

## BUTOMUS UMBELLATUS IN AMERICA\*

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During the summer of 1939 I discovered *Butomus umbellatus* growing as a very abundant plant along the gravelly or marshy shores of most of the larger islands in the western end of Lake Erie. This handsome and interesting plant is not treated in the 7th edition of Gray's Manual and its occurrence here in such abundance led me to investigate the literature dealing with its distribution in America.

This plant, commonly called in France "Jonc fleuri," is classified by some botanists in the Alismaceae but on account of its nine stamens and usually six carpels is treated as a separate family by Gaston Bonmer in his "Flora Complete de la France." It is indigenous in Europe in marshes and along borders of streams and lakes from Italy northward to Norway. According to Dr. Leo H. Grindon it is one of the handsomest plants that England produces.<sup>1</sup> Thomé gives a good colored plate in his "Flora von Deutschland," vol. 1, page 84 (1886).

According to Fr. Marie-Victorin,<sup>2</sup> "elle parait avoir été observée pour la première fois à Laprairie,<sup>3</sup> vers 1897, par le F. Euphrosin." So far as is known, the first specimens were collected in 1905, at Laprairie on the flats ("battures") of the St. Lawrence River by Bros. Marie-Victorin and Rolland-Germain.<sup>4</sup> A specimen in the Britton Herbarium at the New York Botanical Garden was collected September 16, 1906, by Fr. Louis Arsène on the borders of the St. Lawrence River, where he says it was common from Caughnauaga to Sorel, near Montreal.

An appearance along the canal at Ottawa as early as 1906 was reported by E. H. Blackader.<sup>5</sup> The same year it was found at Beauharnois, Valois, and Longueuil and in 1907 at Chateau-

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\*Contribution No. 19 from the Herbarium of West Virginia University.

<sup>1</sup>Fletcher, "Two newly introduced European plants". *Ottawa Naturalist* 22: 80, 81, 1908.

<sup>2</sup>"Flore Laurentienne" (1935), p. 618, footnote.

<sup>3</sup>Opposite Montreal.

<sup>4</sup>Fletcher, loc. cit.

<sup>5</sup>*Ottawa Naturalist*, December, 1908.

guay by L'Abbé V.-A. Huard, who recognized it at sight, presumably from his acquaintance with it in Europe.<sup>6</sup>

In 1908 Fletcher<sup>7</sup> reported that Fr. Marie-Victorin believed that it also grew around the Boucherville Islands a few miles above Longueuil. It seemed certain (he said) that it ripened its seeds at Longueuil, in spite of the late date at which the water recedes from the river flats, preventing its appearance above the surface until late in June. It was found associated with *Scirpus americanus*, *Zizania aquatica*, *Potentilla anserina*, *Mentha canadensis*, *Xanthium canadense*, *Lycopus virginicus*, *Sagittaria variabilis*, etc.

Nash, in 1909, in "North American Flora," said it was "introduced along the shore of the St. Lawrence, near Montreal, Quebec" (Vol. 17, p. 63).

In 1913 it was still so uncommon that Britton and Brown, in the second edition of the "Illustrated Flora," dismissed it summarily by the following note, inserted immediately after their treatment of the Alismaceae: "*Butomus umbellatus* L., a plant of the related family Butomaceae, with many-ovuled ovaries, rose-colored flowers and narrow ensiform leaves, a native of Europe and Asia, has been found on the shores of the St. Lawrence River, near Montreal."<sup>8</sup>

In 1918 Fr. Marie-Victorin reported that it covered "broad flats at least from Chateauguay to Nicolet" and was "especially abundant about Montreal." That it spreads rapidly, he says, "is shown by its conquest of this large domain in less than forty years. It has not been reported elsewhere in America."<sup>9</sup>

In 1922 specimens were collected on a wet stony beach at Lachine by Judge J. R. Churchill and in the "zone intercotidale de la grève de Beauport," near Quebec, by Fr. Rolland. Their collections are preserved in the Gray Herbarium of Harvard University.

The thrill that has by now been experienced by many American botanists upon the discovery of *Butomus* was ably described by Knowlton in 1923: "While collecting plants along the St. Lawrence River at Ste. Angèle de Laval, opposite Three Rivers, Quebec, the last day of July, Mr. Edward B. Chamberlin and I were much surprised to find in the swampy

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<sup>6</sup>"Addition à la flore d'Amérique," *Le Naturaliste Canadien*, 35: 65-67, May, 1908.

