

[M. C. Lourenço, 2005. *Between two worlds: the distinct nature and contemporary significance of university museums and collections in Europe*. PhD dissertation, Conservatoire National des Arts et Métiers, Paris]

Appendix A11: Survey of *Cladistics* and *Systematic Biology*

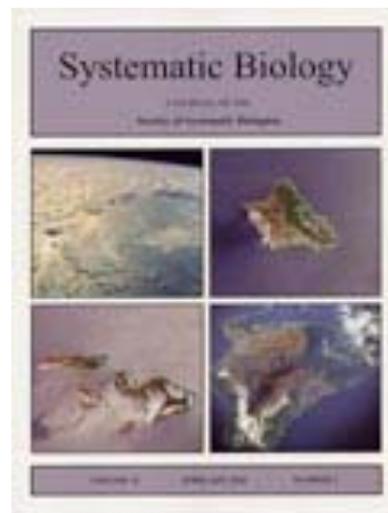
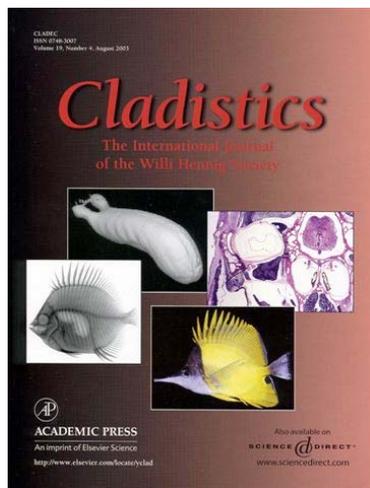
One of the most important criteria for research within any scientific community is the approval of peers through papers published in professional journals.

Are natural history museums publishing papers on systematics?

Are university museums of natural history publishing and, if so, which ones?

To obtain an insight in the frequency with which different institutions publish results of their research, a survey of three volumes of two renowned international journals in the field of systematics – *Cladistics* and *Systematic Biology* – was carried out.

Methodology simply involved listing the institutional provenance of authors of papers in each issue of the two journals published in the years 2000, 2001 and 2002. The content of papers was not considered. Only research papers were included, not reviews, letters, or editorials. The survey comprised a total of 147 articles in *Systematic Biology* and 72 articles in *Cladistics* (table A11.1).



Cladistics is the journal of the Willi Hennig Society and “publishes both empirical and conceptual papers on systematics, and encourages debate and other useful dialogue about systematic methods. It has wide scope and publishes papers in zoology, botany, morphology, molecular biology, ontogeny, biogeography, ecology and systematic philosophy”¹⁹⁷. *Cladistics*

¹⁹⁷ From the Editors’ website at <http://www.cladistics.org/journal/instructions.html>, accessed 10 September 2003.

was established in 1984. It published four issues per volume/year until 2001 and thereafter six issues per volume/year.

Systematic Biology is the journal of the Society of Systematic Biologists. It publishes "original theoretical or empirical studies that explore principles and/or methods of systematics. Systematics is considered broadly to include phylogenetic studies of biogeography, palaeontology, development, genes, and/or anatomical/cellular/molecular traits of taxa. Empirical papers chosen for publication are judged to be of interest to a broad systematics audience because they represent exemplary case studies involving some important contemporary issue or issues. These may be unusually thorough explorations of data, applications of new methodology, illustrations of fundamental principles, and/or investigations of interesting evolutionary questions¹⁹⁸". *Systematic Biology* was established in 1951 and in 2002 also increased its output from four to six issues per volume¹⁹⁹.

Systematic Biology			Cladistics		
Volume & Date	Issues	Number of Articles	Volume & Date	Issues	Number of Articles
51 (2002)	1	8	18 (2002)	1	5
	2	9		2	5
	3	7		3	6
	4	5		4	4
	5	10		5	4
	6	14		6	3
50 (2001)	1	15	17 (2001)	1	7
	2	9		2	3
	3	11		3	10
	4	19		4	6
49 (2000)	1	11	16 (2000)	1	4
	2	7		2	3
	3	12		3	5
	4	10		4	7
		147			72

Table A11.1 – *Cladistics* and *Systematic Biology*: volumes and issues surveyed.

Results

The results are in tune with the interdisciplinary and inter-institutional nature of science. The average number of authors per article was 2.3 (2.2 for *Cladistics* and 2.4 for *Systematic Biology*). Authors came from different institutions – universities, but also museums, national parks, conservation groups, and the industry. Authors from the academic world were predominant (table A11.2), but more came from university departments and institutes than

¹⁹⁸ From the Editor's website at <http://hydrodictyon.eeb.uconn.edu/systbiol/info/instrauth.html>, accessed 10 September 2003.

¹⁹⁹ The mere fact that both journals raised the number of issues per volume by 50% illustrates that not only is there research in systematics, but the volume of output is increasing.

from university museums. Note that the affiliation of an author does not necessarily imply that he or she did not do collection-based research, because in order to confirm this aspect the contents of each paper would need to be examined.

