

**MORPHOLOGICAL CHARACTERISTICS FOR CLASSIFICATION  
OF FAMILY *PLATYCEPHALIDAE* IN GIANH RIVER  
IN THE NORTH CENTRAL PART OF VIETNAM**

*Ho Anh Tuan, Dumitru BULAT\*, Marin USATÎ\**

*Vinh University, Moldova State University*

*\*Academy of sciences of Moldova - Institute of zoology*

Analysis and identification of 35 specimens of family *Platycephalidae* collected in the estuary Gianh in the north central part of Vietnam. We have classified three species: *Rogadius serratus* (Cuvier, 1829), *Sorsogona tuberculata* (Cuvier, 1829) and *Platycephalus indicus* (Linnaeus, 1758). Which has species: *Rogadius serratus* (Cuvier, 1829) & *Sorsogona tuberculata* (Cuvier, 1829) was first discovered in the study area and northern Vietnam.

**Keywords:** *Rogadius serratus, Sorsogona tuberculata, Platycephalus indicus, Platycephalidae, Classification, Vietnam, Gianh river, Quang Binh.*

**CHARACTERISTICILE MORFOLOGICE ALE FAMILIEI *PLATYCEPHALIDAE*  
DIN RÂUL GIANH ÎN PARTEA CENTRALĂ DE NORD A VIETNAMULUI**

Au fost analizate și identificate 35 specimene din familia *Platycephalidae* colectate în râul Gianh în partea centrală de nord a Vietnamului. Noi am clasificat 3 specii: *Rogadius serratus* (Cuvier, 1829), *Sorsogona tuberculata* (Cuvier, 1829) și *Platycephalus indicus* (Linnaeus, 1758), două dintre care – *Rogadius serratus* (Cuvier, 1829) și *Sorsogona tuberculata* (Cuvier, 1829) – inițial au fost descoperite în zona cercetată și în Vietnamul de Nord.

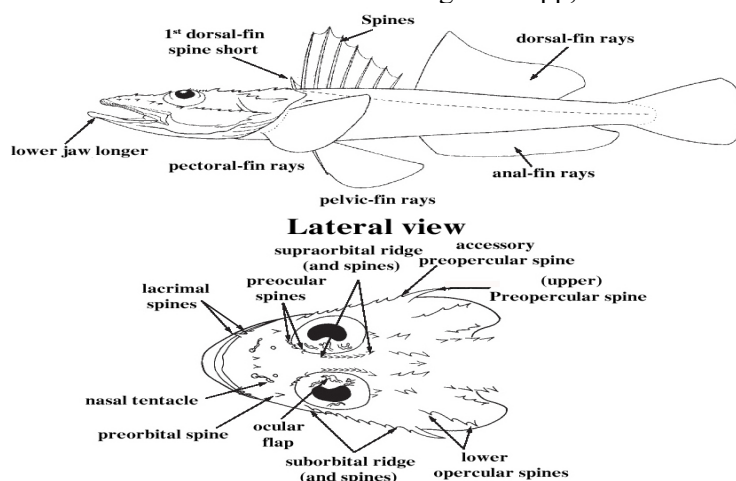
**Cuvînte-cheie:** *Rogadius serratus, Sorsogona tuberculata, Platycephalus indicus, Platycephalidae, clasificare, Vietnam, râul Gianh, Quang Binh.*

**Introduction**

Family of *Platycephalidae* is a group of marine fishes and estuarine fishes containing around 17 genera and 80 species [10]. They are characters: Body elongate, head moderately to strongly depressed, jaw longer than upper. Eye partly directed upward; orbit diameter subequal to or less than snout. Mouth large, lower length. Small villiform or caniniform teeth on jaws, vomer, and palatines in most; stout canines present in a few species. Bony ridges of head usually bearing spines or serrations. Branchiostegal rays 7. Gill rakers few, relatively short or mere stubs; gill membranes free from isthmus. Two dorsal fins, well separated; spinous dorsal fin with VI to X spines, first spine short, isolated or scarcely connected to second spine; second dorsal fin with 10 to 15 soft rays; anal fin with 10 to 15 soft rays (no spines). Pelvic fins thoracic in position, behind pectoral-fin base, set far apart towards sides of body, with I spine and 5 soft rays [1,2]. During the time to research on fish in estuary Gianh in the North Central part of Vietnam. We have already collected 35 specimens of *Platycephalidae*. This study we classify and analyse this specimens.

