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# Journal of Threatened Taxa



Open Access

10.11609/jott.2022.14.2.20539-20702

[www.threatenedtaxa.org](http://www.threatenedtaxa.org)

26 February 2022 (Online & Print)

14(2): 20539-20702

ISSN 0974-7907 (Online)

ISSN 0974-7893 (Print)



ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)

Publisher  
**Wildlife Information Liaison Development Society**  
www.wild.zooreach.org

Host  
**Zoo Outreach Organization**  
www.zooreach.org

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Cover: *Geodorum laxiflorum* Griff.—inflorescence (Orchidaceae) © Ashish Ravindra Bhojwar.



## Rediscovery of *Platerus pilcheri* Distant (Hemiptera: Reduviidae), a forgotten assassin bug from India, with comments on its range extension

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**Abstract:** *Platerus pilcheri* Distant, 1903, a harpactorine reduviid, is rediscovered from India after more than a century since its original description. A brief diagnosis of this species, a note on its range extension, a distributional map, and images of live habitus are provided along with the images of a syntype preserved in the Natural History Museum, London (BMNH). We also present a comparison with the other Indian congeneric species, *Platerus bhavanii* Livingstone & Ravichandran, 1991, and show that this latter species does not belong in the genus *Platerus* and is to be treated as species inquirenda. The issue of the subsequent documentation of *Platerus bhavanii* from Karnataka is also discussed.

**Keywords:** Harpactorinae, *Nagusta*, *Nagustoides*, Oriental region, China.

A single male harpactorine assassin bug was carefully studied and photographed in the Talle Valley Wildlife Sanctuary (Ziro, Arunachal Pradesh), in September 2019. It showed the main diagnostic characters of the genus *Platerus* Distant, 1903, viz., the head about as long as the pronotum; a long oblique suberect spine at the base of the antenna; a posterior pronotal lobe with two long, discal, tuberculous, erect, acute spines and lateral

pronotal angles spinously produced (Distant 1903, 1904; Zhao et al. 2006b). It was subsequently identified as *P. pilcheri* Distant, 1903 based on the original description and an illustration provided by Distant (1903, 1904), as well as the redescription, illustrations and key provided by Zhao et al. (2006b). A further comparison with images of a male syntype of *Platerus pilcheri*, preserved in the BMNH, confirmed the identity of the bug photographed in Arunachal Pradesh.

*Platerus* Distant, 1903 is a small genus in Reduviidae (Hemiptera), with only three species, all described from the Oriental region (Zhao et al. 2006b). Distant (1903) established *Platerus* with *P. pilcheri* as the only species, based on an unspecified number of male specimens, collected by J.G. Pilcher in Sikhim [= Sikkim], India; later Distant (1904) included this genus in Harpactorinae, division Euagorasaria and also provided a figure of the dorsal habitus of this species. While Distant's 'divisions' of Harpactorinae are no longer used, Distant (1904) still proves useful for the identification of the Indian

**Editor:** Anonymity requested.

**Date of publication:** 26 February 2022 (online & print)

**Citation:** Sankararaman, H., A. Agarwal, V.A. Lemaître & H.V. Ghate (2022). Rediscovery of *Platerus pilcheri* Distant (Hemiptera: Reduviidae), a forgotten assassin bug from India, with comments on its range extension. *Journal of Threatened Taxa* 14(2): 20631–20636. <https://doi.org/10.11609/jott.7765.14.2.20631-20636>

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**Funding:** HS obtained travel funds through DST PURSE phase II of Annamalai University.

**Competing interests:** The authors declare no competing interests.

**Acknowledgements:** We thank Mick Webb (BMNH, UK), Tadashi Ishikawa (Tokyo University of Agriculture, Japan) and H.M. Yeshwanth (University of Agricultural Sciences, GKVK, Bengaluru, India) for kindly providing images of (type) specimens. We also extend our thanks to Kolla Sreedevi (National Bureau of Agricultural Insect Resources, Bengaluru) for providing relevant literature on *P. bhavanii*. HS is grateful to S. Manickavasagam. HVG is indebted to the authorities of Modern College for providing facilities and encouragement.

hemipteran fauna. The division Euagorasaria has been merged in the tribe Harpactorini, which includes species with a curved labium. The subfamily Harpactorinae is the largest reduviid subfamily, with over 300 genera and more than 2,800 species (Schuh & Weirauch 2020).

