The orthography of family names typified by compound generic names ending in "*-thrix*" particularly in relation to the *Ulotrichaceae* Kützing (*Chlorophyta*)

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The family (*familia*) is one of the principal ranks of taxonomy and its place in the taxonomic hierarchy is specified in the Shenzhen Code Art. 3.1 (ICN; Turland & al. 2018). ICN Art. 18.1 further specifies the way in which the name of a family is formed from the name of an included genus:

> *"18.1***.** The name of a family is a plural adjective used as a noun; it is formed from the genitive singular of a name of an included genus by replacing the genitive singular inflection (Latin *-ae, -i, -us, -is;* transcribed Greek *-ou, -os, -es, -as,* or *-ous,* and its equivalent *-eos*) with the termination *-aceae* … For generic names with alternative genitives the one implicitly used by the original author must be maintained, except that the genitive of names ending in *-opsis* is always *-opsidis*."

For some Greek suffixes used in compound generic names, the genitive singular may not be immediately obvious, particularly when it is irregular, *e.g*., the genus *Bifurcariopsis* Papenfuss is the type of the family name *Bifurcariopsidaceae* G.Y.Cho & al. (2006: 516). In this example, the genitive singular of the suffix "*-opsis*" is "*-opsidis*" as specified in Art 18.1, even though it has not always been employed thus in Botanical and Zoological nomenclature (see Silva 1980: 18).

A particular, related difficulty has been apparent with some family names formed from compound generic names with "*-thrix*", a suffix that is especially used for filamentous algae as evidenced with the existence of as many as 72 generic names ending with this suffix, many of them belonging to the Cyanobacteria. For extant algae, at least six family names, typified by genera with the suffix "*-thrix*", are in current use, viz., *Elakatotrichaceae* Hindák (Charophyta), *Goniotrichaceae* Skuja (Rhodophyta), *Homoeotrichaceae* Elenkin (Cyanophyta), "*Prochlorotrichaceae*" Burger-Wiersma, Stal & Mur, *nom. inval.* [(Cyanophyta); Latin diagnosis or description not provided; currently included in the *Leptolyngbyaceae* Komárek, J.Kastovsky, Mareš & J.R.Johansen], *Calotrichaceae* Cooke (Cyanophyta), and *Ulotrichaceae* Kützing (Chlorophyta).

The family name *Ulotrichaceae* has been the source of some understandable confusion. The name was introduced by Kützing (1843: 179, 'Fam. Ulothricheae') on the same page that he introduced the family names "*Leptotrichaeae*" based on *Leptothrix* Kützing [probably correctly referred to the Eubacteria] and "*Calothricheae*" based on "*Calothrix* C.Agardh", causing a degree of inconsistency in the formation of the family names. "*Calothricheae* Kützing" is not a validly published name as it predates the starting date for the group concerned [ICN Art. 13.1(e)].

Kützing's "Fam. Ulothricheae" is thought by some to be correctable to "*Ulotrichaceae*" and by others to "*Ulothrichaceae*" and the ordinal name including this family is variously rendered "*Ulotrichales*" and "*Ulothrichales*". The class name *Ulotrichophyceae* Pascher ex Hollerbach & Poljansky, although not in current use, seems only to have been rendered in that way.

The compound generic name *Ulothrix* Kützing was introduced by Kützing (1833: 517) without an explanation as to its derivation. It probably was derived using the prefix "ulo" from "*οὐλός*" (oulos) meaning curly or woolly (Brown 1956: 865, who cited *Ulothrix zonata* (F.Weber & Mohr) Kützing as an example) and "*θριξ*" (thrix) the Greek word for hair. The genitive of *θριξ* is *τριχος* (trichos) and the genitive of *Ulothrix* it thus "*Ulotrichos*", and the family name, in compliance with ICN Art. 18.1, is correctly "*Ulotrichaceae*" and this applies to the names of other higher taxa typified by *Ulothrix* Kützing.

Stearn (1992: 80) specifically addressed the declination of generic names ending in "ix" using *Calothrix* C.Agardh ex Bornet & Flahault as an example and gave the genitive singular as "Calotrichis". The valid name *Calotrichaceae* Cooke (Cooke 1890: 313, as 'Family IV. Calotricheae') is in current use. Stearn (1992: 80) also mentioned that "Similarly declined: *Acrothrix Amphithrix, Dichothris, Schizothrix, Ulothrix*. The change from *thrix* in the nominative to *trich-* in other cases should be noted."

Silva (1980: 18) also arrived at the same conclusion in relation to the suffix "thrix "*θριξ* (f., thrix : hair), *τριχος*: (trichos, Latin trichis) , -trichaceae" in an extensive discussion of the formation of family names from Greek "final elements".

We agree with the assessments of Silva (1980: 18) and Stearn (1992: 80) and choose to use *Calotrichaceae* Cooke.

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