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BETULA MICHAUXII, A BRIEF SYMPOSIUM

1. INTRODUCTORY NOTE

M. L. FERNALD

IN his Flora Boreali-Americana, ii. 180, 181 (1803) André Michaux enumerated under true *Betula* five species: *B. nana* L., *B. glandulosa* Michx., *B. papyrifera* Michx. (with *B. papyracea* Ait. cited as a synonym), *B. lanulosa* Michx. [= *B. nigra* L.] and *B. carpinifolia* Michx. [= *B. lenta* L.]. All four of Michaux's own species had full and clearly stated descriptions and, quite naturally, it would be assumed that his diagnosis of *B. nana* was based on his own material so named:

NANA            *B. humillima, glaberrima: foliis perpusillis, subcuneato-*  
L.                *orbiculatis, inciso-crenulatis, reticulato-venosis: amenti*  
                  *squamis profunde 3-partitis, laciniis oblongis: capsulis*  
                  *orbiculatis, subapteris.*

*Hab.* in sphagnosis, a sinu *Hudsonis* ad lacus *Mistassins*.

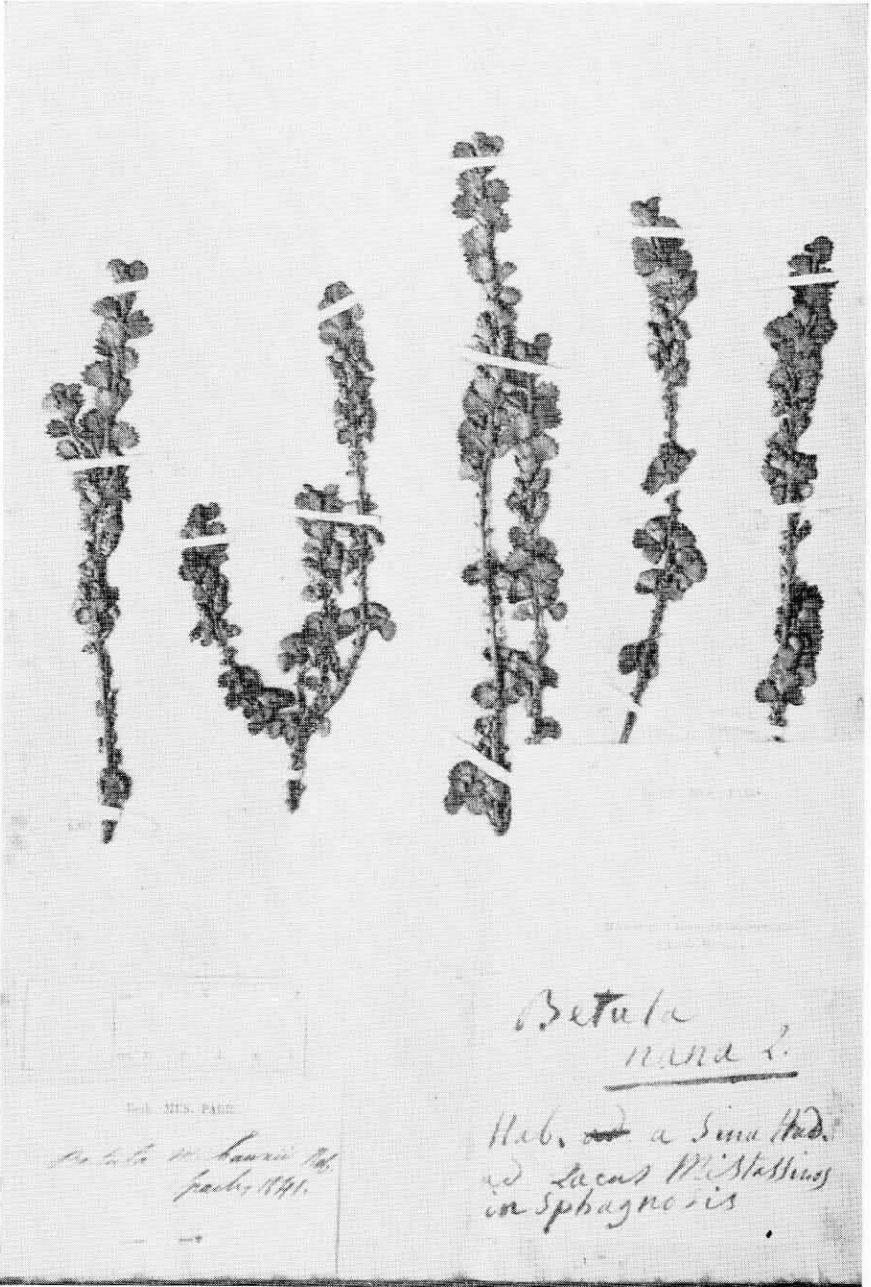
Spach, citing the sheet in the Michaux Herbarium at Paris and Newfoundland material also there as the bases of a new species, *Betula Michauxii* Spach in Ann. Sci. Nat. sér. 2, xv. 195 (1841), emphasized the "ramis . . . novellis tomentosis" ["glaberrima"—Michx.], "foliis . . . cuneato-flabelliformibus" ["subcuneato-orbiculatis"—Michx.] and "Strobilis . . . squamis ovato- v. oblongo-lanceolatis" ["profunde 3-partitis"—Michx.]

