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# *Opsarius sajikensis*, a new bariliine fish (Cyprinidae: Danioninae) from the Yu River basin of Manipur, Northeastern India

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**Abstract**
*Opsarius sajikensis*, a new species of bariliine cyprinid fish is described from the Kana river of Yu River basin, Manipur, India. It is distinguished from congeners in having the following combination of characters: eye diameter 6.9-8.5% SL, caudal peduncle length 14.8-17.8% SL, prepelvic length 49.9-51.7% SL, anal-fin length 22.5-23.9% SL, interorbital distance 36.1-39.0% HL, predorsal scales 23-24, lateral line scales 43-45, 11-15 dark blue vertical bars on the sides of body, vent to anal fin origin 23.9-27.9% distance between pelvic and anal fins,23.6-30.6% distance between pelvic and caudal-fins, presence of very short, rudimentary maxillary and rostral barbels. A key to the species of *Opsarius* and their distributional pattern in the two main river basins of Manipur are provided.

**Keywords:** *Opsarius*, new species, Manipur

## 1. Introduction
Bariliine fishes are relatively elongated, rounded bellies, compressed body, blue black vertical bars or spots or blotches on the flank of the body and dorsal fin inserted behind the middle of the body. They are large genus of cyprinid fishes native to Asia and inhabitants of medium to fast flowing torrential, clean, clear mountain streams (Hamilton 1822, Talwar & Jhingran 1991, Jayaram 1999 and Tejavej 2012 a, b,) [6, 18, 9, 19, 20]. 9, 14, 17, 21 and 22 species of *Barilius* are reported by Sen (1985) [17], Talwar & Jhingran (1991) [18], Jayaram (1999) [9], Raagam & Devi (2005) [15] respectively from the Indian subcontinent. Vishwanath (2007) [21] reported 8 species of *Barilius* from Manipur. Allen *et al* (2010) [1] and Dishma and Vishwanath (2012a) [4] reported 13 species of *Barilius* from the Eastern Himalaya region and 11 species of this genus from the north east India respectively. Nath *et al* (2010) [13], Dishma & Vishwanath (2012b) [5] and Knight *et al.* (2015) [11] described *Barilius arunachalensis*, *B. profundus* and *B. ardens* from Arunachal Pradesh, Koladyne basin and the Western Ghats respectively. The reports of Hora (1921) [7], Arunkumar & Singh (2000) [3], Vishwanath & Manojkumar (2002) [22] and Selim & Vishwanath (2002) [16] are the important reports of bariliine fishes of Manipur. 11 species of *Opsarius* are reported from the inland fishes of Southeast Asia by Kottelat (2013) [12]. Arunkumar and Moyon (2017) [2] and Qin *et al* (2019) [14] describe *Opsarius kanaensis* from Manipur, Northeastern India and *O. putaoensis* from the Irrawaddy basin from northern Myanmar respectively.
The Kana river of Sajik-Tampak, Manipur, northeastern India is a tributary head-water connected to the Yu river of Myanmar. It belongs to the Yu river basin of Manipur and an important part of the Chindwin basin. 10 specimens of *Opsarius* collected from Molnaum village of Sajik-Tampak possess and bear many different morphological characters from its congeners; so it is described here as a new species *Opsarius sajikensis*.

## 2. Material and Methods
Measurements were made point to point on left side of specimens wherever possible with dial calipers to the nearest 0.1mm. Methods used are those of Jayaram (1981, 2002) [8, 10] and Tejavej (2012a,b) [19, 20]. Colour pattern were recorded from live, fresh and preserved specimens. Scale rows below the lateral line were the number of scale rows beginning from the one at origin of the anal-fin base up to the scale below the lateral line (excluding the lateral line scale row). Scale rows above the lateral line were the number of scale rows beginning

