

## **Exciting Results from Geocator Trials on Ruddy Turnstones**

We apologise to those of you on our world-wide circulation list (especially those in the Victorian Wader Study Group who helped with this project), for the long time it has taken to provide full feedback on the results of our geocator trials over the past year on Ruddy Turnstone. Although we retrieved the last three geolocators in early January it has taken until now to fully tease out of the stored data the full information on where birds were during the period they were carrying the geolocators.

The exciting results have been well worth waiting for and we detail some of them below. This information is extracted from a short paper which we've prepared over the last two weeks and which has already been accepted for publication in the April edition of the International Wader Study Group Bulletin. Discussions are taking place concerning it also being published in *Stilt*.

Extensive trials using dummy geolocators attached via backpack harnesses or via plastic leg flags were carried out in March and early April 2009. These showed that whilst harnesses appeared to be satisfactory on lean Turnstone they became less so as birds put on weight prior to migratory departure. Some individuals on King Island for example reached 190 - 198 g, compared with a fat-free weight of 90 to 100 g. They were so round (like a tennis ball) that harnesses were almost impossible to position securely.

Eight 1.1 g Mark 10 and 10S light-sensor geolocators, supplied by British Antarctic Survey in Cambridge, England, were put onto Ruddy Turnstone in April 2009 - six at Flinders in Victoria and two at Carpenter Rocks in the south-east of South Australia. The geolocators were pre-attached to a specially made Darvic leg flag placed on the left tibia of each bird, with the normal engraved leg flag in its usual position on the right tibia.

The first result came unexpectedly quickly. One bird carrying a geocator was seen, and photographed, in Taiwan less than three weeks later. Taiwan is the country from which most sightings of our flagged Ruddy Turnstones are reported during northward migration each year.

The first two birds carrying geolocators were seen back at Flinders on 18 October and one was recaptured there on 20th October. The remaining geolocators were eventually retrieved on 8th January. The retrieval of four of the six geolocators applied at Flinders exceeded all expectations. Unfortunately neither of the two birds given geolocators in South Australia has yet been seen again.

Initial downloading of the data showed some exciting results, but it has taken weeks of patient delving into the stored data (with the assistance of James Fox, of BAS) to fully reveal everything about each bird's movements. Refer to the maps below.

All four birds flew nonstop 7,600 km. from Flinders to Taiwan in just over six days. The tracks followed by the birds are shown in the accompanying maps. Three appear to have travelled in the same flock. Birds spent between 8 and 17 days in Taiwan before travelling on towards northern Siberia, through eastern Asia. They all followed slightly different paths and made stopovers at different locations before all the light sensors ceased to collect data as birds entered the Arctic region of continuous daylight in early June.

When readings restarted in late July on three of the birds they were all still in northern Siberia.

Soon afterwards two of them moved south eastwards, and then southwards before their light sensor stalks failed when the birds were in Korea and in south-east Siberia respectively in early August.

The fourth bird (with engraved leg flag 9Y) had a quite unexpected return migration route to Flinders via the western Central Pacific! It was first picked up moving south-eastwards through north-east Siberia on the 24th and 25th July and it then arrived in the Aleutian Islands, south-west Alaska on 26th July. It remained there for 2 1/2 months, until 15th October, before flying 6200 km southwards across the Pacific in four days to the Gilbert Islands. It remained there for another six weeks, before making a four day, 5000 km flight to the east coast of Australia, which was reached on 3rd December. Five days later the bird was back at Flinders. All previous recovery and flag sightings information suggested that adult Turnstone usually return to their non breeding areas by late October.

This bird had made a 27,000 km. round trip migration. Surprisingly the apparently circuitous route back was only 1000 km longer (because it was close to a great circle route) than the path it had used on northward migration.

There has only been one previous record of an Australian-banded or flagged Ruddy Turnstone on a Pacific island - one caught on Guam (south of Japan) in September 2008. However there are precedents for Ruddy Turnstone from south-west Alaska reaching Australia, with three birds banded in the Pribiloff Islands in the mid-1960s subsequently being reported on the east coast.

