



João Barbosa Rodrigues: lore and practices

João Barbosa Rodrigues: a compilation of his remarkable trajectory as a scientist and main contributions to orchidology

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Abstract

The importance of Barbosa Rodrigues' works for science is indisputable and their impact on the knowledge of the orchid flora of Brazil deserves a special mention. Here we present a summary of the main contributions of Barbosa Rodrigues to Orchidaceae, the second largest botanical family in Brazil. We quantified the contribution of Barbosa Rodrigues to the current knowledge of the diversity of Orchidaceae by consulting three important botanical databases: Flora do Brasil (2020), International Plant Names Index (IPNI) and World Checklist of Selected Plant Families (WCSP). Of the taxonomic names proposed by Barbosa Rodrigues, 265 are currently accepted, corresponding to 11 genera, two subgenera, four sections, one subsection, 246 species and one variety. This survey indicates that Barbosa Rodrigues described about 9% of the Brazilian orchid species and is evidence of his great dedication and commitment to the orchid flora of Brazil. The attribution of the specific epithet *rodriguesii* to several species of orchids in honor to Barbosa Rodrigues expresses the recognition of academic peers and reinforces the grandeur of his role as an international scientist.

Key words: Brazilian flora, accepted species names, homage, orchids, science.

Resumo

A importância dos trabalhos de Barbosa Rodrigues para a ciência é indiscutível e seu impacto no conhecimento da flora orquidológica do Brasil merece destaque especial. Apresentamos aqui um resumo das principais contribuições de Barbosa Rodrigues para Orchidaceae, a segunda maior família botânica do Brasil. Nós quantificamos a contribuição de Barbosa Rodrigues para o conhecimento atual da diversidade de Orchidaceae, consultando três importantes bases de dados botânicas: Flora do Brasil 2020, International Plant Names Index (IPNI) e World Checklist of Selected Plant Families (WCSP). Dos nomes taxonômicos propostos por Barbosa Rodrigues, 265 são atualmente nomes aceitos, correspondendo a 11 gêneros, dois subgêneros, quatro seções, uma subseção, 246 espécies e uma variedade. Este levantamento indica que Barbosa Rodrigues descreveu cerca de 9% das espécies de orquídeas brasileiras e constitui uma evidência de sua grande dedicação e compromisso com a flora orquidológica do Brasil. A atribuição do epíteto específico *rodriguesii* a várias espécies de orquídeas em homenagem a Barbosa Rodrigues expressa o reconhecimento dos pares acadêmicos e reforça a grandiosidade de seu papel como cientista internacional.

Palavras-chave: flora brasileira, nomes aceitos de espécies, homenagem, orquídeas, ciência.

João Barbosa Rodrigues (1842–1909, Brazilian engineer, botanist and ethnographer) dedicated himself to drawing plants and conducting botanical and scientific research since his youth, especially encouraged by his master and patron, Guilherme Schüch de Capanema, the Baron of

Capanema (1824–1908, Brazilian naturalist, engineer and physicist) (Julianele 1997; Rodrigues 2012). Rodrigues graduated in Language arts in 1869 and later obtained the title of engineer from the Central School of Engineering (von Ihering 1911; Ormindo 2012). He also graduated

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in Economics and studied at Pedro II School, where, in 1866, after demonstrating an aptitude for drawing, he became a professor of this subject (von Ihering 1911; Rodrigues 2012). Rodrigues also often wrote poetry, literary works and notes for some newspapers of the time (Rodrigues 2012).

The interactions with naturalists and botanists such as Capanema, Custódio Alves Serrão (1799–1873, Brazilian friar and naturalist), Anders Fredrik Regnel (1807–1884, Swedish physician and botanist) and Francisco Cysneiros Freire Allemão (1797–1874, Brazilian physician and botanist) certainly sharpened Rodrigues' curiosity in relation to naturalist and scientific knowledge. Allemão's influence was particularly important for Rodrigues, as he took him on several botanical excursions around Rio de Janeiro (Rodrigues 2012). However, the relationship with the Baron of Capanema was a watershed in Rodrigues' life. Capanema spared no effort to support his pupil, doing everything in his power to encourage Rodrigues' career as a professional botanist. The Baron strongly believed in Barbosa Rodrigues' talent, fiercely confronting those he considered rivals and rivals of his *protégé* (Sá 2001).

In 1871, Rodrigues was commissioned by the imperial government to explore the Amazon (Ximenes & Coelho 2017). This expedition lasted just over three years and allowed Rodrigues to gather enough material to carry out a significant botanical study, especially on orchids (although his research on this topic began in 1869). However, many naturalists of the time, including the director of the Botany Section of the National Museum, Ladislau Netto (1838–1894, Brazilian botanist), viewed with suspicion and questioned the credibility of Rodrigues' works (Sá 2001). This disbelief made Rodrigues develop some rivals throughout his life (Rodrigues 2012).

Despite criticism from some botanists regarding the professionalism of his work, Barbosa Rodrigues developed vast scientific works. Rodrigues wrote texts and articles on palm trees, rivers, indigenous peoples, plants cultivated in the Rio de Janeiro Botanical Garden, and especially on his fieldwork in the Amazon. He also produced two volumes on orchids in Brazil (Rodrigues 1877, 1882).

