



# NEW ZEALAND WADER STUDY GROUP

*In association with*

*Miranda Naturalists' Trust*

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## The First 25 Years of Wader Banding in North Island New Zealand

### Introduction

Many people over the past eleven years have heard Keith Woodley speak about wader migration; the latest was a group of New Zealanders and Chinese at a Conservation Conference in Auckland in September 2004. He has no problem talking knowledgeable for an hour or more on the subject and is able to answer many questions on all aspects of wader migration and biology. Had he been giving talks on wader migration in the mid 1970's he would have struggled to speak for ten minutes on the subject and answers to most questions would have been "We don't know".

Prior to the mid 1970's Keith could have referred to the available New Zealand literature, including Buller, Oliver and Sibson.

Oliver in 1930 wrote "*The knot is a regular summer visitor to New Zealand favouring the South Island more than the North Island*". For its distribution Oliver said "*North Island: apparently not common but recorded from the Bay of Islands, Auckland and west coast of Wellington*". And for migration he wrote "*The Knot arrives in the Siberian tundra in June and leaves again during August*". "*It arrives in New Zealand in September and October and leaves for the north in April*". Basically true except for the distribution, there are very rare in the Bay of island and the west coast of Wellington.

The story for godwits was a similar one, although Oliver expanded on the migration story with "*The godwit arrives in Siberia in May and leaves again in August and early September. The migration route both from eastern Siberia and Alaska is through Japan, China and the Philippines. Probably a non-stop flight is made from New Guinea or northern Australia to New Zealand as very few birds have been observed on Lord Howe, Norfolk or the Kermadec Islands*". Could Oliver have imagined godwits flying from Alaska non-stop?

Before the mid 1970's little was known about these migrant waders. Today we are still uncertain about many aspects of their migration and biology including where in Asia the Red Knot stop during northern migration. But thanks to dedicated scientists and observant birdwatchers around the world, we are piecing together the story of Red Knot and Bar-tailed Godwit migration, and an amazing story it is, as regular readers of NZWSG News and Miranda News will attest.

Much of what has been learnt about waders in the East Asian-Australasian Flyway has come from birds captured and banded by various wader study groups particularly in Australia and New Zealand. In the late 1970's this was really only the Victorian Wader Study Group. Today waders are banded and flagged on a regular basis in a dozen or more places from New Zealand to Siberia and Alaska and the amount of information generated has risen dramatically. Hardly a week goes by without some new data arriving on my email desk. A Red Knot flagged at Chongming

Island near Shanghai, China for example turning up on the Manawatu Estuary on 15.10.2004 for the second year in a row. Or a Japanese banded Bar-tailed Godwit being caught on the Avon Heathcote Estuary, Christchurch on 22.10.2004 in the first even catch of godwit there. News so fresh we don't have the details yet (25.12.2004) and it makes getting this newsletter written a challenge!

As waders come under increasing pressure from coastal development, human pressure, pollution, etc it is vital we understand these birds and their needs as quickly as possible to ensure they are able to continue their remarkable journeys for generations to come.

### The Banding

Twenty-five years ago on 29.01.1979 one Red Knot and three Bar-tailed Godwit were caught by the Miranda Banders. This modest catch was the first by the group under Dick Veitch's leadership. He had been inspired to band waders in New Zealand by the work of the Victorian Wader Study Group.

Now 25 years on since wader banding began in New Zealand it seems appropriate to reflect on what has been learnt in the past quarter century and how this knowledge can help ensure the survival of these remarkable birds. The main reason for banding waders of course, is to learn more about their migration and biology which in turn enables good conservation decisions to be made.

### Banding Results

Between 1979 and 1982 17 catches were made in the Auckland region using cannon and mist nets. Numbers caught ranged from a single Wrybill on 14.07.1979 to 1291 Wrybill and Red Knot on 17.08.1980 (still the largest single catch although two other catches of over 1000 birds have been made). When banding ceased in 1982, 3392 birds had been caught.

