

First Record of the Fraser's Dolphin (*Lagenodelphis hosei*) in Korean Waters

Hyun Woo Kim^{1,*}, Yong-Rock An¹, Du Hae An¹, Zang Geun Kim²

¹Cetacean Research Institute, National Fisheries Research and Development Institute, Ulsan 680-050, Korea

²Fisheries Resources Research Division, National Fisheries Research and Development Institute, Busan 619-705, Korea

ABSTRACT

The Fraser's dolphin, *Lagenodelphis hosei* has a pantropical distribution. Only several stranding or catch data were available from Japan and Taiwan in the north-west Pacific region. An adult female *L. hosei* stranded in Jeju-do, Korea. The specimen was identified by external features and skull measurements. It showed the same external appearance ratio and range in the number of teeth with *L. hosei* former described. The cranial measurements also well corresponded to condylobasal length proportions given in the previous descriptions of the holotype. This is the first record of the species in Korean waters. We report the information on external and osteological characters of the specimen.

Keywords: first record, Fraser's dolphin, *Lagenodelphis hosei*, Jeju-do, Korea

INTRODUCTION

The Fraser's dolphin, *Lagenodelphis hosei* is poorly known cetacean species, which was relatively recently described by Fraser (1956) based on a skeleton collected from a beach in Sarawak, Borneo in 1895. It was rediscovered by Perrin et al. (1973) based on external coloration and form of the species.

This species has a pantropical distribution, largely between 30°N and 30°S (Jefferson et al., 1993). Several stranding records were reported in temperate areas such as France and United Kingdom (Duguay, 1984; Bones et al., 1998). However, these were considered unusual and were probably influenced by temporary oceanographic events (Louella and Dolar, 2009).

In the north-west Pacific region, there are only 4 documented stranding or catch records of the species in Japan (Amano, 2009). Some were sighted and taken in fisheries in Taiwan (Kaiya et al., 1995). However, the species was not recognized from Korea.

An adult female *L. hosei* carcass (registration No: CRI 00009) was found on the beach at Pyoseon-ri, Seogwipo-si, Jeju-do, Korea (33°19'N, 126°50'E), 15 Jun 2006. External

characters of CRI 00009 were measured following Norris (1961). Specimen measurement was taken using a steel tape to the precision of 0.1 cm. Cranial characters were measured as described by Perrin (1975) with vernier calipers to 1 mm. Dental and vertebral formula were counted as meristic characters. The examined specimen was deposited in the Cetacean Research Institute (CRI), National Fisheries Research and Development Institute, Korea. We present the first record of *L. hosei* in Korean waters and provide the information on external and osteological characters.

SYSTEMATIC ACCOUNTS

Infraorder Cetacea Brisson, 1762
Superfamily Odontoceti Flower, 1867
Family Delphinidae Gray, 1821
¹*Genus *Lagenodelphis* Fraser, 1957

²**Lagenodelphis hosei* Fraser, 1956 (Table 1, Figs. 1, 2)
Lagenodelphis hosei Fraser, 1956: 496; Perrin et al., 1973:

Korean name: ¹*셋돌고래속 (신칭), ²*셋돌고래 (신칭)

© This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

*To whom correspondence should be addressed
Tel: 82-52-270-0980, Fax: 82-52-270-0913
E-mail: hyunwoo.kim@korea.kr

Table 1. Skull measurements of CRI 00009 specimen compared with holotype

| Measurements | CRI 00009 (this study) | | Fraser, 1956 (holotype) | |
|--|------------------------|---------|-------------------------|---------|
| | Value (mm) | CBL (%) | Value (mm) | CBL (%) |
| Condylbasal length | 412 | | 413 | |
| Length of rostrum | 211 | 51.2 | 226 | 54.7 |
| Width of rostrum at base | 125 | 30.3 | 121 | 29.3 |
| Width of rostrum at 60 mm | 80 | 19.4 | 85 | 20.6 |
| Width of rostrum at midlength | 65 | 15.8 | 71 | 17.2 |
| Width of premaxillaries at midlength of rostrum | 27 | 6.4 | | |
| Width of rostrum at 3/4 length | 49 | 11.8 | | |
| Distance from tip of rostrum to external nares | 273 | 66.3 | | |
| Distance from tip of rostrum to internal nares | 250 | 60.7 | | |
| Greatest preorbital width | 205 | 49.8 | 207 | 50.1 |
| Greatest postorbital width | 224 | 54.2 | 230 | 55.7 |
| Least supraorbital width | 201 | 48.8 | 202 | 48.9 |
| Greatest width of external nares | 48 | 11.5 | | |
| Greatest width across zygomatic processes of squamosal | 220 | 53.3 | 225 | 54.5 |
| Greatest width of premaxillaries | 76 | 18.3 | 82 | 19.9 |
| Greatest parietal width | 179 | 43.4 | 170 | 41.2 |
| Greatest length of left post-temporal fossa | 76 | 18.3 | | |
| Greatest width of left post-temporal fossa | 47 | 11.3 | | |
| Length of left orbit | 54 | 13.0 | | |
| Length of antorbital process of left lacrimal | 53 | 12.7 | | |
| Greatest width of internal nares | 45 | 10.9 | | |
| Greatest length of left pterygoid | 86 | 20.9 | | |
| Length of upper left tooth row | 194 | 47.0 | 194 | 47.0 |
| Length of lower left tooth row | 193 | 46.8 | 193 | 46.7 |
| Greatest length of left ramus | 345 | 83.7 | 350 | 84.7 |
| Greatest height of left ramus | 65 | 15.8 | 70 | 16.9 |
| Length of left mandibular fossa | 349 | 84.7 | | |