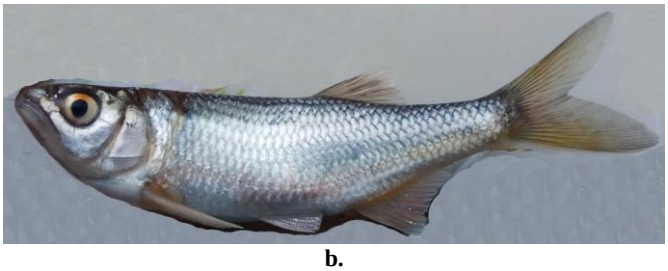
from the one right below the predorsal scale at the origin of the dorsal-fin diagonally down to the scale above the lateral line (not including the lateral line scale row). Pelvic-fin to dorsal-fin depth was the depth of body. Pelvic-fin to anal-fin length was the diameter from the midline between the origins of pelvic-fin base backward to the origin of anal-fin base. Dorsal head length was the distance from the most anterior part of the snout backward to the most anterior part of nape or occiput. Post-orbital head depth was the depth of the head from the vertical line behind the posterior margin of the eye. Preorbital head depth was the depth of the head in fronts of the anterior margin of the eye perpendicular to the body in normal position. Vertebrae were counted after dissection. The examined materials were deposited in the Manipur University Museum of Natural History (MUMNH), Canchipur, Manipur. The generic name *Opsarius* is used instead of *Barilius* according to Kottelat (2013) [12].

### 3. Key to species of the genus *Opsarius* of Manipur

| | | |
|---|---|---|
| 1 | Barbel absent | 2 |
| | Barbel present | 3 |
| 2 | Body with 7-8 vertical bars | *0.chatricensis* |
| 3 | 1 pair of barbell | 4 |
| | 2 pairs of barbells | 9 |
| 4 | Dorsal-fin with a transverse blue black band | 5 |
| | Dorsal-fin without a transverse blue black band | 8 |
| 5. | Origin of dorsal-fin is equidistant from the end of the upper lobe of caudal and the anterior margin of nares | 6 |
| | Origin of dorsal-fin is not equidistant from the end of the upper lobe of caudal and the anterior margin of nares | 7 |
| 6. | Post dorsal length 37.9-40.6%SL and caudal peduncle depth 11.6-14.2%SL | *O. dogarsnghi* |
| 7. | Post dorsal length 72.1-78.5%SL and caudal peduncle depth 9.2-9.9%SL | *O. kanaensis* |
| 8. | Body scales with 2-4 rows of transverse black spots and blotches | *O. tileo* |
| 9. | Body scales with blue black spots | *O. cocsa* |
| | Body scales without blue black spots, with 9-17 vertical bars | 10 |
| 10 | Caudal-fin lobes equal | 11 |
| | Caudal-fin lobes unequal | 14 |
| 11. | Head length 28.3-29.3% SL | 12 |
| | Head length 24.6-27.7% SL | 13 |
| 12. | Body with 9-12 vertical bars | *O. barnoides* |
| 13. | Caudal peduncle length 63.3-79.0% HL | *O. ngawa* |
| | Caudal peduncle length 38.3-41.2% HL | *O. vagra* |
| 14. | Head length 17.3-18.3% SL; body with 14-16 vertical bars. | *O. lairokensis* |
| | Head length 23.6-26.6% SL; body with 11-17 vertical bars, | 15 |
| 15. | Post-dorsal length 42.6-44.3% SL; body with 14-17 vertical bars. | *O. barila* |
| | Post dorsal length 65.6-71.1% SL; body with 11-15 vertical bars, | ***O. sajikensis*** sp.nov. |

### 4. Results

a.



**b.**

**Fig 1:** *Opsarius sajikensis* sp.nov.80/NH/MUM,holotype,99.0 mm SL. (a). After preservation in 10% formalin. (b). Before preservation (in fresh).

**4.1 *Opsarius sajikensis*** sp.nov. [Figure 1. (a), (b)]

**4.2 Material Examined**

**4.3 Holotype:** 80/NH/MUM,99.0 mm SL; 127.8 mm TL; from Kana River at Sajik-Tampak near Molnaum village, Yu river basin, about 43 km towards South from district headquarter, Chandel, from Chandel Bazar, Chandel district, Co-ordinate: Latitude $24^0$0′N-$24^0$15′N and longitude $93^0$45′E-$94^0$0′E, collected by the fishermen of Sajik-Tampak & Moyon along with L. Arunkumar, 7th April 2017.