Between 1982 and 1986 no catching took place. Then on 31.01.1987 a modest catch of four Wrybill was made at Jordan's farm on the Kaipara Harbour under the leadership of Stephen Davies and Adrian Riegen and once again the Miranda Banders were in action. This was followed a month later with a catch of 760 birds comprising 683 Red Knots 76 Pied Oystercatchers and a lone Bar-tailed Godwit. Dealing with this large catch was something of an ordeal for the six people involved and the 760 birds took eight hours of non-stop backbreaking effort to extract from the net and process. Today we ensure all birds are released within four hours of capture and usually work with a bigger group of volunteers and the total catch now stands at 19,662 birds. In 1993 the Miranda Banders name was changed to New Zealand Wader Study Group.

## The one that got away?

All fishermen have stories of 'the one that got away'. Waders banders are just the same and our best story involves an occasion at Jordan's when two nets were set for godwit and knot. However, they were proving to be difficult to catch (outsmarting us!) but one net was full of South Island Pied Oystercatcher (SIPO) and a single Far-eastern Curlew. Although we didn't particularly want to catch SIPO the Curlew was very tempting so we decided to fire that net. On the command "FIRE" the silence was deafening! Alas the extra high tide had waterlogged the electric's and the net would not fire. With a sigh from us the curlew took to the air wagging its wings as it circled overhead and vanished. To this day no curlews have been caught in New Zealand.

## Species Accounts

Target species for study by NZWSG are Red Knot, Bar-tailed Godwit, Turnstone, SIPO and Wrybill. Other species are caught with these from time to time. All birds are banded and Red Knot, Bar-tailed Godwit, Turnstone and Curlew Sandpiper are fitted with a white flag on the right tibia (upper part of the leg). Much of what is written below updates reports in previous issues of NZWSG News or Miranda News. (Flag sighting were covered extensively in NZWSG New #19).

Data used below is as up to date as possible (25.10.2004).

### Red Knot New 6722 Retrap 170

Fifty-six catches of Red Knot have been made with 100 or more caught on 16 occasions. A total of 6722 new Red Knot have been banded in the last 25 years. 29 of these have been recovered overseas a further 5 were recovered in New Zealand. 170 have been retrapped and a further 48 birds banded in Australia have been recovered or recaptured in New Zealand.

In the late 1980's and early 1990's we had a steady stream of bands recovered in China, collected from hunters. Now that hunting has all but ceased that supply of band recoveries has also dried up. Good for the birds but more difficult for us to determine their migration strategy. In spite of all the banding, flagging and field observations that have been made in Australasia and East Asia we still don't have a very clear picture of Red Knot migration routes. The real mystery is where all 200,000+ stop on northward migration in Asia. The largest concentration has been around 20,000 near Tianjin, China.

One very clear and significant discovery has been that a considerable number of New Zealand Red Knot spend their first year in Victoria before moving to New Zealand, evidenced by the almost 400 orange (Victoria) flag sighting reports from around New Zealand and the steady stream of Victorian banded knot that the NZWSG recaptures. This shift in the population between non-breeding sites is almost certainly the biggest of any wader species in the East Asian-Australasian Flyway. Most of these were banded in Victoria as first or second year birds. Once in New Zealand they appear to adopt it as their own and continue to return to New Zealand year after year without re-visiting Victoria, again evidenced by the fact that although around 4000 Red Knot have been caught in Victoria only two New Zealand banded birds have been recaptured there.

48 Red Knot banded in northwest Australia (NWA), NT, southeast Queensland (QLD), southwest Australia (SWA), NSW and of course Victoria have been recaptured or recovered in the Auckland region. Flagged birds from all these sites have also been sighted in New Zealand.

In contrast to the large number of Australian-banded Red Knot being recovered in New Zealand there are only five recoveries of

New Zealand-banded knots in Australia. Of these five recoveries, four were during southward migration, two in Victoria and two in Queensland, and these individuals may well have continued on to New Zealand. There has been only one recovery of a bird on northward migration, an individual found dead near Maryborough in Queensland on 31.03.1981, perhaps an indication of a much more direct and easterly return route. If Red Knot do stop in Australia in large numbers on the way north it is most likely to be in the Gulf of Carpentaria in northern Queensland.

