

The demise of Coelenterata and Madreporaria

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Names of groups of organisms in the higher categories are being changed rather often, even when there is no need for it. This is allowed because the codes of nomenclature do not apply to group names above the family level. Regrettably this may lead to long periods of confusion. Examples are Coelenterata for which the new name Cnidaria was proposed in 1888 and Madreporaria for which the new name Scleractinia was proposed in 1900. The gradual replacement of the old names by the new names in scientific papers during the last 50 years was analyzed. The name Madreporaria virtually disappeared during this period and the name Coelenterata is now being used in only about 10% of scientific papers and had better be abandoned as well.

Introduction

Taxonomists regularly invent new names for organisms and groups of organisms, mostly for good reasons but often needlessly. In the early part of the 19th century this led to a confusion of names and the need to achieve universality of names and a greater stability became apparent. Therefore since about 1840 several attempts were made to regulate the botanical and zoological nomenclature until the present International Code of Zoological Nomenclature (1999) and the similar code of botanical nomenclature. Nowadays there are rather strict rules for conduct in nomenclatorial matters. In principle names of species and groups cannot easily be changed anymore. However, these codes do not cover the whole field of nomenclature. Thus there is still no guarantee for stability and indeed many changes occur. In the first place species names (binomina) change when a species is placed in another genus or when a genus is split up. This is being done regularly, to the dislike of the user community. Quite often the desire to subdivide can equally well be satisfied by the use of subgenera. In the second place the codes only refer to the use of species group, genus group and family group names. There is no code of conduct for the use of names in higher categories and consequently the confusion in this field is still not much less than 150 years ago.

In this paper the replacement of the phylum name Coelenterata and the order name Madreporaria is described as a case history.

History

The name Coelenterata was introduced by Leuckart (1847) and Frey & Leuckart (1847). This group included the sponges and the ctenophores. It was split into three phyla: Spongiaria, Cnidaria and Ctenophora by Hatschek (1888). This was the start of the replacement of the name Coelenterata by Cnidaria. For a long time this was not gen-

Table 1. Counts of names in titles of publications

	Coelenterata		Cnidaria	
	n	%	n	%
1951-1958	53	90	6	10
1970-1973	72	69	33	31
1978-1984	258	59	181	41
1985-1992	183	36	321	64
1993-1998	83	19	360	81
1999-2002	32	12	240	88

	Madreporaria		Scleractinia	
	n	%	n	%
1951-1958	21	78	6	22
1970-1973	16	33	33	67
1978-1984	32	14	189	86
1985-1992	27	10	232	90
1993-1998	10	4	244	96
1999-2002	5	3	156	97

erally accepted. In her very influential textbook Hyman (1940, p. 365) commented, referring to Hatschek: "We therefore consider Cnidaria to be the most suitable name for the phylum, but the word coelenterates is useful and will be frequently employed. Zoologists who retain the combination of coelenterates and ctenophores call the phylum Coelenterata, subdividing it into Cnidaria for the coelenterates proper and Acnidaria for the ctenophores. We here regard the Ctenophora as a separate phylum". This may have led to the ultimate demise of Coelenterata and the general acceptance of coelenterates as a vernacular name. The fact that the name Cnidaria cannot be pronounced easily in the right way by English speaking people may have played a role as well.

Another example is the name for the group of stony corals. The first special name for the group, Madreporaria, was introduced by Milne-Edwards & Haime (1857). Because the group as defined by these authors still included species that do not belong there (e.g. hydrocorals), Bourne (1900) introduced a new name, Scleractinia (also written as Scleractinea and later as Scleractinia). This act was of course totally unnecessary and therefore not generally followed. Hyman (1940) did not yet use the new name. I have a feeling that the very influential Treatise on Invertebrate Paleontology (Bayer et al., 1956) has been of crucial importance for the victory of Scleractinia. It is remarkable though that the use of Madreporaria has been for a long time more common among paleontologists than among biologists.

I made a more detailed analyses of the history of these replacements during the last fifty years.

