On the Occurrence of the Lanternfish *Electrona rissoi* in Japan

Tadashi Kubota and Teruya Uyeno

(Received March 2, 1972)

The genus *Electrona* with 5 or 6 species (Bekker, 1967) is one of the most primitive genera of the family Myctophidae (Bolin, 1939). *E. rissoi* (Cocco) has been reported from the eastern and middle Atlantic (Brauer, 1906; Norman, 1930; Legendre, 1934; Bolin, 1959; Blache and Stauch, 1964; Trunov, 1968), Mediterranean Sea (Tåning, 1918), Indian Ocean (Brauer, 1906; Nafpaktitis and Nafpaktitis, 1969), and the eastern North and South Pacific (Aron, 1960; Andriyashev, 1962; Bekker, 1963; Craddock and Mead, 1970).

Dekhnik and Sinyukova (1966) surveyed the vertical and horizontal distribution of the young of this species in the Mediterranean Sea and reported that this species lives in the layer between 50 to 500 m below the surface, being most abundant around 200 m both day and night.

Moser and Ahlstrom (1970) reported on detailed morphological changes during the growth from the embryological to the early larval stages in specimens collected in the eastern Pacific. But there has been no report on this species from the western North Pacific (Fig. 1).

Bekker (1967) discussed some aspects of the distribution of *E. rissoi* in the Pacific Ocean, considering the possibility that the Pacific form slightly differs from the Atlantic form. Maruyama (1970) reported *Electrona arctica* (Lütken) from off Esan, Hokkaido, but this species has recently been considered as a synonym of *Protomyctophum thompsoni* (Chapman) by Andriyashev (1962) and Bekker (1963).

In the spring of 1971 and 1972, students of the college of Marine Science and Technology, Tokai University, collected 9 specimens of *Electrona rissoi* at Miho Beach in Suruga Bay, Shizuoka Prefecture, Japan, and brought them to us. These 9 specimens constitute the first record of *Electrona,* not only from Japan but also from the western Pacific (Fig. 2). So we here report on them giving the Japanese name "Darumahadaka".

The first specimen was collected by T. Nakazato at the sand beach of Mazaki, Miho Key, on April 23, 1971. Two more specimens (TUMF 71513-1 and 2) were found at the beach near Shimizu lighthouse by T. Abe on May 13, 1971. The fourth one (TUMF 71514) was collected by H. Maruyama on the beach

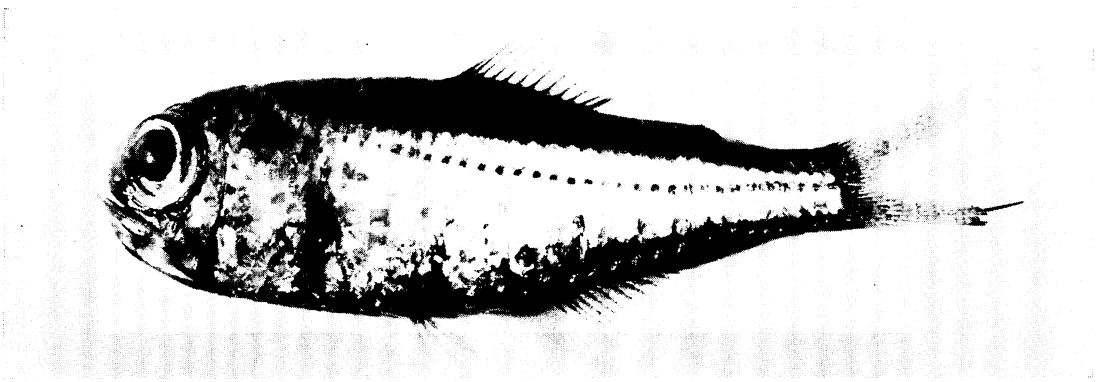

Fig. 1. *Electrona rissoi* (Cocco) from Suruga Bay. 78.7 mm in standard length.

