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Manawatu Region

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BIRDS OF THE MANAWATU ESTUARY
AND THE IMPLICATIONS OF THE SPREAD OF
SPARTINA CORDGRASS

The Ornithological Society of New Zealand is composed of amateurs who contribute towards the study of birds in New Zealand. Members in the Manawatu region have studied birds on the Manawatu estuary for many years and have for a number of years conducted regular counts of the birds associated with the wetland habitat. The estuary supports a rich and varied avifauna of regional and national significance.

The Manawatu estuary has the dubious distinction of being the first estuary in N.Z. in which Spartina cordgrass was planted. Since 1913 cordgrass has been spreading and it now covers over a half of the estuary's total mudflat area. The very rapid spread over the remaining mudflat in the past ten years is causing great concern to the OSNZ, and its records are summarised here to support the case for implementing control measures against Spartina as soon as possible to protect the bird habitat.

Birds of the Manawatu Estuary

The birdlife of the Manawatu estuary is very rich. Fifty-eight species of birds (excluding passerines) have been associated with the estuary during the period of OSNZ surveillance from 1958 - 1987. These species are listed in Appendix 1 together with an indication of typical annual numbers.

Twenty-four of these species are resident for some part of every year on the estuary, but the diversity is enhanced by the large number of occasional visitors to the area. The wader family (e.g. stilts, godwit, oystercatcher etc) is particularly well represented with 25 species. The heron family is also prominent with Royal Spoonbill, White-faced and White Heron, Little and Cattle Egret and Glossy and White Ibis. This large number of species undoubtedly reflects the strategic location of the estuary in the bight of the North Island's west coast. The importance of the estuary for rare vagrants is reflected in the records - the first Great Knot for N.Z. was recorded here by an OSNZ member in 1967 and the one and only Red-kneed Dotterel ever seen in N.Z. was recorded by another member in 1976. More recently the first sighting of Wilson's Phalarope in N.Z. was recorded by members in 1983.

Whilst the number of species recorded in any year is very high compared with any similar sized area in the country, the relatively small size of the estuary limits the total number of birds to 1-2000.

Regional significance of the Manawatu Estuary

This estuary is easily the most important habitat for wading birds on the west coast of the North Island south of Kawhia harbour (Waikato). No other similar habitat in the region rivals it for either number of species or for the total number of birds. In the whole of the southern North Island, only Lake Wairarapa and Ahuriri Lagoon at Napier offer comparable feeding and roosting conditions for wading birds. (see maps 1 & 2). All the OSNZ records substantiate the Manawatu Estuary as the prime habitat of its type by such a margin that birds displaced from it are likely to move to wetlands elsewhere in the country rather than use other local sites.

National Significance of the Manawatu Estuary

There are a number of factors which make the estuary of national significance. The first has already been described - its location is such that straggling waders making a landfall find the estuary offers suitable habitat for their requirements. This factor also applies to internal migration. Wrybill, which migrate between their breeding grounds in Canterbury and their wintering grounds around Auckland (although some winter on the Manawatu and a few are present all year) are known sometimes to use the estuary as a staging post. The strategic value of this for such a rare wader (in global terms) is difficult to evaluate but cannot be discounted.

A wetland is defined by the IUCN as being of national significance if it regularly supports more than 1% of the national population of any species. Using this criterion, the Manawatu estuary is clearly of national importance because of the numbers of Royal Spoonbill, Least Golden Plover and Far-eastern Curlew present each year.

The Royal Spoonbill is a spectacular all-white member of the heron family distinguished by its massive spatulate bill. Up to half of the New Zealand population regularly overwinters at the estuary from March to August. Figure 1 shows the winter counts of Royal Spoonbill at the Manawatu estuary from 1976 - 1987. From 1977 - 1980, national surveys of this species (and other herons and egrets) were conducted by the OSNZ. The national population averaged 45 whilst the numbers overwintering on the Manawatu in those years averaged 22 - i.e. half the national population. There have been no co-ordinated national counts since then, but there are indications of a significant increase in numbers in the past couple of years. This year, there may be about 100 birds in New Zealand - numbers on the Manawatu have increased too with a peak of 38 counted during the winter. Counts from throughout the country continue to show the Manawatu estuary as the most important wintering site for this species.

