MYCTOPHID FISH FROM THE ASHIKAWA FORMATION,
SOUTHERN FOSSA MAGNA, JAPAN

by

Jirō Satō*

I Introduction

In January 1963 when the writer studied a fish fossil specimen at the Geological and Mineralogical Institute, University of Kyoto, he noticed that it was possibly identical to Lampanyctenuis nanae SATO, one of the species of Kunimitoge fauna he had previously found in Iwate Prefecture (SATO, 1962). Since the present specimen occurred at a locality far away from the latter, the writer visited the place in August 1963. Knowledge gained through the field survey has enabled him to describe here the specimen in association with stratigraphical views.

It was kindness of the members of the Custody Committee of Fossil Specimens of the above-mentioned institute—especially Dr. Shiro ISHIDA, and Prof. Motonoshin TANAKA, Yamanashi University that the writer was allowed to access to the specimen under report. Dr. Atsuyuki MIZUNO, the Geological Survey of Japan, and Dr. Tokihiko MATSUDA, the Earthquake Research Institute, University of Tokyo, gave him advice on stratigraphical problems of the Nishiyatsushiro Group. He also had guidance on ichthyology from Prof. Kiyomatsu MATSUBARA, Department of Fisheries, Faculty of Agriculture, Kyoto University. For these assistances the writer expresses here his hearty thanks to them.

II Background of the Specimen

The specimen under study occurred at the foot of the eastern cliff of the River Toita that runs through Kumazawa, Shimobe Town, Nishi-Yatsushiro Province, Yamanashi Prefecture (Fig. 1). By Prof. M. TANAKA's information, sometimes around 1945 M. Sadao ITO, Kumazawa 545, Shimobe-Town, happened to find the specimen when he was looking for materials for his whetstone. Then it was transported to Yamanashi University where Prof. M. TANAKA asked Prof. J. MAKIYAMA, University of Kyoto, to determine the fossil as to species. At present it was placed under the care of Yamanashi University once again.

III Occurrence of the Specimen and the
Horizontal Distribution of the
Fossiliferous Bed

Some of important features of the fossil specimen under report are these. 1) It was contained
in a greenish blue tuff which was compact, fine and more than five meters in thickness. 2) When the writer paid a visit to the spot in August 1963 as stated above in the hope of collecting additional specimens, he could find none of its kind at all. For this reason, the specimen is apparently the only one so far found out of that particular bed. 3) The specimen was finely impressed upon a fine tuff in parallel with the laminated plane of the latter with no primary destruction or distortion of the body was the case with the Kunimitoge fossil. 4) The fossiliferous bed is intercalated in the alternation of tuff and mudstone layers. 5) The upper part of the bed is gradually changing into a comparatively thick whitish tuff of ryholitic breccia.

A few assumptions may be proposed on the basis of evidences enumerated above. First the absence of similar fossils from the spot surveyed suggests that a number of fossils, if may, of similar fauna may be scatteredly contained in the bed as were those of Kunimitoge. The fossil was found preserved in a state resembling that of the Kunimitoge fauna, as well. By analogy, therefore, it is presumed that the fish might also be put into extinction and deposition by similar causes as probably affected the latter. Namely, the particular individual of fish might be stiffed by ashy water due to submarine volcanic activity and immediately buried under fast deposition of the ash before it could be decayed.

According to the stratigraphical succession Mizuno and Katada (1958) proposed for the region under report, the alternatively intercalated fossiliferous bed corresponds to the middle of Kumazawa tuff breccia members of the Ashikawa formation, the Nishiyatsushiro group. Mizuno (1957) suggested to divide the Tertiary fauna of the Pacific region, South-western Japan, into six zones. When applied to this classification, the successive beds dealt here seem to belong to the fourth zone and is regarded as the middle or younger Miocene.

**Description of Species**

Although the state of preservation should have originally been good, the specimen is not so finely preserved with posterior half of body being almost disappeared. Moreover, as the specimen had been given the last coat with canadian balsam for the protection of weathering, cleaning work was very difficult. For that reason, it was impossible for the writer to confirm the skull in detail. However, it is certain that the present fish is referable to family Myctophidae in general physiognomy and at least in having the following features: Inter-muscular bones such as epineural and eppleural are well preserved; adipose fin is visible; pelvic fin is situates the belly region, anal fin is beginning far posteriorly to the middle of body, and all fins seem to be soft fin ray; eye and mouth appear to be very large. In addition, the characteristics of the present species described below resemble those of Lampadena nanae Sato from the Kunimitoge formation.

For the time being, therefore, the writer describes the present species as Lampadena cf. nanae Sato, although comparative osteological revision between the Kunimitoge specimen and the present one has been made yet.

**Lampadena cf. nanae Sato**

(Fig. 2)

*Lampadena nanae* Sato, 1962, pp. 11-14, figs. 21-24, pl. IV.

The present specimen measures about 135 mm, in estimated total length, having the following counts, dimensions and measurements.

D. 14; A. 12+59); V. and P. are invisible; number of fish scale is also uncertain. Abdominal vertebrae counts about 18 and caudal is 14+59).

Estimated standard length is ca. 102 mm; depth of body, 26 mm; head length, 33 mm; depth of head, ca. 20 mm; snout ca. 4.5 mm; diameter of orbital fossa, ca. 10 mm; distance from tip of snout to dorsal insertion, ca. 50 mm; distance from tip of snout to pelvic insertion, 46 mm; distance from tip of snout to anal insertion, 71 mm; length of dorsal fin base, ca. 18 mm; length of anal fin base is ca. 17 mm.

Head is ca. 3.1 in standard length; depth of body, 3.92; depth of head, ca. 5.1; distance from tip of snout to dorsal insertion, ca. 2.0; distance from tip of snout to anal insertion. ca. 1.44; distance from tip of snout to pelvic insertion, ca. 2.2.

Head is moderately large. Eye and mouth are very large. Snout is rather short and bruntly pointed. Lower jaw is extending far beyond a perpendicular drawn through posterior end of orbital fossa. Posterior border of preopercular bone is inclined backward and downward.

Body is elongate and compressed with the deepest the appears to be situated at dorsal insertion. Dorsal fin begins before midway between tip of snout and base of caudal fin, and pelvic fin is situated at a point corresponding to dorsal insertion. Anal fin begins at a point on a perpendicular drawn from posterior end of dorsal fin base. Base of dorsal fin is somewhat longer than, or as long as base of anal fin. Adipose fin and anal insertions occur opposite with each other.
Neural and haemal spines are more or less feeble. Epipleural and epineural bone are well developed. Depository: Department of Earth Science, Yamanashi University, Kofu City. Geological age and formation: Middle or Upper Miocene, the Ashikawa Formation, Nishiyatsushiro Group, Yamanashi Prefecture, Japan.

References


MATSUDA, T. (1957) Late Tertiary Stratigraphy and Development of Folding in the Upper Fuji
南部フォッサマグナ西八代層群
芦川累層産の中新世ハダカイワ
シ類 Lampadena cf. nanae
SATO について

佐藤二郎

（要約）
西八代層群芦川累層熊沢礫角礫岩部層から産した化石魚1体を調べた結果、見附フォーナ（佐藤、1962）の1員である Lampadena nanae Sato に酷似することがわかった。同標本の記載と層位学的問題にふれてる。