

## POLYDESMIDAN MILLIPEDE USED IN SELF-ANOINTING BY A STRONG-BILLED WOODCREEPER (*XIPHOCOLAPTES PROMEROPIRHYNCUS*) FROM BELIZE

Kenneth C. Parkes<sup>1</sup>, Paul J. Weldon<sup>2</sup>, & Richard L. Hoffman<sup>3,4</sup>

<sup>1</sup>Carnegie Museum of Natural History, 4400 Forbes Avenue, Pittsburgh, PA 15213, USA.

<sup>2</sup>Conservation and Research Center, Smithsonian Institution, 1500 Remount Road, Front Royal, VA 22630, USA.

<sup>3,4</sup>Virginia Museum of Natural History, 1001 Douglas Ave., Martinsville, VA 24112, USA.

**Trepatroncos gigante (*Xiphocolaptes promeropirhyncus*) se unta con un miriápodo polidésmido de Belice.**

**Key words:** Strong-billed Woodcreeper, *Xiphocolaptes promeropirhyncus*, millipede, Polydesmida, self-anointing.

Many birds are known, under natural conditions, to wipe themselves with ants, fruits or other scent-laden materials (see Simmons 1966). This behavior, often called "anting," whether ants are used or not, generally is thought to transfer to the plumage substances that deter ectoparasites (Simmons 1966) or pathogenic microbes (Ehrlich *et al.* 1986). We report here on a Strong-billed Woodcreeper (*Xiphocolaptes promeropirhyncus*, Dendrocolapidae) from Belize self-anointing with a millipede of the order Polydesmida. This is the first confirmation of a polydesmidan millipede used for this purpose.

On the morning of 17 July, 1997, we observed a Strong-billed Woodcreeper at the edge of a forest at Chan Chich Lodge, near Gallon Jug, Belize. Most records of this species in Belize are from this area, which is char-

acterized by tall forest (Russell 1964). The bird grasped in its bill a flat, bright orange millipede (25–30 mm long), rubbed it against its plumage for several minutes, and then swallowed it. Millipedes of this species were common in the area at the time. The size, shape, and color of the millipede permit confident identification of it as a member of the genus *Aceratophallus* (Rhacodesmidae, Polydesmida), which is represented by four known species in adjoining Guatemala and Yucatan, but is previously unreported from Belize (Hoffman 1999).

The use of millipedes in self-anointing by birds has been reported for the Little Shrike-thrush (*Colluricincla megarhyncha parvula*) in Australia (Sedgwick 1946), the Black-throated Shrikebill (*Clytorhynchus nigrogularis*) (Clunie 1974) and the Jungle Mynah (*Acridotheres fuscus*) (Clunie 1976) in the Fiji Islands, the European Robin (*Erithacus rubecula*) in England

<sup>4</sup>Corresponding author E-mail: rhoffman@vmnh.org

(Thomas 1982, Eyles 1983, Cramp 1988, Harrup 1992), and the Grey-winged (*Psophia crepitans*) and the Pale-winged (*P. leucoptera*) trumpeters in northern South America (Sherman 1996). M. Théry (pers. com.) observed the Grey-winged trumpeter in French Guiana anoint with millipedes, primarily *Iulus* sp. Millipedes previously reported as those used in self-anointing are *Glomeris* sp. (Thomas 1982), *Iulus* sp. (Cramp 1988), *Tachypodoiulus niger* (Harrup 1992) (all by the European Robin), and *Trigoniulus lumbricinus* (Clunie 1976) (by the Jungle Mynah). Millipedes of the genera *Iulus*, *Tachypodoiulus*, and *Trigoniulus* are in the orders Julida or Spirobolida, which are among the "quinone millipedes," so named because the defensive secretions of their segmental glands consist chiefly of benzoquinones (Eisner et al. 1978). Millipedes of the genus *Glomeris* (order Glomerida) secrete toxic quinazolinone alkaloids (Eisner et al. 1978).

