



Nota científica

FIRST RECORD OF *Trachyderes succincta succincta* (Linnaeus, 1758) (COLEOPTERA, CERAMBYCIDAE) IN *Senna reticulata* (FABACEAE)

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ABSTRACT

This study documents the presence of *Trachyderes succincta succincta* (Linnaeus, 1758) (Cerambycidae) which is distributed from Mexico to Argentina, It has a characteristic yellow or yellowish-brown transverse band and is reported in *Senna reticulata* (Willd.) H.S.Irwin & Barneby (Fabaceae) which is a plant of medicinal use and of climatic importance for CO₂ storage, in the city of Iquitos, Peru. Both samples were identified using taxonomic keys. It was determined that the beetle shows preference for plant species of the order Fabales, providing valuable information on the interaction of the beetle and plants in Amazonia.

KEYWORDS: borer, insect, Peruvian Amazon, plant-insect relationship, urban plant

PRIMER REGISTRO DE *Trachyderes succincta succincta* (Linnaeus, 1758) (COLEOPTERA: CERAMBYCIDAE) EN *Senna reticulata* (FABACEAE)

RESUMEN

Este estudio documenta la presencia de *Trachyderes succincta succincta* (Linnaeus, 1758) (Cerambycidae) que se distribuye desde México hasta Argentina, tiene una característica banda transversal amarilla o marrón amarillenta y es reportada en *Senna reticulata* (Willd.) H.S.Irwin & Barneby (Fabaceae) la cual es una planta de uso medicinal y de importancia climática para el almacenamiento de CO₂, en la ciudad de Iquitos, Perú. Ambas muestras fueron identificadas utilizando claves taxonómicas. Se determinó que el escarabajo muestra preferencia por especies vegetales del orden Fabales, proporcionando información valiosa sobre la interacción del escarabajo y las plantas en la Amazonía.

PALABRAS CLAVE: barrenador, insecto, Amazonía peruana, relación planta-insecto, planta urbana

According to MINAM (2010), there are estimated to be ~3000 species of beetles (Coleoptera) in Peru. Cerambycidae is represented in the country by 5 subfamilies, 405 genera, and 854 species (Monné & Chaboo, 2015).

Trachyderes succincta succincta is a black or reddish-brown species with a yellow or whitish-yellow transverse band on the elytra (rarely absent) and long antennae characteristic of the Cerambycidae (Barreto *et al.*, 2013; Martins, 1975). It is distributed from Mexico to Argentina (Barreto *et al.*, 2013), while *T. succincta succincta* is distributed from Nicaragua to Argentina and it is associated with the following host plants: *Mangifera indica* L., *Schinopsis balsanae* Engl. (Anacardiaceae); *Aspidosperma* sp. (Apocynaceae), *Brassica* sp. (Brassicaceae); *Hevea brasiliensis* (Willd. ex A.Juss.) Müll.Arg., *Alchornea bogotensis* Pax & K.Hoffm. (Euphorbiaceae); *Acacia decurrens* (J.C.Wendl.) Willd., *Paubrasilia echinata* (Lam.) Gagnon, H.C.Lima & G.P.Lewis, *Libidibia ferrea* (Mart. ex Tul.) L.P. Queiroz, *Cassia grandis* L.f., *Erythrina* sp., *Hymenolobium flavum* Kleinhoonte, *Hymenaea courbaril* L., *Inga ingoides* (Rich.) Willd., *I. laurina* (Sw.) Willd., *Mora excelsa* Benth., *Mimosa scabrella* Benth., *Mimosa pigra* L. (Fabaceae); *Persea americana* Mill. (Lauraceae); *Bertholletia excelsa* Bonpl. (Lecythidaceae), *Theobroma cacao* L. (Malvaceae); *Ficus* sp., *Morus alba* L. (Moraceae); *Eucalyptus grandis* W.Hill ex Maiden, *Psidium guajava* L. (Myrtaceae); *Coffea arabica* L. (Rubiaceae); *Citrus* sp. (Rutaceae); *Salta triflora* (Griseb.) A.Dr. Sanchez (Polygonaceae); *Sideroxylon rotundifolium* (Sw.) T.D.Penn. (Sapotaceae); *Handroanthus heptaphyllus* (Vell.) Mattos (Bignoniaceae); *Lantana camara* L. (Verbenaceae); *Khaya ivorensis* A.Chev. (Meliaceae) (Monné & Chaboo (2015); Salazar-E (2013); Fernandes & Santos (2008); Gonzalez & Di Iorio (1996); Fujihara *et al.* (2021); Monné, (2024)).