**4.4 Paratypes**: 80/NH/MUM; 6 specimens, 77.3-92.6mmSL; 98.2-152 mm TL; same data as holotype.

**4.5 Diagnosis**: *Opsarius sajikensis* sp. nov. differs from *O. barnoides* in having larger eye 6.9-8.5% SL; vs.5.3-6.5,longer prepelvic 49.9-51.7% SL vs.47-48; from *O. lairokensis* in having more predorsal scales 23-24 vs.21, larger eye 28.4-32.5% HL vs.26.8-27.4; wider interorbital 36.1-39.0% HL vs. 27.3-33.3; from *O. ngawa* in having larger diameter 28.4-32.5% HL vs.21.3-25.8, longer anal-fin 22.5-23.9% SL vs.13.8-16.4 and unequal caudal fin lobes vs. equal.

**4.6 Description**: General body shape and appearance is shown in Figure 1 (a, b). Morphometric data as shown in Table 1. Body fusiform, deep and compressed with ventral profile convex than dorsal profile. Head deep, compressed, snout slightly blunt to acute. Caudal peduncle long, narrower at the base of caudal-fin. Mouth large, oblique and terminal. Tip of snout not tuberculated. Maxilla length upto the anterior margin of eye to vertical line just through the anterior margin of pupil. Maxillary and rostral barbels are very short and rudimentary. Eyes large, more or less slightly longer by snout length. Infraorbital bones large. Interorbital slightly longer & wider than eye diameter. Vertebrae 40. 43-45 scales in lateral

line row to the end of hypural plate. Lateral line downwardly curved. 8 scale rows above the lateral line to the base of first dorsal-fin ray origin. 2.5-3 rows below the lateral line to the base of first ventral-fin ray. 23-24 scales in predorsal. 12-15 Circumpeduncular scales. Axillary process at the anterior base of pectoral-fin and axillary scale at the anterior base of pelvic-fin well developed. Dorsal-fin origin closed to the origin of pelvic-fin than origin of anal-fin and nearer to the base of caudal-fin than tip of snout; with ii simple rays and 7-8 branched rays; with posterior tip surpassing not reaching vertical through posterior base of anal-fin. Anal-fin origin at vertical not concide or posteriorly extended from the last dorsal-fin rays. Anal-fin with ii simple rays and 10 branched rays. Tip margin of anal-fin is concave. Pelvic-fin with i simple rays with 8 branched rays; origin far in front of dorsal-fin origin, straight tip margin and not reaching vent. Pectoral-fin with i simple ray with 11-12 branched rays, not reaching the base of pelvic-fin origin. Caudal-fin deeply forked, lower lobe longer than upper lobe and with 18-19 branched rays.

**4.7 Colouration:** Dorsum greenish to grayish, belly silvery white and greenish to silvery on side flank in most specimens. 11-15 bluish black vertical bars on the sides of body. Bars and inter bars are equal with 2 scales wide, ends above the lateral line pores, longer bars at the anterior and shorter bars at the posterior end of body. No caudal spot. Anal-fin is dominated by light reddish in colouration from other fins. Pectoral and ventral-fins are less reddish from the anal-fin. Dorsal-fin is less light reddish from pectoral, ventral and anal-fin rays and 4$^{th}$ to 6$^{th}$ of its rays with black melanophores. Caudal-fin is more light reddish or yellowish than dorsal-fin. 3/4 of dorsal and caudal-fin margins light smoky to blackish. At the anterior base margins of the mid 4 to 5 caudal rays bears black dark hypen-like short bands are present.