The other two species of the genus *Platerus*, viz., *P. bhavanii* Livingstone & Ravichandran, 1991 and *P. tenuicorpus* Zhao, Yang & Cai, 2006 are known from India and China (Tibet), respectively. *Platerus pilcheri* has never been documented in detail from any part of India since its original description, although it has been collected, as can be vouched by specimens in the collections of the BMNH (see 'Material studied') and the Zoological Survey of India (ZSI, see Biswas et al. (1994)). More recently, one female specimen was reported from Xizang (Tibet), China, by Zhao et al. (2006b), who described the female of the species for the first time. Agarwal (2019) made images of a specimen available on the iNaturalist website; this was recently identified as *P. pilcheri*. The present report is based on this sighting made on 7 September 2019 at the Talle Valley Wildlife Sanctuary, Arunachal Pradesh (27.545614N & 93.830229E). The specimen was studied in detail and released back into nature; no collections were permitted in that area during the study.

Since the genus and the species have been originally, and subsequently, described in detail, we are here only presenting recent images of this species with brief comments on the other Indian congeneric species, *P. bhavanii*. We are also providing images of a syntype of *P. pilcheri* and documenting other specimens deposited in the BMNH.

## TAXONOMY

### Reduviidae Latreille, 1807

### Harpactorinae Amyot & Serville, 1843

### *Platerus* Distant, 1903

*Platerus* Distant, 1903: 247 (type species *Platerus pilcheri*, by monotypy); Maldonado Capriles 1990: 258; Ambrose 2006: 2399; Zhao et al. 2006b: 25; Biswas et al. 1994: 398; Biswas & Mitra 2014: 14; Bhagyasree 2017: 67.

### Diagnosis

Division Euagorasaria, sensu Distant (1904), which includes the genus *Platerus*, is characterized by an elongate body, the head with a distinct tubercle or spine behind the base of each antenna and lateral pronotal angles spinous or at least prominent. Within Euagorasaria the genus *Platerus* is diagnosed by the following characters: anterior tibia not curved at the tip

and without a spine, anterior lobe of pronotum without any prominent tubercles at the sides, the posterior lobe of pronotum with discal spines and the head about as long as the pronotum.

### Diagnostic characters of the genus

The genus *Platerus* has been described thoroughly by Distant (1903) and some more details were added by Zhao et al. (2006b); for this reason, we do not reiterate those characters. Only some characters that are relevant for the subsequent discussion are given below:

Head long, about or almost as long as the pronotum, postocular portion a little longer and slenderer than the antecular portion; pronotum subtriangular, the anterior lobe obsolete tuberculate, its anterior angles moderately prominent, its posterior area profoundly and broadly sulcate; abdomen long, scarcely wider than the hemelytra, the fifth [visible] segment a little dilated on each side.

### *Platerus pilcheri* Distant, 1903 (Image 1 & 2)

*Platerus pilcheri* Distant, 1903: 248, 1904: 375; Maldonado Capriles 1990: 258 (catalogued); Ambrose 2006: 2399 (in checklist); Zhao et al. 2006b: 25 (redescription, key, description of female); Biswas et al. 1994: 398 (listed); Biswas & Mitra 2014: 14 (checklist, misspelling: *P. pilchen*); Bhagyasree 2017: 67 (as type species of *Platerus*, similar misspelling).

### Material studied

1 male, India, Arunachal Pradesh, Ziro (Image 1); specimen not collected.

#### Other material for which images are provided:

Type material. Syntype, male, India, Sikkim, with the following labels: red-bordered "Type" disc; "♂"; "Platerus pilcheri Dist." [Distant's handwriting]; "Sikkim/7000 [ft]/ June 1895/ J.G. Pilcher // 97/ 120"; "BMNH(E) 1255121"; "NHMUK 013588826" (BMNH) (Image 2).

**Additional material:** (known from the literature / examined in the BMNH)

1 male, India, West Bengal, Jalpaiguri, with the following labels: "♂", "Gopaldhara, Bw./ Darjeeling./ 4,720 ft. 29.ix.14./ H. Stevens.", "At light.", "NHMUK 013588827" (BMNH); "1 ex., Darjiling, Brich hills.,? coll. M. Banerjee; 2 exs., Darjiling, vii.1912, coll.?" (ZSI, fide Biswas et al., 1994, not seen); 1 female, China, Yunnan: Dulong Valley, with the following labels: "♀", "Upper Burma:/ Taron Valley./ 16.x.1938./ R. Kaulback./ B.M.1938-741.", "Alt.5,000 ft./ lat.N.28° 08' Long. E 98° 20'." "NHMUK 013588828" (BMNH) (Although one label reads 'Upper Burma', i.e., northern Myanmar, the

