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BRIEF REPORT

DESCRIPTION OF AN AMAZING NEST OF CAATINGA CACHALOTE *Pseudoseisura cristata* INFESTED BY *Psammolestes tertius* IN TAUÁ, STATE OF CEARÁ, NORTHEASTERN BRAZIL

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ABSTRACT

Psammolestes tertius Lent & Jurberg 1965 is a triatomine species part of the tribe Rhodniini. It is only wild and found in bird nests, mostly of the Furnariidae family. This work describes the amazing infestation of a nest of *Pseudoseisura cristata* in the municipality of Taua, Ceará. The nest harbored a colony with about 40 specimens of *P. tertius* in all evolutionary stages, all negative for trypanosomatids. A rodent of the species *Wiedomys pyrrhorhinos* was seen running away from the nest. The materials used to build the nest included the typical natural wigs, and various anthropogenic materials such as razor blades, shaver, fork, sunglasses, metal fragments, fragments of plastic objects, wire, barbed wire, plastic sandal straps, paper, plastic lid, pieces of plastic bags, gas cylinder label, large feathers and the exuviae of a snake.

KEY WORDS: *Psammolestes tertius*; triatomine; *Pseudoseisura cristata*; birds

Psammolestes tertius Lent & Jurberg, 1965 is a triatomine species that is part of the tribe Rhodniini. It is only wild and found in bird nests, mostly of the Furnariidae family (Lent & Wygozinsky, 1979; Di Iorio & Turienzo, 2009). This species was reported colonizing nests of the following furnariids: Rufous-fronted Thornbird *Phacellodomus rufifrons* (Wied-Neuwied, 1821), Greater Thornbird *Phacellodomus ruber* (Vieillot, 1817), Firewood-gatherer *Anumbius annumbi* (Vieillot, 1817), and Caatinga Cachalote *Pseudoseisura cristata* (Spix, 1824) (Di Iorio & Turienzo, 2009). A study comparing populations of *P. tertius* in Ceará and Minas Gerais States found no differences in the morphology of male genitalia, an important characteristic for specific identification (Lent & Jurberg, 1965). However, in contrast, the analysis of morphometry, isozymes and Random Amplified Polymorfic DNA (RAPD) clearly distinguished these two populations (Soares et al., 2001).

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Food availability and protection offered by hiding places are essential to colonize an environment (Diotaiuti, 2007). In the arid landscape of Ceará State (www.wwf.org.br/natureza_brasileira/questoes_ambientais/biomas/bioma_caatinga/), one can clearly see crevices and hollows formed by large sets of granite rocks (preferred ecotope of *Triatoma brasiliensis*; Alencar, 1987); hollow tree trunks and typical Caatinga tree bark (preferred ecotope of *Triatoma pseudomaculata*, Noireau et al., 2005), palm tree crowns (ecotopes of *Rhodnius nasutus*; Abad-Franch et al., 2009), cactus (Noireau et al., 2005; Valença-Barbosa et al., 2014), and bird nests (preferred ecotope of *P. tertius*; Lent & Wygodzinsky, 1979). Naturally, these hiding places are also refuges for vertebrates, which may also be utilized as food sources for triatomines.

P. cristata is a typical Caatinga bird also found in corresponding landscapes in the States of the Brazilian Northeast and in the north of Minas Gerais, (Sick, 1997; Remsen, 2017). In addition to the "Caatinga arbórea" and shrub habitats in the Caatinga, especially in graze land, this bird is also commonly seen nesting near human dwellings (Zimmer & Whittaker, 2000; Remsen, 2017).