Until recently I did not realize that Michaux was not describing his own material but was giving a compiled or copied diagnosis of the European *Betula nana* L. Across the southern half of the Labrador Peninsula, from north of the Straits of Belle Isle to the region of Hudson Bay, dwarf and depressed states of

both *B. glandulosa* (with glabrous branchlets, subrotund leaves and 3-lobed bracts) and of *B. pumila* L. (unnoted by Michaux) occur, and since nothing matching the characteristic Newfoundland shrub had been reported from west of the Côte Nord of Quebec, I assumed that the shrub from between Hudson Bay and Lake Mistassini must be one which fitted Michaux's description. Consequently, in RHODORA, xlvii. 326, t. 975, figs. 1-4 (1945), reasoning that the name *B. Michauxii* must be retained for the Michaux element (whatever that might prove to be) with glabrous branchlets, suborbicular leaves and deeply 3-lobed bracts (although Spach had not given these characters)—consequently, I named the characteristic Newfoundland shrub with densely pubescent branchlets, cuneate-flabelliform leaves and unlobed bracts and plump and wingless nutlets, *Betula terrae-novae* Fern.

Now, however, Professor Jacques Rousseau, exploring in Ungava, has recently found characteristic *Betula terrae-novae* in bogs along George River, thus proving that this distinct shrub actually occurs in the general region assigned by Michaux for *B. nana*. Then, securing a photograph of the Michaux sheet (their PLATE 1156) at Paris, he and his associate, Marcel Raymond, have presented (as Part 2, following) a carefully reasoned discussion, demonstrating that Michaux did not give a description of his own material but, assuming that he had the European *B. nana*, had contented himself by the easy copying or compiling of a European account of the latter species.

Since the photograph of the Michaux sheet, the TYPE of *Betula Michauxii*, did not show with absolute conclusiveness the simplicity of possible lobation of the bracts nor any of the plump and wingless samaras, it seemed to me wise to have the matter settled beyond any possible doubt. Therefore, I took advantage of the helpfulness of my always friendly correspondent, M. Pierre Senay, who had looked into other problems for me at the Herbarium of the Muséum National d'Histoire Naturelle in Paris. He and M. Paul Jovet of the Muséum made a close study of the type and M. Jovet made a sketch (their FIG. 1) of a portion of a fruiting ament under a binocular. The main portion of M. Jovet's drawing and of M. Senay's accompanying letter are included as part 3 in this brief but significant series of articles.



TYPE of BETULA MICHAUXII Spach (*B. nana* sensu Michaux, not L.). Michaux's writing at right, Spach's at left.

They clearly demonstrate that the conclusions of Rousseau and Raymond are fully justified and that the name *B. terrae-novae* is superfluous. It also becomes evident that caution must be exercised in ascribing to Michaux (or his editor, Richard) originality in all descriptions published in Michaux's great work. Incidentally and most embarrassingly, it must be recorded that, at this late date (after a lapse of nearly half-a-century) I find, on looking up the memoranda made by me when studying Michaux's Herbarium in 1903, I then made the soon forgotten note regarding his full sheet of branchlets of *Betula nana*: " = *Michauxii*, Spach! splendid specimens with constant characters".

## 2. BETULA MICHAUXII SPACH IN NORTHEASTERN AMERICA

JACQUES ROUSSEAU and MARCEL RAYMOND

(Plate 1156)

A dwarf birch, collected by André MICHAUX somewhere along the Rupert River or one of its branches: "Hab. a sinu Huds. ad lacus Mistassinos in sphagnosis", is described in *Flora boreali-americana*. (1). MICHAUX believed the shrub to be the arctic *Betula nana* L. A superficial examination of the two shows a close resemblance. However, the fruiting scales in one differ markedly from those in the other: entire or nearly so in MICHAUX' plant, they are trilobate in true *B. nana* L.

