

Notes on Some Fishes Associated with the Antarctic Krill

I. *Neopagetopsis ionah* NYBELIN*

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南極オキアミ漁で混獲された魚類について

I. カラスコオリウオ (新称) *Neopagetopsis ionah* NYBELIN*

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要旨: 南大洋特産のヘモグロビンを持っていないことで有名なコオリウオ科 Chaenichthyidae の魚の中、正確には2回 (しかも合計2尾) 報告されたに過ぎなかった *Neopagetopsis ionah* NYBELIN が、1976 年度および 1977 年度の南大洋オキアミ試験漁業で、少なからず混獲され、比較的良好な状態の標本が入手できたので、その形態や胃内容物観察とその肉の一般分析の結果を速報する。

形態は ANDRIASHEV (1960) (標本体長 50 cm) の標本と大体一致する。ただし、鰓条骨に 8~9 個と変異のあることは注目に価する。この魚にカラスコオリウオの新称を与える。

肉の一般分析は、冷凍保存されていた魚体を流水中で解凍し、魚肉を採取して乳ばちで均一化したものを分析試料として行った。水分、灰分は常法により、粗蛋白質は Kjeldahl 法により得られた総窒素量に 6.25 を乗じることにより、粗脂肪は Soxhlet 抽出器を使用し、エチルエーテルで 15 時間抽出し、その抽出物重量で示した。結果は水分 84.8%、粗蛋白質 11.9%、粗脂肪 2.0%、灰分 1.3% であった。

胃内容物中には南極オキアミが多数あり、これは大小 2 群に分けられる。大きい方は漁船の漁獲対象となったものと同じく体長約 5 cm であるが、小さい方は体長約 2 cm で、これは漁網の目を通り抜けたものと思われる。

ANDRIASHEV (1960) は 280 m の深さから底曳網で 1 個体を得たが、今回は表層近くで南極オキアミ漁により少なからず混獲された。

Abstract: Not a few specimens of the chaenichthyid fish *Neopagetopsis ionah* NYBELIN were observed among the Antarctic krill caught by the fisheries research vessels in the Southern Ocean from November 1976 to March 1977, and from November 1977 to March 1978. Some of them have been collected

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for study. They measure *ca.* 150–200 mm in standard length and are all much smaller than the adult (measuring 500 mm in standard length) reported by ANDRIASHEV in 1960, which was caught in a trawl at a depth of 280 m.

Results of the morphological and biological observations of the fish and chemical analysis of its flesh are given.

Among the fishes collected by scientists and crew of some of the fisheries research vessels dispatched to the Southern Ocean by the Japan Marine Fishery Resource Research Center (JAMARC), from November 1976 through March 1977, and from November 1977 through March 1978, are found some remarkable ones. The primary objective of the vessels was exploratory fishing of the Antarctic krill, but the fishes dealt with in the present series of papers were caught from time to time along with the krill and aroused interest of some biologists and biochemists on board. The writers wish to inform them about the names and nature of these fishes and to add to our knowledge of Antarctic fishes. It is with pleasure that the authors express their sincere thanks to Drs. Keiji NASU, Satoru NAKAMURA (both of JAMARC) and Mr. Takehiko WATANABE (Tokai Regional Fisheries Research Laboratory) for their kindness in making the valuable specimens available for study; to Dr. Toshio KOBAYASHI (National Food Research Institute) for his generosity in permitting the authors to use his motion picture and photographs of the living specimen of *N. ionah*; to Dr. Tri-Thuc NGUYEN (Ocean Research Institute, University of Tokyo) for the trouble of taking radiographs; and to YAMADA Science Foundation for supporting in part the present work. With but a few exceptions (to be exhibited at a primary school), the specimens will be kept by the senior author to be placed later at a proper organization.

Neopagetopsis ionah NYBELIN

Karasu-kôriuo* (new Japanese name)

Figs. 1, 2, 3, 4, 5 and Table 1

Neopagetopsis ionah NYBELIN, 1947: 46, pl. V, figs. 3, 4; ANDRIASHEV, 1960: 18, figs. 1, 2, 3, 4.

