

## **Part B: Native birds in Tasman District: Application of the River Values Assessment System (RiVAS)**

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### **10.4 Introduction**

#### **10.4.1 Purpose**

This part of the chapter presents the second application of the River Values Assessment System (RiVAS) to native birdlife, in the Tasman District, undertaken in July 2010. A briefing workshop was held in Richmond on 26<sup>th</sup> June 2010 to apply the overall method to multiple values in Tasman District rivers. This Tasman bird report needs to be read in conjunction with the method (Hughey et al. Chapter 3, herein) and with the first native bird application (Part A of this chapter).

In applying the method to native birdlife in Tasman District the Expert Panel first appraised themselves of the Canterbury Region application to see if any further development of the system was necessary. One significant change was suggested, trialled and then rejected – namely to restrict the number of species in the ‘threatened or at risk’ categories to only those most under threat (This made no significant difference to the results and it was agreed by the panel that it was more informative, subject to other conditions, to list all ‘threatened and at risk’ species that are confirmed present subject to the provisos in Hughey et al. (Part A, herein)). As a consequence only brief summary information is given in section 10.5 of this chapter – other key relevant information is contained in Hughey et al. (Part A, herein).

One other relatively minor change, and one appropriate to all value applications, was the suggestion of providing a short section on ‘regional context related to the value’. This section is now included in Step 1 of the method application below.

#### **10.4.2 Preparatory step: Establish an Expert Panel and identify peer reviewers**

The Expert Panel for the native birdlife application in the Tasman District comprised Peter Gaze (DoC) and Trevor James (TDC), advised by Ken Hughey (Lincoln University) who managed the case study. Credentials of the Expert Panel are provided in Appendix 10B-1.

### **10.5 Application of the method**

#### **10.5.1 Step 1: Define river value categories and river segments**

##### ***River value context for native birdlife in Tasman***

Most Tasman rivers are single channel and have their headwaters in catchments largely dominated by native forest – in these catchments the rivers are dominated by single channel bird fauna, typically in this region by the endangered blue duck. The lower sections of these rivers typically (except in NW Nelson and Abel Tasman National Park) run through intensively developed farmland and into estuarine or lagoon systems. In these sections of single channel rivers the birdlife is dominated by shags and waterfowl. There are few braided rivers in Tasman, with the only notable

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1 This phrase is used here as an all-encompassing term for the range of bird species defined to be, and listed as, at some conservation management risk in New Zealand, as listed in Miskelly et al. (2008). We use this listing of species as appropriate for the purposes of this report.

one being the Matakītaki, a tributary of the Buller – this river, not surprisingly, has a more diverse fauna than the others. The Buller is an enormous river with only the mid-upper reaches within Tasman District. It is a highly diverse system including both braided and single channel catchments – as such it appears appropriate to split this river into geographically discrete units: a similar argument also exists for several other systems, e.g., the Motueka.

### ***River value categories***

There is a distinction, typically, between the birdlife of braided rivers and that of single channel rivers. The former is typified by a community of birds that includes gulls and terns, waders, shags and a variety of waterfowl – multiple species are considered ‘threatened or at risk’; the latter is typified by waterfowl and shags with far fewer species threatened or at risk. Despite this distinction it is proposed to treat all rivers primarily in the same way, except where distinctive indicators for the prime attributes (see steps 3 and 4 below) can be identified and used appropriately.

### ***River segments***

Work in advance of the Expert Panel meeting to collate existing data, indicated that expert knowledge primarily held by the Department of Conservation<sup>2</sup>, but also by TDC on occasions, would be the primary data source. While considerable data exist on blue duck in the region there is little or no formal survey information for most rivers. For the purposes of this analysis we generally consider catchments as a whole (except the West Coast rivers which are combined, and the Buller which is divided on a catchment basis).

Following a preliminary scanning exercise some rivers within the TDC region were excluded from further assessment. Criteria considered as part of this preliminary scanning were that the river or stream has:

- No known or suspected presence of breeding threatened or at risk species;
- A very small amount of habitat (e.g., less than 3km for a single channel river) of very low quality;
- Very low numbers (e.g., less than 100 and no breeding ‘threatened or at risk’ species) of native riverine birds; and/or
- Little or no flow at critical times, e.g., during the breeding season.

Table 10-1 lists the rivers not included in this assessment.

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Rivers not included in the assessment of native birdlife values**

<b>Rivers not considered in this analysis</b>	<b>Totally unknown</b>	<b>Birdlife values less than local significance</b>
Abel Tasman NP rivers		Yes
All lowland streams in Tasman and Golden bays with highly developed catchments		Yes

Unlike Canterbury rivers, those of Tasman typically have large lagoon and/or estuarine systems attached – these parts of the system are excluded from analysis and a separate evaluation of all lagoons, estuaries, etc., is required.

