

A NEW RECORD OF *Cephalopholis igarashiensis* KATAYAMA, 1957 (PERCIFORMES, SERRANIDAE) FROM INDONESIA

T. Peristiwady¹, M.F. Rahardjo², and C.P.H. Simanjuntak²

¹ Technical Implementation Unit for Marine Biota Conservation
Indonesian Institute of Science

² Department of Living Aquatic Resources Management, Faculty of Fisheries and Marine Science,
Bogor Agricultural University

✉ Jl. Tandurusa, Kelurahan Tandurusa, Kotamadya Bitung 95227, Indonesia
e-mail: ikan_teguh@yahoo.com

Received: 5 December 2008, Accepted: 12 May 2009

ABSTRACT

Four specimens were collected at Winenet Fish Market, Bitung, North Sulawesi, Indonesia on March 5th, 2008 and October 11th, 2009. Other one specimen was collected at Batuputih Fish Market on October 17th, 2009. The fish was caught by hook and line at a depth about 50 m in Dua Island, North Sulawesi. Distribution of *Cephalopholis igarashiensis* at Pacific Ocean is found in southern Japan, Taiwan, Guam, Philippines, South China Sea, Samoa, and Tahiti in French Polynesia. Its morphological features and diagnostic characters are discussed and illustrated.

Key words: *Cephalopholis igarashiensis*, Garish hind, New record, Serranidae.

INTRODUCTION

The serranid is one of the largest important families on corals reefs and living in all seas except in the cold regions. It may be found in marine and brackish water but is primarily found in marine environment. Ecologically serranid plays an important role in the ecosystem as top predators.

Many members of this family are popular as ornamental fish especially the small size. Sea basses and groupers are found worldwide in tropical and subtropical waters, and several species are of commercial importance. Serranids are all carnivorous, with food ranging from zooplankton (*Anthias*) right through to large fish and crustaceans (cod and groupers).

The family Serranidae belongs to the Class Actinopterygii (ray-finned fishes) and the Order Perciformes. Nelson (1984) divided this family approximately to 35 genera and about 370 species with the dominant genus are *Aiphestes*, *Anthias*, *Caesioperca*, *Centropristis*, *Cephalopholis*, *Dermatolepis*, *Diplectrum*, *Epinephelus*, *Gemoplectrus*, *Hemanthias*, *Hypoplectrus*, *Lioproma*, *Mycteroperca*,

Ocyanthias, *Paralabrax*, *Paranthias*, *Pibea*, *Plectranthias*, *Promicrops*, *Pteranthias*, *Schultzea* and *Serranus*. Randall and Heemstra (1991) revised this family in to 62 genera and there are approximately 500 species with the varied size range on size and weight. This family is further divided into a number of sub families which include Anthias (Antiinae), Grouper (Epinephelinae) and Soapfishes (Grammistinae).

This family is divided into three subfamilies, the Serraninae (sea basses), the Anthiinae (fairy basslets and perchlets), and the Epinephelinae, with the latter arranged into five tribes. These are the Nipponini (Japanese ara or grouper), Epinephelini (groupers and coral trouts), Liopropomini (Swissguard basslets), and the Diploprionini and Grammistini (both soapfishes). The serranid fishes commonly known as groupers are classified in the subfamily Epinephelinae by having the following characters: bodies are robust, oblong, oval to elongate; wide bodied or only slightly laterally compressed; scales smooth to rough, or a mixture of the two; large mouth with lower jaw protruding beyond the upper jaw; flattened spines

on opercle; edge of pre-opercle usually serrated; pelvic fins below or close to the base of the pectoral fins; well defined caudal peduncle.

Ichthyological research in the Indonesian waters began with the visits of European explorers in the early 19th century following by Dutch researchers. The Indonesian sea fishes specimen mostly deposited at the United States National Museum of Natural History (USNM) in Washington, D.C., the Bishop Museum (BPBM) in Honolulu (Allen & Adrim, 2003). Studies on fish in Indonesia are still insufficient. There are numerous technical or research reports, published earlier, which contain information on fishes of the Indonesian waters such as Allen and Adrim (2003) who has documented a very good data of Indonesian fish. However, most of these reports concentrate on community structure of some coastal ecosystems and realized by sensus visual method. Information on the fishes in Indonesia is scarce: Weber and Beaufort (1911-1962) covered 2.778 marine and freshwater fishes of Indonesia and Froese *et al.* (1996) prepared a list of 2.151 marine and brackish water fishes of Indonesia.