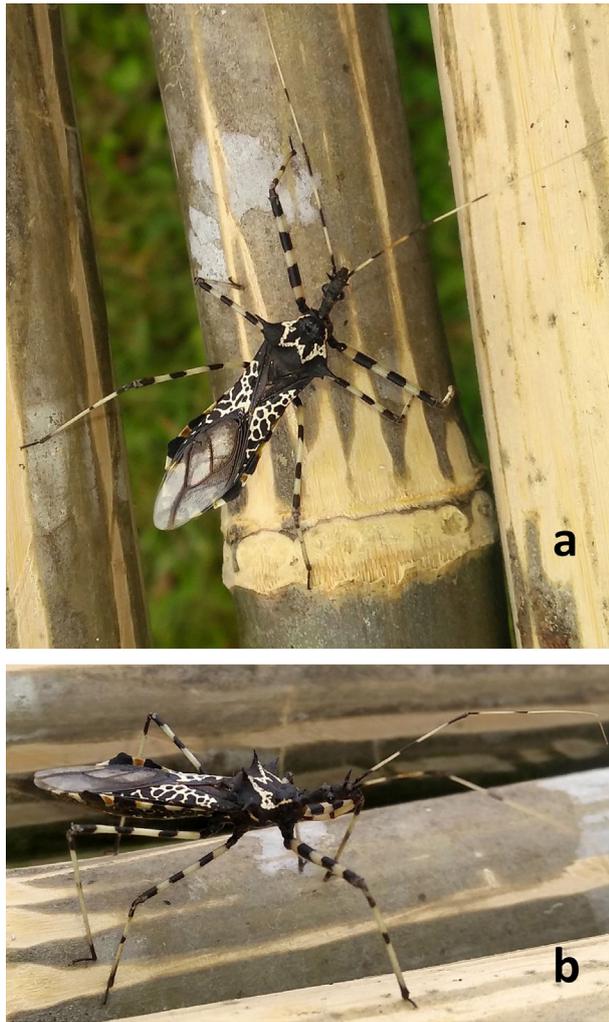


Image 1. *Platerus pilcheri* Distant, 1903 from Talle valley, Arunachal Pradesh: A—dorsal view | b—lateral view. © H. Sankararaman.

coordinates on another label indicate a locality in China; this may be explained by the instability of the Burma-Yunnan frontier (see McGrath 2003). Ronald Kaulback trekked in Tibet (see Kaulback 1934) and “Tibet” is what was recorded in the BMNH accession register under entry 1938-741, when he presented the specimen to the BMNH in December 1938); 1 female, China, Xizang (Tibet), “Motuo; 29-viii-2003, collector unknown; kept in CAU [China Agricultural University, Beijing]” (fide Zhao et al. 2006b, not seen); A further two males, without any data, are deposited in the BMNH.

#### Brief description

**Coloration:** Body dorsally mostly black with symmetrical pattern of white markings on pronotum and corium. Antennae and legs with alternate black and yellow annulations. Anterior pronotal lobe, discal

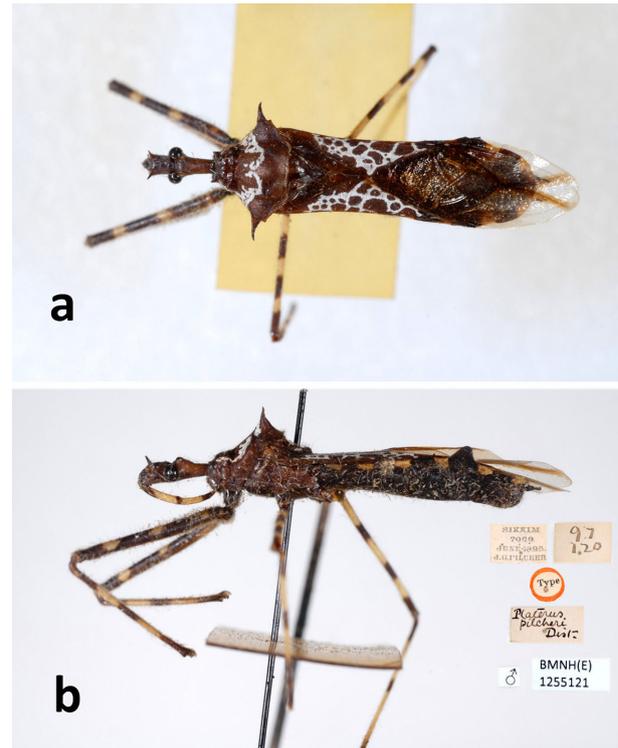


Image 2. *P. pilcheri* Distant, 1903 (syntype & labels): a—dorsal view | b—lateral view. © The Trustees of the Natural History Museum, London. Imaged by T. Ishikawa.

