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Burhinotaenia colombiana n. sp. (Cestoda, Cyclophyllidea) from the Double-Striped Stone Curlew Burhinus bistriatus (Aves, Charadriiformes) in Colombia

Boyko B. Georgiev  
Bulgarian Academy of Sciences

Éva Murai  
Hungarian Natural History Museum

Robert L. Rausch  
University of Washington, rausch@uw.edu

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ABSTRACT: Burhinotaenia colombiana n. sp. (Dilepididae) is described from the small intestine of the double-stripped stone curlew Burhinus bistriatus (Wagler) in Colombia. The new species is distinguished from the most similar Burhinotaenia delachauxi (Baer, 1925), a parasite of the Old World Burhinus spp., by the longer cirrus-sac (375–590, avg. 514 µm) and longer rostellar hooks (412–451, avg. 440 µm vs. 358–367, avg. 364 µm). The validity of the genus Burhinotaenia Spasskii and Spasskaya, 1965 and its generic diagnosis as proposed by Bona (1994) are confirmed. This is the first record of a species of Burhinotaenia in the New World.

The double-stripped stone curlew Burhinus bistriatus (Wagler) occurs in Central America and northern South America, from southern Mexico to northern Colombia and northern Brazil (Howard and Moore, 1980). The only record of cestodes from this host was reported by Beddard (1913) who described the dilepidid tapeworm Eugonodaemum oedicnemi Beddard, 1913 from a bird at the London Zoo.

Three cestode species were found as parasites of B. bistriatus in Colombia. The present paper describes 1 of them, which was found to represent a new species of the genus Burhinotaenia Spasskii and Spasskaya, 1965. The systematic position of the other 2 species is a subject of another study that will be published separately.

MATERIAL AND METHODS

The present description is based on 8 entire specimens, 1 separate scolex, and a few fragments collected by R. L. and V. R. Rausch on 6 April 1977 from the small intestine of 1 female B. bistriatus (collection no. 42,671) captured at Carimagua, Colombia. The new species is distinguished from the most similar Burhinotaenia delachauxi (Baer, 1925), a parasite of the Old World Burhinus spp., by the longer cirrus-sac (375–590, avg. 514 µm) and longer rostellar hooks (412–451, avg. 440 µm vs. 358–367, avg. 364 µm). The validity of the genus Burhinotaenia Spasskii and Spasskaya, 1965 and its generic diagnosis as proposed by Bona (1994) are confirmed. This is the first record of a species of Burhinotaenia in the New World.

The type specimens were deposited in the U.S. National Parasite Collection, Beltsville (USNPC), the Parasitological Collection of the Department of Zoology, Hungarian Natural History Museum, Budapest (HNHM), and the collection of the senior author (BBG). The type specimens of Burhinotaenia delachauxi (Baer, 1925) from the collection of the Natural History Museum, Geneva, nos. 6/24-25 (2 slides) and a specimen of Burhinotaenia coronata from Burhinus oedicnemus (Linnaeus), the Great Hungarian Plain, from the Parasitological Collection of the Hungarian Natural History Museum, Budapest, no. 10907 (published as B. delachauxi by Murai et al. [1988]), were used as comparative material.

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* Department of Zoology, Hungarian Natural History Museum, Baross utca 13, H-1088 Budapest, Hungary.
† Department of Comparative Medicine SB-42, University of Washington, Seattle, Washington 98195.
FIGURES 1–7. *Burhinotaenia colombiana* sp. 1, 2. Scoleces, scale bar 250 μm. 3–7. Rostellar hooks, scale bar = 100 μm.
Burhinotaenia colombiana n. sp. 12. Terminal genital ducts, dorsal view, scale bar = 100 μm. 13. Detail of female genital ducts, ventral view, scale bar 50 = μm; abbreviations: MG, Mehlis' gland; OV, ovary; SR, seminal receptacle; UT, uterus. 14, 15. Eggs, scale bar = 20 μm.