Least Golden Plover breed in Siberia and over-winter (during our summer!!!) in the southern hemisphere. Counts on the Manawatu estuary during the last 10 years have found 15 - 50 of these birds, with a trend to increasing numbers recently (see fig. 2). National counts of all waders in N.Z. only commenced in 1983, when there were 300 Golden Plover. Since then numbers have steadily increased and last summer 1120 were counted. The Manawatu population is therefore quite significant - constituting 4 - 10 % of the national total of this species.

Far-eastern Curlew also breed in Siberia and are relatively uncommon in New Zealand. In recent years there have been 1 - 3 birds each summer at the Manawatu estuary. The national wader counts have revealed an average of 38 of these birds per annum. The few birds at the Manawatu estuary are therefore relatively important from a national perspective.

Fig. 1

ROYAL SPOONBILL

WINTER COUNTS - JUNE OR JULY

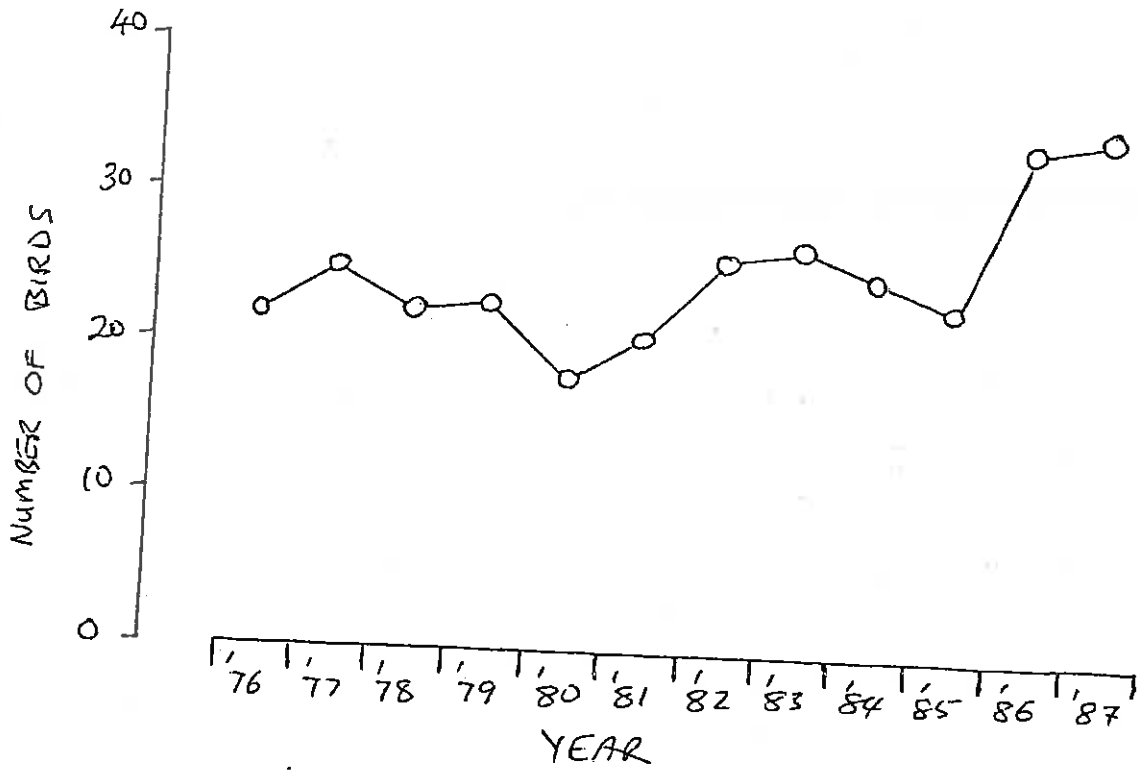
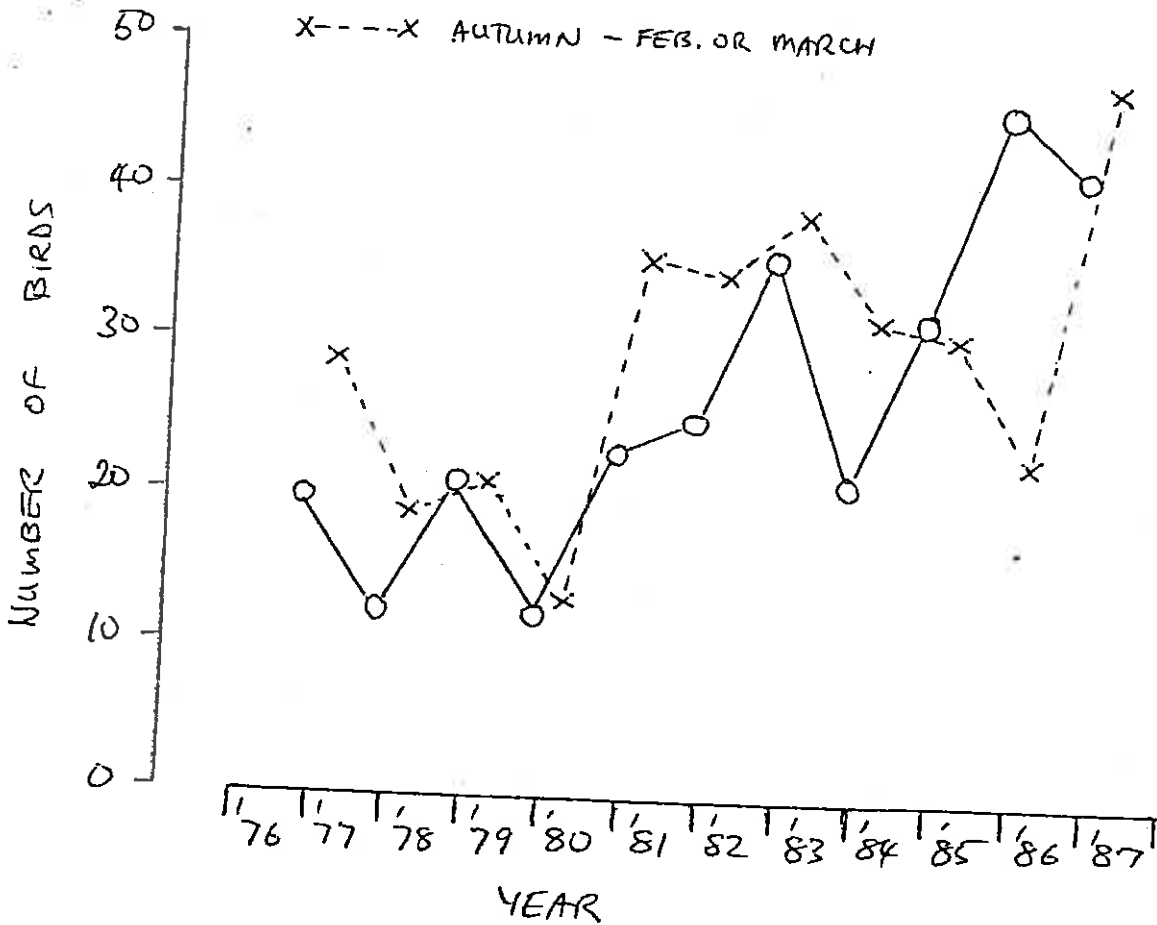