and lateral spines of posterior lobe black; a white fine marking on lateral margins of anterior lobe of pronotum continued as a wavy ‘W’-like transverse fascia on posterior lobe, just in front of discal spines. Three broad black annulations on all femora are also clearly visible; clavus entirely black, membrane fuliginous with basal half partly brownish-black, apical half pale hyaline; conspicuous white reticulate markings on corium (Image 1a). Apical segment of labium, fine tibial annulations and connexival coloration black, showing a well-defined black anterior part of each abdominal segment (Image 1b)

**Structure:** Head about as long as pronotum, with long, anterolaterally directed spine at base of antenna. First visible labial segment longer, slightly passing posterior border of eye and longer than second. Pronotum with the anterior lobe short, posterior lobe more than twice as long as anterior lobe; lateral pronotal angles spinously produced, their posterior margin distinctly notched near base; posterior pronotal lobe with discal, long erect, tuberculous spines; fore femur slightly incrassate; abdomen with sixth connexival segment dilated laterally (Image 1a,b).

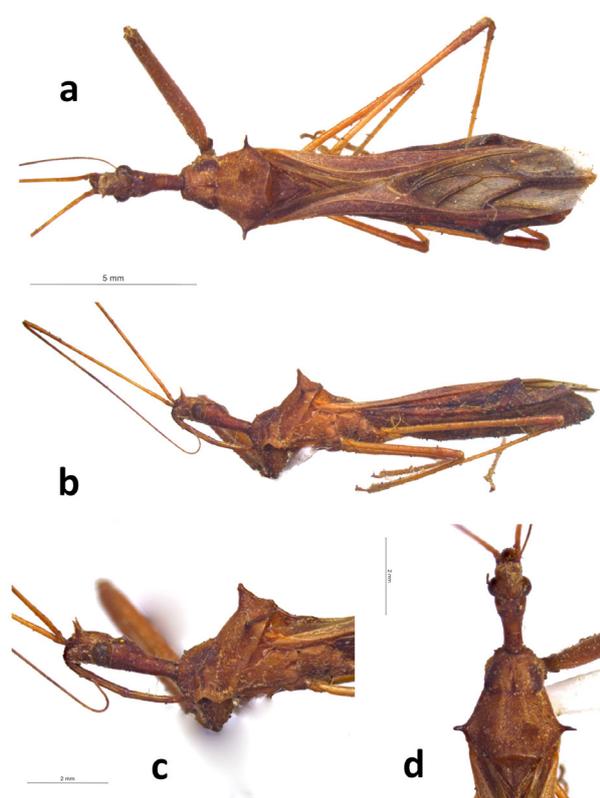


Image 3. *P. bhavanii* sensu Bhagyasree (2017): a—dorsal view | b—lateral view | c—head & pronotum magnified, lateral view | d—same, dorsal view. © University of Agricultural Sciences, GKVK, Bengaluru, India. Imaged by H.M. Yeshwanth.

### Remarks

**Validity of our identification:** The single male from Ziro, Arunachal Pradesh, exactly matches the original description and the subsequent habitus figure given by Distant (1903, 1904), as well as the syntype of *P. pilcheri* preserved in the BMNH, as can be seen from the images provided (Image 2). This species can also be identified, according to the recent key in Zhao et al. (2006b).