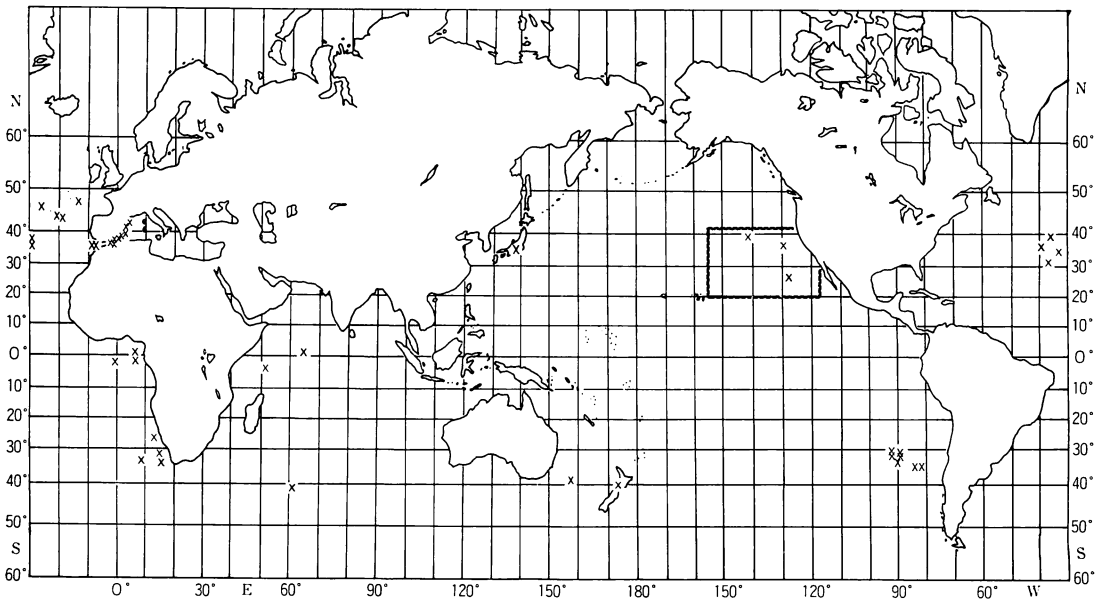

Fig. 2. The distribution records of *Electrona rissoi*.

at Komagoe, about 5 km from the lighthouse, on May 14, and fifth one was obtained by Y. Abe on November 16, 1971 near the locality. Recently on May 12 and 18, 1972, sixth and seventh specimens were collected by E. Fujii on the beach near the lighthouse. On May 18th and 30th, H. Arasaki found eighth and ninth specimens in excellent condition on the same Miho beach. Three specimens with catalogue numbers are deposited in the Department of Fisheries, College of Marine Science and Technology, Tokai University (TUMF).

These 9 specimens found in Suruga Bay are morphologically not much different from specimens reported from other parts of the world, and especially agree well with the description by Andriyashev (1962). Results of meristic counts and measurements on 4 of these specimens are listed in Table 1. Eight of 9 specimens do not have luminous gland on the dorsal and ventral sides of the caudal peduncle and are males (Andriyashev, 1962), only 7th specimen collected on May 18th was female with eggs and luminous organs on the dorsal and ventral side of the caudal peduncle.

Although previous reports on *E. rissoi* included drawings of various quality, we have not found photographs of the species in these publications, hence a photograph is included in this report (Fig. 1).

The largest specimen of *E. rissoi* ever reported is 72 mm in standard length, collected in the Cape Town region of South Africa (Norman, 1930). The specimens from Suruga Bay range 78.7 to 90.5 mm in standard length and are larger than specimens previously recorded.

We would like to express our appreciation to Messrs. Takashi Abe, Yōji Abe, Hideyoshi Maruyama, Takashi Nakazato, Eiichi Fujii, and Hiroshi Arasaki who brought specimens of *Electrona rissoi* to us. We are also thankful to Mr. Richard McGinnis of the University of Southern California, who helped us in providing information on the literature.

