

**ANTING BEHAVIOR BY THE PALE-BREASTED THRUSH *Turdus leucomelas*
(AVES: TURDIDAE)¹**

**COMPORTAMENTO DE FORMICAÇÃO DO SABIÁ-BARRANCO *Turdus leucomelas*
(AVES: TURDIDAE)¹**

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ABSTRACT – Formication is a type of anting behavior performed by birds, consisting of the deliberate application of ants and their secretions to plumage and skin is primarily attributed to feather grooming and the suppression of ectoparasites, bacteria, and fungi. While reported for various bird species worldwide, there is still limited information available for Brazil. In 2025, we recorded and documented this behavior in Bertioga, Southeast Brazil, when a Pale-breasted Thrush (*Turdus leucomelas*) captured Carpenter ants (*Camponotus atriceps*) with its beak and rubbed them on its plumage. This ant genus has been observed being used in formication behaviors by other bird species and may be among the primary species targeted due to the potential insecticidal, bactericidal, and antifungal effects of formic acid. Both species (bird and ant) are widely distributed in Brazil, suggesting a common but poorly observed, understood, and documented behavior. This type of information can aid in understanding this phenomenon and in producing natural history data for the species involved.

Keywords: Brazil, Bertioga, Natural history, *Camponotus atriceps*.

RESUMO – A formicação é um tipo de comportamento de unção realizado pelas aves, que consiste na aplicação deliberada de formigas e suas secreções na plumagem e pele e a principal hipótese é atribuída aos cuidados com as penas, como supressão de ectoparasitas, bactérias e fungos. Já relatado para diferentes espécies de aves ao redor do mundo, ainda existem poucas informações para o Brasil. Registramos e documentamos este comportamento em 2025 em Bertioga, sudeste do Brasil, quando um indivíduo de sabiá-barranco *Turdus leucomelas* capturava formigas carpinteiras *Camponotus atriceps* com o bico e passava na plumagem. Este gênero de formiga já foi observado em outros comportamentos de formicação, e pode estar entre as principais espécies utilizadas devido aos possíveis efeitos inseticidas, bactericidas e antifúngicos do ácido fórmico. Ambas as espécies (ave e formiga) possuem amplas distribuições no Brasil, o que pode indicar que seja um comportamento comum, mas pouco observado, entendido e publicado. Este tipo de informação pode ajudar tanto na compreensão deste fenômeno, como na produção de dados de história natural das espécies envolvidas.

Palavras-chave: Brasil, Bertioga, História natural, *Camponotus atriceps*.

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1 INTRODUCTION

Formication (or anting behavior) is a term originally coined for the deliberate application of ants and ant secretions by birds to their plumage and skin. There are three basic hypotheses for this behavior: (1) food preparation, with formication serving to remove unpleasant chemicals from ants (specifically formic acid) before they are eaten; (2) feather care, such as the suppression of ectoparasites, bacteria, and fungi; and (3) self-stimulation, where the act of formication serves to provide a purely pleasurable sensation (Hendricks 2016).

Formication is also known as "anointing," a poorly understood behavior performed by various mammals and over 200 species of birds, mainly passerines. The broader use of the term is based on behavior similar to formication (which exclusively uses ants), but using other organisms that produce the same effect through their stinging or toxic substances, such as millipedes (Diplopoda), caterpillars (Lepidoptera), pepper tree fruits (Anacardiaceae), citrus peels, flowers, and even objects like cigarette butts, naphthalene, and chimney smoke (Marcon e Andriola 2023).

Formication and anointing behaviors are known for different regions of the world and birds of different families, but there are still few reports for Brazil, namely the following: Blue-necked Tanager *Stilpnia cyanicollis* and Gilt-edged Tanager *Tangara cyanoventris* (Sick 1957); Rufous-collared Sparrow *Zonotrichia capensis* (Coelho 1975); dendrocolaptids, Ochre-bellied Flycatcher *Mionectes oleagineus*, jays (*Cyanocorax* spp.), Brassy-breasted Tanager *Tangara desmaresti*, Golden-chevrons Tanager *Thraupis ornata* and Green-winged Saltator *Saltator similis* (Sick 1997); Plush-crested Jay *Cyanocorax chrysops* and Sayaca Tanager *Thraupis sayaca* (Figueiredo 2003); White-throated Woodcreeper *Xiphocolaptes albicollis*

(Sazima 2009); and White-bearded Manakin *Manacus manacus* (Cestari 2010).

Here, we provide documented evidence of formication behavior by the Pale-breasted Thrush *Turdus leucomelas* (descriptor) observed on the coast of the state of São Paulo, Southeast Region of Brazil.

