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Karyotypes of a Mugiloidid, *Parapercis kamoharai*, and a Blenniid, *Omobranchus punctatus* (Pisces, Perciformes)

By

Ryoichi ARAI

Department of Zoology, National Science Museum, Tokyo

Abstract

Chromosomes of two perciform fishes were examined. The karyotype of *Parapercis kamoharai* in the family Mugiloididae comprises 24 pairs of acrocentric chromosomes, and that of *Omobranchus punctatus* in the family Blenniidae comprises 2 pairs of larger metacentric and 20 pairs of smaller acrocentric chromosomes.

From the viewpoint of karyological approach to fish systematics, I have observed chromosomes of various groups of fishes (e.g., ARAI & KOIKE, 1980; ARAI & YAMAMOTO, 1981; ARAI, 1982 and 1983).

Recently, chromosomes of two marine fishes, *Parapercis kamoharai* SCHULTZ in the family Mugiloididae and *Omobranchus punctatus* (VALENCIENNES) in the family Blenniidae, were examined. As far as I know, their karyotypes are new to science, and then, will be reported in the following lines.

Materials and Methods

A specimen of *Parapercis kamoharai* had been kept at the Aquarium of Seto Marine Biological Laboratory, Kyoto University, Shirahama, and 4 specimens of *Omobranchus punctatus* were collected at Koga-ura, Shirahama, Wakayama Prefecture. Some morphological characters of these material fishes are shown in Table 1.

All the specimens used for the experiments are deposited in the fish collection of the Department of Zoology, National Science Museum, Tokyo.

Method of chromosome preparation is the same as that of ARAI (1973). Classification of chromosomes is adopted from LEVAN *et al.* (1964). Metacentrics and submetacentrics are described as two-arm chromosomes, and subtelocentrics and acrocentrics as one-arm chromosomes. The definition of the new arm number (NAN) is referred to ARAI & NAGAIWA (1976).

Table 1. Characters of two species of material fishes.

Species	Cat. No.	SL (mm)	Dorsal	Anal	Vertebrae
Mugiloididae					
Parapercis kamoharai	E·98·77	185.8	V, 21	I, 16	10+20
Blenniidae					
Omobranchus punctatus	E·98·30	73.4	XII, 22	II, 24	11+29
	E·98·31	79.8	XII, 21	II, 24	11+29
	E·98·32	79.6	XII, 24	II, 24	11+29
	E·98·44	75.6	XI, 22	II, 24	11+28

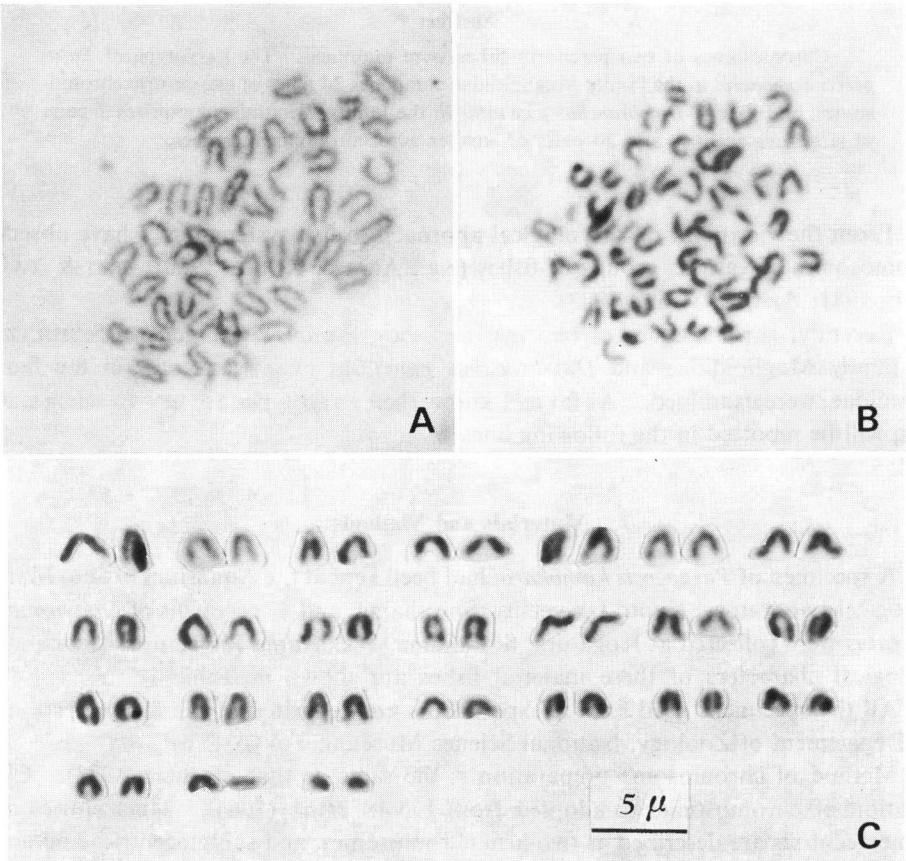


Fig. 1. Photomicrographs of mitotic metaphase chromosomes and a karyotype from gill epithelial cells of *Parapercis kamoharai* (Cat. No. E·98·77). ——A, 2n=48, ×1,630; B, 2n=48, ×2,560; C, from Fig. B, NF=48, ×2,560.

