CLYTIA LAMOUROUX, 1812, LAOMEDA LAMOUROUX, 1812, AND CAMPANULARIA LAMARCK, 1816 (COELENTERATA, HYDROIDA): PROPOSED DESIGNATIONS OF TYPE SPECIES BY USE OF THE PLENARY POWERS, AND COMMENTS ON RELATED GENERA. Z.N.(S.)2326.

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1. Introduction
The marine hydroid family CAMPANULARIIDAE includes several intertidal and offshore genera widely known among biologists. One of these, Obelia Péron & Lesueur, 1810, p. 355, although originally based on the medusa stage, has become the best known of any genus of colonial hydroid; but the closely related Laomedea Lamouroux, 1812, p. 184, and Campanularia Lamarck, 1816, p. 112, are also well known. Another familiar genus in this family is Clytia Lamouroux, 1812, p. 184. There are long-standing nomenclatural problems concerning all these genera and some of the species in them. Campanularia and Laomedea have been confused by many authors, and some have used Obelia in place of Laomedea. Since the genera are comparatively well known the need for stability is pressing, but there is confusion also over the type species of these genera. The purpose of this paper is to propose designations of type species under the plenary powers of the Commission where necessary, to stabilise the generic nomenclature in this family. The proposals follow a world-wide generic revision of the family in which the need for the use of these powers has been made apparent (Cornelius, in prep.).

2. Laomedea and Obelia
2. The widely used genus name Laomedea Lamouroux, 1812, p. 184 (Coeelenterata, Hydroida, CAMPANULARIIDAE), is a junior subjective synonym of another well known name, Obelia Péron & Lesueur, 1810, p. 355 (Cornelius 1975, pp. 253-254), and under the Code should not be used. But the genus to which the name Laomedea has been applied is found on the shores of all continents except Antarctica. Application of the Code would lead to Laomedea being dropped, and this would cause confusion.

3. The following references establish a prima facie case for the conservation of Laomedea under the provisions of Article 23. Each is an important work in which Laomedea was used as a valid name: Kramp, 1935, 1938; Vervoort, 1946; Leloup, 1952; Buchanan, 1957; Hamond, 1957; Marine Biological Association,
4. Conservation of the name Laomedea can be conveniently achieved by designating as type species a species not originally included, so that there will no longer be any question of synonymy with the older name Obelia. The two species originally included in Laomedea were Sertularia dichotoma Linnaeus, 1758, p. 812 (now universally assigned to the 'medusa genus' Obelia) and S. spinosa Linnaeus, 1758, p. 812 (now assigned to the bryozoan genus Vesicularia Thompson, 1830, pp. 89, 97; e.g. Prenant & Bobin, 1956, p. 276); and neither could usefully be designated type species. Therefore, I propose that Laomedea flexuosa Alder, 1857, p. 122, a species not originally included, be designated type species of the genus Laomedea Lamouroux, 1812, by use of the plenary powers (paragraph 28). I define that genus as follows (after Cornelius, in prep.): colonial CAMPANULARIIDAE with: polyp generation forming upright colonies; stolon branching but not anastomosing; no hydrothecal spherule; true diaphragm present; hydranth with well developed hypostome; gonotheca aperture typically circular, wide; gonophores sessile, interpreted as vestigial medusae in species which have been closely studied.

5. It should be noted in passing that Broch (1905, p. 10) proposed that Laomedea loveni Allman, 1859, p. 138, should be type species of Laomedea; but loveni was not originally included. The valid species loveni has been widely referred to the genus Gonothyraea Allman, 1864, p. 374, a practice which seems biologically sound. Hence the Commission is not asked to ratify Broch's invalid designation.

3. Campanularia, Orthopyxis and Rhizocaulus

6. The well known genus name Campanularia Lamarck, 1816, p. 112, also presents problems which need action under the plenary powers. Campanularia had no type species validly designated until Nutting (1915, p. 28) selected Sertularia verticillata Linnaeus, 1758, p. 811. Naumov, 1960, p. 249 (repeated in translation in Naumov, 1969, p. 269) later designated S. volubilis Linnaeus, 1758, p. 811, as type species and Millard, 1966, p. 477 and Millard, 1975, p. 203, concurred; but Nutting's designation of verticillata has priority. However, there are difficulties resulting from Nutting's overlooked designation. The species verticillata stands out from the others in the genus Campanularia s. str. and some authors have removed it to its own genus. I agree with this action (Cornelius, in prep.).