### ***Other Considerations***

Related to the above, an important feature of many surveys and much evidence presented in hearings is associated with total bird numbers of a river. We note the imprecision of the survey data,

<sup>2</sup> Note that this resource includes occasional surveys undertaken by individuals, consultants and NGOs (e.g., community groups, Forest and Bird, the Ornithological Society of NZ).

but again reiterate it is the best available information. Note the following, again consistent with the Canterbury report:

- Some species are particularly difficult to find, e.g., crane and bittern, and until a reliable survey method is found, are excluded from this analysis. Equally, threatened and at risk species such as grey duck are present, but difficult to identify correctly – they too are excluded from that part of the analysis dealing with threatened and at risk species. At least one other species identified as ‘threatened or at risk’, i.e., NZ pipit, is not considered as it is mostly not recorded (for some unknown reason) in surveys.

### **Outcomes**

Use whole catchments as the primary data set and populate with existing river bird survey data and/or Expert Panel considerations, except as already noted for the Buller (subdivided) and for the West Coast rivers (combined).

Ignore the presence of swamp species such as bittern and marsh crane until reliable survey data become available.

Do not include NZ pipit until routinely required within the standard survey method, and then record appropriately.

Do not include grey duck.

#### **10.5.2 Step 2: Identify attributes**

Attributes, i.e., the facets of the birdlife river value. The same attributes as used by Hughey et al. (Part A, herein) for Canterbury were considered here.

#### **10.5.3 Step 3: Select and describe primary attributes**

The same six primary attributes used by Hughey et al. (Part A, herein) are used here.

#### **10.5.4 Step 4: Identify indicators**

The same indicators used by Hughey et al. (Part A, herein).

#### **10.5.5 Step 5: Determine indicator thresholds**

Thresholds are applied to an indicator to determine high, medium and low relative importance for that indicator. Thresholds are defined by real data (e.g., for recreational fishing <1,000 angler days per annum = relatively low importance, or Expert Panel judgements) for each indicator and were identified by the Expert Panel. Because native birdlife is comparatively data rich (c.f. some other river values), this step was informed by ‘hard’ data (albeit much from Expert Panel assessment for this region) for five of the six indicators.

#### **10.5.6 Step 6: Apply indicators and indicator thresholds**

Most indicators were assessed using Expert Panel based quantitative survey data (see Appendix 10B-2) - this step involved entering data from the relevant data sources (primarily the experts). Data were kept in their original format (e.g., *actual area* of habitat, *number* of birds). This assisted the Expert Panel when evaluating the data, and helps achieve process transparency.

#### **10.5.7 Step 7: Weighting of primary attributes**

The Expert Panel reviewed the six primary attributes and considered whether some made a relatively greater contribution to birdlife as a whole. Initial thoughts were that they made an equal contribution. The decision was reached, as per the Canterbury (Part A, Herein) application to keep weightings equal.

**Outcome**

Equal weighting

As a consequence of this decision it was decided for Canterbury to introduce a ‘species stronghold’ criterion into the decision support system for defining priorities, i.e., if a river contains 5% or more of a population of a ‘threatened or at risk’ species then it is of national importance – such a criterion is consistent with decisions made for national water conservation orders. In the case of Tasman no species on any river reaches this criterion, however, it should be noted that blue duck is being managed to establish 50 breeding pairs at one of 8 selected sites nationally. If successful, it will then rise to more than the 5% threshold and the river will jump to national significance.

**10.5.8 Step 8: Determine river significance****Step 8a: Rank rivers**

The spreadsheet in Appendix 10B-3 was used to sum the indicator threshold scores for each river. The sums of the indicator threshold scores were placed in a column and then sorted in descending order. This provided the list of rivers ranked by their significance scores.

**Step 8b: Identify river significance**

Using the ranked list from Step 8a, the Expert Panel closely examined the rivers, and their attribute scores. As per the Canterbury report the following criteria were applied to defining importance within the Appendix 10B-3 evaluation:

**National significance:**

Criterion 1: *Species strongholds* – if any river contained one or more species with over 5% of the total population(s) then = 3, and automatic national significance. We chose 5% as this level has been used in a number of Water Conservation Order decisions as being a threshold for national importance (despite the fact that the World Conservation Union (IUCN) uses a 1% level for international significance); or

Criterion 2: total score is 15 or more then national significance.