Later on SPACH (2), having both MICHAUX' and probably LA PYLAIE's specimens on hand, described the plant as a new species under the name *B. Michauxii* and placed it in his new section APTEROCARYON.

In 1945 (3), Professor FERNALD rejected SPACH's name and redescribed the small birch of Newfoundland and adjacent Labrador, excluding MICHAUX' plant, which he had not seen at the moment. He called it *Betula terrae-novae*, on the assumption that *Betula Michauxii* Spach "had so confused a start". The confusion stemmed from two facts: the description which appears in *Flora boreali-americana* was not based completely upon the MICHAUX-plant, but partly on some European or Asiatic collection or description. In fact, there is in MICHAUX' herbarium a specimen of true *B. nana* L. with the indication: "Hortus Tri-

anonensis. Seminib. e Siberia missis Richard." Consequently the "amenti squamis" are given as "profunde 3 partitis". The phrasing differs in no way from the classical description of the arctic *B. nana* L., which one finds repeated, with only slight variations, from one author to another: MICHAUX, WILLDENOW, PURSH, etc. The second reason FERNALD gives is that in SPACH's description, the "strobili" are described as "4-9 pollices longi", instead of "4-8 lineas longi".

A look at the reproduction of MICHAUX' specimen (Plate 1156) leaves little doubt as to its identity, which has long since been accepted by REGEL (4), WINKLER (5), among others. The size of the strobiles in the MICHAUX plant differ little if any from that of the Newfoundland plant considered as the type of *Betula terrae-novae*. SPACH, a keen student of trees, doubtless had in mind MICHAUX' specimen. He mentions not only that his new species is "*Betula nana* Michx! Flo. Bor. Amer. exclus. syn." but affirms that he saw the specimen in the herbarium of the Muséum d'Histoire Naturelle in Paris. It is quite fitting, since the specimen collected by MICHAUX served as type in the description of his new species, that SPACH should choose the name of its collector as the specific epithet.

The description reads as follows:

#### Sectio II. APTEROCARYON Nob.

Nuculae apterae, margine incrassato, intus suberoso, cinctae.—Squamae strobileae semper 1-carpae, integerrimae, nuculis duplo angustiores (ideoque illas per maturationem haud obtegentes).

B. MICHAUXII Nob.—*Betula nana* Michx! Flor. Bor. Amer. (exclus. syn.)—Fruticosa; ramis divaricatis v. diffusis; novellis tomentosissimis, impunctatis. Foliis subcoriaceis, reticulatis, glabris, impunctatis, subsessilibus, cuneato-flabelliformibus, inciso-serratis, v. crenato-dentatis, basin versus integerrimis. Strobilis sessilibus, cylindraceis, gracilibus, foliis longioribus; squamis ovato- v. oblongo-lanceolatis, v. oblongis, obtusis, v. acutis, v. acuminatis, apice laxis v. subsquarrosis. Nuculis ovatis v. subrotundis.—America borealis et insula Terrae Novae. (V. s. sp. in Herb. Mus. Par.)

Frutex humilis, ramosissimus, habitū et foliis *Betulae nanae* similis. Folia 3-6 lineas longa, lucida, petiolo tenui, brevissimo. Strobili 4-8 pollices (sic) longi, squamis nuculis paulò longioribus.

In addition to the very characteristic fruiting scales, the shape of the leaves is also striking: "cuneato-flabelliformibus" stated SPACH; "late cuneato-flabelliformibus" writes FERNALD. It

could be added that *Betula nana* L.  $\beta$ . *flabellifolia* Hooker (in *Flora boreali-americana* II. 157. 1838) probably belongs here, and would be the oldest varietal name.

SPACH or the typographer made the lapsus calami "4-8 pollices longi". The diagnosis should read "4-8 lineas longi". Otherwise, in the description, it is quite obvious that SPACH would have not only stated "strobilis sessilibus, cylindraceutis, gracilibus, foliis longioribus", but "multo longioribus", since a dwarf plant with strobiles 4-8 inches long would be striking enough to catch any taxonomist's attention!

As SPACH clearly had MICHAUX' plant in mind (the specimen bears his personal annotation); as the mention "4-8 pollices longi" is doubtless a typographical error; as unintentional typographical errors are not sufficient grounds to reject the name of a plant; as otherwise there is no doubt about SPACH'S description, and that, furthermore, study of the MICHAUX' specimen confirms the aforementioned views, SPACH'S name must be restored as the valid name, and *B. terrae-novae* placed amongst its synonyms. Moreover MICHAUX' specimen must be considered the type.