**Table 1:** Morphometric data of *Opsarius sajikensis* sp. nov. (n=7).

| Measurements | Holotype 80NH/MUM | Range (including holotype) | Mean | ±SD |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| Standard length (SL) in mm | 99.0 | 77.3-92.6 | 89.6 | 3.1 |
| Total length (TL) in mm | 127.8 | 98.2-152.0 | 125.7 | 3.7 |
| **In% of Standard length** | | | | |
| Body depth at dorsal-fin origin | 24.9 | 24.9-26.0 | 25.4 | 1.7 |
| Body depth at pelvic fin origin | 27.2 | 26.0-27.2 | 26.4 | 1.7 |
| Pelvic-fin to dorsal-fin origin | 26.9 | 26.9-28.2 | 27.4 | 1.7 |
| Caudal peduncle depth | 8.8 | 8.4-9.7 | 9.0 | 0.9 |
| Caudal peduncle length | 17.8 | 14.8-17.8 | 16.1 | 1.3 |
| Preanus length | 65.8 | 65.1-70.1 | 67.2 | 2.7 |
| Preanal length | 70.7 | 67.5-70.7 | 69.4 | 2.8 |
| Predorsal length | 57.6 | 57.6-59.9 | 58.5 | 2.5 |
| Post dorsal length | 65.6 | 65.6-71.1 | 67.4 | 2.7 |
| Prepelvic length | 59.1 | 49.9-51.9 | 51.2 | 2.4 |
| Pelvic-fin to anal-fin length | 18.8 | 15.8-20.2 | 18.3 | 1.4 |
| Caudal fin length(upper lobe) | 24.2 | 24.2-26.6 | 25.5 | 1.7 |
| Caudal fin length(lower lobe) | 31.0 | 27.9-31.0 | 29.2 | 1.8 |
| Dorsal-fin height | 20.7 | 17.7-20.7 | 19.3 | 1.5 |
| Pectoral-fin length | 21.6 | 19.0-22.7 | 21.1 | 1.5 |
| Pelvic-fin length | 14.5 | 12.9-14.5 | 14.0 | 1.2 |
| Anal-fin length | 23.8 | 22.5-23.8 | 23.6 | 1.6 |
| Dorsal fin base length | 8.0 | 6.7-10.0 | 8.2 | 0.9 |
| Anal-fin base length | 16.5 | 16.5-19.4 | 17.7 | 1.4 |
| Lateral head length | 24.2 | 24.2-26.3 | 24.9 | 1.7 |
| Dorsal head length at occiput | 14.9 | 14.9-19.9 | 18.2 | 1.4 |
| Head width | 12.1 | 11.5-12.1 | 11.8 | 1.1 |
| Head depth at occiput | 18.7 | 16.3-18.7 | 17.9 | 1.4 |
| Snout length | 7.5 | 7.4-8.5 | 7.8 | 0.9 |
| Preorbital head depth | 12.7 | 11.4-12.7 | 12.0 | 1.1 |
| Postorbital head depth | 15.3 | 14.7-15.3 | 15.1 | 1.3 |
| Inteorbital width | 9.0 | 8.8-10.2 | 9.3 | 1.0 |
| Eye diameter | 7.1 | 6.9-8.5 | 7.5 | 0.9 |
| Upper jaw length | 11.4 | 10.2-11.4 | 10.7 | 1.0 |
| Body width at dorsal fin origin | 12.7 | 11.7-13.3 | 12.6 | 1.2 |
| Body width at anal fin origin | 9.5 | 8.8-10.6 | 9.6 | 1.0 |
| **In% of lateral head length** | | | | |
| Head length at occiput | 61.7 | 61.7-81.0 | 72.9 | 2.8 |
| Head width at neck | 50.0 | 47.5-50.2 | 49.2 | 2.3 |
| Head depth at occiput | 77.1 | 67.2-77.1 | 71.9 | 2.8 |
| Head depth at eye (anterior) | 52.4 | 43.3-52.4 | 48.1 | 2.3 |
| Head depth at eye (posterior) | 63.0 | 56.1-63.3 | 60.8 | 2.6 |
| Snout length | 30.8 | 30.3-32.5 | 31.2 | 1.9 |
| Post orbital length | 57.6 | 52.7-57.6 | 54.8 | 2.5 |
| Interorbital width | 37.2 | 36.1-39.0 | 37.4 | 2.0 |
| Eye diameter | 29.2 | 28.4-32.5 | 30.0 | 1.8 |
| Upper jaw length | 47.1 | 40.1-47.1 | 43.2 | 2.2 |