Specimens examined. Three specimens (ABE's Cat. Nos. 18177', 18178' & 18190'), measuring 193–230 mm in total length, collected by M. SUZUKI on January 18, 1978, at 64°05' S, 114°34' E, from among the Antarctic krill caught with mid-water trawl; one specimen bearing the same data as above, measuring 191 mm in standard length and weighing 80.5 g, for chemical analysis and examination of the stomach contents; four specimens measuring 220–250 mm in total length, col-

* Karasu=crow; kôri=ice; uo=fish; kôriuo means chaenichthyids.

Fig. 1. *Neopagetopsis ionah* NYBELIN (ABE's Cat. No. 18177'), measuring 193 mm in total length.

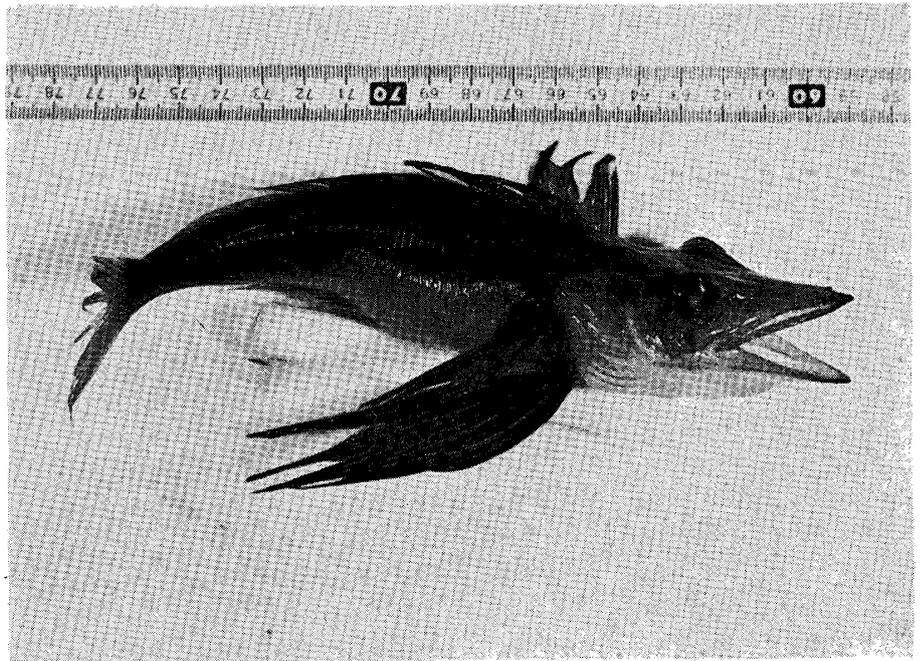


Fig. 2. The same specimen as shown in Fig. 1.