Fig. 2

GOLDEN PLOVER

○—○ EARLY SUMMER - NOV. OR DEC.
 X---X AUTUMN - FEB. OR MARCH



Use of the Estuary by Birds

Most of the birds inhabit the estuary to obtain food - few actually breed there. The birds use different parts of the estuary depending on the state of the tide - feeding out on the exposed mudflats when the tide is low and roosting on higher ground during all but the lowest neap hightides. The main mudflat feeding areas and the high tide roosts are shown on map 3. The relative use of these areas by birds has been studied by OSNZ members and the findings are discussed below.

Mudflat feeding areas

There are three major mudflats at the estuary. Two of these are in the seaward half of the estuary on the north side and south side whilst the third is on the eastern bank of the upriver half of the estuary.

Information on the relative importance of these three mudflats as feeding areas for birds is restricted to counts made on 18.3.79 and 23.3.80 when detailed studies were made of the movements of birds around the estuary during the tidal cycle. Birds were counted in all parts of the estuary at hourly intervals starting during the low tide period for eight hours on 18.3.79 and for five hours on 23.3.80. Table 1 shows counts made on the three mudflats four hours before and four hours after high tide on 18.3.79. Table 2 gives details of counts made 5, 4 and 3 hours before high tide on 23.3.80. With few exceptions all birds were out on the mudflats at these times and the roosting areas were deserted. More than two thirds of the waders and herons (including Royal Spoonbill) were actively feeding but most gulls and terns were resting on the mud.

