

Birds of the braided riverbeds of southern Marlborough, New Zealand

DOC SCIENCE INTERNAL SERIES 95

S.E.A. Hallas

Published by
Department of Conservation
P.O. Box 10-420
Wellington, New Zealand

DOC Science Internal Series is a published record of scientific research carried out, or advice given, by Department of Conservation staff, or external contractors funded by DOC. It comprises progress reports and short communications that are generally peer-reviewed within DOC, but not always externally refereed. Fully refereed contract reports funded from the Conservation Services Levy are also included.

Individual contributions to the series are first released on the departmental intranet in pdf form. Hardcopy is printed, bound, and distributed at regular intervals. Titles are listed in the DOC Science Publishing catalogue on the departmental website <http://www.doc.govt.nz> and electronic copies of CSL papers can be downloaded from <http://www.csl.org.nz>

© January 2003, New Zealand Department of Conservation

ISSN 1175-6519

ISBN 0-478-22362-5

This is a client report commissioned by Nelson/Marlborough Conservancy and funded from the Unprogrammed Science Advice fund. It was prepared for publication by DOC Science Publishing, Science & Research Unit; editing and layout by Geoff Gregory. Publication was approved by the Manager, Science & Research Unit, Science Technology and Information Services, Department of Conservation, Wellington.

CONTENTS

Abstract	5
1. Introduction	6
2. Data collection	6
3. Results	8
3.1 Wairau River	9
3.2 Awatere River	11
3.3 Waima River	15
3.4 Clarence River	15
3.5 Hapuku River	16
3.6 Kowhai River	16
3.7 Kahutara River	16
4. Discussion	17
5. References	18

Birds of the braided riverbeds of southern Marlborough, New Zealand

S.E.A. Hallas

48 Paremata Street, Atawhai, Nelson, New Zealand

ABSTRACT

This report covers surveys of six river-dependent species: South Island pied oystercatcher, *Haematopus ostralegus*; pied stilt, *Himantopus himantopus*; banded dotterel, *Charadrius bicinctus*; black-fronted dotterel, *Charadrius melanops*; black-billed gull, *Larus bulleri*; and black-fronted tern, *Sterna albobriata*, on seven rivers in the southern Marlborough area: Wairau River, Awatere River, Waima (Ure) River, Clarence River, Hapuku River, Kowhai River, Kahutara River. The black-fronted tern, a Category B threatened species, was breeding on four of the rivers, and the total number of birds recorded for this species on the Wairau constituted 29% of the estimated national total. The banded dotterel, a Category C threatened species, was observed widely and was breeding on all rivers but the Clarence. The black-fronted dotterel, a recent immigrant from Australia, was recorded in low numbers, but breeding where it was seen.

Keywords: river-dependent birds, black-fronted tern, *Sterna albobriata*, banded dotterel, *Charadrius bicinctus*, black-fronted dotterel, *Charadrius melanops*, census, southern Marlborough, New Zealand.

© January 2003, New Zealand Department of Conservation. This paper may be cited as:
Hallas, S.E.A. 2003. Birds of the braided riverbeds of southern Marlborough, New Zealand. *DOC
Science Internal Series 95*. Department of Conservation, Wellington. 18 p.

1. Introduction

The braided river systems of Marlborough have been subject to numerous bird surveys over time, the earliest reports dating back to 1975. Staff of the Marlborough Office(s) of the New Zealand Wildlife Service and then the Department of Conservation recognised that there needed to be inventories of these natural features and their inhabitants, not only for their intrinsic values, but also because of the mounting development pressures on braided rivers, nationally and locally. Removal of habitat components, through gravel extraction and water abstraction, is one of the more significant human impacts on braided rivers. The recreational use of riverbeds, by four-wheel-drive vehicles, dogs and fishers, is also considered an important cause of habitat disturbance.

Data from over 15 surveys of seven rivers in the southern Marlborough area are summarised in this report: Wairau River, Awatere River, Waima (Ure) River, Clarence River, Hapuku River, Kowhai River, Kahutara River (Fig. 1).

This report covers six river-dependent species: South Island pied oystercatcher (Torea), *Haemantopus ostralegus*; pied stilt (Poaka), *Himantopus himantopus*; banded dotterel (Tuturiwhatu), *Charadrius bicinctus*; black-fronted dotterel, *Charadrius melanops*; black-billed gull, *Larus bulleri*; and black-fronted tern (Tarapiroe), *Sterna albobriata*. It does not cover every bird species recorded by field staff during the surveys.

Of these species, two are listed as priority threatened species: banded dotterel, Category C (third priority), and black-fronted tern, Category B (second priority) (Molloy & Davis 1994; Hitchmough 2002).

The purpose of this report is to collect, in one document, the available data on the distribution and abundance of these river-dependent species in seven Marlborough rivers. Where trends are apparent they are indicated, and significant sites are highlighted.