MATERIALS AND METHODS

Five specimens were collected at Winenet Fish Market, Bitung, North Sulawesi, Indonesia (Fig. 1) on March 5th, 2008, October 11th, 2009 and Batuputih Fish Market on October 17th, 2009. The fish was mixed with other grouper and collected from the coral reefs ecosystem in Dua Island, Lembeh Island, North Sulawesi. The specimens deposited in the Technical Implementation Unit for Marine Biota Conservation, Indonesian Institute of Science (LBRCF, LIPI Bitung Reference Collection).

Cyanin blue was used to examine and count scales. Counts and measurements follow Randall and Heemstra (1991). Standard length is

expressed as SL. All measurements were made with caliper to nearest 0.05 mm. The counts of last 2 soft rays of the dorsal and anal fins are counted as single rays, as each pair are associated with a single pterygiophore. Pectoral-fin ray counts begin with the short slender uppermost ray. Standard length (SL) is taken from the front of the upper lip to the base of the caudal fin (end of hypural plate). Body depth is the maximum depth, adjusting for any obvious malformations of preservation. Body width is measured just behind the gill opening (anterior to the base of the pectoral fins). Head length is measured from the front of the upper lip to the end of the opercular membrane. Orbit diameter is the greatest diameter to the fleshy edges of the orbit. Interorbital width is the the length of the upper jaw is measured from the front of the upper lip to the posterior fleshy edge of the jaw. The depth of the caudal peduncle is the least depth, and the length of the caudal peduncle is taken horizontally from the rear base of the anal fin to the base of the caudal fin. Lengths of the dorsal and anal spines and rays are measured from the point they depart from the contour of the body. Pectoral-and pelvic-fin lengths are the lengths of the longest ray.

RESULTS AND DISCUSSION

Genus *Cephalopholis* (Randall & Heemstra, 1999 *in* Carpenter & Niem, 1999)

Dorsal-fin spines IX to XI; lower edge of preopercle smooth (except for a few species of *Epinephelus* with 1 to 4 enlarged serrae). Caudal fin rounded, truncate, or concave; dorsal-fin spines IX to XI. Palatines with teeth; body compressed in some species, but its width only 1.8 to 3 times in head length. Dorsal profile of head straight, convex or slightly concave; dorsal-fin spines IX or XI (rarely X); rear nostrils round

or oblong. Pectoral fins symmetric or nearly so, the middle rays longest; dorsal fin with IX to XI spines and 12 to 21 soft rays; caudal fin rounded truncate, or emarginated. Caudal fin rounded (truncate in *Cephalopholis polleni*); head length

2.2 to 3.1 times in standard length; adults with a knob at lower rear corner of maxilla (hidden by upper lip); dorsal-fin membranes between rays distinctly incised.