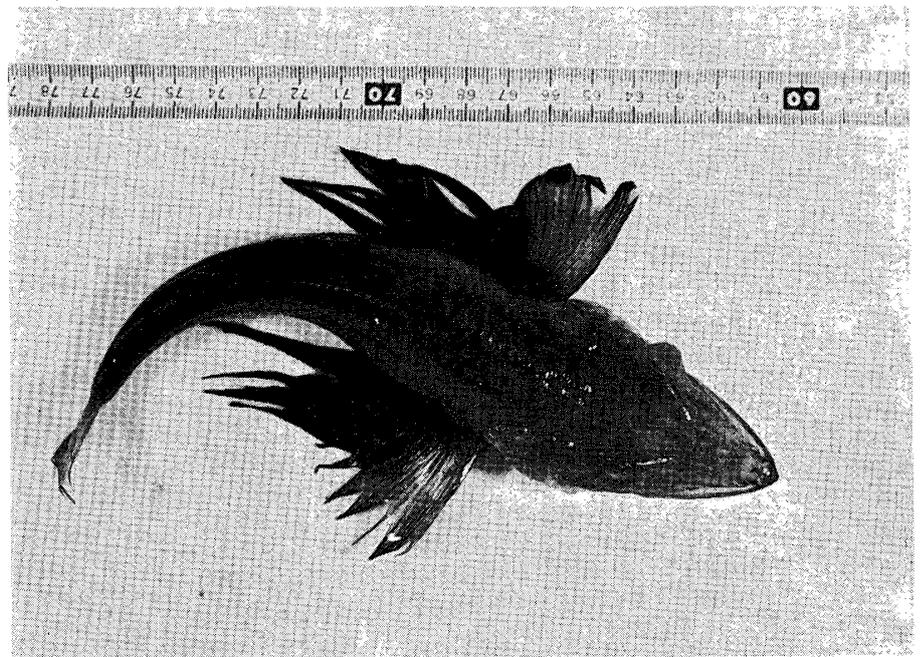
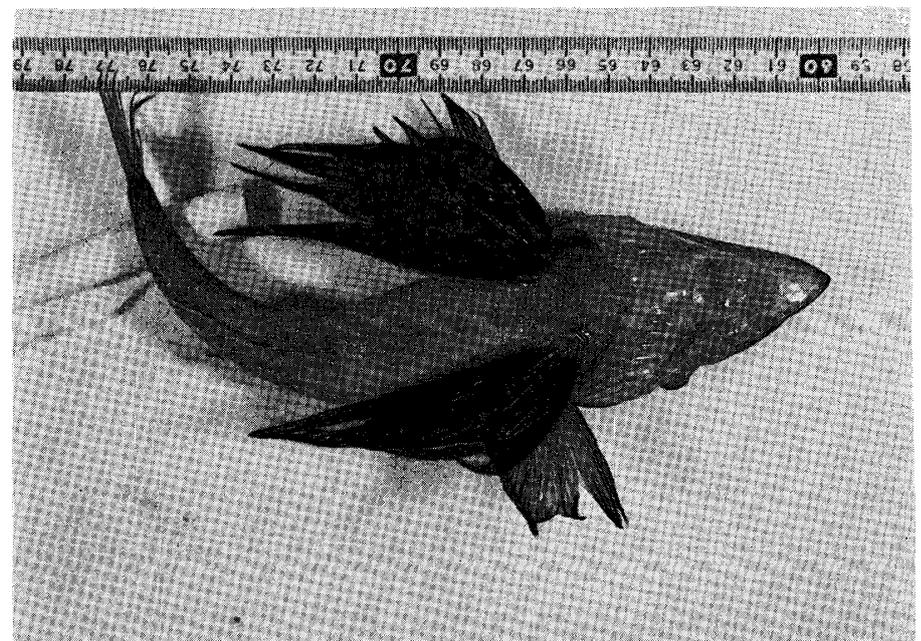


Fig. 3. The same specimen as shown in Figs. 1 & 2.