<sup>7</sup>Fletcher, loc. cit.

<sup>8</sup>Vol. 1, p. 104.

<sup>9</sup>*Revue Trimestrielle Canadienne* 263, November, 1918.

land near the shore a striking endogenous plant that neither of us had seen nor heard of before. Good specimens were a meter tall, with an umbel of large pink flowers, veined with darker red. . . . We soon discovered that the plant did not fit the ordinary key to the endogens, for the flower had three colored sepals, three larger petals, *nine* stamens, and six *separate* carpels."<sup>10</sup> Knowlton reported also finding it at Pointe du Lac, Berthierville, St. Sulpice, and Ste. Lambert.

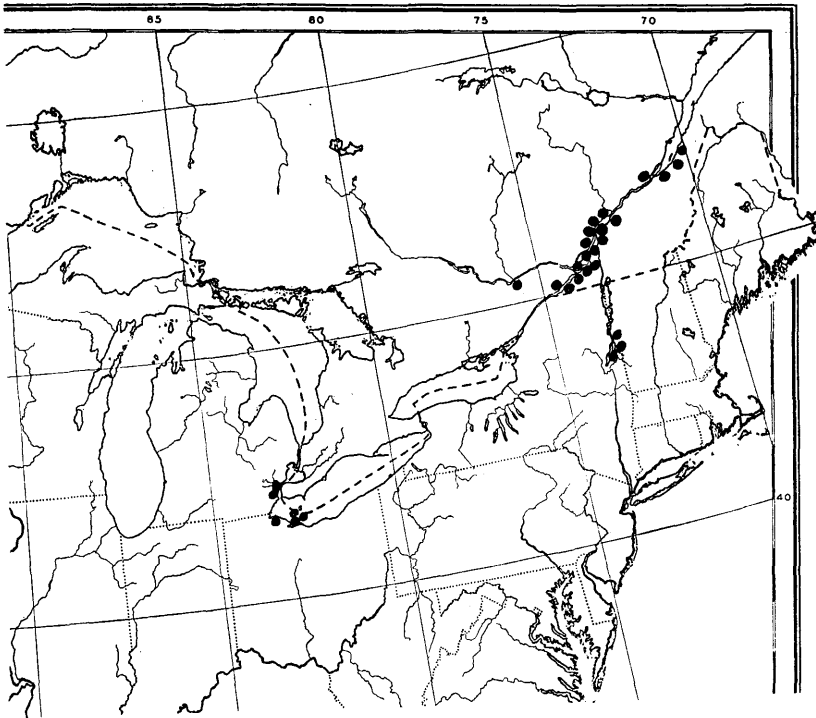


Fig. 1. Map showing recorded distribution of *Butomus umbellatus* in America.

The remarkable manner in which this introduced species has taken its place, ecologically, in the flats along the St. Lawrence is discussed by Fr. Marie-Victorin in 1929: "Le Butome, . . . l'une des dernières acquisitions de la flore du Québec, en moins de quarante ans a conquis les grèves du Saint-Laurent, depuis le lac Saint-Louis jusqu'aux abords de la ville de Québec, et l'espèce est particulièrement enva-

<sup>10</sup>"*Butomus umbellatus* on the St. Lawrence River," *Rhodora* 25: 220, 221. 1923.

hissante dans la region de Montréal où elle semble être apparue pour la première fois. Avec les années, elle regnera presque seule, semble-t-il, sur nos rivages plats au moins dans certaines conditions écologiques. C'est un bel exemple du bouleversement qui peut être opéré dans une flore par une seule espèce quand elle est bien outillée et qu'elle se transporte en territoire nouveau en laissant derrière elle la horde de ses ennemis, un bel exemple de dynamisme violent dans le temps et dans l'espace."<sup>11</sup>

The first record of *Butomus umbellatus* for the United States was published by Knowlton, who found it on August 11, 1929, well established and flourishing on the South Bay of Lake Champlain, at Dresden, Washington County, New York, near the bridge from Whitehall.<sup>12</sup> Five days later, on August 16, Muenschler found it very abundant along South Bay, "on clay flats and in water up to one meter deep;" also, later in August, at Whitehall, "along the border of a mill pond and along the Champlain canal from Whitehall northwards for about ten miles to the Dresden Narrows in Lake Champlain." The first record for Vermont was reported by the same observer, who found it in "Rutland County along the shore of Lake Champlain northward to the Dresden Narrows, and in Addison County along the outlet of East Creek."<sup>13</sup>