Literature cited

Andriyashev, A. P. 1962. Bathypelagic fishes of the Antarctic. 1. Family Myctophidae. Biological Report of the Soviet Antarctic Expedition (1955–1958). Zool. Inst. Acad. Sci. USSR, Moscow, 1(9): (216–300, figs. 1–36. In English translation

Table 1. Counts and measurements (in mm) of specimens of *Electrona rissoi* from Suruga Bay, Japan, and other regions.
Numerals in parentheses are the percentage of the standard length.

	Specimens from Suruga Bay				Atlantic Ocean Bolin (1959)	Pacific Ocean Andriyashev (1962)
	TUMF 71513–1	Apr. 23, 1971	TUMF 71513–2	TUMF 71514		
Standard length	78.7	80.0	81.0	90.5	—	64.5, 65.5
Head length	23.7 (30.1)	25.6 (32.0)	26.1 (32.2)	29.7 (32.8)	—	(33.2), (34.4)
Depth of body	26.5 (33.7)	26.2 (32.8)	27.1 (33.5)	28.4 (31.4)	—	(35.4), (35.2)
Distance from snout to origin of dorsal fin	37.1 (47.1)	38.0 (47.5)	38.5 (47.5)	43.4 (48.0)	—	(50.2), (51.2)
Distance from snout to origin of anal fin	47.5 (60.4)	49.2 (61.5)	50.0 (61.7)	56.5 (62.4)	—	(63.6), (64.4)
Diameter of orbit	9.6 (12.2)	9.7 (12.1)	10.8 (13.3)	11.9 (13.1)	—	(14.0), (14.1)
Number of dorsal rays	14	12	14	14	13–14	14–15
Number of anal rays	20	20	20	20	18–19	20
Number of pectoral fin (Left: Right)	16: 16	15: 15	16: 16	16: 16	13–16	15
Number of pelivic fin (Left: Right)	8: 8	8: 8	8: 8	8: 8	8	—
Number of gill rakers on 1st arch of left side	10+1+21	8+1+20	—	9+1+21	8~9+1+17~20	8+1+19~20
Number of lateral line scales	34	34	35	34	—	—
Number of vertebrae	34	34	34	34	—	33–34
Photophore: PO (Left: Right)	5: 5	5: 5	5: 5	5: 5	—	—
VO (Left: Right)	4: 4	4: 4	—	4: 4	—	—
AO (Left: Right)	11: 12	12: 12	—	12: 12	10~13	—
Sex	♀	♀	♀	♀	—	—

from Russian by the Israel Program for Scientific Translations, Jerusalem, 1966).

Aron, W. 1960. The distribution of animals in the eastern North Pacific and its relationship to physical and chemical conditions. Univ. Washington, Dept. Oceanogr., Technical Rep., (63): 1–65 + 156 appendix pages, figs. 1–13.

Bekker, V. E. 1963. North Pacific species of the genus *Protomyctophum* (Myctophidae, Pisces). Trudy, Inst. Okeeanol., 62: 164–191, figs. 1–8. (Translation No. 60, Bureau of Commercial Fisheries, U. S. National Museum).

Bekker, V. E. 1967. Myctophidae. *In* Fishes of Pacific Ocean. Pacific Ocean 7(3): (120–149, figs. 34–36. In Japanese translation published by Latis Co., Tokyo, 1971).

Blache, J. and A. Stauch. 1964. Contribution a la connacissomie des poissons de la famille des Myctophidae dans la partie orientale du Golf de Guinée (Teleostei, Clupeiformi, Myctophoidei). —Lère Note: Les Genus *Electrona* G. et B. 1895 *Hygophum* (Tan.) Bolin 1939. *In* Travaux de Centre Océanographique de Pointe-Noire. Cahiers O.R.S.T.O.M.—Oceanographie N°5.

Bolin, R. L. 1939. A review of the myctophid fishes of the Pacific coast of the United States and of California. Stanford Ichthyol. Bull., 1(4): 89–156, figs. 1–29.

