

COMENTÁRIO

The maturation of Brazilian ornithology

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A recently compiled bibliography of scientific publications concerned exclusively, or mainly, with the birds of continental Brazil (Paynter and Traylor 1991, *Ornithological Gazetteer of Brazil*, Museum of Comparative Zoology, Harvard University), contains more than 1,500 titles. The requirements for inclusion in this bibliography were somewhat restrictive, resulting in the omission of papers containing information on Brazilian ornithology under other rubrics (e.g., in the avifaunas of other countries, in surveys of wide-ranging taxa, etc.), but the compilation is nonetheless a large and representative sample. It offers insights into trends and developments within Brazilian ornithology over the past three and a half centuries.

When the publications are tallied chronologically (table 1), it may be seen that from 1648 until the middle of the nineteenth century only 30 works were produced. From this time onward there was a gradual increase in the number of publications until the middle of the 1970s, when there was a spurt from an average of about 10-15 titles per year to nearly 25 annually. In the 1980s this rate more than doubled. The 69 publications so far recorded for the year 1990 probably portend another explosive leap in this decade.

It is apparent that much of the growth in the number of publications that began 15 years ago is attributable to a rapid increase in new researchers. In the half-decade periods 1965-1969, 1970-74, 1975-79, 1980-1984, and 1985-89, the number of first-time authors was 10, 16, 25, 67, and 91, respectively. The average number of papers produced by each individual in these cohorts ranged between 1.4 and 1.8, or less than one paper every other year. Interestingly, when the number of publications for each of the same half-decades is calculated for authors who had published at least once prior to the period under consideration, the figures are 6.7, 3.1, 4.9, 4.6, and 3.5, about double to quadruple the productivity of new authors.

The period from the mid-1970s onward was also marked by a proliferation of new bird publications. The journals *SOM* (Sociedade Ornitológica Mineira) and *O Charão* appeared in the 1970s. These were followed

by *Anais da Sociedade Sul-Riograndense de Ornitologia*, *Sulórnis*, *SOBoletim*, *Atobá*, and *Boletim CEO*, culminating with the issuance in 1990 of *Ararajuba*, the first refereed journal covering the entire nation. During this time there were also publications emanating from the new Centro de Estudos de Migrações de Aves (CEMAVE) and many abstracts resulting from the annual Encontro Nacional de Anilhadores de Aves (ENAV), which began in 1985.

The upswing in new journals in this period was not confined to ornithology but extended to other biological disciplines as well. Among the new journals of a broader scope, but which have published papers on birds, are *Revista Nordestina de Biologia*, *Sellóvia* (série zoologia), *Revista Brasileira de Zoologia*, *Natureza em Revista*, *Boletim de Zoologia Universidade de São Paulo*, *Roessleria*, *Acta Biologica Leopoldensia*, *Boletim do Museu Paraense Emílio Goeldi* (série zoologia), *Iheringia* (séries zoologia and miscelânea), *Lundiana*, etc. The 1980s also saw ornithologists participating in numbers in the annual Congresso Brasileiro de Zoologia, whose abstracts are now widely disseminated in printed form, doubtless stimulating the participants to publish in more detail elsewhere.

Beginning over 100 years ago, and lasting until about the mid-1970s, the uncrowded field of Brazilian ornithology was dominated by a succession of prominent authors, mainly of European birth. These early leaders, with the approximate dates of their peak activity as measured by the number of their publications, were: H. Ihering, 1887-1905; E.A. Goeldi, 1894-1905; C.E. Hellmayr, 1902-1915, 1929; E. Snethlage, 1906-1930; A. Miranda-Ribeiro, 1918-1938; E.M.B. Naumburg, 1928-1939; O.M. de O. Pinto, 1932-1978; A. Ruschi, 1944-1979; H. Sick, 1947-1985; F.C. Novaes, 1947-1982; and W.A. Voss, 1962-1984. The importance of their scientific contributions varied, of course, but their productivity gave them prominence. Interestingly, while some of the dates of greatest productivity overlapped among the distinguished earlier ornithologists, an examination of their publications usually leaves little doubt as to who was the dominant

authority at any given time. By the 1970s it was no longer possible to distinguish a single prominent ornithologist, as there were several productive authors on the scene at the same time, presaging the flood of recent researchers.

Brazilian ornithological research, as indicated by a tally of its publications, has until recently lagged far behind that of most other South American countries. For instance, Argentina, with only about one-third of the landmass and about one-quarter of the population of Brazil, had nearly 1,200 titles in its bibliography (Paynter 1985, *Ornithological Gazetteer of Argentina*, Museum of Comparative Zoology, Harvard University) by 1984, which is almost the same number as did Brazil in this same year. Even more strikingly productive is Chile, with both an area and population of only about nine percent of Brazil, which had at the end of 1987 a bibliography (Paynter 1988, *Ornithological Gazetteer of Chile*, Museum of Comparative Zoology, Harvard University) of about 900 titles, while Brazil had roughly 1,350 titles. The reasons for the disparities in productivity are obscure. Geography and accessibility certainly influenced early ornithological research but there are other reasons. In the case of Argentina, the existence of a national ornithological organization, Sociedad Ornitológica del Plata, since 1916, and its journal, *El Hornero*, from 1917, must have had a stimulating effect, but neither the organization nor the journal could have existed 75 years with an insufficient number of ornithologists offering support. Economic and sociological influences undoubtedly also contribute importantly to national differences, although these factors are difficult to document and to quantify. In very recent years these national disproportionalities have become increasingly blurred and the trend is for the quantity of ornithological research to become more nearly related to the size of the population.

Progress and changes in the focus of Brazilian ornithology are shown by shifts in the fields of research. For the first 300 years emphasis was on identifying the avifauna, closely followed by documenting its general distribution. This gave way, as the pace accelerated, to more regional faunistics and to taxonomic revisions. Finally, in recent decades, as would be expected in a maturing biological science building on the foundations prepared by earlier

generations, attention has been focused more narrowly on the behavior, idiosyncrasies of distribution, ecology, general biology, and conservation (and even economics) of related groups or individual species. Reductionism is proceeding rapidly and there is no single ornithologist today who may be described as *the* preeminent Brazilian ornithologist. But, as fragmentation proceeds, there is an increasing need for a cadre of researchers who have a breadth of perspective and who are able to act as synthesizers. Perhaps from among these will emerge the doyen of a mature Brazilian ornithology.

Table 1. Publications on the birds of Brazil, 1648-1990.

Date	Number
1648-1849	30
1850-1854	6
1855-1859	9
1860-1864	3
1865-1869	5
1870-1874	13
1875-1879	2
1880-1884	2
1885-1889	12
1890-1894	11
1895-1899	17
1900-1904	20
1905-1909	42
1910-1914	25
1915-1919	10
1920-1924	27
1925-1929	43
1930-1934	40
1935-1939	45
1940-1944	33
1945-1949	46
1950-1954	56
1955-1959	65
1960-1964	83
1965-1969	73
1970-1974	52
1975-1979	122
1980-1984	251
1985-1989	314
1990	69
Total	1,526