

An attempt to establish a feeding station for bottlenose dolphins (*Tursiops truncatus*) on Moreton Island, Queensland, Australia

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Introduction

In Moreton Bay, bottlenose dolphins, *Tursiops truncatus* (Montagu 1821) have a long history of interacting with people. In the early days of European settlement, there were eyewitness accounts of bottlenose dolphins fishing co-operatively with local aboriginal tribes on Moreton and North Stradbroke Islands (Hall, 1984). In the recent past, through to the present, dolphins have followed working prawn trawlers to feed on the trawlers' by catch (Corkeron, Bryden & Hedstrom, 1990; Blaber & Wassenberg, 1989).

The behaviour and ecology of dolphins in Moreton Bay has been the subject of scientific study since the late 1970's (Lear & Bryden, 1980; Corkeron, 1990). From this research, it seemed possible that a feeding station, such as the one that exists at Monkey Mia in Western Australia (Connor & Smolker, 1985) could be established on the shores of Moreton Island. While there is a long history of interaction between bottlenose dolphins and humans (Lockyer, 1990), to our knowledge there are no good data on the initial establishment of interactions between humans and dolphins.

A research project, to attempt to establish a dolphin feeding station on the beach at Tangalooma Island Resort, Moreton Island and to collect further information on the behaviour of dolphins in Moreton Bay, was conducted from July to September, 1989. This paper discusses preliminary findings of the research and describes the attempts to establish a feeding station.

Methods

Attempting to establish a dolphin feeding station. Three different research platforms were used in attempting to establish a feeding station over the

three month period. From all platforms, attempts were made to identify dolphins from photographs of natural marks on their dorsal surfaces (Würsig & Würsig, 1978).

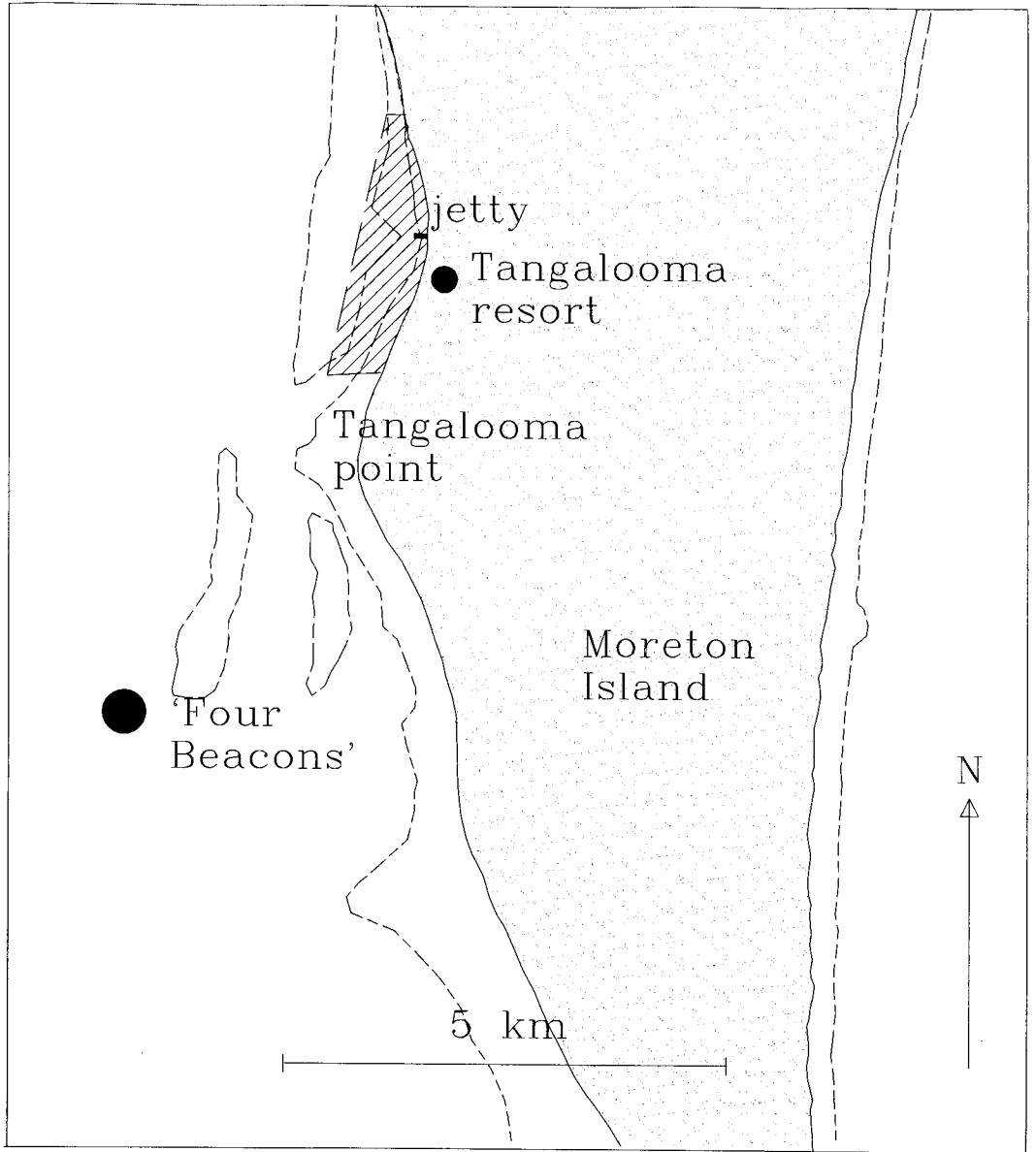
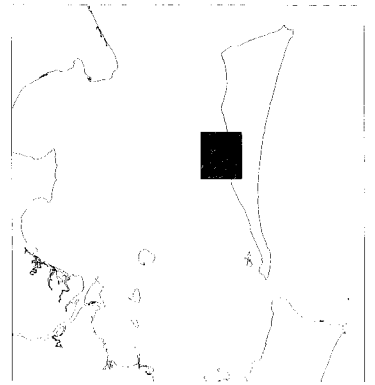
The three methods used are discussed separately.