Just as we think we understand what is happening the birds tell us another story. The Red Knot flagged in Albany (SWA) and seen on the Kaipara in March 2004 was subsequently seen in Broome 5000km away in July 2004. Banded as a young bird in Albany it had presumably travelled eastwards to New Zealand and although too young to breed had left New Zealand for the winter. Will it return here this summer? We shall certainly be looking for it.

In addition to migration studies NZWSG has caught knots for avian virus and DNA studies. More on these at a later date.

### Highlights:

Of particular interest are three first-year birds banded at Corner Inlet on 25.06.2001 that were still together 13 months later when recaptured at Miranda on 14.07.2002.

Two birds caught at Miranda on 20.10.1996 had been banded in Victoria as first year birds on 05.04.1981 and 24.07.1983 making them 14 and 16 years old respectively and among the oldest known Red Knot on the flyway.

### Bar-tailed Godwit New 2191 Retrap 41

Godwit have been caught on 46 occasions with six catches of over 100 birds. It is the most numerous arctic wader to visit New Zealand with a population of around 100,000. Two main subspecies of Bar-tailed Godwit occur on the East Asian-Australasian Flyway, *menzbieri* breeding in eastern Siberia and wintering in northwest Australia and *baueri* breeding in Alaska and wintering in New Zealand and southeast Australia.

Although 2191 godwit have been banded in New Zealand's North Island, only five have been recovered overseas, two on the remote Bering Island off the Kamchatka coast of Russia, one from Kamchatka Peninsula (all were hunted for sport), one from northern Japan and the final bird was one found dead on Epi Island, Vanuatu during southward migration. Interestingly none have been caught in Australia in spite large numbers of godwit are captured there.

Five overseas banded godwit have been recovered in New Zealand including one from Kooragang Island, near Newcastle, NSW, two from southeast Queensland, (one of which hit power lines in Auckland) and two from Victoria one of which was not caught but the bird's metal band number was read in the field.

It is difficult to determine migration strategies from such a small number of overseas recoveries. However, leg-flags have made a dramatic difference and are proving to be a very valuable tool in migration studies. Flagging results appeared in NZWSG News #19.

Only a few white flagged godwit have been sighted around New Zealand which may indicate that they do not move around the country as much as was thought. This view is further enhanced by the fact that although godwit have been banded on the Manukau and Kaipara Harbours and the Firth of Thames, all 41 retraps have occurred at the original banding site. Phil Battley's colour banding scheme may well shed light on any movement that may occur. It is hoped that in the next few years radio and

satellite transmitters will enable us to track godwit movements more accurately.

From observations in South Korea and China it is clear that the Yellow Sea, and Yalu Jiang in particular, are vital to New Zealand godwit on northward migration. Although some godwit may well stop in Australia and Kamchatka on their way north it is likely that the bulk of them fly non-stop from New Zealand to The Yellow Sea. After refueling there, they make a non-stop flight to Alaska.

After years of study we are now convinced that most godwit return directly to New Zealand and southeast Australia from Alaska by flying down the central Pacific on a non-stop flight of around 11,000km. A paper on this is due to be published next year.

#### **Highlights:**

Two godwit retrapped after 10 years are particularly interesting. One banded at Miranda on 18.12.1993 as a second year bird was retrapped there on 12.01.2004, 10 years 1 month later. The other involved a bird banded on Bishop Island near Brisbane, QLD as a first year bird on 21.10.1990 and retrapped 10 years later to the day on 21.10.2000 at Miranda.

Godwit flagged at Miranda and seen at Yalu Jiang and Yalu Jiang flagged godwit seem at Miranda, have been instrumental in forging the links between Miranda Naturalists' Trust and the Yalu Jiang National Nature Reserve which is hoped will lead to greater public awareness and understanding of migrant waders in China, and improved the protection for them.

#### **Turnstone: New 149 Retrap 12**

The last of the main Arctic species we target but in much smaller numbers. To date a total of 149 new birds have been banded, 110 were flagged and there have been 12 retraps. The largest catches were 64 birds at Karaka on 28.10.1996 and 26 at Miranda on 17.02.2002. On both occasions they were flagged as well and this has led to many sightings at both sites since then. Most retraps have occurred at the original banding site and in the same year.

