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SHORT COMMUNICATION

OCCURRENCE OF *CORICA SOBORNA* HAMILTON, 1822 (CLUPEIFORMES: CLUPEIDAE) IN THE GODAVARI BASIN, INDIA

Kante Krishna Prasad, Mohammad Younus & Chelmala Srinivasulu

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Occurrence of *Corica soborna* Hamilton, 1822 (Clupeiformes: Clupeidae) in the Godavari basin, India

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Abstract: We record for the first time, *Corica soborna* Hamilton, 1822 from Godavari River, based on a single specimen collected from stream near Talai Village, Kumaram Bheem Asifabad District of Telangana State. In addition to a detailed description of its morphological characters, we also provide details on distribution, habitat and threats to the species.

Keywords: Bejjur, Clupeoid, freshwater fish, Pranahita River sub-basin, Telangana State.

Approximately 420 species of clupeoids are known from around the world, distributed in marine, estuarine and freshwater habitats (Fricke et al. 2020). In India, more than 80 species of clupeoid fishes have been recorded (Froese & Pauly 2019), of which around 34 species are distributed in freshwaters and estuaries (Jayaram 2010; Froese & Pauly 2019). The Ganges River Sprat, *Corica soborna* Hamilton, 1822 is a small freshwater clupeid primarily known from the Ganges river basin, with a record from the Bharathapuzha River basin in Kerala (Bijukumar & Sushama 2000). Other records are from Indonesia, Malaysia, and Singapore in southeastern Asia (Hardenberg 1936; Herre &

Myers 1937; Whitehead 1967, 1972). This species was described from Aiyargunj in erstwhile Bengal Presidency (Hamilton 1822; also see Britz 2019), at the confluence of Punarbhaba River with Mahananda River, located in current day Bangladesh (Bhattacharya 1974). Previous records of the species are mostly from the Ganges and its tributaries – Dehri-on-Sone on river Sone in Bihar (Motwani & David 1957), Goribaba on river Ken in Uttar Pradesh (Srivastava et al. 1970), Dighwara on the Ganges in Bihar (Karamchandani 1962), from several other locations on the Ganges in Patna and Bhagalpur districts in Bihar, and Sahibganj district in Jharkhand (Kamal & Ahsan 1978). The only record of this species in India, outside the Ganges River system is from the Ponnani Estuary, Kerala (Bijukumar & Sushama 2000). Whitehead (1972) inadvertently mentioned ‘Mahanadi’ river as type locality instead of ‘Mahananda’ river from where the species was described by Hamilton (1822). It has so far not been recorded from the Godavari River basin (Talwar & Jhingran 1991; Krishnan & Mishra 2001; Jayaram 1981, 2010), or from anywhere in Telangana

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Competing interests: The authors declare no competing interests.

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State (Barman 1993; Chaudhry 2010; Jayaram 2010). Through this communication, we report for the first time, the occurrence of *Corica soborna* in the Godavari River basin in Telangana State, India.

MATERIAL AND METHODS

While conducting ichthyological surveys in Telangana State, we collected a single specimen of a fish that resembled *C. soborna* with a dragnet operated by a local fisher at Talai Village, Kumaram Bheem Asifabad District. The voucher specimen was photographed, labeled, and fixed in 4% formalin (Jayaram 2010), and deposited in the Natural History Museum, Department of Zoology, University College of Science, Osmania University, Hyderabad, Telangana State, India (NHMOU). Morphometric measurements were taken using Mitutoyo digital calipers following Jayaram (2010) and Armbuster (2012), and the fish was subsequently identified as *C. soborna* following Whitehead (1972, 1985), Talwar & Jhingran (1991), and Jayaram (1981, 2010).

Corica soborna Hamilton, 1822 (Image 1)

Materials examined: NHM.OU.F-993, 05.i.2019, a stream near Talai Village, Pranahita sub-basin of Godavari, Kumarambheem Asifabad District, Telangana, India, 19.296°N & 79.952°E, 110m, coll. Kante Krishna Prasad & Md. Younus.

