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5 February 2015

Background on management and disturbance to shorebirds at the Manawatu River Estuary

My background and experience

I am a shorebird biologist with 20+ years of field experience in New Zealand and abroad. A PhD student, Jesse Conklin, worked at the estuary from 2007-2011, including monitoring individual-marked godwits daily through each March, and he has maintained this March monitoring up to 2014. I frequently visit the estuary, spending time mostly between the spit and the bollards region or out on the tidal flats. I have also compiled long-term bird count data from the estuary. Mavis Hirini, a keen photographer from Levin who spends a lot of time at the estuary has also contributed her thoughts.

This document will summarise the information I have and my opinions on long-term changes in bird numbers, changes in bird behaviour and roosting patterns, disturbance issues and some suggested management options.

Long-term changes in bird numbers

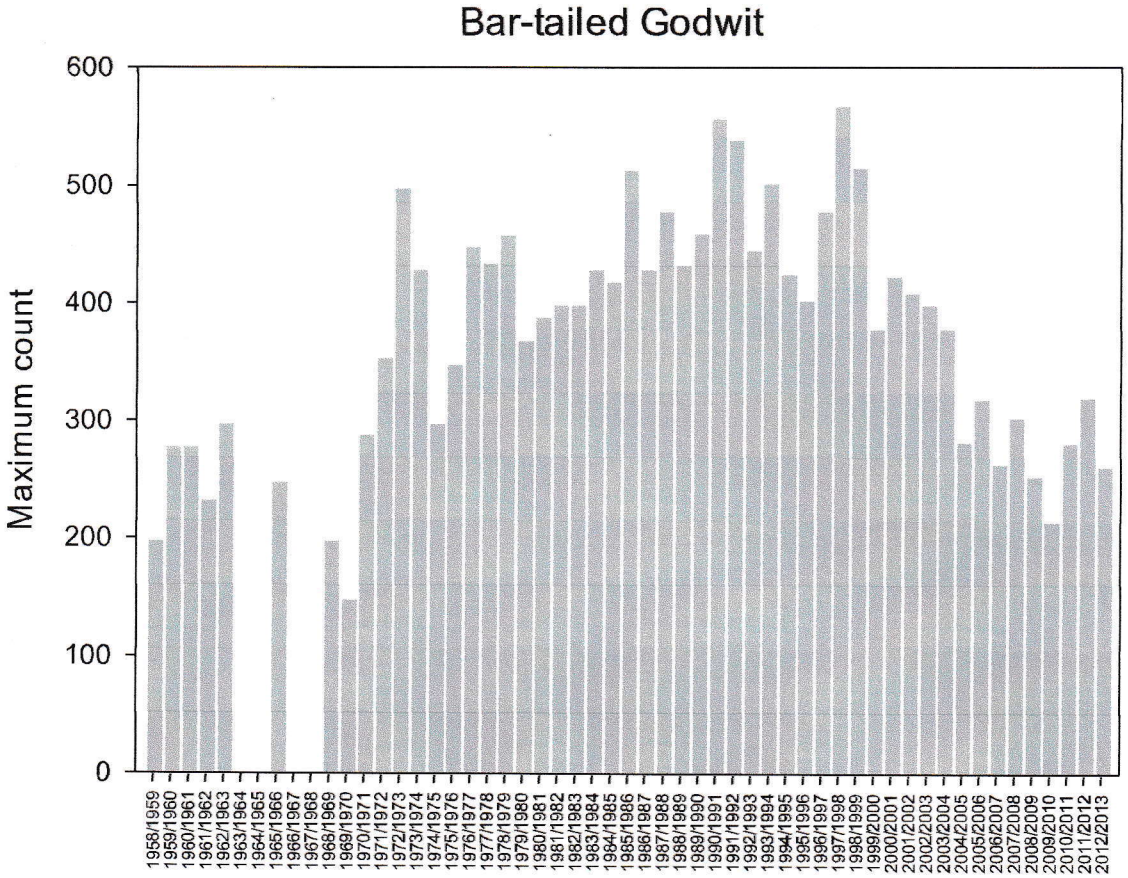
Count data show that bird numbers have changed greatly over time at the estuary. Numbers of New Zealand-breeding waders are generally much lower than they were at varying historical points, but my focus here is on the international migrants.