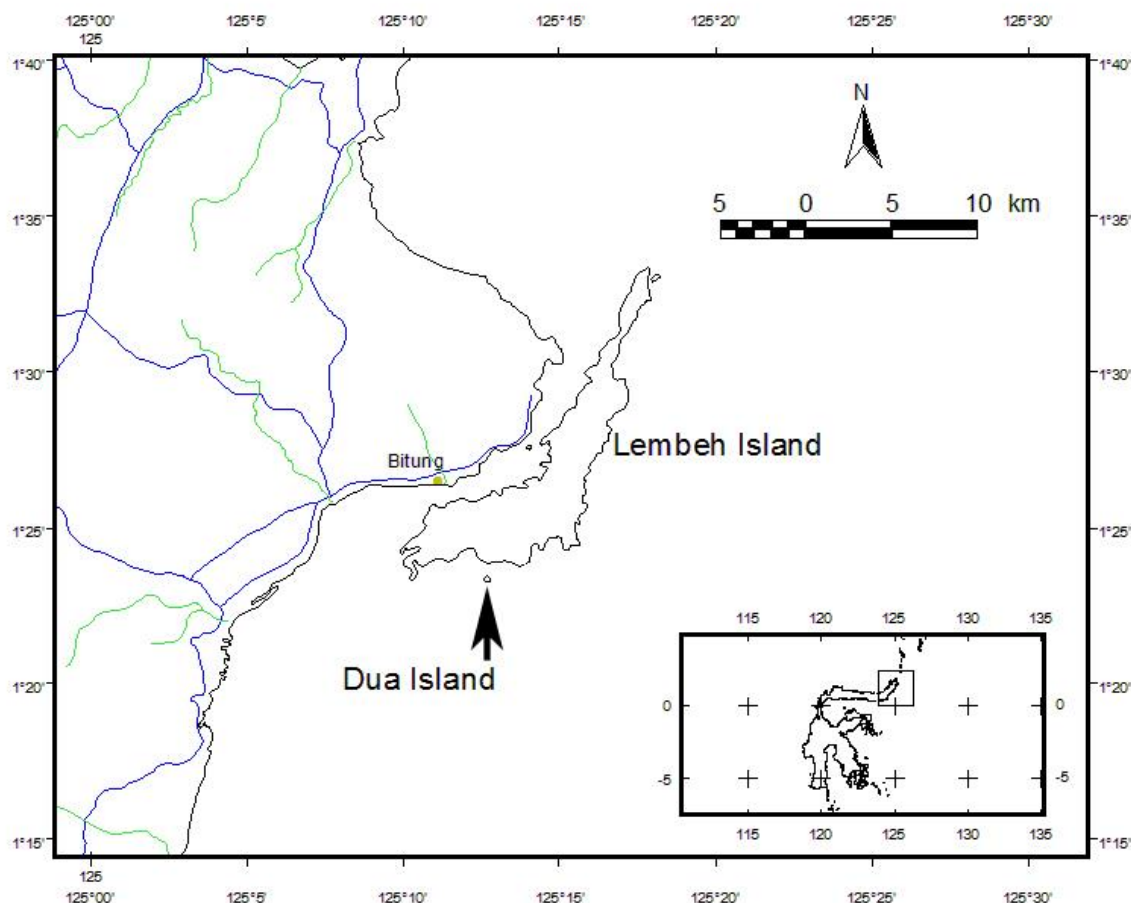


Fig.1. Location of Winenet Fish Market, Bitung, North Sulawesi, Indonesia where the specimen was collected

***Cephalopholis igarashiensis* Katayama, 1957**

(Fig. 2)

English Name: Garish hind

Local Common Name: Kerapu

Synonym:

Cephalopholis swanius Tsai, 1960 (Froese & Pauly (eds.). 2006)

Material examined:

CRDOA 6370; 1 specimen; Winenet Fish Market; June 1, 2008; hook and line; coll. by a

local fisherman; -- LBRCF 239; 1 specimen Winenet Fish Market; June 1, 2008; hook and line; coll. by a local fisherman; -- LBRCF 241; 1 specimen Winenet Fish Market; June 1, 2008; hook and line; coll. by a local fisherman; -- LBRCF 1282; 1 specimen Batuputih Fish market; October 17, 2009; hook and line; coll. by a local fisherman; -- LBRCF 1269; 1 specimen Winenet Fish Market; October 11, 2009; hook and line; coll. by a local fisherman.

Table 1. Meristic and morphometric of *Cephalopholis igarashiensis* Katayama, 1957

| Counts and Measurements | | <i>n</i> = 5 | |
|---------------------------|---------------------------|-----------------------|-----------------------|
| Total length (mm) | | (158.83) | |
| Standard length (mm) | | (128.90) | |
| Counts | Dorsal-fin rays | IX, 14 | |
| | Anal-fin rays | III, 9 | |
| | Pectoral-fin rays | 18 | |
| | Pelvic-fin rays | I, 5 | |
| | Caudal-fin rays | (17-18) | |
| | Scales on lateral line | (63-66) | |
| | Scales above lateral line | (28-30) | |
| | Scales below lateral line | (57-58) | |
| | Gill rakers on upper limb | (8-9) | |
| | Gill rakers on lower limb | (16-17) | |
| | Total gill rakers | (8-9) - (16-17) | |
| | Measurements (%SL) | Head length | 41.83-43.00 (42.35) |
| | | Body depth | 44.77-49.06 (46.57) |
| | | Body width | 18.48-20.94 (19.60) |
| Predorsal length | | 41.19-42.33 (41.86) | |
| Prepelvic length | | 40.35-43.16 (41.52) | |
| Preanal length | | 68.30-71.90 (70.69) | |
| Caudal-peduncle depth | | 13.98-15.58 (14.80) | |
| Caudal-peduncle length | | 17.62-22.40 (19.19) | |
| Dorsal-fin base | | 54.82- 8.67 (56.68) | |
| 1th dorsal spine | | 6.41-7.85 (6.95) | |
| 2nd dorsal spine | | 11.58-13.89 (12.72) | |
| 3th dorsal spine | | 14.28-16.78 (15.43) | |
| 4th dorsal spine | | 13.69-15.72 (14.64) | |
| 5th dorsal spine | | 13.32-15.72 (14.46) | |
| 6th dorsal spine | | 13.32-14.73 (14.01) | |
| 7th dorsal spine | | 13.32-14.55 (13.84) | |
| 8th dorsal spine | | 12.66-13.20 (12.98) | |
| 9th dorsal spine | | 11.83-13.05 (12.52) | |
| Longest dorsal ray length | 16.12-20.41 (18.21) | | |
| Anal-fin base | 20.10-21.15 (20.73) | | |