2. Data collection

The data have been collected over 25 years, generally by teams that were different for each survey. The survey technique usually involved one or more pairs of observers walking downstream along a section of riverbed and recording the numbers of each species encountered. For at least one survey of the Wairau, rafts were used to get to central gravel islands.

Staff made efforts to ensure that birds were not counted twice or missed, but impassable vegetation and high water levels interfered with data collection on a few occasions. It is important to note that none of the surveys produced 'total counts'. Rather, the data should be considered as indices of relative abundance; the patterns they yield are patterns of relative distribution.



Figure 1. Map of braided rivers in southern Marlborough surveyed for river-dependent bird species.

Two surveys were of a different nature, both on the Wairau. In 1997 staff carried out a reconnaissance survey, rafting down the river and noting the presence of large colonies of gulls and terns in passing. Colony size was estimated. The second atypical survey involved monthly visits to sample sections of the Wairau over the course of 18 months, and produced seasonal data.

Except for this later study, all other surveys were carried out in September, October or November—the breeding season for the species being considered. Species are recorded as ‘breeding’ if observers saw birds with chicks or on nests (indicated by **B**). If birds were described as exhibiting nest-defending or territorial behaviours, or empty nests were noted, species are ‘presumed breeding’ (**PB**). This status was also accorded to species where it was clear in the records that the observers’ professional judgement led them to conclude that birds were nesting in the area.

3. Results

Three species were present in all seven rivers: pied oystercatcher, pied stilt and banded dotterel (Table 1). Black-fronted dotterels were observed only in the Wairau and the Awatere. Black-billed gulls were observed in those two large rivers and in the Waima and Kahutara. Black-fronted terns were observed in the three big rivers (Awatere, Wairau, and Clarence) and in the Kahutara.

Estimates of total population, national or regional, were taken from Heather & Robertson (1996).

TABLE 1. SUMMARY OF RIVER-DEPENDENT BIRD SPECIES ON SOUTHERN MARLBOROUGH BRAIDED RIVERS.

	WAIRAU	AWATERE	WAIMA	CLARENCE	HAPUKU	KOWHAI	KAHUTARA
Pied oystercatcher	✓ ^B	✓ ^{PB}	✓ ^B	✓ ^B	✓	✓ ^B	✓
Pied stilt	✓ ^{PB}	✓ ^B	✓ ^B	✓ ^B	✓	✓	✓
Banded dotterel	✓ ^B	✓ ^{PB}	✓ ^{PB}	✓	✓ ^B	✓ ^B	✓ ^B
Black-fronted dotterel	✓ ^B	✓ ^{PB}					
Black-billed gull	✓ ^B	✓ ^{PB}	✓				✓
Black-fronted tern	✓ ^B	✓ ^B		✓ ^B			✓ ^B
Year of survey	1997, 1996, 1995, 1993, 1988, 1987, 1986, 1985, 1984	1997, 1996, 1975	1997	1992	2001	2000	2000

✓ = present
B = breeding
PB = presumed breeding

3.1 WAIRAU RIVER

The Wairau has been surveyed many times (see Tables 1-7), some sections of it having been inventoried up to four times.

The detailed surveys carried out over 1993, 1995 and 1996 provide comprehensive information (Table 2). All species were present on the Wairau and there are records of all species breeding on it. The most recent survey, in 1997 (Table 3), showed mixed colonies of black-billed gulls and black-fronted terns on the upper and mid- to lower Wairau. Bird numbers were less than in previous surveys, one possible reason being that since the survey was of a reconnaissance nature it was not difficult to miss birds, especially in the highly braided lower Wairau.

The upper Wairau was where most breeding pied oystercatchers were observed, whereas breeding banded dotterels were seen in both upper and middle Wairau. Pied stilts and black-billed gulls used separate sections of the middle Wairau, but most of the breeding birds of the latter species were actually found in the bottom of the lower Wairau. In contrast, black-fronted terns were

TABLE 2. RIVER-DEPENDENT BIRDS OF THE UPPER, MIDDLE, AND LOWER WAIRAU RIVER (SURVEYED 1996, 1995, AND 1993, RESPECTIVELY)

	UPPER WAIRAU			D	E	MIDDLE WAIRAU				J	LOWER WAIRAU			TOTALS	
	A*	B	C			F	G	H	I		K	L	M		N
Pied oystercatcher	9 ^B	11 ^B	24 ^B		26	8 ^{PB}	3		5		1	1	5	93	
Pied stilt			7		27 ^B	15	6	5	4		19	11	16	26	136
Banded dotterel	28 ^B	45 ^{PB}	84 ^B		84 ^B	34 ^B	44 ^B	26 ^B			40+	19	85	13+	502
Black-fronted dotterel												2 ^B	2	2	6
Black-billed gull	4	4	13			12	7	114+ ^B					87	580 ^B	821
Black-fronted tern	97 ^{PB}	141 ^B	55 ^B		157 ^B	51 ^B	26 ^B	120 ^B	141 ^B	1	133 ^B	384+ ^B	97 ^B	20	1423

* Section boundaries: A. Wash Bridge to Boulder Stream. B. Boulder Stream to Goulter River. C. Goulter River to Wye River. D. On Wye River, from bridge to Wairau confluence. E. Wye River to Top Valley Stream. F. Top Valley Stream to Pine Valley Stream. G. Pine Valley Stream to Bartletts Creek. H. Bartletts Creek to the Narrows. I. The Narrows to Waihopai River. J. On Waihopai River, from bridge to Wairau confluence. K. Waihopai River to Onamalutu River (Rock Ferry). L. Onamalutu River to State Highway 6 bridge. M. State Highway 6 bridge to Waikakaho River. N. Waikakaho River to State Highway 1 bridge.