From this data it is evident that certain species favour certain mudflats. On both dates most godwits and oystercatchers were found feeding over the north side mudflat whilst Royal Spoonbill and Golden Plovers favoured the eastern bank mudflat. White-faced heron was the main species preferring the south side mudflat. Pied stilts tended to be evenly distributed around the estuary but the distribution of Knot, Wrybill and Banded Dotterel differed on the two dates. All three mudflats held similar numbers of species but in terms of the total numbers of birds present the north side mudflat was easily the most important. This is the largest mudflat on the estuary and compared with the other mudflats is only lightly infested with Spartina - hence it is not surprising that most birds favoured it for feeding.

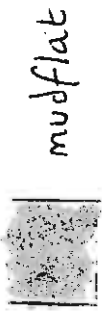
High Tide Roosts

There have been six main roosting areas at the estuary as shown on map 3. We have named the roosts - "spit" (SP), "dotterel flat" (DF), "main hide" (MH), "stump" (ST), "east bank" (EB) and "corner" (C). The spit, dotterel flat and corner roosts are relatively small, well defined areas. The spit roost is at the end of the large sand bar on the north side of the estuary. Here the sand is sufficiently high to provide the birds with a clear view in all directions. Dotterel flat is a Salicornia covered basin surrounded by sanddunes on the south side of the estuary. The corner is a bar of sand at a major bend in the river on the upper estuary. Here the roosting area is either open sand or rough grass/rushes. The other three roosts are larger, less well defined areas. East bank is a long thin strip of higher mud at the edge of the mudflat in the upriver section of the estuary, much of which is covered in Spartina. Shags and Spoonbills often roost on logs out on the mudflat immediately adjacent to the bank and are counted as part of this roost. The main hide and stump roosts are adjacent parts of the south side of the estuary. Birds roost here on patches of higher mudflat amongst Spartina or rush covered sand.

Tables 4 - 8 are counts of birds made at the roosts in February of the five years 1978 to 1982. We have available a complete set of counts made each month from 1976 to 1981 but the relative importance of the various roosts can be clearly seen from these February counts alone. February is the month when the number of species and the total number of birds present are at a maximum (although peak numbers of Royal Spoonbill occur in late autumn). The counts were all made at high tide when the birds were forced to congregate on the roosts; the majority of birds stand or sit quietly at the roosts waiting for the tide to recede.

The counts show that the spit is the most important roost at the estuary in terms of both the number of species and the total number of birds present. Oystercatcher, wrybill, curlew, and most godwit, Knot, Red-billed Gull and tern roost here. There is usually a flock of stilt and occasionally sandpipers are present. Dotterel flat was favoured by Golden Plovers, Banded Dotterels and Sharp-tailed Sandpipers. The east bank is the main roost for Royal Spoonbill and most stilts. It is also important for non-waders (e.g. mallard and pukeko) which do not necessarily roost at high tide. The other three roosts are of relatively minor importance as only stilts and White-faced Herons used them regularly.

