

RARE PLANT CONSERVATION IN VERMONT IN THE 1980'S

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The value of rare species has increased dramatically in the public mind in the last two decades, a result of the increased appreciation of the fragility and vulnerability of all our natural resources. In Vermont, a state with a long history of environmental awareness, this appreciation has had an especially profound effect. This paper will review the history of rare plant protection in Vermont, and summarize the important advances of the 1980's.

The early botanical explorers in this state were avid plant collectors; they apparently saw it as their duty (for some it was a livelihood) to provide herbaria with an adequate supply of collections of each species, particularly the unusual ones. Little concern was expressed about the potential for such collecting to result in decline and decrease in native plant populations. Neither, it seems, was there any concern about the loss of native plants to development. Countryman (1980) cited the example of *Astragalus robbinsii* Oakes, a Vermont endemic discovered on the Winooski River in 1829 and extinct by 1894. A dam was constructed that flooded the only colony of the species, but its doom may have been sealed earlier by overcollection. Cyrus Pringle (1897) remarked that from the station, there "... had been gathered a supply of these plants sufficient for all the herbaria of the world."

Listera australis Lindl., extant but quite rare in Vermont, is a plant of the southern United States with local outlier populations north to Quebec. Two populations were known historically from Vermont, but only one is extant. H. W. Child (1922) described an expedition to a Vermont bog to find the plant: "In a short time [Mr. Horsford] came to me with a plant of *Listera australis*. . . . We then hunted for more and found four. . . . All were then carefully packed and taken to Boston." He then listed the herbaria to which the specimens were distributed, described Horsford's pride at having found the plants, and explained that the location of the station should be kept a secret. Dutton (1927) described another expedition in search of the plant, again to a secret location (perhaps the same one), and proudly stated: "Several specimens were collected so that *Listera* might be represented

in each of the leading herbaria of the state.” In spite of the zealous collectors of the 1920’s, at least one population of the species (albeit a small one) remains.

Other plants have not fared as well. Our current list of missing species (once reported from Vermont but not seen in the last 25 years) numbers more than 70 (Jerry Jenkins and Vermont Natural Heritage Program, unpubl. data). The Natural Heritage Program has made the search for missing species a priority, but many remain missing, either because they are difficult to locate, or because they have been lost to thoughtless overcollection or development. For a very few of these plants, climatic change may be responsible for their loss.

The first plant protection law in Vermont was passed in 1921. This law (37 P.L. 8578) protected certain plants from picking; it was apparently a response to the threats imposed by collection of plants for the florist trade. The plants protected were not necessarily the rarest in the flora, but were showy and desirable plants that might have been vulnerable to such use. All orchids were on the list, for example, including the now common, almost weedy alien *Epipactis helleborine* (L.) Krantz. In 1957 a new Endangered Species statute was enacted by the Vermont Legislature (13 V.S.A. 3614), through which a few species were added to the list. The law was replaced in 1972 by a new statute (13 V.S.A. 3651-3), but no amendment was made to the list.

Unfortunately, little attention was paid to the actual list of threatened and endangered species in Vermont, and in the early part of this decade it stood almost as originally constituted, by then badly out of date. It was outdated in three senses: 1) in the 60 years since the passing of the first law and compilation of the list, much new information had been gathered about the rarity and distribution of the plants on the list, as well as others, 2) the status of a few species on the list (such as *Epipactis*) had changed dramatically, and 3) the primary threat to native wild plants had become development rather than collecting.

With the environmental movement of the 1970’s came a number of significant advances in the awareness and protection of native wild plants. The Federal Endangered Species Act (P.L. 93-205) was passed in 1972, providing for protection of plants and animals in danger of extinction throughout their natural ranges. In 1974, The Nature Conservancy established its first state Natural Heritage Program (in South Carolina) to inventory and mon-

itor rare plants, animals, and natural communities at the state level. Of more local significance, the U.S. Fish and Wildlife Service in the early 1970's initiated the publication of a report on rare plants for each of the New England states. For Vermont, this resulted in the first useful, up-to-date state list of rare and endangered plant species (Countryman, 1978).

These activities have spurred further awareness and activity in rare plant protection. The 1980's have seen significant changes in rare plant protection in the state. In this decade: 1) the Vermont Natural Heritage Program was established, 2) there has been a consequent dramatic increase in rare plant protection activities on the part of The Nature Conservancy and other private conservation groups, 3) state government has incorporated data on rare plants into its state lands management plans and environmental review processes, 4) the Vermont Botanical and Bird Clubs have published a bulletin after a hiatus of 30 years, and 5) the Vermont Endangered Species Law has seen significant amendments and updates.

The Vermont Natural Heritage Program was established in 1983, first within the New England Natural Heritage Program at the Nature Conservancy's Eastern Regional Office. The fledgling program compiled historical data and prepared lists of rare species and natural communities for Vermont and provided for an inventory of rare plants in the state. In 1984 the program moved to the Vermont Field Office of The Nature Conservancy, and in 1987 was transferred to state government. It is now operated as a unit of the Vermont Agency of Natural Resources, and as such is able to interact easily and efficiently with state regulatory and land management agencies.

