Rediscovery, new distributional records, and description of the female of the “beaked” bidessine water beetle Neoclypeodytes anasinus Miller, 2001 (Coleoptera: Dytiscidae)

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Abstract: The rediscovery of Neoclypeodytes anasinus Miller, 2001 is reported, a bidessine diving beetle species anteriorly only known from the unique type specimen collected in Jamaica. The new localities in Cuba imply an extension of the hitherto known area of distribution and confirm the presence of the species on the Greater Antilles. The Cuban population differs from the holotype from Jamaica in the elytral coloration and, to some degree, body size. The hitherto unknown female of N. anasinus lacks the strongly produced clypeus characteristic of the male and could scarcely be diagnosed applying the only taxonomic key available for species identification. Therefore, some comparative taxonomic notes are presented as well as the first information about the habitats of N. anasinus.

Key words: Coleoptera, Dytiscidae, Hydroporinae, Neoclypeodytes, systematics, taxonomy, West Indies, Cuba.

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Resumen: En este estudio se reporta el redescubrimiento de Neoclypeodytes anasinus Miller, 2001, una especie de Bidessini anteriormente conocida solamente del único espeímen tipo proveniente de Jamaica. Los nuevos registros en Cuba implican la extensión de su área de distribución conocida y confirman la presencia de la especie en las Antillas Mayores. Los ejemplares cubanos difieren del holotipo de Jamaica en la coloración elitral y ligeramente en el tamaño del cuerpo. La hembra de N. anasinus hasta ahora no se conocía, a esto le falta la característica del clípeo fuertemente pronunciado del macho y fue identificada aplicando este único carácter en la clave disponible para la identificación de la especie. Por lo anterior, algunas notas taxonómicas comparativas son presentadas, así como la primera información sobre los hábitats de N. anasinus.

Palabras claves: Coleoptera, Dytiscidae, Hydroporinae, Neoclypeodytes, sistemática, taxonomía, Antillas Mayores, Cuba.

Introduction

Neoclypeodytes Young, 1967, with 26 species, are small diving beetles zoogeographically restricted to the western Nearctic, the Mexican transition zone between Nearctic and Neotropical, Central America, and the West Indies. However, to date only a single individual, the unique male holotype specimen of N. anasinus Miller, 2001, has been reported from the West Indies, namely the Greater Antillean island Jamaica, without more detailed information about the finding place (Miller, 2001). The male of N. anasinus differs from all other species of Neotropical Bidessini by the beak-like produced clypeus (Fig. 1a, 1b). During a recent exhaustive study of adephagous water beetles in Cuba conducted by the first author, this distinctive species was rediscovered in significant numbers at two distant sampling stations on that neighbour island. In this study we describe some slight differences between the Cuban population and the holotype as well as, while describing the female of N. anasinus for the first time, an important character that differs between the sexes.

Material and methods

Nomenclature: The nomenclature here used follows Nilsson (2015). Collecting methods: Specimens collected for this study were part of a broader study dealing with the aqua-tic Adephaga of Cuba. Sampling was done using a D-framed-net swept in various microhabitats including macrophyte beds, rocky shores, organically rich sediments, and open water.

Examination: Specimens have been examined with different binocular optical equipment using magnifications up to 200x. Taxonomical treatment: Genus identification was conducted on the basis of the taxonomical keys provided by Young (1967) and Biström (1988) as well as the detailed genus diagnostics of the New World bidessine genera Bidessonotus Régimbart, 1895, Crinodessus Miller, 1997, Liodessus Guignot, 1939, Neobidessus Young, 1967, and Neoclypeodytes Young, 1967, in other words, of the genera sharing the following characters: parameres with basal and apical segments divided by an articulation or at least a conspicuous suture; head with a transverse cervical stria behind the eyes or in between the posterior margins of the eyes; pronotum and elytra with basal plicae; elytra not carinate; and epipleurae without transverse ridge (Balfour-Browne, 1947; Miller, 1997, 1998, 2001; Pederzani, 2001; Young, 1977, 1981). Species identification was conducted on the basis of the taxonomical key provided by Miller (2001). Deposition of material: Specimens of N. anasinus are deposited in the Zoological Collection of the Museo de Historia Natural (Museum of Natural History) “Charles Ramsden”, Cuba, and the National Museum in Prague, Czech Republic. Illustrations: Drawings were made using the software Corel Draw X-4. Photos were taken with a Nikon Coolpix 990 through either a Leitz or a Bausch & Lomb stereomicroscope and processed with Combine ZP using the simple stack mode as preconfigured by that software.

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Fig. 1. Neoclypeodytes anasinus. a) body habitus, dorsal aspect; b, c) head, frontal aspect, b) male, c) female; d) median aedeagal lobe, lateral aspect; e) apex of median aedeagal lobe, ventral aspect; f) right aedeagal paramere, lateral aspect.

Fig. 2. Neoclypeodytes anasinus. Habitus of a female. a) dorsal aspect, b) ventral aspect.
Fig. 3. Neoclypeodytes anasinus. Collection localities in Cuba. 1) Isla de La Juventud, Cerro Caudal; 2) Guantánamo, Baracoa, Monte Iberia.