Barbosa Rodrigues also collaborated with the journal *Revista de Horticultura* in 1876 and together with Capanema and Baptista Caetano de Almeida Nogueira (1826–1882, Brazilian linguist and mathematician) created the journal

Ensaio de Sciencia in 1876. When preparing this journal, in its introductory text, its creators claimed that: “The present publication is an essay without any pretension, with the sole purpose of gathering and taking advantage of works done in spare time, as a mere hobby [...]. [...] There can be something good in these *Ensaio*s, because they are observational studies, discrimination of confused or misinterpreted facts, and investigation of new ones. We accept the collaboration from other amateurs, but we refuse anything that is pure and simple reproduction of reading. In such conditions, it would be convenient to present the studies to a [...] circle of readers who could judge [them], since in Brazil the number of those who deal with such investigations is still very limited; this, however, would oblige us to write in a foreign language, and we would incur a serious fault which we have often censured; few are those who seek to root science in Brazil” (Rodrigues *et al.* 1876: vi).

This introductory text of *Ensaio de Sciencia* clearly demonstrates the intentions of its creators. It was a journal that sought to maintain an open channel for amateur researchers (possibly self-taught researchers like Barbosa Rodrigues himself), but who, above all, were scholars interested in presenting and discussing new discoveries focused on the Brazilian scientific field. Rodrigues *et al.* (1876) pointed out that the number of researchers and people seeking to develop science in Brazil was still exceedingly small.

Rodrigues (1876: 93) also emphasized that there was a branch that needed a “critical, severe and conscientious study [...]”, which was that of archaeology. When discussing the matter, the author increased the tone of his complaint by saying that for lack of adequate explorations, Brazilian people did not know their antiquities. What is more, they were losing their relics. The author stated that: “some [antiquities were] taken to Europe by amateurs and naturalists, others destroyed by careless and uneducated people, and most of them despised by the sertanejos who would find them. Hence the backwardness that we are living, the ignorance toward the uses and customs of our natives. If something appears, it is always taken from what some ancient authors left us written” (Rodrigues 1876: 93).

As we can see in the quote above, the lack of incentive for research by Brazilian institutions caused the loss of national material and cultural heritage. Rodrigues harshly criticized the lack of

support for scientific work, because it hindered the development of science in Brazil.

When examining his article, we noticed that Barbosa Rodrigues was a great enthusiast and defender of scientific knowledge, but also a researcher who valued and respected the native peoples of Brazil. During the years of his expedition to the Amazon, he pointed out that when he walked with pencil and notebook in hand, he not only drew what he saw, but also listened very carefully to everything that the inhabitants of the forest had to say to him. Rodrigues (1876: 94) claimed that “no matter how insignificant the finding was, it always gave rise to a study, a comparison and an analysis”.

After 13 years of efforts to be recognized as a researcher in botany, Rodrigues’ dedication to scientific development and research finally resulted in him being “invited to act as a professional in the area and to direct a scientific institution”: the Botanical Museum of Amazonas (Sá 2001). With the Proclamation of the Republic in Brazil, he was appointed director of the Botanical Garden of Rio de Janeiro in 1890, one of the most prestigious scientific institutions in Brazil at that time, and he held this position until the end of his days (Ormino 2012). For all that he did for science and research in Brazil, the naturalist, researcher and botanist João Barbosa Rodrigues received a tribute from a newspaper in Rio de Janeiro on the centenary of his birth, recognizing him as “one of the greatest Brazilian names of all time” (Anonymous 1942).

Contributions to orchidology

The importance of Barbosa Rodrigues’ works for science is indisputable, but their impact on the knowledge of the orchid flora of Brazil deserves a special mention. Next, we present a summary of the main contributions of Barbosa Rodrigues to Orchidaceae, the second largest botanical family in Brazil (BFG 2021).

We quantified the contribution of Barbosa Rodrigues to the current knowledge of the diversity of Orchidaceae by consulting three important botanical databases: Flora do Brasil (2020), International Plant Names Index (IPNI 2022), and World Checklist of Selected Plant Families (WCSP; 2022). Using the advanced search tools of these online databases, the results were filtered for the taxa of Orchidaceae described by Barb.Rodr. (standardized botanical abbreviation for Barbosa Rodrigues). A preliminary list was obtained from IPNI. Then, queries of accepted names were performed in WCSP, because synonyms

are highlighted in this platform. The taxa were organized by year of publication and the main works in which the names were published were compiled in a spreadsheet. Raw data were deposited as a supplemental digital Excel file in the Figshare repository (<<https://doi.org/10.6084/m9.figshare.19688866>>). We checked which names described by Barbosa Rodrigues are currently considered synonymous with accepted names. Complementarily, data on the distribution of the species in Brazil were obtained from Flora do Brasil (2020). Using the same search method, we also compiled the species described in honor of Barbosa Rodrigues, using the word *rodriguesii* in the search fields.