CBL (%), percentage of condylbasal length.



Fig. 1. Fraser's dolphin (*Lagenodelphis hosei*) stranded in Jeju-do, Korea, showing body shape. Photo by Kim BY.

345; Tobayama et al., 1973: 251; Bones et al., 1998: 460; Mignucci-Giannoni et al., 1999: 15.

Description. External morphology: Body streamlined and robust. Gently rounded head. Distinct short beak. Number of teeth 40 in each upper row, 44 in left under row and 41 in

right under row. Relatively short appendages. Triangular but slightly falcate dorsal fin located mid-back. Small flippers with pointed tips. Flukes concave edges and distinct notch in the middle. Body color is dark gray on the back yellowish and white on the belly.

External measurements (cm): Total body length 221.0,

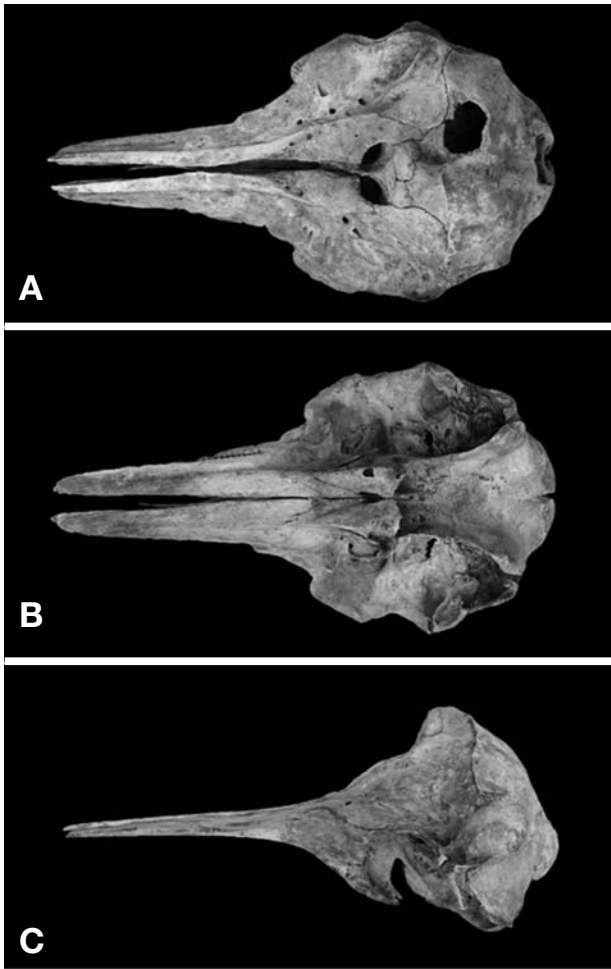


Fig. 2. Skull of a *Lagenodelphis hosei* (CRI 00009) stranded in Jeju-do, Korea. A, Dorsal view; B, Ventral view; C, Lateral view.

snout to gape 26.7, snout to blowhole 32.5, snout to eye 32.5, snout to external auditory meatus 38.0, snout to anterior insertion of flipper 40.5, snout to posterior dorsal fin 93.2, snout to umbilicus 101.3, snout to genital aperture 143.1, snout to anus 156.4, maximum width of dorsal fin 29.3, height of dorsal fin 14.5, anterior length of flipper 24.5, posterior length of flipper 17.0, maximum width of flipper 7.5, width of flukes 47.5, nearest point on anterior border of flukes to notch 13.5, girth on anus 63.0, girth on umbilicus 97.0.