B = breeding

PB = presumed breeding

TABLE 3. SIZES OF MIXED COLONIES OF BLACK-BILLED GULL AND BLACK-FRONTED TERN ON THE WAIRAU RIVER (1997 RECONNAISSANCE SURVEY)

	UPPER WAIRAU			MIDDLE WAIRAU			LOWER WAIRAU		TOTALS
	A*	B	C	E,F	G	H,I	J-L	M,N	
Colony sizes	15, 40	40, 100			30	30, 10, 60, 20, 20, 100	30, 30	80+, 40, 100+	745+

* Section boundaries. See Table 2.

TABLE 4. SUMMARY OF 1988/89 STUDY OF RIVER-DEPENDENT BIRDS ON THE WAIRAU RIVER.¹

	UPPER WAIRAU	MIDDLE WAIRAU	LOWER WAIRAU
Pied oystercatcher	✓ ^{PB}	✓	✓
Pied stilt		✓	✓
Banded dotterel	✓	✓	✓
Black-fronted dotterel			
Black-billed gull		✓	✓
Black-fronted tern	✓	✓	✓
Sections of river sampled	1. Six Mile Creek to Woolshed Creek 2. Woolshed Creek to No Catchem Creek	Sections not specified. Between Wash Bridge and State Highway 1 bridge.	Sections not specified. Between State Highway 1 bridge and river mouth.

¹ Two sections, 3.5 km each, were surveyed monthly in each category, for 18 months.
 ✓ = present
 PB = presumed breeding

TABLE 5. MONTHLY COUNTS OF RIVER-DEPENDENT BIRDS OF THE WAIRAU RIVER, 1988.

	PIED OYSTERCATCHER	BANDED DOTTEREL	BLACK-BILLED GULL	BLACK-FRONTED TERN
Spring Sep	3	14	10	7
Oct	1	17	4	44
Nov	6	20	12	23
Summer Dec	3	10	2	6
Jan	0	1	1	8
Feb				3
Autumn Mar				2
Apr				
May				12
Winter Jun				
Jul				1
Aug	4	7	102	22

TABLE 6. RIVER-DEPENDENT BIRDS OF THE WAIRAU RIVER, 1985.

	UPPER WAIRAU		MIDDLE WAIRAU			LOWER WAIRAU	TOTALS
	AA*	A, B	C-E	F, G	H-L	M, N	
Pied oystercatcher	28	40	26	82 ^{PB}	18	12	206
Pied stilt	22	24	76	154 ^{PB}	53	4	333
Banded dotterel	95	152	223	294 ^{PB}	147 ^B	59	970
Black-fronted dotterel						19	19
Black-billed gull	324 ^B	55	69	265	300+ ^B	15	1028+
Black-fronted tern	223 ^B	271	225	360	268+ ^B	12	1359+

* Section boundaries: AA. Rainbow Station homestead to Wash Bridge; otherwise, as for Table 2.
 B = breeding PB = presumed breeding

TABLE 7. MISCELLANEOUS OBSERVATIONS OF RIVER-DEPENDENT BIRDS ON THE WAIRAU RIVER.

DATE	SPECIES	NO. OF BIRDS	COMMENTS
1984, Oct	Banded dotterel	20 ^B	Near the Rainbow River
	Black-billed gull	2	
	Black-fronted tern	2	
1986, Dec	Banded dotterel	B	Near Bartletts Creek
	Black-fronted tern	B	
	Banded dotterel	Numerous	Above Top Valley Stream
	Black-fronted tern	Numerous	
1987, Apr	Pied stilt	2	At State Highway 1
	Black-fronted dotterel	3	
1995, Nov	Pied oystercatcher	1	In Big Lagoon
	Pied stilt	7	

B = breeding

observed breeding along the surveyed length of the Wairau. The total recorded for this species on the Wairau is 28.6% of the estimated national total, where counts for the four other species represent a fraction of their national population (Figs 2–6). One pair of black-fronted dotterels was recorded as breeding on the lower Wairau.

The river was relatively diverse in most of the sections. Although two sections had no birds sighted, or only one, no section was markedly more diverse than any other.

3.2 AWATERE RIVER

The combined surveys of 1996 and 1997 covered only the middle and lower Awatere (Table 8); the upper Awatere was not surveyed. All species were present and breeding on the Awatere (Table 1).