Senna reticulata (Willd.) H.S.Irwin & Barneby belongs to the Fabaceae family, which is often found in alluvial plain areas rich in nutrients (Vásquez, 1997) and in deforested areas (Garate-Quispe *et al.*, 2021). This plant has compound leaves with 8-14 leaflets that are obovate-oblong in shape, obtuse, mucronate, glabrous on both sides, and has rectangular petioles. The flowers are yellow and the fruits are elongated legumes. Trees can reach 4-8 m height with a maximum diameter at breast height (DBH) of 13 cm. Over 50% of its seeds germinate on the fifth day of planting, producing flowers and mature fruits between 9-12 months. Blooming takes place during the flooding season, mature their fruits, and release seeds during the receding phase of the rivers (Parolin 2001, 2016; Trindade *et al.* 2021). *Senna reticulata* is widely used for medicinal purposes and serves as a source of bioenergy for rural communities. Additionally, it captures and benefits high amounts of CO₂, making it important for climate change mitigation (Rámirez *et al.* 2013; Saraiva *et al.* 2018; Grandis *et al.* 2021). *Senna reticulata* is associated to other insects species such as *Crypticerya genistae* Hempel, 1912, *C. multicitricipes* Kondo and Unruh, 2009 (Hemiptera: Monophlebidae), *Senius lawrencie* Johnson, 1977 and *S. lebasii* Fähræus, 1839 (Coleoptera: Chrysomelidae) (Arias de López *et al.*, 2022; Viana, 2011). Further investigation is needed to understand the relationship between these insects and species of *Senna* Mill.

The study was carried out in a local garden at 2 de Febrero Street, in the Anita Cabrera neighborhood, located in the San Juan Bautista district, Maynas province, Loreto department, 3°45'55.22"S, 73°16'27.34"O, at an altitude of 126 meters above sea level, Peru (Figure 1). The climate of the region is moderately humid and warm, with little to no dry season deficiency, and seasonally homogeneous rainfall concentra-

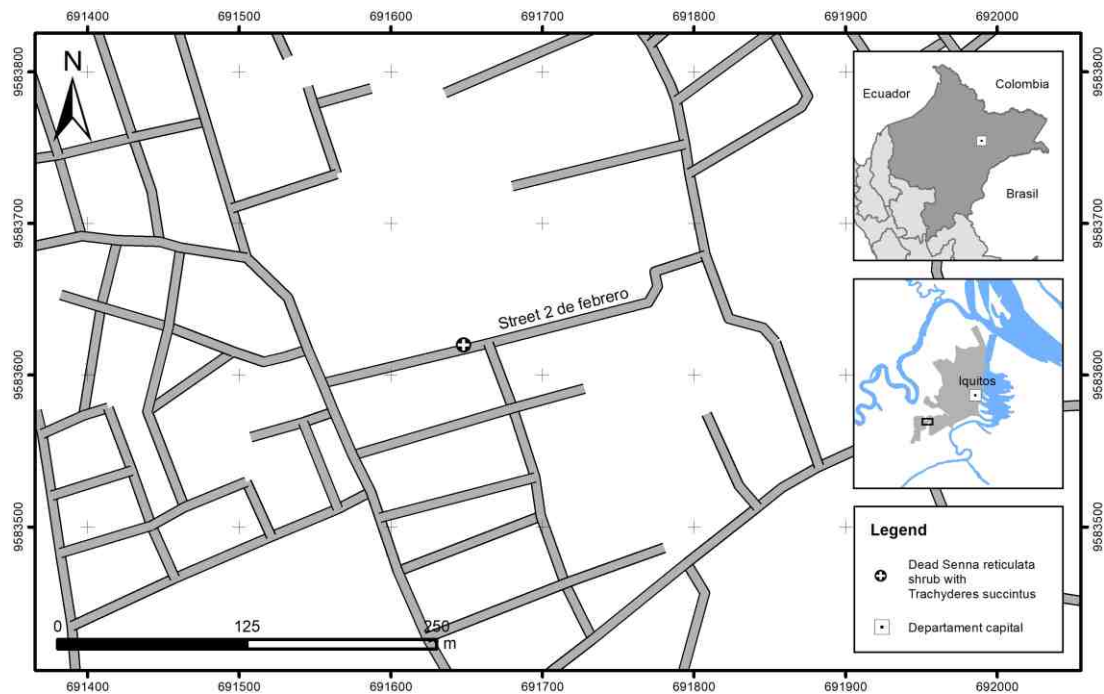


Figure 1. Location map of the dead *Senna reticulata* shrub where *Trachyderes succincta succincta* was found in Iquitos, Loreto, Perú.

