damming or a combination of the two, changing river flows and flood frequencies and magnitudes;
- 2 – surrounding land use directly impacts on water quality and river management including flood protection schemes which reduce the area of active riverbed;
- 3 – rabbit control on farmland lowers rabbit abundance;
- 4 – differing land use practices changes habitat availability for predators;
- 5 – predator abundance is altered by changes to rabbit abundance but also helps control rabbit abundance;
- 6 – vegetation on riverbeds provide cover for predators;
- 7 – predators prey on eggs, chicks and adults;
- 8 – weeds clog up breeding habitat and alter feeding habitat;
- 9 – vegetation provides cover and food for rabbits, but some weed species are controlled by rabbit grazing;
- 10 – lowered water flows and floods allow vegetation to establish on riverbed;
- 11 – floods destroy nests;
- 12 – lowered water flows can alter abundance of aquatic insects and feeding areas;
- 13 – food abundance can influence survival of young or condition of breeding adults;
- 14 – fishers, campers and four-wheel drivers can destroy nests or disturb breeding birds;
- 15 – extreme cold spells can kill eggs and chicks;
- 16 – high rainfalls can cause floods.

The braided Tasman riverbed - Mt Cook in background





***Photograph 4-2 Typical braided section, Kurow to SH 1,
river flow 152 cumecs***



Threat/degradation process

Habitat degradation is, in some cases leading to species decline, namely via the often interactive/ synergistic effects of:

- Water abstraction, and damming;
- River protection works;
- Encroachment of exotic plants;
- Predation by introduced mammals;
- Disturbance by stock, fishers & vehicles.

Trends - habitat & species

HABITAT:



- Vegetation encroachment is increasing on most rivers (Opihi now virtually destroyed as a habitat for key species) - new habitat equilibrium on some rivers;
- Water loss is increasing but mitigation and compensation in some places, e.g., Project River Recovery in the Mackenzie Basin;
- Predators not controlled, virtually anywhere.



AS A RESULT OF DECLINING HABITAT QUALITY:



KEY SPECIES:



- Black-fronted tern – declining as fast as brown kiwi
- Black-billed gull – declining very quickly
- Wrybill – static or slight long-term decline

Ability to sustain bird populations based on scientific modelling:

- Population Viability Modelling (PVA): an interactive model which predicts short and long term changes according to a range of measures, e.g., known breeding success, habitat changes.
 - Has been applied to several species including black-fronted tern: given existing trends, including habitat loss, the long term outlook is very bleak.
- Habitat modelling: 1-D and 2-D hydraulic modelling based on river behaviour changes and known attributes of bird habitat needs, e.g., feeding habitat, nesting habitat, predator access.
 - Limited application to birds but much better information available for fish and invertebrates;
 - Used for predictive purposes with limited success on the Rangitata and Wairau rivers.

Management/research needs

- We do not know, despite the suggestions of a few consultants, the relationship between river flows and mammalian predation, but the theory is the higher the flows the lower the predation
- We do not have a good understanding of the energetics of some species, especially terns, in relation to feeding and habitat requirements.
- In the absence of 'quality' science on the above conservation managers have to be extremely cautious and recommend 'high' minimum flow and sharing regimes and/or expensive mitigation packages, esp. around predator control.

Impacts and mitigation measures

Impact

- Lowered flows will increase predator access
- Weed growth enhanced – reduced & poorer nest sites & better predator habitat
- Reduced flows will reduce feeding habitat
- Increased disturbance from stock and people

Mitigation

- Active predator control for colonies
- Mechanical and herbicide control to maintain existing areas
- Feeding habitat not seen as limiting
- Fencing of stock and controls on recreation access

Conclusions

- Canterbury's rivers, especially the wide braided rivers, are special habitats for birdlife, occupied by a range of bird guilds.
- Several threatened and endangered species are enormously reliant on these rivers.
- The habitat needs of birdlife are highly dependent on controls maintained by river flows.
- There is a lack of research and at least 2 key critical habitat relationships: predation-flow; energetics;
- Some mitigation measures are possible but key ones are very expensive, e.g., vegetation management and predator control.