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Scientific Note

First record of *Hister cavifrons* Marseul, 1854 (Coleoptera: Histeridae) for Santa Catarina's Island, Brazil

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Abstract. *Hister cavifrons* Marseul, 1854 (Coleoptera: Histeridae) is a common species in Brazilian territory mostly associated with animal carcasses that has previously been recorded in the Amazon, Atlantic Forest, and Cerrado biomes across several Brazilian states, ranging from the North to the South of the country. The highest number of records is from the state of Paraná, while Santa Catarina has only two records from inland municipalities. This note presents the first record of *H. cavifrons* on the coast of Santa Catarina specifically in the municipality of Florianópolis and the third for the state. The species was sampled in Biguá [*Nannopterum brasilianum* (Gmelin, 1789) (Suliformes: Phalacrocoracidae)] carcass, an aquatic bird commonly found along the Santa Catarina coast, marking the first record of this species associated with this animal, during the month of April (autumn season).

Keywords: Geographic distribution; aquatic bird carcasses; Florianópolis; forensic entomology.

Worldwide, Histeridae is recorded as generalist predators being found associated with multiple types of habitats such as bird nests, ants nests, animal carcasses, dung, decaying fruits, decaying trees, litter and termites (Leonel & Leivas 2023; Leivas et al. 2024a). Worldwide, there are 4,252 species belonging to 391 genera, 17 tribes and 11 subfamilies (Mazur 2011). For Brazil, 607 species, 132 genera, 16 tribes, and six subfamilies are known: Abreainae Mcleay, 1819; Dendrophilinae Reitter, 1909; Haeteriinae Marseul, 1857; Histerinae Gyllenhal, 1808; Saprininae Blanchard, 1845; Tribalinae Brickhardt, 1914 (Leivas et al. 2024a; Bicho et al. 2025). Histerinae are composed of five tribes: Exosternini Bickhardt, 1914; Hololeptini Hope, 1840; Platysomatini Bickhardt, 1914; Omalodini Kryzhanovskij, 1972 and Histerini Gyllenhal, 1808 (Mazur 2011). The latter includes more than 500 described species, distributed in all zoogeographic regions (Kovarik & Caterino 2005; Mazur 2011).

In Brazil, the Histerini are represented by three genera that can be identified by keys found in Caterino (1999a) and Leivas et al. (2015): *Atholus* Thomson, 1859 (only one species introduced in Brazil), *Hister* Linnaeus, 1758 (15 species) and *Margarinotus* Marseul, 1853 (only one species introduced in Brazil) (Leivas et al. 2015; Bicho et al. 2025). *Hister* (Histeriniae: Histerini) is one of the most diverse in the family, with about 195 species described (Kovarik & Caterino 2016) and 15 species occurring in Brazil that can be morphologically identified by the works of Caterino (1999a; 1999b; 2002), Leivas et al. (2015) and Celli et al. (2015).

Twenty-one species of the genus (12.5% of the total) are cited as associated with some kind of carcass (Correa et al. 2020), and among these, *Hister cavifrons* Marseul, 1854 (Coleoptera: Histeridae) is commonly found in the Neotropical region. This species is mainly associated with manure, most commonly bovine manure (Leonel & Leivas 2023), and prefers more humid and mountainous habitats (Caterino 1999a). However, it has been recorded in tapir faeces (Leonel & Leivas 2023), fermented banana (Leivas et al. 2024b), organic waste (Leonel & Leivas 2023), abundant in collections using human faeces (Dégallier et al. 2021), and in mixtures of human and pig manure (Vieira et al. 2018).

Regarding the necrophilic association of *H. cavifrons*, it has already been collected with beef bait (Vieira et al. 2018; Leonel & Leivas 2023) and bovine heart (Leivas et al. 2024b) and associated with armadillo, rabbit, rat, and snake carcasses (Leonel & Leivas 2023). In pig carcasses, the species has been recorded in the initial and middle stages of decomposition (Celli et al. 2015). More recently, *H. cavifrons* have been recorded in human corpses in the state of Paraná (Correa et al. 2019), sparking interest in its potential in Forensic Entomology (Correa et al. 2019).