Bar-tailed Godwits (see figure below) increased in number from the 1960s to the early 1990s but have declined since. Summer populations are now ~200 birds instead of the 400-500 birds 20 years ago. The recent decline does not closely match changes in national numbers.

Red Knots were uncommon in the 1960s but then increased steadily to the early 1990s before declining thereafter (see below). Maximum numbers are now about 120 rather than 200-300 birds. This recent decline may largely reflect changes in national numbers, though changes in ecological conditions at the estuary were presumably responsible for the earlier increase.

Declines in less common species such as **Golden Plovers** and **Sharp-tailed Sandpipers** are probably symptomatic of declines of these species throughout New Zealand.

Whatever the causes of these changes, numbers and diversity of shorebirds at the estuary are now both substantially lower than they were 20 or 30 years ago. At their peak, there were just over 1000 Arctic waders at the estuary; now there are <400. Despite this, the Manawatu Estuary remains the most important wetland for coastal shorebirds on the west coast of the North Island south of the Waikato Harbours, and in the southern North Island as a whole. As a Ramsar site, there is an expectation that New Zealand reports on any changes to the ecological character of the site.


Bar-tailed Godwit
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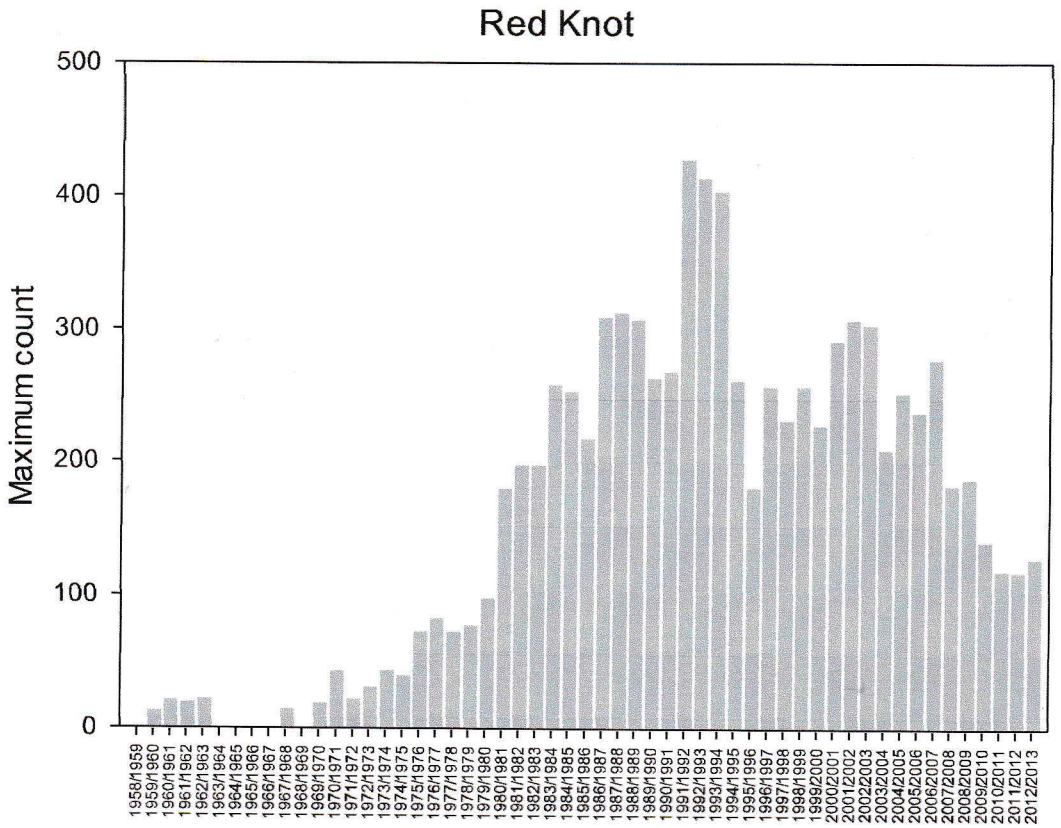
Red Knot
Maximum count
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Roost sites at the estuary

