

Lectotypification of *Fucus bifurcatus* Gunnerus

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In recent years there have been many proposed changes in the classification of the families and the genera of kelps based in large part upon the results of gene-sequence analyses. A number of generic boundaries have been re-drawn, including a distinction between *Laminaria* and *Saccharina* (Lane et al. 2006). Many species formerly assigned to *Laminaria* have been transferred to the resurrected genus *Saccharina* Stackhouse (1809). One of the species transferred to *Saccharina* was *Laminaria bongardiana* Postels & Ruprecht (1840) (Selivanova et al. 2007). In addition to the autonym, Selivanova et al. (2007) recognized the following additional formae:

forma *bifurcata* (Postels & Ruprecht) Selivanova, Zhigadalova & G.I.Hansen
 forma *subsessilis* (Areschoug) Selivanova, Zhigadalova & G.I.Hansen
 forma *subsimplex* (Setchell & N.L.Gardner) Selivanova, Zhigadalova & G.I.Hansen
 forma *taeniata* (Postels & Ruprecht) Selivanova, Zhigadalova & G.I.Hansen

In recognizing the forma *bifurcata*, Selivanova et al. (2007) cited as basionym *Laminaria bongardiana* f. *bifurcata* Postels & Ruprecht, *Illustr. Alg.*, 1840: 10, pl. XIV. However, the following considerations should be taken into account: (1) according to Art. 37.4 of ICN, the correct rank of the infraspecific taxon proposed by Postels & Ruprecht is “variety” and not “forma”; (2) because Postels & Ruprecht cited the valid and legitimate name *Fucus bifurcatus* Gunnerus, *Flora Norvegica* Vol. 1 (1766), pag. 96, *Laminaria bongardiana* var. *bifurcata* is not a new variety, but a recombination [*Laminaria bongardiana* var. *bifurcata* (Gunnerus) Postels & Ruprecht]; (3) *Saccharina bongardiana* f. *bifurcata* (Postels & Ruprecht) Selivanova, Zhigadalova & G.I.Hansen is thus an invalid designation according to Art. 41.8 (a).

Fucus bifurcatus Gunnerus has a type locality of “Ofodienfibus in Norlandia” [= Ofoten Fjord, Nordland, Norway] (Gunnerus 1766). Subsequently, Gunnerus (1768, pl. VI: fig. 2) depicted his *Fucus bifurcatus*, which is reproduced here (Fig. 1). Jørgensen (2012: 1088) typified a number of new names in Gunnerus’s *Flora Norvegica* including seven species of *Fucus* and five species of *Ulva*, but *Fucus bifurcatus* was not cited. According to Stafleu & Cowan (1976), the herbarium of Gunnerus is now located in TRH and LINN. An enquiry made to TRH elicited a reply from the curator Kristian Hassel that although he did not find a specimen of *Fucus bifurcatus* in the collection of Algae, the collection manager recognized that they had a “book” of specimens by Gunnerus, and that is where they found a specimen that seems relevant (Fig. 2). Although the specimen does not bear the name “*Fucus bifurcatus*”, it does bear the name “Ofoten”, the type locality, has “*Fucus saccharinus*” and “69” [in different handwriting], and, importantly, it resembles Gunnerus’s plate VI: fig. 2 [Fig. 1]. In a catalogue of the Gunnerus herbarium, Krovoll & Nettelbladt (1985: 55) referred to this specimen (*Fucus saccharinus*, Ofoten, G:69) as = *Laminaria digitata*. That specimen in TRH is here designated as the lectotype of *Fucus bifurcatus* Gunnerus.