Fifty white flag sightings have been reported, all but three within the Auckland region. The remaining three were seen in South Korea, two in May on northward migration and one in September on southward migration.

Little has been learnt about Turnstone migration or how much they move around New Zealand. Colour banding studies commencing in 2004-2005 may help in this regard.

#### **Highlight:**

Only one New Zealand banded Turnstone has been recovered overseas. D99806 was a rare double catch, made even more remarkable when one considers that only 18 Turnstone had been banded in New Zealand at the time and only a few more in Queensland. The bird was first caught at Miranda on 28.10.1991. It was recaptured in Moreton Bay, Brisbane, on 19.09.1993. Then on 17.10.1993 just 28 days later it was recaptured again at Miranda. From field observations we were able to determine that the Turnstone had returned to Miranda only two days before recapture and weight data recorded in Queensland and Miranda indicated that it had probably arrived in Queensland just before capture there. Small pieces of data but they all add to the understanding of wader migration. This recapture also showed that at least some Turnstone migrate through the Brisbane-Moreton Bay region on their way to New Zealand.

#### **Wrybill New 5537 1889 retraps**

The easiest wader to catch but the most complex to deal with from a data gathered point of view. Some birds have been recaptured five times and rebanded four times due to excessive band wear. Keeping track of all this is quite a challenge and will be covered at a later date when all the data has been thoroughly checked. Papers have been published from data gathered including one on the age structure of the population. They appear to be quite a long lived species with many reaching 7-10 years of age.

A total of 56 catches have been made with 500+ birds caught on occasions. The remarkable number of retraps is due to catching the same flock of birds at Miranda several times. These retraps have generated a great deal of age data and retraps and colour banded birds have shown that Wrybill move around the Auckland region quite considerably during the winter.

#### **Highlights:**

Three birds worth a mention are these old friends.

- One banded on the Cass River, South Island on 24.09.1985 as an adult was recaptured at Miranda on 25.07.1993 and was found dead near Lake Tekapo, South Island on 04.09.2000, 15 years after banding.
- A bird banded on 18.02.1988 at Jordan's was rebanded by John Dowding on the Upper Tasman River, South Island on 25.09.1998 when colour bands were added. It was last seen on the breeding grounds in September 2002 then at least 15 years old.
- One banded at Miranda as an adult on 17.08.1980 was retrapped there in 1992 and 1997 and was found dead at Miranda on 23.08.1997, 17 years after banding.

#### **South Island Pied Oystercatcher: New 2788 Retrap 22**

SIPO have been caught on 63 occasions resulting in 2827 new birds being banded and 22 retrapped. Eight catches have involved at least 100 birds. Yellow flags were fitted to some birds on the Kaipara Harbour and white to birds at Miranda in an attempt to monitor movement between harbours. However, few flags have been reported, particularly yellow. This is possibly because observers spend less time looking at SIPO and of course there are an awful lot of them!

Twenty-two birds have been retrapped seven of which were 6 – 10 years after banding and all but two retraps were at the original banding site. Retraps also provide important age data statistics for the species, although with such a large number of SIPO wintering in the banding region retraps are not common.

Twenty-seven have been recovered in other parts of New Zealand, mainly on the South Island breeding grounds. One South Island banded bird was recaptured on the Manukau Harbour and another bird banded in 1991 at Miranda was found dead at Miranda 10 years 3 months later.

#### **Highlight:**

One bird banded at Miranda on 21.02.1981 was recaptured 18 years 11 month later at Miranda on 11.01.2000 and although unaged in 1981, it must have been at least 19 year old.

#### **Banded Dotterel: New 72 Retrap 0**

A species we don't target but they are caught occasionally along with other birds. The largest catches were 25 birds at Taporā, Kaipara Harbour on 22.03.1980 and 16 on 23.03.1997 at Miranda. There have been no retraps or recoveries.

#### **Curlew Sandpiper: New 22 Retrap 1**

Four were banded at Miranda on 01.01.1981 but not reported again. Eight were banded at Miranda on 21.04.1992 with a large

Wrybill catch. Seven more were banded on 04.07.1992 with an even larger Wrybill catch! and one of the April birds was also retrapped. Two of these were sighted (band numbers read in the field) at Karaka, Manukau Harbour in 1994 and 1999. Two more were banded at Karaka on 01.03.2003 with white flags also fitted, and were then seen regularly at Karaka during 2003-04.