**Regional significance:**

Those rivers in the table not defined as nationally or locally significant, and scoring 11-14.

**Local significance:**

Sole criterion: *Number of ‘threatened or at risk’ species present* = 0 and all other indicator columns (i.e., 1-5) are 2 or less then automatic local significance; or if the total score <11 = local significance.

Translation of these functions to rivers is shown in Appendix 10B-3.

The Expert Panel assessed the output from this process against the results of existing assessments and other relevant considerations, including:

1. Sites of Special Wildlife Interest for braided rivers in Canterbury – O’Donnell and Moore (1983);
2. Existing Water Conservation Orders associated with birdlife;
3. Existing planning documents, including Regional Plans under the RMA; and
4. Reference to MfE Waters of National Importance work.

It is acknowledged that, owing to the judgmental nature of this exercise, rivers close to the threshold points could ‘swing either way’, and that in time the Wangapeka is likely to be of national significance for blue duck but is not currently.

**Outcome**

A list of rivers ranked by a scoring system from highest to lowest, which represents an initial significance ranking list. See Appendix 10B-3 (columns highlighted in green).

Rivers identified as significant at the national, regional and local level - see Appendix 10B-3.

Rivers in the Tasman Region not listed have either low value to birdlife dependent on rivers or streams or are of unknown value.

**10.5.9 Step 9: Outline other factors relevant to the assessment of significance**

Perhaps the most telling other issue concerns the 'state' of the survey data – apart from blue duck little is formally known about the birdlife of Tasman rivers, especially those on the Tasman plain, i.e., the mid to lower Motueka and the lower Waimea, but also the Matakitaki and Maruia in the Buller catchment. As a consequence, and unlike for Canterbury, there is little quantitative data available and this needs to be noted. Despite these comments we are of the view that our assessments are likely to be 'reasonably accurate' at least as far as diversity is concerned, if not in terms of absolute numbers.

**Outcome**

Notes have been made in Appendix 10B-2 and 10B-3 about data sources.

**10.5.10 Step 10: Review assessment process and identify future information requirements**

In order to rectify the situation identified in step 9 some formal survey work on the river sections identified is considered important – this could be undertaken in a relatively informal way by cooperation between DoC, the Council and the Ornithological Society of NZ.

## References

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- Gaze, P. (2010). Motueka River Survey – Kohatu to the Coast. *DOC DM-675156*. Unpublished Report, Department of Conservation, Nelson.
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- Studholme, B. (2000). Survey of the distribution and abundance of blue duck (whio) in Kahurangi National Park. *Nelson/Marlborough Occasional Publication No. 46*. Department of Conservation, Nelson.
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## Appendix 10B-1

### Credentials of the Expert Panel members and peer reviewers

The Expert Panel comprised three members. Their credentials are:

**Peter Gaze** is a technical support officer with Department of Conservation in Nelson. He has lived in the study area for many years and is familiar with the birdlife of these rivers through the work of the department as well as that of the Ornithological Society.

**Trevor James** is a resource scientist with the Tasman District Council, where he is responsible for surface water quality and aquatic ecology monitoring, reporting on the State of the Environment, and advising consents and planning staff on specific issues and options. He has a total of 13 years experience in this role including seven years at West Coast Regional Council. Prior to this he worked for environmental consultants mostly in the field of contaminated site assessment and remediation as well as biological waste treatment. He has a strong interest in ornithology and improving the lot of all aquatic ecosystems. RiVAS projects he has been involved in include whitewater kayaking, swimming, native fish and river-nesting birds.

**Ken Hughey** is Professor Environmental Management at Lincoln University. His expert knowledge of river birdlife spans the period 1981-2009, including his PhD thesis (habitat needs of birds of braided rivers), multiple river bird surveys in almost all regions of the South Island, expert evidence at multiple hearings and published research papers (e.g., Hughey 1997, 1998, Duncan et al., 2008). Ken is overall project manager of the river values project. Selected references:

Duncan, M.J., Hughey, K.F.D., Cochrane, C.H., Bind, J. 2008. River modelling to better manage mammalian predator access to islands in braided rivers. In: Sustainable Hydrology for the 21st Century, Proc. 10th BHS National Hydrology Symposium, Exeter. 487-492.

Hughey, K.F.D. 1997. The diet of the wrybill (*Anarynchus frontalis*) and the banded dotterel (*Charadrius bicinctus*) on two braided rivers in Canterbury, New Zealand. Notornis 44: 185-193.