Walled, highly elongate, claviform (with wider aporal end), often sigmoid; its measurements 375–590 × 54–85 (514 ± 44 × 66 ± 7, n = 49), vary in narrower limits in 1 strobila, e.g., 375–491 × 54–67 (n = 6), 456–532 × 63–72 (n = 9), 483–554 × 67–81 (n = 8), 528–590 × 58–67 (n = 8); situated obliquely, cross poral longitudinal osmoregulatory canals and about a third or a quarter of it lies in median field. Internal vas deferens forming 1 or a few coils in aporal part of cirrus-sac. Cirrus usually slightly evaginated, then almost conical, 16–25 (19 ± 4, n = 10) long and 12–17 (14 ± 2, n = 10) wide at base; thoroughly evaginated cirrus occurs rarely, cylindrical, 77–107 (93, n = 3) long, with diameter 12–15 (13, n = 3); armament observed neither on evaginated cirrus nor in ductus cirri.

Vitellarium compact, transversely elongate, usually reniform, situated near middle of posterior proglottis margin. Ovary (Fig. 8) occupies only central third of median field; consists of 2 separate wings connected by narrow isthmus; wings slightly lobed; aporal wing more anterior than
poral. Mehlis' gland distinct, globular (Fig. 13). Seminal receptacle from fusiform to lemon-shaped, situated in poral half of median field, anterior to poral wing of ovary and posterior to cirrus-sac; 201-254 (233 ± 17, n = 10) long and base. Considering this differentiating feature, the conclusion is that Spasskii (1978) considered the shape of rostellar hooks as the main types of hook shape. On the basis of this publication, Spasskaya and Spasskii from a charadriiform host from Zaire clearly demonstrated 2 different species described from birds of the family Burhinidae (Charadromes): B. delachauxi (Baer, 1925) (type species) and Burhinotaenia colombiana, for measuring has metric characters under the range of dimensions of its species as proposed by Schmidt (1986). However, Burhinotaenia differs obviously from the latter 2 genera by its strobilar morphology. Therefore, the present study on the rostellar apparatus of Burhinotaenia spp., characterized by the absence of a saclike rostellar sheath. It is completely different from the rostellum of the majority of dilepidid genera, including these types of hook shape. On the basis of this publication, Spasskaya and Spasskii (1978) considered the shape of rostellar hooks as the main character. A full comparison between the anatomy of proglottides of B. colombiana and B. delachauxi is difficult due to the rather contracted condition of the types of the latter and the scarce literature data. Nevertheless, a considerable difference in the dimensions of the cirrus sac was established, i.e., 375-590 × 54-85 (514 × 66) of B. colombiana and 322-393 × 40-45 (354 × 42, n = 6) of the types of B. delachauxi. In addition, the only scolices from the types of B. delachauxi available for measuring has metric characters under the range of dimensions of the new species, i.e., diameter of scolex 975, diameter of suckers 250-268 (258, n = 4), rostellum 362 long and 459 wide.

DISCUSSION

After the separation of Burhinotaenia from Paricterotaenia by Spasskaya and Spasskii (1965), its validity was supported only in a subsequent publication of the same authors (Spasskaya and Spasskii, 1978). Schmidt (1986) recognized B. delachauxi and B. coronata as members of the genera Polycercus Villot, 1883 (syn. Paricterotaenia) and Choanotaenia Railliet, 1896, respectively, i.e., he regarded Burhinotaenia as a synonym of Polycercus although the generic name was not included in the list of synonyms. Recently, Bona (1994) validated Burhinotaenia and amended its generic diagnosis.

The present study confirms the peculiar structure of the rostellar apparatus of Burhinotaenia spp., characterized by the absence of a saclike rostellar sheath. It is completely different from the rostella of the majority of dilepidid genera, including these types of hook shape. On the basis of this publication, Spasskaya and Spasskii (1978) considered the shape of rostellar hooks as the main distinguishing character between B. delachauxi and B. coronata: the former is characterized with ratio length of blade: length of base about 1.5:1; the latter has rostellar hooks with almost equal lengths of blade and base. Considering this differentiating feature, the conclusion is that the specimen of Burhinotaenia from Burhinus oedicnemus from Hunary determined as B. delachauxi and possessing rostellar hooks with length of the blade 115-160 and length of the handle 120-150 (Murai et al., 1988) belongs to B. coronata. Dr. F. V. Bona (pers. comm.) examined the rostellar hooks of the type of B. coronata from the Collection of the Natural History Museum, Geneva (no. 28/42) and confirmed that they correspond to the drawing of Mahon (1954) for the same material; he found that the ratio length of blade: length of base of these hooks is 0.85-1.1.