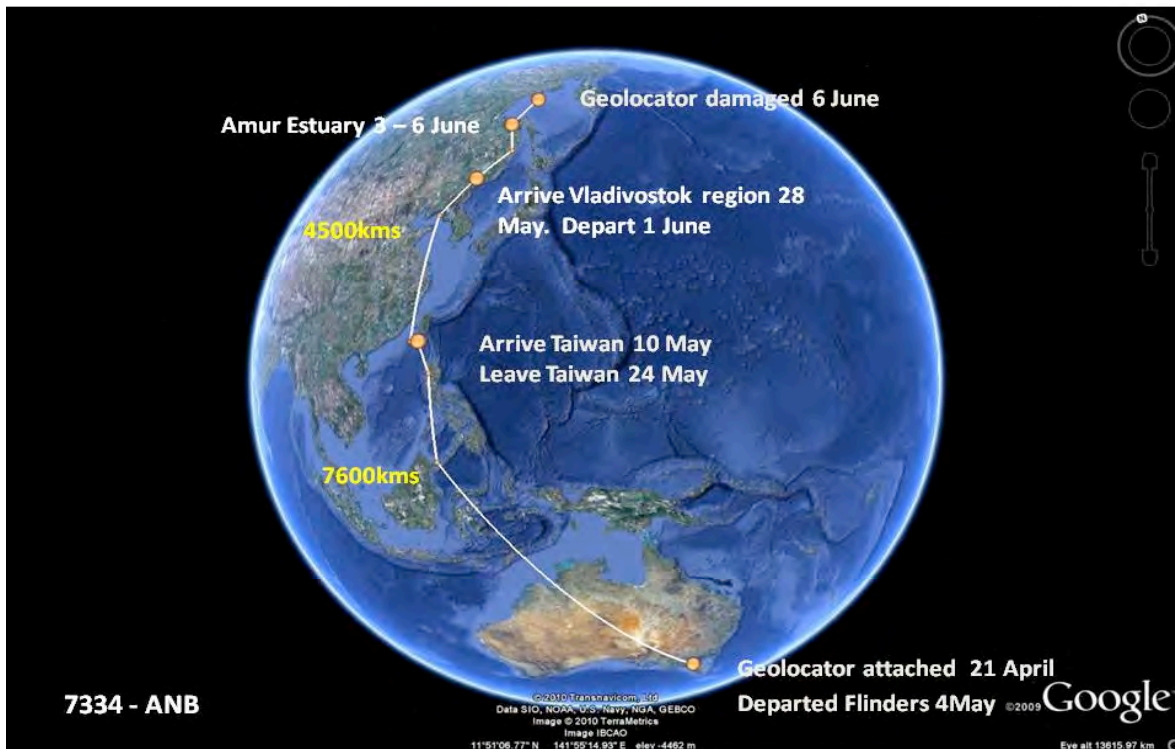
It is interesting that on some of the longer flights it was possible to calculate the "over ground" flight speed achieved. For the flights from Flinders to Taiwan and the flight back from the Gilbert Islands to Australia the average speed was 50 to 55 km per hour. A higher speed of 65 km per hour was achieved during the flight from Alaska to the Gilbert Islands, indicating possible assistance by tail winds.

Spurred by these exciting results from the initial trials of geolocators a further 60 have been applied (or will be applied) in March/April 2010. Ten have already been put on Ruddy Turnstone in South Australia and 38 in King Island. It is hoped that at least a further 12 geolocators will be deployed in Victoria. In addition 30 geolocators have been applied to Greater Sand Plovers at Roebuck Bay, Broome, in northwest Australia and to four Sharp-tailed Sandpipers at Werribee Sewage Farm. The Australasian Wader Studies Group (north-west Australia) and Marcel Klaassen of Deakin University (north-west Australia, King Island and Victoria) have provided some of the geolocators and are now working in partnership with the VWSG.