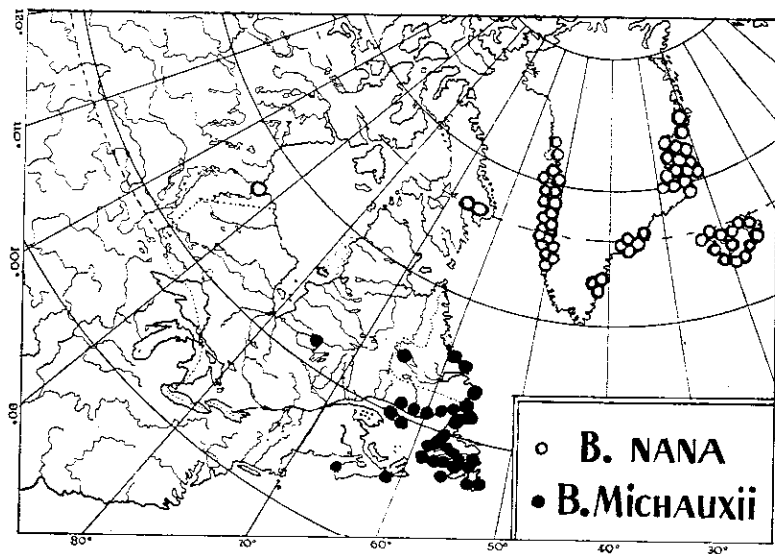
WINKLER (loc. cit.: 70) gives a good description and an accurate illustration of *Betula Michauxii*, based on MICHAUX' plant and also on a specimen collected in Newfoundland, probably by LA PYLAIE. He writes: "Vidi specimen alterum in herb. musei bot. berlinensis a cl. A. Richard datum cum nota" "America septentrionalis Michaux", alterum in herb. Boiss. in Terra nova collectum. *B. nana* Michx. Fl. bor. Amer. II (1803) 180 non huc trahenda".

As early as 1902, Professor FERNALD (6) clearly understood *B. nana* var. *Michauxii*, which, in 1861, REGEL first lowered to the rank of a variety of *B. nana*, but later, in 1868, restored to its rank of species.

The senior author spent four summers botanizing in the Lake Mistassini area but, after careful search, is still unable to report finding *B. Michauxii* there. However, the birch was not collected in the immediate environs of Lake Mistassini, according to the label MICHAUX himself wrote (compare the calligraphy with that in the manuscript of his diary), but rather in the region between Lake Mistassini and Hudson Bay. In an attempt to

reach James bay, MICHAUX travelled westward to a distance of about 78 miles from Lake Mistassini before giving up because of the lateness of the season (7).

The occurrence of *B. Michauxii* at this latitude in the interior is hardly out of the ordinary, since the senior author of this note collected it in Eastern Ungava, on Hubbard Lake, at the head of George River, at 54° 46' Lat. N., where it grows abundantly in peat-bogs. Among other new localities in Québec, we may also



MAP 1. Map of *BETULA MICHAUXII* Spach drawn from specimens deposited in the MARIE-VICTORIN Herbarium, from literature and from a complementary sketch provided by Prof. FERNALD.—Distribution of *B. nana* in North-eastern North America from literature, mainly BÖCHER (loc. cit.).

include Anticosti Island (*Rousseau*), where the shrub is common in the peat-bogs which cover the center of the island. Apparently, it has never been reported from stations along the coastline.

Compiled from herbaria and literature, below is a list of the collections of *Betula Michauxii* Spach known to us. Map 1 shows, in addition to these cited stations, others which are represented in the Gray Herbarium, the dots taken from a sketch-map supplied by Professor Fernald.

LABRADOR: Blanc Sablon, *Fernald & Wiegand* 3269 (8).

QUEBEC: Between Hudson Bay and Lake Mistassini, *Michaux* (1792).—Along George River (Hubbard Lake), in Eastern Ungava, *Rousseau* 36.—North Shore of the St-Lawrence: Natashkwan River, *C. W. Townsend*.—Lagorgendière: Romaine, *St. John* 90 386.—Kegaska, *Lewis*.—Harrington Harbour, *Lewis* (9).—Pointe-aux-Esquimaux: au bord des étangs de la tundra derrière le village, 11 juillet 1924, *Marie-Victorin & Rolland-Germain* 18 876.—Anticosti: au centre de l'île, entre le 10<sup>e</sup> mille de la Rivière au Saumon et la source du Crique à la Chaloupe; dans une tourbière, 13 juillet 1942. *Jacques Rousseau* 52 263.—Entre la source de la Rivière Vauréal et la source de la Rivière au Saumon, au centre de l'île. Dans une tourbière, 10 juillet 1942, *Jacques Rousseau*, 52 172.