In total, 1,112 names created by Barbosa Rodrigues were found in IPNI, corresponding to 34 genera, three subgenera, four sections, one subsection, 1,020 species, two subspecies, 45 varieties, and three forms. Of these, 110 names were duplicates and were discarded.

A total of 1,002 names were effectively included in the analysis. Of these, 737 represent synonyms and 265 are currently accepted names. The accepted names correspond to 11 genera (*Anathallis* Barb.Rodr., *Capanemia* Barb.Rodr., *Centroglossa* Barb.Rodr., *Constantia* Barb.Rodr., *Cyanaeorchis* Barb.Rodr., *Isabelia* Barb.Rodr., *Orleanesia* Barb.Rodr., *Palmorchis* Barb.Rodr., *Platyrrhiza* Barb.Rodr., *Psilochilus* Barb.Rodr. and *Macroclinium* Barb.Rodr.), two subgenera [*Pleurothallis* subgen. *Pleurobotryum* (Barb. Rodr.) Luer, *Specklinia* subgen. *Hymenodanthae* (Barb.Rodr.) Karremans], four sections (*Octomeria* sect. *Planifoliae*, *Ornithocephalus* sect. *Iridifolius*, *Pleurothallis* sect. *Hymenodanthae*, *Stelis* sect. *Patuliflorae*), one subsection [*Pleurothallis* subsect. *Longicaulae* (Barb.Rodr.) Luer], 246 species, and one variety [*Encyclia patens* var. *serroniana* (Barb.Rodr.) Romanini & F.Barros]. The 11 genera, 246 of the species and the variety occur in Brazil. The 246 species occurring in Brazil are distributed in 65 genera, most of them in *Acianthera* Scheidw. (35 species), *Octomeria* R.Br. (23 spp.), *Habenaria* Willd. (19 spp.), *Pabstiella* Brieger & Senghas (18 spp.), *Maxillaria* Ruiz & Pav. (17 spp.), *Epidendrum* L. (15 spp.), *Anathallis* (12 spp.), *Bulbophyllum* Thouars (9 spp.), and in other 23 genera represented by 2–6 species each and 34 genera represented by only one species.

The authorship of 143 of the 246 species remains attributed exclusively to Barbosa Rodrigues. Of these, 57 were published in *Genera et species*

Orchidearum Novarum I (Rodrigues 1877), 77 in *Genera et species Orchidearum Novarum II* (Rodrigues 1882), seven in *Velosia: Contribuições do Museu Botânico do Amazonas* (Rodrigues 1891), and two names (*Octomeria palmyrabellae* Barb.Rodr. and *Selenipedium vanillocarpum* Barb.Rodr.) in the journal *Rodriguésia* (Rodrigues 1937 - published after his death, from recovered data; Fig. 1). Fifteen species of Orchidaceae were created in honor of Barbosa Rodrigues (some of them while he was still alive), described between 1893 and 2020, and the names of six of them are accepted according to WCSP. They are: *Acianthera rodriguesii* (Cogn.) Pridgeon & M.W.Chase, *Cleistes rodriguesii* (Cogn.) Campacci, *Dichaea rodriguesii* Pabst, *Habenaria rodriguesii* Cogn., *Maxillaria rodriguesii* Cogn., *Octomeria rodriguesii* Cogn., all occurring in Brazil.

Final remarks

Barbosa Rodrigues was authentic, innovative and a pioneer. He was able to use his qualities and skills, turning his actions into results. The numbers are expressive: Barbosa Rodrigues described about 9% of the orchid species of Brazil. This demonstrates his earnest dedication and commitment to the Brazilian orchid flora.

Barbosa Rodrigues was honored not only with the attribution of the specific epithet *rodriguesii* to several species of orchids but also honored with a journal with “his name”, the journal of the Rio de Janeiro Botanical Garden Research Institute, where he served as director for nearly two decades. The journal *Rodriguésia* had its first volume published in 1935 and since then has included dozens of articles on orchids and other botanical groups.

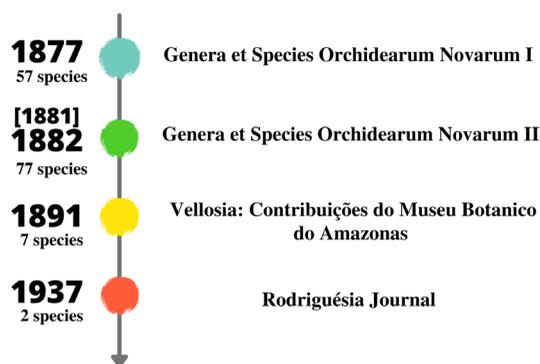


Figure 1 – The authorship of 143 species names created by Barbosa Rodrigues and published from 1877–1937 remains attributed exclusively to him.

These homages to Barbosa Rodrigues reinforce the recognition of his academic peers and highlight the grandeur of his role as an international scientist.

We are grateful to Lisi Dámaris Pereira Alvarenga for revising the English.

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Area Editor: Dr. Paulo José Guimarães

Received in February 24, 2022. Accepted in June 9, 2022.



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