Table 1. Continued

| | | |
|---------------------------|---------------------|-----------------------|
| | First anal spine | 5.31-7.55 (6.56) |
| | Second anal spine | 10.46-11.79 (11.41) |
| | Third anal spine | 11.43-12.32 (11.73) |
| | Longest anal ray | 16.99-20.10 (18.45) |
| | Caudal-fin length | 17.99-23.89 (22.31) |
| Pectoral fin | Pectoral-fin length | 27.19-28.06 (27.65) |
| Pelvic fin | Pelvic spine length | 13.34-15.79 (14.84) |
| | Pelvic-fin length | 23.25-26.26 (24.06) |
| Measurements (%HL) | Snout length | 24.79-27.11 (25.94) |
| | Orbit diameter | 21.64-23.11 (22.39) |
| | Interorbital width | 17.44-20.85 (19.35) |
| | Upper-jaw length | 53.27-54.77 (54.18) |

Diagnostic characters:

Meristic: D IX, 14; A III, 9; P₁ 18; P₂ I, 5;

Dorsal fin with IX spines and 14 soft rays, the membranes distinctly indented between the spines; anal fin with III spines and 9 soft rays; caudal fin rounded; pectoral-fin rays 18, the fin length 27.19-28.06 (27.65) in SL; pelvic fins reach to or beyond anus, 13.34-15.79 (14.84) SL. Body scales rough, without auxiliaries; lateral-line scales 63 to 66. Scales above lateral line (28-30), scales below lateral line;(57-58), gill rakers on upper limb (8-9), gill rakers on lower limb (16-17), total gill rakers (8-9) - (16-17).

Body depth greater than head length 41.83-43.00 (42.35%) SL; body depth 44.77-49.06 (46.57) SL; body width 18.48-20.94 (19.60) SL; caudal peduncle depth equal to or lower than its length.

Dorsal head profile straight or slightly concave to above eye, the nape markedly convex; lateral line noticeably arched over pectoral fin. Interorbital area flat; preopercle rounded, finely serrate, the ventral serrae slightly enlarged, the lower edge irregular but hidden by skin; subopercle and interopercle finely serrate; upper

edge of operculum distinctly convex; maxilla reaching vertical at rear edge of eye.

Color:

Color of fresh specimens: head, body, and fins reddish orange; 7 lemon yellow bars on dorsal part of body, extending onto dorsal fin; 3 broad yellow bands radiating from eye; fins red, except for extension of yellow bars from body into dorsal fin and membranes at tips of dorsal-fin spines, which are orange. Juveniles more yellowish, with a large black spot in dorsal fin, pelvic fins and tips of interspinous dorsal-fin membranes blackish; tips of pelvic fins blackish in large juveniles or small adults.

Size:

Maximum total length about 43 cm. demersal; non-migratory; marine; depth range 80-250 m

Remark:

A rare, deep-water grouper; a specimen from Tahiti was taken in a depth of 250 m

(Heemstra & Randall, 1993). This species seems too rare to be of commercial importance.

Caught with hook-and-line and in traps; marketed fresh.



Fig. 2. *Cephalopholis igarashiensis* Katayama, 1957; LBRCF-239, 158.50 mm SL from Bitung, North Sulawesi, Indonesia.

