ID 3203

REPORT ON TRIP 1 TO BARROW ISLAND
October 31 - November 22, 1990

The Mobile Field Laboratory plus one CALM vehicle were transported by barge from Onslow to Barrow on Wednesday October 31 and 6 personnel (Don & Felicity Bradshaw, Phil Withers, Bob McNeice, Keith Morris & Michael Gartrell) flew by "Islander". Chris Dickman (Sydney Uni) and Dave Pearson (CALM) arrived later by WAPET charter. Despite a very heavy work schedule, transport of the laboratory to Barrow was given high priority and we would like to acknowledge the help of Peter Clark and Wayne Neenan in expediting our arrival on Barrow.

The Mobile lab. was installed on capped lease S62M in John Wayne Country on Thursday Nov 1 and the trapping grid was opened. All personnel who had not previously been inducted spent the morning at the training centre. The next day, 20 Bromilow traps were installed along the cliff face at John Wayne in sites where there was obvious evidence of rock wallabies. These were not set, but baited with stock cubes and bread in an effort to encourage the wallabies to frequent the traps.

The grid was cleared twice daily (mammals and reptiles in the morning, reptiles in the afternoon) from November 2-6 and 13-16 and a summary of overall trapping success is attached at Appendices I and II. As may be seen, trapping success was high and 12 bandicoots that had been trapped in April were also recaptured. It was notable that these individuals had lost approximately 30% of their body weight in the interim, indicating that 1990 had indeed been a difficult year due to low rainfall. On the grid, bandicoots were turning over approximately 14% of their body water reserves per day, which approximates to a daily intake of about 25ml for an average-sized bandicoot. Body weights were basically stable over the tracking period (mean weight change = -0.41% body mass/day) indicating that food and water intake was adequate for the maintenance of balance over the period of study. Rates of water turnover for the 5 Rock rats recaptured were not significantly different from those of the bandicoots at 16.4% of the pool per day, but turnover for 9 Barrow Island Mice was significantly higher at 17.7%.

Four Fat-Tailed Antechinus and 5 Planigales were also trapped, increasing the rather few records of these two rare species on the island. One Fat-Tailed Antechinus was recaptured and showed a 26% water turnover coupled with a very high 23% sodium turnover, indicative of a very salty diet. This may represent a real difference when compared with the other small mammals - where sodium turnover was of the order of 18% per day - or it may simply reflect individual variation.

Small radio-transmitters were used extensively to track bandicoots and the small eutherian mammals and these provided the first evidence of large-scale movements by, especially, the bandicoots. Once it was realised that bandicoots and Rock Rats trapped on the grid move distances of up to a kilometre, a second trapping grid was established to the east of West Coast Highway in an attempt to gain information on the condition of small mammals in this primarily spinifex-dominated habitat. The bandicoots here appeared to be in better condition than

those captured at John Wayne and three females were found with pouch young (see Appendix I for details). An estimate of bandicoot density on both trapping grids was also obtained. These, together with estimates from the south of the island, suggest that as many as ~~105~~ 100,000 bandicoots occur on Barrow Island.

Low day-time temperatures meant that fewer reptiles were trapped on the grid than anticipated but, nonetheless, a total of 565 specimens was handled with 2 recaptures of injected Ctenotis grandis and 4 of injected C. saxatilis. A summary of numbers and species handled is given in Appendix II. In addition to the reptiles captured on the grid, a total of 15 Amphibolurus caudicinctus was captured by hand along West Coast Highway and on the track leading to John Wayne Country and lease S84. Five of these agamid lizards were subsequently recaptured and provided data on rates of water and sodium turonver for this insectivorous species. Water and sodium turnover rates of all the reptiles were similar, averaging between 3-4% for water and 2-4% for sodium and all animals maintained balance over the period of study.

Dave Pearson (CALM) left Barrow on Wednesday November 7 and Ron Wooller (Murdoch Uni) arrived. Mist-nets were established at John Wayne Country, in the vicinity of the grid, and trapping proceeded continuously from November 8-20. Persistent high winds rendered trapping difficult but moderate success was experienced with the spinifex birds, a total of 11 being captured and marked, two of which were recaptured. One of these had been injected with isotopes and gave us our first measure of the water turnover for this bird which equalled 90% of the body water reserves per day - or approximately 8ml per day for a 12.5g bird. Sodium turnover was also high at 45% of the pool per day. These figures are marginally higher than those measured by Ambrose & Bradshaw (1988) in another small insectivore, the White-Browed Scrubwren studied at Shark Bay where it also subsists on an insectivorous diet and has no access to free water. A total of 8 Black-and-White Wrens and 4 Singing Honeyeaters were also caught and injected, but none was recaptured in the mist nets.