| | | | | |
|---|---|---|---|---|
| Caudal peduncle length | 73.5 | 56.3-73.5 | 64.6 | 2.7 |
| Caudal peduncle depth | 36.3 | 36.3-38.8 | 37.4 | 2.0 |
| **In% of distance between pelvic and anal fins** | | | | |
| Vent to anal-fin origin | 25.8 | 23.9-27.9 | 25.9 | 1.7 |
| **In% of distance between pelvic and caudal fins origin** | | | | |
| Vent to pelvic fin origin | 29.0 | 23.6-30.6 | 27.7 | 1.8 |
| **In% of caudal peduncle length** | | | | |
| Caudal peduncle depth | 49.4 | 49.4-65.5 | 58.5 | 2.5 |

**Table 2:** Distribution pattern of *0psarius* species in the two major river basins in Manipur. BRB= Barak River Basin and CRD= Chindwin River Basin. + =Present. - = Absent

| Sl. No. | ***Opsarius* species** | BRB | CRB |
|---|---|---|---|
| 1 | *O. barila* (Hamilton,1822) | + | + |
| 2 | *O. barnoides* (Vinciguerra,1890) | - | + |
| 3 | *O. chatricensis* (Selim & Vishwanath, 2002) | + | - |
| 4 | *O. cocsa* (Hamilton,1807) | - | + |
| 5 | *O. dogarsinghi* (Hora,1921) | - | + |
| 6 | *O. kanaensis* Arunkumar and Moyon, 2017 | - | + |
| 7 | *O. lairokensis* (Arunkumar & Singh, 2000) | - | + |
| 8 | *O. ngawa* (Vishwanath & Manojkumar, 2002) | - | + |
| 9 | *O. sajikensis* sp. nov. | - | + |
| 10 | *O. tileo* (Hamilton,1822) | + | - |
| 11 | *O. vagra* (Hamilton,1822) | + | - |

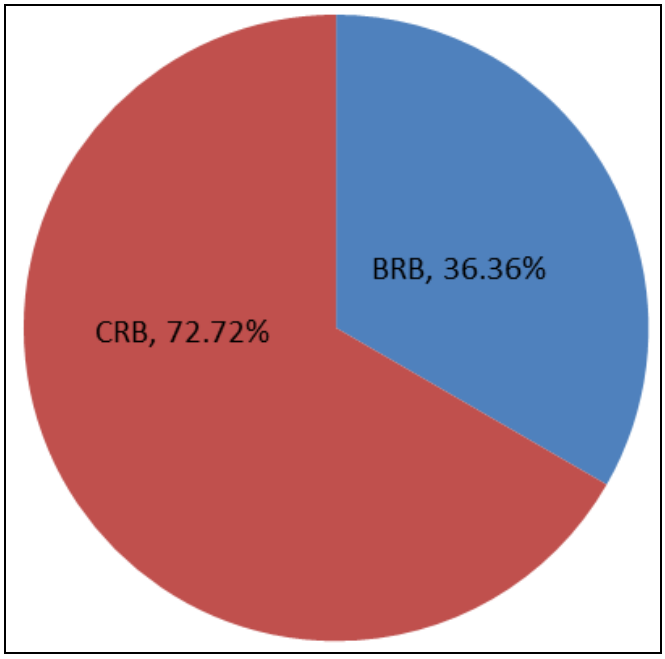



**Fig 4:** Pie Chart showing the distribution pattern of *0psarius* species in the two major river basins in Manipur. BRB= Barak River Basin and CRD= Chindwin River Basin.

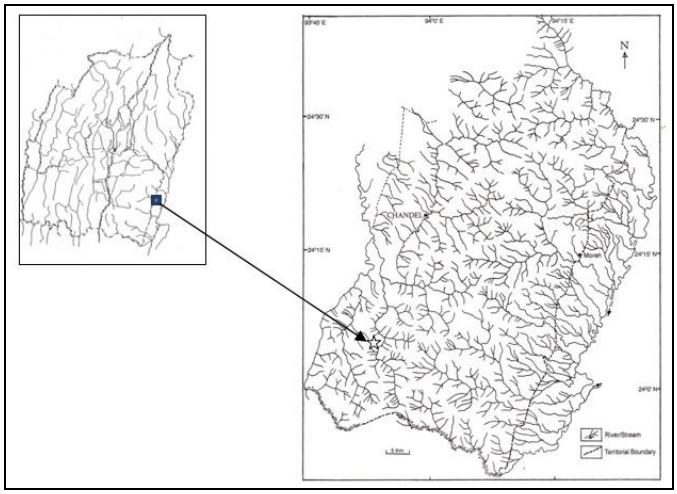


**Fig 2:** Map of Manipur, India showing the type locality of *Opsarius sajikensis* sp. nov. indicated by star (☆) symbol.