	Cladistics	Systematic Biology
Number of articles	72	147
Number of authors	158	360
Number of university authors (departments, institutes, museums)	105	287
Number of non-university authors (independent groups, parks, non- university museums, industry)	53	73

Table A11.2 – Number of articles, number of authors and affiliation (*Cladistics* and *Systematic Biology* 2000-2002).

The number of museum affiliated authors is detailed in table A11.3. The survey shows that:

- Researchers from museums are publishing, although they only represent 28% (147) of the total number of authors (518).
- More researchers from non-university museums (96 authors) published than from university museums (51 authors).
- The three museums outside higher education that contribute most in terms of number of authors are the American Museum of Natural History in New York (24), the National Museum of Natural History in Washington D.C. (16), and the Swedish Museum of Natural History in Stockholm (11 authors).
- The two museums inside higher education that contribute most in terms of number of authors are the Muséum national d'Histoire naturelle in Paris (7) and the Museum of Zoology at the University of Michigan Ann Arbor (7).
- Apart from the Muséum in Paris, two museums visited during this research – the Zoology Museum at the University of Cambridge and the University of Leiden Branch of the Dutch National Herbarium – appear on the list with significant contributions (particularly Cambridge), thus confirming my own observations that they were active in collection-based research.

Museums outside the higher education system	Cladistics	Systematic Biology	Total	'Worldwide' Position
Australian Museum	7	1	8	5
American Museum of Natural History,	18	6	24	1
Royal Ontario Museum	1	1	2	10
New York Botanical Garden	1	0	1	
Carnegie Museum of Natural History	1	3	4	8
South Australian Museum	1	0	1	
National Museum of Natural History USA	2	14	16	2
Field Museum	0	9	9	4
Herbarium (Smithsonian)	0	2	2	10
Buffalo Museum of Science	0	1	1	
Bermuda Natural History Museum	1	1	2	10
National Museum of Natural Sciences Madrid	1	0	1	
Swedish Museum of Natural History Stockholm	11	0	11	3
Natural History Museum London	1	5	6	7
Royal Botanical Garden Madrid	2	0	2	10
Kew Botanical Gardens	0	6	6	7
Total	47	49	96	
Higher education museums				
Museum of Biological Diversity (Ohio State University)	2	0	2	10
Ohio State University Herbarium	3	0	3	9
Museum of Zoology (Univ. of Michigan, Ann Arbor)	5	2	7	6
Dep. of Zoology & M.L.Bean Life Sciences Museum (Brigham Young University, Provo)	1	3	4	8
Sternberg Museum of Natural History (Fort Hays State University, Hays, Kansas)	1	0	1	
L.H. Bailey Hortorium (Cornell)	2	0	2	10
Museum Vertebrate Palaeontology (Berkeley)	0	4	4	8
Dep. Zoology & Burke Museum (Univ. Washington)	0	2	2	10
Museum of Comparative Zoology (Harvard)	0	3	3	9
Natural History Museum (Univ. of Colorado, Boulder)	0	1	1	
Red Path Museum & Department of Biology (McGill University, Montréal)	0	1	1	
Harvard Herbarium	0	2	2	10
Dep. Zoology & Texas Memorial Museum (University of Texas)	0	1	1	
Museo de Zoología (Facultad de Ciencias, Universidad Autónoma de Mexico)	0	1	1	
Georgia Southern Museum (Georgia Southern Univ.)	1	0	1	
Museum & Dep. of Zoology (Michigan State Univ)	0	1	1	
Muséum National d'Histoire Naturelle Paris	7	0	7	6
Nationaal Herbarium Nederland (Leiden branch)	1	0	1	
Botanical Garden (University of Valencia)	1	0	1	
Museum of Zoology Cambridge	0	2	2	10
Zoologisches Institut & Museum (University of Hamburg)	0	1	1	
Botanical Garden (University of Lausanne)	0	1	1	
Botanical Garden (University of Hamburg)	0	1	1	
Zoological Museum (University of Copenhagen)	0	1	1	
Total	24	27	51	
Total of museum authors	71	76	147	

Table A12.3 – Number of authors from museums outside and within the higher education system. European institutions are given in bold. In the right column, the relative position (1-10 only) of each institution in terms of number of contributing authors (*Cladistics* and *Systematic Biology* 2000-2002).

This survey does not allow for far-reaching conclusions about the course of collection-based research in natural history museums. It is too limited and there is no indication about the substance of research published.

Size of collections is important, but not proportionately in relation to the number of contributing authors. Obviously, large museums have more researchers and therefore are likely to publish more. The number of relatively small museums – including university museums – that are almost on a par with the largest and better staffed collections in the world seems significant. Further research is necessary to determine in what ways this may be relevant.

There is a predominance of American museums (university and non-university) compared to European ones. To most professionals, this will hardly come as a surprise. When I interviewed the Director of the Botanical Garden of the University of Lisbon, he said: “Today, the biggest worldwide expert on Portuguese flora is from the USA. The last major Portuguese botanist has been dead for some decades” (F. Catarino, interview 12 April 2000).

Certainly, it would be interesting to expand this survey, taking these aspects into consideration and also comprising geology, anthropology, archaeology, history of science and medicine and other scientific journals.

