

**BRUCHIDS FROM *SENNA MULTIJUGA* (Rich) I. & B. (Caesalpinaceae)
in Brazil with Descriptions of two New Species¹**

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Abstract

Samples of mature fruits of *Senna multijuga* (Rich) I. & B. (Caesalpinaceae), an ornamental tree, were collected in Curitiba, Paraná, Brazil. The bruchid species that emerged were: *Sennius bondari* (Pic), *Sennius puncticollis* (Fähræus) **new combination**, *Sennius crudelis*, **new species** and *Sennius nappi*, **new species**, here described and illustrated. A key to all bruchid species found developing on seeds of *Senna multijuga* is also provided.

Ornamental plants are used in streets and public gardens to enhance the aesthetic value of these areas. Different bruchid species were found developing in such plants in Curitiba, Paraná, Brazil. Although, some of these species are known to science, a few of them remain undescribed.

Senna multijuga (Rich) I. & B. (Caesalpinaceae) is one of the most handsome of Neotropical sennas extensively planted in southeastern Brazil. Although Lorenzi (1992) has said this species is native in Brazil, Irwin and Barneby (1982) stated that the origin of much of the material planted in the American tropics as ornamental trees is uncertain. The only bruchid reported to feed in seeds of *Senna multijuga* was *Acanthoscelides sennicola* Johnson from Venezuela. This species also feeds in seeds of *Senna saeri* (Pittier) I. & B. (Johnson 1990, Johnson and Siemens 1995).

For the present study, one sample of mature pods of this tree was collected in July, 1992, one in June, 1995, and others from four different specimens, from June until August, 1996, biweekly. In the laboratory samples were kept in thick-mesh bags and afterwards in inflated plastic bags, following the methodology of Janzen (1980). Three times a week these samples were observed and adult bruchids collected.

Four different bruchid species were obtained from *Senna multijuga* pods: *Sennius bondari* (Pic), *Sennius puncticollis* (Fähræus), and two undescribed species of *Sennius* Bridwell. We present here all the bibliography related to these species, original descriptions, justification for a new combination and a key to separate the bruchid species collected from *Senna multijuga*.

Sennius bondari (Pic)

Bruchus bondari Pic 1929:28 (description, distribution); Bondar 1937:40 (description, host plant, distribution); Zacher 1952:461 (host plant).

Acanthoscelides bondari: Blackwelder 1946: 759 (checklist, distribution); Costa Lima 1955:245 (host plant.); Silva *et al.* 1968:372 (host plant, distribution);

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Sennius bondari: Johnson and Kingsolver 1973:72 (citation); Johnson 1984:62 (host plant, distribution); Udayagiri and Wadhi 1989:100 (catalog, distribution, host plant); Kingsolver and Silva 1991:412 (citation); Macêdo, Lewinsohn and Kingsolver 1992:331, 334 (host plant, distribution).

Sennius bondari occurs in Venezuela, Colombia (Johnson 1984) and in Brazil. Silva *et al.* (1968) reported *S. bondari* in the Brazilian states of Bahia, Rio de Janeiro, Minas Gerais and São Paulo. Here, *S. bondari* is reported for Paraná, southeastern Brazil.

Silva *et al.* (1968) cited as host plants of *S. bondari*, *Senna multijuga*, *S. occidentalis* (L.) Link, *S. surattensis* (N. L. Burman) I. & B. and *S. splendida* (Vogel) I. & B. Johnson (1984) increased the list with *S. pistaciifolia* (H.B.K.) I. & B. and *S. pendula* (Willd.) var. *advena* (Vog.) I. & B., and Macêdo, Lewinsohn and Kingsolver (1992) with *Senna bicapsularis* (L.) Rox.

Sennius puncticollis (Fähræus), **new combination**

Bruchus puncticollis Fähræus 1839:89 (description, distribution, host plant); Gemminger and Harold 1873:3228 (catalog, distribution); Costa Lima 1928:182 (host plant); Zacher 1952:462 (host plant).

Acanthoscelides puncticollis: Blackwelder 1946:760 (checklist, distribution); Silva *et al.* 1968:374 (host plant); Udayagiri and Wadhi 1989:61 (catalog, distribution).