7. Stechow, 1919, was the first to propose a genus to accommodate S. verticillata (and some dubious species similar in colony habit which he listed). For this genus he introduced the name Rhizocaulus Stechow, 1919, p. 852, type species Sertularia
verticillata Linnaeus, 1758, by original designation. It is proposed to retain the name Rhizocaulus, by setting aside Nutting's designation (paragraph 28).

8. Application of the Code would restrict Campanularia to verticillata and the few similar nominal species listed by Stechow, 1919, and Naumov, 1960, 1969. The familiar intertidal and shallow water species usually referred to Campanularia would need a new genus name. Since no familiar name is available confusion would be inevitable, so long as the generic separation of verticillata were upheld.

9. A second genus was later established to accommodate S. verticillata and one other species, namely Verticillina Naumov, 1960, pp. 9, 115, 122, 269 (also in translation in Naumov, 1969, pp. 6, 115, 123, 291); type species Sertularia verticillata Linnaeus, 1758, p. 811, by original designation. Although more pleasing than Rhizocaulus, the name Verticillina is clearly a junior objective synonym of Rhizocaulus since it has the same type species, and regretfully it should not be used.

10. It should again be noted in passing that Broch, 1905, p. 10, designated 'Campanularia calyculata Hincks, 1853', p. 178 (lapsus for caliculata) as type species of Campanularia, but caliculata was not among the originally included species. The species C. caliculata is currently referred to the genus Orthopyxis J.L.R. Agassiz, 1862, pp. 297, 355 (type species by monotypy Clytia (Orthopyxis) poterium J.L.R. Agassiz, 1862, p. 297, subjectively regarded as conspecific with caliculata by Cornelius, in prep., and by others listed therein). Orthopyxis was introduced by Agassiz, 1862, as a subgenus of Clytia on page 297 of his work, including the 'new' species poterium alone; but on page 355 he upgraded Orthopyxis to genus. [Although employing the combination Clytia poterium in the 'Explanation of the plates' following page 380 of the main text, in the captions of plates 28 and 29 therein; and the lapsus Clythia poterium on the plates themselves. Nevertheless, the name Orthopyxis was validly introduced.] On page 355 of the work Agassiz, 1862, implicitly used the combinations 'Orthopyxis (Orthopyxis) poterium', 'Orthopyxis (Campanularia) volubiliformis' and 'Orthopyxis (Laomedea) integra' of various authors). Thus poterium can rightly be regarded as type species by monotypy of the subgenus Orthopyxis Agassiz and of the genus Orthopyxis Agassiz.

11. There is some debate about whether Orthopyxis s. str. and Campanularia s. str. should be taken as one genus or two. Millard, 1975, combined them; but Ralph, 1957, and Cornelius, in prep., have upheld a separation. If the two genera are regarded as distinct, then I believe none would doubt that caliculata would
ideally go into Orthopyxis, and not into Campanularia. Hence Broch's, 1905, invalid designation of 'calyculata' as type species of Campanularia would, if accepted, prove confusing. A new genus name would have to be found for Campanularia auctorum. No familiar name is available, and the Commission is not asked to ratify Broch's invalid proposal.

12. I therefore propose that Sertularia volubilis Linnaeus, 1758, p. 811, should be designated as type species of Campanularia by use of the plenary powers. Campanularia could then still be used sens. auct.; and the species S. verticillata would become known as Rhizocaulus verticillatus, which is taxonomically acceptable.

13. The remaining species once assigned to Campanularia in the sense of, for example, Hincks, 1868, and Bedot, 1901–1925, would have to be placed in other genera, in keeping with some previous opinions. These genera would be: Laomedea Lamouroux, 1812 (as defined here); the acceptable genus Hartlaubella Poche, 1914, p. 76 (to accommodate Sertularia gelatinosa Pallas, 1766, p. 116, alone; discussion in Cornelius, in prep.); and the unacceptable Paracalix Stechow, 1923a, p. 3, which under the Code is available to receive the remainder.

14. The name Paracalix has not been used since it was introduced. The type species of Paracalix, namely Campanularia pulcratheca Mulder & Trebilcock, 1914, p. 11 (by monotypy), was based on a deformed specimen of Campanularia sp., possibly C. volubilis (Linnaeus, 1758); so that there are strong subjective grounds for regarding Paracalix and Campanularia as congeneric. Unless the name Campanularia were given the meaning proposed here (paragraphs 6–16, 28) Paracalix would replace Campanularia, to the detriment of established usage. But designating C. volubilis (Linnaeus, 1758) as type species of Campanularia would make Paracalix a very safe junior subjective synonym of Campanularia, and the problem would be resolved. It seems unlikely that the type species of Paracalix would ever again be regarded as a valid species by a serious worker. But if it were, then if necessary it could be removed to the genus Paracalix without affecting the stability of the name Campanularia.