Birds of the Furnariidae family build several different types of nests, always tending to hide their eggs in cavities or building domed nests with clay or plant material (Vaurie, 1980; Remsen, 2017). Furnariids of the genus *Pseudoseisura* are part of a group that builds closed nests made mostly of twigs, a similar behavior to that of birds of the genera *Anumbius, Phacellodomus, Synallaxis, Certhiaxis* and others. The nests of *Pseudoseisura* can be more than 1.5 meters long and the twigs more than 60 cm long and one inch thick. Twigs are often thorny and so tightly entwined that they can withstand the weight of a person without damaging the nests (Vaurie, 1980). These nests have a tubular prolongation at the entrance which leads to the nesting chamber, often lined with more delicate material, which may include small thornless twigs, pieces of bark and other vegetable fibers, dung and exuviae of snakes (Narosky et al., 1983; Nores & Nores, 1994; Sick, 1997). Various materials are used in the whole nest such as large feathers of other bird species (vultures, hawks), mollusk shells, bone fragments. Materials of anthropogenic origin may also be used, e.g., wire, paper, plastic, nylon. This is also common in other furnariids that build twig nests (Vaurie, 1980; Nores & Nores, 1994; Sick, 1997; Brasileiro, et al. 2017; Remsen, 2017). Wire seems to be one of the most widely used substitutes as there are several records of nests of these species of furnariids which are composed mostly of wire fragments (Roda & Carlos, 2003; Chaves, et al. 2013). Nores & Nores (1994), in a particular case, found that this material represented 40% of a nest of *Pseudoseisura*. The substitution of natural materials for anthropogenic materials can arise from the availability of the latter around the nest, also serving as an indication of the quality of the environment.

Because they are complex and durable structures, the nests of many furnariids are used as ideal shelters by various other animals, both vertebrates and invertebrates, either to rest, sleep, nest, or dwell (Sick, 1997; Remsen, 2017). A wide range of arthropods can be found simultaneously in a single nest (Sick, 1997).

P. cristata nests are abundant in the municipality of Taua, Ceará (Figure 1a). They are often colonized by *P. tertius*, but also harbor *T. pseudomaculata* or *Rhodnius nasutus*. In a transect determined along 25 km, between the UTM coordinates included in zone 24M (1: 353931mE, 9363075mN; 2: 361452mE, 9357683mN; 3: 358855mE, 9362632mN; 4: 355079mE, 9363442mN), we found 23 nests. Most of the nests were among branches of trees known as "jurema" (*Mimosa hostilis*), "algaroba" (*Prosopis juliflora* (SW) D.C.) (Fabaceae) and "favela" (*Cnidoscolus quercifolius*; Euphorbiaceae). One of the nests, with no bird activity at that moment, was dissected. It had been built in a "jurema" tree (Figure 1b), approximately 350 meters away from the closest house in Cachoeira do Julio (358167mE, 9360764mN). The nest harbored a colony with approximately 40 specimens of *P. tertius* in all evolutionary stages (Figure 2a). Eggs of this species were found, showing typical piercings by the parasitoid wasps of the Scelionidae family (Figure 2b). A rodent of the species *Wiedomys pyrrhorhinos* (Cricetidae; Figure 2c) was also seen running away from the nest. This is a typical Caatinga rodent and has been reported to seek shelter in old bird nests built with dry grass entangled in the xique-xique cactus *Pilosocereus gounellei* (Bocchiglieri et al., 2012). Although the presence of rodents increases the risk of infection, the triatomine specimens examined were not parasitized by *Trypanosoma cruzi* under optical examination.

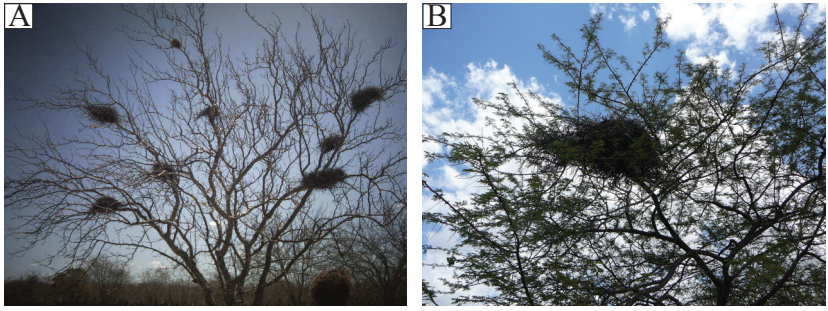

Figure 1. Nests of *Pseudoseisura cristata* infested by *Psammolestes tertius* built in "algaroba" (*Prosopis juliflora*) (a) and in "jurema" (*Mimosa hostilis*) trees (b), in Tauá, State of Ceará.

