

Distribution of the dolphins of the genus *tursiops* in the China Seas

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Introduction

The dolphins of the genus *Tursiops* occur in the Pacific, Indian and Atlantic Oceans. But only fragmentary data concerning their occurrence in the coastal waters of China and adjacent sea areas has been published so far. The aim of this paper is to present the records of twelve new localities for *Tursiops* from the waters off the Chinese coast and to summarize the present knowledge of the distribution of this genus in the China Seas (Figures 1 and 2).

Material

Most of the specimens examined are in the collections of the Department of Biology, Nanjing Normal University (NNU); the rest are deposited in the Department of Biology, Fudan University (FU) and the Shanghai Natural History Museum (SNHM). Of the total of 25 specimens, 15 large forms were identified as *Tursiops truncatus* and 10 small forms were judged to be *T. aduncus*.

Tursiops truncatus (Montagu 1821)

Localities of new records: Yellow Sea, 37°N, 124°15'E, 1 (NNU 7402); Yellow Sea, 36°55'N, 123°45'E, 2 (NNU 7403-4); Yellow Sea, 33°25'N, 122°25'E, 1 (FU 1303); Jianggang, Dongtai County, Jiangsu Province, 33°25'N, 121°E, 1 (NNU 8006); Shenshan, Zhejiang Province, 30°45'N, 122°50'E, 1 (NNU 7301); East China Sea, 30°45'N, 123°25'E, 1 (NNU 8004); East China Sea, 30°45'N, 123°15'E, 1 (NNU 8301); Zhoushan, Zhejiang Province, 30°N, 122°10'E, 1 (FU 1670). Localities of published records: China Sea, locality unknown, 1 (MNHN a3070, True 1889); Yellow Sea, 34°30'N, 124°30'E, 4 (NNU 7916-8, 7920, Zhou *et al.* 1982); East China Sea, 31°40'N, 122°10'E, 1 (FU 46, Huang *et al.* 1965); East China Sea, 28°45'N, 123°15'E, 1 (NNU 6401, Zhou, 1965). Localities of possible records: Penghu Is, Taiwan Province, 23°35'N, 119°38'E (Chen *et al.* 1976); Donggang, Bingdong County, Taiwan Province, 22°28'N, 120°26'E (Yang 1964); Okinawa, Japan, 26°30'N, 127°30'E (Nishiwaki & Uchida 1977); Goto Islands, Japan, 33°N, 129°12'E, 5 (Mizue & Yoshida 1961; Yoshida & Mizue 1961);

Matsuura, Japan, 33°20'N, 129°42'E, 5 (Mizue & Yoshida 1960).

According to True (1889), a skull of *Tursiops catalania* from the China Sea is deposited in the National Museum of Natural History in Paris; the precise locality of the specimen is unknown. *T. catalania* is synonymous with *T. aduncus*. Nevertheless, van Bree, who examined this skull in Paris, has kindly informed the first author that this should be referred to as *T. truncatus*. Published data of the specimens of *Tursiops truncatus* from the coastal waters of China also include 1 complete skeleton and 1 skull from the coastal waters of eastern China (Zhou 1965), 1 skull from the East China Sea near the mouth of the Yangtze River (Huang *et al.* 1965) and 4 individuals from the Yellow Sea (Zhou *et al.* 1982). The localities of *T. truncatus* in the coastal waters of China can be increased to 12 by virtue of the previously unpublished data communicated in the present paper. Yang (1964) reported the sighting of *Tursiops gilli* at the fishmarket in Jilong City and Bingdong County of Taiwan Province, and considered on the basis of photographs that this species also occurs in the Penghu waters. The occurrence of *T. gilli* in the waters near Penghu was also reported by Chen *et al.* (1976), although they did not examine the osteological character of the specimens. Therefore, their opinion cannot be confirmed before the large form of *Tursiops* from the coastal waters of Taiwan and Penghu has been investigated thoroughly. In our opinion the large form of *Tursiops* inhabiting the coastal waters of Taiwan and Penghu as well as that from the coastal waters of Chinese mainland can probably be referred to as *T. truncatus*.

