

FURTHER INVESTIGATIONS OF THE WHALES
Peponocephala electra AND *Globicephala*
macrorhynchus
 REPORTED FROM GUAM

Whales and dolphins are frequently encountered in the coastal waters of Guam and the Mariana Islands, but the identities of the species sighted are often unknown. Accurate species identifications are usually not made until individual whales are stranded ashore. Recent strandings and subsequent identifications have established a number of new distribution records, extending the known ranges of those species recorded. Kami and Lujan (1976) summarized past new distribution records and recently two new records for *Peponocephala electra* and *Globicephala macrorhynchus* have been reported (Kami and Hosmer, 1982).

Peponocephala electra was stranded at Inarajan Bay, Guam, on 6 April 1980. *Globicephala macrorhynchus* was stranded at Togcha Bay, Guam, on 6 July 1980. Both whales were photographed and measured in detail by myself with the assistance of R. Logan Kock and other Division of Aquatic and Wildlife Resources personnel. I submitted a report in each case to J. G. Mead, Division of Mammals, United States Natural History Museum, who in turn forwarded the reports to the Scientific Event Alert Network Bulletin (SEAN) of the Smithsonian Institution. Since the appearance of those reports (Smithsonian Institution 1980a; 1980b) both whale species have since been described in a paper of recent whale strandings on Guam by Kami and Hosmer (1982). The purpose of this note is to provide detailed descriptions of both stranded whale species cited in the SEAN reports and in Kami and Hosmer (1982).

External measurements made for the description of *Peponocephala electra* and *Globicephala macrorhynchus* follow Norris (1961) and Leatherwood et al. (1976). All measurements are in centimeters (cm), given in a straight line parallel to the body axis (except where indicated otherwise).

Peponocephala electra (Gray 1846)

Fig. 1

MATERIAL: Male, 250 cm; sand beach, NW shore, Inarajan Bay, Inarajan, Guam, Mariana Islands, by Matthew Duenas, 6 April 1980. Measurements by T. J. Donaldson, R. L. Kock, C. Willie, and H. T. Kami.

DESCRIPTION: Tip of upper jaw to deepest part of fluke notch, 250 (point to point); tip of upper jaw to leading edge of dorsal fin, 73.5; tip of upper jaw to center of blowhole, 32(41 point to point); tip of upper jaw to auditory meatus, 38 (right), 39 (left); tip of upper jaw to center of eye, 33 (right), 34 (left); tip of upper jaw to angle of gape, 26 (point to point); tip of upper jaw to apex of melon, 26.5; projection of upper jaw beyond lower, 35; width of head at postorbital process of frontals, 33.

Center of eye to center of eye, 46.5 (point to point); height of eye, 1.0 (right), 1.0 (left); length of eye, 3.4 (right), 3.4 (left); center of eye to angle of gape (right), 6.5 (point to point); center of eye to angle of gape (left), 6.5 (point to point); center of eye to external auditory meatus (right), 5.0 (5.5 point to point); center of eye to external auditory meatus (left), 5.0 (5.5 point to point); center of right eye to center blowhole, 21.5 (point to point); center of left eye to center of blowhole, 21.5 (point to point); blowhole length, 2.0; blowhole width, 4.0.

Flipper width (right), 27 (point to point); flipper width (left), 27 (point to point); flipper length-tip to anterior insertion, 53 (right), 53 (left); flipper length-tip to axilla, 37 (right), 37 (left).

Dorsal fin height, 26; dorsal fin base, 35; fluke span, 67; fluke width, 21.5; fluke depth of notch, 5.0.

Girth at axilla, 130 (point to point); girth at eye, 91.5 (point to point); girth 22 cm in front of notch of flukes, 26.5 (point to point).

Blubber thickness (point to point), 1.5 (mid-dorsal), 1.75 (lateral), 2.0 (midventral).

Genital slit length, 93; anal slit length, 8.0.

Tooth counts, 17 (right upper), 15 (right lower), 17 (left upper), 17 (left lower).

The categories of measurements were selected



Fig. 1. Head of *Peponocephala electra* stranded at Inarajan Bay, Guam, Mariana Islands on 6 April 1980.

Table 1. Selected measurements of a male *Peponocephala electra* stranded at Inarajan Bay, Guam, compared with two males from Queensland, Australia described in Bryden et al. (1977).

Absolute measurements are in cm and those in parentheses are the percentage of total body length.

Measurement	Guam	Queensland C2*	Queensland MM9**
Total length	250 (100)	267.7 (100)	223 (100)
Tip of upper jaw to center of eye	33.5 (13.4)	36.4 (13.6)	30 (13.5)
Tip of upper jaw to blowhole	32 (12.8)	38.3 (14.3)	29 (13.0)
Length of flipper from anterior margin to tip	53 (21.2)	51.6 (19.3)	40 (17.9)
Axilla to tip of flipper	37 (14.8)	39.1 (14.6)	29 (13.0)
Height of dorsal fin	26 (10.4)	29.3 (10.9)	20 (9.0)
Length of dorsal fin at base	35 (14.0)	45.8 (17.1)	33 (14.8)
Fluke span	67 (26.8)	74.3 (27.8)	45.5 (20.4)
Depth of notch between flukes	5 (2.0)	4.7 (1.8)	13 (5.8)

* Queensland Museum (JM 762).