**1. Methods**

Counts, analysis and measurements were taken according to Knapp, Smith and Heemstra, 1986.



**Diagram of head spines used in the identification  
key and species accounts (Knapp, Smith & Heemstra, 1986)**

## 2. Results and discussion

### 2.1. *Rogadius serratus* (Cuvier, 1829)

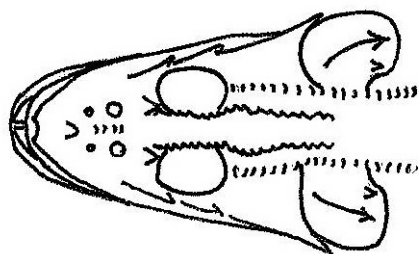
*Platycephalus serratus* Cuvier in Cuvier and Valenciennes 1829: 259 (original description, type locality: Trincomalee, Sri Lanka)

*Platycephalus polijodon* Bleeker 1853: 462 (original description, type locality: Jakarta [Batavia], Java, Indonesia)

**Material examined.** (17 specimens) RGQB 001 - RGQB 017, fish estuary Gianh, Quang Binh, 6 Oct. 2010.

#### Description

Counts: First dorsal-fin rays I+VIII; second dorsal-fin rays 12; anal-fin rays 12; pectoral-fin 18 - 21; pelvic-fin rays I, 5; branched caudal-fin rays C: 13 - 15; scales in lateral line 56 - 60, anterior 6 - 7 scales with a spine; oblique body-scale rows slanting downward and backward above lateral line 64 - 66; oblique body-scale rows slanting downward and forward above lateral line 54 - 59.



Head of *Rogadius serratus*



Fig.1. *Rogadius serratus* (Cuvier, 1829).

Proportions as % standard length (SL): Head length (HL) 36.31 (34.46 - 37.92); predorsal length 36.52 (34.61 - 38.99); length of first dorsal fin base 20.57 (18.17 - 22.77); length of second dorsal fin base 29.90 (28.57 - 31.62); length of anal fin base 31.33 (29.96 - 34.00); caudal peduncle length 4.93 (4.66 - 5.39); caudal peduncle depth 8.34 (7.45 - 8.92); snout length 11.90 (10.51 - 12.43); orbital diameter 8.31 (7.62 - 9.13); upper jaw 14.68 (13.25 - 15.51); lower jaw 13.28 (12.58 - 14.03); interorbital width 2.58 (2.83 - 2.40); postorbital length 44.39 (40.69 - 47.31); suborbital width 3.03 (2.25 - 3.82); pectoral fin length 14.98 (14.32 - 16.44); pelvic fin length 23.13 (20.99 - 24.11); caudal fin length 19.33 (18.47 - 20.28); length of first spine of first dorsal fin 6.13 (5.38 - 6.76); length of second spine of first dorsal fin 14.70 (13.11 - 16.15); length of first ray of second dorsal fin 11.75 (10.26 - 14.53); length of first anal fin ray 7.75 (7.05 - 9.01). Proportions as % HL: snout length 32.78 (30.11 - 34.73); orbital diameter 22.89 (22.11 - 24.07); upper jaw 40.44 (37.94 - 42.34); lower jaw 36.57 (35.68 - 37.67); interorbital width 7.10 (6.35 - 7.74); postorbital length 44.39 (40.69 - 47.31); suborbital length 8.37 (5.97 - 11.09)

Body elongate. Head moderately depressed. Dorsal surface of head with spines. Single ocular spine present. Suborbital ridge with fine serrations. Preopercule with 4 spines, including single short antrorse lowermost spine. Eye without ocular flaps. Iris lappet bilobed. Teeth on vomer in 2 separate patches. Interopercular flap absent. Cheek region with well developed skinny sensory tubes. Lateral line scales with two opening to exterior.