Bolin, R. L. 1959. Iniomi Myctophidae from the "Michael Sars" North Atlantic deep-sea Expedtion 1910. Rep. Sci. Res. "Michael Sars" Exped. 1910, 4, pt. 2(7): 1–45, figs. 1–7.

Brauer, A. 1906. Die Tiefseefische. I. Systematischer Teil. Wiss. Ergebnisse Deutschen Tiefsee-Expedition, Valdivia, 1898–1899. 15: 1–432, figs. 1–176, pls. 1–18.

Craddock, J. E. and G. W. Mead. 1970. Midwater fishes from the eastern South Pacific Ocean. Sci. Results Southeast Pacific Exp., Anton Bruun Rep. Number 3: 1–46, figs. 1–11.

Dekhnik, T. V. and V. I. Sinyukova. 1966. Distribution of pelagic fish eggs and larvae in the Mediterranean Sea. Pt. II. On the reproduction and ecology of larvae of Mediterranean Myctophidae. *In* Studies on the plankton of southern Sea. Nauka, Moscow. 82–108, figs. 1–17. In Russian. (Translation No. 55, Bureau of Commercial Fisheries, U. S. National Museum).

Fraser-Brunner, A. 1949. A classification of the fishes of the family Myctophidae. Proc. Zool. Soc. London, 118, pt. 4: 1019–1106, figs. 1–14, pl. 1.

Legendre, R. 1934. La faune pelagique de l'Atlantique au large du Golf de Gascogne recueillie dans les estomacs de germons. Pt. 1. Poissons. Ann. L'Inst. Oceanogr., 14(6): 247–418, figs. 1–53.

Maruyama, K. 1970. Some deep-water fishes from off the Tohoku and adjacent regions. Bull. Tohoku Reg. Fish. Res. Lab., (30): 43–66, figs. 1–22. In Japanese.

Moser, H. G. and E. H. Ahlstrom. 1970. Development of lanternfishes (Family Myctophidae) in the California Current. Pt. I. Species with narrow-eyed larvae. Bull. Los Angeles County Mus. Nat. Hist., Sci., (7): 1–145, figs. 1–53.

Nafpaktitis, B. G. and M. Nafpaktitis. 1969. Lanternfishes (Family Myctophidae) collected during cruises 3 and 6 the R/V Anton Bruun in the Indian Ocean. Bull. Los Angeles County. Mus. Nat. Hist. Sci., (5): 1–79, figs. 1–82.

Norman, J. R. 1930. Oceanic fishes and flatfishes collected in 1925–1927. Discovery Rep., 2: 261–370, figs. 1–47, pls. 1–2.

Tåning, Å. V. 1918. Mediterranean Scopelidae (*Saurus, Aulopus, Chlorophthalmus* and *Myctophum*). Rep. Danish Ocean. Exped. 1908–1910. No. 5, 2 (A.7): 1–154, figs. 1–49.

Trunov, I. A. 1968. A new data on the distributions of *Electrona rissoi* (Cocco) and *Diaphus ostenfeldi* Taning (Myctophidae). Voprosy Ikhtiologii, 8(4): 745–748, figs. 1–2.

(Department of Fisheries, College of Marine Science and Technology, Tokai University, Orido, Shimizu-shi, Shizuoka-ken; Nippon Luther Shingaku Daigaku, Mitaka-shi, Tokyo, Japan)

日本および西太平洋で初記録のダルマハダカ(新称)とその分布

久保田　正・上野 輝弥

1971～2 年に駿河湾で 9 尾のダルマハダカが採集された．体長は 78.7～90.5 mm であって，これまでに報告されている最大のものよりさらに大きい．ダルマハダカは東および中部大西洋，地中海，インド洋，北および南太平洋東部海域に分布することがわかっていたが，今回の日本の個体により北太平洋西部にも分布していることが判明した．

(静岡県清水市折戸1,000　東海大学海洋学部水産学科・東京都三鷹市大沢3丁目　日本ルーテル神学大学)