Each year since the program's inception in 1983, significant advances have been seen in our understanding of the status of rare plants in the state. In 1985, for example, the program conducted an inventory of rare plants on the Lake Champlain Islands, re-locating several so-called missing species. The inventory was inspired by the re-location in 1984 of *Lathyrus ochroleucus* Hk. (it had last been collected in the state in 1910). This is one of a handful of plants that are more common westward and reach their eastern limits in the Champlain Valley of Vermont. It was found on an uninhabited island in a woodland sedge opening, a habitat that is mostly restricted in Vermont to the Champlain Islands but may mimic habitats found in the prairie states. The

1985 inventory yielded new information on other missing species as well as other range limit species. Of particular interest are *Astragalus canadensis* L., with only seven extant stations in Vermont, *Lathyrus japonicus* Willd., a relict of the marine invasion of the Champlain basin, with only five sites known, and *Paronychia canadensis* (L.) Wood, known only from a Lake Champlain Island and the Pownal Hills in extreme southwestern Vermont. In all, about 75 new rare plant stations were found in the inventory.

This new knowledge gave impetus to The Nature Conservancy and other conservation groups to increase their protection efforts for rare plants. In 1986, for example, The Nature Conservancy contacted over 30 landowners of rare plant sites, including several islands, and arranged for voluntary protection of those sites. Included was our only outwash-drawdown pond (similar to coastal plain ponds), with *Fimbristylis autumnalis* (L.) R. & S. and *Rhexia virginica* L., both at range limits here. The limestone hills of Pownal, with the largest concentration of rare plants in Vermont, were also protected in this manner. In 1988, The Nature Conservancy secured partial protection of a site for Vermont's endemic maidenhair fern, a recently discovered taxon with twice as many chromosomes as the typical maidenhair.

The government of the State of Vermont has also increased its plant protection efforts as a direct consequence of new information. The island where *Lathyrus ochroleucus* Hk. was discovered, now a state park, has been developed with utmost care for the protection of the 17 rare species found on the island. Trails are routed away from rare plant populations and use will be limited to primitive recreation. Rare high-elevation cliff plants in Smuggler's Notch are now better protected by informational posting in the notch (a favorite place for rock climbers), a cooperative effort of the Heritage Program and Department of Forests, Parks and Recreation. In addition, at least 40 other rare plant sites on state land are receiving protection that they never had prior to the new wave of information and cooperation. Natural areas protection by the State of Vermont has been important for some time, but only recently has full protection become possible, as information and resources have become readily available.

Another important indication of the resurgence of interest and activity with respect to rare plants was the publication in 1986 of Joint Bulletin No. 20 of the Vermont Botanical and Bird Clubs.

The cover pages of the early Bulletins read: "Published annually by the Clubs"; the recent Bulletin reads: "Published at intervals by the Clubs." In fact those intervals had increased from an average of two years to thirty years between the last Bulletin of 1956 and the present 1986 Bulletin. The Botanical Club had always had a special interest in the unusual flora of the state, and in its early days had a very distinguished membership, including such people as Nellie Flynn, Ezra Brainerd, and Cyrus Pringle. Annual meetings continued uninterrupted through the years, but active interest in the rare flora of the state had diminished, as indicated by the absence of Club Bulletins. The Club and its members are now, again, actively involved in the research and protection of rare plants.

Perhaps the most important change of the decade was the 1982 amendment of the Vermont Endangered Species Act. The amendment represented an attempt to provide for updating of the lists and to establish sound management policies for endangered species, while at the same time making Vermont eligible for federal endangered species funds. Unfortunately the 1982 amendment was still flawed, and had to be revised again. Nevertheless, it provided for the establishment of an Endangered Species Committee, which worked ardently for two years to prepare new lists of endangered and threatened species, while the legislature worked to amend the law. The new amendments were passed in 1986 (10 V.S.A. Chap. 123), and the new lists adopted in 1987. Vermont now has an endangered species law which provides for protection and management of threatened and endangered species, and provides for the regular updating of the lists of protected species. Twenty-one plants are listed as Endangered, and 91 are Threatened.

The new age of comprehensive knowledge and viable legislation is represented well by the case of *Anemone multifida* Poir. This is a plant of moist river ledges that is at its southern range limit here and is rare throughout New England and New York. Four stations for this species have been known or reported in Vermont, but two are apparently extirpated. The plant has always been considered rare in the state, but clearly never received the protection that it deserved. In 1986, a hydroelectric developer submitted applications for the permits necessary to develop Winooski Falls, the largest remaining station for *A. multifida* in Vermont. The Endangered Species Committee, acting under authority of

the new Endangered Species Law, considered the proposal and met with the developer to discuss potential damage to the plants. An agreement was reached whereby the developer would minimize the disturbance so that only a small percentage of the *Anemone* population would be lost and an in-depth study and recovery plan would be prepared, funded by the developer and supervised by the Agency of Natural Resources. This agreement, made in a spirit of cooperation and mutual concern for the rare plants, represents a milestone of change from the early days when, only a mile upstream, *Astragalus robbinsii* (Oakes) Gray was lost forever because there was no provision for its protection.

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