**Fig 3:** Kana River at Sajik-Tampak near Molnaum village, Chandel district of Manipur for the type-locality and natural habitat of *Opsarius sajikensis* sp. nov.

### 4.8 Distribution and habitat

Currently known to occur only at its type, locality, Molnaum village of Sajik-Tampak, Manipur, India (Figure 2 and Table 2). *Opsarius sajikensis* sp. nov.is found in fast flowing with clear water, cobble, pebble and sandy bottoms (Figure 3). Fishes that were found together with are: *Acantopsis spectabilis*; *Paracanthocobitis tumitensis*, *P. zoanlternans*; *Badis ferraris*; *Botia histronica*; *Synchrossus berdmorei*; *Channa marulius*; *Gonorhynchus burmanicus; Devario aequipinnatus*; *Garra gravelyi*; *Lepidocephalichthys guntea* and *Mastacembelus armatus*; *Macrognathus morehensis* etc.

### 4.9 Local name

Ngawa (in Manipuri dialect), Ngaphar (in Moyon dialect).

### 4.10 Etymology
The species is named after Sajik-Tampak, one of the important border areas of Manipur, India and Myanmar where the type materials were collected.

## 5. Discussions
*Opsarius arunachalensis* and *O. profundus* are currently endemic bariliine cyprinid ichthyofauna of the Brahmaputra and the Koladyne basins of Arunachal Pradesh and Mizoram respectively according to Nath *et al* 2010 [13] and Dishma & Vishwanath (2012b) [5]. Nath *et al* (2010) [13] wanted to keep separately the species *Barilius lairokensis* due to the presence of dorsal and anal fins with spines. Thus, Kottelat (2013) [12] kept it in species inquirenda. After vivid examinations, it has no spines in pectoral and ventral fins, not in dorsal and anal fins. So, *B. lairokensis* is revalidated here as *O. lairokensis*. Kottelat (2013) [12] synonymized *B. chatricensis* and *B. ngawa* into *O. barnoides*. They were used as valid species for comparisons with the new species, *O. sajikensis* due to the occurrence in the same river basin. The distributional pattern of *Opsarius species* in the two main river basins of Manipur are shown in Table 2 and Figure 4. *O. sajikensis* sp. nov. differs from *O. arunachalensis*, *O. barna* and *O. chatricensis* in having 2 pairs of rudimentary short barbels (maxillary and rostral) vs.absent; from *O. barila* in having more predorsal scales 23-24 vs. 22, deeper body at dorsal-fin origin 24.9-26.0% SL vs.23.4-24.0; from *O. barnoides* in having longer anal-fin 22.5-23.9% SL vs.16.8-17.3,wider inter-orbital 36.1-39.0% HL vs. 33.7-36.3, more lateral line scales 43-45 vs.37-43; from *O. chatricensis* in having deeper body (24.9-26.0%SL vs. 23.2), more predorsal scales (23-24 vs. 15), more lateral line scales (43-45 vs. 36-38), more body vertical bars (11-15 vs. 7-8), from *O. cocsa* in having more predorsal length 23-24 vs.18-20, scales without dark spots vs. with dark spots. *O. sajikensis* sp. nov. differs from *O. dogarsinghi* in having 2 pairs of barbels vs. 1 pair of barbel, more lateral line scales (43-45 vs. 38-42), more predorsal scales (23-24 vs. 20) and more transverse or vertical bars on the sides of body (11-15 vs.9) respectively. It differs from *O. kanaensis* in having 2 pairs of barbels vs. 1 pair of short rudimentary maxillary barbel, more body