In the areas of the East China Sea adjacent to Japan, the distribution of *Tursiops truncatus* reaches from near the Goto Islands, to near the Ryukyus Islands. The specific type of the *Tursiops* specimens from the Goto Islands, and Matsuura has not been identified by Mizue & Yoshida (1960, 1961), and Yoshida & Mizue (1961). Nishiwaki (1965), and Nishiwaki & Uchida (1977) have judged that the large form of *Tursiops* occurring in the waters from near the Goto Islands, and Okinawa Island of Japan to near Taiwan Province, China, is conspecific with

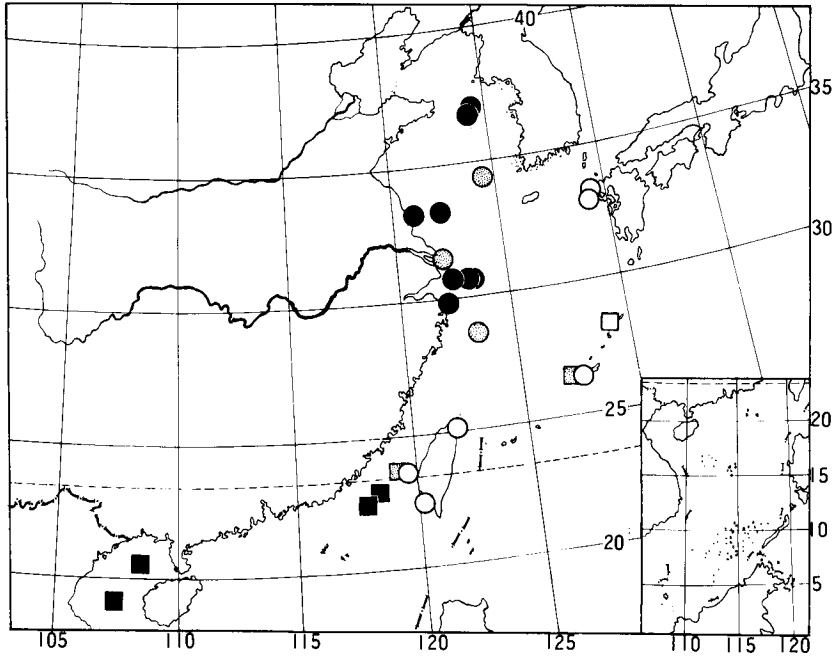


Figure 1. Localities for *Tursiops truncatus* and *Tursiops aduncus* in the China Seas. Circle: *Tursiops truncatus*; square: *Tursiops aduncus*; solid: new locality; stippled: previously published locality; open: possible locality.

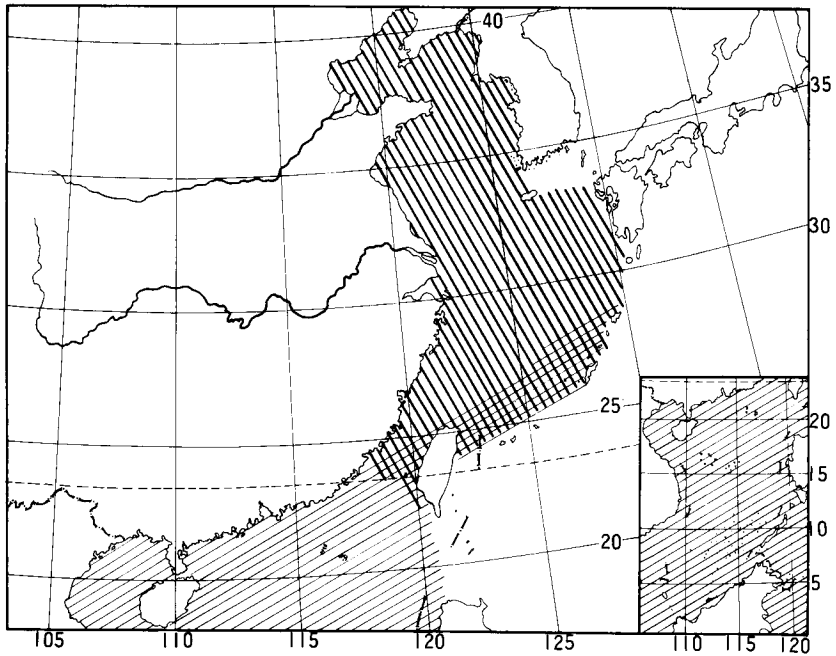




Figure 2. Distribution of *Tursiops truncatus* and *Tursiops aduncus* in the China Seas.  *Tursiops truncatus*  *Tursiops aduncus*.