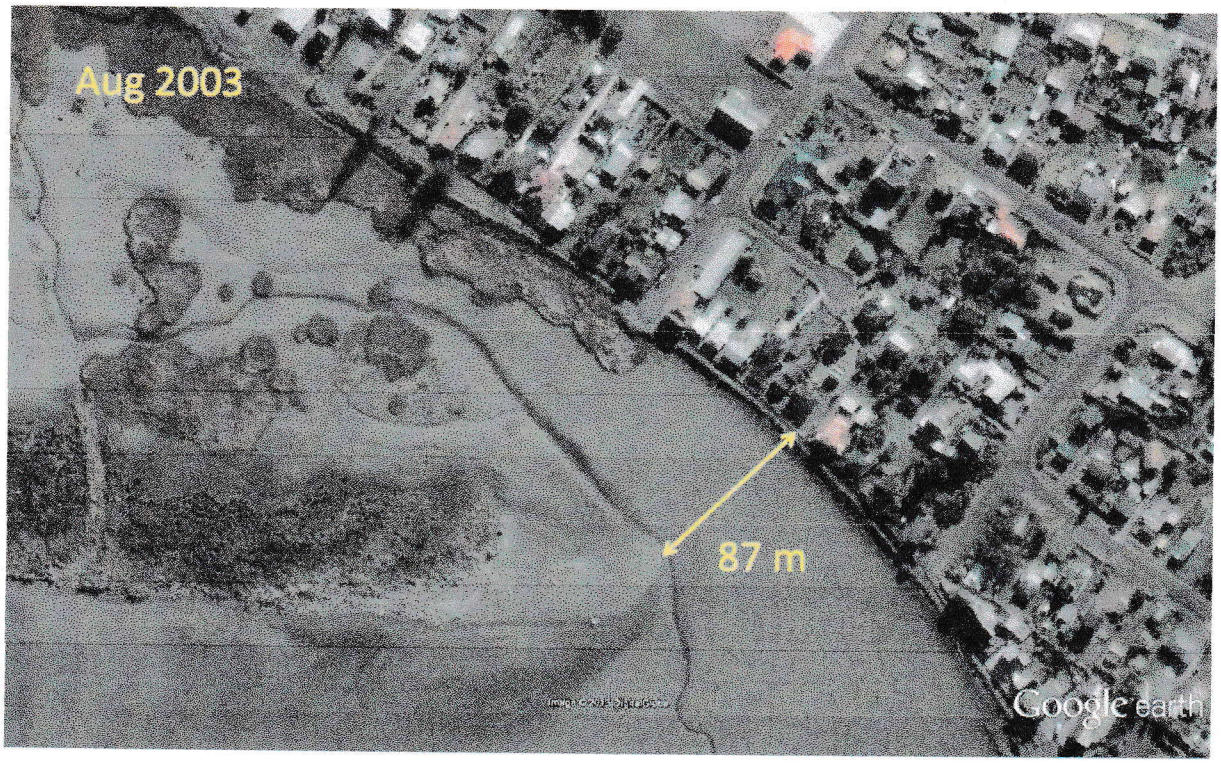
Shorebirds on estuaries need secure sites to roost at over the high tide period, which may last 4-5 hours. These are limited at the Manawatu Estuary, especially on spring tides. The main roost historically has been the sandspit opposite Dawick Street, but in recent years birds have also used the flat sands near the bollards, 450 m to the west. On lower tides some birds may manage to remain on the saltmarsh on the south side of the estuary. If disturbed birds may also use the dune areas near the river mouth. At night, they do something completely different and we don't know where they roost, but godwits have been seen at dusk on a rising tide flying high inland over the Fernbird Flat.

There are some major issues affecting the use of these roost sites.

The spit

Proximity to the shore

The spit has been extending eastwards and landwards in recent years, and you can track this in Google Earth by using the time slider to see earlier and more recent images. Measurements made with the ruler tool in Google Earth indicate that in 2003 the tip of the spit was about 87 m from the pathway in front of the houses; by 2013 this was just 24 m. We have observed waders being disturbed by noises from gardening activities nearby, and the substrate in the channel is now much sandier than it had been, so foot access to the spit is straightforward.