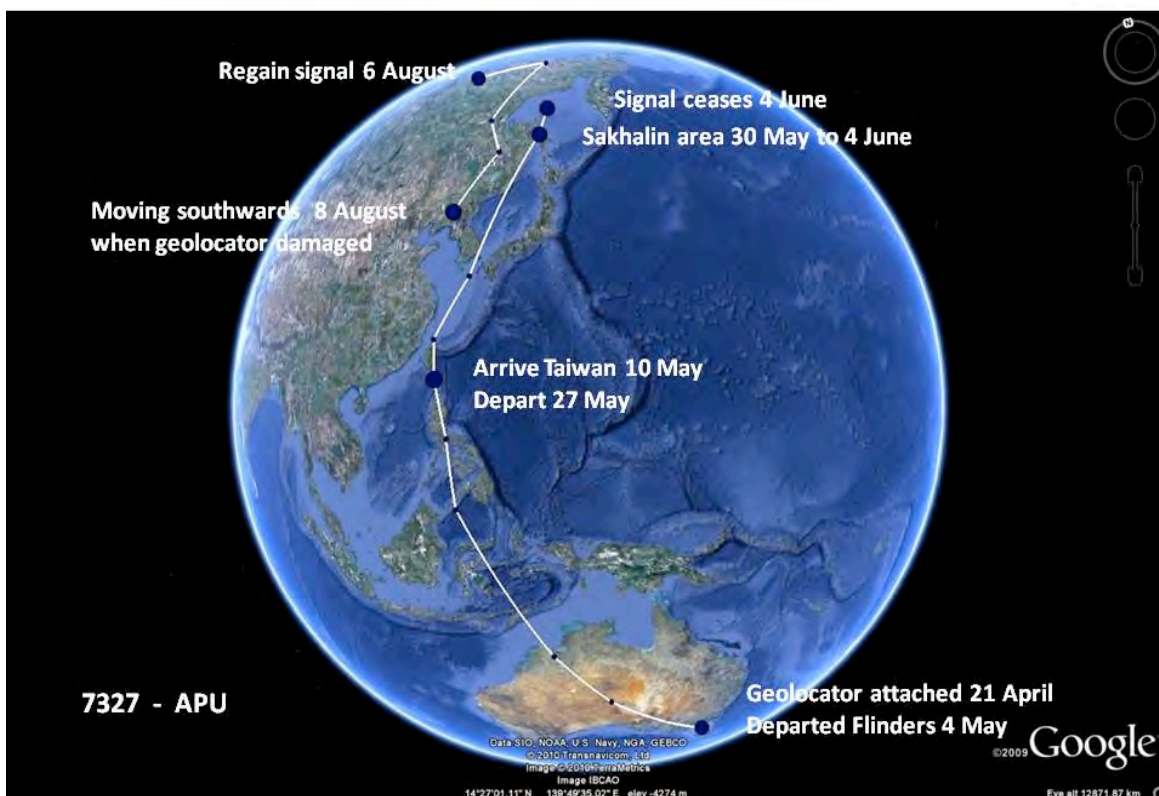
The 2010/11 wader season is going to be very exciting indeed as we attempt to retrieve geolocators from returned migrants for downloading. Hopefully we should be able to obtain a much fuller picture of the migrations of Ruddy Turnstone which spend the non-breeding season in south-east Australia, as well as some initial data on other species.

Thanks again to the many colleagues who provided advice in the early stages of this project and to the team members in Victoria and SA who were so diligent in catching and recatching the birds in the field.