tion, with a precipitation range of 2500 to 2600 mm and a temperature range of 21.3 to 32.8 °C (Paredes, 2012; Tello *et al.*, 2013). The garden where the shrub was located is situated between a sidewalk and a concrete sidewalk road, and the neighborhood has few green areas (Palacios *et al.*, 2020). Sampling was conducted on November 10, 2022, with three larval stage specimens collected from the dead wood of the shrub. The larvae were reared on the dead branches of their host plant, inside plastic containers to prevent external interference. Several photographs were taken to document the process.

The plant identification was done using the botanical key by Vásquez (1997), bibliographic information from WFO (2023), The Field Museum of Chicago (2023), and speciesLink (2023). the species and subspecies of the beetle was identified with the key of Hudepol (1985) and Monné & Wang (2017).

The specimens studied were longicorn beetles of the family Cerambycidae, subfamily Ce-

rambycinae, tribe Trachyderini; they measured 22.18 mm and 22.41 mm, elongated bodies of dark brown and light brown colors (possibly not yet completed its sclerotization process), long antennae that exceed the length of the body, all femurs and the second, third and fourth antennal arrays are bicolored (dark brown and copper), tibiae and the last three antennal arrays are copper colored, presence of a thin yellow transverse band in the middle part of both elytra.

Around September 2022, the host shrub died, possibly after only 4 years of life, and the dry branches and stem became a hazard for pedestrians. Therefore, we decided to cut it down. During the cutting, we discovered the larvae, which marked the beginning of this research project.

The beetle corresponded to *Trachyderes succincta succincta* (Linnaeus, 1758), from the family Cerambycidae (Figures 2 and 3), and the shrub was identified as *Senna reticulata* (Figures 3 and 4). This represents the first record of this relationship. *Trachyderes succincta succinc-*

ta larva was found in galleries within the branches of *Senna reticulata*, and was reared on branches of this species until reaching adulthood. The first adult emerged on December 18, 2022, the second on April 16, 2023, and the third on May 25, 2023 (see Table 1).

Apparently, *Trachyderes succincta succincta* larvae has a preference for plant species in the

order Fabales (11 species), which is consistent with our findings. Based on the Angiosperm Phylogeny Group (2016), the 27 plant species where *T. succincta succincta* larvae have been reported, predominately belong to the Rosids group, a branch of flowering plants located at the center of plant phylogenetic evolution.

Tabla 1. Dates and stages of three larvae of *Trachyderes succincta succincta* in *Senna reticulata* Wood in Iquitos, Peru.

Individual	2022			2023		
	10-Nov	18-Dec	31-Dec	14-Apr	25-Apr	25-May
1	Larva	Adult				
2			Larva	Pupa	Adult	
3			Larva	Larva	Pupa	Adult