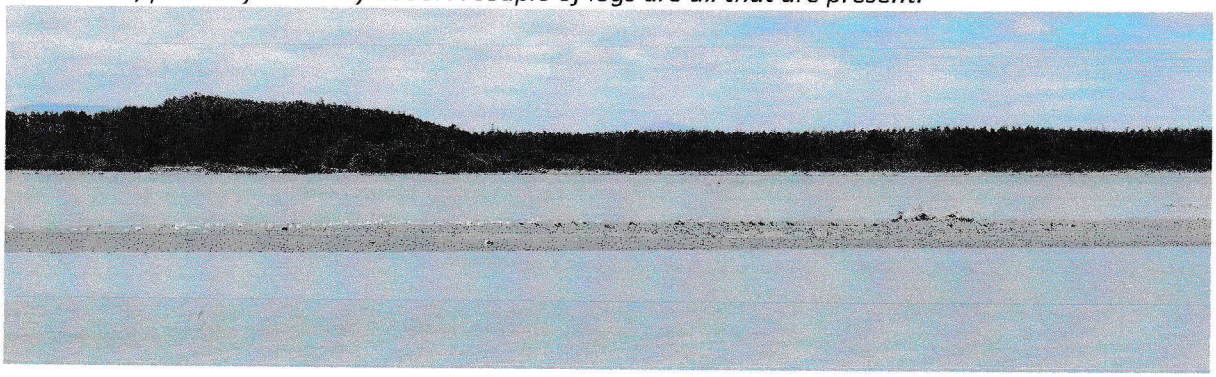

Feb 2005
46 m


May 2010
36 m

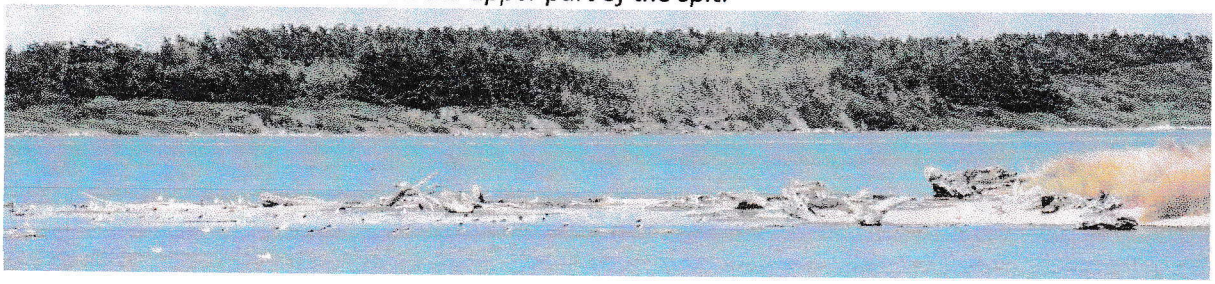
Volume of woody debris

In 2006 the spit was virtually completely clear of logs and branches and there was very little Sarcocornia vegetation on it. Since then, the build-up of wood washed up on large tides has been massive. Currently, apart from at the very tip of the spit, there is just a single 10-m strip on the estuary side that is not covered in wood. The profile of the spit has also changed, and it is now more steeply shelving than before. Birds are largely unable to walk up onto the spit while retaining good visibility and the area of usable land for the birds is much smaller than it has been. The images below illustrate this.

Late 2000s, probably February 2006. A couple of logs are all that are present.



March 2010. Much more debris on the upper part of the spit.



A typical scene these days, with logs strewn along virtually the entire southern shoreline of the spit.

Disturbance

The wood on the spit is also used by holidaying kids to build 'teepee' structures on the spit, especially over the Christmas break. Some of this may be done at low tide, but it has been reported to me that a family with kayaks was out there regularly over this summer at high tide, roaming all over the spit. There is no signposting to dissuade people from such activities. Birds are also disturbed by walkers and sometimes birdwatchers and photographers.

We have been cannon-netting waders on the spit in recent years, or at least trying to, and this is undeniably a disturbance event. My plan to now to focus research attention on catching immature godwits that do not migrate, in April, once the main flock has left. This should help minimise any effects on godwits and knots. The New Zealand-breeding waders (oystercatchers and stilts) seem unconcerned by cannon-netting and are typically back on the spit on the same or successive high tides to those we catch on.

The bollards

The line of bollards placed east of the vehicle track through the dunes generally works well to keep vehicles from going towards the spit, but at low tide people can drive below them (accidentally or on purpose). Godwits and knots often roost in the vicinity of the bollards. They used to frequently roost on the eastern (i.e. protected) side but perhaps due to subtle changes in the shape of the beach there they now are more often on the western side. This area is also used by gulls and terns, and godwits and knots seem somewhat uneasy in the presence of Black-backed Gulls, particularly the dark juveniles (that may resemble the skuas from their breeding grounds). They are also more likely to encounter disturbance from people and their dogs, which are often present near that area. Mavis Hirini reports dogs frequently running loose on both sides of the bollards, and people regularly driving directly out from the vehicle track to the shore with no regard for the birds present. Walkers are also an issue here.

