Bull. Inst. Zool., Academia Sinica **26**(3): 195-200 (1987)

SYSTEMATIC STATUS OF THE FISHES OF *GLAUCOSOMA* IN TAIWAN[1]

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(Received March 5, 1987)
(1st revision received March 19, 1987)
(2st revision received April 8, 1987)
(Accepted April 8, 1987)

Sin-Che Lee, S. C. M. Tsoi and W.C. Chao (1987) Systematic status of the fishes of *Glaucosoma* in Taiwan. *Bull. Inst. Zool., Academia Sinica* **26**(3): 195-200. *Glaucosoma hebraicum* Richardson 1844-1846 and *G. fauvelii* Sauvage 1881 were previously recognized as two valid species. However, Masuda *et al.* (1984) considered that the smaller striped *G. fauvelii* may be the juvenile state of larger non-striped *G. hebraicum*. This coincides with the results of starch gel electrophoresis for MDH, LDH, AAT and general proteins which show identical electromorphs between two former species at presumptive gene loci surveyed. The final conclusion will not be made unless more specimens and isozymatic loci are studied furtherly.

Glaucosoma is the only genus included in the family Glaucosomatidae which is known as a marine commercial fishes to occur in the western Pacific from Japan to Australia. The *Glaucosoma* has only five species throughout the world (Nelson, 1984). In Taiwan, two valid species, *G. hebraicum* Richardson, 1844-1846 and *G. fauvelii* Sauvage, 1881 were recognized by Shen (1984) and Chen and Yu (1986). Although an earlier name for *G. burgerii* was recorded in 1902 by Jordan and Evermann, it is infact identical with *G. hebraicum*. According to the key stated by Chen and Yu (1986), *G. hebraicum* could be separated from *G. fauvelii* by having more numerous lateral line scales (60 *versus* 50) and brownish stripes on body side in the latter. However, Masuda *et al.* (1984) considered *G. fauvelii* as the juvenile state of *G. hebraicum* and hereby treated as its synonym. In order to confirm this possibility, the isozymes of the above two existing morphs: A, *G. hebraicum* (Fig. 1) and B, the former *G. fauvelii* (Figs. 2-3) were studied electrophoretically.

The specimens used were trawled from deeper ground of southern part of East China Sea near Keelung, and deep-freezed immediately while on board. They were transferred to the laboratory with dry ice box and stored at −70°C until dissection. The extractions of skeletal muscle, heart, eye and liver were prepared for electrophoresis, and the procedure followed that of Tsoi *et al.* (1987) in the previous paper. After electrophoresis, the starch gel was sliced horizontally into several pieces and stained respectively for MDH, LDH, AAT and general proteins.

All individuals from two morphs examined expressed identical electromorphs at presumptive gene loci surveyed (Figs. 4-7). The locus designation is according to Buth (1984) except general protein. The electrophoretic mobilities of these monomorphic loci were shown in Table 1.

When comparing some selected morphometric data and meristic counts (Table 2),

1. Paper No. 291 of the Journal Series of the Institute of Zoology, Academia Sinica.
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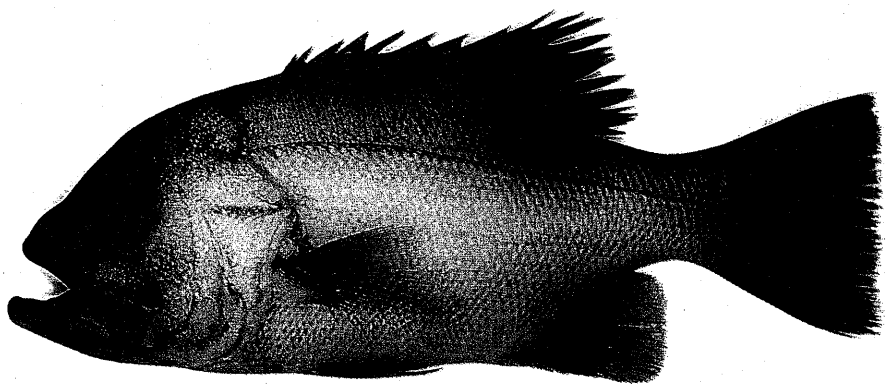