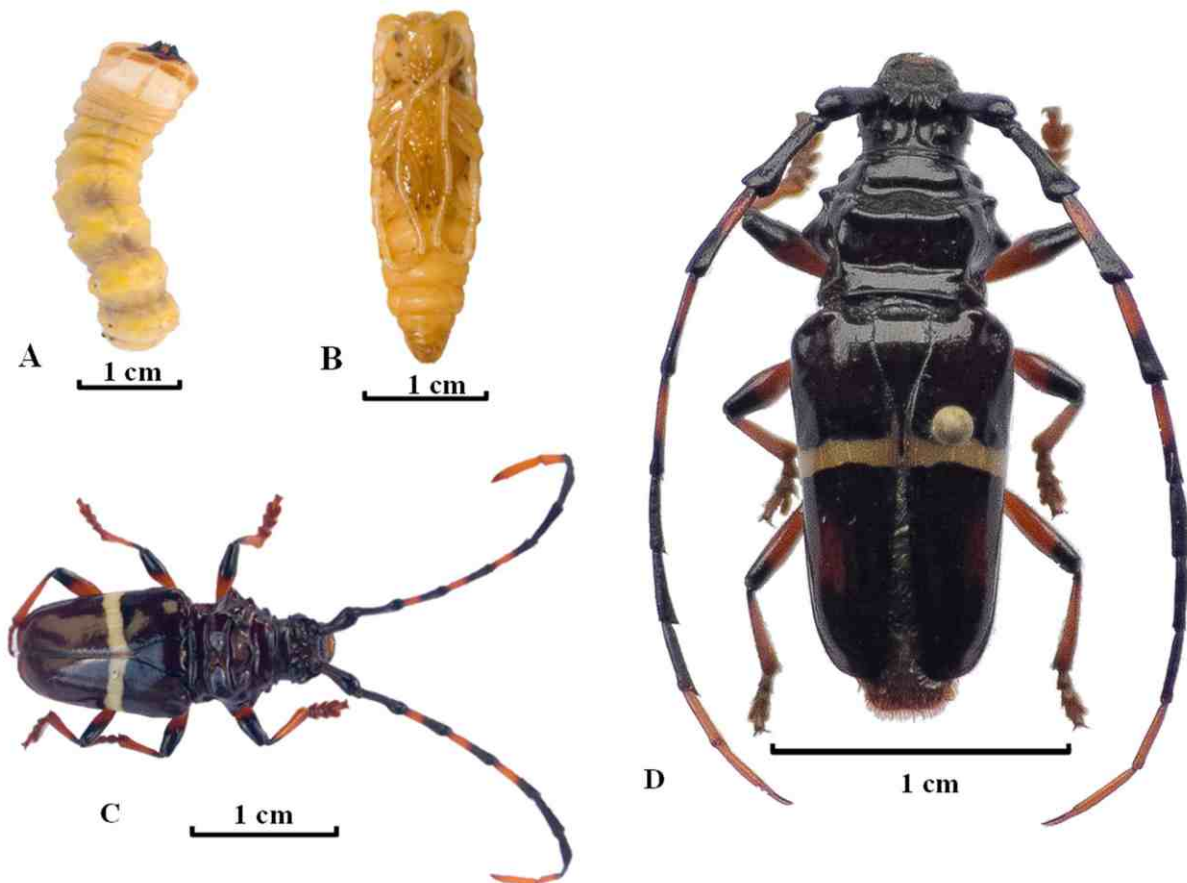


Figure 2. Photographs of live *Trachyderes succincta succincta* reported in *Senna reticulata* in the present study; A. live larva, B. live pupa, C. live adult, and D. mounted specimen of an adult.

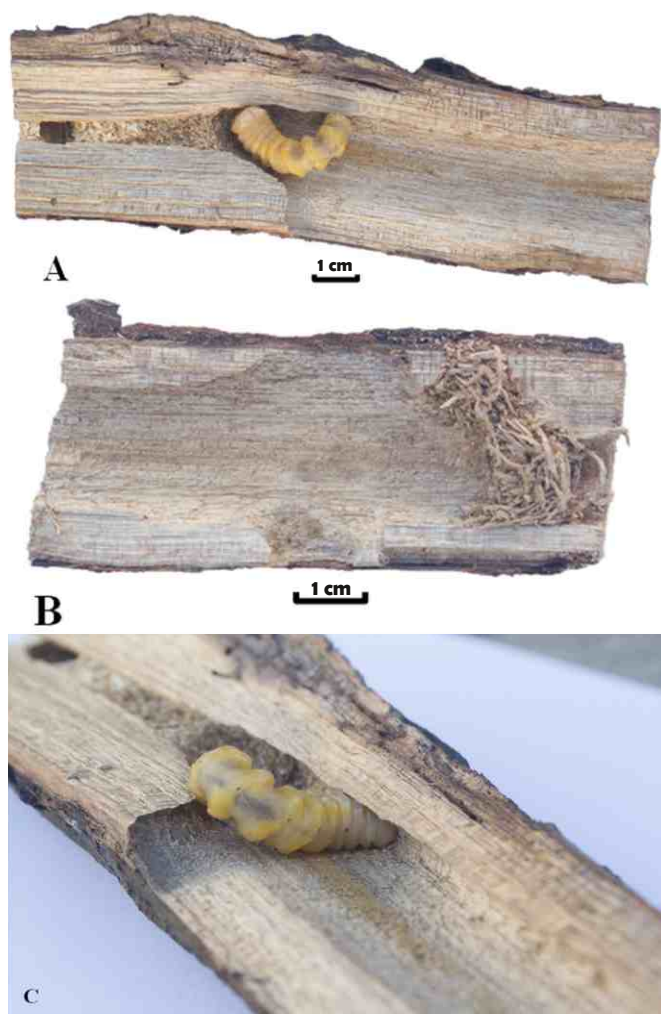


Figure 3. Photographs of *Trachyderes succincta succincta* larvae in galleries in branches of *Senna reticulata* in the present investigation.