Hughey, K.F.D. 1998. Nesting home range sizes of wrybill (*Anarynchus frontalis*) and banded dotterel (*Charadrius bicinctus*) in relation to braided riverbed characteristics. Notornis 45: 103-111.

## Appendix 10B-2

### Surveyed or Estimated native bird numbers on rivers in the Tasman District.

Guilds	a) Open water divers	b) Deep water waders	c) Shallow water waders		d) Dabbling waterfowl	e) Torrent specialists	f) Aerial gulls & terns			g) Swamp birds	h) Riparian birds	Total	Source of information	Notes
			Banded dotterel	Others			Black-fronted tern	Black-billed gull	Other					
Examples	Shags	Stilts, oystercatchers, herons etc	Banded dotterel	Others	Shoveller, teal, scaup, paradise shelduck	Blue duck	Black-fronted tern	Black-billed gull	Other	Bittern, Pukeko	Swallow, kingfisher			
Waimea	10	120	20	10	0	0	10	0	0	10	20	200	Blue duck surveys; otherwise expert opinion	Including black-fronted dotterel
Mid Motueka	11	22	0	0	28	0	0	1	0	0	25	130	Expert opinion based on habitat; and Gaze 2010	
Lower Motueka	12	7	0	0	7	10	23	0	0	20	15	155	Blue duck surveys; otherwise expert opinion; and Gaze 2010	
Upper Motueka	0	24	7	0	41	4	1	19	0	0	25	134	Blue duck surveys; otherwise expert opinion; ; and Gaze 2010	
Aorere	100	60	20		0	14	0	0	0	20	20	234	Blue duck surveys including Studholme (2000); otherwise expert opinion	



Upper Buller	20	20	20	0	0	5	50	80			50	245	Blue duck surveys; Steffens (2007) and expert opinion	Does not including the Fyfe and Matakaitaki tributaries
Matakaitaki	20	40	60	0		5	30	50			50	255	Blue duck surveys; Steffens (2007) and expert opinion	
Takaka	50	50	20	0	0	20	0	0	20	0	15	175	Blue duck surveys incl. Studholme (2000); otherwise expert opinion	
Fyfe	10	0	0	0	0	10	0	0	0	0	10	30	Butler and Steffens (2010) and expert opinion	
Wangapeka	2			0		35						37	Butler and Steffens (2010) and expert opinion	
West Coast Rivers	50	0	0	0	0	10	0	0	0	0	25	85	Studholme (2000) and expert opinion	
Whanganui Inlet rivers	10	0		0		0	0	0	0	0	10	20	Expert opinion based on habitat	Counts based on a typical single river, boundary being too far up to include exposed mudflats
Riwaka	5	0	0	0	0	2	0	0	0	0	10	17	Studholme (2000) and expert opinion	
Maruia	20	20	20	0	0	0	0	0	0	0	0	60	Expert opinion based on habitat	