Osteological characters: Cranial characters of CRI 00009 are shown in Table 1. Dorsal view of the skull is slightly asymmetry especially around external nares part (Fig. 2). The vertebral formula was cervical 7, thoracic 15, lumbar 21 and caudal 29. Some caudal vertebrae which were missed during preparation were not included. The first two cervical vertebrae were fused. The junction of spinous process between

fifth and sixth cervical vertebrae was also observed.

Remarks. *Lagenodelphis hosei* can be confused with striped dolphin (*Stenella coeruleoalba*) in external appearance at a distance. However, they have the most robust body shape among the pantropical dolphin species. The flippers, dorsal fin and flukes of the species are small, compared with those of other dolphins. The flipper length of *L. hosei* is about 10–13% of the total length. The height of dorsal fin represent <9% of the total body length. Flipper length and width of fluke represent about 10–13% and 20–24% of the total body length, respectively (Jefferson and Leatherwood, 1994). Normal tooth counts *L. hosei* are 36–44 in each upper row and 34–44 in each lower row (Perrin et al., 1994). The present specimen shows the same external appearance ratio (6.5% in dorsal fin height, 11.1% in flipper length and 21.5% in fluke width) and range in the number of teeth with *L. hosei* formerly described in the papers.

Cranial measurements of the present specimen also well corresponded to condylobasal length proportions given in the previous descriptions of the holotype provided by Fraser (1956) (Table 1).

ACKNOWLEDGMENTS

This work was supported by the National Fisheries Research and Development Institute (RP-2012-FR-046). We are grateful to Dr. Kim BY at Jeju National University and Dr. Kim SH at NFRDI for their reporting of the stranded specimen.

REFERENCES

- Amano M, 2009. *Lagenodelphis hosei* Fraser, 1956. In: The wild mammals of Japan (Eds., Ohdachi SD, Ishibashi Y, Iwasa MA, Saitoh T). Shoukadoh, Kyoto, pp. 366-367.
- Bones M, Neill B, Reid B, 1998. Fraser's dolphin (*Lagenodelphis hosei*) stranded on South Uist: first record in U.K. waters. *Journal of Zoology*, 246:443-486.
- Duguay R, 1984. Rapport annuel sur les cétacés et pinnipèdes trouvés sur les côtes de France. XIII. Année 1983. *Annales de la Société des Sciences Naturelles de la Charente-Maritime*, 7:189-205.
- Fraser FC, 1956. A new Sarawak dolphin. *The Sarawak Museum Journal*, 7:478-503.
- Jefferson TA, Leatherwood S, 1994. *Lagenodelphis hosei*. *Mammalian Species*, 470:1-5.
- Jefferson TA, Leatherwood S, Webber MA, 1993. *FAO species identification guide: marine mammals of the world*. FAO, Rome, pp. 1-320.
- Kaiya Z, Leatherwood S, Jefferson TA, 1995. Records of small cetaceans in Chinese waters: a review. *Asian Marine Bio-*

- logy, 12:119-139.
- Louella M, Dolar L, 2009. Fraser's dolphin *Lagenodelphis hosei*. In: Encyclopedia of marine mammals (Eds., Perrin W, Würsig B, Thewissen JGM). Academic Press, San Diego, CA, pp. 469-471.
- Mignucci-Giannoni AA, Montoya-Ospina RA, Pérez-Zayas JJ, Rodríguez-López MA, Williams EH Jr, 1999. New records of Fraser's dolphins (*Lagenodelphis hosei*) for the Caribbean. Aquatic Mammals, 25:15-19.
- Norris KS, 1961. Standardized methods for measuring and recording data on the smaller cetaceans. Journal of Mammalogy, 42:471-476.
- Perrin WF, 1975. Variation of spotted and spinner porpoise (genus *Stenella*) in the eastern Pacific and Hawaii. Bulletin of the Scripps Institution of Oceanography, 21:1-206.
- Perrin WF, Best PB, Dawbin WH, Balcomb KC, Gambell R, Ross GJB, 1973. Rediscovery of Fraser's dolphin *Lagenodelphis hosei*. Nature, 241:345-350.
- Perrin WF, Leatherwood S, Collet A, 1994. Fraser's dolphin *Lagenodelphis hosei* Fraser, 1956. In: Handbook of marine mammals. Vol. 5. The first book of dolphins (Eds., Ridgway SH, Harrison SR). Academic Press, London, pp. 225-240.
- Tobayama T, Nishiwaki M, Yang HC, 1973. Records of the Fraser's Sarawak dolphin (*Lagenodelphis hosei*) in the western North Pacific. Scientific Reports of the Whales Research Institute, 25:251-263.

Received August 31, 2012
Revised November 23, 2012
Accepted November 28, 2012