Pied oystercatchers and stilts were breeding in the middle sections. Banded dotterels were recorded as breeding throughout the surveyed length of the river. Black-billed gulls were observed in only one section, in the middle Wairau, in a large breeding colony. Black-fronted terns were present and nesting in sections only at the beginning and at the end of the surveyed river.

The number of black-fronted dotterels observed represents 5% of the South Island total. Birds were recorded from various sections of the middle and lower Wairau, with breeding being indicated in the final two survey sections. One observer commented, ‘the Awatere River is one of the few places in the South Island where the black-fronted dotterel has established ... [and] also is breeding.’

The totals for each species were 1% or less of the total number of birds estimated in New Zealand. Diversity was moderate and consistent throughout the sections surveyed.

A previous survey (1975; Table 9), covering a portion of the more recent surveys, was carried out when the river was in flood.

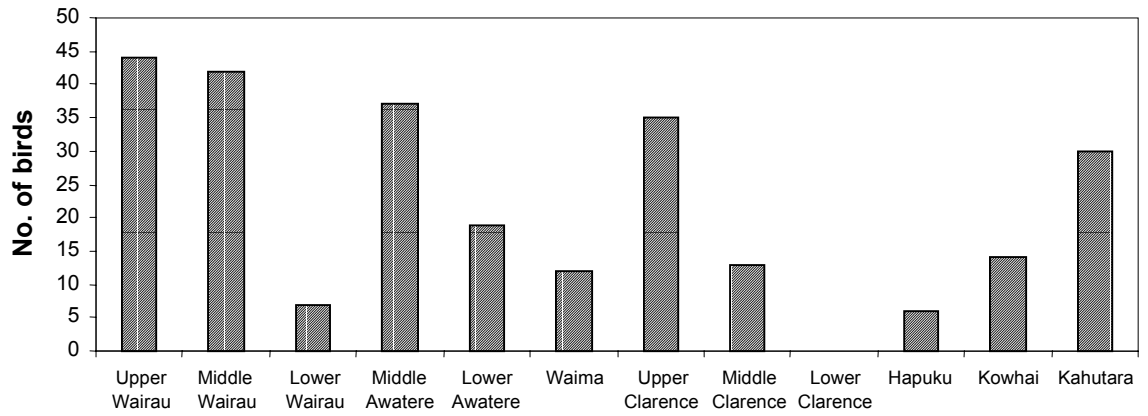


Figure 2. Abundance of pied oystercatcher on rivers of southern Marlborough.

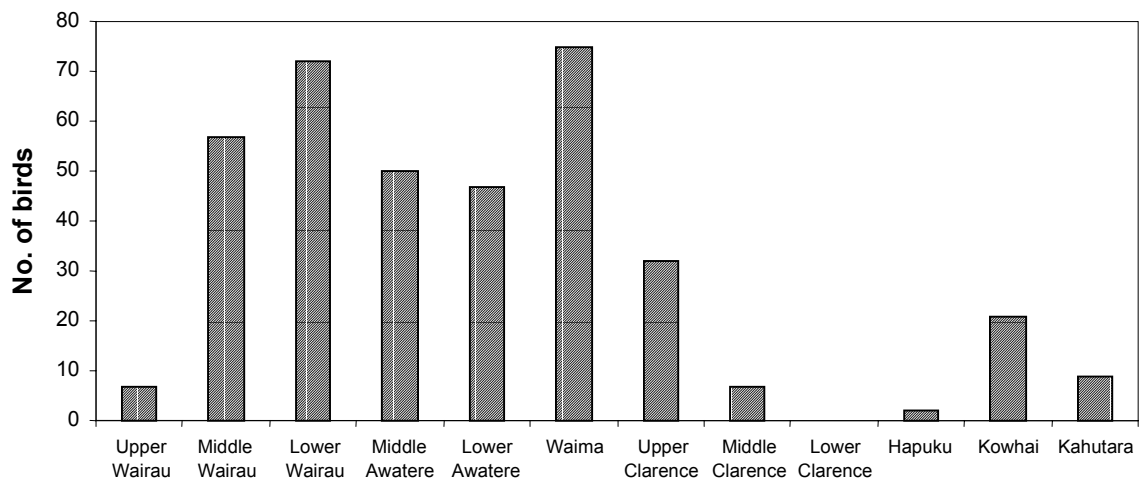


Figure 3. Abundance of pied stilt on rivers of southern Marlborough.