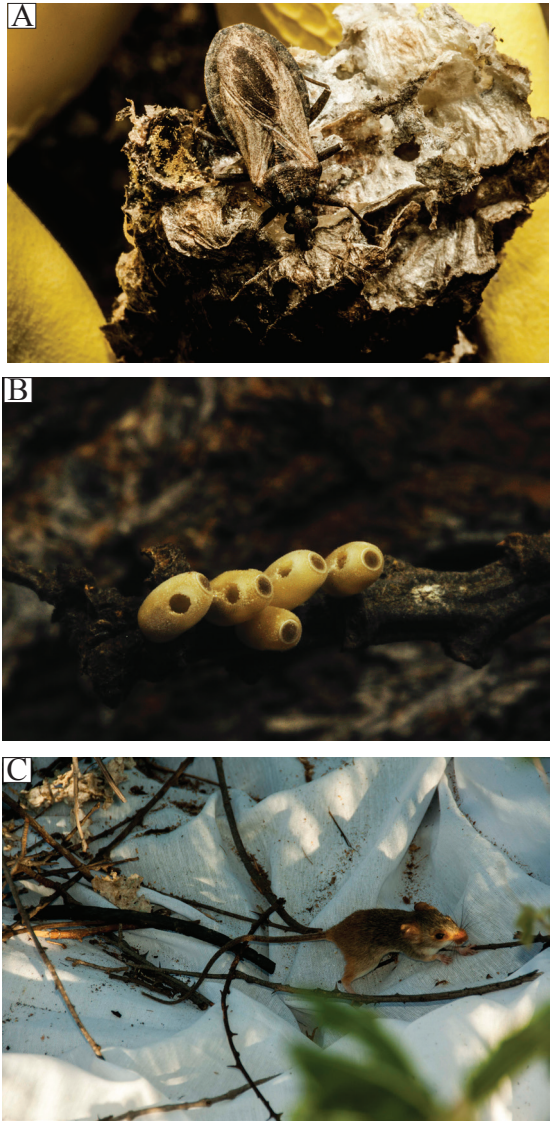

Figure 2. Occupants found in a nest of *Pseudoseisura cristata* in Tauá, State of Ceará: (a) adult of *Psammolestes tertius*; (b) eggs of *P. tertius*, with typical openings caused by the parasitoid wasps of the Scelionidae family; (c) rodent *Wiedomys pyrrhorhinos* running away from the nest.

Figure 3. Materials of anthropic origin found in nests of *Pseudoseisura cristata* in Tauá, state of Ceará: razor blades, shaver, fork, broken glasses, metal fragments, fragments of plastic objects, wire, barbed wire, plastic sandal straps, paper, plastic lid, pieces of plastic bags, gas cylinder plastic label. Also, snake skins and large feathers.

The materials used by the birds to build the nest examined, were even more unusual than those previously described in the literature (Nores & Nores, 1994; Sick, 1997; Chaves et al., 2013; Brasileiro et al., 2017). Apart from the typical natural twigs, various anthropogenic materials were found, probably taken from the houses by the birds: razor blades, shaver, fork, sunglasses, metal fragments, fragments of plastic objects, wire, barbed wire, plastic sandal straps, paper, plastic lid, pieces of plastic bags, gas cylinder label (Figure 3). Large feathers and the exuviae of a snake were also part of the nest. It is not known whether the exuviae had been carried inside by birds or if a snake had shed its skin inside the nest, although this has been recorded in nests of many furnariids (Remsen, 2017). The snake exuviae may be used to dissuade nest predators, such as small mammals (Hansell, 2000). This was not confirmed in this case, since the nest was used by a small rodent.

Although *P. tertius* is exclusively wild, its association with rodents should be better investigated, since it may have some epidemiological importance in the distribution of the parasite *Trypanosoma cruzi*.