The next year (1930) Farwell collected it in Wayne County, Michigan, in Brownstown Township on August 26 and at River Rouge on September 9. Farwell notes: "This species has long been naturalized in the vicinity of Detroit and southward. I am informed on good authority that it was well established before the present century and that it covered acres of marshes at River Rouge before the operations of the Ford Motor Co. in this region reclaimed the marshland and destroyed the better part of the stand. There is nothing to prove or disprove the belief that the plant was brought over by Cadillac's party more than three centuries ago and that it has been here ever since."<sup>14</sup> Marie-Victorin, however, doubts that *Butomus umbellatus* was in Detroit during the French regime, believing that its first introduction "took place about fifty

<sup>11</sup>"La dynamisme dans la flore du Quebec," *Contrib. Lab. Bot. Montreal* 13: 83, 84. 1923.

<sup>12</sup>"*Butomus umbellatus* at Lake Champlain," *Rhodora* 32: 18, 19. 1930.

<sup>13</sup>"*Butomus umbellatus* in the Lake Champlain Basin," *Rhodora* 32: 19, 20. 1930.

<sup>14</sup>Papers of the Michigan Academy of Science, Arts and Letters, 23: 125. 1937 (1938).

years ago on the St. Lawrence somewhere near Montreal."<sup>15</sup> In a paper presented at the 6th Congress of *L'Association Canadienne-française pour l'avancement des Sciences*, at Trois-Rivières, in 1938, he "discute cette hypothèse et en montre l'invraisemblance."<sup>16</sup>

Writing in 1932, Fernald listed *Butomus umbellatus* as one of the characteristic plants of the St. Lawrence estuary.<sup>17</sup>

In Marie-Victorin's "Flore Laurentienne," published in 1935, in a chapter on "Facteurs Dynamiques Extrinseques" there is a map, "Carte R," showing the "Extension du *Butomus umbellatus* sur le Saint-Laurent, a la fin de l'année 1933." On page 618 of that work there is a description of the plant and a footnote states: "Jusqu'aux present, le Butome a conquis les rivages du Saint-Laurent depuis le lac Saint-François jusqu'à l'eau salée (St. Jean-Port-Joli). Il remonte aussi les affluents: Richelieu, Nicolet, St. François. Le Butome s'avance en eau profonde sous une forme sterile à longues feuilles dont les extremités deviennent flottantes à la fin de la saison; cette forme d'eau, f. vallisneriifolius (Sagorski) Glück, est un obstacle serieux à la petite navigation d'agrement, dans la region montrealaise. La rapidité de cette conquête s'explique par l'abondance des graines, multiplication vegetative un moyen des rhizomes tracains et des bulbilles et par l'action de la glace qui enroue les rhizomes superficiels et les transporte au loin au moment de la debâcle."

In a discussion of some phytogeographical problems of eastern Canada, in 1938, Marie-Victorin relates the story of its introduction: "Then appeared, nobody knows how, a short time before 1900 probably, a hardy and beautiful Alismaceous plant, *Butomus umbellatus*, the Old World flowering rush. Spreading very rapidly by means of its seeds, rootstocks, and bulblets, it has refreshed the rather dull purple of *Lythrum Salicaria* and painted anew the shoals with the mass effect of multitudinous pink umbels."<sup>18</sup> Illustrations accompanying his article show pure stands of the plant growing on shoals of the St. Lawrence, and a close-up of the rootstock, "bearing

<sup>15</sup>Letter to the author, January 2, 1940.

<sup>16</sup>"Le *Butomus umbellatus* etait-il déjà en Amérique au XVIIe siecle?" An abstract of the paper appears in the proceedings of the Congress.

<sup>17</sup>"*Callitriche stagnalis* on the lower St. Lawrence," *Rhodora* 34: 39. 1932.

<sup>18</sup>"Phytogeographical problems of eastern Canada," *Amer. Midl. Nat.* 19: 489-558. 1938. See especially pages 555-557.

numerous pea-size bulblets," which "powerful means of dispersal partly accounts for" its rapid conquest of the region.

