

Review

The Entomological Collection of Ricardo von Diringshofen (1900–1986) and its incorporation to the *Museu de Zoologia da Universidade de São Paulo*



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ABSTRACT

Ricardo von Diringshofen (1900–1986) was a Natural History enthusiast who collected an incredible variety of objects, mostly insects, which amount to over 2 million specimens. We present here a brief biography of Ricardo von Diringshofen, including the history of his insect collection and the processes of purchase and incorporation of his collection by the *Museu de Zoologia da Universidade de São Paulo*.

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Introduction

The *Museu de Zoologia da Universidade de São Paulo* (MZSP) is considered one of the premier scientific institutions in Brazil, housing one of the most important Neotropical fauna collections in the world, with about 10 million animals therein preserved (Landim, 2011). The history of the museum as well as its individual collections is very useful in understanding animal evolution and biodiversity studies in Brazil (Taddei et al., 1999).

From its beginning, as the Department of Zoology in the *Museu Paulista*, up to the present, the number of specimens in the MZSP entomological collection has risen gradually. The Museum, which in 1939 had about 100,000 entomological specimens, now has about 2.2 million mounted specimens and about 2.5 million to be prepared (Taddei et al., 1999). One of the factors that largely contributed to the growth of the MZSP entomological collection was the incorporation by purchase and donation of several entomological collections (Marinoni and Marinoni, 2012).

Among the several collections acquired by the MZSP the following are important due to their rarity, quality and distribution: Julius Melzer (Coleoptera: Cerambycidae), Bóris Malkin, Claudionor Elias (Espírito Santo state, Brazil), John Lane e Mauro Pereira Barreto (Diptera), Fritz Plaumann (Diptera of Santa Catarina state, Brazil),

Renato Lion de Araújo (Isoptera), Tomás Borgmeier (Hymenoptera: Formicidae and Diptera: Phoridae), Walter Kempf (Hymenoptera: Formicidae), José Pinto da Fonseca (Hemiptera: Coccoidea and Membracidae), Luís Cláudio Peña (Diptera of Chile, Ecuador and Paraguay; and Coleoptera: Cerambycidae of Chile), Werner Bokermann (Coleoptera: Chlamisinae) and Alípio da Rocha Miranda, Celso Duprat and Fernando Martins Pinto (Lepidoptera) (Costa et al., 2000; Marinoni and Marinoni, 2012). Perhaps, the most important collection in terms of number of specimens is Dirings' Entomological Collection, which also included the former collections of B. Pohl (Coleoptera), G.H. Nick (Coleoptera: Carabidae), Jacintho Guérin (Coleoptera: Chrysomelidae) and several others insect collectors (Costa et al., 2000; Marinoni and Marinoni, 2012).

Given the importance and the size of Dirings' collection, the literature about the said collection and its history is scarce, composed of minor comments and low informative data in taxonomic papers (e.g. Martins, 1987a; Marinoni and Marinoni, 2012; Evangelista et al., 2014; Ferreira, 2015). This paper presents a brief biography about Ricardo von Diringshofen and his entomological collection, as well as comments about the purchase, incorporation and the benefits that this collection brought to the MZSP in structural and curatorial terms.

Methods

The biographical profile and the descriptions about the acquisition process of Dirings' collections were made by means of

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interviews and consultation of official documents. People who met Ricardo von Diringshofen (or Dirings, as he liked to be called and signed in letters and documents) and people who participated in the acquisition of the collections by MZSP were interviewed. Documents and other historical records such as journal articles and newspapers were also consulted.

Results

Biography

Ricardo von Diringshofen (Fig. 1) was born on August 4th 1900 in Joinville city, Santa Catarina, Brazil (Diringshofen, 1985; Martins, 1987a). His family had a German origin and settled in Brazil, Santa Catarina State, probably in Vale do Itajaí, at an unknown date (Martins, 1987a). Ricardo Dirings was married with Marketa von Diringshofen (of Swedish origin) and together they had a single daughter, Edite Ricardo von Diringshofen. Along with his daughter and grandsons (Edite had four children: Edite, Ula, Egon and Ingo), they were the last descendants of a noble European family, with more than 600 years of tradition, with a title of nobility dating back to the times of Maximilian I, from the Holy Roman Empire (Diringshofen, 1985).