1. Attempting to lead dolphins into Tangalooma using the University of Queensland research trawler, the *Sea Wanderer*.

The University Research vessel, capable of otter trawling, was used to attract the dolphins as they fed on the by-catch of trawls. For 40 days (weather permitting), three or four trawls were conducted daily in the commercial trawling grounds south of Tangalooma. After each haul, the catch was sorted and the species known to be preferred by the dolphins (Corkeron *et al.*, 1990, and pers. obs.) were kept. In particular, squid (*Loligo* spp.), squire (*Chrysophrys auratus*), grinner (*Saurida undosquamis*), flounder (*Pseudorhombus* spp.), and whiting (*Sillago* spp.) were collected. Trawling was continued until sufficient food was obtained. The animals which were following the trawler at that stage were fed while the boat steamed towards Tangalooma. Each attempt to lead the dolphins into Tangalooma was called a 'run'. A run was said to be successful if the animals entered the Tangalooma area.

The 'Tangalooma area' was defined as the body of water north of Tangalooma Point (= Tangalooma Spit) which is between the sand bar west of Tangalooma Island Resort and the beach on which the resort is situated (see Figure 1). The area includes the channel into Tangalooma as far west as the end of Tangalooma Point also. Any animal that left at or before Tangalooma Point was considered to have stopped following the trawler before we entered the Tangalooma area. Contact between humans and dolphins was encouraged by feeding the animals from the duck board (an aluminium platform at water level, hung off the port stern section) and by having dolphins take food directly from the observer's hand

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whenever possible. When successful runs led dolphins into Tangalooma, feeding was continued.

2. Attempting to feed animals in the Tangalooma area using a small boat.

Dolphins entered the Tangalooma area during day-light hours without being led by the trawler. When the trawler was unavailable, and whenever these animals were sighted, we would approach them very slowly (at idling speed), usually in a 3 m inflatable boat with a 28 hp outboard engine. We would try to position the boat in front of them (< 10 m), and place food in the water in the direction we believed they were heading. We would remain with them as long as possible (until they moved away), and we would stay close and place food in the water near them whenever possible. Initially the food collected from the trawler operation was used in this exercise. However, when the trawler work was completed, good quality frozen squid was purchased and used. Human contact with the animals was encouraged by towing a person beside the boat sometimes, or by placing the food in the water by hand.