The first collection of *Butomus* in Ohio was made by Louis W. Campbell at Little Cedar Point, Jerusalem Township, Lucas County.<sup>19</sup> Two additional Ohio counties, Ottawa and Erie, were recorded by the author in 1939.

*Butomus umbellatus* forma *vallisneriifolius* (Sagorski) Gluck, a sterile deep-water form with long leaves the ends of which float on the surface, was collected at Longueuil on September 12, 1931, by Marie-Victorin and Rolland-Germain,<sup>20</sup> and occurs elsewhere.

In addition, it should be noted that *Butomus* has been extensively introduced in numerous lake regions, particularly in New York, and may be expected to be encountered as a thoroughly established plant over a rapidly widening area. As far south as Morgantown, W. Va., it grows and flowers abundantly in the garden of Dr. H. A. Davis.

A good brief description and a sketch appear in Fassett's "Manual of Aquatic Plants,"<sup>21</sup> published in 1940.

The present known distribution of this species in North America, excluding the areas in which it is known to have been planted, may now be summarized as follows:

QUEBEC: L'Islet Co.: St. Roch-des-Aubrets, *Marie-Victorin* et al 43059, July 26, 1935. Montmagny Co.: Cap St. Ignace, *Marie-Victorin* et al 33195, July 15, 1930. Bellechase Co.: Anse St. Vallier, *Fernald* 2507, September 15, 1931. Quebec Co.: Beauport, *Rolland-Germain* 16028, August 8, 1922. St. Maurice Co.: Trois Rivières, *Stanislas*; Pointe du Lac, *Knowlton and Chamberlain*, August 2, 1923. Nicolet Co.: Ste. Angele-de-Laval, *Knowlton and Chamberlain*, July 31, 1923. Berthier Co.: Berthier, *Bonin* 261, June 26, 1931. Richelieu Co.: Ile aux Corbeaux, *Marie-Victorin* 16029, August 22, 1922. Tamaska Co.: *Adrien* 1215, July 17, 1926. L'Assomption Co.: St. Sulpice, *Boivin* 200, August 24, 1935. Chambly Co.: Longueuil, *Marie-Victorin* and *Rolland-Germain* 43815, October 5, 1934. Laprairie Co.: Laprairie, *Marie-Victorin* and *Rolland-Germain*, in 1905; La Tortu, *Fernald* 2507, September 19, 1931. Montreal

<sup>19</sup>In Schaffner's "Additions to the Revised Catalog of Ohio vascular plants. I." *Ohio Journ. Sci.* 33: 288. 1933.

<sup>20</sup>Memoires et Compte rendus de la Societe Royale du Canada III. 28: 1-17. 1934.

<sup>21</sup>Pages 93, 96.

Co.: Ile-Ste.-Hélène, *Boivin* 178a, August 18, 1935. Jacques-Cartier Co.: Lachine, *Churchill*, in 1922; Valois, *Huard*, in 1906. Chateauguay Co.: Chateauguay, *Huard*, in 1907. Beauharnois Co.: Beauharnois, *Huard*, in 1906.

ONTARIO: Glengarry Co.: Rivière Raisin, *Marie-Victorin*, *Rolland-Germain*, and *E. Jacques* 46741, August 9, 1932. Russell and Carleton Cos.: Environs of Ottawa, *Blackader* in 1906; *Rolland-Germain* 16027, June 27, 1921.

VERMONT: Rutland Co.: Dresden Narrows, *Muenschner*, in August, 1929. Addison Co.: East Creek, *Muenschner*, in August, 1929.

NEW YORK: Washington Co.: Dresden, *Knowlton*, August 11, 1929; South Bay, *Muenschner*, August 16, 1929; Whitehall, *Muenschner*, August, 1929.

MICHIGAN: Wayne Co.: Brownstown Township, *Farwell* 8742, August 26, 1930; River Rouge, *Farwell* 8759, September 9, 1930.

OHIO: Lucas Co.: Little Cedar Point, *Campbell*. Ottawa Co.: Gibraltar Island, *Core* 7098, June 21, 1939; North Bass Island, *Core* 7300, July 6, 1939; Sugar Island, *Core*, July 25, 1939; Middle Bass Island, *Core*, August 16, 1939; South Bass Island, *Core*, August 24, 1939. Erie Co.: Kelley's Island, *Core*, July 13, 1939.

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