Results

Morphological observations. The Cuban population compared with the holotype. In contrast to the holotype from Jamaica, as illustrated by Miller (2001), the Cuban specimens are lacking any distinctly delimited or sharply contrasting elytral colour pattern, but show merely very vague alterations of slightly darker and lighter parts, the most conspicuous being the lighter elytral apex (Fig. 2). However, normally the elytral pattern remains vaguely discernable, especially near the lateral margins. Besides, the Cuban specimens are on average (1.8–2.1 mm) slightly smaller, only exceptionally reaching the size of the holotype (2.13 mm). Apart from these details, they perfectly match the original description, including the male genitalia (Figs 1d-f) and the distance between cervical line and hind margin of the eyes, and there is no doubt that they belong to the same species.

Sexual dimorphism. The female has the anterior margin of the clypeus only inconspicuously produced (Fig. 1c), and thus, the key to species provided by Miller (2001) will not lead to a consistent identification of individuals of that sex, or female specimens might key to 

N. discedens

Sharp, 1882. Females of 

N. discedens

are in all aspects very similar to females of 

N. anasinus

inclusive the decidedly converged metacoxal lines. However, they differ from Cuban 

N. anasinus

by the well developed elytral pattern. Single females of 

N. anasinus

from Jamaica, when detected, might be turn out to be difficult to distinguish from females of 

N. discedens.

Distributional update

The here reported finding of 

N. anasinus

in Cuba expands the known distribution area of that species as well as of the whole genus, and confirms its occurrence on the Greater Antilles. Within Cuba, it has been found in the southwestern part as well as in the extreme east (Fig. 3). The record details are as follows:

1. Isla de la Juventud Special Municipality, Cerro Caudal, 22-V-2006, 9 specimens, Y. S. Megna leg., 21°36’28’’N; 82°38’03’’W, elevation ca. 12 m.a.s.l.
2. Guantánamo Province, Baracoa Municipality, Monte Iberia, 04-X-2003, 4 specimens, 7-II-2004, 9 specimens, Y. S. Megna leg., 21°36’28’’N; 82°38’03’’W, elevation ca. 12 m.a.s.l.

Habitat selection

The specimens from the Isla de la Juventud were collected in a temporary pool with turbid water and muddy to stony sediments, in association with the predaceous diving beetles 

Bidessonotus brownneanus

Balfour-Browne, 1947, 

B. fallax

Balfour-Browne, 1947, 

Copelatus danyi

Megna and Epler, 2012, 

C. posticus

Fabricius, 1801), 

Laccophilus alariei

Megna, Deler-Hernández and Challet, 2011, 

L. proximus

Say, 1823, 

Pachydrus obniger

(Chevrolat, 1863), 

Rhantus calidas

(Fabricius, 1792), 

Hydaticus rimosus

Aubé, 1838, and 

Thermonectus basillaris basillaris

(Harris, 1829).

The Guantánamo specimens were collected in a mountainous permanent lentic, unshaded habitat with clear water and muddy to stony raw bottom free from aquatic vegetation, in association with 

Copelatus insolitus

Chevrolat, 1863 and 

Laccophilus venustus

Chevrolat, 1863.

Key to the genera of Bidessini known to occur on the West Indies (Note: the distinction given for 

Liodessus

Guignot, 1939 and 

Neobidessus

Young, 1967 applies only to the West Indian representatives of these genera)

1(2) Elytron without a basal plica; epipleuron near base with diagonal carina..........Brachyvatus

Zimmermann, 1919

– Elytron with a basal plica (Fig. 1a); epipleuron without diagonal carina..................1

2(1) Elytron without a conspicuous carina.................................................................Babington, 1841

– Elytra lacking distinct carinae.................................................................3

3(2) Clypeus markedly prolonged or forming a distinct rim .................................Neoclypeodytes

Young, 1967

– Clypeus not such ..................................................4

4(3) Pro- and mesotarsi pentamericus, the 4th segment short but distinctly visible for not being concealed by lobes of 3rd segment...............Bidessonotus

Régimbart, 1895

– Pro- and mesotarsi pseudotetramerous, the 4th segment largely concealed by lobes of 3rd segment...............4

5(4) Metatibia of the male with truncate spur at apex; last abdominal sternite broad; penis modified, lateral aspect of apex evocative of a birds’ head..................................................Neobidessus

Young, 1967

– Metatibia of the male without truncate spur at apex; last abdominal sternite narrower, almost triangular; penis simple, lateral aspect of apex falciform..................................................Liodessus

Guignot, 1939

Discussion

Of all known species of Neoclypeodytes, male 

N. anasinus

show the most extreme development of the constitutive trait of the genus, the extension of the clypeus, and thus, it is well placed in this genus. However, 

N. anasinus

now represents, besides 

N. challeti

Miller, 2001 and 

N. haroldi

Miller, 2001, the third species of the genus which - at least in a part of its area of distribution - shows the elytral pattern absent or strongly faded. Miller (2001) proposed that a typical pattern of two brightly contrasting elytral markings might present the only probable unambiguous synapomorphy of Neoclypeo-
dytes, and that the few species with faded or absent markings have secondarily lost this trait. Within the Neotropical realm, the systematic status of Neochelyrodytes is rather well defined. Here, a rimmed or significantly extended clypeus is found in Anodocheilus and Uvarus Guignot, 1939. Anodocheilus differs in many respects, with carinate elytra and distant, divergent metacoxal lines. Uvarus lacks for an occipital line, and at least the Neotropical species have the metacoxal lines distant and divergent, and the median aedeagal lobe does not form a closed tube and is weakly sclerotized.

Against the background of the differences between the holotype of N. anasinus from Jamaica and the Cuban material, the latter might present a distinct subspecies. However, due to the fact that the Jamaican population is known from no more than a single individual, such conclusion would be premature.

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References