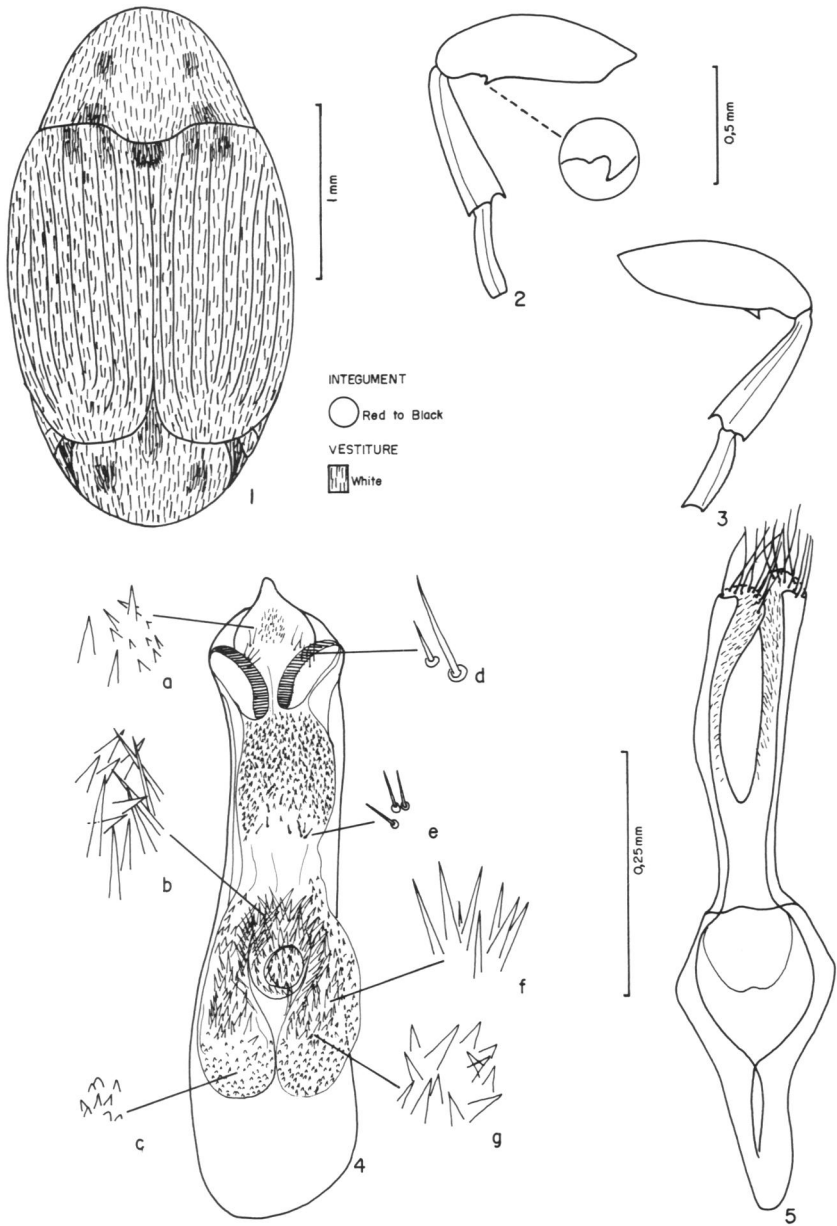
The Brazilian bruchid *Sennius puncticollis* was reported by Fähræus (1839) and Zacher (1952) to feed in seeds of *Maina brasiliensis* (sic); Silva *et al.* (1968) and Costa Lima (1928) quoted *Trigonia brasiliensis* Jacob-Makoy and *Trigonia* sp. (Trigoniaceae), and here we record *Senna multijuga* (Caesalpinaceae). Since no other bruchid species was reported reared from seeds of the family Trigoniaceae, the reports of Silva *et al.* (1968) and Costa Lima (1928) are questionable.

Fähræus (1839) originally described *S. puncticollis* in the genus *Bruchus* Linnaeus and Blackwelder (1946) transferred it to the genus *Acanthoscelides* Schilsky. A detailed morphological study indicates that the species belongs to the New World genus *Sennius*. The distinctive characters which, in combination, support the transfer are: mucro very short (0.08 the length of first tarsomere of metathoracic leg) and male genitalia with hinge sclerites.

