A malformed sperm whale with two nostrils

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Toothed whales have a single external nostril. The sperm whale (*Physeter catodon* L.) has also a single nostril, but the position and the shape of the nostril are characteristic. It is situated on the left side near the front of the head, and its form resembles the letter S.

When I was on board of a whaling factory ship "Tonan Maru" as an inspector in the North Pacific in 1968, I found a sperm whale with two nostrils. The biological data of this whale are as follows: It was female, and 11.9 m in body length. It was caught at the position of 44°24'N, 136°43'W on August 2. The thickness of blubber was 9.5 cm at the side position below the dorsal fin. So, it was as fat as normal females. There were one corpus luteum and 9 corpus albicantia in the ovaries of this whale. It was pregnant, and the foetus was male and 19 cm long.

There were some differences in shape and size between the left and right nostrils of this whale. The left nostril situated in parallel to the body axis, but the right one was set about 45° to the axis as shown in Plate 1, Fig. 1. The slit of the left nostril was 22 cm long, and the other one was 13 cm long.

The shape of the left nostril was similar to that of normal sperm whale, although the former was little smaller than the latter. On the other hand, the shape of right nostril was different from the left one.

The form of the right nostril slit resembled the letter J, and an elliptical rise of skin surrounded the nostril as shown in Plate 1, Fig. 2.

Diagrams of nostrils and nasal passages are shown in Text Fig. 1A and B. The left nostril of this whale leads down into a small vestibule of the left nasal passage, and leads backward into the pipe-like left nasal passage as same as normal sperm whale (RAVEN and GREGORY, 1933). The slit of right nostril is descended obliquely to the front end of the head, and is connected with the right side of distal sac. The distal sac of this whale is more enlarged than that of normal one in the right part. In the hinder wall of the distal...
Fig. 1. Diagrams showing relations of the nostrils and nasal passages in a deformed sperm whale. A: Top projection. B: Sidal projection.


sac, mouth like slit, called museau de singe by POUCHET and BEAUREGARD (1885), was found in this whale. From the front end of the vestibule of left nostril, a small canall also leads the distal sac. Therefore, the left and right nostril connect together through the distal sac. A comparison of frontal view of nasal parts between this whale and the normal sperm whale is shown in Fig. 2.

Two—left and right—nostrils are open in the middle of the forehead in early foetal stage of the sperm whale (BEDDARD, 1915, 1919; RAVEN and GREGORY, 1933; PALIZA, 1964). However, this paired structure is lost before the foetus grows to 8.5 cm in body length, and by the length of foetus attains to 36 cm, it shifts to the left side of the forehead. And it becomes characteristic shape and position of the sperm whale nostril in the 45 cm long foetus (PALIZA, 1964).

Estimating from above developmental knowledge of the sperm whale nostril, the present deformed sperm whale must not have united
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Fig. 2. A comparison of frontal view of nasal parts between a deformed sperm whale and the normal one. A: Normal sperm whale. B: Deformed sperm whale.

LB: Left nostril, RB: Right nostril, LN: Left nasal passage, RN: Right nasal passage, B: Blubber, D: Distal sac, M: Museau de singe

the both nostrils. Raven and Gregory describe that distal sac is an expansion of the right nostril cavity, and museau de singe represents the right nostril. Then, museau de singe does not represent the right nostril, but it is a characteristic structure of the right nasal passage.

According to the information of a crew of the catcher boat which caught the present malformed sperm whale, the right nostril of this whale was functional as well as the left nostril. It is interesting that he also observed a small sperm whale which had also two functional nostrils while he was pursuing the herd from which the present whale was caught. I guess that these whales were in relation of cow and calf. The present whale had a foetus in its berry. Unfortunately I had no chance to observe the nostrils of the foetus, because it had been lost before I noticed to observe it.

References