15. If the rules were applied and the genus name Campanularia were restricted to the large, upright-growing species Sertularia verticillata Linnaeus, 1758, and the few closely allied species taxa listed in Stechow, 1919, and Naumov, 1960, 1969, then Campanularia would no longer be available for the remainder of the genus sens. auct.; that is for the small, stoloniferous species with which the name is usually associated. This would cause confusion among a wide variety of biologists ranging from advanced course students and their teachers to developmental physiologists,
ecologists and others engaged in research. Conservation of the existing widespread use (but not necessarily the sense) of *Campanularia*, and stability, would be achieved by setting aside Nutting’s designation of *S. verticillata* Linnaeus, 1758, as type species of *Campanularia*; and admitting Naumov’s (1960) designation of *S. volubilis* Linnaeus, 1758. I define the genus *Campanularia* as follows (after Cornelius, in prep.): stoloniferous and colonial CAMPANULARIIDAE, stolon not anastomosing; hydrothecae borne on pedicels inserted on the stolon at irregular intervals; sub-hydrothecal spherule present; hydrothecal diaphragm absent; no medusa stage. This definition expressly excludes the genus *Orthopyxis* J.L.R. Agassiz, 1862, pp. 297, 355, as redefined by Ralph, 1957, p. 834, and by Cornelius, in prep. But it happens that the species of *Orthopyxis* do not impinge on the immediate discussion.

16. It should be stressed that the proposed type species of *Campanularia* Lamarck, 1816, is *Sertularia volubilis* Linnaeus, 1758 (=*C. volubilis* sens. auct., e.g. Hincks, 1868) and not *S. volubilis* sens. Ellis & Solander, 1786, p. 51 (usually subjectively referred to *Clytia hemisphaerica* (Linnaeus, 1767); details in Millard, 1966, p. 477 and Cornelius, in prep.). This point is particularly important since ‘*Sertularia volubilis* Ellis & Solander’ was designated as type species of the genus *Clytia* Lamouroux, 1812, p. 184, by Mayer, 1910, p. 262. Since this is not the same as *S. volubilis* Linnaeus, 1758, *Clytia* is a genus based on a misidentified type species. Under Article 70a(i) the Commission is invited to use its plenary powers to designate the species that Ellis & Solander had before them, namely, *Campanularia johnstoni* Alder, 1856a, p. 359, as type species of the genus *Clytia* Lamouroux, 1812. The reasons are as follows. Ellis & Solander included among their indications of *S. volubilis* an illustration with a binominal name, that is to say *Sertularia uniflora* Ellis, 1768, pl. 19, fig. 9 (there being no related text). The Ellis, 1768, engraving was that used in the later, Ellis & Solander work so that the two names are objectively linked. However, the combination *Sertularia uniflora* had been used still earlier, by Pallas, 1766, p. 121, and Ellis’s usage was homonymous. [The Pallas species was in fact a junior objective synonym of *S. volubilis* Linnaeus, 1758 — the other species; details in Cornelius, in prep.] The earliest unpreoccupied name which it is possible to link unequivocally with *S. uniflora* sens. Ellis, 1768, is *Campanularia johnstoni* Alder, 1856a, pp. 359-360, pl. 13, fig. 8. Alder in his text related *johnstoni* to the illustration of Ellis & Solander, 1786. The type species of the genus *Clytia* Lamouroux, 1812, should, therefore, be known as *Clytia johnstoni* (Alder, 1856a). Most authors have taken *C. johnstoni* to be subjectively conspecific with
**Medusa hemisphaerica** Linnaeus, 1767 (=*Clydia hemisphaerica* auct.); but the two are respectively hydroid and medusa stages in a genus with many unsolved taxonomic problems and there are still some doubts that they represent the same species (discussion in Cornelius, in prep.).

17. Lamouroux, 1812, originally included three species in *Clydia*, cited as 'Sertularia volubilis Ell.', 'S. syringa Ell.' and 'S. verticillata Ell.'. The references must be to Ellis & Solander, 1786, and not to Ellis, 1755, since binominal names occur only in the later work. The nominal species concerned, as it happens, were all included in Linnaeus, 1758.

18. Although the name *Medusa hemisphaerica* Linnaeus, 1767, has been attributed to Gronovius 1760, p. 38, by some authors his usage was not strictly binominal (Millard, 1966, p. 477). Similarly, Bedot's implication (1901, p. 486) that Houttuyn, 1770, p. 423, might have introduced the name *hemisphaerica* so early as 1761, is misleading. Houttuyn did not use the words 'Medusa hemisphaerica' in a binominal sense; and the volume in which they appeared was dated 1770, conveniently following most of the other early works in question.