Distinguishing characters: *Corica soborna* is a small

fish, attaining about 50mm in standard length. The following characters distinguish the species from its congeners: body moderately elongate; abdomen keeled; 10 pre-pelvic and eight post-pelvic scutes; mouth terminal; second supra-maxilla equal to, or as long as maxilla blade; teeth absent or minute; gill rakers of first gill 19–21 (Whitehead 1972; Talwar & Jhingran 1991); dorsal fin inserted above pelvic origin with two simple (Talwar & Jhingran 1991) and 13–14 branched rays (Hamilton 1822; Talwar & Jhingran 1991); pectoral with 12–13 rays (Hamilton 1822; Talwar & Jhingran 1991); pelvic fin insertion in advance of dorsal fin origin with one simple and seven branched rays (Talwar & Jhingran 1991); anal fin with two simple and 12–13 branched rays and two rays in a distinct finlet (Talwar & Jhingran 1991); caudal fin deeply forked with 18 rays and faint dark edges (Hamilton 1822); scales small; lateral line absent; lateral series scales 40 to 42 (Jayaram 2010).

The present specimen matches the general description provided by Hamilton (1822), Talwar & Jhingran (1991), and Jayaram (2010). Morphometric measurements and meristic counts are presented in Table 1. Minor variations with respect to simple and branched rays could likely be due to the manner in which counts were taken by previous researchers with those made in the present study. In the present specimen, dorsal fin is inserted above pelvic origin, with three simple and 13 branched rays; pectoral fin with one simple and 13 branched rays; pelvic fin with one simple and seven branched rays; anal fin with three simple and 11 branched rays and two branched rays in the finlet;

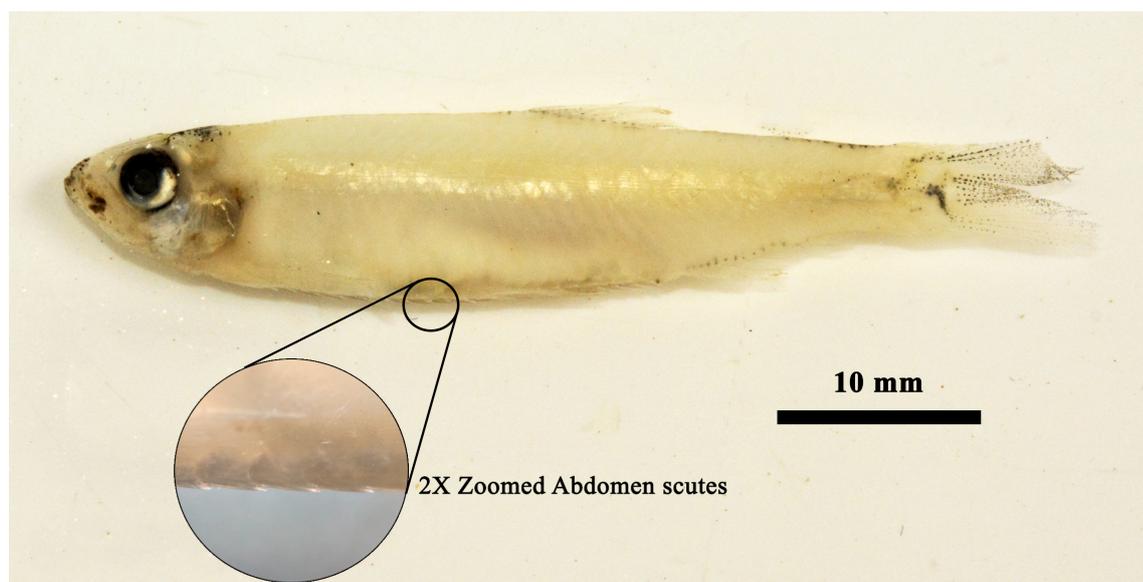


Image 1. Lateral view of the preserved specimen of *Corica soborna* (NHM.OU.F-993). © K. Krishna Prasad

Table 1. Morphometric characters and meristic counts of *Corica soborna* from Godavari River basin, Telangana State, India.

Morphometric Characters	Specimen voucher NHM.OU.F-993
Total length (mm)	50.5
Standard length (mm)	41.6
Head length (mm)	9.0
% of Standard length	
Body depth	20.4
Head length	21.6
Head depth	16.9
Head width	9.2
Eye diameter	7.9
Snout length	6.4
Inter orbital width	4.8
Dorsal fin base length or dorsal fin width	14.6
Pre-dorsal distance	50.8
Dorsal fin length	19.1
Dorsal fin origin to hypural distance	46.2
Pectoral fin length	17.3
Pelvic fin length	13.7
Caudal peduncle length	11.0
Caudal peduncle depth	9.2
Pre-pelvic distance	49.0
Pre-anal distance	70.7
Anal fin base length	17.7
Anal fin length	12.1
% of Head length	
Head depth	78.3
Head width	42.5
Eye diameter	36.6
Snout length	29.8
Inter orbital width	22.2
Meristic counts	
Scales in Lateral Series	41
Transverse scale rows	9
Pre pelvic scutes	10
Post pelvic scutes	8
Pre-dorsal scales	17
Pre-pelvic scales	14
Pre-anal scales	23
Dorsal fin rays	iii+13
Pectoral fin rays	i+13
Pelvic fin rays	i+7
Anal fin rays + (finlet)	iii+11+(2)
Principal caudal fin rays	18
Procurrent caudal fin rays	12

caudal fin deeply forked with 18 principal rays and 12 procurrent rays; lateral series scales 41; and 22 gill rakers on lower arch of first gill.