***Platerus bhavanii* does not belong in *Platerus*:** *P. pilcheri* was the only species known under this genus until Livingstone & Ravichandran (1991) described a new species *Platerus bhavanii* Livingstone & Ravichandran, 1991, collected from the Botanical Garden near Bhavani Dam, Periyar, Tamil Nadu, southern India. The specimens examined by them included one female (holotype), one male and another female (paratypes); our attempts at locating these types and obtaining images remained unsuccessful. The authors gave a brief description and only a dorsal habitus line drawing, without any information on male / female genitalia. Considering the description and illustration given by Livingstone & Ravichandran (1991), it is important to point out here

that *P. bhavanii* has some characters that are distinctly different from the original diagnostic characters of the genus *Platerus* given above. For example: (i) the pronotum is of a very different shape in *P. bhavanii*, (ii) the broadly sulcate area in the posterior part of the anterior lobe described in the genus *Platerus* is neither mentioned in the original description of *P. bhavanii* nor visible on the line drawing provided and (iii) in *Platerus*, only abdominal segment V is dilated on either side, as per Distant (1903), while in *P. bhavanii* segments V to VII are dilated (Distant (1903) had stated: ‘the fifth segment a little dilated on each side’; this must refer to a visible segment V, i.e., segment VI, as Zhao et al. (2006b) have described the sixth connexival segment as expanded in the female and our specimens show expansion on the sixth connexival segment). Finally, Livingstone & Ravichandran (1991), while describing *P. bhavanii*, had stated: “...anteocular area with a median ‘Y’-shaped, smooth brown streak, posteriorly confluent with the transverse fissure connecting the eyes”; this character is not found in the genus *Platerus*.

Because of these differences alone we strongly reckon that *P. bhavanii* does not belong in the genus *Platerus* and that the type material must be re-examined to settle its identity. We therefore suggest that until the types are located, the species *P. bhavanii* should be treated as species inquirenda, i.e., a species of doubtful identity.

**Specimens identified as *P. bhavanii* may not be this species and do not belong in *Platerus*:** Bhagyasree (2017) examined seven females collected from various parts of Karnataka, identified those as *Platerus bhavanii* and photographically illustrated one of them. Looking at the original line drawing in Livingstone & Ravichandran (1991) and the photo provided by Bhagyasree (2017), it seems that the specimens in Karnataka are again different and a detailed re-examination of these specimens is essential. It is certain that Bhagyasree’s specimen, photographed anew for this study (Image 3), does not belong in *Platerus* either as it also lacks the diagnostic characters of the genus *Platerus*; in addition, a lateral view of the head of this specimen shows the first visible segment of the labium to be passing much beyond the posterior border of the eye (Image 3b,c), a feature not seen in the similar view of the live specimen (Image 1b) or of the syntype (Image 2b) of *P. pilcheri*. In the absence of the type material of *P. bhavanii*, it is also difficult to tell with certainty if Bhagyasree’s specimens are conspecific with what was originally described as *P. bhavanii*.