An unforeseen consequence of having the bollards in place appears to be a build-up of wood on the upstream side of them. This area used to be well used by Banded Dotterels in late summer but in the last couple of years has been almost covered in wood. The photos below illustrate the woodiness. I

don't know whether the increase of wood on the sandspit is related to the bollards retaining wood in the estuary or whether it is coincidental.

A contrast in how much wood is present on the upstream and downstream sides of the bollards.

Wood accumulated on the upstream side of the bollards.

Wood trying to escape on a spring tide. Oystercatchers and godwits are just visible in the upper right of the picture.

Changes to roosting patterns

In the past two years we have confirmed that godwits from the Manawatu Estuary may leave the estuary entirely and move to the Ohau Estuary, 20 km to the south. A couple of years ago we started to get records of godwits from the Ohau, and we located one or two colour-banded godwits from the Manawatu there. One bird seemed largely resident there, while others were seen there just occasionally. Last year we documented a flock leaving the Manawatu Estuary and going to the Ohau Estuary, and back again to the Manawatu the same day (this was confirmed by our records of colour-banded birds at both sites in sequence). That was evidently a 40-km round trip just to have a quieter roosting period.

On 6 January 2015 I visited the Manawatu Estuary and found the godwits very flighty, and they left the area and were seen flying out the river mouth. On 8 January I went to the Ohau Estuary and found about 100 godwits, including 5 colour-banded birds in the 70 I could check. I then went to the Manawatu Estuary in time to observe flocks of godwits (I saw about 110 birds) taking off from by the spit, and either flying directly out the rivermouth or landing for 1 minute at the bollards before being disturbed by a gull and then flying out the rivermouth and turning south. Only about 50 godwits stayed on the spit that high tide. I returned to the Ohau estuary and found 238 godwits there from which I identified 60 individually marked birds from the Manawatu Estuary. Hence, the majority of the godwits from the Manawatu estuary were abandoning the site at high tide and flying 20 km away, presumably to return later on. These birds had mostly made no attempt to roost at the Manawatu Estuary first.

Godwits roosting on the ocean beach by the Ohau Estuary

Jesse Conklin has observed that he has more "unexplained absences" in his daily roll calls of marked godwits at the Manawatu Estuary in recent years than he had during his core PhD research period (2008-2010). It is likely that these absences signify birds that had left the estuary to go to the Ohau, and implies that disturbance levels may be increasing.

Sources of disturbance

As Glen Butcher noted, there are many sources of disturbance or potential disturbance at the Manawatu Estuary, and we have noted many of the ones he lists. Some examples:

People

Runners or walkers often head up to the sand spit attempting to get to the walking path (we even saw this just last Sunday before the Manawatu Estuary Trust's World Wetlands Day visit to the estuary). These people will often put any birds up on their way past, or circle around the tide edge and put the birds up on both sides of the spit. As discussed, people may also roam all over the spit at various stages of the tide, sometimes with dogs.

Occasionally you can find vehicle tracks heading up past the bollards towards the spit, or see people driving around on the wrong side of them.

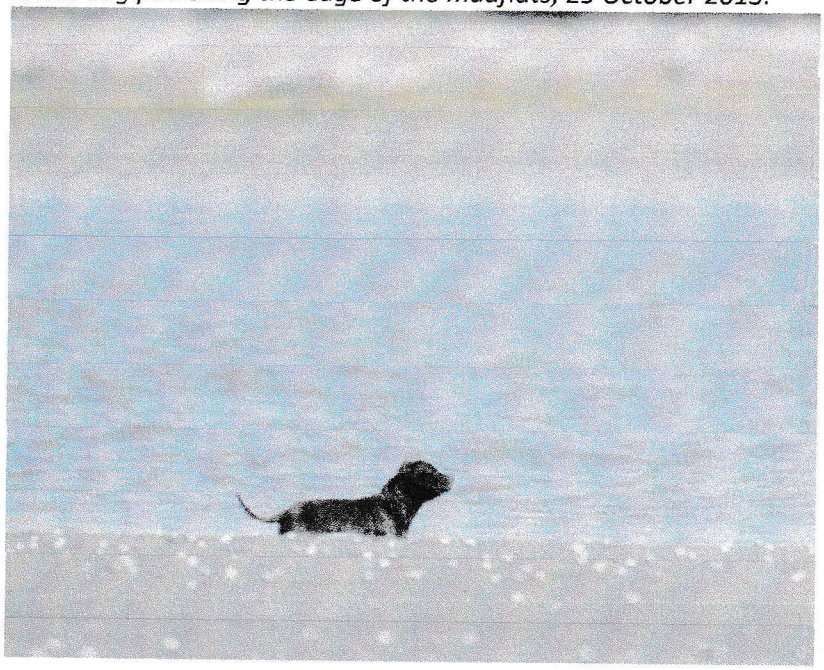
Kids on beach buggies doing 360s on the wrong side of the bollards. January 2014.

