BRYDE'S WHALE IN THE COASTAL WATERS OF EASTERN AUSTRALIA

ROBERT A. PATERSON* AND STEPHEN VAN DYCK*

ABSTRACT

While documented capture of *B. edeni* in eastern Australian waters is limited to only a few records, inshore observations suggest that the species is not uncommon. Aspects of osteology and baleen morphology in two large stranded whales now housed in the Queensland Museum confirm their identity as Bryde's whales. Breaching behaviour and the "working" of fish schools is discussed.

INTRODUCTION

Bryde's whale (*Balaenoptera edeni* Anderson, 1878) is widely distributed between latitudes 40°N and 40°S (Omura, 1959). Although Bryde's whale has been captured in the south-west Pacific Ocean to the east of Australia (Kawamura, 1980) very few captures have been reported from the waters adjacent to the east Australian mainland which lies between latitudes 11°37'S and 39°04'S (Fig. 1). Information will be presented in this paper detailing Bryde's whale captures, strandings and field observations in the coastal waters of eastern Australia. Specimens mentioned in this paper are lodged in the following collections: Queensland Museum (J or JM), Victorian Museum (C).

CAPTURES

Between 1952 and 1962 shore stations at Tangalooma (27°11'S, 153°23'E) and Byron Bay (28°37'S, 153°38'E) processed 7423 humpback whales (Paterson and Paterson, 1984) and the industry was based almost exclusively on that species. However, Bryden (1978) noted that on 14 September 1962 a 42 foot 3 inch [12.87 m] male sei or Bryde's whale was captured by the chaser *Norfolk Whaler* five miles north of Cape Byron and Best (1977) noted that he had received data concerning two Bryde's whales captured from the east Australian shore stations in the early 1960s. Those captures and the small numbers captured from the shore station at Carnarvon in Western Australia (Chittleborough, 1959) occurred during the decline in humpback whale stocks in Australian waters and may have been associated with attempts to

Queensland Museum, PO Box 300, South Brisbane, Queensland 4101 Australia

Sci. Rep. Whales Res. Inst.,
No. 39, 1988, 21-29

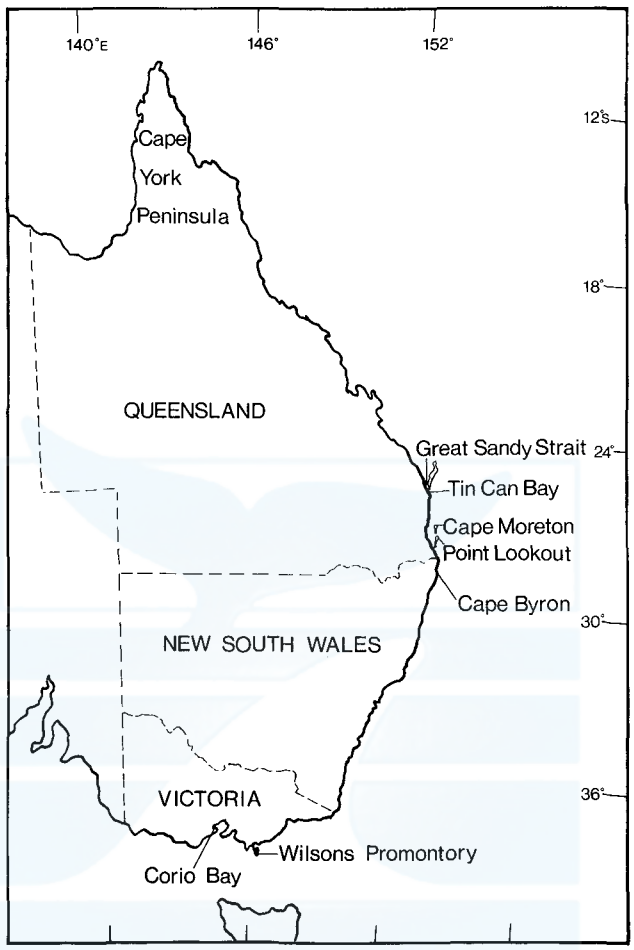

Fig. 1. Eastern Australian mainland showing localities mentioned in text.

diversify the operations of the shore stations. No systematic survey of Bryde's whale abundance was conducted and in 1962, when humpback whale stocks were commercially exhausted, the east Australian shore stations ceased all whaling activity.