ACKNOWLEDGMENT

We would like to thank Dylis Vela and Scarlet Medina for their assistance in translating the present document to English. Thanks also to Giuseppe Gagliardi and Christian Perez for the photographs and Sharon Carpio for mounting the beetles specimens.

REFERENCIAS BIBLIOGRÁFICAS

Angiosperm Phylogeny Group. 2016. An update of the Angiosperm Phylogeny Group classification for the orders and families of



Figure 4. Photographs of *Senna reticulata* in the present investigation.

flowering plants: APG IV. *Botanical Journal of the Linnean Society*, 181(1): 1-20. DOI: <https://doi.org/10.1111/boj.12385>
Arias De López, M.; Molina-Moreira, N.; Herrera, I.; Rizzo, K.; Velásquez, J.A.; Chirinos, D. T.; Kondo, T. 2022. First record of two invasive species of *Crypticerya* (Hemiptera: Monophlebidae) causing outbreaks in urban green areas of Guayas Province, Ecuador. *Ciencia y Tecnología Agropecuaria*, 23(3): DOI: https://doi.org/10.21930/rcta.vol23_num3_art:2890
Barreto, M.R.; Machiner, R.; Smiderles, E.C. 2013. Cerambycinae (Coleoptera, Cerambycidae) in Mato Grosso, Brazil. *Biota Neotropica*, 13(1): 331-335. DOI: <https://doi.org/10.1590/>

- S1676-06032013000100032
- Fernandes, G.W.; Santos, J.C. 2008. Feeding and mating behavior of *Dorcacerus barbatus* (Olivier, 1790) (Coleoptera: Cerambycidae) on *Lantana camara* L. (Verbenaceae). *Lundiana: International Journal of Biodiversity*, 9(2): 155-158. DOI: <https://doi.org/10.35699/2675-5327.2008.23817>
- Fujihara, R.T.; Viani, R.A.G.; Savaris, M. 2021. First record of *Trachyderes succinctus succinctus* (Linnaeus, 1758) (Coleoptera: Cerambycidae) in *Khaya ivorensis* A. Chev. (Meliaceae) in Brazil. *Brazilian Journal of Biology*, 81(1): 220-222. DOI: <https://doi.org/10.1590/1519-6984.226537>
- Garate-Quispe, J.S.; Canahuire-Robles, R.; Surco-Huacachi, O.; Alarcón-Aguirre, G.; Garate-Quispe, J.S.; Canahuire-Robles, R.; Surco-Huacachi, O.; Alarcón-Aguirre, G. 2021. Development of forest structure and tree floristic composition on affected gold mined sites in the Peruvian Amazon: 20 years after reforestation. *Revista Mexicana de Biodiversidad*, 92: e923437. DOI: <https://doi.org/10.22201/ib.20078706e.2021.92.3437>
- Gonzales, O.E.; Di Iorio, O.R.D. 1996. Plantas hospedadoras de Cerambycidae (Coleoptera) en el noreste de Argentina. *Revista de Biología Tropical*, 44(3): 167-175.
- Grandis, A.; Arenque-Musa, B.C.; Martins, M.C.M.; Maciel, T.O.; Simister, R.; Gómez, L.D.; Buckeridge, M.S. 2021. *Senna reticulata*: A Viable Option for Bioenergy Production in the Amazonian Region. *BioEnergy Research*, 14(1): 91-105. DOI: <https://doi.org/10.1007/s12155-020-10176-x>
- Hudepohl, K.E. 1985. Revision der Trahyderini (Coleoptera, Cerambycidae, Cerambycinae). En: G. Frey (Ed.), *Entomologische Arbeiten-Museum*. p. 1-168.
- Martins, U.R. 1975. Gênero *Trachyderes* Dalman (Coleoptera, Cerambycidae): Observações, sinonímias, descrições. *Papéis Avulsos de Zoologia*, 29: 81-92. DOI: <https://doi.org/10.11606/0031-1049.1975.29.p81-92>
- MINAM. 2010. Capítulos I, II, III, IV, apéndices y anexo Áreas Protegidas. En: *Cuarto Informe Nacional sobre la Aplicación del Convenio de Diversidad Biológica: Años 2006-2009*. 184pp.
- Monné, M.A.; Chaboo, C.S. 2015. Beetles (Coleoptera) of Peru: A Survey of the Families. Cerambycidae, Disteniidae, Vesperidae. *Journal of the Kansas Entomological Society*, 88(1): 34-120. DOI: <https://doi.org/10.2317/JKES1410.13.1>
- Monné, M.; Wang, Q. 2017. General morphology, classification and biology of Cerambycidae. En: Wang, Q. (Ed) *Cerambycidae of the World: Biology and Pest Management*. p. 1-76
- Monné, M.A. 2024. *Catalogue of the Cerambycidae (Coleoptera) of the neotropical region. Part I. Subfamily Cerambycinae*. Universidade Federal do Rio de Janeiro. 1210pp.
- Palacios, J.J.; Zárate, R.; Minaya, R.J.; Martín, M.; Benavides, J.E. 2020. Forecasting vegetation loss due to urban sprawl in the vicinity of Iquitos, Peru. *Ciencia Amazónica (Iquitos)*, 7(1): 37-50. DOI: <https://doi.org/10.22386/ca.v7i1.263>
- Paredes, M.A. 2012. *Clima. Microzonificación Ecológica y Económica del Área de Influencia de la Carretera Iquitos-Nauta*. Instituto de Investigaciones de la Amazonia Peruana. 79pp.
- Parolin, P. 2001. *Senna reticulata*, a pioneer tree from Amazonian várzea floodplains. *The Botanical Review*, 67(2): 239-254. DOI: <https://doi.org/10.1007/BF02858077>
- Parolin, P. 2016. *Senna reticulata* (Willd.) H. S. Irwin & Barneby (Fabaceae) as «pasture killer» («matapasto») pioneer tree in Amazonian floodplains. *Ecología Aplicada*, 4(1-2): 41. DOI: <https://doi.org/10.21704/>