Fig. 1. *Glaucosoma hebraicum*, morph A, 274 mm SL

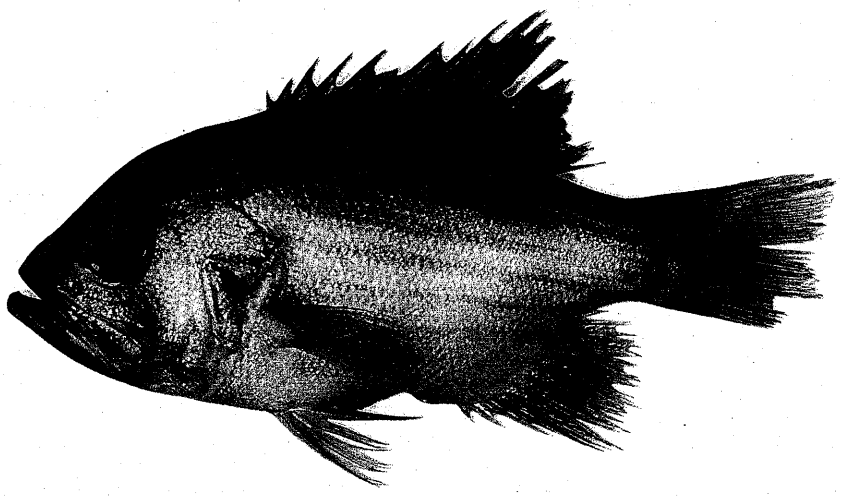

Fig. 2. *Glaucosoma hebraicum*, morph B (former *G. fauvelii*), 187 mm SL.

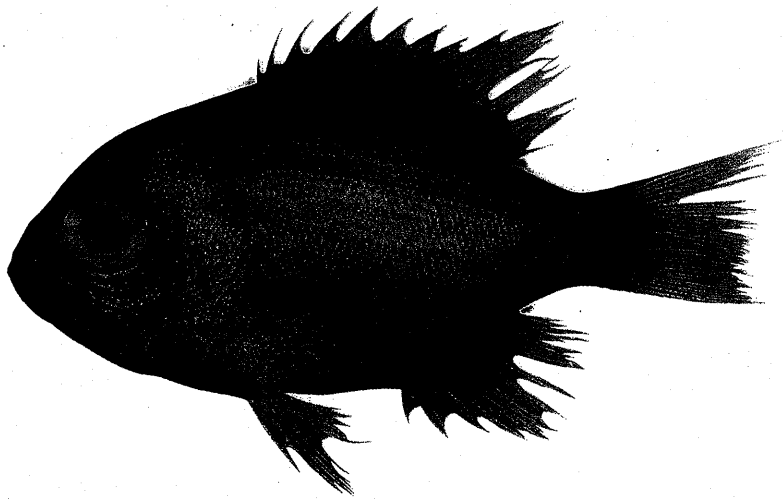

Fig. 3. *Glaucosoma hebraicum*, morph B (former *G. fauvelii*), 73 mm SL.

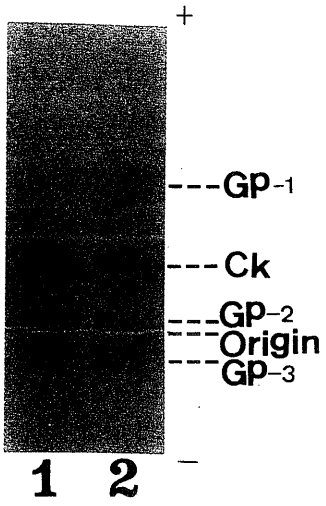

Fig. 4. General proteins of white muscle tissues of two morphs of *Glaucosoma hebraicum*. 1, morph A; 2, morph B (=former *G. fauvelii*).

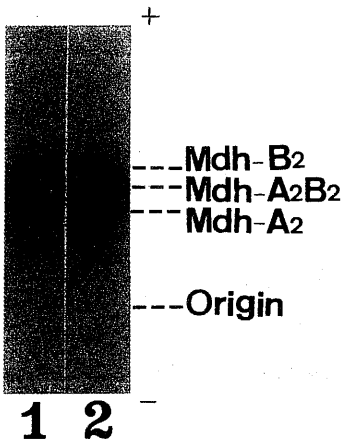

Fig. 5. MDH isozymes white muscle tissues of two morphs of *Glaucosoma hebraicum*. 1, morph A; 2, morph B (=former *G. fauvelii*).

though the smaller stripped morph B tends to have deeper body and shorter snout than those of the larger non-stripped morph A. However, there is no difference of meristic counts found between the twos. It is noted that the lateral line scales of the examined specimens are equally numbered in constrast to the greater difference mentioned by Chen and Yu (1986). The only minor difference of body proportion shown above is simply a result of growth. From the preliminary re-

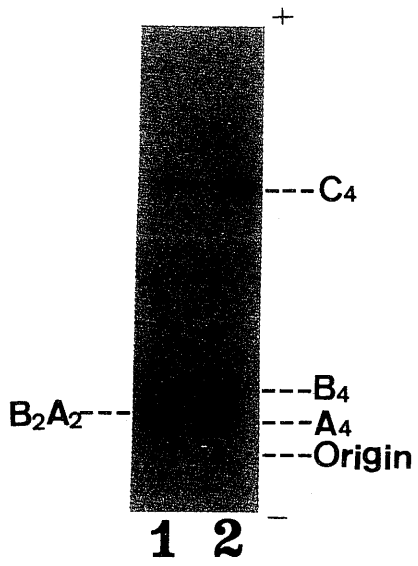

Fig. 6. LDH isozymes of eye tissues of two mophs of *Glaucosoma hebraicum*. 1, morph A; 2, morph B (=former *G. fauvelii*).