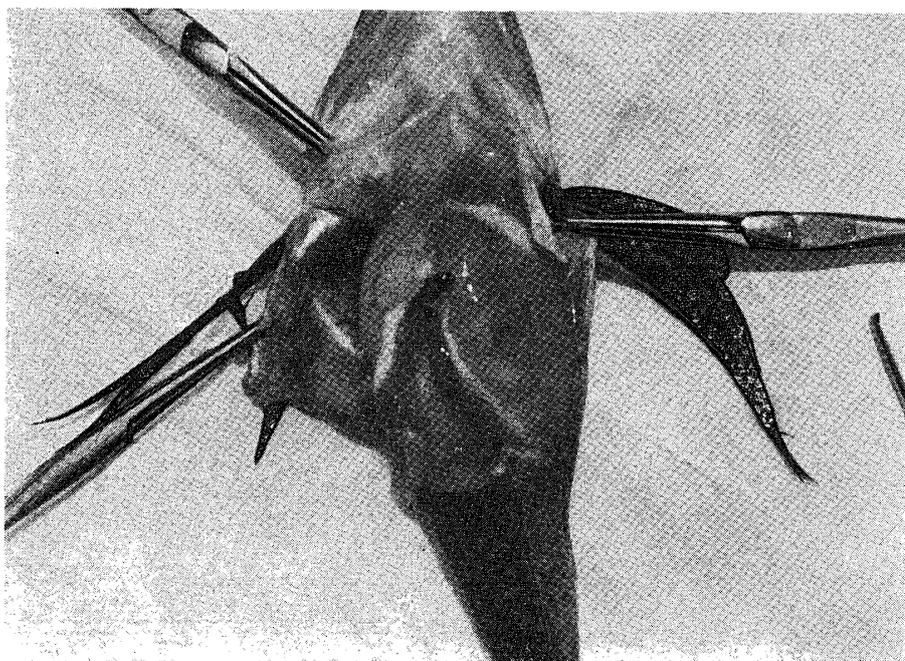


Fig. 4. *Neopagetopsis ionah* NYBELIN (ABE's Cat. No. 18190'), measuring 188 mm in standard length; to show the viscera.

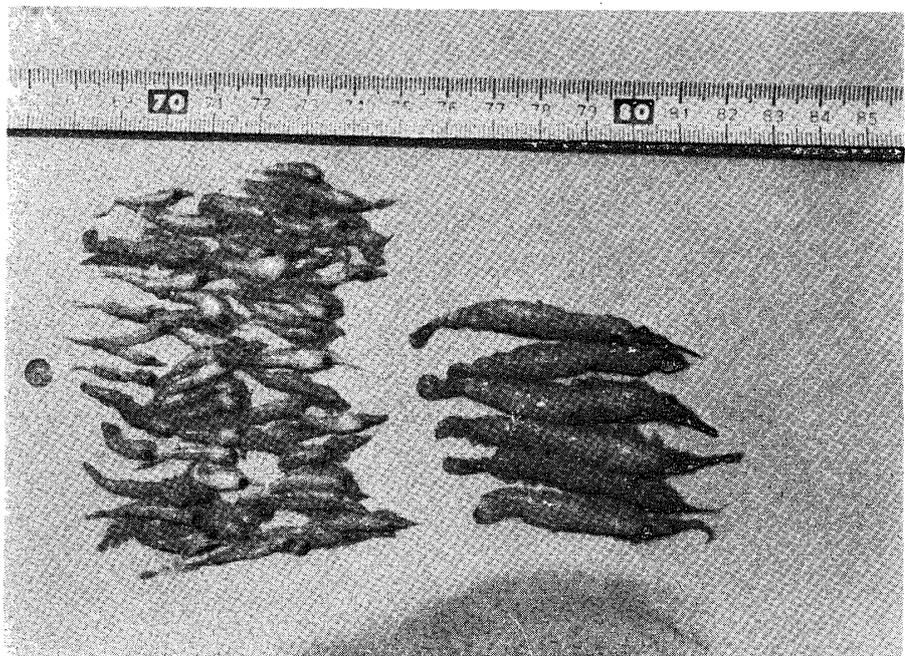


Fig. 5. The Antarctic krill found in the stomach of the same specimen as shown in Fig. 4.