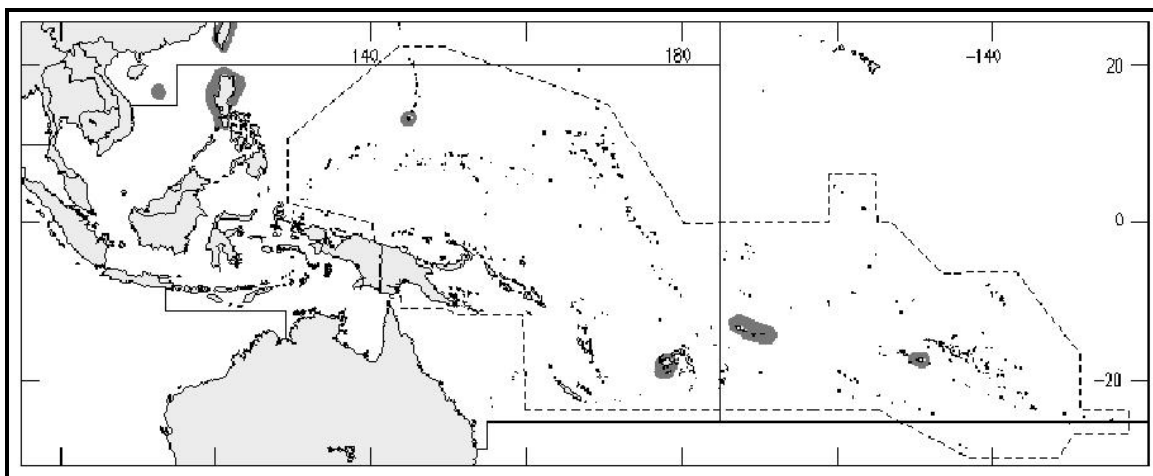


Fig. 3. Geographic distribution of *Cephalopholis igarashiensis* Katayama, 1957 at western Central Pacific (Randall, 1999 in Carpenter & Niem, 1999).

Distribution:

Tropical western Pacific: southern Japan, Taiwan Province of China, Guam, Philippines, South China Sea, Samoa, and Tahiti (Fig. 3). Froese and Pauly (2006) noted the countries where Christmas I. (Allen & Steene, 1988), Cook Is. (Mc Cormack, 2000 in

Froese & Pauly, 2006). Guam & Japan (Heemstra & Randall, 1993), Malaysia (Cabanban, 1999), Micronesia (Myers, 1999), N Marianas (Myers, 1999), Ogasawara Is. (Randall *et al.*, 1997), Palau (Myers, 1999), Philippines (Conlu, 1986), Samoa (Wass, 1984), Tahiti (Heemstra & Randall, 1993), Taiwan (Randall & Heemstra, 1991) as Fig. 4.