Dad plus kid on quad on the correct side of the bollards, but nevertheless near where birds roost, 22 January 2014. I have encountered a similar duo on a bike (or possibly the same one) driving up towards the spit, having been head down and completely not noticed the bollards.

Dogs

Dogs are often let loose to run about west of the bollards. If they are far enough away there should not be a problem, but they are sometimes close to or on the wrong side of the bollards. We have also seen a lost dog right out on the tidal flats, and people taking dogs onto the spit at high tide (including a dog on anleash chasing dotterels, pulling its owner along with it). Unrestrained dogs have been seen chasing birds at the bollards.

A lost dog patrolling the edge of the mudflats, 29 October 2013.



Gulls and harriers

Black-backed Gulls usually roost by the bollards in small to moderate numbers. As mentioned, godwits and knots are easily disturbed by gulls. If disturbed to the bollards from the spit, the shorebirds may already be somewhat flighty. Harriers feed over the spit and the adjacent wetland, and cross the river. The approach of a harrier usually causes all the shorebirds to take off.

Kite boarders

As these examples show, I think that there are several issues going on at once that are making the Manawatu Estuary a less attractive place for migratory shorebirds, but it is obvious that many people feel that kite boarders and jet skiers are having negative impacts on the birds. I have seldom seen jet skiers at the estuary and those that I have seen were simply commuting along the main channel and presented no issue for birds. That is not to say that all jet skiers will always behave like that, but I have not seen any direct disturbance associated with jet skis.

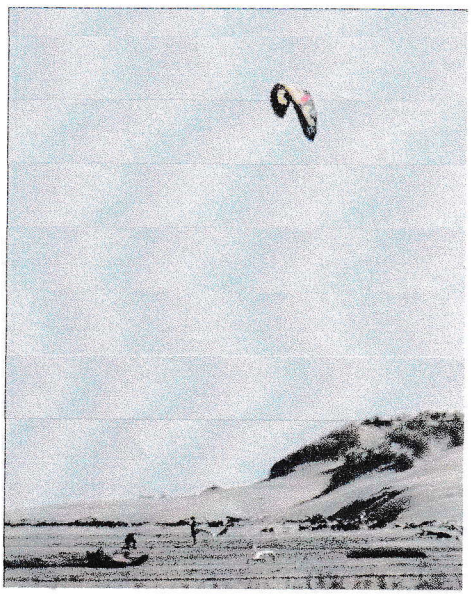
I can't say the same about kite boarders, unfortunately. Shorebirds live in essentially two-dimensional landscapes and are easily disturbed by foreign objects in the sky. The kites used by kite boarders are extremely obvious, large (25-m lines going to a kite of 6–12 m^2 area), mobile, rapid moving and unpredictable and they do disturb shorebirds. The problems at the Manawatu Estuary appear to me to stem from those less competent boarders who cannot handle the conditions adequately and drift upstream with the westerly wind, repeatedly trying to get their kite working, bailing into the water, until eventually they either manage or don't manage to get themselves up and sailing again. We have seen boarders have to bail out completely and walk back along the shoreline from as far up as the sandspit itself, hauling their gear with them. I have been sitting in full view watching a flock of roosting shorebirds and had a boarder walk right through the flock, making no attempt to avoid the birds and making no eye contact with me even though I was obviously present only 30 or 40 m away. If kite boarding was only conducted by the rivermouth then any impacts on birds would be minimised, but this is not what happens. Despite anyone's best intentions, the conditions can get the better of the boarder and that is when the problems arise. Given the size of the kit and the length of the lines (see the images below) the kites themselves present a big visual object in the sky and birds must be able to see these from some distance.