Ricardo von Diringshofen worked during many years as a commercial representative of an important and well-known textile industry of southern Brazil, the Artex Company, which he helped to build (Diringshofen, 1985). Dirings worked in the axis São Paulo – Rio de Janeiro for years, establishing himself in São Paulo with his family, probably in the 1930s, where his collections started to grow (Martins, 1987a). He took up residence in the Paraíso neighborhood, at Maestro Cardim Street, in a fancy house, where he could



Fig. 1. Ricardo Von Diringshofen.

nurture his passion for collections. He was one of the founding partners of the *Sociedade Brasileira de Entomologia* in 1937 (Nomura, 1991) and he also was awarded by the British Museum (Natural History Museum, London) several times. His passion for Natural History started in the year of 1915 (Diringshofen, 1985) and one of Dirings' mote was that: "There is no day without joy, if everyone believed in it, everyone would be happier". Cleide Costa still has one of Dirings' notepad with the following sentence in Latin: "Nulla dies sine laetitia" (C. Costa, pers. comm., 2015).

According to Ubirajara Ribeiro Martins (U.R. Martins, pers. comm., 2014), Ana Maria Vasques (A.M. Vasques, pers. comm., 2014), Francisca Carolina do Val (F.C. do Val, pers. comm., 2015) and interviews of Dirings himself (Rosa, 1949; Diringshofen, 1985), Dirings was an enthusiast for all sorts of collections. In his many years of life he collected and gathered an incredible assortment of objects: shells, Brazilian indigenous objects, such as feather headdresses and other materials, living flowers (with about 8000 varieties of orchids from all Brazil), living freshwater fishes (a collection that once had up to 400 aquariums), Egyptian jewelry, horns and antlers, birds, minerals, matchboxes, watches, coins, postal cards, shoes, human hair, beer labels, stamps and insects, especially Cerambycidae (Coleoptera), Membracidae (Hemiptera) and Lepidoptera. Besides the collections of dead animals and inanimate materials Dirings also owned a zoo for a short period at his house in downtown São Paulo, where he reared an anteater, owls, parrots, monkeys and marmosets, turtles and a bush pig (Rosa, 1949).

Concerning his faith, Dirings was Evangelical, from Lutheran confession, and according to himself (Diringshofen, 1985) the purpose of his collections was: "God let me live until now to show [to the people] the miracles that He has created". At the time of his death, – May 20th 1986, at 85 years old – the estimated size of his Entomological collection was between 1.25 and 2 million specimens (Martins, 1987a,b), but these numbers were probably underestimated (A.M. Vasques, pers. comm., 2014; U.R. Martins, pers. comm., 2014) and his collection was by far one of the most relevant collections of Brazil and the Neotropical Region.

Even as an amateur Dirings published two papers on taxonomy of Membracidae (Hemiptera) (Fonseca and Diringshofen, 1969, 1974), which resulted in the description of two genera and 15 species (Annex 1). In acknowledgment of his efforts and contributions to the Natural History of Brazil and the Neotropical Region, up to the moment, 18 species were described in Ricardo Diringshofen's honor (Annex 2).

Diringshofen entomological collection

The largest part of Dirings' collection was stored in the garage and in the basement of his house however, an extensive portion was spread over other rooms of the house (A.M. Vasques, pers. comm., 2014). Most of his insects were collected by professional collectors, but Dirings himself also collected in some localities such as Itatiaia (Rio de Janeiro state), and at his summer house (U.R. Martins, pers. comm., 2014). Significant amounts of material were from other particular collections bought by Dirings (Fig. 2).

The Dirings collection contained specimens predominantly collected in Brazil, especially from Rio Grande do Sul and Santa Catarina States (South), Rio de Janeiro, São Paulo and Espírito Santo (Southeast), Goiás, Mato Grosso and Mato Grosso do Sul (Midwest), Acre, Amazonas and Pará (North), Bahia and Maranhão (Northeast). Some of these species were collected in biotypes that have now disappeared, such as the woods of Morumbi and Jabaquara, in São Paulo city (Costa et al., 2000; Campaner et al., 2008). Besides the Brazilian material, Dirings gathered specimens from several other South American countries such as Argentina, Bolivia, Chile, Colombia, Ecuador, Paraguay, Peru and Uruguay (Costa et al., 2000; Evangelista et al., 2014).