MANAWATU
ESTUARY



mudflat



high tide roosts

SP spit

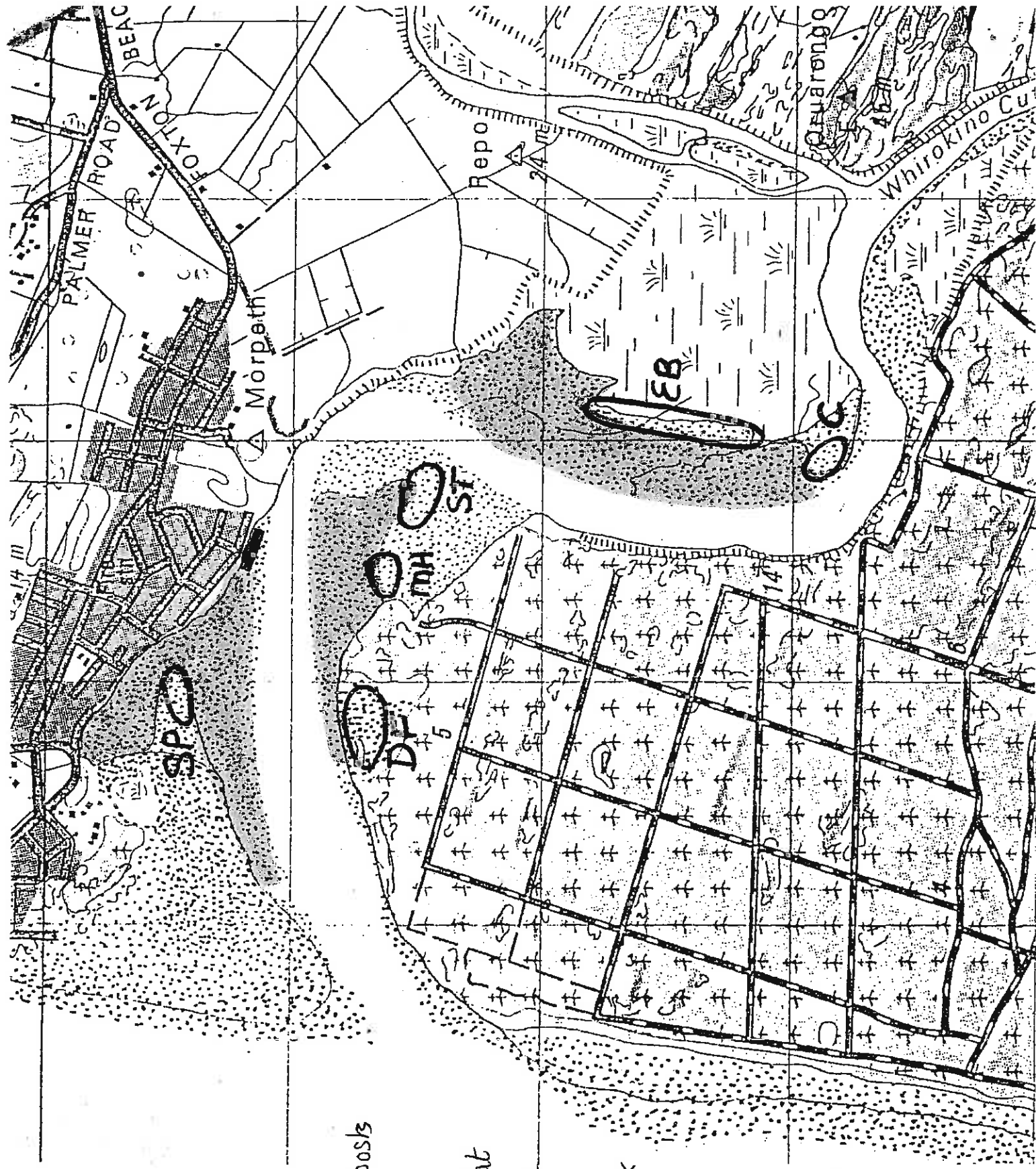
DF dotted flat

MH main hids

ST stump

EB east bank

C corner



Changes to the Habitat in Recent Years

Since 1982, counts of the birds have been conducted three times each year - in spring when most Arctic migrants have arrived, in autumn when they are still present and numbers are at a peak, and during the winter when most Royal Spoonbills are present.

These recent counts (see e.g. table 9) indicate that the habitats have changed and the use of them now appears different from the pattern described above. The south bank mud flat now has significantly more Spartina cover than previously and the loss of the feeding areas has tended to mean that fewer birds are now using it. The eastern mudflat is showing similar trends, and supports fewer waders than in the past, but it still has significant feeding habitat remaining. The general trend has been for more birds to use the north bank mudflat. It is thus of concern that this area, which ten years ago had no Spartina at all, now has scattered patches throughout, with further encroachment actively occurring.

The roosting behaviour of the birds has also changed. Dotterel flat, which used to be a major roosting site, was cut off by flood depositions in April 1981, and since then has become unsuitable for wading birds. Sandpiper numbers in recent years appear to reflect this loss of habitat. The main hide and stump roosts have been most affected by Spartina encroachment. Despite there still being some clear areas of sand, the current conditions are apparently now unfavourable for waders. Overall changes have reinforced the importance of the northern roosts, with most birds now favouring the spit or even the bay between the spit and the river mouth for roosting.