Sennius crudelis, **new species**

Figs. 1–5

Description. *Dimensions.* Body length: 2.60–2.80 mm; width 1.36–1.44 mm. Pronotal length: 0.70–1.00 mm; width 0.60–0.94mm. *Integument color.* Vertex and frons very dark red to black, clypeus and labrum usually gently lighter; five basal antennal segments red orange, apical six darker to black. Dorsal and undersurface varying from red to entirely black, remainder of legs red orange. *Vestiture.* Body with white recumbent hairs and light golden sheen (Fig. 1). Eye with medial fringe of sparse golden hairs, postocular lobe with short white hairs; small postocular patch of dense white hairs. Pronotum (Fig. 1) with hairs usually forming patches on either side of midline and opposite bases of striae intervals 3 and 5. Scutellum densely whitish obscuring integument. Elytron (Fig. 1) with dense, short patches of hairs at bases of striae intervals 3 and 5. Pygidium (Fig. 1) with white patches of hairs, one on median basal region sometimes elongate but never extending to midpoint and usually two others rounded on lateral areas. Undersurface moderate dense white; patches denser on mesepimeron, posterior margin of metepisternum, distal part of metacoxa, lateral area of first visible abdominal sternite and fourth



Figs. 1–5. *Sennius crudelis*: 1) Dorsal aspect; 2) hind leg, internal view; 3) hind leg, external view; 4, 5) male genitalia: 4, median lobe, ventral view (a, b, c, d, e, f, enlarged structures); 5, lateral lobes, ventral view.

visible abdominal tergite. *Structure.* Head long and narrow, densely punctulate, with coarser and dense punctures except on median frontal carina, glabrous and opaque; apex of clypeus and labrum usually opaque; vague transverse sulcus between upper limits of eyes, this moderately protuberant, ocular sinus 1/1.7 length of eye and ocular index 4.2; postocular lobe very narrow. Antenna short, reaching posterior corner of pronotum, gradually clavate; segments 1–4 moniliform to filiform, 5–10 eccentric broader than long, 11th subacute apically. Pronotum (Fig. 1) subcampanulate, lateral margins and apex slightly rounded, basal margin sinuate; basal lobe broad rounded. Disk shallowly sulcate in basal lobe with dense, coarse punctation, apparently not becoming coarser laterad; lateral carina present, acute in basal 0.5, obsolete apically; cervical sulcus conspicuous; cervical boss bisetose. Prosternum Y-shaped, extending to apices of procoxae or slightly longer and very thin, apparently absent, in the procoxae apices; mesosternum broad, truncated apically; postmesocoxal sulcus parallel to margin of coxa; metasternum slightly convex. Scutellum small, with lateral posterior teeth, clothed with dense recumbent white hairs giving quadrate appearance. Elytra together 1.1 times as long as wide, slightly convex in a middle transverse section along elytral suture; first strial interval conspicuously slender; striae 3 and 4 usually closer to one another at base than to adjacent striae, all arising at or near basal margin, lacking basal denticles, free apically and composed by obovate punctures joined by a small channel. Metacoxal face evenly densely micropunctate; metafemur (Figs. 2, 3), swollen, ventral margin in apical 0.50 flattened to slightly concave, mesoventral margin with a single subapical denticle, about 1.8 times than the width of tibia base (Fig. 2); metatibia (Figs. 2, 3) about 0.8 times as long as femur, straight, gradually expanded to apex with ventral, lateral and dorsomesal glabrous longitudinal carinae; lateroventral carina (Fig. 3) faint, gently longer than $\frac{1}{2}$ length of metatibia; mucro (Fig. 2) 0.07 times length of first tarsomere of metathoracic leg, longer than coronal denticles and separated from lateral denticle by slight emargination; lateral carina usually ending in lateral denticle; coronal denticles 3; first tarsomere of mesothoracic leg (Figs. 2, 3) with ventral, lateral and mesal, glabrous longitudinal carinae. Abdomen of male with basal sternum 1.2 times as long as remaining sterna together, subequal in female; terminal sternum emarginate to about 0.7 times its length in male, evenly rounded in female; pygidium subtriangular, oblique, moderate convex medially and slightly reflexed apically. *Male genitalia.* Median lobe (Fig. 4) slender; ventral valve triangular, setiferous (Fig. 4a), with convex margins and narrow rounded apex; hinge sclerites slightly curved, about 1.6 as long as the width of median lobe in basal region. Internal sac in basal region with a cluster of very short, fine spicules homogeneously arranged, some setae sparse (Fig. 4e); median region with slender, longer (Fig. 4f, g) and short (Fig. 4c) spicules lining lateral diverticula extending to apical region, this region with many long (Fig. 4b) and short spicules near O-ring apical sclerite. Tegmen (Fig. 5) slender; lateral lobes elongated, cleft 1.6 their length, apices greatly expanded mesally, setose.