vertical bars (11-15 vs. 8-10), absence (vs. presence) of a round black spot at the anterior base of caudal-fin, shorter post dorsal length (65.6-71.1% SL vs. 72.1-78.5), longer head (24.2-26.3%Sl vs. 18.7-24.2), wider interorbital (36.1-39.0% HL vs. 32.2-35.8). It differs from *O. koratensis* in having more lateral line scales (43-45 vs.32-36) and more predorsal scales (23-24 vs.15-18). The new species differs from *O. lairokensis* in having less scale rows above the lateral line (8 vs.9.5), shorter preanal (67.5-70.7% SL vs. 71.9-75.2), longer anal-fin (22.5-23.9% SL vs.13.0-15.3), longer lower caudal-fin lobe (27.9-31.0% SL vs.25.3-28.9), slender depth of head at occiput (67.2-77.1% HL vs.79.3-81.1) and wider head at neck (47.5-50.2% HL vs. 42.9-47.5) respectively. It differs from *O. ngawa* in having more predorsal scales (23-24 vs. 21-22), more lateral line scales (43-45 vs.42-43), longer caudal- fin (27.9-31.0%SL vs. 24.0-28.6), wider inter-orbital (36.1-39.0%HLvs. 29.1-34.4), shorter caudal peduncle (56.3-73.5% HL vs. 69.3-79.0), slender depth of caudal peduncle (36.3-39.4%HL vs. 37.4-43.4), dorsal-fin without (vs. with) a black band and pelvic-fin not reaching (vs. reaching) anal-fin base. It differs from *O. ornatus* in having slender caudal peduncle (8.8-9.7%SL vs.9.6-12.1), longer post-orbital (52.7-57.6% HL vs. 40.9-52.5), longer predorsal (57.6-59.3%SL vs. 53.2-57.6), more lateral line scales (43-45 vs. 37-40), more scale rows above the lateral line (8 vs. 6-7), more predorsal scales (23-24 vs.17-20). *O. sajikensis* sp. nov. differs from *O. profundus* in having slender body depth at dorsal-fin origin (24.9-26.0% SL vs. 32.0-37.3), more predorsal scales (23-24 vs.17-18), more lateral line scales (43-45 vs.32-35) and more bars on flank or the sides of body (11-15 vs.7-10). It differs from *O. putaoensis* in having presence (vs. absence) of barbels, more lateral line scales (43-45 vs. 35-38), more predorsal scales (23-24 vs. 15), body with more vertical bars (11-15 vs. 6-7), longer predorsal (59.6-59.9%SL vs. 51.1-56.5), shorter dorsal-fin height (17.7-20.7% SL vs. 21.8-30.0), shorter dorsal-fin base (6.7-10.0% SL vs. 12.7-15.3), longer head (24.2-26.3%SL vs.18.7-24.2), wider interorbital (8.8-10.2%SL vs. 7.7-7.9), wider body at dorsal-fin origin (11.7-13.3%SL vs. 6.6-8.8) and at anal-fin origin (8.8-10.6%SL vs. 5.5-6.7), slender head depth at eye (56.1-63.3%HL vs. 64.6-70.0) and wider interorbital (36.1-39.0%HL vs. 32.2-35.8). It differs from *O. signicaudus* in having shorter dorsal-fin base (6.7-12.9% SL vs.13.3-17.3), slender head depth (16.3-18.7% SL vs. 20.1-23.5), slender post orbital depth (14.7-15.4% SL vs. 17.0-21.7), more lateral line scales (43-45 vs. 36-39) and more predorsal scales (23-24 vs. 17-21) respectively. It differs from *O. tileo* in having short rudimentary pairs of two barbels vs. one barbel, lesser predorsal scales (23-24 vs. 28) and lesser lateral line scales (43-45 vs. 59+4) respectively. The new species, *Opsarius sajikensis* differs from *O. vagra* in having more lateral bars (11-15 vs. 10-12), longer anal-fin (22.5-23.9% SL vs.15.3-17.1) and larger eye (28.4-32.5% HL vs. 21.2-25.9) respectively.