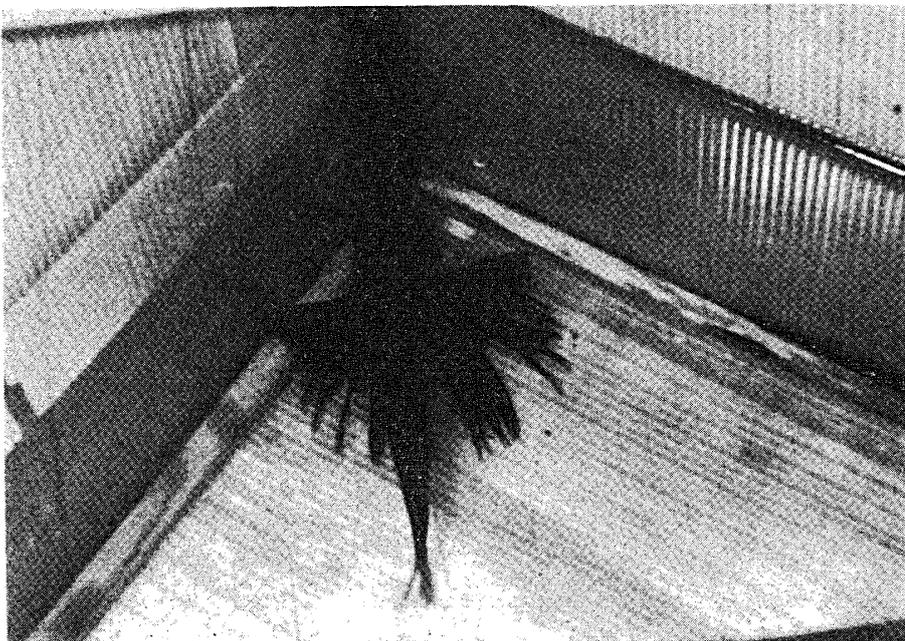


Fig. 6. *Neopagetopsis ionah* NYBELIN, kept alive in a container on board the mother boat OTSU-MARU. Total length ca. 200 mm. Photographed by Dr. Toshio KOBAYASHI.

lected by T. WATANABE, from among the Antarctic krill caught near the sea area mentioned above; two specimens (ABE's Cat. Nos. 17763 & 17764) measuring *ca.* 155 mm and 180 mm respectively in standard length, collected by a friend of Dr. K. NASU, off Enderby Land on 21 and 22, of January, 1977, from among the Antarctic krill.

Morphological notes. D. XIV–XV (*ca.* 32) 33–35; A. 29–32; P. i 23–24; V. I 5; C. i 13–14 i; Br. steg. 8–9; number of vertebrae *ca.* 58 in one specimen, and 61 (at 41st and 43rd irregular) in another specimen. The pelvic fins reach the middle point of the anal base or beyond. Of the three lateral lines, the middle one is extremely short and located near the base of the caudal fin; the posterior ends of the upper and lower lateral lines and the anterior end of the middle lateral line are all near the vertical line through the last named point and vary back and forth. It is remarkable to see that the number of the branchiostegals is either 8 or 9 (oftener 9) (8 & 8 in 3 specimens; 9 & 8 in 1 specimen; 9 & 9 in 5 specimens).

Biochemical notes. One specimen caught in January 1978, had been kept at -26°C in a vinyl bag till April 28, 1978, when it was thawed and subjected to general chemical analysis. The thawing was made by running water, and the dissection was done at room temperature. The standard length of the fish was 191 mm, and the body weight was 80.5 g. The flesh was mashed in a mortar and homogenized. Moisture was determined by drying method. Crude protein, crude fat and crude ash were analyzed by Kjeldahl method, Soxhlet's method (ethylether was used as solvent) and AOAC method, respectively. The results are given in Table 1.

Table 1. Flesh composition of *Neopagetopsis ionah* NYBELIN.

Substance	Percent (%)
Water	84.8
Crude protein	11.9
Crude fat	2.0
Crude ash	1.3

Biological notes. The examination of the stomach contents of the single specimen dissected reveals that there are two size-groups of the Antarctic krill among them; in one of them each individual measures *ca.* 50 mm in body length, and in the other group the body length is *ca.* 20 mm. The krill of the latter group was not caught with the net used by the research vessels and commercial fishing vessels during the fishing season of December 1977 through February 1978. The former group, namely, the krill of larger size is believed to be of the same size group fished com-

mercially with the use of the midwater trawl.

As pointed out by ANDRIASHEV (1960), the distribution range of *Neopagetopsis ionah* is very wide, from near the Balleny Islands to Ingrid Christensen (67°09' S; 77°03' E). It is interesting to see that the young collected by the Japanese vessels were among the Antarctic krill near the sea surface and that the large-sized adult (55 cm in standard length) reported by ANDRIASHEV was caught at the depth of 280 m with trawl. This reminds the authors of the young of the Japanese hexagrammids living near the surface. The adults of these fishes are bottom dwellers. The large pectoral fins together with the large pelvic fins of *Neopagetopsis ionah* are thought to be useful for their pelagic life. Examination of a motion picture of this species taken by Dr. KOBAYASHI in a tank on board the mother ship of the krill fishing boats shows that the former fins are used skillfully for swimming (Fig. 6).

References

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