** James Cook University (No number given).

for comparison with available data of Bryden et al. (1977) and are given in Table 1.

REMARKS: The body length of 250 cm is within the known range (169–273 cm) of collected Pacific specimens (Goodwin, 1945; Nishiwaki and Norris, 1966) although a maximum length of 280 cm has been suggested for this species by Bryden et al. (1977). Comparisons of other selected measurements (Table 1) with those of two Australian males reported in Bryden et al. (1977) were similar, indicating on the basis of length that the male *P. electra* stranded in Inarajan was probably an adult.

The tooth count reported here was quite low. Dawbin et al. (1970) reported a range of $\frac{21}{22}$ – $\frac{22}{23}$ to $\frac{22}{23}$ – $\frac{25}{25}$ among Australian specimens. Nishiwaki (1972) cited a count of $\frac{21}{22}$ – $\frac{25}{25}$ from a Japanese specimen, and Perrin (1976) reported a count of $\frac{23}{22}$ – $\frac{23}{22}$ from an eastern Pacific specimen collected off the coast of Guatemala. A number of teeth were broken from the Guam specimen and this may have contributed to an erroneous count. However, Bryden et al. (1977) have also reported low tooth counts from specimens stranded in Australia.

Peponocephala electra is apparently a herding species (Dawbin et al., 1970) with a circum-tropical and warm-temperate distribution (Van Bree and Cadenat, 1968). In the Pacific Ocean, *P. electra* has been stranded, collected or observed off Guatemala (Parrin, 1976), Hawaii (Nishiwaki and Norris, 1966), New South Wales, Australia (Dawbin et al., 1970), Queensland, Australia (Bryden et al., 1977), Vanuatu (New Hebrides) (Rancurel, 1974), Palau (C. Birkeland, pers. comm., 1980), and Japan (Nakajima and Nishiwaki, 1965; Nishiwaki and Norris, 1966). Perrin (1976) cited additional records from scattered parts of Polynesia, Melanesia, Australia and the Philippine Sea. Mass strandings have been reported from New South Wales, Australia (Dawbin et al., 1970), and Vanuatu (Rancurel, 1974).

The presence of *P. electra* in the waters of Guam, Palau (Caroline Islands), and Japan suggests a possible link between equatorial Pacific and northern Pacific populations, via the Mariana Islands.

Globicephala macrorhynchus Gray 1846

Fig. 2

MATERIAL: Female, 359 cm; approximately

3 m from reef margin, Togcha Beach, Togcha Bay, Guam, Mariana Islands, by George Hudson, 6 July 1980. Measurements by T. J. Donaldson, R. L. Kock, and C. Willie.

DESCRIPTION: Tip of upper jaw to deepest part of fluke notch, 359; tip of jaw to center of anus, 193; tip of upper jaw to center of umbilicus, 150; tip of upper jaw to leading edge of dorsal fin, 117; tip of upper jaw to anterior insertion of flipper, 65 (right), 65 (left); tip of upper jaw to center of blowhole, 49; tip of upper jaw to anterior edge of blowhole, 38; tip of upper jaw to auditory meatus, 52.5 (right), 53 (left); tip of upper jaw to center of eye, 49 (right), 49 (left); tip of upper jaw to angle of gape, 35 (point to point).

Center of eye to center of eye, 91 (point to point); height of eye, 1.2 (right), 1.2 (left); length of eye, 3.6 (right), 3.6 (left); center of eye to external auditory meatus, 4.0 (right), 4.0 (left).

Blowhole length, 5.2; blowhole width, 5.3.

Flipper width (right), 56 (point to point); flipper width (left), 56.5 (point to point); flipper length-tip to axilla, 42 (right), 42 (left).

Dorsal fin height, 23; dorsal fin base, 46; fluke span, 81; fluke width, 25; fluke depth to notch, 3.5; notch of flukes to center of anus, 166; notch of flukes to umbilicus, 209; notch of flukes to nearest point on leading edge of flukes, 28.

Girth at axilla, 154 (point to point); girth at eye, 150 (point to point); girth 35 cm in front of flukes, 84 (point to point).

Genital slit length, 51.

ADDITIONAL COMMENTS: Other measurements, including tooth counts, could not be obtained because local fishermen butchered the specimen before the examination could be completed. Attempts to retrieve the skull for further examination were unsuccessful.

Various unusual markings were observed and are reported here: two small (approximately 5 cm) crescent-shaped gouges on the posterior edge of the left flipper; a circular hole "punched" through the dorsal fin; a small (approximately 3 cm) mark on the posterior edge of the dorsal fin; a heavy scar 1.2 cm behind the posterior edge of the dorsal fin, along the dorsal ridge; unidentified material, resembling heavy-duty nylon fishing line, threaded through the midventral blubber from left to right.