Polydesmidan millipedes, by contrast, typically secrete hydrogen cyanide, benzaldehyde, and, in some cases, benzoyl cyanide, among other compounds (Eisner et al. 1978); they are not known to discharge either benzoquinones or alkaloids. Therefore, our observation on the use of a polydesmidan millipede in anointing suggests that, if the function of wiping millipedes against the plumage is indeed that of appropriating exogenous natural products, birds may use a wider array of compounds from these myriapods than has previously been indicated. Sherman (1996) reported that trumpeters self-anoint with a millipede that was believed to exude hydrogen cyanide, although the species was not identified. Polydesmidan millipedes may be used for this purpose more commonly than is generally appreciated.

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They use dead millipedes as a part of their reproduction cycle and feeds on them. The female Myriophora flies towards the dead millipedes and feeds on them. They lay their eggs inside the decaying body of the millipedes and left the body. The eggs hatch inside the millipedes and get food or the nourishment for their growth and after some time fly away in search of food and shelter. This millipede killer works as treatment or a barrier by which the millipedes are unable to enter the houses or yards. It is a liquid matter that is used after every three months. This method is effective because it also helps to make sure that they do not enter the homes in the rainy season. Powder Millipede Killer. It is a powder-like substance that is used to kill or suffocate the millipedes. While there is no concrete evidence, there is this uneasy feeling that with the later northern-hemisphere fall approaching, we will be hit by a "new" lab-made "variant" - much stronger, that requires more and more oppressive, dictatorial government measures, more coerced vaxxing with gene-therapy that could affect mankind's neurological system. These two quotes say it all. "There is absolutely no need for vaccines to extinguish the pandemic You do not vaccinate people who aren't at risk from a disease. You also don't set about planning to vaccinate millions of fit and healthy people with an [experimental] vaccine that hasn't been extensively tested on human subjects." Dr. Mike Yeadon PhD, Pfizer's former Vice President and Chief Scientist for Allergy & Respiratory Disease. Strong-billed Woodcreeper *Xiphocolaptes promeropyrhynchus*. Scientific name definitions. LC Least Concern. (Furnariidae; White-throated Woodcreeper *X. albicollis*) Gr. *xiphos* sword; *kolaptes* pecker < *kolaptes* to peck (cf. genus *Colaptes* Vigors, 1826, woodpecker); "II. BEC RECOURBÉ" (*Xiphocolaptes*). 1. *D. decumanus*, Illig., Lichst., no. 147. "Grand Pic-grimpereau, Azara, 241. Millipedes are used for self-anointing by a variety of birds and mammals. Free-ranging birds in the New and Old Worlds have been observed rubbing these myriapods against their plumage (reviewed in Parkes et al., 2003). Among mammals known to self-anoint with millipedes are Malagasy lemurs (Overdorff, 1993; Birkinshaw, 1999) and Central and South American cebid mon-keys (Baker, 1996; Valderrama et al., 2000; Zito et al., 2003). Polydesmidan millipede used in self-anointing by a strong-billed woodcreeper (*Xiphocolaptes promeropyrhynchus*) from Belize. Ornithol. Neotrop. The facts about millipede chemical defenses were last effectively reviewed in English by Blum (1981), and by Eisner et al. (1978). Popular accounts of several species were provided by Eisner et al. (2005), and Demange (1993) produced a summary in French. 1-octen-2-ol was found in the secretion of the polydesmidan *Niponia nodulosa* (Omura et al., 2002a). Phenols (including o-cresol [Fig. 1G], p-cresol [Fig. Barth (1967) noted that spraying was accompanied by strong contractions of the body or by a writhing motion and that this contraction provided the motive force. Not much quantitative data is available, but large spirobolids or spirostreptids may contain 200e300 mg of benzoquinones, small julids as little as 1 mg (Schildknecht and Weiss, 1961; Eisner et al., 1978).