**Color:** Body and head brownish above, whitish below; body with several dark brownish bands and spots. First dorsal fin with submarginal blackish band. Second dorsal fin with many dark brownish spots. Pectoral fin with many irregular dark brownish bands in upper portion, blackish in lower half; posterior margin of the fin white. Pelvic fin blackish, with irregular two blackish bands posteriorly; posterior margin of the fin white. Caudal fin with a blackish band basally and posteriorly. Color in alcohol similar to that when fresh.

**Distribution:** Known from the Indian Ocean and western Pacific, including Mauritius, Seyshelles, Somalia, Pakistan, Sri Lanka, Maldives, Chagos Archipelago, Indonesia, Nha Trang Vietnam, Philippines, Port Moresby, northern Queensland, and New Caledonia (Knapp 1999, this study).

## 2.2. *Sorsogona tuberculata* (Cuvier, 1829)

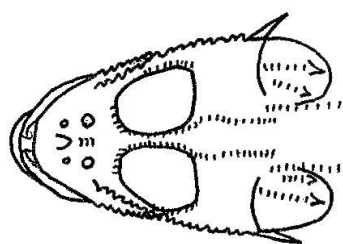
*Platycephalus tuberculatus* Cuvier in Cuvier and Valenciennes 1829: 258 (original description, type locality: Trincomalee, Sri Lanka)

*Sorsogona serrulata* Herre 1934: 67 (original description, type locality: Magallanes, Sorsogon Prov., Luzon I., Philippines)

**Material examined.** (4 specimens) RGQB 018 - RGQB 021, fish estuary Gianh, Quang Binh, 10 Oct. 2010.

### Description

Counts: First dorsal-fin rays I+VIII; second dorsal-fin rays 12; anal-fin rays 11; pectoral-fin 20 - 21; pelvic-fin rays I, 5; branched caudal-fin rays C: 13 - 15; scales in lateral line 61 - 63, anterior 4 scales with a spine; oblique body-scale rows slanting downward and backward above lateral line 65 - 67; oblique body-scale rows slanting downward and forward above lateral line 61 - 63.



Head of *Sorsogona tuberculata*



Fig.2. *Sorsogona tuberculata* (Cuvier, 1829).

Proportions as % standard length (SL): Head length (HL) 37.34 (36.75 - 37.93); predorsal length 36.54 (35.66 - 37.42); length of first dorsal fin base 21.89 (20.79 - 23.00); length of second dorsal fin base 26.39 (25.81 - 26.96); length of anal fin base 28.97 (28.37 - 29.57); caudal peduncle length 5.56 (5.46 - 5.65); caudal peduncle depth 8.89 (8.37 - 9.42); snout length 11.98 (11.69 - 12.28); orbital diameter 9.22 (8.97 - 9.47); upper jaw 15.00 (14.70 - 15.31); lower jaw 13.98 (13.79 - 14.16); interorbital width 2.74 (2.69 - 2.80); postorbital length 43.53 (42.52 - 44.55); suborbital width 2.82 (2.73 - 2.91); pectoral fin length 17.86 (17.54 - 18.19); pelvic fin length 24.73 (24.51 - 24.95); caudal fin length 18.84 (18.16 - 19.51); length of first spine of first dorsal fin 4.85 (4.64 - 5.06); length of second spine of first dorsal fin 12.47 (12.38 - 12.57); length of first ray of second dorsal fin 12.48 (11.84 - 13.13); length of first anal fin ray 9.06 (8.38 - 9.75). Proportions as % HL: snout length 32.09 (31.81 - 32.36); orbital diameter 24.69 (24.41 - 24.97); upper jaw 40.18 (40.01 - 40.35); lower jaw 37.43 (37.33 - 37.54); interorbital width 7.35 (7.10 - 7.61); postorbital length 43.53 (42.52 - 44.55); suborbital length 7.55 (7.43 - 7.66)

Body elongate. Head moderately depressed. Dorsal surface of head with spines and tubercles. Two to 6 preocular spines present. Suborbital ridge with fine serrations. Lower half of preopercle roughly serrated, lacking the antrorse spine. Eye without ocular flaps. Iris lappet scalloped. Teeth on vomer in 2 separate patches. Interopercular flap absent. Cheek region with well developed skinny sensory tubes. Lateral line scales with two opening to exterior. Scales on anterior portion of body with one or more spines.