REMARKS: The total length of the female *Globicephala macrorhynchus* stranded at Togcha

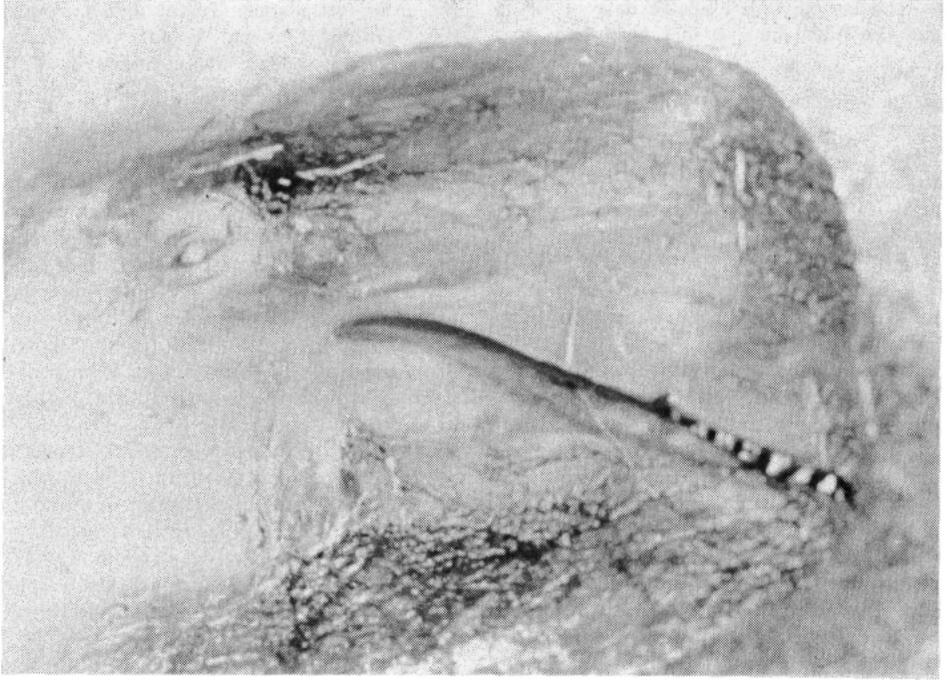


Fig. 2. Head of *Globicephala macrorhynchus* stranded at Togcha Beach, Togcha Bay, Guam, Mariana Islands of 6 July 1980.

Bay was less than lengths reported for mature (450 cm) females of the western North Atlantic (Lee and Ogden, 1982). Leatherwood et al. (1972) reported mature males of up to 700 cm in the Pacific, while females were described only as being smaller in size. The small size of the Guam specimen, compared with these figures, suggests that the specimen reported here may have been a young female.

Globicephala macrorhynchus is a herding species (Leatherwood et al., 1976) in the tropical and warm-temperate Pacific Ocean (Nishiwaki, 1972). Leatherwood et al. (1976) and Lee and Ogden (1982) also reported it from similar waters of the western North Atlantic. The distribution of *G. macrorhynchus* in the western Pacific is uncertain, although Kami and Hosmer (1982) contended that this species was the most frequently sighted cetacean in Guam's waters.

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BOOK REVIEWS

WORDS OF THE LAGOON: FISHING AND MARINE LORE IN THE PALAU DISTRICT OF MICRONESIA by R. E. Johannes. University of California Press, Berkeley. 1981. 245 p. \$24.95.—Johannes went to Palau to test an hypothesis about the productivity of reef fishes, using the Popperian approach of a competent scientist. Soon after he arrived, he began to realize that the local fishermen knew more of the ecology of reef fishes than scientists will know for decades if they use only the scientific method in the future. Furthermore, the cultural and economic matters of harvesting fishes interacted with the biology of fishes in a sophisticated manner. Therefore, he changed his approach to one of living with the native fishermen and learning all he could from them while accompanying them on their fishing activities. This book is an account of his experiences and summarizes what he learned about the ecology of reef fishes and the interactions of reef fishes with the culture of the native fishermen.

This book provides substantive materials for four purposes simultaneously. Explicitly presented is information new to science on the fishing techniques of Palauans and related information from their rich knowledge of fish and bird behavior, water movement patterns, and seasonal, lunar and diurnal rhythms on which their effective fishing and conservation customs are based. Implicitly presented is an essay on the scientific method. Third, the practical importance of traditional knowledge is presented, both for fisheries scientists as a shortcut for obtaining information and insights of patterns in a complex system, and for the Palauans themselves as a form of security to fall back on in case the future world economy does not turn out to be as healthy as we seem to assume it is at this time. The fourth purpose of the book is to call attention to the urgent need to record fishing and marine lore and to foster interest of islanders in their traditional knowledge and skills before