



FIELD STATION PROFILES

ESTAÇÃO ECOLÓGICA DO CAIUÁ

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NAME OF FIELD STATION

Estação Ecológica do Caiuá (ESEC)

GEOGRAPHIC LOCATION

- Brazil, Paraná State, Municipality of Diamante do Norte
- 22°41'S, 52°55'W
- 283 m a.s.l.

GEOGRAPHIC CONTEXT AND HABITAT

The region is characterized by sedimentary rocks of the Caiuá Sandstone Formation (Torres 2003), with sandy soils highly susceptible to erosion. Landforms of the plain were originally covered by mesophytic semideciduous Atlantic Forest (Campos 2004). Due to the massive historical loss of native vegetation, less than 1% of the original vegetation

remains as small fragments scattered within an agricultural landscape (Campos 1999, 2004; Ribeiro et al. 2013).

The ESEC covers an area of 1,449 ha in different levels of conservation. It is drained by Scherer and Conceição streams, and the Diamante River, all belonging to the Upper Paraná River Basin. The Scherer and Conceição streams flow into the Paranapanema River downstream of the Rosana hydroelectric plant (i.e., Rosana Reservoir) and the Diamante River flows into the Rosana Reservoir (Fig. 1). The streams and rivers are highly dependent on riparian vegetation to prevent erosion and silting, and to maintain the preserved local physical habitat (Cionek et al. 2011). The area surrounding the ESEC is characterized by extensive pastures and manioc plantations (Fig. 1), progressively replacing sugarcane (Ribeiro et al. 2013). The regional climate is classified as Cfa in the Köppen Climate Classification system: a humid subtropical oceanic climate without a dry season and with hot summers.