**Color:** Body and head light brown above, whitish below; body with several indistinct brown bands dorsally. Dorsal fins with many brownish spots. Pectoral fin with many irregular brownish bands; posterior portion of the fin blackish except for upper. Pelvic fin with irregular brownish spots. Caudal fin dusky.

**Distribution:** Widespread, ranging from the Okinawa Island to Persian Gulf and northern Australia, Nha Trang Vietnam. (e.g., Knapp, 1999; Sakashita et al., 2003; this study).

## 2.3. *Platycephalus indicus* (Linnaeus, 1758)

*Callionymus indicus* Linnaeus (1758). Syst. Nat. ed. ,10 : 250.

*Platycephalus insidiator* Day (1878). Fish. India, Z16.

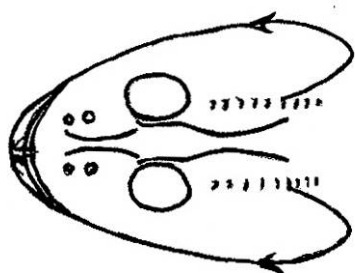
*Thysanophrys indicus* Munro (1955). Marine and freshwater fishes of Ceylon, 253. Misra, (1962). Rec. Indian Mus., 57: 304.

*Platycephalus indicus* de Beaufort and Briggs (1962). Fish. Indo-Aust. Archipel., 11.

**Material examined.** (14 specimens) RGQB 022 - RGQB 035, fish estuary Gianh, Quang Binh, 17 Oct. 2010.

### Description

Counts: First dorsal-fin rays IX; second dorsal-fin rays 13; anal-fin rays 13; pectoral-fin 18 - 19; pelvic-fin rays I, 5; branched caudal-fin rays C: 13 - 15; scales in lateral line 105 - 136, anterior 11 - 15 scales with a spine; oblique body-scale rows slanting downward and backward above lateral line 110 - 140; oblique body-scale rows slanting downward and forward above lateral line 93 - 98.



Head of *Platycephalus indicus*



Fig.3. *Platycephalus indicus* (Linnaeus, 1758).

Proportions as % standard length (SL): head length (HL) 32.49 (31.79 - 33.36); predorsal length 34.04 (33.75 - 34.66); length of first dorsal fin base 15.52 (14.12 - 18.07); length of second dorsal fin base 34.71 (33.36 - 35.42); length of anal fin base 37.32 (36.08 - 39.50); caudal peduncle length 3.51 (3.08 - 3.77); caudal peduncle depth 8.03 (6.24 - 9.11); snout length 9.75 (9.36 - 10.21); orbital diameter 4.85 (4.21 - 5.11); upper jaw 11.89 (10.71 - 12.80); lower jaw 12.08 (11.16 - 12.96); interorbital width 3.92 (3.40 - 4.40); postorbital length 56.20 (55.17 - 58.32); suborbital width 2.47 (2.09 - 2.73); pectoral fin length 14.70 (13.92 - 16.17); pelvic fin length 19.67 (18.84 - 20.46); caudal fin length 15.31 (14.57 - 16.32); length of first spine of first dorsal fin 1.46 (1.35 - 1.67); length of second spine of first dorsal fin 14.39 (12.67 - 15.49); length of first ray of second dorsal fin 13.31 (11.33 - 15.06); length of first anal fin ray 5.61 (4.88 - 6.17). Proportional measurements (% HL): snout length 30.00 (28.89 - 30.90); orbital diameter 14.94 (12.87 - 15.88); upper jaw 36.59 (33.69 - 39.34); lower jaw 37.19 (34.91 - 40.77); interorbital width 12.08 (10.20 - 13.76); postorbital length 56.20 (55.17 - 58.32); suborbital length 7.61 (6.45 - 8.42)