Habitat: One individual of *Corica soborna* was collected in an eighth-order stream (Strahler 1957) of six-meter depth, with rapid water flow (1.2 m/s) and bedrock, submerged boulders, sand, silt and detritus swamp as substrates. Riparian vegetation on the left bank of the stream was occupied with shrubs and scattered trees of *Tectona grandis*, *Cassia fistula*, *Albizia amara*, and *Acacia leucophloea*, and right bank with cultivated lands. Co-occurring fish fauna included *Amblypharyngodon mola*, *Barilius barila*, *Chanda nama*, *Channa marulius*, *C. striata*, *Glossogobius giuris*, *Labeo calbasu*, *Macrognathus pancalus*, *Mastacembelus armatus*, *Mystus bleekeri*, *M. vittatus*, *Puntius sophore*, *Rasbora daniconius*, *Sperata seenghala*, and *Systemus sarana*.

DISCUSSION

The present record of *Corica soborna* in the Godavari River basin extends its distribution to the middle of peninsular India. This species is currently known from few locations in the Ganga basin from Uttar Pradesh to West Bengal in India, and in Bangladesh (Mahananda, Ken, and Sone river drainages), as well as in the Bharathapuzha River (in Ponnani Estuary) in Kerala. The presence of *C. soborna* in the Godavari River basin suggest that this species may be more widespread in peninsular India than previously thought. In addition to the inland waters of India and Bangladesh (Rahman 1989, 2005; Payne et al. 2004; Wahab 2007; Alam et al. 2013; Arefin et al. 2018), *C. soborna* also occurs in the estuaries of Southeast Asian countries (Fig. 1) including Indonesia (Hardenberg 1936; Whitehead 1967, 1972), Malaysia (Whitehead 1967, 1972), and Singapore (Herre & Myers 1937; Whitehead 1967). This species has also specifically been recorded from Mekong and Bangpakong rivers in Thailand (Taki 1978; Suvatti 1981); however, Chaudhry (2010) doubted the validity of these records. The discontinuous distribution of this species may suggest data-deficiency in surveys and non-availability of verified checklists from other parts of southern and Southeast Asian countries, indicating ‘Wallacean shortfall’.

Alteration, fragmentation, and destruction of critical habitats as a result of the construction of irrigation and hydropower projects in the middle and upper reaches of the Godavari, as well as indiscriminate fishing could be detrimental to the survival of the newly detected population of *C. soborna* in Telangana State. We