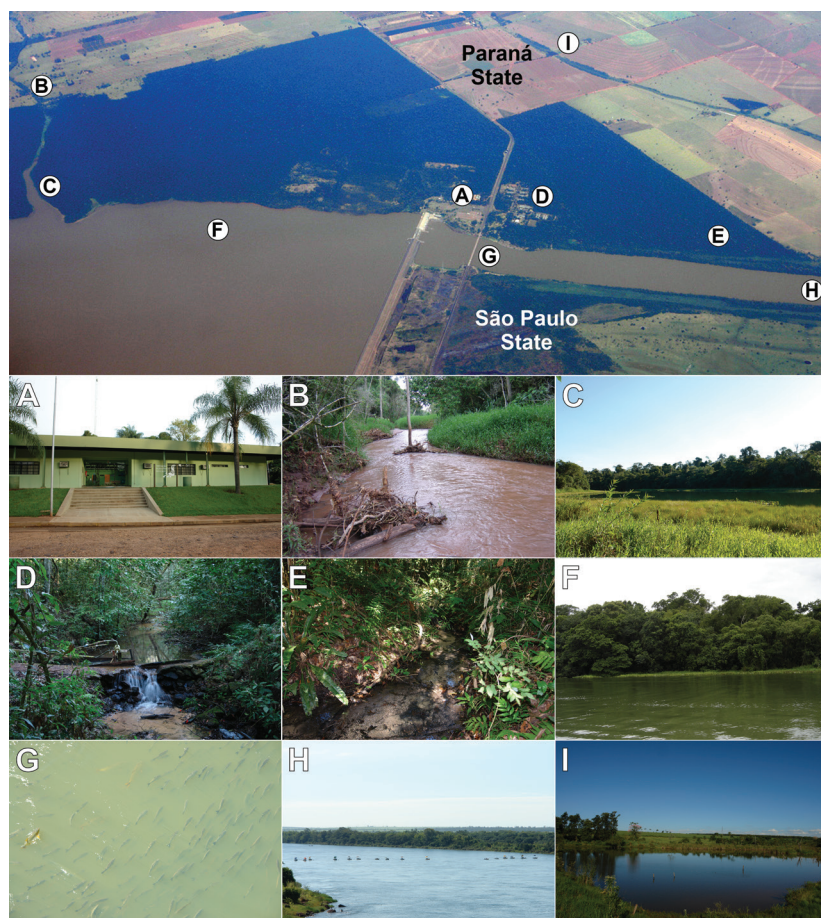


Figure 1. Aerial view of the ESEC in the municipality of Diamante do Norte, Paraná State, southern Brazil. (A) View of the main building. (B) A silted stretch of the Diamante River. (C) Right margin of the Diamante River near Rosana Reservoir. (D) Scherer Stream inside forest fragment. (E) Conceição Stream inside forest fragment. (F) Riparian forest of the Rosana Reservoir at the ESEC. (G) Schools of migratory fish species (*Salminus brasiliensis* and *Prochilodus lineatus*) downstream of the Rosana hydroelectric power plant. (H) Fishing boats anchored in the river section downstream of the Rosana hydroelectric power plant (outside the limits of the ESEC), on the border between the states of Paraná and São Paulo. (I) Small dam near the spring of the Maria Koss Stream. Photos by Fabrício H. Oda (A-C, E-I) and Evanilde Benedito (B).

Mean annual temperature ranges from 20 to 22°C and total annual rainfall ranges from 1300 to 1600 mm (Alvares et al. 2013).

FLORA AND FAUNA

The ESEC is located in one of the most deforested regions in the state of Paraná and, as such, plays an important role as a refuge for biodiversity and in protecting endangered species of flora and fauna (Figs. 2 and 3). A significant number of studies on aquatic and terrestrial biodiversity have been conducted at the ESEC. Inventories of aquatic communities of the Diamante River identified 77 phytoplankton taxa (Train et al. 2009), with higher periphytic algal biomass in summer months (Rodrigues et al. 2009); 95 zooplankton taxa, including 34 rotifers, 28 testaceans, 21 cladocerans, and 11 copepods (Lansac-Tôha et al. 2009); and 81 zoobenthic taxa, including 46 chironomid larval morphotypes, 13 oligochaete species, and two bivalve species (Takeda et al. 2009). Tadpoles of five anuran species were identified as prey of insect larvae and hosts of leeches in

four lentic water bodies located in an open, anthropogenic area within sugarcane crops near the ESEC (Gambale et al. 2014). Fish represent one of the most studied taxa at the ESEC, with 41 species recorded and aspects of their biology and ecology studied (e.g., Abilhôa & Bastos 2005, Corbetta & Benedito 2009, Morales et al. 2009b, Cionek et al. 2012, Zanatta et al. 2013).

Studies on terrestrial biodiversity include investigations of communities of flora and fauna. Floristic and phytosociological studies recorded 322 species distributed in 188 genera and 71 families (e.g., Borghi et al. 2004, Costa Filho et al. 2006, Del Quiqui et al. 2007, Sakuragui & Janunzzi 2009, Carneiro & Vieira 2012). Identified invertebrates include 24 anuran endoparasitic species (da Graça et al. 2017), 379 butterfly species (Garcia-Salik et al. 2014), and individuals of the tiger-beetle *Tetracha brasiliensis brasiliensis*, preying upon newly metamorphosed frogs (Oda et al. 2014). Identified vertebrates include 19 anuran species (Oda et al. 2016), 358 bird species (IAP 2009), 14 bat species (Miretzki & Margarido 1999), and 30 non-volant mammal species (IAP 2009).

