

**A Proposal to Relocate Rare and Endangered
Plants of Mount Desert Island
Nishanta Rajakaruna**

Submitted: May 24, 1993

To: Garden Club of Mount Desert and Acadia National Park

From: Nishanta Rajakaruna

Memo: Proposal to study rare and endangered plants of ANP and MDI region

Date: May 23, 1993

Background, Experiences, and Interests

I had my entire secondary education in Sri Lanka. During my three years in high school, I studied Botany, Zoology, Chemistry, and Physics. At the end of my third year in high school I sat for the Advanced Level Examination which is the equivalent to the university entrance examination in Sri Lanka. I obtained an "A" pass for botany which was of course my favorite subject and was ranked among the top one percent in the country based on my performance at the botany examination. On the basis of the overall results obtained, I was selected to follow a four-year undergraduate course in Biology/Agriculture at the University of Peradeniya, Sri Lanka.

Due to the political disturbances at that time the universities had to be closed. As a result, I became involved with a research group from the Plant Pathology Division of the Central Agricultural Research Institute (CARI) in Sri Lanka. I worked there for almost six months and became seriously involved in many aspects of plant disease and their control.

Even though I had the opportunity to get more and more involved in the field of pathology, I decided to leave Sri Lanka in

order to pursue my interrupted undergraduate education. I left the country in August 1990 and since then have been a student at College of the Atlantic (COA) in Bar Harbor, Maine. During the past three years at COA I have pursued my interests in diverse fields but have concentrated mainly in the plant sciences.

I have taken almost all available courses in this area and have also had a number of experiences in both field and herbarium work. In the summer of 1991 I worked as a research assistant with a few graduate students from the Department of Organismic and Evolutionary Biology of Harvard University. I took part in many different projects ranging from plant identification to aspects of plant physiology. However, most of my work was in the area of surveying the forest vegetation. By the end of that summer, I was able to identify almost all the common plants in the forest.

During the summer of 1992 was involved in a number of projects. I helped Ms. Linda Gregory, a researcher at Acadia National Park, conduct a study on the ecology of sub-alpine plants. This experience furthered my knowledge of a large range of plants growing at higher altitudes. I also participated as a videographer in the week-long program on relocating and reintroducing some rare plants on Acadia National Park. This exciting project was organized by both the Garden Club of America and Acadia National Park. In most of these projects my knowledge of the temperate flora was important and an asset to the researcher. Furthermore, I began working on an independent project surveying all vascular plants on campus. Before I graduate from COA I hope to complete not only this

inventory but also the mapping and labelling most of the woody plants on campus.

Last Fall I took a tutorial on advanced plant taxonomy where I worked on relocating rare species belonging to both genera Aster and Solidago. I went through herbarium specimens to confirm the identification of the present collection, naming unidentified specimens and renaming misidentified specimens. I relocated a few specimens presently unavailable in our herbarium collection by going to locations on the island where they were previously recorded.

From December, 1992 to March, 1993 I participated in a project on writing a guide to common trees and shrubs of Sri Lanka. I was employed by the authors to coordinate day-to-day activities in the preparation of the guide. This was an exciting opportunity to learn first-hand about the flora of Sri Lanka.

Presently I am taking an advanced course on plant systematics and this course has exposed me to many theoretical and practical aspects of plant variation and evolution. As part of my project for this class I am involved in writing and presenting a paper on edaphic factors leading to rarity and endemism of plants. I have been introduced to both laboratory and field techniques used in determining patterns of variation within certain genera. Presently we are involved in a long-term project to study the extent of variation in the genus Amelanchier in a certain part of the island. This term I am also involved in an independent study examining some aspects of the distribution of Bryophytes in a wet and a dry

habitat of the COA campus.

I first became interested in the areas of taxonomy and dendrology in 1983 during my brief stay at the Sinharaja rain forest in Sri Lanka. I was amazed to see such a diverse flora where more than 60% of the flora is supposed to be endemic. I then realized that I wanted to work in the fields of systematics and plant ecology and have since been pursuing my interests in these directions. In the Fall of 1992 I was fortunate enough to get selected as a research assistant to work at this rain forest for a period of seven months starting August, 1993. I will be working on a Smithsonian Tropical Research Institute project surveying vascular plants in 120 acres of primary forest.

Even though I have always been interested in various aspects of the plant sciences my interests in plant systematics and ecology were heavily influenced during my stay at COA. Dr. Craig Greene, who is both my faculty advisor and professor of botany, has been a great inspiration and has strongly influenced me in molding my interests and focus in these fields.

