2. SYSTEMATIC CATALOGUE

2.1 The Family Glaucosomatidae

FAO Names: **En** - Pearl perches.

Diagnostic Features: Robust to deeply ovate, compressed, marine coastal perch-like fishes. Head large; scales present on entire head except tip of snout, lips and chin (maxillary, mandible and isthmus scaled). Mouth large, oblique, terminal and protractile, lips thin; maxilla broad, scaled, with a narrow supplemental bone (supramaxilla) above, scarcely slipping below preorbital; lower jaw protruding; teeth pointed or conical, in narrow bands in jaws, usually without canines; teeth on vomer, palatines and tongue; preopercle with blunt spines at angle or entire; opercle with one blunt spine. Dorsal fin single with VIII graduated spines and 12 to 14 soft rays which are much higher than the spines; pectoral fins short and blunt; pelvic fins small, below base of pectoral fins, with I spine and 5 soft rays; anal fin with III short graduated spines and 9 to 10 soft rays; caudal fin lunate or emarginate, sometimes with the tips produced or filamentous. Scales ctenoid, small or moderate, a basal sheath present; lateral line continuous, tubes simple. Vertebrae 10 + 15; haemapophyses (lower surface) of the 5th to 10th modified, the 6th to 8th forming flat plates to which the swimbladder is firmly bound (see Tominaga, 1986; also Fig. 4). Swimbladder (Fig. 3) with the anterioventral portion unattached to overlie the lower sclerotic swimbladder tissue forming a free anterior pocket below which is a space with an anteriorly directed slit between the inner surface of the bladder and the ceiling comprised of the lamellar haemapophyses and the dorsal inner surface of the bladder; a cylindrical muscle bundle originates from the bony wing of the pterotic situated posterior to the opening of the sensory canal system, passes between the ventral process of the post-temporal and Baudelot's ligament, enters the slit of the cover of the swimbladder where it meets with its counterpart, and attaches to the dorsal surface of the inner swimbladder surface; a trapezoid red muscle originates from the last modified haemapophysis, extends forward and, as a white muscle, attaches to the dorsal surface of the swimbladder and the cylindrical muscle bundles (Tominaga, 1986); posterior of swimbladder free.

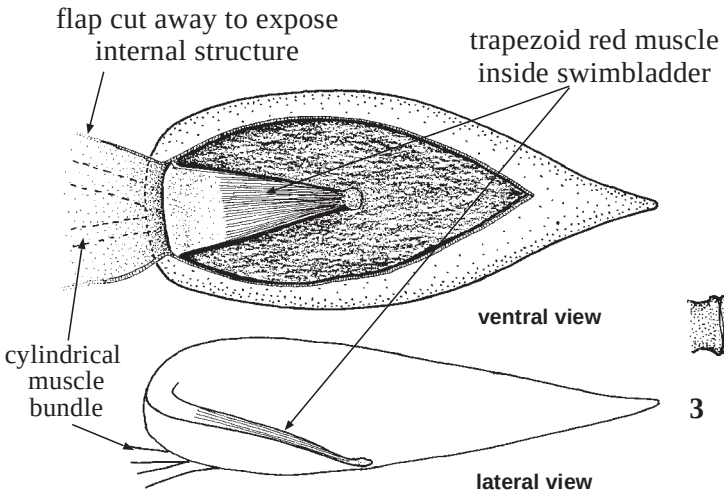

Fig. 3 Swimbladder (*Glaucosoma scapulare*)