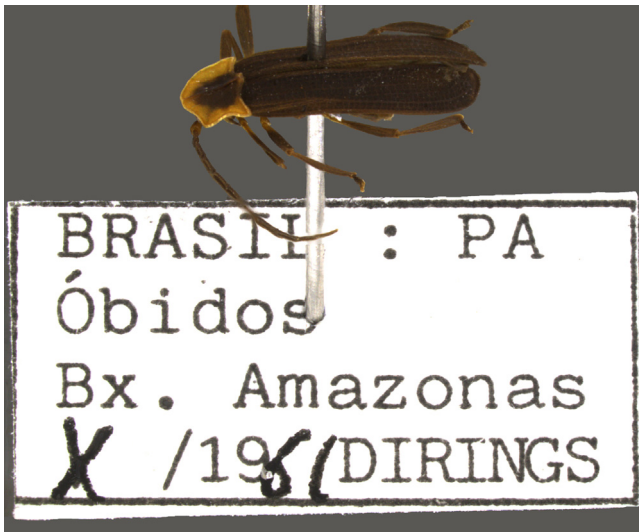


Fig. 2. An undescribed species of *Lycoplateros* Pic, 1922 (Coleoptera: Lycidae) from Dirings's Entomological Collection.

Despite the large number of specimens in Dirings' collection, it was poor concerning type material, with most of the types originating from Lane, Pohl, Nick and Guérin collections, that he acquired by purchasing (U.R. Martins, pers. comm., 2014). The number of mounted beetles from Dirings collection was about 61,000 specimens, identified by renowned specialists such as J. Bechyné (Chrysomelidae: Alticinae, Eumolpinae, Galerucinae), E. Uhmman (Chrysomelidae: Hispinae), F. Spaeth (Chrysomelidae: Cassidinae), M. Liebke and S. L. Straneo (Carabidae), J. Kulzer (Tenebrionidae), K.E. Schedl (Scolytidae and Platypodidae), G. Frey (Scarabaeidae: Melolonthinae), J. Guérin (Erotylidae and Chrysomelidae: Megalopodinae), F.S. Pereira (Scarabaeidae, Passalidae), B.A.M. Soares (Brentidae), F. Lane and U.R. Martins (Cerambycidae) (Costa, 1999; Costa et al., 2000).



Fig. 3. Unmounted material preserved in envelopes.

Most of Dirings' material was stored in drawers of several measurements and while his mounted material had an excellent curation, his unmounted material was stored in entomological envelopes in boxes, cans, wooden boxes and smith-boxes in the ground or in shelves (Fig. 3).

Acquisition and incorporation of Dirings collection to MZSP

After Ricardo Dirings' death his family contacted Ubirajara R. Martins with the intention of selling the Entomological collection. According to him (U.R. Martins, pers. comm., 2014), although the collections were the apple of Dirings' eye, his family was not really happy with all of the assorted objects littered throughout the house. In July 1986, Ubirajara R. Martins related the situation to the then director of MZSP, Paulo Emílio Vanzolini, about the Dirings' collection and its importance to the knowledge of Neotropical Insects (Fig. 4). Vanzolini then contacted the entomology chief at the time, Francisca Carolina do Val, and together they