STRANDINGS

Skeletal elements of two whales, positively identified as Bryde's whales at the time of stranding by the characteristic three longitudinal ridges on the dorsal aspects of their heads (Omura, 1962) have been deposited in the Victorian and Queensland Museums (Table 1 and Figs 2 and 3). The two specimens are

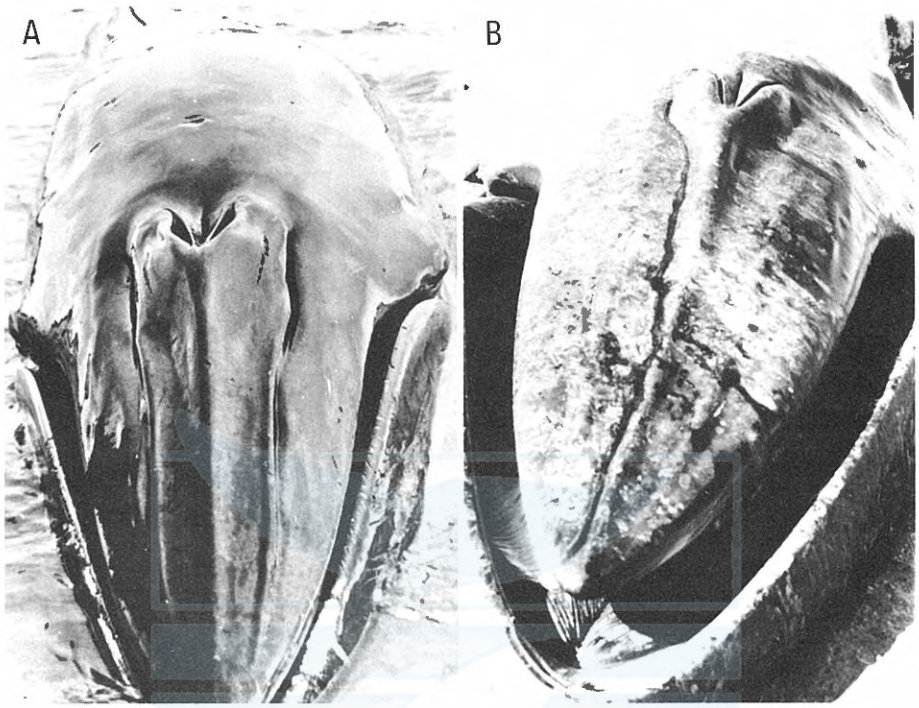

Fig. 2. Bryde's whales stranded on the east Australian coast.
A. Specimen C8841, from Victoria. B. Specimen JM4386, from Queensland.
See Table 1 for locality details.

TABLE 1. BRYDE'S WHALES STRANDED ON THE EAST AUSTRALIAN COAST

Registration Number	Date and location of stranding	Specimen details	Reference
C8841	25.vii.1968 Limeburner Creek, Corio Bay, Victoria (38°04′S, 144°24′E)	Male, 6.1 m long, Post cranial skeleton not collected.	Dixon (1970)
JM4386	30.x.1982 Stewart Island, Great Sandy Strait, Queensland (25°38′S, 152°57′E)	Sex unknown, 14.35 m long., Almost complete skeleton but some caudal vertebrae missing.	Paterson (1984)

from animals of disparate physical maturity. Watson (1981) noted that the maximum lengths of male and female Bryde's whales are 14.3 and 14.6 m respectively but the maximum lengths of male and female Bryde's whales

Fig. 3. Bryde's whale JM4386, stranded at Stewart Island, Great Sandy Strait, Queensland.

captured from the Great Barrier Island shore station in New Zealand between 1956 and 1961 were 14.6 and 14.9 m respectively (Gaskin, 1968). C8841 measured 6.1 m in length and the incomplete fusion of its cranial sutures indicates that the animal was juvenile whereas JM4386 measured 14.35 m in length and the lumbo-caudal portion of its vertebral column shows gross change of spondylitis deformans with associated spinal canal stenosis. Those pathological changes are considered to be a mainfestation of advanced age (Paterson, 1984) and are probably caused by repetitive vertebral ligamentous traction (Lagier, 1977).