T. gilli from the eastern Pacific of the American coast. *T. gilli* differs from other forms of *Tursiops* mainly in having relatively larger teeth and mandibular condyles (Walker 1981). Since no data for the above-mentioned criteria has been published by these authors for comparison, we doubt whether the large form of *Tursiops* found between Taiwan, China and the Goto Islands, Japan should be referred to as *T. gilli* and provisionally consider it to be *T. truncatus* before a general agreement on its taxonomic identification has been obtained by further investigations.

According to the distribution data of *Tursiops truncatus* in the China Seas now available, it is found in temperate waters and inhabits the waters between 25°N–37°N latitude in the East China, Yellow and Bohai Seas. The sea surface temperature of this sea area is about 4°C–20°C in February and 13°C–25°C in May. It indicates that *Tursiops truncatus* may be found in sea areas where the sea surface temperature is considerably lower than 20°C in February.

Mixed schools of *Tursiops truncatus* and *Pseudorca crassidens* have been seen on several occasions during fishing in the Yellow and Bohai Seas (Wang 1977). In 1979, four *Tursiops truncatus* were caught from a mixed school of *Tursiops truncatus* and *Pseudorca crassidens*; individuals of the latter were also taken by the same net (Zhou *et al.* 1982).

Tursiops aduncus (Ehrenberg, 1832)

Localities of new records: South China Sea, 23°15'N, 118°15'E, 4 (NNU 8123–6); South China Sea, 23°N, 118°E, 2 (NNU 7801–2); Gulf of Beibuwan, South China Sea, 20°30'N, 108°30'E, 1 (SNHM B04); Gulf of Beibuwan, South China Sea, 19°15'N, 107°15'E, 3 (NNU 8315–7).

Localities of published records: Penghu Is, Taiwan Province, 23°35'N, 119°38'E (Chen *et al.* 1976); Okinawa, Japan, 26°30'N, 127°30'E (Nishiwaki & Uchida 1977). Locality of possible records: Amami Is, Japan, 28°N, 129°E (Shimizu & Shibata 1961).

The specimens of *T. aduncus* taken from the South China Sea off the mainland of South China reported for the first time in the present paper are worthy of notice. In the East China Sea, *T. aduncus* has been recorded from near Penghu Is. of Taiwan Province (Chen *et al.* 1976) and Okinawa, Japan (Nishiwaki & Uchida 1977). At Penghu Island, *T. aduncus* and *T. truncatus* were caught together from mixed schools of these two species by drive fisheries.

Shimizu & Shibata (1961) have not assigned the specific name for the *Tursiops* specimen taken from the Amami waters. The published description indicates that it is a female of 180.5 cm in length and that the total number of its vertebrae is 60. In the

light of the smaller body size and lower vertebral number, we suppose it is quite probable to refer it to as *Tursiops aduncus*. Consequently, the ranges of *T. aduncus* and *T. truncatus* overlap between Taiwan and Amami in the East China Sea. The present data indicates that this species inhabits warm temperate waters, is widely distributed in the South China Sea and lives in the eastern border of the East China Sea. The northern range of *T. aduncus* in the East China Sea is roughly that of the sea areas where the sea surface temperature is about 20°C in February.

Conclusions

Two species of the genus *Tursiops* are widely distributed in the China Seas. *T. truncatus* is found in the Yellow, Bohai and East China Seas. *T. aduncus* occurs in the South China Sea and also lives in the eastern border of the East China Sea where the range of the two species overlap. Mixed schools of *T. truncatus* and *T. aduncus* have been found at Penghu Is.

Acknowledgements

Thanks are due to the Shanghai Natural History Museum and Prof. Huang Wengi (Fudan University, Shanghai) who extended the privilege of studying their specimens. We also wish to thank the technical assistance rendered by Cheng Hua, Xu Xinrong and Gu Yimin. We are grateful to Dr P. J. H. van Bree (Institute of Taxonomic Zoology, Amsterdam) for his helpful suggestions on the manuscript and Mrs. Susan Massotty (DUT) for her valuable input into the editing of this paper.

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