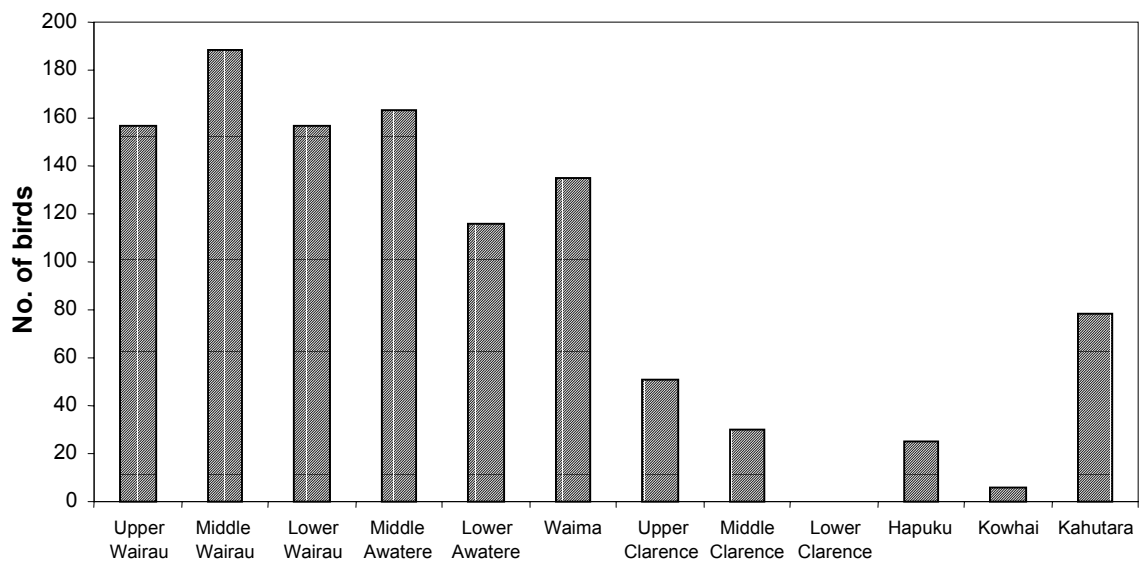


Figure 4. Abundance of banded dotterel on rivers of southern Marlborough.

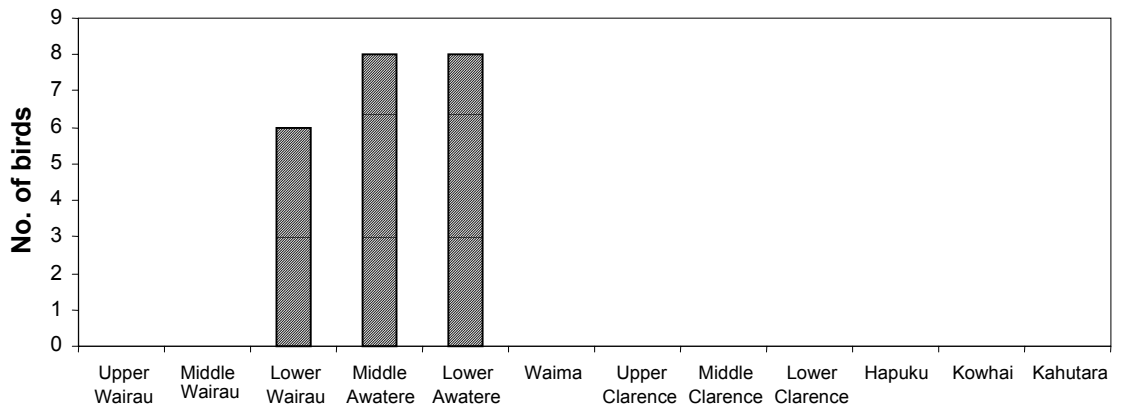


Figure 5. Abundance of black-fronted dotterel on rivers of southern Marlborough.