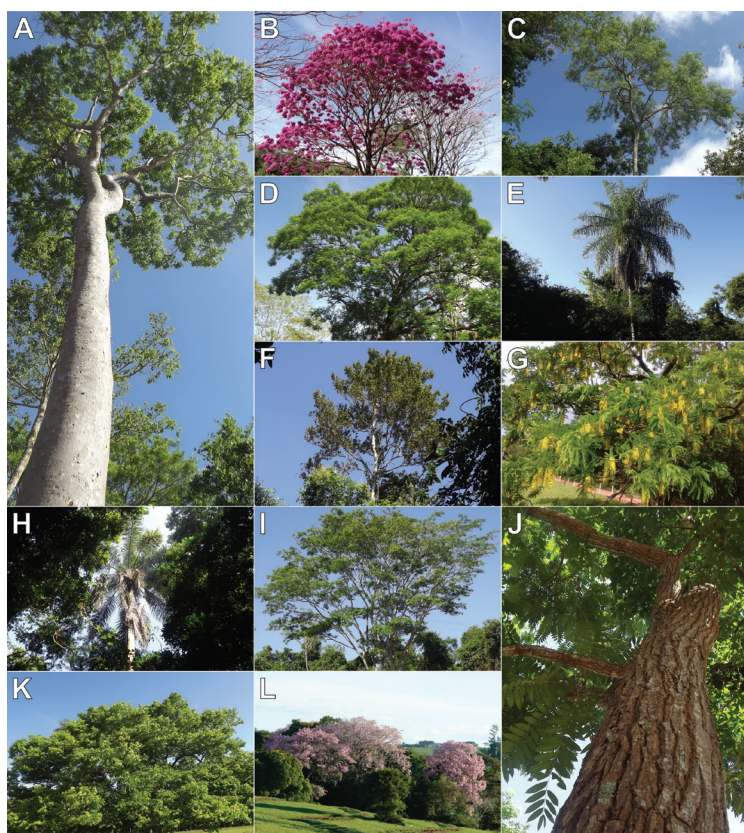


Figure 2. Examples of tree species found at the ESEC, municipality of Diamante do Norte, Paraná State, southern Brazil. (A) Guaritá (*Astronium graveolens*). (B) Ipê-roxo (*Handroanthus impetiginosus*). (C) Amendoim-bravo (*Pterogyne nitens*). (D) Canafístula (*Peltophorum dubium*). (E) Macauba (*Acrocomia aculeata*). (F) Espeteiro (*Casearia gossypiosperma*). (G) Chuva-de-ouro (*Cassia ferruginea*). (H) Jerivá (*Syagrus romanzoffiana*). (I) Farinha-seca (*Albizia polycephala*). (J) Cedro (*Cedrela fissilis*). (K) Jatobá (*Hymenaea courbaril*). (L) Paineira (*Ceiba speciosa*). Photos by Valdir L. da Silva (A-K) and Fabrício H. Oda (L).

