Impact of recreation and tourism on the Australian sea lions hauled out near Perth: a case study from Carnac Island

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The Australian Sea lion (*Neophoca cinerea*), a species endemic to Australia, is classified as a Specially Protected species under the Western Australian *Wildlife Conservation Act 1950*. There is an estimated total population of about 10,000-12,000 in Australia and approx. 3,000 in Western Australia: 1,000 individuals on the West Coast and 2,000 on the South Coast (Gales et al. 1994). Offshore islands in the Perth-Rockingham region represent major haulout sites for sea lions on the West Coast, with up to 80-90 sea lions hauled out in peak season on Carnac, Penguin, Seal, Dyer and Little Islands, and Burns Rock (all of them part of the conservation estate).

Humans come into contact with sea lions on many occasions, either during recreational activities or during commercial tours. There is very little information available on the impact of recreation and tourism on sea lions in Western Australia. Human safety can also be an issue if interactions between humans and sea lions are not managed adequately.

The main objectives of the research program on Carnac Island was:

- To investigate the impact of the presence of humans (recreation and tourism) on the sea lions;
- To get an insight into visitor attitudes and expectations when visiting Carnac Island; and
- To investigate whether sea lion tourism can be sustained in the long-term.

Individual sea lions were identified over a period of four months (Oct. 2002 to Mar. 2003) and the subsequent presence of identified animals recorded. Early results indicate that:

- There is a high turnover rate of sea lions at Carnac Island from day to day, suggesting that there may be many more sea lions than the ones seen hauled out;
- The numbers of sea lions hauled out and their rate of return to the beach does not appear to be affected by levels of human visitation.

The level of response of sea lions to human presence, called vigilance (or alertness), has been used in this study as an indicator of human disturbance. Vigilance was measured by direct observation of sea lion behaviour. Early results show that:

- The main factors that influence the level of sea lion in response to the presence of humans are the animal's age (juveniles have higher levels of vigilance than adult males) and the time of the day (vigilance significantly decreases after mid-morning), but not the number of people present near the animal;
- Vigilance occurs at a range of approach distances (up to 15m and more), showing that animals appear to maintain a high level of awareness of human presence even if humans are relatively far from them. This suggests that disturbance by humans to sea lions may not be restricted to interactions at close range.

Anecdotal observations show that inappropriate human behaviour towards sea lions does occur, such as people playing cricket or football in close proximity to a sea lion, throwing sand or seaweed or splashing water at a sea lion, young children playing dangerously close to an animal, or people approaching sea lions at a distance <5m (sometimes <1m). There was also one instance of people feeding a sea lion from a boat. These results suggest that improvements could be made to visitor education on sea lions.

A survey of 207 visitors on Carnac Island showed that visitors were generally very interested in the sea lions, wished to be provided with more information on the species and would welcome the presence of a voluntary ranger on the beach.

References

Gales, N. J., P. D. Shaughnessy, and T. E. Dennis. 1994. Distribution, abundance and breeding cycle of the Australian sea lion, *Neophoca cinerea*. Journal of Zoology, London **234**: 353-370.