19. Lastly, *Medusa hemisphaerica* Linnaeus, 1767, is type species of the genus *Thaumantias* Eschscholtz, 1829, p. 102 (designated by Forbes, 1848, p. 41). *Thaumantias* is hence a junior subjective synonym of *Clydia*. The name *Thaumantias* was once widely used but no longer finds a place in standard works (e.g. Kramp, 1961). The subjective synonymy of *hemisphaerica* with the type species of *Clydia* [namely *C. johnstoni* (Alder, 185a; see paragraph 16)] is so strong as to make unlikely the future resurrection of *Thaumantias*. Even if the two species were recognized it is most improbable that they would be placed in separate genera.

4. Other names

20. If the present proposals are adopted certain unfamiliar genus and subgenus names will fall, to the advantage of hydroid nomenclature.

21. The genus *Campalaria* Hartlaub, 1897, p. 449, was introduced to embrace solely the nominal species *Campalaria conferta* Hartlaub, 1897. The name *Campalaria* has apparently been used only once since its introduction, by Hamond, 1957, p. 315, in the combination *Laomedea (Campalaria) conferta*. The species, itself now regarded as invalid (Cornelius, in prep.), falls within the generic diagnosis given for *Laomedea* in paragraph 4; and if the proposals in paragraph 28 are accepted, the genus name *Campalaria* will be regarded as a junior subjective synonym of *Laomedea* as here understood. If the proposals are not accepted,
then *Campalaria* would have to replace *Laomedea*, to the detriment of established usage.

22. The subgenus *Eulaomedea* Broch, 1910, p. 189, has as type species *Laomedea flexuosa* Alder, 1857, p. 122, by monotypy. The name would fall as a junior objective synonym of *Laomedea*. Stechow, 1923b, p. 95, referred *Eulaomedea* to *Laomedea*, not recognizing the subgenus, a course with which I agree. But Splettstösser, 1924, p. 424, and Hummelinck, 1936, pp. 51, 57, interpreted the subgenus *Eulaomedea* widely, that is in the sense in which the authors listed in paragraph 3 understood the genus *Laomedea*. The genus name *Laomedea* was applied by Broch, 1910, 1928, Splettstösser, 1924, and Hummelinck, 1936, to a large group of species comprising, they said, three subgenera: *Eulaomedea (=Laomedea s. str.), Obelia* Péron & Lesueur, 1810, and *Gonothyraea* Allman, 1864. But the great majority of authors have used *Laomedea* in the narrow sense and regarded it and *Obelia* and *Gonothyraea* as full genera.

23. Apart from subgeneric use without comment by Vervoort, 1946, pp. 284–285, also Vervoort, 1959, p. 316, the name *Eulaomedea* was not used again until Rees & Thursfield, 1965, p. 101, employed it as a genus name, but likewise without proper explanation. Rees wrote: ‘The reason for adopting *Eulaomedea* in preference to *Laomedea* will be discussed elsewhere; it is sufficient here to state that the type species of *Laomedea* is a true *Obelia* producing [a] medusa’; indicating that he had realized the synonymy between *Obelia* and *Laomedea* mentioned in paragraph 2. The only other use of *Eulaomedea* of which I am aware was by Millard, 1975, p. 223, who did not comment on the nomenclatural problems and who used the name in the sense of *Laomedea* as understood here. Reversing my previous opinion (Cornelius, 1975, pp. 253–254) I recommend conserving the name *Laomedea* s. str. Although *Eulaomedea* is available under the Code it has hardly been used. In any case, the oldest available name for the genus under discussion would be *Campalaria* (see paragraph 21), not *Eulaomedea*.

24. The subgenus *Paralaomedea* was apparently introduced by Broch, 1928, p. 74, as *Laomedea (Paralaomedea)*. The taxon was actually first proposed and defined by Splettstösser, 1924, pp. 424–425, but given neither formal subgeneric rank nor a name. Broch, 1928, gave it both, applying the new name *Paralaomedea*. The subgenus has always included only the species *Laomedea neglecta* Alder, 1856b, p. 440, pl. 16, figs 1–2, which is type species by monotypy. Hummelinck, 1936, p. 51, and Vervoort, 1946, p. 285, followed Broch’s usage, Vervoort only in his key to species; but the name seems otherwise unused. I have concurred
(Cornelius, in prep.) with these authors that there might be a case for referring the species *neglecta* to a supra-specific taxon distinct from other species of *Laomedea*, on the basis of its reproductive structures. But the acknowledged medusoid nature of the female gonophore of *neglecta*, described by Splettstösser, 1924, suggests that there are not good grounds for a separation. But if a separation were upheld the name *Paralaomedea* would be both available and acceptable taxonomically. Meanwhile, and subject to the present proposals being accepted, I regard the subgenus *Paralaomedea* as a junior subjective synonym of the genus name *Laomedea*.