Given the importance of this species our aim are: i) to expand the geographical distribution of *H. cavifrons* in the state of Santa Catarina; ii) to present the first record of the species for Santa Catarina's Island; iii) to present the first association of the species with waterfowl carcasses.

Two specimens of *H. cavifrons* were collected between April 2 and 30, 2025 (Fig. 1.), during the rainy season in autumn, in a small forest area within the campus of the Federal University of Santa Catarina (UFSC), in the municipality of Florianópolis (Lat: -27.597288, Long: -48.515003) (Fig. 2). For this purpose, a carcass of *Nannopterum brasilianum* (Gmelin, 1789) (Suliformes: Phalacrocoracidae) (Biguá), an aquatic bird recorded on the coast of Santa Catarina (Schiefler & Soares 1994; Rosário 1996), was placed on the ground inside a metal cage to prevent scavenging mammals and birds. The animal had been previously collected by a UFSC technician on a beach, already in an initial state of decomposition, stored in a freezer at the UFSC Skeletons and Macromodels Maintenance Laboratory, and subsequently provided for this study.

The specimens were collected two days after the carcass was installed. The beetles were found attached to the carcass by their mandibles, collected with the aid of anatomical forceps, stored in a falcon plastic tube, and transported to the Hematozoan Transmitters Laboratory at UFSC, where they were preserved in 70% ethyl alcohol. The identification of the beetles was performed with the aid of the Identification and Diagnosis Key for Histeridae (Insecta: Coleoptera) of forensic interest in Brazil (Celli et al. 2015), which resulted in the species *H. cavifrons*, which was later confirmed by Dr. Fernando W. T. Leivas of the Universidade Federal do Paraná, Palotina Sector (UFPR).

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Hister cavifrons is a species widely distributed in Central and South America (Mazur 2011), recorded from Mexico to Uruguay (for details on its geographical distribution, see Caterino 1999a; Dégallier & Touroult 2015; Aguilar-Sosa et al. 2020). In Brazil, *H. cavifrons* has been reported in the states of Pará, Piauí, Pernambuco, Acre, Bahia, Minas Gerais, Brasília, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catarina, and Rio Grande do Sul (Caterino 1999a; Celli et al. 2015; Costa-Silva et al. 2017; Gonçalves & Leivas 2017; Vieira et al. 2018; Leonel & Leivas 2023; Leivas et al. 2024b) (Fig. 2). In southern Brazil, the largest number of records of this species is in the state of Paraná, with 27 records, but only two occurrences are cited for the state of Santa Catarina (SC): São Bento do Sul (Rio Vermelho, Lat: -26.2833, Long: -49.3333) and Seara (Nova Teutônia, Lat: -27.0500, Long: -52.3833). Therefore, this is the third record for the state of Santa Catarina. Due to its wide geographical distribution in Brazil, *H. cavifrons* has records for the Amazon, Atlantic Forest, and Cerrado biomes, but also for Rupestrian Field vegetation formations and areas strongly influenced by the Caatinga (Leivas et al. 2024b). This species has been shown to be abundant in forests and open habitats, however, it is useful for distinguishing habitats from open areas, such as rocky fields, Cerrado, and introduced pastures (Vieira et al. 2018).

In Brazilian island areas, this species had already been reported on Ilha do Mel in the state of Paraná (Paranaguá, Ilha do Mel Ecological Station, Lat: -25.535124 Long: -48.310982, Brazil) associated with rat carcasses (Leonel & Leivas 2023). Thus, this is the second record in southern Brazil of *H. cavifrons* associated with carcasses on coastal islands, as well as being the first record of collection associated with bird carcasses, specifically of Biguá. This finding presents for the first time the presence of *H. cavifrons* on the coast of the state of Santa Catarina in the municipality of Florianópolis, in addition to expanding the information about the species's habitat.