Current Ranking of Habitat

The accumulation of data and experience allows the OSNZ to rank the feeding and roosting areas in the estuary for their importance to birds. Of the mudflats, the northern one is by far the most important, with the eastern flat second. The south bank mudflat is now much less important than these for providing feeding habitat. The roosts are dominated in importance by the spit, with the dotterel flat now no longer suitable.

SP > EB > C > ST > MH

best roost

worst roost

Priorities for Spartina Control

The bird numbers and their distribution indicate clear priorities for Spartina control. The northern side of the estuary has the most important feeding mudflat, the most important roost (SP) and is least affected by Spartina encroachment. Total extermination of Spartina from this area is an achievable goal at modest cost - much of the infestation could be sprayed by hand (a number of willing volunteers would be available).

Also of importance is the eastern roost and mudflats on the upriver stretch of the estuary. The infestation here is more widespread and would require spraying by helicopter, but control would undoubtedly benefit those species which regularly make use of this area, notably the Royal Spoonbill but also the Least Golden Plover.

Lower priority of control should be accorded the infestations on the south side of the river. Here both roosting and feeding grounds for wading birds have been badly affected, and whilst a longer term programme is desirable, they are clearly of less importance than the other areas identified.

Conclusions and Recommendations

Bird studies by members of the OSNZ on the Manawatu estuary show that the habitat is of regional and national significance for wading birds. The importance of the estuary for feeding and roosting by these birds is threatened by the encroachment of Spartina cordgrass.

Because of this it is recommended that:

(a) the Department of Conservation control Spartina on the Manawatu estuary through an annual spraying programme with top priority being given to the north side of the estuary between the river mouth and the wharf. Importance should also be given to control of Spartina on the large area upriver and east of the township which is particularly important for the Royal Spoonbills.

(b) whilst helicopter spraying is the most efficient means for most areas, some infestations could be treated by hand by volunteers in order to divert the resources saved to infestations elsewhere in the estuary.

(c) that the importance of the estuary be recognised by the Department of Conservation through an active wildlife management programme. In addition to Spartina control, this should include protecting the key sites from human disturbance and preventing damage to the habitat through reclamation or draining etc.

APPENDIX I

BIRDS OF THE MANAWATU ESTUARY

This list is compiled from OSNZ surveys conducted from 1958 - 1987. The list comprises only non-passerine birds associated with the wetlands of the estuary and is divided into those species which are regular or common ie have been present virtually every year, and those which only occasionally visit or are rare. An indication of the numbers of the common or regular species is given.

Common or regular species

NZ breeding waders

SI Pied oystercatcher	50-80
Variable oystercatcher	5-20
Banded dotterel	30-110
Wrybill	5-40
Pied Stilt	100-350
Spur-winged Plover	0-60

Arctic breeding waders

Least Golden Plover	15-50
Far-eastern Curlew	1-3
Bar-tailed Godwit	300-450
Lesser Knot	40-260
Sharp-tailed Sandpiper	3-10

Gulls and terns

Black-backed Gull	100-300
Red-billed Gull	40-120
Black-billed Gull	5-120
White-fronted Tern	5-150
Caspian Tern	5-20

Other species

Royal Spoonbill	5-38
White-faced Heron	20-60
Black Shag	5-20
Little Shag	1-5
Mallard	50-400
Harrier	1-4
Pukeko	20-100
Kingfisher	1-5

Rare or occasional visitors

NZ breeding waders

NZ Dotterel
Black Stilt

Arctic breeding waders

Asiatic Whimbrel
Little Whimbrel
Hudsonian Godwit
Tattler species
Terek Sandpiper
Pectoral Sandpiper
Curlew Sandpiper
Turnstone
Great Knot
Sanderling
Red-necked Stint
Wilson's Phalarope

Other NZ breeding species

Dabchick
Little Black Shag
Spotted Shag
White Heron
Bittern
Paradise Duck
Grey Duck
Grey Teal
Shoveler
Black Swan
Black-fronted Tern

Other foreign breeding species

Red-kneed Dotterel
White-winged Black Tern
Little Tern
Little Egret
Cattle Egret
White Ibis
Glossy Ibis
Antarctic Fulmar
Chestnut-breasted Shelduck

TABLE 1 - LOW TIDE COUNTS ON MUDFLATS - 18.3.79

High tide at 1230 hrs.

Counts were made when the tide was out at 930 and again at 1630.