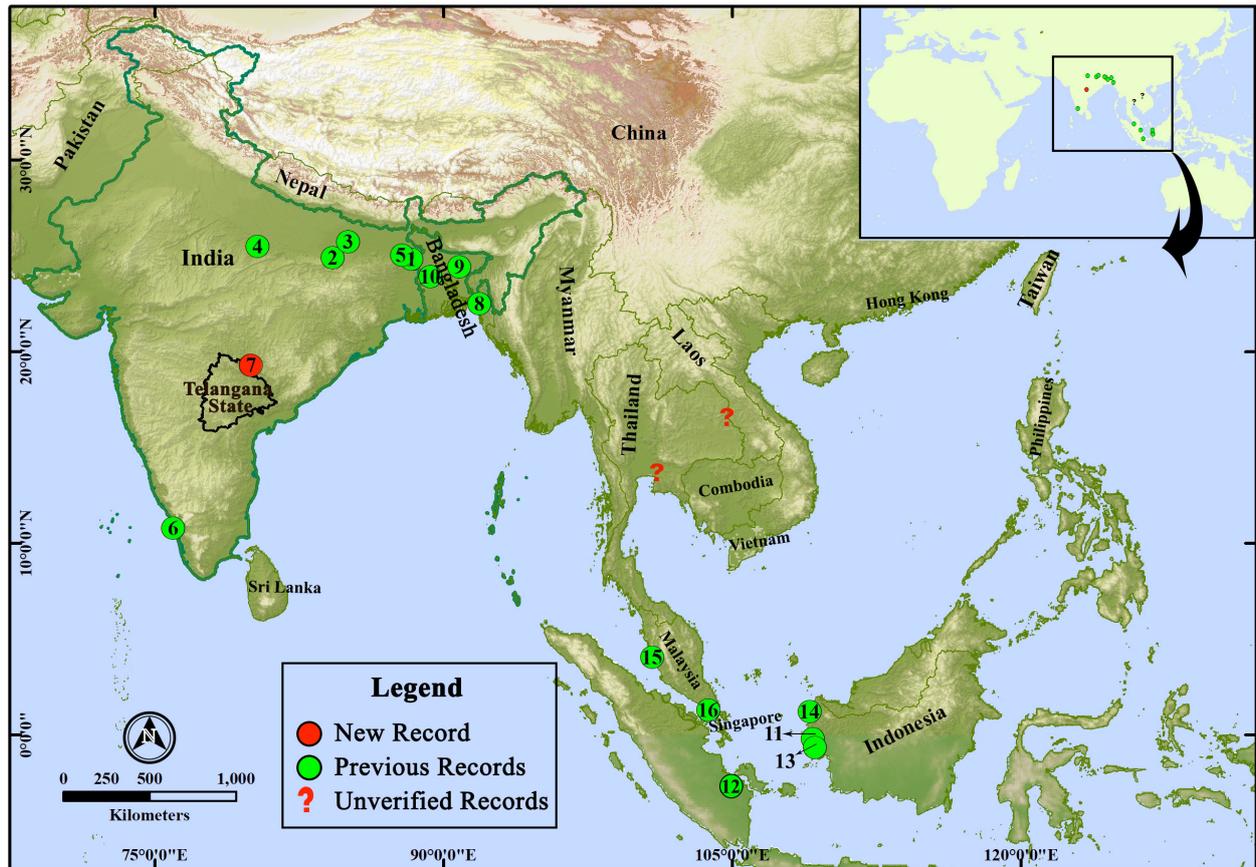


Figure 1. Global distribution of *Corica soborna*. Verified records in green circles, present record in red circle, and unverified records as red question mark. Numerical numbers in the circles represent ID numbers mentioned in Table 2.

Table 2. Global distribution of *Corica soborna*. Location names in brackets are historic names.

ID	Location	River Basin/ Estuary	Country	Source
1	Aiyargunj, Mahananda River, Bangladesh (Aiyargunj, Mahananda River, India)*	Ganga	Bangladesh	Hamilton 1822; Britz 2019
2	Dehri-on-Sone, Sone River, Bihar	Ganga	India	Motwani & David 1957
3	Dighwara, Ganga River, Bihar	Ganga	India	Karamchandani 1962
4	Goribaba, Ken River, Banda, Uttar Pradesh	Ganga	India	Srivastava et al. 1970
5	Rajmahal, Ganga River, Jharkhand	Ganga	India	Kamal & Ahsan 1978**
6	Ponnani Estuary, Kerala	Bharathapuzha	India	Bijukumar & Sushama 2000
7	Talai, Kumarambheem Asifabad District, Telangana State	Godavari	India	Present Study
8	Halda River, Chittagong, Bangladesh	Karnaphully	Bangladesh	Alam et al. 2013
9	Narsunda River, Kishoreganj District, Bangladesh	Surma-Meghna	Bangladesh	Arefin et al. 2018
10	Padma River, Bangladesh	Ganga	Bangladesh	Payne et al. 2004
11	Kapuas River, West Kalimantan (S.W. Borneo)	Kapuas	Indonesia	Whitehead 1967, 1972
12	Musi River, South Sumatra, Indonesia (S.E. Sumatra)	Musi	Indonesia	Whitehead 1967
13	Padang Tikar Bay, Indonesia	Estuary	Indonesia	Hardenberg 1936; Whitehead 1967
14	Pamangkat, Indonesia (Pemangkat, S.W. Borneo)	Estuary	Indonesia	Whitehead 1967, 1972
15	Perak River, Malaysia (Malaya)	Perak	Malaysia	Whitehead 1967, 1972
16	Singapore	Estuary	Singapore	Herre & Myers 1937; Whitehead 1967

*Type locality; **Kamal & Ahsan (1978) report *C. soborna* being collected from various locations of Ganga River in Patna and Bhagalpur districts in Bihar, and Sahibganj District in Jharkhand, India.

propose further research on understanding the micro-level distribution, population status and dynamics, and threats (both direct and indirect) of this species in Telangana State.

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