Table 2. Frequency distributions of diploid chromosome counts in a mugiloidid and a blenniid.

Species	2n										Total
	40	41	42	43	44	45	46	47	48	49	
Parapercis kamoharai								2	7		9
Omobranchus punctatus	1	1	1	2	17						22

Results and Discussion

Parapercis kamoharai SCHULTZ "Kamohara-toragisu"

(Fig. 1)

As shown in Table 2, the diploid chromosome number of this species is 48. The karyotype comprises 24 pairs of acrocentric chromosomes. Excepting 2 smallest acrocentric chromosomes, the other chromosomes are comparable in appearance and show a gradation in size which makes it impossible to arrange them in size groups. The arm number is 48. The new arm number may be 48.

The karyotype of this species differs from those of *Parapercis sexfasciata* (TEMMINCK et SCHLEGEL) and *P. pulchella* (TEMMINCK et SCHLEGEL), i.e., 2n=48 and NF=48 in *P. kamoharai*, while 2n=26 and NF=48 in *P. sexfasciata*, and 2n=42 and NF=50 in *P. pulchella* (MUROFUSHI *et al.*, 1984; OJIMA *et al.*, 1984).

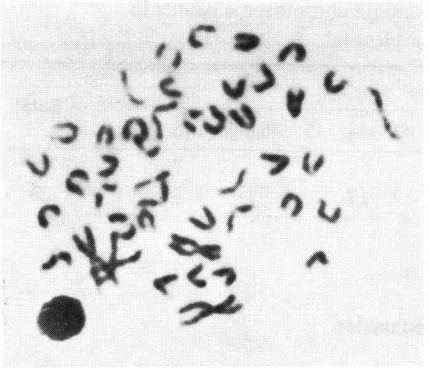
MUROFUSHI *et al.* (1984) suggested that the karyotype of *Parapercis* was characterized by small number of the diploid chromosomes. However, the karyotype of *P. kamoharai* seems to show that *Parapercis* is not so different from percoid fishes in the karyotype (ARAI & YAMAMOTO, 1981).

As the karyotype comprising 48 one-arm chromosomes similar in size is hypothesized as primitive in perciform fishes, *P. kamoharai* is considered karyologically to be the most primitive of the three species of *Parapercis* whose karyotypes were reported. Karyotypes of *P. sexfasciata* and *P. pulchella* might have been produced from that of *P. kamoharai* or its closely related ancestor by both centric fusion and tandem fusion as well as by pericentric inversion.

Omobranchus punctatus (VALENCIENNES) "Idaten-ginpo"

(Fig. 2)

The diploid chromosome number of this species is 44 (Table 2). The karyotype comprises 2 pairs of larger metacentric and 20 pairs of smaller acrocentric chromosomes. All metacentrics are approximately two times longer in size than any acrocentric chromosome, and hence they seem to have been produced by centric fusion. The arm number is 48. The new arm number is 48.



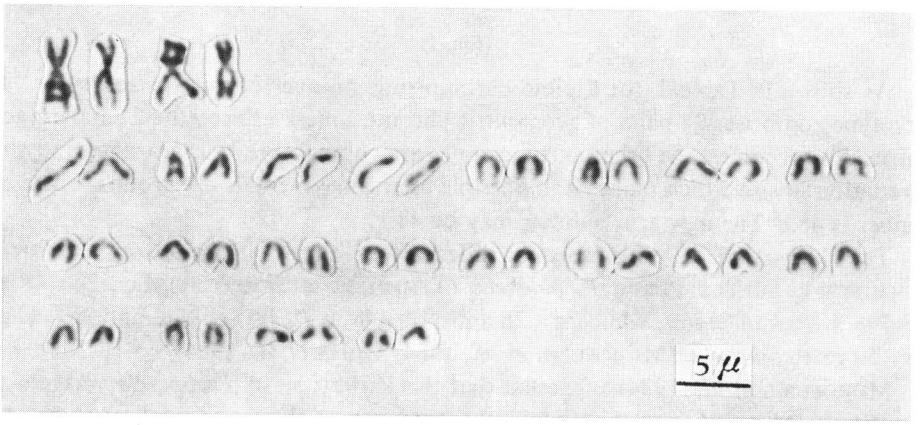


Fig. 2. A photomicrograph of mitotic metaphase chromosomes (above, ×1,790) and the karyotype (below, ×1,930) from a gill epithelial cell of *Omobranchus punctatus* (Cat. No. E·98·44), 2n=44, NF=48.

The karyotype of this species differs from that of *Omobranchus elegans* (STEINDACHNER) in both the diploid chromosome number and the arm number, i.e., 2n=44, NF=48 and NAN=48 in *O. punctatus* versus 2n=42, NF=54 and NAN=48 in *O. elegans* (ARAI & SHIOTSUKI, 1974). From the viewpoint of comparative karyology, it seems to be that the karyotype of *O. punctatus* is more primitive than that of *O. elegens*.

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