There has been a long and complicated history as to how *Fucus bifurcatus* Gunnerus has been treated. Turner (1811: 62) treated it as conspecific with *Fucus bulbosus* Hudson [= *Saccorhiza polyschides* (Lightfoot) Batters]. Wahlenberg (1812: 494) treated (with a query) *Fucus bifurcatus* in the synonymy of *Fucus saccharinus* [homotypic synonym: *Saccharina latissima* (Linnaeus) C.E.Lane, C.Mayes, Druehl & G.W.Saunders]. Lyngbye (1819: 20) treated *Fucus bifurcatus* as conspecific with *Laminaria digitata* (Hudson) J.V.Lamouroux. Kützing (1849: 577) recognized *Hafgygia bongardiana* (Postels & Ruprecht) Kützing var. *bifurcata* (Gunnerus) Kützing, considering that it occurred on the shores of Kamchatka, whereas both Kjellman (1889: 44) and

Sinova (1940: 199) recognized *Laminaria bongardiana* f. *bifurcata* Postels & Ruprecht. Ruprecht (1850: 159) proposed the name *Laminaria bifurcata* (Gunnerus) Ruprecht. In a footnote, Foslie (1885: 61) summarized the various prior treatments of *Fucus bifurcatus*, stating that in his opinion it coincided with *Laminaria digitata*. Foslie (1886: 116) affirmed his opinion the following year.

In an incisive study of the taxonomy and nomenclature of *Laminaria digitata* and *L. hyperborea* (Gunnerus) Foslie, Du Rietz (1953) presented persuasive evidence that *Fucus bifurcatus* Gunnerus is identical to *L. digitata*, and that is how the name is treated in the catalogue compiled by Krovoll & Nettelbladt (1985).

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- Du Rietz, G.E. (1953). Nomenclature of *Laminaria digitata* (Huds.) Lamour. and *Laminaria hyperborea* (Gunn.) Foslie. *Svensk Botanisk Tidskrift* 47(1): 16-23.
- Foslie, M. (1885). Ueber die Laminarien Norwegens. *Forhandlinger Videnskabs-Selskabet I Christiania Aar 1884* (14). 112 pp., 10 pls.
- Foslie, M. (1886). Kritisk fortegnelse over Norges havsalger efter aeldre botaniske arbeider indtil aar 1850. *Tromsø Museums Aarshefter* 9: 85-137.
- Gunnerus, J.E. (1766). *Flora Norvegica*, observationibus praesertim oeconomicis panosque norvegici locupletata. Vol. 1 pp. [i]-viii, 1-96, [4], 3 pls. Nidrosia [Trondheim] & Hafnia [Copenhagen]: Typis Vindingianus & F.C. Pelt.
- Gunnerus, J.E. (1768). Om nogle norske planter. *Kongelige Norske Videnskabers Selskabe Skrifter* [Copenhagen] 4: 81-86, pls 4-9.
- Jørgensen, P.M. (2012). New names in Gunnerus's *Flora Norvegica*, and their typification. *Taxon* 61: 1088-1095.
- Kjellman, F.R. (1889). On Beringhafvets algflora. *Kongl. Svenska Vetenskaps-Akademiens Handlingar* 23(8): 1-58, pls. I-VII.
- Krovoll, A. & Nettelbladt, M. (1985). Catalogue of the J. E. Gunnerus herbarium. *Gunneria* 52: 1-171.
- Kützing, F.T (1849). *Species algarum*. Lipsiae: F.A. Brockhaus.
- Lane, C.E., Mayes, C., Druehl, L.D. & Saunders, G.W. (2006). A multi-gene molecular investigation of the kelp (Laminariales, Phaeophyceae) supports substantial taxonomic re-organization. *Journal of Phycology* 42: 493-512.
- Lyngbye, H.C. (1819). *Tentamen hydrophytologiae danicae*... xxxii + 248 pp., 70 pls. Hafniae: Typis Schultzianus, in commissis Librariae Gyldendaliae.
- Postels, A. & Ruprecht, F. (1840). *Illustrationes algarum* in itinere circa orbem jussu imperatoris Nicolai I. atque auspiciis Navarchi Friderici Luutke annis 1826, 1827, 1828 et 1829, celoce Seniavin executo in oceano pacifico, imprimis septentrionali ad littora Rossica Asiatico-Americana collectarum. pp. [i-vi], [i]- iv, 1-28 [1-2, index], [Latin:] [-iv], [1]-22, [1-2, index], 40 pls. Petropoli [St. Petersburg]: Typis Eduardi Pratz.
- Ruprecht, F.T. (1850). *Algae ochotenses. Die ersten sicheren Nachrichten über die Tange des Ochotskischen Meeres*. 243 pp., 10 pls. St. Petersburg.
- Selivanova, O.N., Zhigadlova, G.G. & Hansen, G.I. (2007). Revision of the systematics of algae in the order Laminariales (Phaeophyta) from the far-eastern seas of Russia on the basis of molecular-phylogenetic data. *Russian Journal of Marine Biology* 33: 278-289.
- Sinova, E.S. (1940). The algae of the Commander Islands. *Transactions of the Pacific Committee of the Academy of Sciences of the USSR* 5: 165-243. [In Russian.]
- Stackhouse, J. (1809). Tentamen marino-cryptogamicum... *Mémoires de la Société Impériale des Naturalistes de Moscou* 2: 50-97.