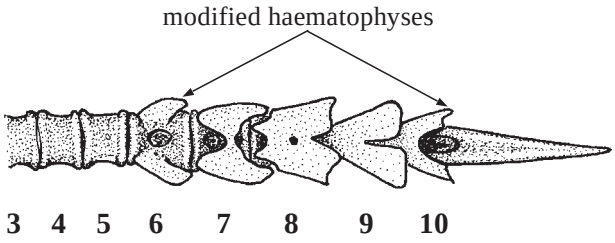

Fig. 4 Abdominal vertebrae 3-10 in ventral view (*Glaucosoma buergeri)*

Glaucosomatids are somewhat similar in shape to the snappers of the family Lutjanidae, but differ in lacking strong canine teeth on the jaws, and in having a very thin supplementary bone (supramaxilla) on the upper edge of the maxillary bone (Fig. 1). The Glaucosomatidae is related to the Pempheridídae in having the same structure of the swimbladder, the modification of the haemapophyses of the 5th to 10th abdominal vertebrae, the foramin in the frontal bone (Katayama, 1954; Tominaga, 1986), features of the otolith in ***G. magnificum***, and in lacking an articulation between the second epibranchial and pharyngobranchial (Johnson, 1993). Johnson further recommended that the Glaucosomatidae should be included as a subfamily of the Pempheridídae. The family Glaucosomatidae is recognized here based on the possession of fewer anal fin elements (9 to 12 versus 17 to 45), more dorsal spines (8 or 9 versus 4 to 6), a supramaxillary bone, the procurrent spur of the caudal fin, the axillary process of the pelvic fin (Fig. 1), and in lacking the two ventral processes attaching the cleithrum (Tominaga, 1986).

Habitat and Biology: Generally frequenting submerged reefs, pinnacles and rough rocky bottom in moderately deep water, but moving into shallow water at times. Usually strictly bottom feeders that may move up into the water column to take a bait on occasions. These fishes feed mostly at dawn or dusk and may be taken throughout the day and night in deep water. The large eye is characteristic of these fishes and fishermen prefer white baits such as skinned octopus or squid when fishing deep or at night. Professional fishermen recognize that these fishes are influenced by the phases of the moon. Their biology is poorly known.

Geographical Distribution: Indo-West Pacific from Japan and China coast to the tropical and warm temperate coasts of Australia.

Interest to Fisheries: All are superior tablefishes with white flesh of excellent texture and superb flavour. Recognized in Australia to be some of the finest of foodfishes available.

Remarks: Regan (1913) commented that ***Arripis*** resembles ***Glaucosoma***, but included ***Glaucosoma*** within the Centropomidae as did Norman (1966) who placed it within the subfamily Latinae. Modern authors have placed this family adjacent to the Terapontidae and Pseudochromidae (Gloerfelt-Tarp and Kailola, 1984), or the Acanthoclinidae and Terapontidae (Greenwood et al. 1966; Paxton et al., 1989). However, the family is clearly the sister family to the Pempheridídae as demonstrated by Katayama (1954) and Tominaga (1986). Further relationships can be evidenced in the cranial morphology and the morphology of the otoliths. The saccular otoliths (sagittae) of the Glaucosomatidae are typical of the Percoidei. There is no fossil record of the family nor of the Pempheridídae. The otolith of ***Glaucosoma magnificum,*** in being almost as deep as long, appears to be the most plesiomorphic and shows a clear relationship to that of ***Pempheris*** (Fig. 5). A phylogenetic hypothesis of the Glaucosomatidae is shown in Fig. 6.

