



Do seals and fish farms mix?

The south and west coasts of Eyre Peninsula in South Australia (SA) are home to about 8,000 Australian sea lions (ASL) and about 40,000 New Zealand fur seals (NZFS).

Australia's southern bluefin tuna (SBT) aquaculture industry is located in the same region and produces about 9000 tonnes of SBT per annum with an on-farm worth of \$263.6 million in 2007/08.

Some farming equipment used on finfish aquaculture farms can lead to seal mortalities. Conversely, seal's interactions with farming operations can lead to damage of farming equipment and death of aquaculture stock, both of which can be a significant cost to operators. So, can finfish aquaculture farms and seals co-exist?

In a recently completed project entitled 'Innovation solutions for aquaculture planning and management: addressing seal interactions in the finfish aquaculture industry (FRDC 2004/201)' that was joint-funded by Fisheries Research and Development Corporation and Primary Industries and Resources South Australia Aquaculture Division, scientists from the South Australian Research and Development Institute (SARDI) Aquatic Sciences, investigated ASL interactions with tuna farms by monitoring their movement and behaviour in order to provide information that assists with the zoning, placement and management of finfish aquaculture developments in SA.

From 2003 to 2006, a total of 109 male and female ASLs ranging from juveniles to adults, were monitored within Spencer Gulf and Nuyts Archipelago using satellite tracking devices attached to the seals. These devices provided tracking data showing the location of ASL feeding areas and movement corridors as well as breeding colonies and haul out locations in the region.

Tracking data from ASLs at Dangerous Reef, near Port Lincoln, demonstrated that ASLs use a diverse range of marine habitats, with limited use of the area within the tuna farming zone. Results also indicated that there is some evidence for seasonal differences in foraging locations.

Tracking data from the Nuyts Archipelago showed that there were marked inter-colony differences in foraging behaviour and provided evidence for two broadly different foraging ecotypes, shallow inshore and deep offshore forages.

These results demonstrate that ASL movements in the Eyre Peninsula region have a high level of inter-colony variation and results from Dangerous Reef suggest that ASL have not been adversely affected by the presence of tuna farms.

The movement patterns of ASL observed in this project suggests that the rationale currently used to manage interactions between ASL colonies and aquaculture activities, being a 15km buffer around large ASL colonies and a 5km buffer around small

ASL colonies, is not the most appropriate way to reduce ASL-aquaculture interactions.

The authors of the project report propose an alternate management strategy involving assessing the foraging locations of ASL of colonies that are close to proposed aquaculture sites, to ensure that critical habitats and movement corridors are not occupied.

The authors suggested that if buffer zones were to be used, they should be larger around small ASL colonies, because they are more at risk from population declines.

Despite the limited use of the tuna farming zone by ASL, surveys of tuna farmers confirmed that interactions are a continuing problem, but there were opposing views on whether interaction rates were increasing or decreasing.

Farmers commented that seal encounters stressed aquaculture stock, caused damage and, in the worst case, death to stock all resulting in financial losses. Mortality results provided by some companies showed that impacts from seals varied considerably, with up to 14% of yearly mortalities attributed to seals. New Zealand fur seals (NZFS) were also seen frequently around cages, however they were not considered a threat because they were mostly juveniles and therefore too small to attack SBT.

It seems likely, based on examples of interactions elsewhere, that sub-adult male ASL from nearby colonies are the main source of most ASL-aquaculture interactions. The project's results suggest that breeding female ASL's, critical to population sustainability, do not appear to interact significantly with the tuna farms. To confirm this, the project author's recommend additional research using seal traps and new Global Positioning System (GPS) technology to target seals that interact with finfish farms.

To further mitigate against seal interactions with finfish farms, the report suggests that farmers should continue to: use seal fences for passive exclusion; perform regular and frequent net maintenance; regularly remove tuna carcasses; and investigate new cage technologies.

Improving procedures and staff training for recording the causes of death of farmed finfish and better communication with regulatory agencies is likely to provide the most cost effective method for monitoring changes in seal activity around finfish farms, their economic impact to industry and the effectiveness of mitigation procedures.

Project leader Simon Goldsworthy concludes "The findings of the report suggest that seals and aquaculture can co-exist if farm placement is sensitive to proximity to seals colonies and foraging areas, and if industry standards and requirements for seal mitigation practices and monitoring of interactions are appropriate".

Key Points

Around 8000 Australian sea lions (ASL) and 40,000 New Zealand fur seals (NZFS) live within close proximity to Australia's southern bluefin tuna (SBT) aquaculture industry in Port Lincoln, SA.

A recently completed project investigated seal movements and interactions with farms in the region.

Tracking results from Dangerous Reef suggest that ASL have not been adversely affected by the presence of tuna farms and current finfish aquaculture management policies are not the most appropriate way to reduce ASL-aquaculture interactions.

Surveys of tuna farmers however, confirmed that interactions are occurring.

It has been proposed that sub-adult male ASLs from nearby colonies are the main source of interactions; further research is needed to investigate this.

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