

## **MAPPING BENTHIC FAUNA OF INTERTIDAL KIMBERLEY MUDFLATS**

Grant Pearson of the CALM Wildlife Research Centre at Woodvale spoke to the meeting on 3 May 2000 about major projects on the fauna of mudflats of Roebuck Bay, King Sound and 80 Mile Beach. The projects are connected with studies of migratory wading birds, which nest in Siberia and then spend the Austral summer feeding on Australian coastal mudflats and inland lakes.

Wader studies started in Broome in 1981 with trapping, counting and banding. Observations of birds feeding, and some idea of what they were feeding on, followed. The realisation that about 150,000 fed on the mudflats from August to April each year led to the establishment of the Broome Bird Observatory by Birds Australia (formerly RAOU). Roebuck Bay is now recognised as one of the foremost internationally important sites for shorebirds in the Asia-Pacific flyway system and one of the five best wader sites in the world.

The fact that the shorebirds fly 30,000 km per year (18 days of continuous flight) suggests that Roebuck Bay has much to offer. A desire to find out how so many birds make a living in the mud at Roebuck Bay led to the planning of a detailed survey in 1997 with collaboration between CALM, the Netherlands Institute of Sea Research (NIOZ), Curtin University and the Broome Bird Observatory. The Lotteries Commission of WA provided a grant to build an air-conditioned wet laboratory and to buy a small hovercraft. The survey would not have been possible without the skills of five Dutch scientists who organised the sampling regime, counted, measured, identified the specimens (all 17,000 of them) and entered the data in a computer each day. Grant coordinated CALM's input and logistics of the expedition. It also would not have been possible without many volunteers who slogged through the sometimes thigh deep mud to cover a grid of 537 stations over 45 km<sup>2</sup>.

Grant gave a light-hearted account of the techniques tested to cope with the mud (skis, mud-sled and the somewhat erratic hovercraft). In the end most work was done on foot, with vehicles used on the beach to reach the more distant transects. With a nine-metre tide at springs exposing 190 km<sup>2</sup> of mudflat, sampling could only take place at low tide and the penalty of trying to do just one more station was being caught by the rushing incoming tide. The samples were sieved, bagged and labelled at each site then sorted in the lab and identified by the experts. Any that could not be identified were preserved for museum identification. About 200 different taxa were recognised, some identified to species, some to family or even phylum. Ultimately, representatives of all will be lodged in the Western Australian Museum. The majority of animals found were molluscs (85 species) while polychaete worms made up 70% of the individual species and 45% of the biomass.

The results of the Roebuck Bay Expedition have now been published in a 212 page NIOZ Report.

Since Roebuck Bay may be threatened by pollution from tourist developments and the new Broome airport it was decided to look at alternative feeding sites for the waders.

In 1998 a small survey of mudflats in King Sound was made but yielded only 16 species of animals and few birds. There is much greater input of freshwater and terrigenous mud from the Fitzroy River making it a less suitable habitat for marine animals.

Another known congregating place for waders is 80 Mile Beach so in 1999 a large expedition was based at Anna Plains Station, a few kilometres from the coast, to sample the mud flats which extend 4 km beyond the sandy beach. Cannon netting in 1982 had shown that about 450,000 waders used the area in summer. The survey covered 80 km of the 220 km of 80 Mile Beach with blocks of sampling stations every 15 km giving a total of 900 stations from which 18600 animals of 112 taxa were collected. The expedition had the luxury of a larger hovercraft, a portable laboratory and a delightful tree shaded grassy camping area at Anna Plains Station. Over a two-week period 80 people, of whom 72 were volunteers, took part in the survey.

Within a couple of weeks of the end of the expedition a preliminary report with distribution maps of the commonest species was distributed, a tribute to the industry of scientists involved.

Mandora wetlands are another area that supports about half a million birds, 35 species on the plain and 65 on the beach.

Plans for the future include further taxonomic work, ongoing monitoring of sites in Roebuck Bay and analysis of the benthos as food for the birds. Most of these projects will depend on the success of grant applications to Australian and Dutch funding bodies.

Altogether this was a most stimulating talk giving an insight into the little known riches of the coastal waters off the Kimberley coast.

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