3. Attempting to feed animals around the jetty at night.

Dolphins come in to the Tangalooma at night to feed on the pelagic fishes which congregate at the water surface below the lights of the jetty. Attempts were made to feed these animals by throwing food off the jetty on many evenings during August and September, using the fish collected from the trawler or the squid purchased for the inflatable boat work.

Results

1. Attempting to lead dolphins into Tangalooma using the *Sea Wanderer*.

Bottlenose dolphins were led into the Tangalooma area on 25 of the 45 runs. Of the successful runs, animals were led as far as the jetty on ten runs, as far as the Tangalooma lease on five runs and as far as the channel into Tangalooma on ten runs (see Figure 1). Animals stopped following us at Tangalooma Point, before we turned into the Tangalooma area, on eight runs. The animals did not follow as far as the point on 12 of the 45 runs. Humpback dolphins were recorded as following the trawler on nine runs towards Tangalooma. They were led into the Tangalooma area on seven occasions. They followed as far as the jetty four times, as far as the lease once and as far as the Tangalooma channel twice. They were led just as far as Tangalooma Point on one

occasion and they were lost before the point on another.

2. Attempting to feed animals in the Tangalooma area using a small boat

Bottlenose Dolphins:

The inflatable boat was used to search for dolphins around Tangalooma on 23 days. Bottlenose dolphins were found in and around Tangalooma on 17 of these days, within the Tangalooma area on 14 days, and around the 'four beacons' (Figure 1) on three days of the six when that area was surveyed. On two other occasions we approached dolphins behind trawlers south of the beacons. It was possible to get within ten metres of dolphins on ten occasions. Most frequently, the dolphins seemed to enter the Tangalooma area from the south and then move slowly northwards, following the coast, although this was not always the case.

Humpback dolphins were seen in the Tangalooma area on one occasion (from the inflatable boat). A group of two animals was seen near a jetty, and close (> 30 m) to a group of approximately eight bottlenoses and a solitary bottlenose for two hours.

3. Attempting to feed the animals around the jetty at night.

Dolphins were present around the jetty on 19 of the 22 nights recorded. Groups of three dolphins were recorded on three nights, groups of two on three nights and solitary dolphins were present on 13 nights. The animals had few identifying marks and there was insufficient light to photograph them. Therefore, we can not comment on whether the same individuals were present each night.

Discussion

Possible reasons why leading the animals with the trawler was not successful:

It appeared that some identified individual dolphins were 'reluctant' to pass Tangalooma Point and enter the Tangalooma area while others were not. On many occasions dolphins were led for kilometres, but were lost when the vessel entered Tangalooma. This may have been because these waters are relatively enclosed (between a sand bar and Moreton Island) and they may have been avoiding this area because it is an area used heavily by people for water sports.

One subgroup of four male dolphins were obtaining most of the food from the trawler and sometimes these four would actively chase other subgroups away. Unfortunately, these four dolphins would not

Figure 1. Map of the study area showing the major landmarks mentioned in the paper. Dashed lines represent the 5 metre depth contour (dotted lines in inset B), shaded region indicates the extent of the "Tangalooma area" as defined in the paper, and land areas are stippled. The shaded rectangle in inset B shows the study area relative to Moreton Bay, while the shaded rectangle in inset A shows where inset B lies in the state of Queensland.

enter the Tangalooma area. They were seen to chase both bottlenose dolphins (apparently of any sex or age) and humpback dolphins behind the trawler. The project would have been more successful if this dominant male group had not been chasing the others away, as then the other animals may have followed the trawler in.

Another problem was that the area immediately adjacent to Tangalooma was unsuitable for trawling. Therefore we were forced to operate in the commercial trawling grounds south of Tangalooma. It was difficult to judge how much food was necessary to keep the animals travelling with the boat to the Tangalooma area, without feeding them to satiation. The presence of commercial trawlers working in the area influenced our success. On week days, the animals may have been able to follow any one of up to approximately ten trawlers in the area. On weekends, commercial trawlers are forbidden to work in Moreton Bay. Since the animals were obtaining food from the other trawlers, they did not seem to be as hungry as they were on weekends, nor did they follow the *Sea Wanderer* for as long as they did on weekends. Furthermore, the dolphins may have learned that their preferred prey species were not discarded after every trawl. In contrast, the other boats would throw 'trash' fish (including some of the dolphins' preferred species) out after each haul. Therefore, weekend work with no commercial boats operating, was more successful than work during the week.