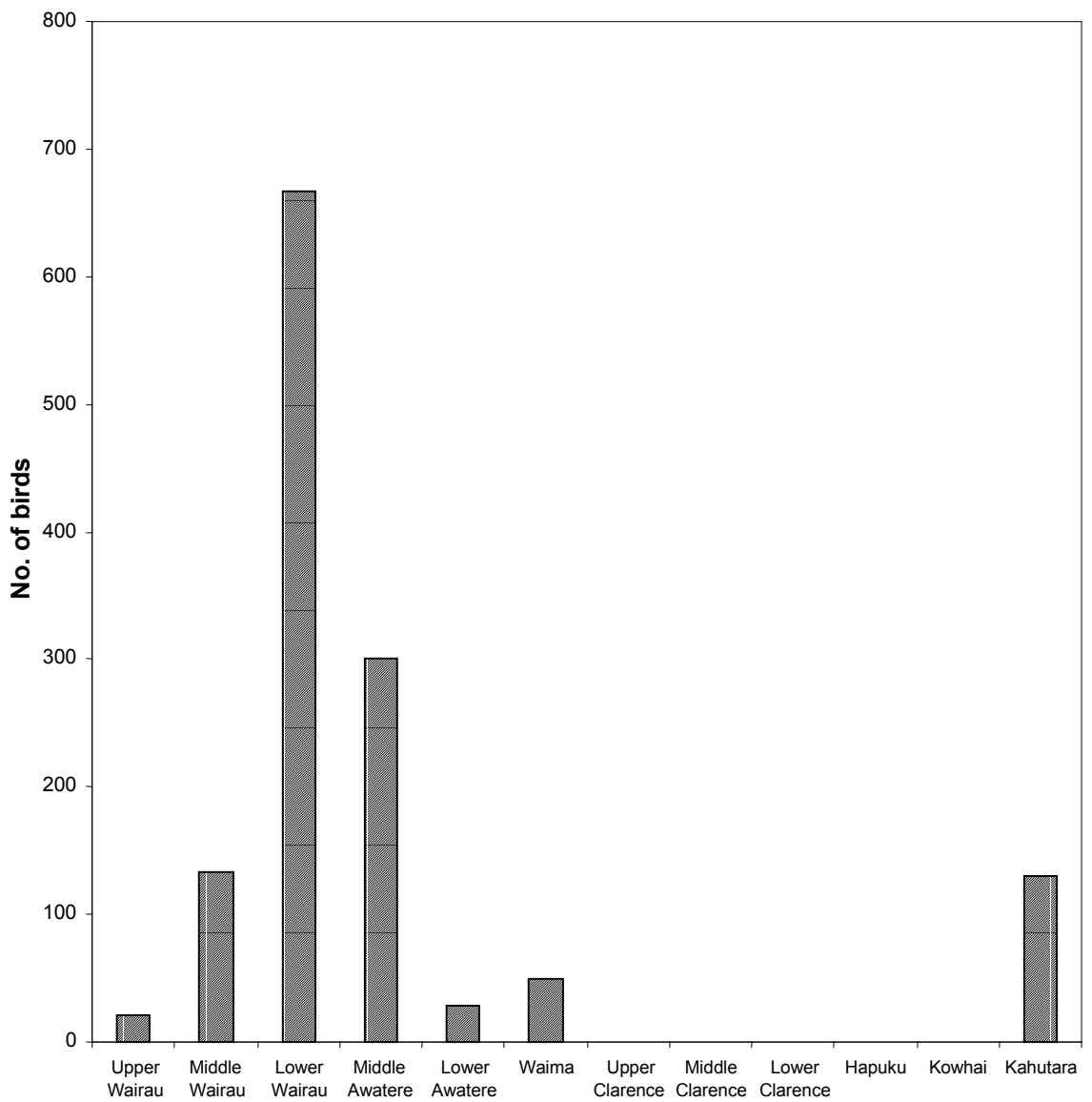


Figure 6. Abundance of black-billed gull on rivers of southern Marlborough.