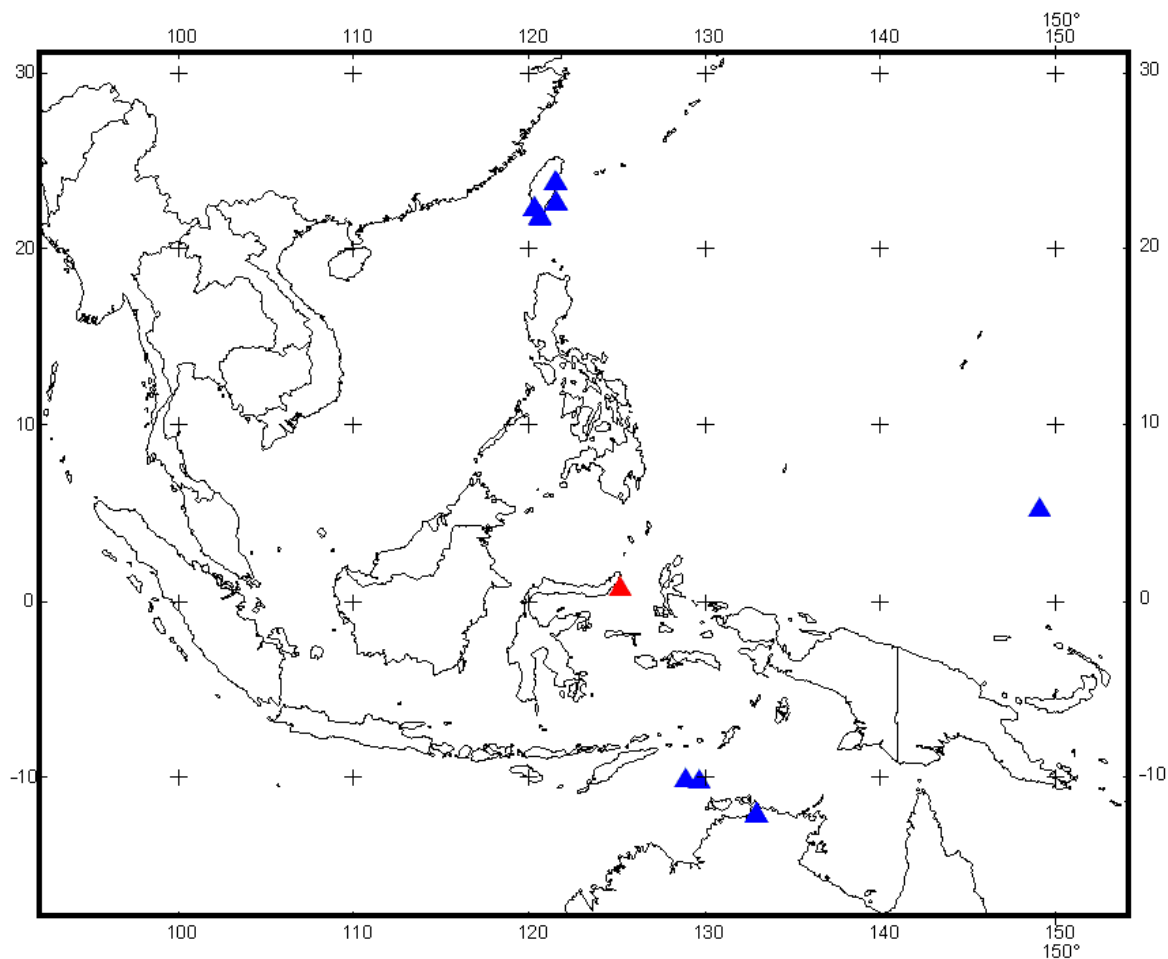


Fig. 4. Geographic distribution of *Cephalopholis igarashiensis* Katayama, 1957 in the world represented by blue triangle (position were downloaded from Froese & Pauly (eds.), 2006.) and specimen collected from Bitung, Indonesia represented by red triangle

ACKNOWLEDGEMENT

I am very grateful to the reviewers for all suggestions and corrections. I also express my sincere gratitude to Dr. S. Kimura, Fisheries Research Laboratory of Mie University, Mie,

Japan for the visit of author in his laboratory. And also to JSPS by Dr. K. Matsuura, Collection Director at National Museum of Nature and Science, Tokyo-Japan to support author visiting Japan.