REFERENCES

1. Abad-Franch F, Monteiro FA, Jaramillo NO, Gurgel-Gonçalves, Dias FBS, Diotaiuti L. Ecology, evolution, and the long-term surveillance of vector-borne Chagas disease: A multi-scale appraisal of the tribe Rhodniini (Triatominae). *Acta Tropica 110*: 159-177, 2009.
2. Alencar JE. *História Natural da Doença de Chagas no Estado do Ceará*. Imprensa Universitária da UFC, Fortaleza, 1987. 341 p.
3. Bocchiglieri A, Campos JB, Reis ML. Ocorrência e uso de abrigo por *Wiedomys pyrrhorhinus* (Rodentia: Cricetidae) em áreas de caatinga de Sergipe, Brasil. *Scientia Plena 8*: 1-4, 2012.
4. Brasileiro AC, Lima-Araujo F, Alcântara JA, Pontes ASM, Neto JA, Tavares RO, Silvino AS, Vizentin-Bugoni J. Birds of the Parque Ecológico Lagoa da Fazenda, Sobral, Ceará state, northeastern Brazil. *Check List 13*: 1-10, 2017.
5. Chaves, AV, Alvim RG, Lopes RAG. O uso de materiais industriais em ninhos de *Certhiaxis cinnamomeus* (Passeriformes: Furnariidae) na cidade de Cláudio, Minas Gerais, Brasil. *Atualidades Ornitológicas 173*: 6-8, 2013.
6. Di Iorio O, Turienzo P. Insects found in birds' nests from the Neotropical Region (except Argentina) and immigrant species of Neotropical origin in the Nearctic Region. *Zootaxa 2187*: 1-144, 2009.
7. Diotaiuti L. Capítulo 16. Triatomíneos. In: Teixeira A. *Doença de Chagas e evolução*. Editora UNB, FINATEC. Brasília, 2007.
8. Hansell M. *Bird nests and construction behaviour*. Cambridge University Press. Cambridge, UK, 2000.
9. Lent H, Jurberg J. O gênero *Psammolestes* Bergroth, 1911, com um estudo sobre a genitália das espéecies (Hemiptera: Reduviidae, Triatominae). *Rev Bras Biol 25*: 349, 1965.
10. Lent H, Wygodzinsky P. Revision of the Triatominae (Hemiptera, Reduviidae), and their significance as vectors of Chagas' disease. *Bull Am Mus Nat Hist 163*: 125, 1979.

11. Narosky S, Fraga R, de la Peña M. *Nidificación de las aves Argentinas (Dendrocolaptidae y Furnariidae)*. Associacion Ornitologica del Plata. Buenos Aires, Argentina, 1983.

12. Noireau F, Carbajal de la Fuente AL, Lopes C, Diotaiuti L. Some considerations about the ecology of Triatominae. *Anais Acad Bras Ciências 77*: 431-436, 2005.

13. Nores AI, Nores M. Nest building and nesting behavior of the Brown Cacholote. *Wilson Bulletin 106*:106-120, 1994.

14. Remsen JVJr. Ovenbirds (Furnariidae). In: del Hoyo J, Elliott A, Sargatal J, Christie DA, de Juana E. (eds.). *Handbook of the Birds of the World Alive*. Lynx Editions, Barcelona, 2017. Available at: http://www.hbw.com/node/52289. Acessed at 29/10/2017).

15. Roda AS, Carlos JC. On a Nest of yellow-chinned spinetail (*Certhiaxis cinnamonmea*-Passeriformes, Furnariidae) built with bites of wire. *Lundiana 4*: 69-70, 2003.

16. Soares RPP, Barbosa SE, Borges EC, Melo Júnior TA, Romanha AJ, Dujardin JP, Schofield CJ, Diotaiuti L. Genetic studies of *Psammolestes tertius* (Hemiptera: Reduviidae: Triatominae) using male genital morphology, morphometry, isoenzymes, and random amplified polymorphic DNA. *Biochem Genet 39*: 1-13, 2001.

17. Sick H. *Ornitologia brasileira*. Nova Fronteira, Rio de Janeiro, 1997.

18. Valença-Barbosa C, Lima MM, Sarquis O, Bezerra CM, Abad-Franch F. A common caatinga cactus, *Pilosocereus gounellei*, is an important ecotope of wild *Triatoma brasiliensis* populations in the Jaguaribe valley of northeastern Brazil. *Am J Trop Med Hyg 90*: 1059-1062, 2014.

19. Vaurie C. Taxonomy geographical distribution of the Furnariidae (Aves, Passeriformes). *Bull Amer Museum Natural History 166*: 1-357, 1980.

20. Zimmer KJ, Whittaker A. The Rufous Cacholote (Furnariidae: *Pseudoseisura*) is two species. *Condor 102*: 409-422, 2000.