rea.v4i1-2.296

- Rámirez, A.; Isaza, G.; Pérez, J.E. 2013. Vegetal Species Studied by their Antimicrobial, Immunomodulatory and Hypoglycemic Properties in Caldas-Colombia, South America. *Biosalud*, 12(1): 59-82.
- Salazar-E, J.A. 2013. Colombian Butterflies (Lepidoptera: Papilionoidea) Attracted To Tree Exudates. *Boletín Científico. Centro de Museos. Museo de Historia Natural*, 17(2), 227-245.
- Saraiva, A.C.F.; Mesquita, A.; De Oliveira, T.F.; Hauser-Davis, R.A. 2018. High CO₂ effects on growth and biometal contents in the pioneer species *Senna reticulata*: Climate change predictions. *Journal of Trace Elements in Medicine and Biology*, 50, 130-138. DOI: <https://doi.org/10.1016/j.jtemb.2018.06.018>
- speciesLink. 2023. ++speciesLink network. <https://specieslink.net/search/>. Access: 19/05/2023.
- Tello, D.; Paredes, M.; Cobos, M. 2013. Propuesta de Clasificación Microclimática en función a la Vegetación predominante en la Cuenca del Rio Itaya, Loreto-Perú. *Revista ECIPeru*, 84-88. DOI: <https://doi.org/10.33017/RevECIPeru2012.0025/>
- The Field Museum of Chicago. 2023. *Explore the World at the Field—Field Museum*. <https://www.fieldmuseum.org/>. Access: 19/05/2023.
- Trindade, J.R.; Rodrigues, C.A.; Santos, J.U.M. dos; Gurgel, E.S.C. 2021. Estudos biométricos em frutos, sementes e germinação de matapasto (*Senna reticulata*) da Amazonia. *Research, Society and Development*, 10(17): e23812139619. DOI: <https://doi.org/10.33448/rsd-v10i17.24807>
- Vásquez, R. 1997. *Flórula de las Reservas biológicas de Iquitos, Perú: Allpahuayo-Mishana, Explornapo Camp, Explorama Lodge*. Missouri Botanical Garden Press, Iquitos. Iquitos. 1046pp.
- Viana, J.H. 2011. *Taxonomia dos bruquíneos associados à Senna Neglecta (Vogel) H. S. Irwin e Barneby (Fabaceae: Caesalpinioideae), com revisão do grupo abbreviatus de Sennis Bridwell (Coleoptera, Chrsomelidae, Bruchinae)* [Dissertação de Mestrado em Ciências Biológicas, Universidade Federal do Paraná]. 149pp.
- WFO. 2023. *The World Flora Online*. <https://www.worldfloraonline.org/>. Access: 19/05/2023.

Recibido: 01 de diciembre de 2023 **Aceptado para publicación:** 30 de enero de 2024