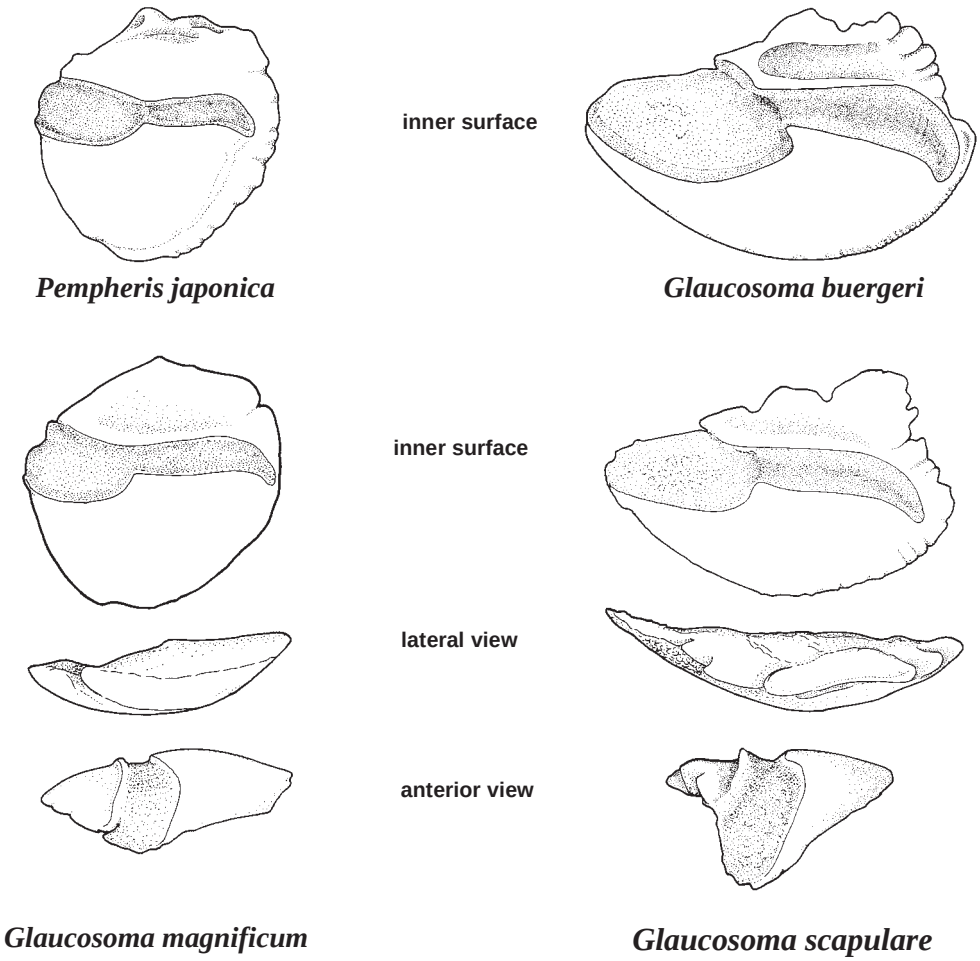

Fig. 5 Saccular otoliths

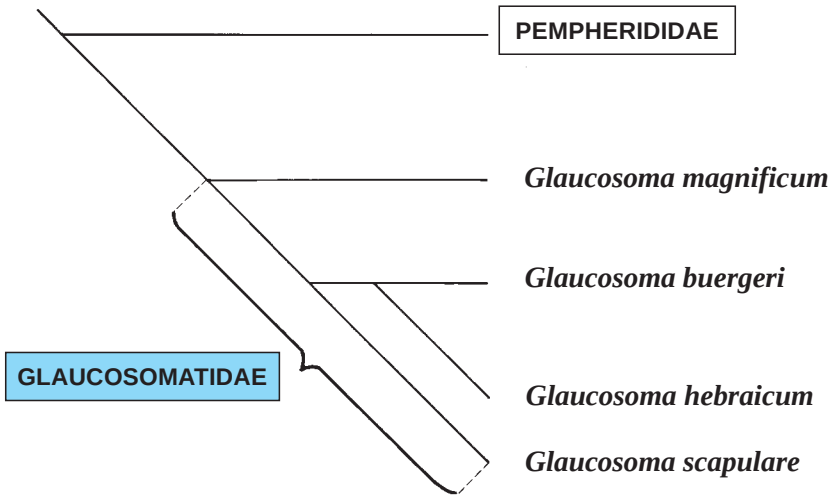

Fig. 6 Phylogenetic hypothesis of the Glaucosomatidae

2.2 Illustrated Key to Species

1a. Three dark vertical bands from nape, the first through eye, the second along the edge of the preopercle and the third down to the base of the pectoral fins; dorsal, caudal and anal fins with some filamentous rays; 14 dorsal-fin rays and 12 anal-fin rays (Fig. 7) . . . . . ***Glaucosoma magnificum***

1b. One dark vertical band through eye which may disappear with an increase in size; 11 dorsal-fin rays and 9 anal-fin rays . . . . . → ***2***

