

New species and new records of *Notonecta* (Hemiptera: Heteroptera: Notonectidae) from Brazil

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ABSTRACT. *Notonecta itatiaia* sp. nov. is described from the state of Rio de Janeiro. Like other *Notonecta* species that occurs in Brazil, *N. itatiaia* has no remarkable diagnostic features than the shape of genital capsule. Along with the first description of a *Notonecta* from Brazil in eighty years, *N. disturbata* is newly recorded from the states of Pará, Piauí and São Paulo, and *N. pulchra* from Pará. A key to species of *Notonecta* (males) occurring in Brazil is given.

KEY WORDS. Atlantic Forest; identification key; Neotropical Region; Notonectinae; taxonomy.

Notonecta Linnaeus, 1758 is a cosmopolitan genus with about 65 species (TRUXAL 1979), and is one of the four genera of the tribe Notonectini (ŠTYS & JANSSON 1988). Individuals of this genus are mid-sized notonectids, with a maximum body length of 16 mm, being smaller than *Enithares* Spinola, 1837 and *Enitharoides* Brooks, 1953. Members of *Notonecta* have the pronotum with lateral margins not foveate, median femur stout with anteapical pointed protuberance, and genital capsule symmetric. They are found in lentic waters with moderate to high abundance of submerged plants (LÓPEZ RUF *et al.* 2003). Some species prefer shady places under bushes whereas others are found on open waters (HUNGERFORD 1933).

According to MOREIRA *et al.* (2011), seven species of *Notonecta* occur in Brazil: *N. bifasciata* Guérin-Méneville, 1844, *N. disturbata* Hungerford, 1926, *N. polystolisma* Fieber, 1851, *N. pulchra* Hungerford, 1926, *N. nigra* Fieber, 1851, *N. sellata* Fieber, 1851 and *N. variabilis* Fieber, 1851. The last three species have no other records in Brazil since their descriptions. Most of the records of *Notonecta* from Brazil are restricted to the southeastern region of the country, where three species are more commonly found: *N. polystolisma*, *N. disturbata* and *N. pulchra* (NIESER & MELO 1997, VIANNA & MELO 2003, SOUZA *et al.* 2006, RIBEIRO *et al.* 1998, 2010). Since the revision of *Notonecta* made by HUNGERFORD (1933), no other species of the genus has been described from Brazil. In this work a key to the species that occur in Brazil is provided, including a new species, along with new records from the country.

MATERIAL AND METHODS

Specimens are deposited in the Coleção Entomológica Prof. José Alfredo Pinheiro Dutra, Departamento de Zoologia, Instituto de Biologia, Universidade Federal do Rio de Janeiro,

Rio de Janeiro (DZRJ) and Instituto Nacional de Pesquisas da Amazônia, Manaus (INPA). In quotations of label data, a comma separates different information and a semicolon separates information of different specimens. An exclamation mark (!) indicates new records of a species. Collectors are cited in parentheses. The full citation of individual specimens collected at the same locality on different dates is not given. The letter “m” refers to male specimens and the letter “f” to female ones. All localities are listed geographically from north to south.

Measurements were made with an ocular micrometer on a stereoscopic microscope and are given in millimeters. Morphological terms follow HUNGERFORD (1933). The dissected genital structures are stored in microvials with alcohol. In the absence of *N. nigra*, *N. sellata*, *N. variabilis* and *N. bifasciata* specimens, their illustrations were based on HUNGERFORD (1933).

TAXONOMY

Key for males of *Notonecta* occurring in Brazil (modified from HUNGERFORD 1933)

1. Anterior width of vertex equal to two times synthlipsis width 2
- 1'. Anterior width of vertex greater than two times synthlipsis width 3
2. Body length 16 mm. Male genital capsule with a digitiform process (Fig. 1) *N. nigra*
- 2'. Body length 11 mm. Male genital capsule without digitiform process (Fig. 8) *N. itatiaia* sp. nov.
3. Clasper apex bifurcate 4
- 3'. Clasper apex not bifurcate 5