REFERENCES

- Allen, G.R. & Adrim, M. 2003. Coral reef fishes of Indonesia. *Zoological Studies* 42(1): 1-72.
- Allen, G.R. & Steene, R.C. 1988. *Fishes of Christmas Island Indian Ocean*. Christmas Island Natural History Association, Christmas Island, Indian Ocean, 6798, Australia. 197 p.
- Bleeker, P. & Weber, M. 1911. *The fishes of the Indo-Australian Archipelago. Volume I, Index of the Ichthyological papers*. E.J. Brill Ltd., Leiden, 410 pp.
- Cabanban, A.S. 1999 Coral reef fish resources of Darvel Bay: an analysis of coral reef fish data from 1981-1990 and report of diversity from a market study in Lahad Datu. p. 85-95. In M.W.R.N. De silva, R.A. Rahman, S. Mustafa & A.S. Cabanban (eds.) *Ekspedisi Galaxea '98*.
- Carpenter, K.E. & Niem, V.H. (eds.). 1999. *FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Volume 4. Bony fishes part 2 (Mugilidae to Carangidae)*. Rome, FAO. 1999. pp. 2069-2790.
- Conlu, P.V. 1986. *Guide to Philippine flora and fauna. Volume IX, fishes, natural resources management center, Ministry of Natural Resources and University of the Philippines*, 495 pp.
- Froese, R. & Pauly, D. (eds.). 2006. *FishBase*. World Wide Web electronic publication. www.fishbase.org, version (06/2006).
- Froese, R.; Luna S.M. & Capuli, E.C. 1996. Checklist of marine fishes of Indonesia, compiled from published literature. In D. Pauly & P. Martosubroto (eds.). *Baseline studies of biodiversity: the fish resources of Western Indonesia*. pp. 217-275. *ICLARM Stud Rev.*, 23: 1-312 Heemstra & Randall, 1993)
- Heemstra, P.C. & Randall, J.E. 1993. *FAO species catalogue. Vol. 16. Groupers of the world (family Serranidae, subfamily Epinephelinae)*. An annotated and illustrated catalogue of the grouper, rockcod, hind, coral grouper and lyretail species known to date. *FAO Fish. Synop.* 125(16):382 pp.
- Myers, R.F. 1999. *Micronesian reef fishes: a comprehensive guide to the coral reef fishes of Micronesia*. 3rd revised and expanded edition. Coral Graphics, Barrigada, Guam. 330 p. 297
- Nelson, J.S. 1994. *Fishes of the world*. John Wiley & Sons, Inc., 600 pp.
- Randall, J.E. & Heemstra, P.C. 1991. *Revision of Indo-Pacific groupers (Perciformes: Serranidae: Epinephelinae), with descriptions of five new species*. *Indo-Pacific Fishes* (20): 332 p.48; pl.IIIC; fig. 16-18
- Randall, J.E.; Allen, G.R. & Steene, R.C. 1997. *The complete diver's & fisherman's guide to fishes of the Great Barrier Reef and coral sea*. Revised and Expanded Edition. Crawford House Publishing, Bathurst, 557pp.
- Wass, R.C. 1984. An annotated checklist of the fishes of Samoa. *Natl. Ocean. Atmos. Adminis. Tech. Rept.*, *Natl. Mar. Fish. Serv.*, Spec. Sci. Rept. Fish. (781).
- Weber, M. & de Beaufort, L.F. 1913. *The fishes of the Indo-Australian Archipelago. Volume II. Malacopterygii, Myctophoidea, Ostariophysii: I. Siluroidea*. E.J. Brill Ltd., Leiden, 404 p.
- Weber, M. & de Beaufort, L.F. 1916. *The fishes of the Indo-Australian Archipelago. Volume III. Ostariophysii: II Cyprinoidea Apodes, Synbranchi*. E.J. Brill Ltd., Leiden, 455 p.
- Weber, M. & de Beaufort, L.F. 1922. *The fishes of the Indo-Australian Archipelago. Volume IV. Heteromi, Solenichthyes, Synentognathi, Percosoces, Labyrinthici, Microcyprini*. E.J. Brill Ltd., Leiden, 410 p.
- Weber, M. & de Beaufort, L.F., 1929. *The Fishes of the Indo-Australian Archipelago. Volume V, Anacanthini, Allotriognathi, Heterostomata, Berycomorphi, Percomorphi: Kuhliidae, Apogonidae, Plesiopidae, Pseudoplesiopidae, Priacanthidae, Centropomidae*. E.J. Brill Ltd., Leiden. 458 p.
- Weber, M. & de Beaufort, L.F. 1931. *The fishes of the Indo-Australian Archipelago. Volume VI. Perciformes: Serranidae, Theraponidae, Sillaginidae, Emmelichthyidae, Bathyclupeidae, Coryphaenidae, Carangidae, Rachycentridae, Pomatomidae, Lactariidae, Menidae, Leiognathidae, Mullidae*. E.J. Brill Ltd., Leiden, 448 p.
- Weber, M. & de Beaufort, L.F. 1936. *The fishes of the Indo-Australian Archipelago. VII.*

- Perciformes (continued)*. E.J. Brill Ltd., Leiden, 607 pp.
- Weber, M. & de Beaufort, L.F. 1940. *The fishes of the Indo-Australian Archipelago. VIII. Percomorphi (continued). Cirrhitoidea, Labriiformes, Pomacentriiformes*. E. J. Brill Ltd., Leiden. 508 pp.
- Weber M. & de Beaufort, L.F. 1951. *The fishes of the Indo-Australian Archipelago. IX. Percomorphi (concluded), Blennoidea*. E.J. Brill Ltd., Leiden, 484 pp.
- Weber, M. & de Beaufort, L.F. 1953. *The fishes of the Indo-Australian Archipelago. Vol. X. Gobioidae*. E.J. Brill Ltd., Leiden, 423 p.
- Weber, M. & de Beaufort, L.F. 1962. *The Fishes of the Indo-Australian Archipelago. Volume XI, Scleroparei, Hypostomides, Pediculati, Plectognathi, Opisthomi, Discocephali, Xenopterygii*. E.J. Brill, Leiden, 458 pp.