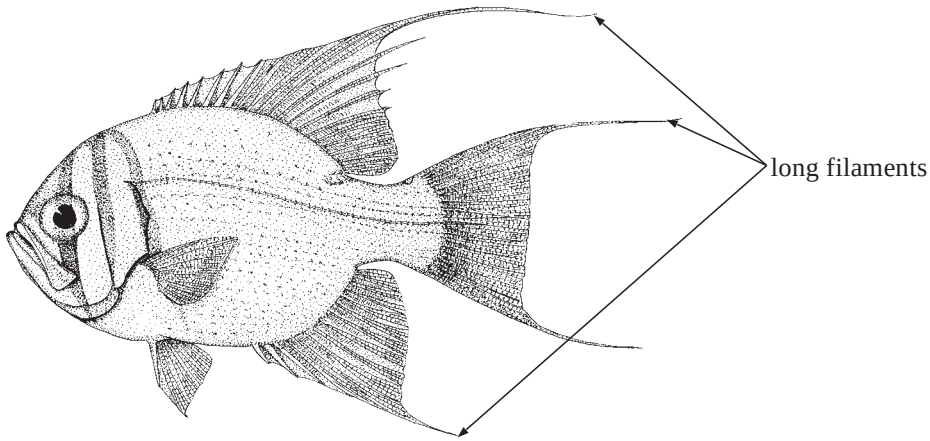

Fig. 7 ***Glaucosoma magnificum***

2a. Supraclavicle (shoulder-bone) developed into a prominent bony shield (Fig. 8) . . . . . ***G. scapulare***

2b. Supraclavicle not developed into a bony shield . . . . . → ***3***

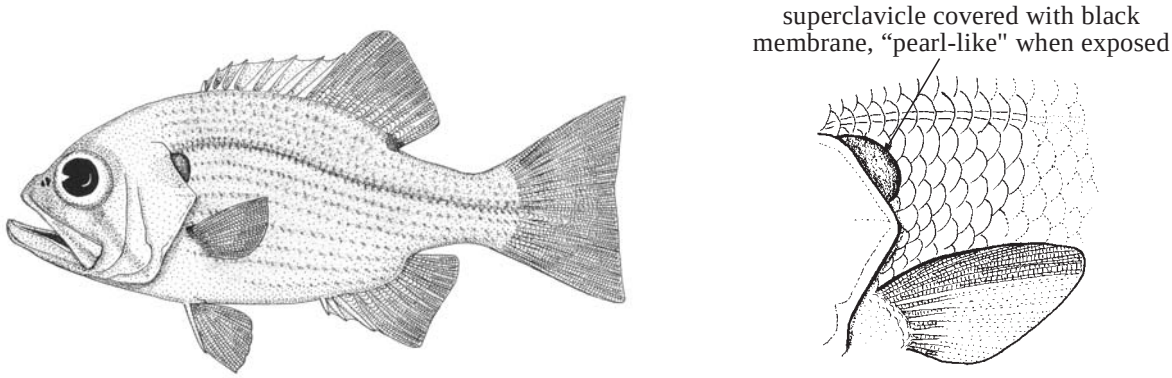

Fig. 8 ***Glaucosoma scapulare***

3a. Peritoneum and gill rakers black; lateral line with 49 to 51 pored scales; juveniles with narrow horizontal bands narrower than interspaces (Fig. 9) . . . . . ***G. buergeri***

3b. Peritoneum and gill rakers pale; lateral line with 44 to 48 pored scales; juveniles with wide dark horizontal bands wider than interspaces (Fig. 10) . . . . . ***G. hebraicum***