4. Anterior width of vertex three times synthlipsis width. Base of clasper narrow, widening at apex (Fig. 2) *N. sellata*
- 4'. Anterior width of vertex two and one-half times synthlipsis width. Entire body of clasper with about the same width (Fig. 3) *N. variabilis*¹
- 5a. Anterior width of vertex about four times synthlipsis width. Genital capsule with one caudoventral protuberance (Fig. 4) *N. pulchra*
5. Anterior width of vertex about three times synthlipsis width. Genital capsule with two caudoventral protuberances .. 6
6. Body length 9 mm or greater. Base of clasper narrower than the apex, which surpasses the apex of genital capsule (Fig. 5) *N. polystolisma*
- 6'. Body length less than 9 mm. Base of clasper large, tapering along the length, with apex not surpassing the apex of genital capsule 7
7. Anterior width of vertex a little less than four times synthlipsis width. Genital capsule with dorsal portion pointed; caudoventral protuberances acute and clearly defined (Fig. 6) *N. disturbata*
- 7'. Anterior width of vertex a little less than three times synthlipsis width. Genital capsule with dorsal portion rounded; caudoventral protuberances rounded and not clearly defined (Fig. 7) *N. bifasciata*

Notonecta itatiaia Barbosa & Nessimian sp. nov.

Figs 9-12

Material type. Holotype male macropterous, labeled: BR, RJ – Itatiaia [Parque Nacional do Itatiaia, brejo próximo ao córrego das Agulhas Negras, 22°23'05.40"S/44°40'41.70"W, 2.397 m], 8.IV.2006 (R.B. Braga; F.F.F. Moreira; A.P.M. Santos; J.L. Nessimian): 1 m macropterous, holotype (DZRJ).

Description. **Measurements.** Body length: 10.96; head width: 2.88; vertex length: 1.31; vertex width: 1.2; synthlipsis: 0.58; rear margin of eye: 1.09; pronotum length: 2.05; pronotum width: 4.03; scutellum length: 3.03; scutellum width: 3.32. **Color.** Head and pronotum yellow dorsally. Labrum yellow bordered with brown. Triangle at apex of second rostral segment stained with brown; third rostral segment yellowish with brown surface; fourth rostral segment dark brown. Propleuron brown. Scutellum dark brown. Metathorax brown. Hemelytra dark brown with claval suture delimited by a yellow stripe, a short yellow stripe below, and a dimmed yellow stain before membrane (Figs 9 and 10). Legs entirely yellow except coxae brown. Dorsal and ventral surface of abdomen

brown. Connexivum yellow. **Head.** Vertex a little longer than its anterior width; slightly longer than rear margin of an eye and more convex than anterior margin of eye. Synthlipsis wide, about one-half of width of anterior margin of vertex and a little longer than one-half rear margin of an eye. **Thorax.** Pronotum width 1.6 times its longitudinal median length; length about 1.6 times longitudinal length of head; posterior margin straight with oblique extremities anterad. Scutellum distinctly longer than pronotum. Membranal lobes of hemelytra equal. Anterior trochanter with a hook at lateral margin. Mesotrochanter rounded. Apex of metaxyphus V-shaped. Internal margin of hind femur slightly sinuous. **Abdomen.** Ventral keel not bare. Penultimate abdominal sternite with spatulated apex. Last abdominal sternite deltoid with truncated apex (Fig. 11). Genital capsule without digitate process, with caudoventral and posterior pointed protuberance and dorsal portion acute (Fig. 12). Clasper apex not bifurcate; slightly longer than dorsal portion of genital capsule; two-thirds of clasper length broad from base, tapering at apical third.

Etymology. The species epithet, *itatiaia*, refers to the locality (municipality of Itatiaia) in which the holotype was collected.

Remarks. In general, the species of *Notonecta* do not show many diagnostic features. Identification is performed through ratios between measures and by the shape of the genital capsule and clasper. The genital capsule of *N. itatiaia* has a conspicuous shape, with a posterior rounded protuberance, absent in other species.