Discussion

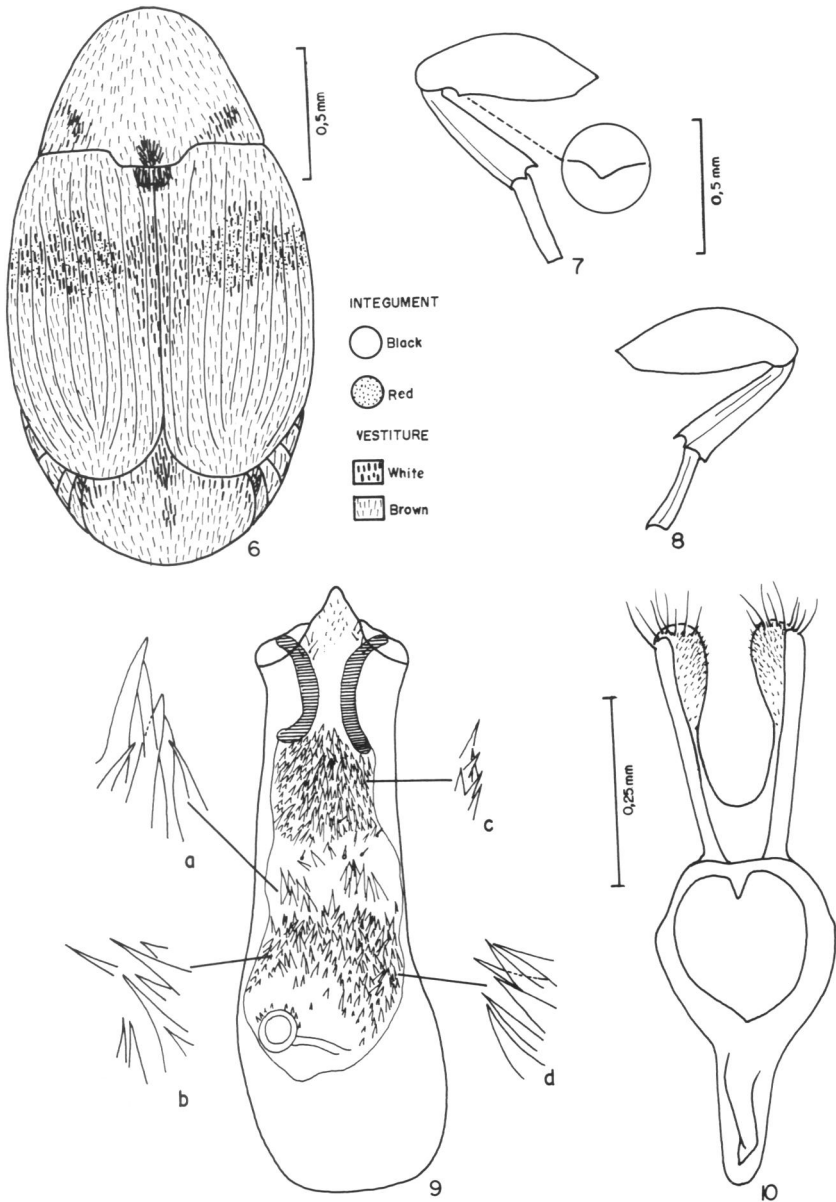
Sennius crudelis does not appear to be closely related to any other *Sennius*. It is easily separated from species in the genus, especially from those collected in *Senna multijuga*, by its characteristic integument and vestiture color pattern on its dorsum (Fig. 1).

