ABSTRACT

The Hector's dolphin is one species targeted by the booming dolphin-watching industry in New Zealand. In 1999, a marine mammal-watching permit was granted at Motunau. This study gathered pre-disturbance data on the Motunau Hector's dolphin population and assessed the level of disturbance from vessel traffic to which this population has been subjected prior to the establishment of the new dolphin-watching operation.

Land-based observations and theodolite tracking were carried out in the summers of 2000 (twenty nine days) and 2001 (forty five days) to assess dolphin behaviours and occupancy patterns as well as to quantify their short-term responses to the presence of vessel(s). Most groups encountered contained between one and four individuals while mean group size was 2.6 individuals. Hector's dolphins displayed both monthly and diurnal trends in their occupancy patterns. Dolphins were found further away from the shore in March and during the middle of the day (1000-1400). Hector's dolphin behaviour also varied with the time of day. Rates of aerial, play, and sexual behaviours increased as the day progressed. Rates of behaviour associated with feeding peaked in the morning (0600-1000) and in the afternoon (1400-1800). Although the dolphins were often engaged in individual or small group feeding activities, they occasionally displayed cooperative feeding techniques.

Quantification of vessel traffic at Motunau showed that vessels were present for 30.6% of the total observation time over both the 2000 and 2001 field seasons. Vessel traffic consisted mainly of private vessels, and was highest in January and during weekends. Vessels remained within the study site for relatively short periods of time, crossing the area at high speeds to access open waters. Analysis of Hector's dolphin short-term reactions to vessels found no statistical evidence of active attraction or avoidance to vessels, although dolphins formed significantly tighter pods in the presence of vessels. On the few occasions when dolphins positively interacted with vessels, they were mainly attracted to slow-moving boats of less than ten km/hr or five knots. There are no indications that the current level of vessel traffic is displacing the dolphins from this study site or having an effect on their behaviour. However, this does not mean that vessel traffic has no effect. In this study, sample size was often too small to have sufficient statistical power to detect subtle changes.

There were a few concerns regarding private vessels. These included: a- the high speeds at which they crossed the study area, increasing the possibility of collision, b- the noise level potentially generated by these vessels, particularly those with outboards, and c- lack of knowledge of the Marine Mammal Protection Regulations (MMPR). Preliminary observations of the commercial tour operator while indicated that the type of approaches used were successful and respected the MMPR.

In the light of this study's results and as a precautionary approach, the following management measures should be considered: a- no expansion of this type of commercial activity should take place until further research is carried out, b- continuance of a thirty minute-limit per encounter, c- a speed limit of ten km/hr (or five knots) where vessel traffic crosses the area of densest dolphin concentrations, d- the allocation of a time period when the dolphins are not targeted by tourism activities, and e- distribution of educational materials to the public regarding how vessels should behave around dolphins. At this stage, there is no scientific evidence for not permitting swimming-with-dolphin activities, although the probable small size of the Motunau population is a cause for concern.

Finally, a long-term monitoring programme for this population is recommended. Motunau is a rare site were pre-disturbance data will be available when assessing the sensitisation or habituation of a population of Hector's dolphins exposed to tourism. Further research should concentrate on the following in order of priority: a- estimating the population size, b- determining the home range, c- assessing the dolphin responses in relation to vessel type, speed, distance from vessel, and the dolphin behavioural activity, d- relating dolphin behaviour, distribution and occupancy patterns with ecological, temporal and environmental factors on a larger scale, and e- standardised research methods between other New Zealand tourism impact studies to allow intra- and inter-species comparisons.