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A new sound from a stranded pygmy sperm whale

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Introduction

The pygmy sperm whale (*Kogia breviceps*) has a cosmopolitan distribution in temperate, subtropical and tropical waters of the Atlantic and Pacific oceans (Leatherwood and Reeves, 1983). In the Pacific, it most commonly strands in southeastern Australia, New Zealand, the west coast of North America from Washington state to the Gulf of California, and Japan. Members of this species are rarely seen at sea; they are most commonly observed as individuals or in small groups (Walker, 1975). They are not notably soniferous. Watkins and Wartzok (1985) report only pulsed sounds for this species. Using a towed array of hydrophones, a *Kogia* was followed in the eastern tropical Pacific for about 30 minutes, but no distinguishable sounds were heard (Thomas, unpublished data).

Airborne recordings by Caldwell *et al.* (1966) and underwater recordings by Caldwell and Caldwell (1987) of *Kogia breviceps* recovered from strandings showed low-amplitude echolocation-like clicks of varying repetition rates with peak frequencies below 13 kHz. These authors note the importance of recording sounds of stranded cetaceans as a means of documenting their repertoire, especially in this uncommon species. We had the opportunity to make underwater recordings of a stranded *Kogia breviceps* that beached on Oahu and to further document other aspects of this species by videotape recordings. We advocate that simultaneous video and audio records be made on stranded marine mammals to provide a permanent record of many aspects of the animal's behaviour and appearance.

Species account

On the morning of 14 August 1988 a pygmy sperm whale (*Kogia breviceps*) was found stranded at Punalu'u beach on the northeast shore of the island of Oahu, Hawaii. The adult female was transported to Sea Life Park and housed in a large circular pool. She weighed 364.8 kg and was 269 cm long. She had a few scars, and her general appearance was good. She swam slowly around the pool without listing. Her body shape was broad, and a pregnancy was suspected. The whale expired late in the afternoon of 15 August and the necropsy later showed a near-term fetus.

Methods

During the afternoon of 15 August, we made simultaneous video and audio tape recordings of the *Kogia* swimming around the pool. Initial listening indicated that the whale generally was not vocal. It occasionally produced a low-frequency, low-amplitude sound of short duration, but no echolocation-clicks. We made a video tape using a video camera/recorder (Sears model 42850 HQ) with a half-inch VHS format. Underwater recordings were made with a calibrated Gould CH-17 hydrophone, which had been modified to be flat (±3 dB) up to 18 kHz. The output

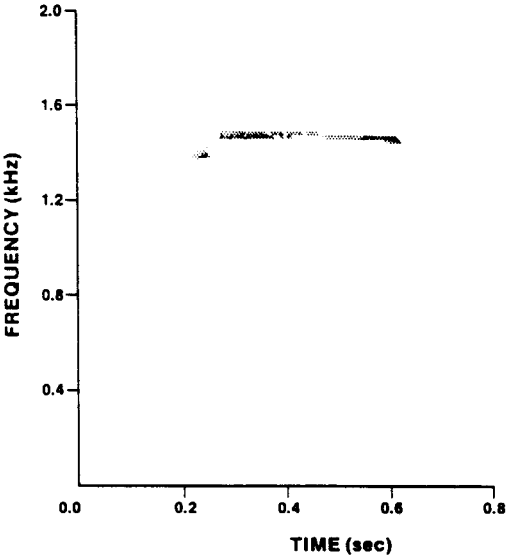

Figure 1. A representation sonogram of a cry from a pygmy sperm whale.

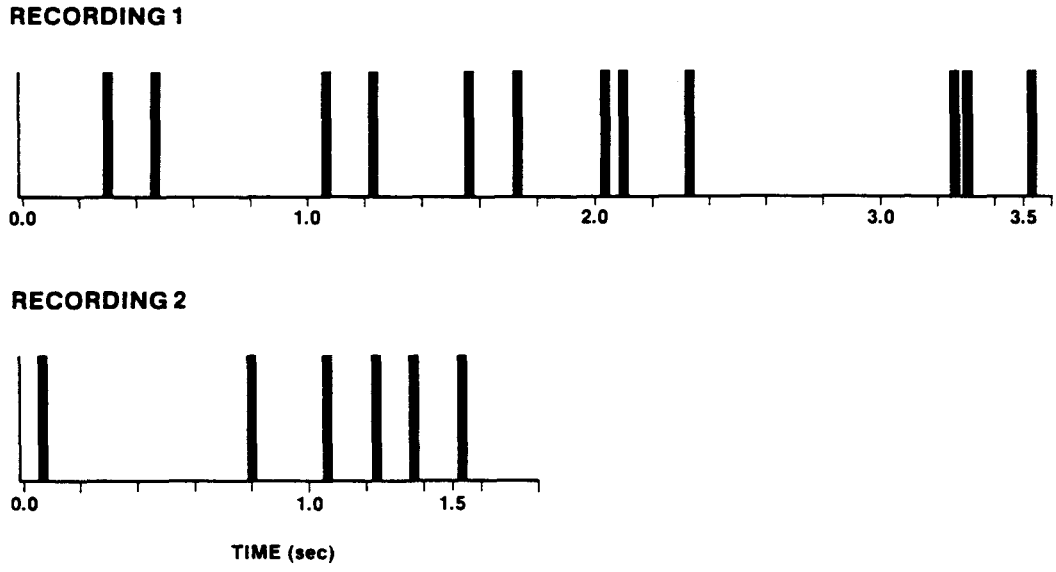

Figure 2. Time-line of cries during the two most active recording periods.

of the hydrophone was passed to a Hewlett Packard amplifier bank (flat from 0 to 300 kHz) and then simultaneously passed to the video camera and a Marantz PMD 430 cassette recorder (frequency response 35 Hz to 15 kHz ± 3 dB). Recordings were made opportunistically over a 2-hour period.

All sounds on the cassette tape were examined using the Uniscan II spectrum analyzer. Coordination of the counters on the video tape player and cassette player allowed us to select the loudest calls produced with a direct orientation to the hydrophone for detailed spectral analysis. We transcribed the temporal sequence of the sound using a digital stop watch.

A review of the video tape allowed us to examine some of the whale's diagnostic characteristics and verify the species of *Kogia*.

Results and Discussion

As far as we know, this is the only synchronized video and audio recording of this species. On retrospective examination, many types of data can be gleaned from a video tape that could not be tracked at the time of data collection.

Based on the small dorsal fin located posterior to the center of the back, the presence of 11 pairs of lower teeth, the absence of upper teeth, and the absence of ventral throat grooves described by Handley (1966), we diagnosed this whale to be a *Kogia breviceps*.

We recorded no echolocation-type clicks as reported by Caldwell and Caldwell (1987). However, we clearly detected a short duration (0.42 sec) ascending sweep or 'cry'. This 'cry' may have been a distress call. Eighteen moderately stereotypic, good quality cries were examined. Figure 1 shows a typical cry with a start frequency of 1.36 kHz and an end frequency of 1.48 kHz. The sounds were heard singly, or in pairs. Figure 2 shows the time-line or sequence of these cries during the two most active recordings.

We advocate that a simultaneous video/audio tape recording of stranded animals provides a wealth of information about the individual and sometimes an unusual species. This permanent record can be viewed by anatomists, behaviorists, taxonomists, and physiologists in retrospect to retrieve pertinent information. The tapes also may provide a valuable training tool for stranding network team members.

Acknowledgements

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