BIRD SPECIES (waders, herons, gulls & terns only)	MUDFLAT AREA					
	North Side (MF 1)		South Side (MF 2)		East Bank (MF 3)	
	930	1630	930	1630	930	1630
	<u>930</u>	<u>1630</u>	<u>930</u>	<u>1630</u>	<u>930</u>	<u>1630</u>
W.F.Heron	5	4	24	23	3	
R.Spoonbill					20*	20*
SIPO	58	55	10	16		
G.Plover	3				21	12
B.Dotterel			**	12		57
Wrybill		2			21	22
F.E.Curlew			2			2
B.T.Godwit	249	172	7	96	65	37
L.Knot	16				70	70
Pied Stilt	29	31	19	3	98	50
Bl.Backed Gull	22	2				6
R.Billed Gull	20	66			15	2
W.F.Tern		35				
Caspian Tern		2	4		5	15
S.W.Plover		9				
B.F.Tern		1				

* Royal Spoonbill roosted on mudflat from 930 to 1630 and were not observed to feed.

** 91 Banded Dotterel still roosting on Dotterel Flat at 930.

TABLE 2 - LOW TIDE COUNTS ON MUDFLATS - 23.3.80

High tide at 1430 hrs.

Counts were made when the tide was out at 930
and as the tide came in at 1030 and 1130

BIRD SPECIES (waders, herons, gulls & terns only)	MUDFLAT AREA								
	North Side (MF 1)			South Side (MF 2)			East Bank (MF 3)		
	930	1030	1130	930	1030	1130	930	1030	1130
W.F.Heron			1	10	13	23	2	4	4
R.Spoonbill	5	4	1	2	3		15	15	21
SIPO	19	23	33	3	6	1	1	1	
V.Oystercatcher	1	1							
G.Plover							11	11	12
B.Dotterel	12	1		71	66	62			
Wrybill	17	9	19		1				
B.T.Godwit	155	143	197	18	15	6	26	26	23
L.Xnot	84	60	66	47	41				
Pied Stilt	51	42	49	12	20	27	32	39	47
Bl.Backed Gull	57	30		11	24	18	8	8	9
R.Billed Gull	6		26			1			2
Caspian Tern		2	2		1			1	
Curlew Sandpiper				8	8				
Terek Sandpiper				1	1				
R.N.Stint						1			
Little Egret	1	1	1						

SPECIES	C	EB	ST	MH	DF	SP	towards river mouth	TOTAL
Black Shag		5		6				11
Little Shag								0
W.F. Heron	2	2		36				40
R. Spoonbill	1	27						28
Mallard		100+						100+
Harrier								0
Pukeko		62		11				73
S.I.P.O.						73		73
V.Oystercatcher						1		1
G. Plover					19			19
B. Dotterel					61			61
Wrybill						29		29
L.B. Curlew						3		3
B.T. Godwit						320		320
Knot (Lesser)						32		32
S.T. Sandpiper					2			2
Pied Stilt	16			6		88		110
S.B.B. Gull		6				23		29
R. Bill Gull						7	9	16
B. Bill Gull								
W.F. Tern						200+	34	230+
Caspian Tern						19		19
OBSERVERS								

WEATHER: Temp.: Wind:
Cloud: Light:

TIDE: High Tide Time: Height (tide tables):
Tide Height at Wharf:

COMMENTS:

* C = Corner, EB = East Bank, ST = stump, MH = Main Hide, (over)
DF = Dotterel Flat, SP = Spit

SPECIES	C	EB	ST	MH	DF	SP	TOTAL
Black Shag		4				7	11
Little Shag		2					2
W.F. Heron	1	7	29				37
R. Spoonbill		15					15
Mallard		7					7
Harrier		2					2
Pukeko		21	1				22
S.I.P.O.						76	76
V.Oystercatcher						1	1
G. Plover					21		21
B. Dotterel					95	1	96
Wrybill						26	26
L.B. Curlew						3	3
B.T. Godwit						360	360
Knot (Lesser)						51	51
S.T. Sandpiper					2		2
Pied Stilt		34	123			91	248
S.B.B. Gull		16	20			45	81
R. Bill Gull						12	12
B. Bill Gull						30	30
W.F. Tern						1	1
Caspian Tern						21	21
Cattle Egret			1				1
OBSERVERS							