Omura (1959) and Omura, Kasuya, Kato and Wada (1981) after detailed studies of Bryde's whales from the north and south Pacific Ocean and the Indian Ocean considered that the appearances of the anterior aspects of the nasal bones were the most distinctive osteological characteristic of Bryde's whales with regard to differentiation from sei whales (*Balaenoptera borealis* Lesson, 1828). The anterior margins of the nasal bones are concave and inclined forwards on their outer aspects in all specimens of Bryde's whales examined by Omura whereas those of sei whales are convex or straight and never inclined forwards on their outer aspects. The skull of JM4386, showing the characteristic nasal bones, is illustrated in Fig. 4. The skull of C8441 has been examined and its nasal bones are consistent with Omura's description of Bryde's whale.

Part of a baleen plate from JM4386 is shown in Fig. 5. The incomplete

Fig. 4. Dorsal view of the skull of Bryde's whale JM4386.

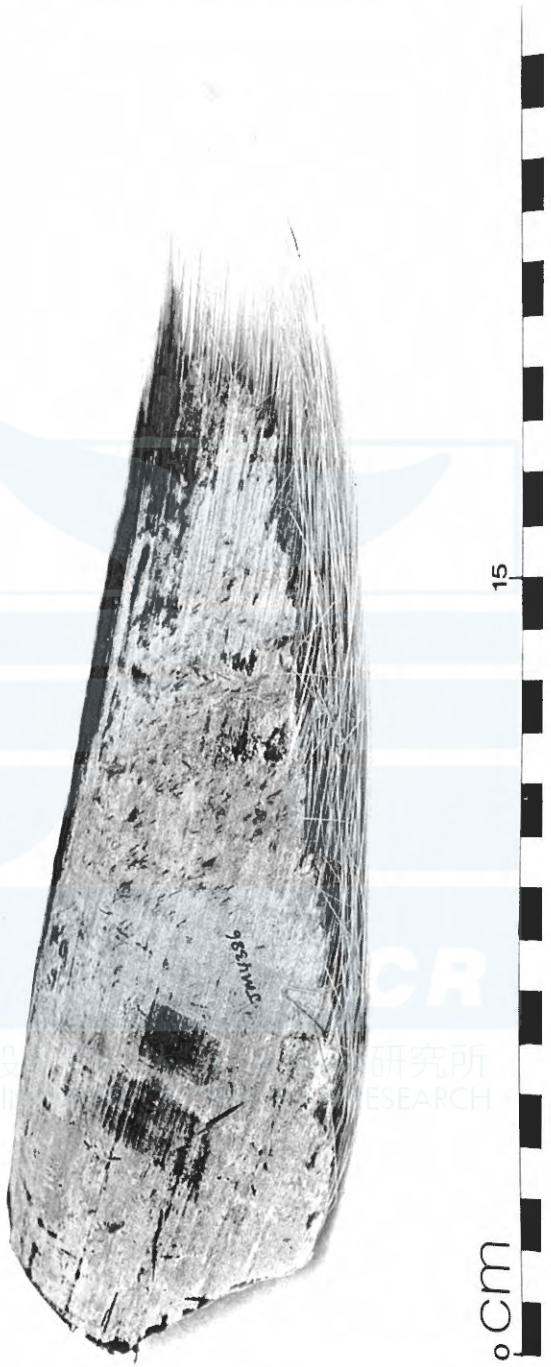

Fig. 5. Baleen sample from Bryde's whale JM4386.