New records

Notonecta disturbata Hungerford, 1926

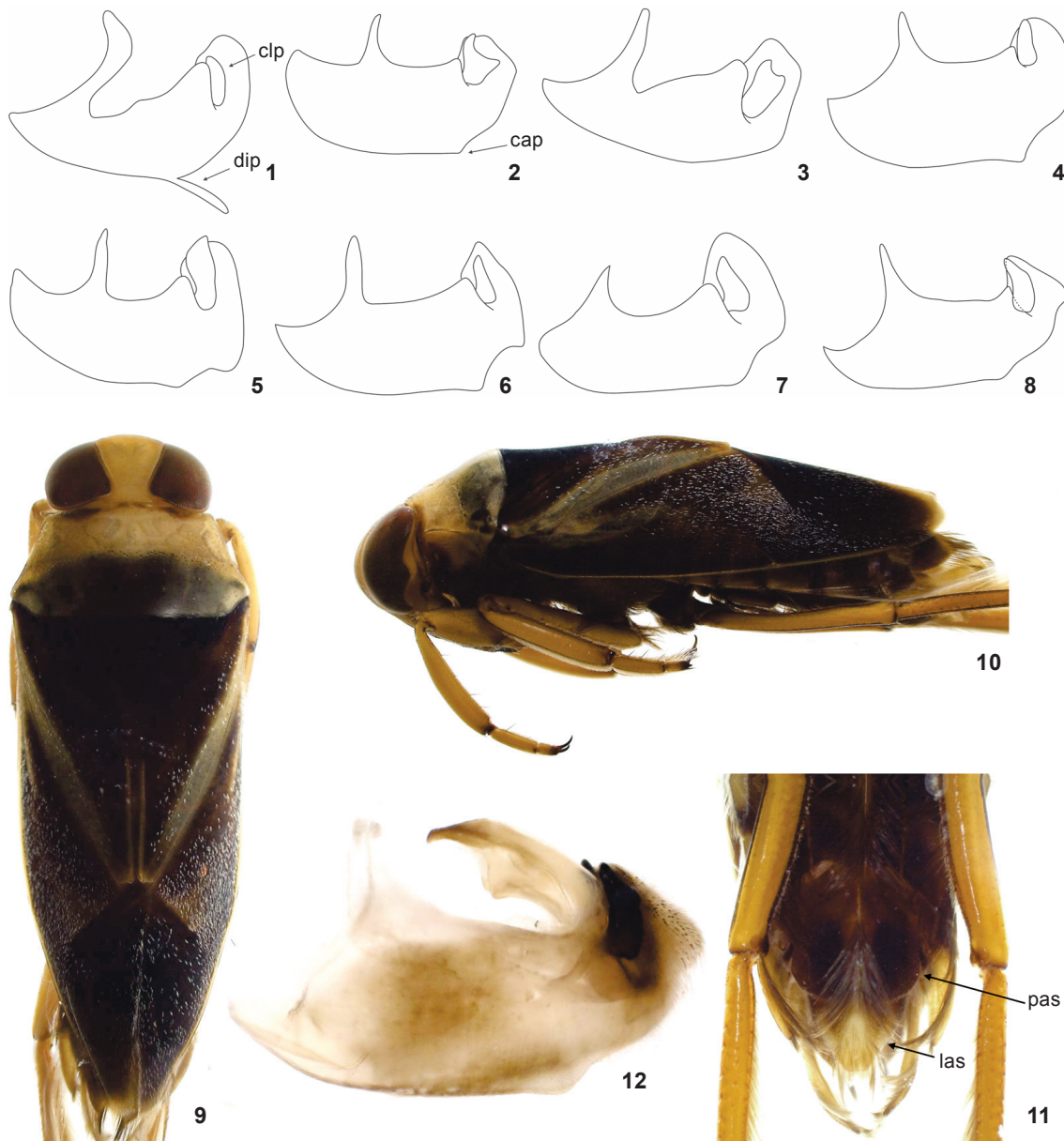
Notonecta disturbata is a common species that occurs in Paraguay and Argentina (MOREIRA *et al.* 2011), and is also widely distributed in Brazil (see records below). This species shows substantial variation in color, with individuals entirely clear to individuals with most of the body dark and with some clear stains.

It is very similar to *N. pulchra*, with the same range of body length. They are better distinguished by the shape of the genital capsule. *Notonecta disturbata* has two caudoventral protuberances and the dorsal portion of the genital capsule is acute; *N. pulchra* has only one caudoventral protuberance and the dorsal portion of the genital capsule is rounded.