**Highlight:**

A first year bird banded at Miranda on 21.04.1992 was recaptured at Yallock Creek, nr Melbourne, Victoria 10 years and 8 months later on 08.01.2003. The only overseas recovery of a New Zealand banded Curlew Sandpiper. A good return rate from only 22 banded. Large numbers of Curlew Sandpipers occur in Victoria but only a hundred or so make it to New Zealand each year.

**New Zealand Dotterel: New 15 Retrap 2**

Not a target species as they are well studied by many people with John Dowding in particular colour banding numerous birds over many years. In 1980-81 12 were caught. On 23.03.1997 three were caught at Miranda, two were already banded. One banded 27.12.1991 at Opoutere on the Coromandel, the other at Sulphur Point, Tauranga on 19.01.1995. Both were banded as chicks by John Dowding.

**Pied Stilt: New 15 Retrap 0**

Ten were banded in 1979 at Miranda, two at Jordan's Kaipara Harbour on 24.01.1993 and three were mist netted in 2000. We avoid catching this species with their very long delicate legs whenever possible.

**Red-necked Stint: New 4 Retrap 0**

Just four birds banded the first on 01.03.1981 at Miranda. Two on 21.04.1992 at Taramaire and one on 01.02.2003 at Karaka. None have been recorded since banding.

**Pacific Golden Plover: New 2 Retrap 0**

A shy wary species in New Zealand but we have caught two birds, both at Jordan's, Kaipara Harbour on 03.02.91 and 10.01.93. Both were adult but neither has been seen since.

**Terek Sandpiper: New 1 Retrap 0**

Just one, banded on 05.04.92. It has not been seen anywhere since then.

**Grey-tailed Tattler: New 1 Retrap 0**

A single bird caught 17.02.02 at Rangipo, Firth of Thames It was seen around until late March but has not been seen since.

**Variable Oystercatcher: New 1 Retrap 0**

A single bird was mist netted at Karaka on 04.03.2000 along with 24 Pied Oystercatchers. It has not been recorded since.

**Spur-winged Plover: New 1 Retrap 0**

One very noisy bird was mist netted at Tapora in 1997 and has been heard constantly ever since! Typical Aussie!

**Table 1**

Total number of new and retrapped birds caught

Species	New	Retrap	Total
Red Knot	6722	170	6892
Bar-tailed Godwit	2191	41	2232
Turnstone	149	12	161
Wrybill	5537	1889	7426
SIPO	2788	22	2810
Curlew Sandpiper	22	1	23
Pied Stilt	15		15
Banded Dotterel	72		72
New Zealand Dotterel	19	2	21
Red-necked Stint	4		4
Variable Oystercatcher	1		1
Pacific Golden Plover	2		2
Siberian Tattler	1		1
Terek Sandpiper	1		1
Spur-winged Plover	1		1
Total	17525	2137	19662

**Table 2**

Regional sites, number of catches and total numbers caught

Site	No Catches	Total Caught
Firth of Thames	63	13878
Kaipara Harbour	36	4987
Manukau Harbour	34	847

**Table 3**

Total numbers caught at regional sites

Species	FoT		Kaipara		Manukau	
	New	Retrap	New	Retrap	New	Retrap
Red Knot	3768	104	2739	56	265	10
Bar-tailed Godwit	1568	32	470	8	153	1
Turnstone	48	8	9		92	4
Wrybill	4951	1732	454	138	132	19
SIPO	1593	13	1039	8	156	1
Curlew Sandpiper	19	1	0		3	
Pied Stilt	11		2		2	
Banded Dotterel	20		47		5	
New Zealand Dotterel	3	2	14		2	
Red-necked Stint	3				1	
Variable Oystercatcher					1	
Pacific Golden Plover			2			
Siberian Tattler	1					
Terek Sandpiper	1					
Spur-winged Plover			1			
Total	11986	1892	4777	210	812	35