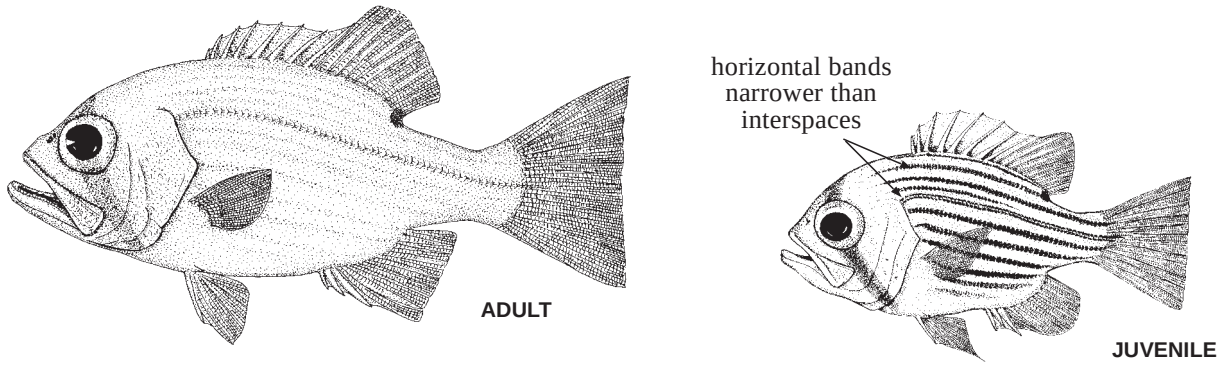

Fig. 9 ***Glaucosoma buergeri***

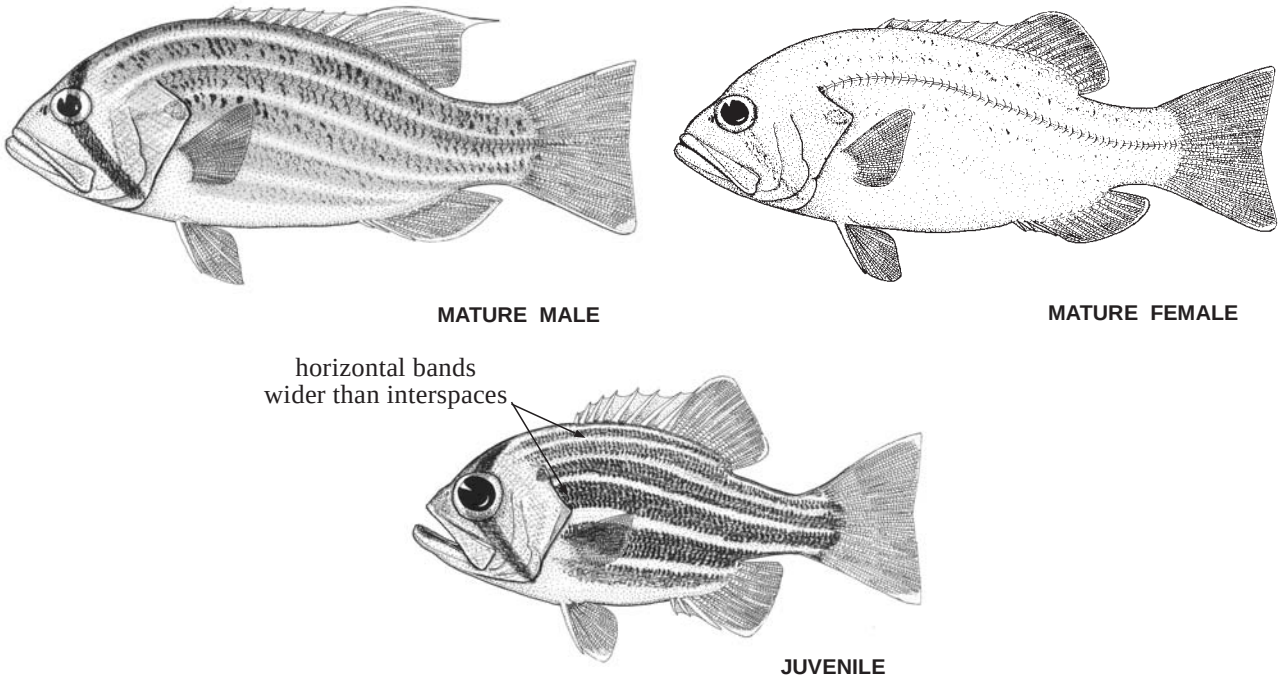

Fig. 10 ***Glaucosoma hebraicum***