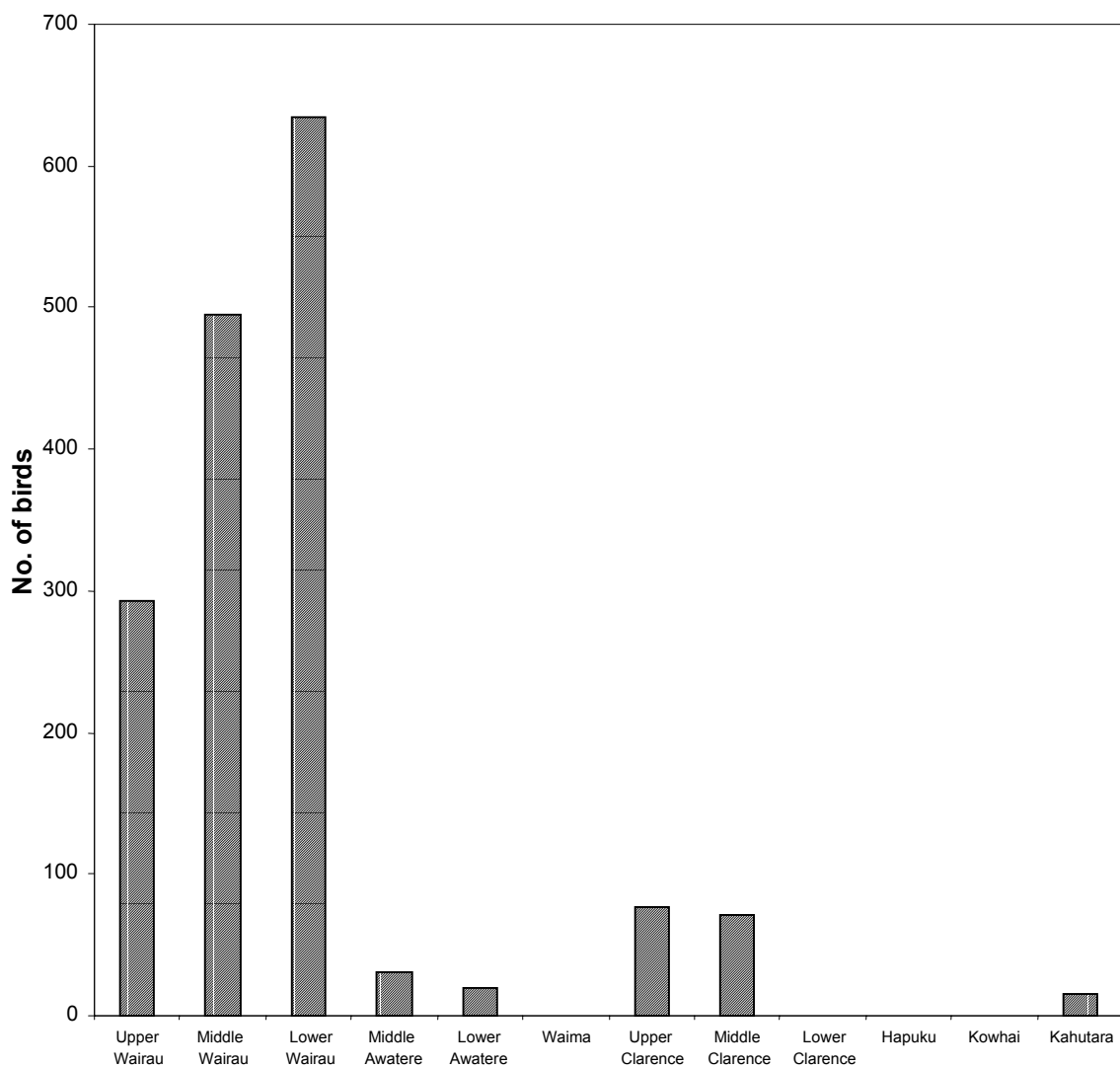


Figure 7. Abundance of black-fronted tern on rivers of southern Marlborough.

TABLE 8. RIVER-DEPENDENT BIRDS ON THE UPPER (1996) AND LOWER AWATERE RIVER (1997).

SPECIES	MIDDLE AWATERE				LOWER AWATERE				TOTALS
	A*	B	C	D	E	F	G	H	
Pied oyster-catcher	12 ^{PB}	6 ^{PB}	11 ^{PB}	10 ^{PB}	5	4	6	4	58
Pied stilt	16 ^{PB}		21 ^{PB}	13 ^{PB}	11 ^B	22	8	6	97
Banded dotterel	40 ^B	26 ^B	57 ^B	40 ^B	32 ^{PB}	21 ^{PB}	36 ^{PB}	27 ^{PB}	279
Black-fronted dotterel			5	3		1	3 ^{PB}	4 ^{PB}	16
Black-billed gull		300 ^B						28	328
Black-fronted tern	14 ^B	16 ^B				5 ^{PB}	2 ^{PB}	13 ^{PB}	50

* Section boundaries: A. Medway Hills to Blackbirch Stream. B. Blackbirch Stream to Blairich River. C. Blairich River to Nina Brook. D. Nina Brook to State Highway 1 bridge. E. State Highway 1 bridge to bluffs below Riverside. F. Bluffs below Riverside to Stafford Creek. G. Stafford Creek to Flemmings Road. H. Flemmings Road to river mouth.

B = breeding

PB = presumed breeding

TABLE 9. RIVER-DEPENDENT BIRDS ON AWATERE RIVER, 1975.

SPECIES	UPPER AWATERE C,D*	LOWER AWATERE E-G	TOTALS
Pied oystercatcher	7	10	17
Pied stilt	19	11	30
Banded dotterel	34	30 ^B	64
Black-fronted dotterel		3	3
Black-billed gull	32	2	34
Black-fronted tern		1	1

* Section boundaries, see Table 8.

B = breeding

3.3 WAIMA RIVER

The survey of 1997 (Table 10) showed that the Waima was being used by low numbers of four species (all totals were less than 0.5% of the estimated total New Zealand population). Three species were recorded as present and breeding: pied oystercatchers, pied stilts and banded dotterels. Black-billed gulls were present. Slightly higher diversity was detected in the lower section of the Waima.

TABLE 10. RIVER-DEPENDENT BIRDS ON WAIMA (URE) RIVER, 1997.

SPECIES	A*	B	C	TOTALS
Pied oyster-catcher	3	8 ^{PB}	1	12
Pied stilt	28 ^B	20	27	75
Banded dotterel	15 ^{PB}	57 ^{PB}	63 ^{PB}	135
Black-fronted dotterel				
Black-billed gull			49	49
Black-fronted tern				

* Section boundaries: A. 'Blue Mountain' to Dunsandel Creek. B. Dunsandel Creek to Ure Road bridge. C. Ure Road bridge to river mouth.

B = breeding

PB = presumed breeding

3.4 CLARENCE RIVER

In 1992 a significant length of the Clarence was surveyed (Fig. 1). Although three species were recorded as breeding (pied oystercatchers, pied stilts and black-fronted terns), and banded dotterels were present (Tables 1, 11), the records were scattered over the upper and middle Clarence (i.e. in the first seven of nine sections).

Pied oystercatchers and black-fronted terns were present together in five sections, and breeding in two. Banded dotterels were observed in the same sections. Pied stilts were present in four sections, breeding in one. Only black-

TABLE 11. RIVER-DEPENDENT BIRDS ON THE CLARENCE RIVER, 1992.