Type Series. Holotype (male), Brazil: Paraná, Curitiba; VI–X/1996; C. S. Ribeiro-Costa; Host plant. *Senna multijuga*. Allotype and 108 paratypes with same labels; 5 paratypes collected in 8/VIII/1992. Holotype, allotype and 73 paratypes deposited in the Coleção de Entomologia Pe. Jesus S. Moure, Curitiba (DZUP); 10 paratypes deposited in the Museu de Zoologia de São Paulo, São Paulo (MZSP); 10 in the Museu Nacional do Rio de Janeiro, Rio de Janeiro (MNRJ), 10 in the Florida State Collections of Arthropods, Gainesville (FSCA) and 10 in the C. D. Johnson Collection, Flagstaff (CDJ).

Sennius nappi, new species

Figs. 6–10

Description. *Dimensions.* Body length: 2.20–2.40 mm; width 1.10–1.20 mm. Pronotal length: 0.56–0.60 mm; width 0.80–0.88 mm. *Integument color.* Head black, labrum rarely lighter; four basal antennal segments reddish, apical seven very dark brown to black. Prothorax, scutellum, pygidium and undersurface, black. Elytron (Fig. 6) black with red transverse maculation up to median line, extending from 3 or 4 to 8 or 9 stria intervals, rarely maculation absent. First and second pair of legs entirely black or dark red apically, third pair black. *Vestiture.* Body with white and brown recumbent hairs (Fig. 6). Eye with medial fringe of sparse golden hairs, postocular lobe with short white hairs, small postocular patch of dense white hairs. Pronotum (Fig. 6) clothed with very sparse brown hairs; white hairs forming oblique stripes laterad and usually a median basal patch. Scutellum densely whitish obscuring integument. Elytron (Fig. 6) with white hairs forming medial transverse, irregular strip from 2 or 3 stria intervals, clothing red integument maculation; remainder with sparse short brown hairs. Pygidium (Fig. 6) basally gently white denser and with dense white hairs forming a median, moderate broad or narrow stripe sometimes extending to middle region. Undersurface moderate dense white; patches denser on mesepimeron, posterior margin of metepisternum, distal part of metacoxa, lateral area of first visible abdominal sternite and fourth visible abdominal tergite. *Structure.* Head long and narrow, densely punctulate, with coarser and dense punctures except sometimes on median frontal carina; apex of clypeus and labrum, slightly shine or opaque; frons slightly convex; vague transverse sulcus between upper limits of eyes, this moderately protuberant, ocular sinus 1/1.7 length of eye and ocular index 4.1; postocular lobe very narrow. Antenna short, reaching posterior corner of pronotum, gradually clavate; segments 1–4 moniliform to filiform, 5–10 eccentric broader than long, 11th subacute apically. Pronotum (Fig. 6) subcampanulate, lateral margins straight, apex slightly rounded, basal margin sinuate; basal lobe subtruncate with dense coarse punctation except, sometimes, in area of median white hair patch. Disk shallowly sulcate in basal lobe with dense coarse punctation, sometimes absent in areas with laterobasal white patches; punctures apparently not becoming coarser laterad. Lateral carina present, acute in basal 0.5, cervical sulcus conspicuous; cervical boss bisetose. Prosternum Y-shaped, extending to apices of procoxae or slightly longer and very thin, apparently absent in procoxal apices; mesosternum broad, subtruncate apically; postmesocoxal sulcus parallel to margin of coxa; metasternum slightly convex. Scutellum small with lateral posterior teeth, dense recumbent hairs giving quadrate appearance. Elytra together 1.1 times as long as wide, flat in middle transverse section along elytral suture; first interval conspicuously slender, sometimes stria 2 and 3 or 3 and 4 gently close to one another at base than to adjacent striae, striae 3 and 4 sometimes abbreviated at base; all striae lacking basal denticles, free apically and composed by obovate punctures, joined by small channel. Metacoxal face evenly, densely, micropunctate; metafemur (Figs. 7, 8) moderately swollen, ventral margin in apical 0.50 flattened to slightly concave, mesoventral margin with one straight, subapical denticle (Fig. 7) about 3.0 times narrower than metatibia base; metatibia (Figs. 7, 8) 0.8 times as long as femur, straight, gradually expanded to apex, with ventral, lateral and dorsomesal glabrous longitudinal carinae; lateroventral carina faint (Fig. 8), gently longer than ½ length of metatibia; mucro very short 0.08 length of first tarsomere of metathoracic leg, nearly as long as coronal denticles, separated by slight emargination (Fig. 7); lateral carina ending in lateral denticle; coronal denticles 3; first tarsomere of metathoracic leg (Figs. 7, 8) with ventral, lateral and mesal glabrous longitudinal carina. Abdomen of male with basal sternum 1.4 times as long as remaining sternae together, equal in female; terminal sternum emarginate to about 0.7 times lateral length in male, evenly rounded in female; pygidium subtriangular, nearly flat basally, moderate convex medially and slightly reflexed apically. *Male genitalia.* Median lobe (Fig. 9) broad; ventral valve setiferous, triangular, lateral margins nearly straight; hinge sclerites moderately curved, about 1.4 at times as long as width of median lobe in basal region. Internal sac in basal region with short cluster of fine, slender spicules homogeneously arranged (Fig. 9c); median region with two tufts of slender and longer seta (Fig. 9a), remaining parts with long and short spicules (Fig. 9b, d); apical region with a few