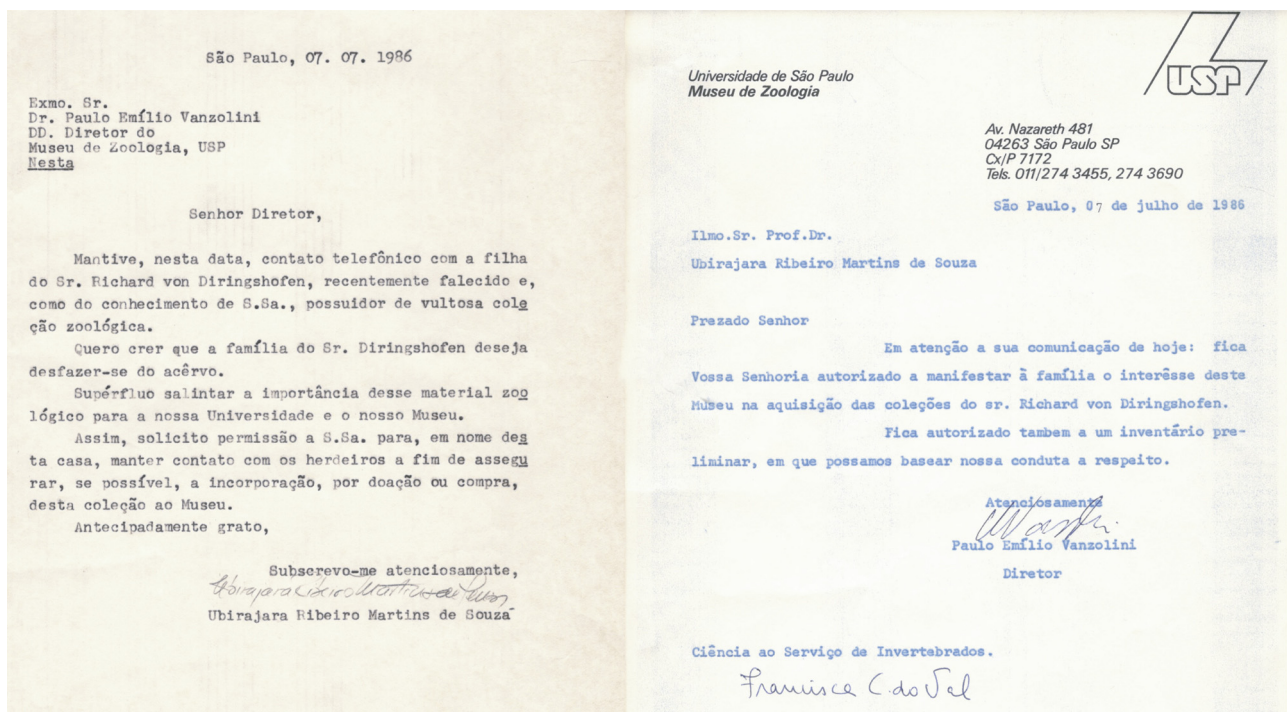


Fig. 4. Letters from Ubirajara R. Martins de Souza and Paulo E. Vanzolini, emphasizing the importance of Dirings's collection to the knowledge of the Neotropical Insects.



Fig. 5. Cans with unmounted Lepidoptera.

made a request for acquisition of Dirings' collection to the *Fundação de Amparo à Pesquisa do Estado de São Paulo* (FAPESP) and asked U.R. Martins to inventory the collection (U.R. Martins, pers. comm., 2014).

Meanwhile, in December of 1986, Ubirajara R. Martins got a letter from a colleague in Europe (Dr. Karl-Ernst Hübepohl, Germany) (U.R. Martins, pers. comm., 2014). The content of the letter was that Dr. Hübepohl had heard about a collection that was for sale in Brazil.