Methods and results

The Zoological Record is the best tool to study the use of scientific names among zoologists. The editors at Biosis have a quite conservative attitude towards the nomenclature of the higher taxa, which I appreciate. When you search for Coelenterata in the electronic version (1978 to September 2002) you get 17,858 hits, whereas Cnidaria gives

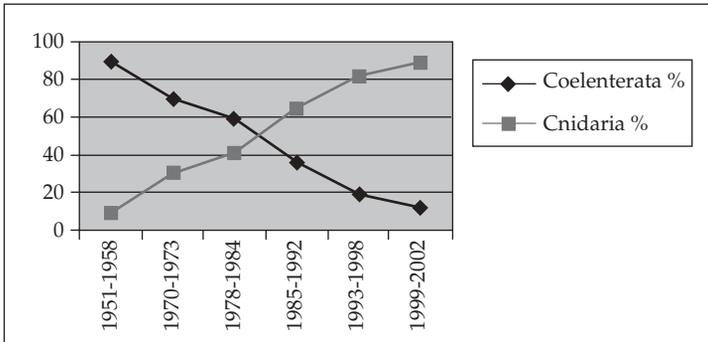


Fig. 1. Replacement of Coelenterata by Cnidaria in the period of 1951 to 2002

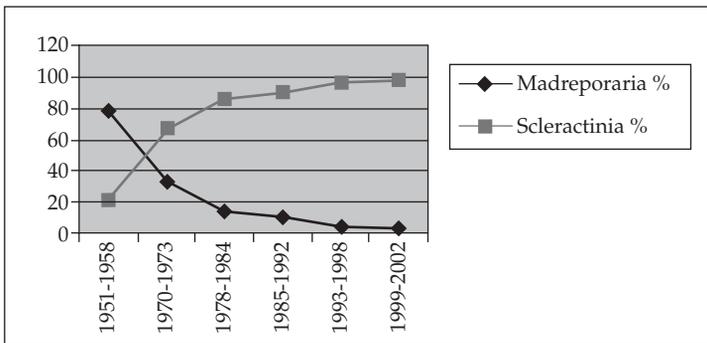


Fig. 2. Replacement of Madreporaria by Scleractinia in the period of 1951 to 2002

only 1,437 hits. Similarly coelenterates and cnidarians get 17,645 and 117 hits. Evidently this does not give a good impression of the present use of these names among experts. A Google search on the internet results for Coelenterata in 5,170 hits and for Cnidaria 20,300 hits which is better but still not yet quite representative.

The victory of Scleractinia over Madreporaria was more rapid as is also evident from the two search engines. The Zoological Record gives only 20 hits for Madreporaria and 3,822 for Scleractinia. A Google search gives a somewhat different outcome: Madreporaria 571 hits and Scleractinia 3,080 hits.

In order to determine the use of the names by experts over the years I counted the occurrence in the titles of scientific papers published in six somewhat arbitrarily chosen periods from the 1950's to present. I counted the names Coelenterata (including Coelenterés, Coelenterates and similar words in national languages), Cnidaria (including Cnidarios, Cnidaires, Cnidari, Cnidarians, etc.), Madreporaria (including Madreporaires, Madrepori, Madreporarios, Madreporarians, etc.) and Scleractinia (including Scleractinians, Scleractinaires, etc.). Such counts can give a good representation of the use of names of higher categories because, in particular since the 1960's, it has become common practice to include such names in the titles of scientific papers.

The results are given in Table 1 and in figs 1-2. They show that the name Coelen-

terata, still dominant in the 1950's, was only gradually replaced by Cnidaria and presently it is still being used in about 10% of the scientific papers. The name Madreporaria, also still dominant in the 1950's, was more rapidly replaced by Scleractinia and its use has virtually disappeared now.

It is remarkable that the trends shown here seem to be independent of the region or country of the authors or the language used. I did not make exact counts from this perspective, but I am sure there are no evident differences. As I mentioned earlier the use of Madreporaria has been for a long time more common among paleontologists than among biologists. For Coelenterata there is no evident difference between disciplines.

Conclusions

I advise the scientific and user communities (and the editors of the Zoological Record) to abandon the name Coelenterata altogether, not because this is right but because it has evidently been beaten by Cnidaria. Further confusion should be avoided. The use of Madreporaria is no problem anymore.

As is shown by these two examples the unnecessary replacement of names may lead to very long periods of confusion, in these cases over a hundred years. In both instances the replacement originated from the splitting up of groups. Confusion would have been avoided if the original names had been retained for the most important groups, the coelenterates (s. str.) and the stony corals (s. str.) in this case. In my opinion for names of higher categories the same rules should be applied as for family and genus group names, where after a split-up the original is always being retained. This undoubtedly will foster stability of nomenclature, particularly because splitting almost always is between a large and a small sub-group.

Regrettably my plea for reservedness is still warranted. Far too many needless replacement names have been proposed in recent years. Cavalier-Smith (1998) is undoubtedly the champion in this respect, with more than 50 new higher taxa in one rather small paper, including orders, classes, phyla etc. Results of cladistic analyses and DNA studies tend to lead to confusion from a nomenclatorial point of view, mostly unnecessary. Kinman (1994) proposed 33 new orders, classes and phyla in a "cladisto-eclectic" system.

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