Stafleu, F.A. & Cowan, R.S. (1976). *Taxonomic literature*... Vol. I: A-G. 2nd ed. Bohn, Scheltema & Holkema, Utrecht.

Turner, D. (1811). *Fuci; or, colored figures and descriptions of the plants referred by botanists to the genus Fucus*. Vol. III. London: John and Arthur Arch.

Wahlenberg, G. (1812). *Flora lapponica exhibens plantas geographice et botanice consideratas, in Laponiis suecicis*... Berolini: In Taberna Libraria Scholae Realis.

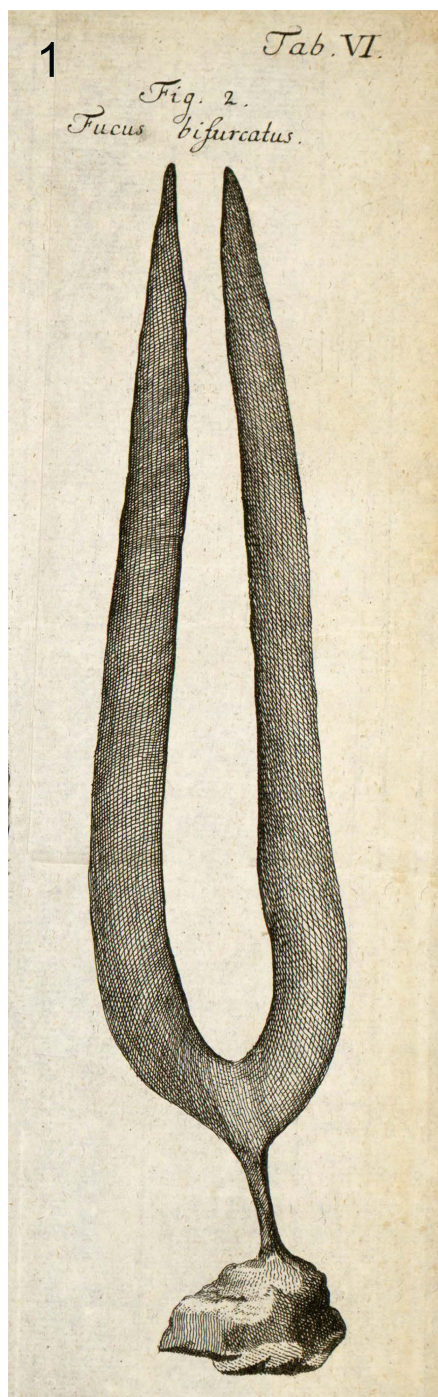


Fig. 1. *Fucus bifurcatus* Gunnerus (Gunnerus 1768, Pl. VI: fig. 2).

Fig. 2. Specimen G:69 in TRH here designated as the lectotype of *Fucus bifurcatus* Gunnerus.