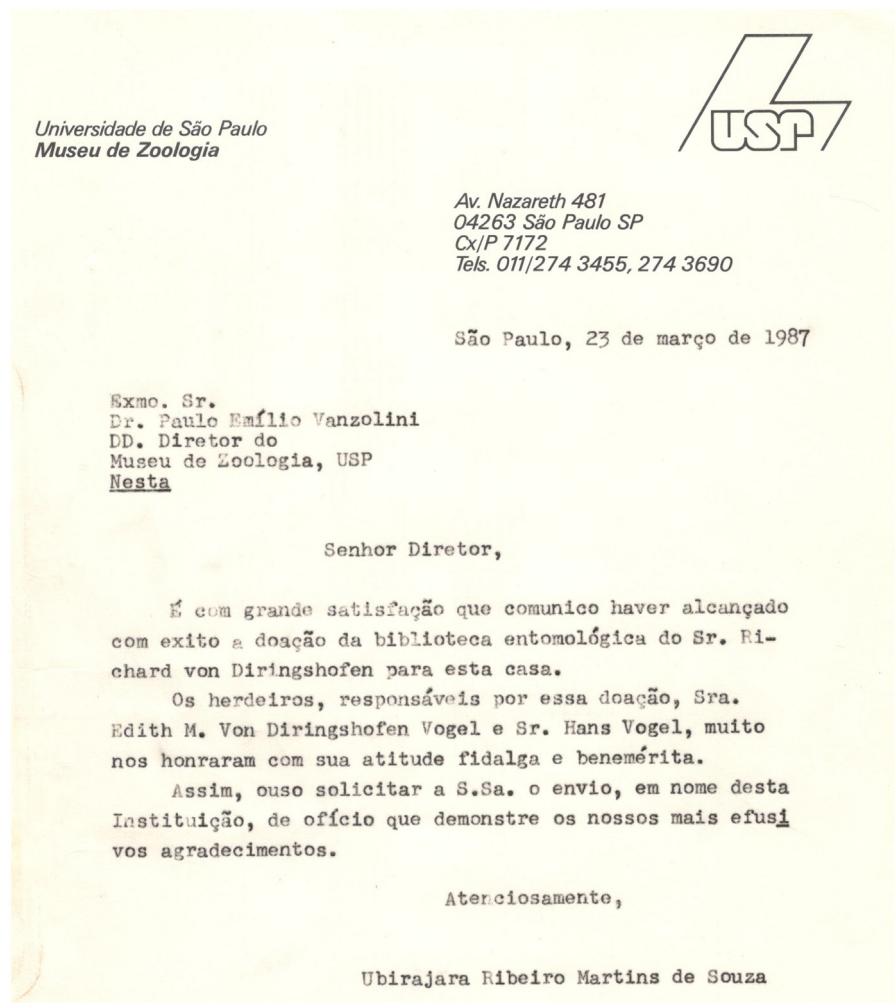


Fig. 6. Letter from Ubirajara R. Martins to the then director of MZSP Paulo E. Vanzolini requesting an official letter of appreciation to be sent to Dirings's family due to the donation of his Entomological Library.

The collection in question was Dirings' collection. In the occasion, Edite Diringshofen had traveled to Europe and used the opportunity to offer her father's collection to anyone interested. The arrival of this letter was a proof that the MZSP staff had to act quickly if they were in fact interested in acquiring Dirings' Entomological Collection.

As part of the acquisition process Ubirajara R. Martins already had contact with Dirings family and had access to his collection to make the inventory of Dirings' collection. According to him, the amount of material from Dirings' collection was so big that he took about six months of visiting Dirings' house once or twice a week, to assess the conditions of his entomological collection (U.R. Martins, pers. comm., 2014).

The evaluation of the collection was made based in the conditions of the mounted materials, in the quantity and quality of the material and especially in the status of conservation of the insects. This was evaluated in March of 1987 (Martins, 1987b) at Cz\$3,288,500.00, approximately U\$220,000 at that time. A large part of Dirings' collection, especially the unmounted material, remained in metal boxes and in cans, some of which have never been opened (Fig. 5). A few boxes (about 5%) were in such a bad condition that when opened no specimen remained there, just the dust left behind by the Anobiinae (Coleoptera: Ptinidae), a very common plague of zoological collections.

A few months later, the purchase request made to FAPESP (process number 87/01291–2) was granted and the money was finally released to buy the collection (F.C. do Val, pers. comm., 2015). The curatorship and arrangement of material was intensive. At the occasion, two employees were hired permanently – Ana Maria Vasques and Carlos Campaner – to process the entomological material, contact specialists to identify the groups and other activities linked to curatorship and supervision of four other temporary staff. As a consequence of the increase in size of the entomological collection, the MZSP needed to expand its structure to properly store the new material. New entomological cabinets, tables for processing the material, entomological drawers, humidity chambers and dryers were also acquired. Ubirajara R. Martins incorporated the Cerambycidae material to MZSP, while Cleide Costa, Sonia Casari, Carlos Campaner and Ana Maria Vasques were dealing with the other Coleoptera families. Nelson Papavero accommodated the material from other insect orders (especially Diptera and Hemiptera) with the help of Carlos Roberto F. Brandão and Eliana M. Canello. Throughout this operation, the MZSP staff also convinced the Dirings' family to donate his indigenous ethnographic collection to the *Museu Paulista da Universidade de São Paulo* and his entomological reference library to the MZSP (Fig. 6). The acquisition of the Dirings entomological collection was accompanied by his literature, which contained 297 volumes, 59 were reprints and 238 journals, mostly entomological, with a minor part of them devoted to natural history and agricultural interest. DS, the third author of this paper and librarian of the MZSP, organized this material in that time. Dirings was also very dedicated to his entomological library and most of his literature was organized in special book bindings (Fig. 7).