## 6. Comparative materials
1. ***Opsarius arunachalensis*:** Data from Nath *et al* (2010) [13].
2. ***Opsarius barila*:** MUMF 5049, 5051, 83.2-89.5mmSL, Khuga River, Churachandpur, Manipur, India. Additional data from Dishma & Vishwanath (2012) [4].
3. ***Opsarius barna*:** Data from Nath *et al* (2010) [13].
4. ***Opsarius barnoides*:** CMK 4052, 4280, 2exs; Mae Hong Son Province, Thailand. (CMK=Collections of Maurice Kottelat, Switzerland). Data from Nath *et al* (2010) [13]. Talwar & Jhingran (1991) [18] and Vishwanath & Manojkumar (2002) [22].
5. ***Opsarius chatricensis*** or *Barilius chatricensis*: Holotype: MUMF 530/1, 86. 4mm (SL) Chatrikong river, Ukhrul district, Manipur, India, 150km from Imphal. Coll. Keishing Selim, 16. X 1. 1995. paratype: MUMF 531/9, 58.6-89.00mm (SL). Data from Selim & Vishwanath (2002) [16].
6. ***Opsarius cocsa*** or *Barilius bendelisis*: MUMF 4167-4171; 5 exs; 80.5-134.0 mm SL. Noney. Additional data from Dishma & Vishwanath (2012) [4] and Nath *et al* (2010) [13].
7. ***Opsarius dogarsinghi*** or *Barilius dogarsinghi*: Type Specimen-F9983/1.Zoological Survey of India (Ind. Mus.). Data from Hora (1921) [7], ZSI/F 2208/2,n=3; MUMF 360/n=10. Data from Selim & Vishwanath (2002) [16]. Additional data from Talwar & Jhingran (1991) [18], Jayaram (1999) [9], Nath *et al* (2010) [13], Tejavej (2012) [19, 20].
8. ***Opsarius kanaensis:*** 75/NH/MUM, 53.6mm SL, 68.5mm TL, India: Manipur from Kana Rivers at Sajik Tampak, located in Chakpikarong of Chandel district and data from Arunkumar and Moyon (2017) [2].
9. ***Opsarius lairokensis*** or *Barilius lairokensis*: Holotype

MUMF 3700/1A, TL 110mm; SL.87mm; from Lairok Maru, Moreh, Chandel district, Manipur, 17. x. 1992. coll. Laifrakpam Arunkumar. MUMF 27075, 105.0mm SL, Moreh Bazar, Moreh, Chandel district, Manipur, India. Data from Arunkumar & Singh (2000 [3]. Additional data from Dishma & Vishwanath (2012) [4, 5].

10. ***Opsarius ngawa*** or *Barilius ngawa*: Holotype: MUFM 149,84.8m Sherou river (tributary of Manipur river), 83km south of Imphal, Manipur, W. Manojkumar, 20. iii. 1993. Paratype: MUFM 150, 61.5-134.3mm. Data from Vishwanath & Manojkumar (2002) [22]. Additional data from Dishma & Vishwanath (2012) [4].
11. ***Opsarius ornatus*** or *Barilius ornatus*: ZSI6/2986-87, Kolkata. Data from Vishwanath & Manojkumar (2002a) [22] and Tejavej (2012) [20].
12. ***Opsarius profundus****:* Data from Dishma & Vishwanath (2012) [5].
13. ***Opsarius putaoensis:*** Data from Qin *et al* (2019) [14].
14. ***Opsarius signicaudus*** or *Barilius signicaudus*: Data from Tejavej (2012) [19].
15. ***Opsarius tileo*** or *Barilius tileo***:** MUMF 27076, 128.1mmSL, Untrao river, Byrnihat, Norbong, Ribhoi district, Assam, India. Data from Dishma and Vishwanath (2012) [4].
16. ***Opsarius vagra***: MUMF 4091-4093,88.0-107.3 mm SL, Barak river, Vangchengphai, Tamenglong District, Manipur, India. Additional data from Dishma & Vishwanath (2012) [3]. Uncat. 7 exs.87-130 mm SL, Tamenglong collected by L.A.

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