Figs. 6–10. *Sennius nappi*: **6**) Dorsal aspect; **7**) hind leg, internal view; **8**) hind leg, external view; **9, 10**) male genitalia: **9**, median lobe, ventral view (a, b, c, d, enlarged structures); **10**, lateral lobes, ventral view.

short spicules near O-ring apical sclerite. Tegmen (Fig. 10) moderately broad; lateral lobes slightly elongate, cleft 1.3 their length, apices moderately expanded mesally, setose.

Discussion. Because *Sennius nappi* and *Sennius transversesignatus* (Fåhreaus) both are black on the dorsum except for the reddish transverse maculation on elytra clothed with white hairs, they might on first examination be confused. In *Sennius nappi* the seven apical antennal segments are brown to black and there are no patches of white hairs near the base of the elytra, whereas in *S. transversesignatus* the antenna is usually entirely red and the patches are present. There are also slight differences in the male genitalia as well.

Type Series. Holotype (male), Brazil: Paraná, Curitiba; 22/XI/1995; C. S. Ribeiro-Costa col.; Host plant. *Senna multijuga*. Allotype and 75 paratypes with same label. Holotype, allotype and 45 paratypes deposited in the Coleção de Entomologia Pe. Jesus S. Moure, Curitiba (DZUP); 10 paratypes deposited in the Museu de Zoologia de São Paulo, São Paulo (MZSP); 10 in the Museu Nacional do Rio de Janeiro, Rio de Janeiro (MNRJ); 5 in the Florida State Collections of Arthropods, Gainesville (FSCA) and 5 in the C.D. Johnson Collection, Flagstaff (CDJ).

Etymology. This species is named for our friend Dra. Dilma Solange Napp, a Cerambycid researcher.

Key to Bruchidae from *Senna multijuga*

- 1 Metafemur armed with one acuminate spine followed by 3 spinules (0.5 times length of spine); elytron on third stria interval with three brown patches of hairs intermixed with gently dense white hairs
..... *Acanthoscelides sennicola* Johnson (Venezuela)
- 1' Metafemur armed with a single denticle; elytron on third stria interval with different vestiture color pattern 2
- 2 General aspect of dorsal surface without hairs, smooth; deep punctures on pronotum, distant, interstices opaque
..... *Sennius puncticollis* (Fåhreaus), Brazil (PR)
- 2' General aspect of dorsal surface clothed with hairs; deep punctures on pronotum, very close, interstices usually shiny 3
- 3 Elytron with patches of white hairs only at bases of stria intervals 3 and 5; pronotum with 4 dense white patches of hairs (Fig. 1)
..... *Sennius crudelis*, Brazil (PR)
- 3' Elytron and pronotum with a different vestiture color pattern 4
- 4 Elytral integument entirely black with white hairs forming an irregular, usually broad stripe along elytral suture, becoming slender laterally
..... *Sennius bondari* (Pic), Venezuela, Colombia, Brazil (BA, RJ, MG, SP, PR)
- 4' Elytral integument black with red, transverse maculation up to the median line, extending from 3 or 4 to 8 stria intervals of elytron, very rarely maculation absent; elytra with white hairs in a median, transverse and irregular stripe clothing red integumental maculation (Fig. 6)
..... *Sennius nappi*, Brazil (PR)

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