Shorebirds at Zackenberg ... Ugebrev nr. 5, 30. juni 2003

Shorebirds (or waders) are eminently adapted for life during the Arctic summer. Yet, shorebirds spend most of the year at much more southerly latitudes, often in coastal wetlands in the tropics or beyond. They come to the High Arctic tundra to reproduce: to find a partner, to produce a clutch of four eggs, to incubate these eggs for 3 weeks and to see the hatchlings through to the moment they can fly, another 2-3 weeks.

To reach High Arctic places like Zackenberg, they invest in the fuelling up for non-stop flights of many thousands of kilometres and the making of the actual flights. Shorebirds arrive in the last days of May and the first of June in places that are then, by and large, still buried in snow. Shorebirds are fascinating creatures for biologists. Their huge concentrations at coastal wintering sites, their immensely long flights and their summer disappearance to the Far North have triggered many studies, especially in countries with large coastal wetlands such as The Netherlands.

The Dutch have entertained long-term research programmes on long-distance migrating shorebirds for the last 30 years, and although most work is done at home in the Dutch Wadden Sea, the shorebird lifestyle demands expeditions research abroad, both south and north. It is in the context that a team from the Centre for Ecological and Evolutionary Studies at the University of Groningen and the Royal Netherlands Institute for Sea Research on Texel has mounted a summer of field work at the now renowned High Arctic research facility at Zackenberg in North-east Greenland.

The team, consisting of Joop Jukema, Petra de Goeij, Welmoed Ekster, Jeroen Reneerkens and Theunis Piersma, arrived at Zackenberg on 17 June and will continue the studies till early August. We all feel extremely privileged to be able to work here at Zackenberg and are very impressed by the perfect logistic outfit and the congenial research atmosphere at the station.

Our research has four different focuses. (1) General breeding biology of High Arctic breeding waders, with emphasis on Red Knots Calidris canutus and Sanderling Calidris alba. (2) The collection of blood samples for DNA analysis of shorebird pairs and their offspring for new studies on the genetic basis of the possibly reduced immuno-competence in High Arctic breeding shorebirds due to past population bottlenecking. (3) The functional significance of the diester preens waxes during the breeding season. (4) The extent to which different species of shorebirds rely on income or capital breeding strategies (i.e. whether the eggs are produced from nutrients collected on the tundra or carried in from the spring fuelling areas.

The actual fieldwork is much more prosaic than this. It basically consists of 9 hour long days in the field during which we try to locate pairs and their nests, and then capture the birds to ring them with numbered rings, collect a small blood sample, a few feathers and a bit of preen wax and in some cases manipulate the wax on one of the wings. Once the chicks hatch, and we expect this to happen from tomorrow onwards, we will also try to capture the chicks, ring them, and collect small blood samples.

So far we have searched about 5 km2 of tundra habitat in detail and found 14 nests of Sanderlings, 10 nests of Ruddy Turnstones Arenaria interpres, 5 nests of Dunlin Calidris alpina, 3 nests of Ringed Plovers Charadrius hiaticula and 1 nests of the Red Knot. To find highly cryptic species like Red Knots and to a lesser extent Sanderlings, we have ‘roped’ as much as we could of suitable tundra slopes. This method

involves the dragging of a 50 m long rope between two people over the tundra, usually with an extra observer following the rope.

We have now covered about 3.5 km2 of tundra, and although this has yielded only a single nest of the Red Knot, it leads us to find most of the Sanderling nests. At all nests at least one of the attending partners was captured with small clap nets, and at about one third of the nests both partners were also captured.

Two things particularly puzzle us right now.

(1) The amazingly low density of Red Knot nests in spite of the presence of displaying (and more rarely, alarm calling) birds in the habitats searched by us. We see and hear good numbers of Red Knots in the study area, and according to the investigations by Hans Meltofte, numbers of displaying Red Knots and their locations are similar to previous summers. Must we conclude that many of these birds are present, but have no nests?

(2) The breeding system of the Sanderlings. Although we see two partners at the majority of nests, at some nests a single bird seems to be on duty all the time. The latter suggest uniparental care of the clutch and the possibility of so-called ‘double-clutching’ (the phenomenon that a female lays a clutch of four eggs, leaves them to the male for incubation, and goes on to lay another clutch of four eggs which she will incubate herself). Careful following of the nests and pairs located so far, and hopefully the capture and fingerprinting of any young that might appear, would allow us to say more of the breeding system of the Zackenberg Sanderlings.

To some extent the success of the field work will depend on the predation rates. Although several Arctic Foxes are present in the study area, we have only seen one of them on two occasions, and so far we have lost 1 or 2 clutches of Ruddy Turnstones and one clutch of Sanderlings. We keep our fingers crossed and will continue the exciting but tiring fieldwork on the 'Aucella'-slopes at full speed.

By the Dutch research team Theunis Piersma