2 METHODS

The field observations were conducted by the authors at the Centro de Férias Sesc Bertioga (23°49'36.86"S; 46°06'41.35"W; 5m), in the city of Bertioga, on the north-central coast of the state of São Paulo, Southeast Brazil. The bird were observed with 10x42 Leica Ultravid and Nikon Monarch binoculars. The behavior was documented through digiscoping, using a Kowa TSN-820 telescope with 20-60x magnification and an iPhone 13. The video was made available on the Macaulay Library - ML (<https://www.macaulaylibrary.org/>) through the eBird birdwatching platform (<https://ebird.org/home>). The field observations are part of a species list produced for the locality (<https://ebird.org/checklist/S281330551>).

3 RESULTS

On October 23, 2025, at approximately 7h15min, at the, an adult Pale-breasted Thrush (*Turdus leucomelas*) was observed engaging in self-formication next to an anthill, at the base of a *Clitoria fairchildiana* (Fabaceae) shade tree. The bird approached the group of ants and proceeded to pick up them with its beak, on the ground or when they climbed onto its body, one at a time, and quickly rub them on the underside of its wings and along the side of its body (Figure 1; Video available at: <https://macaulaylibrary.org/asset/645847851>).

Figure 1. Pale-breasted Thrush *Turdus leucomelas* performing formication. Images taken with telescope and removed from video ML645847851. A. Bird searching for ants; B and C. Bird capturing ants with wings and tail spread; D. Bird with an ant in its beak, prior to rubbing it on its body. Photos/video: Fabio Schunck (23 October 2025).

Figura 1. Indivíduo de sabiá-barranco *Turdus leucomelas* formicando-se. Imagens feitas com a luneta e retiradas do vídeo ML645847851. A. Ave procurando as formigas; B and C. Ave com as asas e cauda aberta capturando as formigas; D. Ave com uma formiga no bico, antes de passa-la no corpo. Fotos/video: Fabio Schunck (23 de Outubro de 2025).



The individual was observed for about 10 minutes, during which it performed this behavior approximately three times. Prior to initiating the formication behavior, the bird was observed eating some ants, which we think were probably the same ants used for formication but were unable to confirm this. The bird presented a reddish coloration on the feathers of the front part of its head and chest.

We found several dead ants near the anthill where the behavior was observed, which were identified as the Carpenter ant *Camponotus atriceps* (Formicidae) (Figure 2). The material was deposited in the ant collection of the Museu de Zoologia da Universidade de São Paulo (MZUSPHYM162316 e 17).

Figure 2. Carpenter ant *Camponotus atriceps* collected in the field and deposited in the Museu de Zoologia da Universidade de São Paulo. Photo: Leonardo Breder Passalacqua (10 November 2025).

Figura 2. Indivíduo de formiga-carpinteira *Camponotus atriceps* coletado em campo e depositado no Museu de Zoologia da Universidade de São Paulo. Foto: Leonardo Breder Passalacqua (10 de Novembro de 2025).



4 DISCUSSION

The individual *Turdus leucomelas* observed in the field exhibited the behavior known as "active anting," whereby the bird actively captures ants. However, birds of the family Turdidae are also well known for exhibiting the behavior known as "passive anting" (without the bird capturing the ants), thus demonstrating a wide behavioral variety (Hendricks 2016, Marcon e Andriola 2023). The fact that turdids are well known for this type of behavior indicates great potential for new field detections of anting, as they are very common birds in a wide variety of habitats, including urban areas (Sick 1997).

The ant genus *Camponotus* is widely distributed throughout the world, except for Antarctica, and belongs to the subfamily Formicinae. Species of this subfamily do not sting but instead bite with their mandibles and subsequently spray formic acid to defend themselves (Hölldobler e Wilson 1990). Anting behavior using carpenter ants of this genus has been reported for bird species such as Blue Jay *Cyanocitta cristata*, Fork-tailed Drongo *Dicrurus adsimilis*, Baltimore Oriole *Icterus galbula*, Red-

billed Leiothrix *Leiothrix lutea*, Cape White-eye *Zosterops pallidus* (Craig 1999, Flores 2023, Morozov 2015, Sick 1957). This is the first report of a bird using *Camponotus atriceps* for anting. It is hypothesized that ants of this genus are used by birds for anting behavior because of the possible insecticidal, bactericidal, and antifungal effects of formic acid (Cestari 2010, Flores 2023).

The production of field information on the natural history of birds is very important for a better understanding of some of their basic behaviors, such as anting and anointing, which are still poorly understood and with different hypotheses that need to be further investigated and tested (Marcon e Andriola 2023).

5 CONTRIBUTION OF THE AUTHORS

MB: Conceptualization, Investigation, Data curation, Writing – Technical review; CKY, LFN and CPA: Investigation, Writing – Technical review; LBP: Laboratory identification, Writing – Technical review, FS: Conceptualization, Project administration, Investigation, Data curation, Writing – original draft, review & editing.

6 CONFLICTS OF INTERESTS

The authors declare that there are no conflicts of interest related to the publication of the manuscript.

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