The size of Dirings' collection was probably underestimated. Dirings' collection was acquired by MZSP in the year of 1987 and it is still being incorporated into the main collection of MZSP (Pinto and Lamas, 2011). Despite the decades since the acquisition of the collection, the improvements in infrastructure, permanent employees and library material, Dirings' collection continues to provide valuable data and information of places that no longer exist as natural environments. The Dirings' collection is an important source of research material for students and researchers interested in the Neotropical fauna (e.g. Napp and Martins, 2006; Brailovsky and Barrera, 2009; Macedo, 2009; Pinto and Lamas,



Fig. 7. Ricardo Von Diringshofen Ex-Libris.

2011; Santos, 2012; Medeiros et al., 2014) from the MZSP and other institutions.

Conflicts of interest

The authors declare no conflicts of interest.

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Annex 1. Genera and species described by Ricardo Von Diringshofen

Genera

Hypsoprachis (Fonseca and Diringshofen, 1969)

Achantomedes (Fonseca and Diringshofen, 1974)

Species

Leioscyta hemacroma (Fonseca and Diringshofen, 1969)

Leioscyta similis (Fonseca and Diringshofen, 1969)

Erechtia foleata (Fonseca and Diringshofen, 1969)

Hypsoprachis tuberosa Fonseca (Fonseca and Diringshofen, 1969)

Spongophorus trilobosus (Fonseca and Diringshofen, 1969)

Hemikypta atrata Fonseca (Fonseca and Diringshofen, 1969)

Aspona gibosa Fonseca (Fonseca and Diringshofen, 1969)

Cyphotes quadridosus Fonseca (Fonseca and Diringshofen, 1969)

Alcmeone flavoestriata (Fonseca and Diringshofen, 1969)

Sundarium achantocornus (Fonseca and Diringshofen, 1969)

Achantomedes flavocephala (Fonseca and Diringshofen, 1974)

Achonophoroides orthosoma (Fonseca and Diringshofen, 1974)

Heteronotus sakakibarai (Fonseca and Diringshofen, 1974)

Alcmeone sinauta (Fonseca and Diringshofen, 1974)

Hypsoprora maculata (Fonseca and Diringshofen, 1974)

Annex 2. List of species described in honor of Ricardo von Diringshofen (Dirings).

- Acrtus diringshofeni* (Soares, 1970) (Coleoptera, Brentidae)
- Alphus diringsi* (Martins and Monné, 1993) (Coleoptera, Cerambycidae)
- Brontostoma diringshofeni* (Gil-Santana and Baena, 2009) (Hemiptera, Heteroptera, Reduviidae)
- Colaspis diringshofeni* (Bechyné and Bechyné, 1968) (Coleoptera, Chrysomelidae)
- Compsa diringshofeni* (Martins, 1960) (Coleoptera, Cerambycidae)
- Cycloramphus diringshofeni* (Bokermann, 1957) (Amphibia, Anura, Cycloramphidae)
- Deltochilum diringshofeni* (Pereira and Martinez, 1956) (Coleoptera, Scarabaeidae)
- Diplacaspis diringshofeni* (Bokermann, 1964) (Coleoptera, Chrysomelidae)
- Discoloma diringsi* (John, 1968) (Coleoptera, Discolomidae)
- Eugenysa diringshofeni* (Viana, 1968) (Coleoptera, Chrysomelidae)
- Fredlanella diringshofeni* (Lane, 1972) (Coleoptera, Cerambycidae)
- Hyphantus diringshofeni* (Soares and Scivittaro 1977) (Coleoptera, Curculionidae)
- Ischiocentra diringshofeni* (Lane, 1956) (Coleoptera, Cerambycidae)
- Oncideres diringsi* (Martins and Galileo, 1990) (Coleoptera, Cerambycidae)
- Otostigmus diringshofeni* (Bücherl, 1969) (Myriapoda, Chilopoda, Scolopendromorpha, Scolopendridae)
- Phenrica diringshofeni* (Scherer, 1960) (Coleoptera, Chrysomelidae)
- Potnia diringshofeni* (Creão-Duarte and Sakakibara, 1997) (Hemiptera, Membracidae)
- Proteramocerus diringshofeni* (Soares and Dias, 1971) (Coleoptera, Brentidae)

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