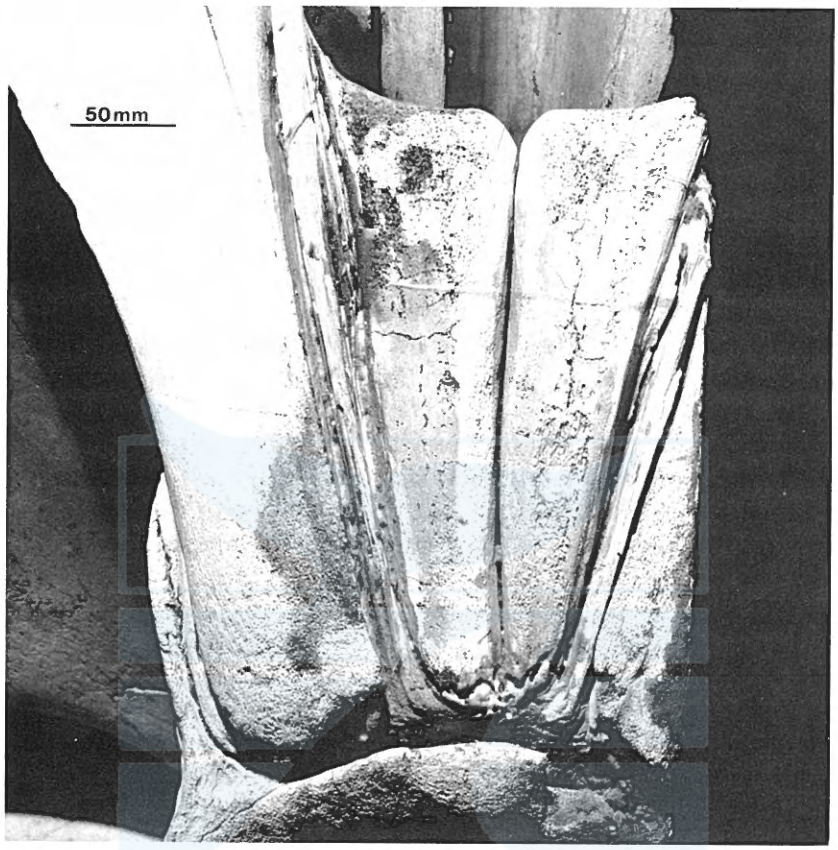

Fig. 6. Dorsal view of the nasal bones of Bryde's whale J21713 (the skull had been sawn longitudinally to allow its wall mounting).

nature of this sample precluded a determination of the affinities of JM4386 with Best's (1977) "inshore" and "offshore" forms.

Specimen J21713 in the Queensland Museum is from a whale which stranded at Tin Can Bay Inlet (25°51′S, 153°02′E) in 1965. No baleen samples or diagnostic photographs of the stranded animal are available for study. The specimen was considered to be that of a sei whale and was mounted and displayed in the Queensland Museum. The Museum has recently been relocated and the opportunity has arisen to examine the specimen in detail. The nasal bones are illustrated in Fig. 6 and their appearance is typical of a Bryde's whale. Omura *et al.* (1981) noted that the vertebral count of Bryde's whales is 54–55 and that of sei whales 56–57. Some vertebrae of JM4386 and J21713 are missing, the vertebral count being 49 in each specimen. Specimens of both Bryde's and sei whales examined by one of us (S.V.D.) in 1987, in the Rijksmuseum Van Natuurlijke Histoire, Leiden, Nederland (including the Palau Sugi specimen referred to by Omura, 1959) have confirmed the

identity of JM4386 and J21713 as Bryde's whales.

FIELD OBSERVATIONS

One of us (R.A.P.) has monitored the annual migration of humpback whales from Point Lookout (27°26′S, 153°33′E) and Cape Moreton (27°02′S, 153°28′E) during the months of June to October yearly since 1978 (Paterson, 1987). During this period (an approximate total of 320 watching days) incidental sightings of minke and Bryde's whales were recorded. The latter were positively identified when the characteristic rostral ridges, described above, were seen. It was not uncommon for Bryde's whales to be seen close inshore near the headland at Point Lookout and in the surf-lines along adjacent beaches.

Kawamura (1980) noted that Bryde's whales have peak feeding periods during early morning and late afternoon and the Point Lookout observations appeared to support those findings but if schooling fish were present at other times during the day behaviour considered characteristic of feeding was observed. The behaviour included surface rushes, lunging and circling. On occasions fish were seen leaping as the whales swam quickly through densely packed schools.

Watson (1981) noted that Bryde's whales seldom show their flukes and fluke raising was not observed during any of the Point Lookout sightings. Breaching was occasionally seen but it was not acrobatic, as is that of humpback whales. When a Bryde's whale breached it usually emerged partially from the water and returned in the reverse direction but on two occasions Bryde's whales were seen to leap clear of the water in a horizontal position and re-entered by a "belly-flop".