Teeth villiform, those on upper jaw at the symphyseal region pointed, in a crescent shaped band on vomer and in two narrow longitudinal bands on palatines; some on vomer and palatines slightly pointed (on vomer the pointed teeth are at the end of the crescent). Ridges between nostrils smooth, run parallel backwards up to middle of interorbital space. A short but strong spine on anterior orbital rim. Supraorbital ridge completely smooth, superior postorbital ridge also smooth, but in large specimens with single spine posteriorly; inferior postorbital ridge with a spine anteriorly and with two to four spines posteriorly, last one longer and in line with lateral line. Suborbital ridge, smooth sometimes with single spine below hind border of eye. Two strong subequal preopercular spines, upper one at an angle to suborbital ridge. Opercular ridges flat and smooth, lower ridge not very prominent. A prominent triangular subopercular flap present. Head completely scaly. First lateral line scale keeled. First dorsal spine short, second and third spines more or less of same length, ninth spine not connected with eighth one; first ray of soft dorsal longest.

**Colour:** Brown above and pale yellow below. Sometimes two cross bands on posterior dorsal side. Pectoral, pelvic and dorsal fins spotted. Caudal yellowish with two oblique black bands with white borders

**Distribution:** Extends westwards from coasts of New Guinea, Philippines, seas of Japan, through Celebes, Borneo, Java, Sumatra, Burma, Andaman Coasts of India, and Sri Lanka to east coast of Africa, the Red sea, Vietnam and this study.

### Conclusion

Analysis and identification of 35 specimens of family Platycephalidae collected in the estuary Gianh in the north central part of Vietnam. We have classified three species: *Rogadius serratus* (Cuvier, 1829), *Sorsogona tuberculata* (Cuvier, 1829) và *Platycephalus indicus* (Linnaeus, 1758). Which has species: *Rogadius serratus* (Cuvier, 1829) & *Sorsogona tuberculata* (Cuvier, 1829) was first discovered in the study area and northern Vietnam.

**Bibliography:**

1. FAO species identification sheets. In: *Fishing area*, 1983, (51), p.1-12.
2. FAO species identification guide for fishery purposes - The living marine resources of the western central Pacific. In: *Bony fishes*, part 2 (Mugilidae to Carangidae), 1999 (4), p.2385-2421.
3. IMAMURA, H., KOMADA, M., and YOSHINO, T. Record of the flathead fishes (Perciformes: Platycephalidae) collected from Nha Trang, Vietnam. In: *Coastal marine science*, 2006, 30 (1), p.293-300.
4. NGUYEN, Van Hao. *Freshwater Fishes of Vietnam*. Vol.2. Hanoi: Agriculture Publishing House, 2005.
5. IMAMURA, H. A New Species of the Flathead Genus *Inegocia* (Teleostei: Platycephalidae) from East Asia. In: *Bull. Natl. Mus. Nat. Sci., Ser. A, Suppl.*, 2010, (4), p.21-29.
6. IMAMURA, H., NAGAO, T. *Silurus imberbis* Gmelin 1789, a senior synonym of the platycephalid *Inegocia japonica* (Cuvier 1829), with a proposal to suppress the name. In: *Ichthyological*, 2011, (58), p.166-169.
7. IMAMURA, H., YOSHINO, T. Authorship and validity of two flatheads, *Platycephalus japonicus* and *Platycephalus crocodilus* (Teleostei: Platycephalidae). In: *Ichthyological Research*, 2009, (56), p.308-313.
8. KNAPP, SMITH and HEEMSTRA. *Sea fishes. Platycephalidae*. Berlin: Springer-Verlag, 1986, p.482-486.
9. KNAPP, L.W., IMAMURA, H. and SAKASHITA, M. *Onigicia bimaculata*, a new species of flathead fish (Scorpaeniformes: Platycephalidae) from the Indo-Pacific. In: *Special Publication of the J.L.B. Smith Institute of Ichthyology*, 2000, (64), p.1-10.
10. NAKABO, T. *Fishes of Japan*. Printed in Japan. 2002. 1749 p.
11. NAGANO, Y., IMAMURA, H., YABE, M. A new ghost flathead (Scorpaeniformes: Hoplichthyidae) from southwestern Australia. In: *Ichthyological Research*, 2014, p.8.
12. <http://fishbase.org/Nomenclature/FamilySearchList.php>

Prezentat la 24.11.2014