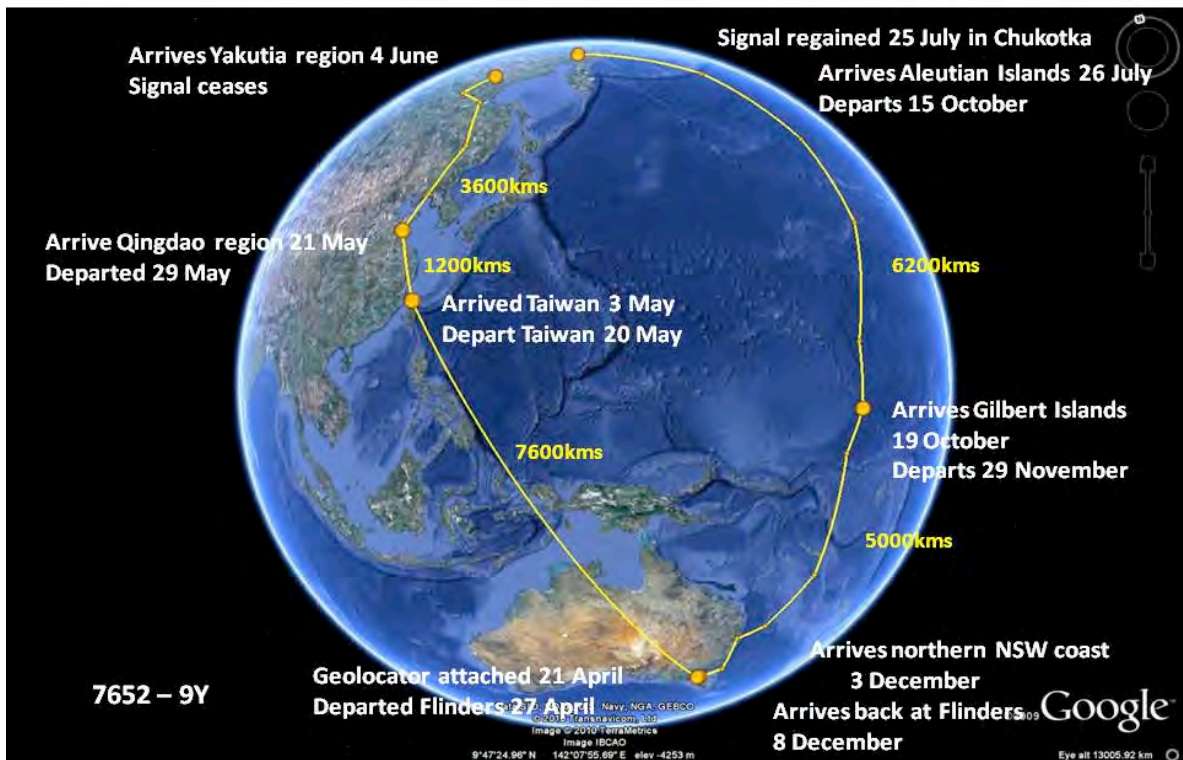
Clive Minton  
Ken Gosbell



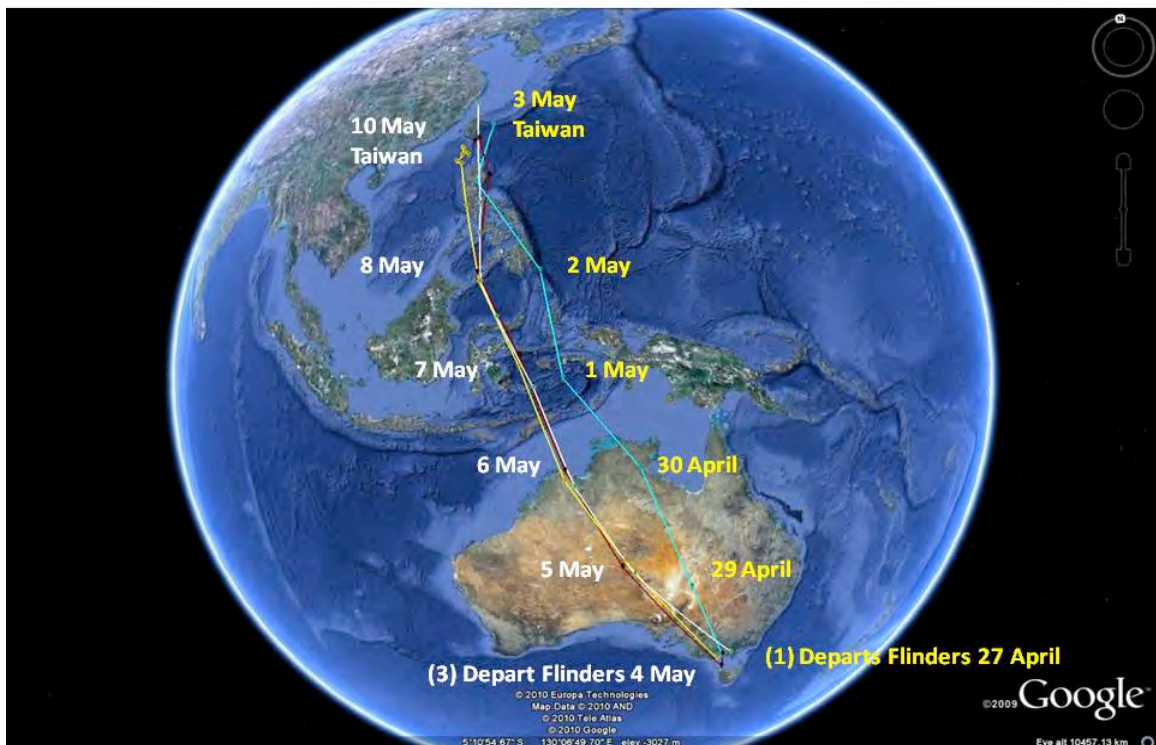
Migration route recorded by geolocator for Ruddy Turnstone with leg flag ANB.



Migration route recorded by geolocator for Ruddy Turnstone with leg flag APU.



Migration route recorded by geolocator for Ruddy Turnstone with leg flag 9Y. This bird departed Flinders (Victoria) 27 April, 2009 and returned 8 December, 2009 after a journey of 27,000kms.



Migration routes of the four Ruddy Turnstones from Flinders (Victoria) to Taiwan.