Singles and pairs were the most common groupings and pairs occasionally "worked" adjacent schools of fish. As mentioned above, observations were conducted at Point Lookout from June to October and no assessment was made of Bryde's whale occurrence during the other months of the year. At this latitude in eastern Australia the sea is warmest in February and coldest in August. The average surface temperatures for February and August were reported as 24.3°C and 18.9°C (Paterson, 1986). Although Bryde's whales were seen in all months from June to October they were most frequently seen during August and September. Bryden (1978, pls 1–3) showed a photograph of a Bryde's whale seen near Cape Moreton (27°02′S, 153°28′E) during aerial observations in September 1976.

As Bryde's whales seen on successive days at Point Lookout may have been the same animals it was not possible to estimate their abundance. However, the observations indicate that Bryde's whales frequent the inshore waters of eastern Australia between latitudes 27°S and 28°S at least during the winter and spring months.

ACKNOWLEDGEMENTS

Mr Malcolm Cox of Project Jonah, Brisbane initially identified specimen JM4386 and kindly allowed reproduction of his original photographs. Dr Chris Smeenk, Curator of Mammals at the Rijksmuseum van Natuurlijke Histoire, Leiden, Holland is gratefully acknowledged for his hospitality and assistance while examinations were made of specimens in his care. Miss Joan Dixon, Curator of Mammalogy at the Museum of Victoria gave every assistance with regard to specimen C8841 and provided the relevant photograph. Mr Carlos Picasso of the Queensland Museum photographed the specimens in that Museum. Drs Hideo Omura and Seiji Ohsumi were most helpful with advice in relation to our enquiries.

REFERENCES

BEST, P.B., 1977. Two allopatric forms of Bryde's whales off South Africa. *Rep. int. Whal. Commn* (special issue 1): 10–38.

BRYDEN, M.M., 1978. Whales and whaling in Queensland waters. *Proc. R. Soc. Qd*, 88: v-xviii, pls 1–3. (This appears in vol. 89).

CHITTLEBOROUGH, R.G., 1959. *Balaenoptera brydei* Olsen on the west coast of Australia. *Norsk Hvalfangst-Tid.*, 48(2): 62–66.

DIXON, J.M., 1970. Two new whale records from Victoria *Mesoplodon bowdoini* Andrews (Ziphiidae) and *Balaenoptera edeni* Anderson (Balaenopteridae). *Vict. Nat.*, 87(4): 88–93.

GASKIN, D.E., 1968. The New Zealand cetacea. *Fish. Res. Bull.*, 1: 28.

KAWAMURA, A., 1980. Food habits of the Bryde's whales taken in the south Pacific and Indian Oceans. *Sci. Rep. Whales Res. Inst.*, 32: 1–23.

LAGIER, R., 1977. Spondylosis in the whale – an anatomical study of an osteophyte. *Scand. J. Rhuematol.*, 6(4): 245–249.

OMURA, H., 1959. Bryde's whale from the coast of Japan. *Sci. Rep. Whales Res. Inst.*, 14: 1–33.

OMURA, H., 1962. Further information on Bryde's whale from the coast of Japan. *Sci. Rep. Whales Res. Inst.*, 16: 7–18.

OMURA, H., T. KASUYA, H. KATO and S. WADA, 1981. Osteological study of the Bryde's whale from the central south Pacific and Indian Ocean. *Sci. Rep. Whales Res. Inst.*, 33: 1–26.

PATERSON, R.A., 1984. Spondylitis deformans in a Bryde's whale (*Balaenoptera edeni* Anderson) stranded on the southern coast of Queensland. *Jnl. Wild. Dis.*, 20(3): 250–252.

PATERSON, R., 1986. Shark prevention measures working well. *Aust. Fish.*, 45(3): 12–18.

PATERSON, R., 1987. Recovery in the east Australian humpback whale stock. *Aust. Fish.*, 46(8): 32–36.

PATERSON, R. and P. PATERSON, 1984. A study of the past and present status of humpback whales in east Australian waters. *Biol. Conserv.*, 29: 321–343.

WATSON, L., 1981. *Sea guide to whales of the world*. Hutchinson, London. 302 pp.