Known distribution in Brazil. North (Tocantins) (TRUXAL 1957), Central-West (Mato Grosso and Goiás) (TRUXAL 1957, NIESER 1970), Southeast (Minas Gerais and Rio de Janeiro²) (HUNGERFORD 1933, RIBEIRO *et al.* 1998, 2010, MELO & NIESER 2004) and South regions (Rio Grande do Sul) (BACHMANN 1971).

¹ HUNGERFORD (1933) considered *N. variabilis* virtually identical to *N. indica* Linnaeus, 1771 from Puerto Rico, but he chose to retain the name *N. variabilis* for the specimens from Brazil until there were more specimens available for study. In our key the structural characteristics presented for *N. variabilis* are, in fact, those from *N. indica*.

² Cited as “Campo, Bello Staat, Rio de Janeiro” (HUNGERFORD 1933). The district of Campo Belo was part of the territory of the municipality of Resende, state of Rio de Janeiro. This district was raised to the category of municipality, under the name Itatiaia, in 1988 (IBGE 2009).



Figures 1-12. (1-8) Genital capsule, lateral view: (1) *Notonecta nigra*; (2) *N. sellata*; (3) *N. variabilis*; (4) *N. pulchra*; (5) *N. polystolisma*; (6) *N. disturbata*; (7) *N. bifasciata*; (8) *N. itatiaia*. (9-12) *Notonecta itatiaia* sp. nov.: (9) habitus, dorsal view; (10) habitus, lateral view; (11) penultimate and last abdominal sternites; (12) genital capsule, lateral view. (cap.) Caudoventral protuberance, (clp.) clasper, (dip.) digitiform process, (pas.) penultimate abdominal sternite, (las.) last abdominal sternite.

Material examined. BRAZIL: state of Pará (!), Parauapebas, FLONA de Carajás, Serra Norte, 09.IX.2006 (N. Ferreira Jr & L.L. Dumas), det. J.F. Barbosa: 7f and 8m, macropterous (DZRJ); APA do Igarapé Gelado, Lago Gelado, Cela 7, 22.IX.2007 (N. Ferreira Jr. & V.P. Alecrim): 1m, macropterous (DZRJ); FLONA de Carajás, N4-D, 21.IX.2007: 1m, macropterous (DZRJ); Canaã dos Carajás, Floresta Nacional de Carajás, Serra Sul, Lagoa S11B-A, 06°21'20"S/

50°23'25"W, 15.IX.2006 (L. L. Dumas & N. Ferreira Jr.): 1m and 2f, macropterous (DZRJ); Lagoa S11D-F (Lagoa do Amendoim), 06°23'56.87"S/50°22'17.53"W, XI.2012 (Lab. Limnologia UFRJ): 1m and 1f, macropterous (DZRJ); Lagoa S11B-D, 06°21'8.21"S/50°23'38.13"W, 730 m, XI.2011 (Lab. Limnologia UFRJ): 1m, macropterous (DZRJ); Curionópolis, FLONA de Carajás, Serra Pelada, L.A., 20.IX.2007: 3m and 5f, macropterous (DZRJ); state

of Piauí (!), Piracuruca, Parque Nacional de Sete Cidades, Cachoeira do Riachão, 04°06'28"S/41°40'13"W, 171 m, 09.II.2013 (D.M. Takiya & A.P.M. Santos): 2m, macropterous (DZRJ); alojamento, 4°05'57"S/41°42'34"W, 193 m, 12.II.2013 (A.P.M. Santos & D.M. Takiya): 3m and 1f, macropterous (DZRJ); state of Minas Gerais, Itamonte, Parque Nacional do Itatiaia, Brejo da Lapa, represa abaixo da cachoeira, 13.IX.1996 (Equipe do Laboratório de Entomologia – UFRJ), det. R.M.C. Paiva: 1m, macropterous (DZRJ); Bocaina de Minas, Vale do Alcantilado, 23.XII.2000 (P.H. Carvalho), det. J.F. Barbosa: 1f, macropterous (DZRJ); state of Rio de Janeiro, Seropédica, poça próximo à EMBRAPA, 16.VI.2003 (A.L. Netto-Ferreira): 1m, macropterous (DZRJ); Magé, Campo dos Escoteiros, fazenda de criação de peixe, 09.XII.2007 (B. Clarkson & A. Hoffman): 2f, macropterous; state of São Paulo (!), Ubatuba, Parque Estadual da Serra do Mar, Núcleo Picinguaba, brejo, 17.VI.2004 (N. Ferreira Jr): 2m, macropterous (DZRJ); state of Rio Grande do Sul, Chuí, Poça no Km 5,5 da estrada de acesso a Barra do Chuí, 12.IX.1999 (?), 1m, macropterous (DZRJ).