Because the synonymy proposed by Spasskaya and Spasskii (1978) is based on a study of the literature, it can be accepted only conditionally and needs further confirmation grounded on a reexamination of the relevant species. Moreover, the data on the strobilar anatomy of most of the nominal taxa considered as synonyms of B. coronata or B. delachauxi are scarce, and only the morphology of rostellar hooks can be used for reliable comparisons. The synonymy of Spasskaya and Spasskii (1978), however, reflects the presence of 2 types of rostellar hook shape in the known nominal species of Burhinotaenia, and this character is the main one applied further in the differential comparison of the new species.

The shape of the rostellar hooks of B. colombiana n. sp. is close to those of B. delachauxi. The hitherto reported lengths of the hooks of this species are 370 (Baer, 1925), 360-388 (Mahon, 1954), and 366-375 (Baer, 1959). The present observations on type specimens of B. delachauxi revealed that their hooks are 358-367 (364, n = 8) long; Dr. F. V. Bona (pers. comm.) measured a minimum length of 337 for the rostellar hooks of types of B. delachauxi. The new species with rostellar hooks 412-451 (440) long is clearly distinguished from B. delachauxi by this character. A full comparison between the anatomy of proglottides of B. colombiana and B. delachauxi is difficult due to the rather contracted condition of the types of the latter and the scarce literature data. Nevertheless, a considerable difference in the dimensions of the cirrus sac was established, i.e., 375-590 × 54-85 (514 × 66) of B. colombiana and 322-393 × 40-45 (354 × 42, n = 6) of the types of B. delachauxi. In addition, the only scolices from the types of B. delachauxi available for measuring has metric characters under the range of dimensions of the new species, i.e., diameter of scolex 975, diameter of suckers 250-268 (258, n = 4), rostellum 362 long and 459 wide.

The present results are also in agreement with the generic diagnosis of Burhinotaenia proposed by Bona (1994). However, there is an exception with respect to the structure of the gravid
uterus. According to the key of Bona (1994), the uterine walls of Burhinotaenia are not persistent and the eggs are loose in parenchyma in the final stage of uterine development. In well stained specimens of the new species, the uterine walls are seen up to the end of the development of the organ.

The peculiar scolex structure of Burhinotaenia and the other 2 genera with an onderstepoortioid rostellar apparatus makes questionable their position within the family Dilepididae because most of the genera (including the type genus Dilepis Weinland, 1858) possess rostella with sacculae sheaths. The characteristics that the absence of a saccular rostellar sheath, in combination with the saclike uterus without a paruterine organ and the avian host, resemble cestodes of the family Metadilepididae. The metadilepidids are a small family (8 genera) of avian parasites morphologically similar to both Dilepididae and Paruterinidae; they can be distinguished from the former by the absence of a saccular rostellar sheath and the position of the developing uterus dorsal to the ovary, and from the latter by the absence of a paruterine organ (Kornyushin and Georgiev, 1994). In spite of the similarity of Burhinotaenia with the metadilepidids, it cannot be placed among them because of the ventral position of its uterus to the female glands. It seems that none of the cyclophyllidean families erected up to the moment may harbor the genus Burhinotaenia, but the erection of a new family could be well grounded only as a part of a thorough revision of the order. Therefore, Burhinotaenia is tentatively retained in the Dilepididae pending further revisions of the order Cyclophyllidea. In its present composition, the family Dilepididae is a heterogeneous group. This is also the opinion of Bona (1994) who believed that the 100 genera referred to this family do not form a monophyletic assemblage and suggested further studies in order to elaborate a new suprageneric arrangement of the group.

Until now, the species of the genus Burhinotaenia were known only from Europe, Africa, and south Asia (Spasskaya and Spasskii, 1978; Schmidt, 1986). This is the first record of cestodes of this genus in the New World.

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