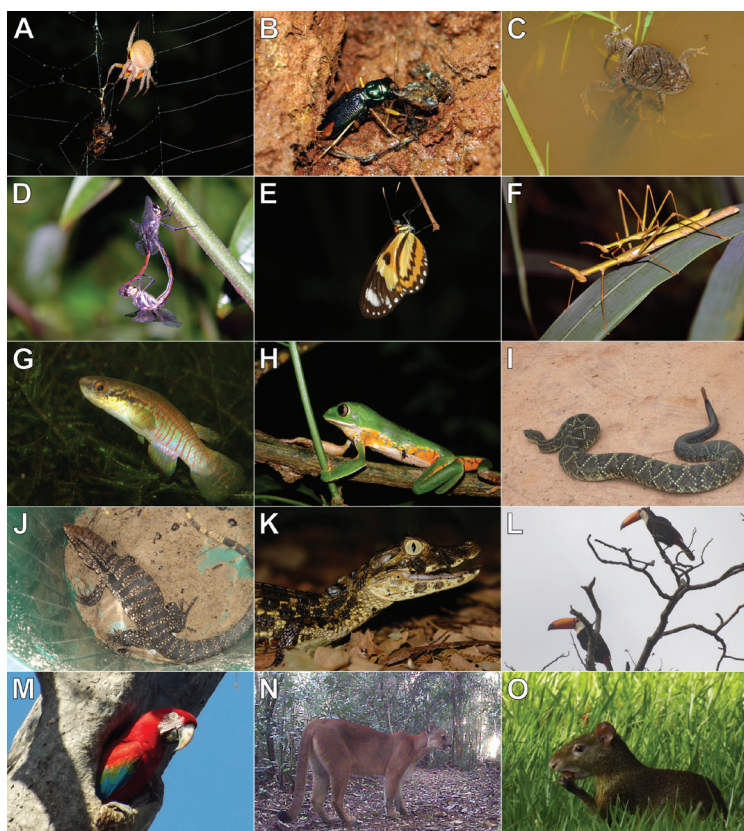


Figure 3. Examples of invertebrate and vertebrate species found at the ESEC, municipality of Diamante do Norte, Paraná State, southern Brazil. (A) Orb-weaving spider (*Araneus* sp.). (B) Adult tiger beetle (*Tetracha brasiliensis brasiliensis*) consuming the fleshy parts (viscera) of newly-metamorphosed frog (*Physalaemus cuvieri*). (C) Giant water bug (*Lethocerus annulipes*) preying on an adult frog (*Physalaemus nattereri*). (D) Dragonflies mating (Odonata: Anisoptera). (E) Lysimnia tigerwing (*Mechanitis lysimnia*). (F) Stick grasshoppers (Proscopiidae). (G) Killifish (*Melanorivulus apiamici*). (H) Hidden walking leaf frog (*Phyllomedusa tetraploidea*). (I) Cascavel (*Crotalus durissus*). (J) Teiú (*Salvator merianae*). (K) Broad-snouted caiman (*Caiman latirostris*). (L) Tucanuçu (*Ramphastos toco*). (M) Arara-vermelha (*Ara chloropterus*). (N) Onça-parda (*Puma concolor*). (O) Cutia (*Dasyprocta punctata*). Photos by Fabrício H. Oda (A-H, K) and Valdir L. da Silva (I, J, L-O).

ACCESS, INFRASTRUCTURE, AND FEES

The ESEC is situated at the side of Rosana Reservoir, on the border with the State of São Paulo (Fig. 1). In the State of Paraná, the ESEC is accessed via highway PR-182 (coming from the municipality of Nova Londrina) or highway PR-557 (coming from the municipality of Terra Rica). The two highways connect the State of Paraná to the State of São Paulo. From the State of São Paulo, the ESEC is reached via highway SP-669 to the border with the State of Paraná, where it interconnects with highway PR-182.

Infrastructure of the ESEC includes an auditorium (capacity for 50 people) with multimedia devices, rooms with 28 beds each and separate bathrooms for men and women, a kitchen and refectory, a barrier-free bathroom, a museum of fauna and flora with a diorama (characterizing the local ecosystem with taxidermized animals), a zoology laboratory with a fish museum, a botany laboratory with a herbarium, a storeroom, a parking area, administration office space, and a research center. There are no entrance fees for the ESEC, but research and educational activities should be coordinated with the ESEC administration with regard to timing.

LEGAL REQUIREMENTS

Research at the ESEC and the collection and transport of biological samples require permits from the Instituto Água e Terra (<https://www.iat.pr.gov.br/Pagina/Autorizacoes-em-Unidades-de-Conservacao-Estaduais>) and Instituto Chico Mendes de Conservação da Biodiversidade/Sistema de Autorização e Informação em Biodiversidade (<https://www.gov.br/icmbio/pt-br/servicos/sistemas/sisbio-sistema-de-autorizacao-e-informacao-em-biodiversidade>).

KEY RESEARCH

Projects at the ESEC and in surrounding areas address general biodiversity topics such as inventories and ecology of aquatic and terrestrial communities (summarized in the “Flora and Fauna” section). Over the last ten years, the main research studies conducted at ESEC have included continuous floristic and phytosociological studies, and long-term monitoring of amphibians (e.g., Gambale et al. 2014, Oda et al. 2016) and medium-large mammals (e.g., da Silva et al. 2019). Environmental education activities have also been developed with students from schools and universities. A full list of research projects and environmental education activities can be obtained upon request from the authors at fabricao_oda@hotmail.com.

FIVE SELECTED PUBLICATIONS

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Links and Information

Further information at:

ESEC management plan: https://www.iat.pr.gov.br/sites/agua-terra/arquivos_restritos/files/documento/2020-07/pm_ee_caiua.pdf

Wikiparques: https://www.wikiparques.org/wiki/Estacao_Ecologica_do_Caiua

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