Notonecta pulchra Hungerford, 1926

Notonecta pulchra occurs in Brazil, Paraguay and Argentina (MOREIRA *et al.* 2011). In Brazil it has not been recorded from the Northeast and South regions.

This species has a genital capsule with the apex strongly rounded as that of *N. polystolisma*, but the clasper of *N. pulchra* just reaches the apex of genital capsule, whereas the clasper of *N. polystolisma* clearly exceeds the apex.

Known distribution in Brazil. North (Amazonas) (NIESER 1970, PEREIRA & MELO 2007, BARBOSA & RODRIGUES 2013), Central-West (Mato Grosso do Sul) (FLORIANO *et al.* 2013) and Southeast regions (Minas Gerais and Rio de Janeiro) (NIESER & MELO 1997, MELO & NIESER 2004, RIBEIRO *et al.* 2010).

Material examined. BRAZIL: state of Amazonas, Iranduba, várzea, 07.VII.2008 (J.F. Barbosa), det. J.F. Barbosa: 1m and 1f, macropterous (INPA); Rio Solimões, Lago Januári, banco de macrófitas e raízes, 11.VII.2008 (J.F. Barbosa): 1m, macropterous (INPA); state of Pará (!), Parauapebas, FLONA de Carajás, A.P.A. do Igarapé Gelado, Lago Gelado, Cela 7, 22.IX.2007 (N. Ferreira Jr. & V.P. Alecrim): 1m, macropterous (DZRJ); state of Minas Gerais, Manga, ?, col. ?, 1m, macropterous (DZRJ).

Notonecta polystolisma Fieber, 1851

Notonecta polystolisma occurs in south Brazil and Argentina (MOREIRA *et al.* 2011) and is the largest species among the three species cited. It has a general dark facies and genital capsule with two caudoventral protuberances as in *N. disturbata*. They are distinguished by the rounded shape of caudoventral protuberances and the clasper clearly surpassing the apex of the genital capsule in *N. polystolisma*, whereas in *N. disturbata* the caudoventral protuberances are more acute and the clasper does not exceed the apex of genital capsule.

Known distribution in Brazil. Southeast (Minas Gerais and São Paulo) (HUNGERFORD 1933, NIESER & MELO 1997, VIANNA & MELO 2003, SOUZA *et al.* 2006) and South regions (Paraná and Santa Catarina) (JACZEWSKI 1928, MUSEO CIVICO DI ROVERETO 2012).

Material examined. BRAZIL: state of São Paulo, Ubatuba, Parque Estadual da Serra do Mar, Núcleo Picinguaba, brejo, 17.VI.2004 (N. Ferreira Jr), det. J.F. Barbosa: 2m and 1f, macropterous (DZRJ); São José do Barreiro, PARNA Serra da Bocaina, Conde D'Eu, poça, 24.III.2009 (D. B. Provete): 1m and 1f, macropterous (DZRJ); 26.V.2009: 7m and 10f, macropterous (DZRJ); 21.VI.2009: 1m and 1f, macropterous (DZRJ); 21.VI.2009 (D.B. Provete): 1m and 1f, macropterous (DZRJ); paredão, poça, 26.III.2009: 1f, macropterous (DZRJ); base, poça, 11.IV.2009: 1f, macropterous (DZRJ); ponte alta, poça, 18.IV.2009: 1m, macropterous (DZRJ); 25.V.2009: 1m, macropterous (DZRJ); 21.VI.2009: 1m and 1f, macropterous (DZRJ); Nascente Éden, 20.IV.2009: 1f, macropterous (DZRJ); Conde D'Eu, poça, IV.2009: 4f, macropterous (DZRJ); 21.IV.2009: 1f, macropterous (DZRJ).

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