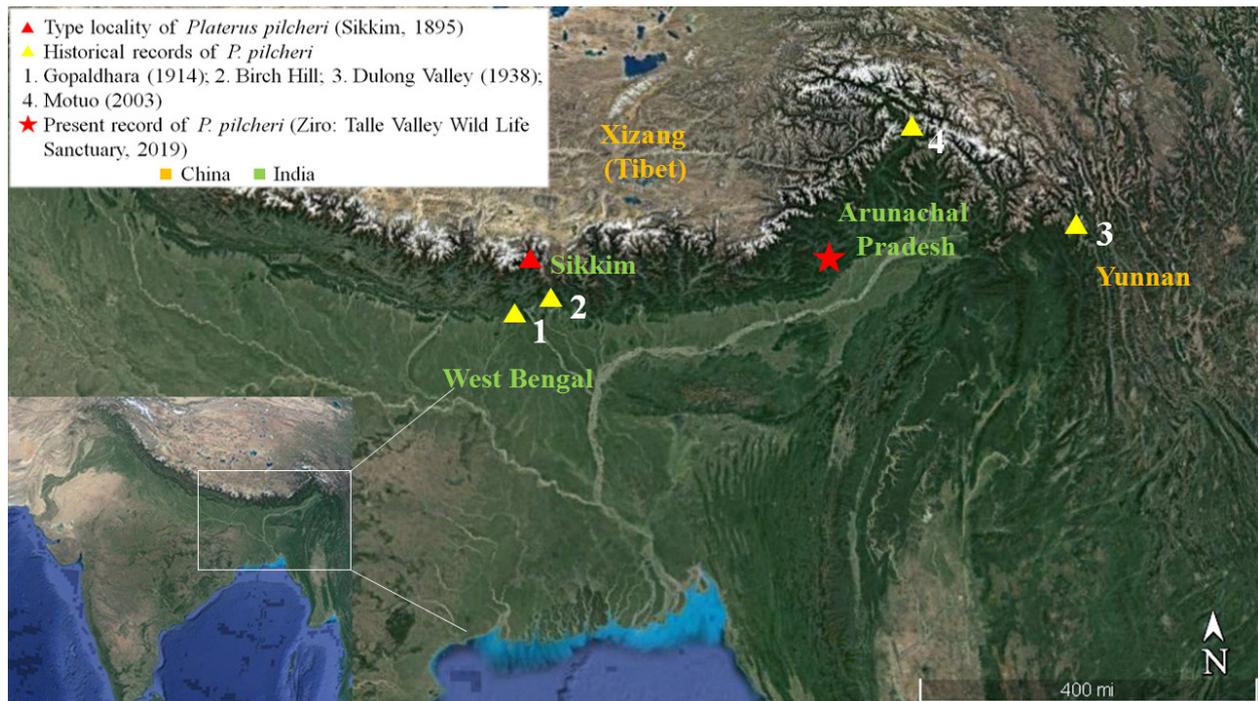


Image 4. Map showing the distribution of *P. pilcheri* Distant.

***P. bhavanii* and specimens identified as such could belong to either *Nagustoides* or *Nagusta*:** Some of the aforementioned characters that preclude *P. bhavanii* and specimens identified as such by Bhagyasree (2017) to be placed in *Platerus* are, however, seen in the genera *Nagustoides* and *Nagusta*: (i) the 'Y'-shaped smooth brown streak and more than one expanded abdominal segments are seen in the genus *Nagustoides* Miller, 1954 (Miller 1954 (Fig. 43 A); Zhao et al. 2006a (Fig. 1); Ishikawa & Naka 2016 (Fig. 3)) although, in *Nagustoides*, only abdominal segments (connexivum) V and VI are laterally expanded (and the external apical angle of segment V is spinous) and the 7<sup>th</sup> abdominal sternite has only a small median spine on the posterior border. In some species of *Nagusta* Stål, 1859, one or more abdominal segments are expanded or dilated as well (Villiers 1967). (ii) the first visible segment of the labium is passing much beyond the posterior margin of the eye in Bhagyasree's *P. bhavanii* (Image 3b,c), which is another character seen in the genera *Nagusta* and *Nagustoides* (as a matter of fact, in *Nagustoides*, the first visible labial segment is longer than the second and third combined; this is one of the characters that separates it from the genus *Nagusta* Miller, 1954). For these reasons, we suspect that the originally described *P. bhavanii* and the specimens identified as *P. bhavanii* by Bhagyasree (2017) possibly belong in either *Nagusta* or *Nagustoides*

and certainly not in *Platerus*.

Miller (1954: 52) separated *Nagustoides* from *Nagusta* thus: "Allied to *Nagusta* Stål, [...] but it differs in having the basal segment of the rostrum longer than the remaining segments together, the anterior pronotal lobe tuberculate, the posterior lobe without subdorsal spines or gibbosities and the expanded 5<sup>th</sup> connexival segment spinous". Despite this, subsequent papers have illustrated *Nagustoides* with discal tubercles on the posterior lobe of pronotum (Zhao et al. 2006a; Ishikawa & Naka 2016), a character seen in Bhagyasree's specimens, and, even described in *P. bhavanii*. To better define *Nagusta* and *Nagustoides* a detailed study of their types species need to be carried out.

Thus, we firmly state that our discovery of *P. pilcheri* in Arunachal Pradesh becomes the first authentic record of this genus and species from India, after a gap of over 100 years. This discovery also indicates that this handsome predatory bug is still inhabiting northeastern India. Besides this, we also maintain that *Platerus pilcheri* is the only species under the genus *Platerus* in India; the other described species from India is of doubtful identity.

**Distribution:** China (Xizang, Yunnan), India (Sikkim, West Bengal, Arunachal Pradesh).

Distant's historical record of *P. pilcheri* was from Sikkim, Zhao et al. (2006b) reported it from Xizang (Tibet), China, the present record is from Ziro, Arunachal

Pradesh, while specimens found in the collections of ZSI and BMNH allow us to add to the distribution West Bengal and the Yunnan province of China (Image 4), altogether showing the northward and eastward extension of the range of this species. No specimens were collected during the present study. The species was diagnosed based on the original description and subsequent illustrations.

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NAAS rating (India) 5.64

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ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

February 2022 | Vol. 14 | No. 2 | Pages: 20539–20702

Date of Publication: 26 February 2022 (Online & Print)

DOI: 10.11609/jott.2022.14.2.20539-20702

[www.threatenedtaxa.org](http://www.threatenedtaxa.org)

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