I have also seen feeding birds disturbed by a kite boarder. On 20 November last year we ran a field trip to the estuary and dunes along the coast for the Ecological Society annual conference. We visited the tidal flats by the bollards on the falling tide after lunch, and there were godwits and knots spreads thinly across the flats, but by the time we had walked the 150 m needed to get a decent view, all the birds had been disturbed off that end of the flat by a kite boarder on the "wrong side" of the bollards having trouble (see photo below).

It may be that kite boarders are indeed infrequent users of the estuary, but this doesn't necessarily mean that their presence has no cumulative impacts on the birds. How we regard a threat and how birds regard one may be very different.

Kite boarder at the edge of the tide on the intertidal flat. 20 November 2014. This is a typical example of someone having trouble and trying not to be hauled along by the kite. This resulted in the feeding shorebirds being flushed from most of the mudflat on the north side of the river.

Below left: A kite being practiced with well west of the bollards, with a flock of godwits leaving on migration in the foreground, 22 March 2014. Below right: The same kite giving a sense of vertical scale.



Frequency of disturbance

Jesse Conklin has routinely recorded instances of disturbance that he has encountered at the estuary, or situations in which birds have been absent from particular areas. He has summarised these data for March 2014. The table below gives the causes attributable to birds being flushed from a site. There were also 23 cases where birds flushed but no cause was apparent.

Class	Number	Detail
People on ground	10	3 x people with dogs 1 x kite flier 3 x researcher approach 1 x photographer 1 x birders 1 x walker
Kiteboarders	7	Mostly on one Saturday in mid-March
Vehicles	3	ATV, truck, motorbike
Planes/helicopters	2	
Boats	5	Includes motorboats, sailboats, rowboats and jetskis
Other birds	32	11 x gulls 21 x harriers
Dogs	1	Free-running dogs chasing oystercatchers at bollards

The "people with dogs" category includes four people + two dogs that crossed to the spit, a dog on leash that was nevertheless chasing dotterels on the spit, and a child + dog crossing to the spit at high tide. Disturbance levels were higher on weekends, and were very low when the weather was bad and there were few people around. In general, disturbance by birds is short-duration whereas human activities can be prolonged and disturbance (or at least human presence, influencing behaviour) can go on for longer.

Some suggested management options

Overall, the behaviour of birds at the estuary indicates that they do not have enough undisturbed roost sites during the daytime. Mavis reports seeing flocks circling at high tide having been disturbed off the spit, unable to land on the south side because of the tide height and unable to land at the bollards due to the activity levels near there. This is a highly undesirable situation for birds to be in.

There are some fairly straightforward management actions that could improve conditions at the estuary for birds.

1. More or remove the woody debris from the sandspit

A team of workers could move some of the wood on the spit, but it would be better to have a small digger there that was able to shift the large and heavy logs. Some would probably have to be cut into smaller bits, and they could then be floated off the spit on an outgoing spring tide (preferably with an easterly wind). Clearing the spit of this wood-load would probably make it a more attractive roosting space for shorebirds again. Note that some of the New Zealand species still commonly use the spit even as it is, but even they are restricted in just where they roost.

2. Move the bollards approximately 100 m west

Currently, any birds roosting near the bollards do so either in line with them or to the west, in the unrestricted access area. The area immediately west of the bollards is often driven over for fun or for dog walking/running but is not really used for fishing as much as the rivermouth is. There would be minimal impact on people's recreational options by shifting the bollards but it could reduce disturbance to roosting birds. Additional signage towards the end of the line of bollards would be useful.

3. Improve signage along the pedestrian path adjacent to the sandspit

This should specifically state that people should avoid disturbing the birds that roost on the spit at high tide. On a related matter, the sign by the road towards the dunes that states "The beach is a road" seems to me to send entirely the wrong message. Taken at headline value it says "Great, you can take your car here!" instead of "If you take your car here you have to obey the road rules".

In conclusion

At the moment we have the situation where birds from what should be a protected (or at least appropriately managed) area are choosing to leave the area at high tide. The lower numbers reported by residents this summer are probably a result of birds not being on the estuary over high tide. The underlying declining trends may be something that we cannot do much about, but management of the high tide roosting areas for birds is something we could do. Identifying the problems and understanding how and why they arise is an important first step towards managing the estuary. Hopefully the information presented here will be a useful starting point.

Regards,

Phil Battley