NOVA SCOTIA: Liscomb River, Gusboro Co., *E. R. Faribault* (1884). New to the flora of Nova Scotia. FARIBAULT, a geologist, still living, has extensively surveyed gold-bearing series in Nova Scotia. He made some botanical collections which are included now in the MARIE-VICTORIN Herbarium. [The dot indicated for extreme western Nova Scotia indicates its occurrence in bays of Brier Island, Digby County, where it was recently discovered by Dr. Roland.—M. L. F.]

NEWFOUNDLAND: numerous collections by *La Pylaie, Wagner, Fernald & Wiegand, K. P. Jansson*, at Cape Ray, Burgeo, Long Range, Goose Pond.

SAINT PIERRE ET MIQUELON: Arsène (10).

*Betula Michauxii* is indeed very close to *Betula nana*. Recently (11), Professor Eric HULTÉN described *Betula nana* L. ssp. *exilis* (Sukatch.) Hultén var. *reducta* Hultén, from Alaska, which shows "peculiarly reduced catkin-scales corresponding to those of *B. Michauxii* (*B. nana* var. *Michauxii*) of the Lower St. Lawrence R. distr., Newfoundland and Labrador".

*Betula nana* has not as yet been reported from Quebec. Consult the map in HEGI (12). But since it occurs in Eastern and Western Greenland (13), and as Dr. N. POLUNIN (14) made a collection in Central Baffin (see our own map), it may probably turn up some day in Ungava and then fill the distributional gap between Baffin and Western Alaska.

The authors wish to thank cordially Mr. James KUCYNIK for his help in the drafting of this article.

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- (12) HEGI, GUSTAV. *Illustrierte Flora von Mittel-Europa III*: 84. Fig. 481.
- (13) BÖCHER, TYGE W. *Biological distributional types in the flora of Greenland*. Medd. om Grønland Bd. 106 (Nr. 2): 68-71. Fig. 31. 1938.
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MONTREAL BOTANICAL GARDEN

### 3. THE TYPE OF BETULA MICHHAUXII

PIERRE SENAY AND PAUL JOVET

[The text is taken from a letter of M. Senay, dated August 28, 1949. The figure is from drawings (enlarged) by M. Jovet.—Eds.]

Dear Mr. Fernald.

From the result of my examination of the type specimen of *Betula Michauxii* Spach, "*B. nana* L." of Michaux, you will undoubtedly see that the investigation was most useful indeed.

(1) PUBESCENCE:—From the top downwards the branchlets are covered with very short indumentum (nearly felt-like), dense about the tip; then the density decreases and, in the portion between five and ten centimeters below the apex, the branchlets begin to become more or less pubescent, then glabrescent and are completely glabrous below 10 cm. or so.

No glands (particles of dust should not be mistaken for such).

The color of the hairs follows the same pattern; the top ones are russet-gray, and the lower ones grayish-white, and, in the portion between 5 and 10 cm., there is a mixture of both. There is no sharp line of demarcation regarding either the density or the color of the hairs, the differentiation is progressive from the top downward.

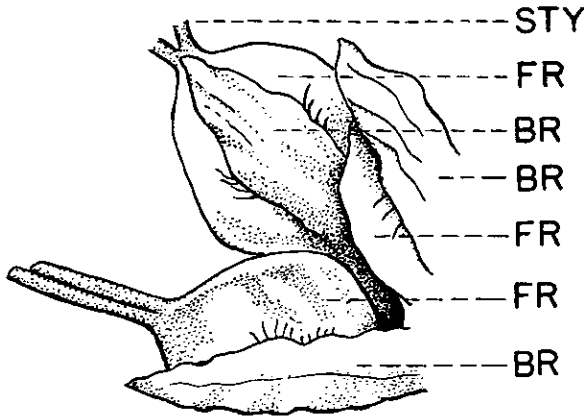


FIG. 1. Enlarged Bracts and Fruits of *BETULA MICHAUXII* (after Jovet).

A very young ament is covered with silvery-grayish-white hairs reaching 0.5–0.6 mm.

Last but not least:

(2) *SQUAMAE*:—At first glance, without lens, they really look 3-lobed and no better comparison may be made than with minute *Polygala*-like fruits in which the fruit exceeds both sides of the “wing”. And this certainly led Michaux into error.

Actually, the squamae are entire and, under the lens, slightly ciliolate on the margins. There cannot be any hesitation on this point. So those of your botanists who have seen them unlobed are quite right.

The specimens were examined conjointly by Jovet, who made the drawings (FIG. 1) “in sicco”, and myself.

ASNIÈRES (SEINE)