Regarding the collection period, in French Guiana, this species is present throughout the year, but with greater prevalence from December to February during the rainy season (Dégallier & Touroult 2015), while in northern Brazil (Acre), the species was recorded only during the dry season, in July (Leivas et al. 2024b). In southeastern Brazil, in Minas Gerais, there were records of great abundance in the summer months: January, February, and March (Vieira et al. 2018). In southern Brazil, occurrences were recorded in all seasons (spring, summer, fall, and winter), with lower abundance in the fall (Costa-Silva et al. 2017). In the state of Paraná, on Ilha do Mel, there is also a record in the autumn in April (Leonel & Leivas 2023), coinciding with the current record. The individuals are currently deposited in the Entomological Collection Mítia Heusi Silveira at the Biological Science Center of Universidade Federal de Santa Catarina, where they are available for future studies.

Thus, this study reports the third occurrence of *H. cavifrons* in the state of Santa Catarina, contributing to the expansion of knowledge

Figure 1. *Hister cavifrons* Marseul, 1854 (Coleoptera: Histeridae). A and B – Adults sampled from *Nannopterum brasilianum* (Gmelin, 1789) (Suliformes: Phalacrocoracidae) carcass in the municipality of Florianópolis, Santa Catarina, Brazil.

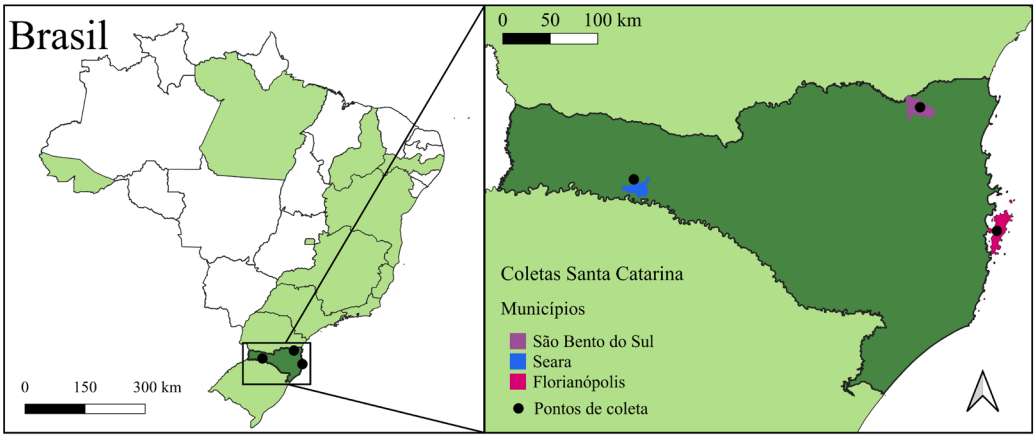

Figure 2. Distribution map of *Hister cavifrons* Marseul, 1854 (Coleoptera: Histeridae) in Brazil. A) States where *H. cavifrons* are recorded (in light green); B) Records of *H. cavifrons* in the state of Santa Catarina (in dark green).

about the geographical distribution of the species. It is the first occurrence in a waterbird carcass, demonstrating new possibilities for experimental studies using animal carcasses, as well as the first record of the family, genus, and species in the municipality of Florianópolis.

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Author's Contributions

MESV: Conceptualization, Data curation, Writing - original draft, Investigation, Project administration and Methodology; SGH: Methodology, Investigation and Software; FWTL: Conceptualization, Writing - review and editing, Resources, Verification and Investigation; CJCP: Conceptualization, Investigation, Verification, Resources and Writing - review and editing.

Conflicts of Interest Statment

The authors declare no potential conflict of interests.

Ethical Approval

It was not necessary to obtain approval from the ethics committee because the animal used in this experiment was originally found dead in an initial stage of decomposicion on the beach of Balneário do Estreito in the municipality of Florianópolis, Santa Catarina. Therefore, no harmful procedures were performed on the animal to obtain the carcass.

Data Availability

The references used to support the text were obtained from free-access websites, books and articles. The beetles are currently housed at the Laboratório de Ecologia Terrestre e Animal (LECOTA) in UFSC and will soon be deposited in the Coleção Entomológica “Mítia Heusi Silveira” (CE-MHS) also in UFSC where they will be available for future examinations. The beetle pictures were taken by a photographer and graduate student from the Biological Sciences Center of the Federal University of Santa Catarina. The map was produced using the software QGIS.

Generative AI Statment

No AI was used for the production of the manuscript, photos and map.

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