Recapturing marked spinifex birds was effected by driving individuals into spinifex clumps, which were then covered by a net, into which the bird was finally driven. This technique is labour intensive, but appears effective and will be explored further on the next trip. Further details are given in Appendix III.

A total of 36 Hare Wallabies was captured using hand nets at night on the airport between November 8-10 and 14 of these were subsequently recaptured a week later. Kidney function was also studied in six individuals and four of these were amongst the recaptures, indicating that the increased handling of these animals had no adverse effects on their wellbeing. Rates of water turnover were extremely low, averaging between 3-4% of the total body water content exchanged per day, and these measurements are the lowest for any marsupial yet studied in Australia. The Hare Wallabies all lost a small amount of weight over the observation period, however, and this indicates that water intake was marginally less than required to maintain balance.

Comparing the data obtained from the six Hare Wallabies where kidney function was studied with that obtained by Bakker & Bradshaw (1983) in the laboratory, it appears that the Barrow animals were experiencing a low protein intake, but were not dehydrated. Comparable data from a study of Rothschild's Rock Wallaby on Enderby Island by Bradshaw & Morris (1991) indicates that these Pilbara wallabies were more deprived of water than Barrow wallabies when studied in December 1987.

No rock wallabies were captured on the trip and, as in April, this was due to intense pressure on the Bromilow traps by other species (bandicoots, possums and bettongs). It was hoped that by siting the traps high up on the cliff we would avoid this pressure but this was not realised. It would appear that rock wallabies can only be trapped in regions where they are the sole inhabitants and a region of cliff south of Biggada Creek will be tried on Trip 2 in April 1991.

Extensive trials were made with a series of net traps constructed to capture euros, but these were also unsuccessful. The main reason for this appears to be lack of interest shown by euros in the various baits tried (apple, bread, stock cubes, universal bait, anise) and on many occasions they were seen to move right past the bait. Traps placed in Biggada Creek were also ignored by euros which clearly utilise the creek bed solely as a thermal refuge and do not feed during the day. There was clear evidence of euros drinking from the pools in Biggada Creek and water samples were taken for analysis. These show that the water is about 50% sea water in concentration (sodium = 240 mmol/L, chloride = 230 mmol/L), indicating the presence of a significant input of fresh or brackish water to the creek.

Two trials were made with the anaesthetic dart gun at Biggada, and these were both highly successful. A 16.5kg male was darted on November 17 with 1ml of a mixture of Ketamine hydrochloride and Rompun (Xylazine). The animal was not startled in any way by the dart and was down within 5 minutes of the impact. It remained quiet whilst it was weighed, measured, and a blood sample taken for hormone measurements. It first showed signs of recovering from the anaesthetic within 60 minutes and was sitting up after 75 minutes. 48 hours later the animal was observed in its usual place at Biggada during the day and it showed no evidence of having been affected by the darting.

A larger 21.5kg male euro was darted at 1409 on Sunday November 18 and this animal followed a female doe which was startled by our presence and left the Creek. The male was tracked slowly and took cover at 1429 in a Ficus bush where it was subsequently measured and sampled at 1436 by which time the anaesthetic had taken full effect. By 1645 the animal had regained its feet and was again capable of co-ordinated movement.

These trials suggest that darting is probably the preferred method for capturing and recapturing euros, given their propensity to ignore baits and traps. Recovery time after injection of the anaesthetic can probably be reduced significantly by injecting an antidote to the drug as soon as contact is made with the anaesthetised animal, and this will be tested on the next trip in April 1991. If again successful, the method

will be utilised to measure water and sodium turnover rates of euros in the 1991 dry season.

Steve Van Leeuwin and Bob Bromilow from CALM (Karratha) spent 10 days on Barrow and erected 8 exclosures which will be used to study the impact of grazing pressure by the larger mammals on the vegetation. Each exclosure is complemented by an adjacent, similar-sized area, where plants have been identified and counted and which is open to grazing by macropods. We anticiapte that, over time, the composition and vigor of plants within and without the exclosures will differ and this will provide us with a direct measure of grazing selectivity and pressure. The exclosures have been sited close to the grid at John Wayne Country and also to the east of West Coast Highway to coincide with the major habitats that are being utilised by the animals we are studying.

A total of 176 person days was spent on Trip 1 on Barrow, bringing to 252 the total for the year. The total for 1991 will probably be closer to the 350 estimated at the commencement of the study, as the April trip this year was essentially an exploratory one. A preliminary schedule for Trip 2, in April 1991, is attached including a list of personnel who will be involved.

May I again attest to the magnificent support provided by WAPET for this study. As well as Russell Lagdon, Marilyn White, Kellie Pendoley and Harry Butler, we would like to thank especially the kitchen staff for providing us with a lunch hamper each day and also Nedi Beka, Ron Lund, Brian Colgate and Tex Nichols who helped with various practical problems.