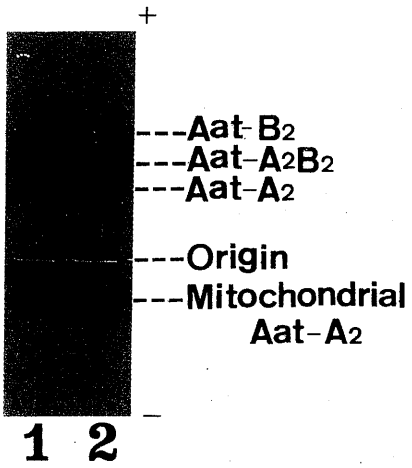

Fig. 7. AAT isozymes liver tissues of two morphs of *Glaucosoma hebraicum*. 1, morph A; 2, morph B (=former *G. fauvelii*).

sults of electrophoretic comparisons of 3 isozymes and general proteins between two morphs coincides with the fact that the smaller striped *G. fauvelii* is the young of larger non-striped *G. hebraicum* as stated by Masuda *et al.* (1984). Neverthless, the final conclusion should not be made unless more isozymatic loci from larger amount of samples are furtherly studied.

TABLE 1

Relative mobilities of isozymes of two morphs of *Glaucosoma hebraicum* for the 12 presumptive gene loci. Morph A, *G. hebraicum*; morph B, former *G. fauvelii*

Enzyme	Enzyme Commisson Number	Locus	Buffer	Morph A	Morph B
Aspartate aminotransferase (mitochondrial)	2. 6. 1. 1.	M-Aat-A	EBT	−100	−100
Aspartate aminotransferase (supernatant)	2. 6. 1. 1.	S-Aat-A	EBT	53	53
Aspartate aminotransferase (supernatant)	2. 6. 1. 1.	S-Aat-B	EBT	100	100
Creatine kinase	2. 7. 3. 2.	Ck-A	EBT	100	100
Lactate dehydrogenase	1. 1. 1. 2. 7.	Ldh-A	TC	13	13
Lactate dehydrogenase	1. 1. 1. 2. 7.	Ldh-B	TC	25	25
Lactate dehydrogenase	1. 1. 1. 2. 7.	Ldh-C	TC	100	100
Malate dehydrogenase (NAD: supernatant)	1. 1. 1. 3. 7.	S-Mdh-A	TC	65	65
Malate dehydrogenase (NAD: supernatant)	1. 1. 1. 3. 7.	S-Mdh-B	TC	100	100
General protein		Gp-1	EBT	100	100
General protein		Gp-2	EBT	6	6
General protein		Gp-3	EBT	−100	−100

TABLE 2

Some selected morphometric and meristic characters of two morphs of *Glaucosoma hebraicum*. A, *G. hebraicum*; B. former *G. fauvelii*

	Morph A (*G. hebraicum*) *n*=2	Morph B (former *G. fauvelii*) *n*=4
Standard length (mm)	268-274	73-230
Standard length/body depth	2.32-2.34	1.93-2.13
Head length/snout length	3.75-3.92	4.08-5.08
Dorsal rays	VIII, 11	VIII, 11
Anal rays	III, 9	III, 9
Gill-rakers (first left arch)	6-8+13-14	8+13
Lateral line scales	51	50-51

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臺灣產葉鯛屬魚類之分類地位

李信徽　蔡昌明　趙維誠

青葉鯛（*Glaucosoma hebraicum*）及葉鯛（*G. fauvelii*）過去一直被認爲係兩個截然不同的種類，益田氏等（1984）則認爲小型而有條紋之葉鯛因命名法則之關係應視同爲大型而無條紋之青葉鯛之幼魚期。由於合乎實驗條件標本來源之短缺，雖僅測試數尾，仍可粗略地從上述二種魚間因澱粉膠電泳分析出之 MDH, LDH, AAT 及 General proteins 之基因座電泳帶所呈現幾全一致的情況看來，似乎與益田氏（1984）等人之看法有點巧合。當然目前尚不敢據以論斷，須俟獲得更多標本並分析更多之同功酶才能確定它們是否爲同一種。本文只是一個初步的發現。