25. Broch, 1910, p. 184, and Broch, 1928, p. 73, referred all CAMPANULARIIDAE lacking a hydrothecal diaphragm to the genus *Campanularia* Lamarck, 1816. He recognized two subgenera: *Clytia* Lamouroux, 1812, in which medusa release occurred; and *Eucampanularia* Broch, 1910, p. 184, in which the gonophore was sessile (i.e. in which the medusa was retained and vestigial). Hummelinck, 1936, p. 49-50, and Vervoort, 1946, pp. 268-269, followed Broch's, 1910, usage. But all subsequent workers have understood the genus *Campanularia* in the more restricted sense, equivalent to Broch's subgenus *Eucampanularia*; and have reinstated *Clytia* to full genus status. The subgeneric name *Eucampanularia* has apparently not been used again. The genera *Clytia* and *Campanularia* s. str. (=Broch's *Eucampanularia*) have been widely regarded as distinct, and there seems no value to classification in following Broch (1910, 1928) in uniting them as subgenera of a single genus. Further, his action was nomenclaturally invalid since it is logically untenable to treat *Clytia* Lamouroux, 1812, as a subgenus of the younger genus *Campanularia* Lamarck, 1816.

26. The species *Sertularia volubilis* Linnaeus, 1758, p. 811, has been designated type species of *Eucampanularia* Broch, 1910 (by Cornelius, in prep.). If the present proposal is adopted, that *volubilis* should become type species of *Campanularia* Lamarck, 1816, then the subgenus name *Eucampanularia* Broch, 1910, would fall in the objective synonymy of the genus name *Campanularia* Lamarck, 1816 (see paragraph 28).

27. Some names derived from *Campanularia* and *Laomedea* are considered as unjustified emendations or incorrect subsequent spellings (Cornelius, in prep.), and hence as invalid or not available: *Campanula* Westendorp, 1843, p. 23; *Laomedea* Dana, 1846, p. 689; *Campanulata* J.L.R. Agassiz, 1862, p. 354; *Clytea* Wright, 1862, p. 308; *Clythia* J.L.R. Agassiz, 1862, pl. 28; *Clythia* van Beneden, 1866, p. 166; *Campanularia* Mulder & Trebilcock, 1914, p. 11; *Laomedia* Nutting, 1915, p. 123; *Eulaomeda* Rees & Thursfield, 1965, p. 102.
5. Proposals

28. To preserve the established use of the genus names Laomedea Lamouroux, 1812, and Campanularia Lamarck, 1816, the Commission is therefore requested:

(1) to use its plenary powers:
   (a) to set aside all designations of type species hitherto made for the nominal genus Laomedea Lamouroux, 1812, and having done so to designate the nominal species Laomedea flexuosa Alder, 1857, as type species of that genus;
   (b) to set aside all designations of type species for the nominal genus Campanularia Lamarck, 1816, other than that of Sertularia volubilis Linnaeus, 1758, by Naumov, 1960;
   (c) to set aside all designations of type species for the nominal genus Clytia Lamouroux, 1812, and having done so to designate the nominal species Campanularia johnstoni Alder, 1856a, as type species of that genus;

(2) to place on the Official List of Generic Names in Zoology:
   (a) Laomedea Lamouroux, 1812 (gender: feminine), type species, by designation under the plenary powers in (1) (a) above, Laomedea flexuosa Alder, 1857;
   (b) Campanularia Lamarck, 1816 (gender: feminine), type species, by designation by Naumov, 1960, ratified by use of the plenary powers in (1) (b) above, Sertularia volubilis Linnaeus, 1758;
   (c) Clytia Lamouroux, 1812 (gender: feminine), type species, by designation under the plenary powers in (1) (c) above, Campanularia johnstoni Alder, 1856a;

(3) to place on the Official List of Specific Names in Zoology:
   (a) flexuosa Alder, 1857, as published in the binomen Laomedea flexuosa (specific name of type species of Laomedea Lamouroux, 1812);
   (b) volubilis Linnaeus, 1758, as published in the binomen Sertularia volubilis (specific name of type species of Campanularia Lamarck, 1816);
   (c) johnstoni Alder, 1856a, as published in the binomen Campanularia johnstoni (specific
name of type species of Clytia Lamouroux, 1812).

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