WEATHER: Temp.: Wind:
 Cloud: Light:

TIDE: High Tide Time: Height (tide tables):
 Tide Height at Wharf:

COMMENTS:

* C = Corner, EB = East Bank, ST = stump, MH = Main Hide, (over)
 DF = Dotterel Flat. SP = Spit

SPECIES	C	EB	ST	MH	DF	SP	TOTAL
Black Shag		10		1			11
Little Shag		2					2
W.F. Heron		2		25			27
R. Spoonbill			18				18
Mallard		330+		25			350+
Harrier		1					1
Pukeko		31	12				43
S.I.P.O.						75	75
V.Oystercatcher						4	4
G. Plover					11		11
B. Dotterel					49		49
Wrybill						28	28
L.B. Curlew			4				4
B.T. Godwit				1		370	371
Knot (Lesser)					16	55	81
S.T. Sandpiper						10	10
Pied Stilt	31		135	76		40	282
S.B.B. Gull		12				24	36
R. Bill Gull						40	40
B. Bill Gull							0
W.F. Tern							0
Caspian Tern			3			16	19
Curlew Sandpiper					7		7
Terek Sandpiper					1		1
Great Knot						1	1
OTHERS Little Tern						1	1

WEATHER: Temp.:
Cloud:

Wind:
Light:

TIDE: High Tide Time:
Tide Height at Wharf:

Height (tide tables):

COMMENTS:

* C = Corner, EB = East Bank, ST = stump, MH = Main Hide, (over)
DF = Dotterel Flat, SP = Spit

SPECIES	C	EB	ST	MH	DF	SP	TOTAL
Black Shag	1	2	7				10
Little Shag							0
W.F. Heron			37				37
R. Spoonbill	8	2					10
Mallard		50+	7				60+
Harrier		1					1
Pukeko		10	11				21
S.I.P.O.						74	74
V.Oystercatcher						6	6
G. Plover					36		36
B. Dotterel					81		81
Wrybill						17	17
L.B. Curlew						3	3
B.T. Godwit						305	305
Knot (Lesser)						158	158
S.T. Sandpiper					7		7
Pied Stilt		250				150	400+
S.B.B. Gull		14	9				23
R. Bill Gull						} 240	} 240
B. Bill Gull							
W.F. Tern							0
Caspian Tern	5					18	23
Red-necked Stint					1		1
Terek Sandpiper						1	1
Black Swan		7					7
OBSERVERS							

WEATHER: Temp.: Wind:
 Cloud: Light:

TIDE: High Tide Time: Height (tide tables):
 Tide Height at Wharf:

COMMENTS:

* C = Corner, EB = East Bank, ST = stump, MH = Main Hide, (over)
 DF = Dotterel Flat. SP = Spit

MANAWATU RIVER ESTUARY CENSUS RESULTS 1982-83 9
 — Manawatu Regional Group O.S.N.Z.

	Spring 21.11.82	Summer 27.2.83	Winter 10.7.83
BLACK SHAG	8	13	6
LITTLE SHAG	2	0	2
WHITE-FACED HERON	33	45	6
LITTLE EGRET	1	0	0
CATTLE EGRET	0	3	1
ROYAL SPOONBILL	0	7	27
BLACK SWAN.	0	0	10
MALLARD	27	22	102
N.Z. SHOVELER	0	0	4
HARRIER	0	3	2
PUKEKO	44	21	36
S.I. PIED OYSTERCATCHER	11	98	0
VARIABLE OYSTERCATCHER	9	8	1
SPUR-WINGED PLOVER	0	0	41
PACIFIC GOLDEN PLOVER	36	39	0
BANDED DOTTEREL	0	75	2
WRYBILL	5	25	0
FAR-EASTERN CURLEW	1	3	0
BAR-TAILED GODWIT	385	320	28
TEREK SANDPIPER	0	1	0
TURNSTONE	2	1	0
KNOT	69	140	0
SHARP-TAILED SANDPIPER	0	23	0
CURLEW SANDPIPER	3	2	0
RED-NECKED STINT	1	4	0
PIED STILT	111	194	56
BLACK-BACKED GULL	22	41	34
RED-BILLED GULL	8	0	0
WHITE-FRONTED TERN	6	61	0
CASPIAN TERN	2	51	5