SPECIES	UPPER CLARENCE			MIDDLE CLARENCE				LOWER CLARENCE		TOTALS
	A	B	C	D	E	F	G	H	I	
Pied oyster-catcher	6		29 ^B	2	4		7 ^B			48
Pied stilt	6		26 ^B		5		2			39
Banded dotterel	7		44	1	7		22			81
Black-fronted dotterel										
Black-billed gull										
Black-fronted tern	1		75 ^B	14	23		34 ^B			147

* Section boundaries: A. Acheron Accommodation House to Dillon River. B. Dillon River to Tinline Creek. C. Tinline Creek to Gloster River. D. Gloster River to Quail Flat. E. Quail Flat to Bluff River. F. Bluff River to Goose Flat. G. Goose Flat to Crib Stream. H. Crib Stream to Boundary Stream. I. Boundary Stream to State Highway 1 bridge.

B = breeding

fronted terns were present in noteworthy numbers (3% of the national population).

Diversity and abundance were consistently low in the surveyed sections.

3.5 HAPUKU RIVER

This small river is known to flood regularly and has been extensively modified. Low numbers of three species were present at a 2001 survey: pied oystercatchers, 6; pied stilts, 2; and banded dotterels, 25. Only banded dotterels were recorded as breeding in the Hapuku (Table 1).

3.6 KOWHAI RIVER

The Kowhai is not particularly hospitable to river-dependent species: it floods heavily in winter, has sections that dry up in summer; and it has been modified for flood protection and used for gravel extraction. Despite that, some pied oystercatchers and banded dotterels were nesting in the Kowhai (Table 1). Numbers of pied oystercatchers, banded dotterels, and pied stilts in 2000 were 14, 6, and 21, respectively.

3.7 KAHUTARA RIVER

The survey in 2000 revealed that pied oystercatchers, pied stilts and black-billed gulls were present; banded dotterels and black-fronted terns were breeding (Tables 1, 12). There was a clear pattern of greater diversity in the lower section (all five species present).

TABLE 12. RIVER-DEPENDENT BIRDS ON KAHUTARA RIVER, 2000.

SPECIES	A*	B	TOTALS
Pied oystercatcher	17	13	30
Pied stilt		9	9
Banded dotterel	36 ^B	42 ^B	78
Black-fronted dotterel			
Black-billed gull		130	130
Black-fronted tern		15 ^B	15

* Section boundaries: A. Inland Road to Dairy Farm Road. B. Dairy Farm Road to river mouth.

B = breeding

4. Discussion

For successful reproduction, the river-dependent species discussed in this report, being a selection of waders, gulls and terns, require braided riverbeds with little vegetation. More specifically, 'cobble substrates are most important for breeding' (Heather & Robertson 1996). Each species had a characteristic distribution over the seven rivers surveyed.

Pied oystercatcher

Observed on most rivers and river sections (Fig. 2), the pied oystercatcher was most abundant in the upper and middle reaches of the bigger rivers (Wairau, Awatere, Clarence) and in the Kahutara. It was recorded as breeding on all rivers and river sections except the Hapuku and Kahutara.

Pied stilt

Like the oystercatcher, pied stilts were recorded for most rivers and river sections (Fig. 3). They were most abundant in the Waima. They were also found in relatively high numbers in wetland sections, such as in the middle and lower reaches of two of the big rivers (Wairau, Awatere). Breeding pied stilts were recorded for only a few sections: one section each on the upper Wairau, upper Clarence, and the Waima, and in half of the Awatere sections (mostly the middle).

Banded dotterel

Banded dotterels were observed widely on the rivers surveyed (Fig. 4). They were most abundant on the larger rivers, which coincidentally are also the most northern of the seven rivers and furthest from Kaikoura. They were breeding on all rivers but the Clarence.

Black-fronted dotterel

These recent immigrants to New Zealand from Australia were found in low numbers, and on only three sections of riverbed: lower Wairau, middle Awatere, and lower Awatere (Fig. 5). They were breeding where they were seen.

Black-billed gull

The rivers north of Kaikoura had the highest numbers of black-billed gulls recorded (Fig. 6). Notably, the lower Wairau had many times more birds than any other river or river section. Breeding colonies were seen in the lower Wairau and in the middle Awatere.

Black-fronted tern

The Wairau had by far the greatest numbers of black-fronted terns and, based on national population estimates, was used by over 28% of all birds in New Zealand (Fig. 7). The Wairau is clearly an important river for this species. Breeding was observed throughout the length of the surveyed sections. In three other rivers, where much lower numbers were recorded, breeding was also observed (Awatere, Clarence, and Kahutara).

5. References

- Heather, B.D.; Robertson, H.A. 1996: The field guide to the birds of New Zealand. Viking Press, Hong Kong.
- Hitchmough, R. (compiler) 2002: New Zealand Threat Classification lists 2002. *Threatened Species Occasional Publication* 23. Department of Conservation, Wellington.
- Molloy, J.; Davis, A. 1994: Setting priorities for the conservation of New Zealand's threatened plants and animals. (2nd edn) Department of Conservation, Wellington.