### Appendix 10B-3 Significance assessment calculations for birdlife (Steps 1 and 5-8)

		PRIMARY ATTRIBUTES						SCORING OF PRIMARY ATTRIBUTES									
		Step 6A: Apply indicators and thresholds						Step 6B: Apply indicators and thresholds						Step 8: River significance		Step 9 - issues	
River	1. Relative distinctiveness (Subjective)	2. Amount of Habitat (Objective) - measured in area for braided rivers and distance for single channel rivers. Note that while some braided rivers also have single channel reaches it is the dominant habitat that is recorded	3. Numbers (Obj)	4. Foraging guilds (Obj)	5. Number of 'threatened or at risk' species present (Obj)	6. Proportion of 'threatened or at risk' species present with a significant (>1% or >5%) proportion of their total populations (Obj/Subj)	1. Relative distinctiveness of habitat	2. Amount of Habitat	3. Numbers (ranked with SBBG removal adjustment)	4. Foraging guilds	5. Number of 'threatened or at risk' species present (Obj)	6. Species strongholds	Sum Weights 1	Rank1	Overall evaluation of importance		
		INDICATORS						INDICATOR THRESHOLDS									
	1= Habitat type or species assemblage widely represented elsewhere in NZ; 2= Habitat type or species assemblage rarely represented elsewhere in NZ; 3= Habitat type or species assemblage not represented in other regions in NZ	ha for braided river birds	km for mainly single channel bird rivers	Number adjusted by removing SBBGs	Ranges from 0-8, i.e., a= open-water divers; b= deep water waders; c= shallow water waders; d= dabbling waterfowl; e= torrent specialists; f= aerial hunting gulls and terns; g= swamp specialists; h= riparian wetland birds	Principally: blue duck (BD), black stilt (BS), wrybill (WB), banded dotterel (BDo), black-fronted tern (B-FT), black-billed gull (B-BG), pied stilt (PS), NZ pied oystercatcher (NZPO), white-fronted tern (W-FT); red-billed gull (R-BG); Caspian tern (CT); southern crested grebe (SCG); NZ dabchick (DC)	Principally: blue duck (BD), black stilt (BS), wrybill (WB), banded dotterel (BDo), black-fronted tern (B-FT), black-billed gull (B-BG), pied stilt (PS), NZ pied oystercatcher (NZPO), white-fronted tern (W-FT); red-billed gull (R-BG); Caspian tern (CT); southern crested grebe (SCG); NZ dabchick (DC) - note that where surveys are based only on part sections then expert assessment is used to estimate proportionality.	1= low; 2= medium; 3= high	1=<5000ha and/or <10km; 2=5000-9999ha and/or 10-30km; 3= >10000ha and/or >30km	1=<1000 individuals; 2= 1000-4999 individuals; 3= >5000 individuals	1-4 = low = 1; 5-6= medium = 2; 7-8= high = 3	1=1; 2-3= 2; 4 or more = 3	0= no species with >1% of the total population; 1= 1 at 1-4.9% = low; 2= 2 at 1-4.9% = medium; 3= 1 or more > 5%, or 3 or more 1-4.9% = high	Standard	DSS: if column 6, of Step 6B, (threatened spp >5%) = 3; or total score is 15 or more = national importance; if all columns 1-5 are 2 or less and column 6 is 0; or the total score <10 = local; otherwise regional		
Waimea	1	239		<200	a,b,c,f,g,h	B-FT, BDo, NZPO, PS, NZP, BD		1	1	1	3	3	0	9		Local	Bird values mostly in plains reaches; lower river part of planned river park and attached to Waimea Estuary which is very important
Mid Motueka	1	200		<200	a,b,c,f,h	B-FT, B-BG, BDo, NZPO, PS		1	1	1	2	3	0	8		Local	See Gaze 2010
Lower Motueka	3		100	c.200	a,b,c,e,f,g,h	B-FT, BDo, NZPO, PS, BD		3	3	1	3	3	0	13		Regional	See Gaze 2010
Upper Motueka	1		100	c.250	a,b,c,e,f,h	B--FT, B-BG, Bdo, NZPO, PS, BD		1	3	1	3	3	0	11		Regional	Includes down to Wangapeka; See Gaze 2010
Aorere	3		100	c.250	a,b,c,g,h	BDo, NZPO, PS, BD		3	3	1	2	3	0	12		Regional	Possibly SI fernbird
Upper Buller	3	1679	c.1000	750	a,b,c,d,e,f,h	BDo, BD, B-FT, B-BG, NZPO, PS	B-FT, BD?	3	3	1	3	3	1	14		Regional	Blue duck? Maybe 30 birds max which might be >1% of popn; might be significant on an eco region basis c.f. REC

Matakitaki	2	c.150		c.500	a,b,c,d,e,f,h	BDo, BD, B-FT, B-BG, NZPO, PS		2	1	1	3	3	0	10		Regional		
Takaka	3		100	c.200	a,b,c,e,f,h	BDo, BD, PS	BD?	3	3	1	2	2	1	12		Regional	We have not included banded rail because not in river; or red-billed gull for same reason	
Fyfe	2		c.20	10	e	BD		2	2	1	1	1	0	7		Local	One of rare types with no introduced salmonids; managed as part of Wangapeka blue duck programme	
Wangapeka	2		c.100	c.100	a,e	BD	BD(3%)	2	3	1	1	1	1	9		Local	Being managed for blue duck to get to 50 pairs as one of 8 selected sites nationally - if successful then it will rise to more than the 5% threshold and therefore will jump to National significance; assumed a national popn of 1500 but check latest recovery plan and adjust	
WestCoast Rivers	1		c.100	c.100	a,e,h	BD		1	3	1	1	1	0	7		Local	Farewell Spit south, excluding tributaries of Whanganui inlet - the Big would score most of this itself	
Whanganui Inlet rivers	1		c.30	<100	a,d,h	Nil		1	2	1	1	0	0	0		local		
Riwaka	1		25	20	a,e,g,h	BD		1	2	1	2	1	0	7		Local		
Maruia	1		50	<100	a,b,c,h	BDo,PS		1	3	1	2	1	0	8		Local	Check for breeding terns upstream and feeding downstream	
<b>Colour coding</b>	Orange cells - less reliable data, including expert based estimates																	
	Red typeface - data checked by Expert Panel and may have been adjusted																	