Human contact with free ranging dolphins from the *Sea Wanderer*:

Bottlenose Dolphins

Four individual dolphins could be hand fed on a regular basis. Three of these animals belonged to the group of four large males which appeared to be the dominant group in the area. The other male in the group never came near. The three males did not hesitate to hand feed while the *Sea Wanderer* was moving at around two or three knots (3.5–5.3 km/hr). However, when the trawler stopped, they became very 'wary' and they would not come in as close (they would stop about 1 m away and blow bubbles). The other animal that hand fed regularly was an adult female with a calf. This female also seemed more wary when the boat was not moving but could be hand fed when the vessel was stationary. The male dolphins would turn on their backs and take the food item. In contrast, the female did not turn on her back to do this. During the course of the study, 14 people hand fed these animals from the duck board. However, the animals were much more 'hesitant' in coming in to be fed if a new person was attempting to feed them (most hand feeding was done by A. Green). They would hang back and not hand feed until A. Green went down onto the duck board. Nevertheless, once they started feeding from both A.

Green and the other person on the duck board, the new person could be left to hand feed them. It appeared that the dolphins recognised A. Green individually. Two of the male dolphins initiated physical contact with A. Green. In particular, they would often hold her hand or foot in their mouths for minutes at a time. The female could be touched quite frequently and she did not either draw away or respond to the contact. In contrast, if the males were touched they would move away a metre or so instantly, watch the person, and they would return to be hand fed 'warily'. Generally, it was left to the dolphins to initiate the contact.

Humpback Dolphins

No contact was made with humpback dolphins. This was because they would not come up close to the duckboard but stayed further back behind the boat.

Attempting to feed animals in the Tangalooma area using a small boat

When animals were first approached in the inflatable boat, they tended to avoid the boat or leave the area. However, towards the end of the work, it was often possible to stay with the animals for up to three hours in one area.

It appeared that the animals were getting used to the inflatable boat. They would often come very close to the boat and spyhop, apparently looking at the occupants. In contrast, on the rare occasions when the inflatable boat was not used (and an aluminium dinghy was used instead), the animals could not be approached as closely, nor would they stay around for long. Aluminium dinghies are far more common around Tangalooma, being the preferred boats of many amateur fishermen in the area. The tidal phase seemed to influence the presence of the animals more than did the time of the day. Dolphins appeared to enter the Tangalooma area most often at high tide (particularly at slack water or at the beginning of the ebb). However, they were often found in the area in the late afternoon. The most likely time to see animals at Tangalooma seemed to be when there was a high tide late in the afternoon or early in the morning. However, animals would also appear at almost any combination of the tidal phase and the time of day. As small boat surveys were conducted randomly, it was impossible to quantify dolphin movements by tidal state or time of day. Using a small boat to try to feed animals in the Tangalooma area seemed to show a great deal of promise, given sufficient time and a suitable site. It was not possible to observe how the dolphins were responding to the food released from the inflatable boat because the food would sink.

Attempting to feed the animals around the jetty at night

Dolphins fed on the pelagic fishes (primarily garfish) which were swimming at the surface of the

water under the jetty lights. The best time to see the dolphin(s) at night was around the high tide. At low tide there was very little water below the jetty lights and the fish may not have been there. However, at high tide the water was relatively deep (one to three metres) around the jetty lights and the dolphins were able to feed on the fish in the light. The dolphins were often around at low tide but tended to stay in the dark area off the end of the jetty where the water was of sufficient depth. Despite many attempts to try and feed these animals at night we were unsuccessful. The animals would often come very close to the food item and they would appear to investigate it.

In conclusion, we were unsuccessful in establishing a permanent feeding station on the beach of Moreton Island in the three months of this project. However, such a station could be established, given sufficient time, at a site with very little water sports activity (restricted boating, no jet skis or water skiing). The best option would be to establish a marine reserve or a boat exclusion zone where recreational boating can be restricted.

The implementation of such a project raises issues relating to the management of human exploitation of populations of small cetaceans. While creation of opportunities for people to interact with free ranging dolphins is probably more acceptable than the capture of such dolphins for maintenance in oceanaria, such contact requires strict controls. We suggest that the establishment of such stations should occur only in areas where human activities can be demonstrated to have major impacts on the behaviour of resident dolphins, and wildlife management agencies maintain some control over the activities of such stations.

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