Proposed study

During June and July of 1993 I propose to undertake a project relocating some rare and endangered plants on Mount Desert Island. Having had all these experiences and training in plant taxonomy and systematics I feel confident in my ability to contribute in both gathering important botanical information and relocating at least

a few of these rare and endangered plants. Prior to undertaking this project I plan on getting familiarized with these rare plants by going through herbarium specimens both at the COA herbarium and the University of Maine herbarium. I will gather relevant information on reproductive biology and habitat characteristics of all these species prior to going out into the field. This will include reading guides and checklists and talking to knowledgeable people in the community. As a result I will interact often with persons from both the Wild Gardens of Acadia and Resource Management of the Park.

I plan to work approximately 20 hours a week for a period of 6 weeks beginning June 7, 1993. During the period of six weeks I will search for the following rare plants.

Proposed list of rare species to be searched

1. Acorus calamus L.
Common name: Sweetflag
2. Apios americana Medic.
Common name: Groundnut
3. Antennaria spp.
Common name: Everlasting spp.
4. Botrychium spp.
Common name: Grapefern
5. Calamagrostis stricta ssp. inexpansa (Gray) C.W.Greene
Common name: Reed-Bent grass
6. Carex bigelowii Torr.
Common name: Bigelow's sedge
7. Cyripedium reginae Walt.
Common name: Showy Lady's Slipper
8. Cyripedium calceolus L.
Common name: Yellow Lady's Slipper
9. Decodon verticillatus (L.) Ell.
Common name: Water Willow
10. Isoetes acadiensis Kvtt.
Common name: Acadian Quillwort
11. Iris setosa var. canadensis M. Foster
Common name: Beach-head Iris
12. Juncus greenei Oakes & Tuckerm.
Common name: Rush sp.

13. Juncus secundus Beauv.
Common name: Rush sp.
14. Lindernia dubia (L.) Pennell
Common name: False Pimpernel
15. Listera auriculata Wieg.
Common name: Auricled Twayblade
16. Lobelia cardinalis L.
Common name: Cardinal Flower
17. Lycopodium selago L.
Alpine Clubmoss
18. Polygala paucifolia Willd.
Common name: Fringed Polygala
19. Potamogeton confervoides Reichenb.
Common name: Pondweed
20. Ranunculus trichophyllus Chaix
Common name: White Water Buttercup
21. Sagina nodosa subsp. borealis Crow
Sagina nodosa (L.) Fenzl subsp. nodosa
Common name: Pearlwort
22. Selaginella rupestris L.
Common name: Rock Spikemoss
23. Senecio aureus L.
Common name: Ragwort
Senecio robbinsii Oakes
Common name: Ragwort
24. Suaeda americana (Pers.) Fern
Common name: American Sea-blite
25. Suaeda richii Fern.
Common name: Rich's Sea-blite
26. Subularia aquatica L.
Common name: Awlwort
27. Vaccinium boreale Hall and Aalders
Common name: Boreal Blueberry

(See list (Report 1) prepared 6/15/1993 for more information)

During the six-week period I will go to both previously cited localities and to other localities with similar habitat characteristics and will search for the above species. I will make collections whenever necessary and the specimens will be pressed, mounted, and stored for display at the COA herbarium. Slides or photographs will be taken whenever a rare plant is discovered.

At the end of the search period I will write a short report describing my experiences and will present it to the resource

management of ANP and to the Garden Club of Mount Desert. I will also provide pertinent data to the State of Maine Natural Heritage Program.

I would like Ms. Linda Gregory from Acadia National Park to be my supervisor during this project. Having had many experiences in similar projects she will be an ideal person to advice and direct me during my study. I will also seek Dr. Craig Greene's advice and assistance whenever the need arises.

Conclusion

I feel that this project will be the most challenging study I have ever undertaken independently. The project will provide an ideal setting to put into practice all the knowledge and the experiences I have accrued in the field of botany. Hence, it will be challenging both in terms of personal development and academic growth. This opportunity will provide me with new knowledge and experience and will help me in similar studies that I may undertake in the future.

I see this project not only as an opportunity to contribute information on rare and endangered plants of this island, but also as an experience which will add to all the exciting times I have had, and plan to have, during my undergraduate education at College of the Atlantic. Furthermore, I consider any success I may have in this study as a way in which I can say thank you to Mount Desert Island, a place I will always consider my second home, for all the support, knowledge, and friendship it has given me during my stay in the United States.

To: Garden Club of Mount Desert and Acadia National Park

From : Nishanta Rajakaruna

Memo: Report 1. List of species to be searched and their localities (From Eastman, 1978, Greene, 1990, Vascular Plants of MDI, ANP, and Vicinity Alphabetical Listing, 1992 and other sources. Habitat description from Fernald, 1950).

Date: June 15, 1993

1. Acorus calamus (Araceae) -- Near head of Doctor's creek; near otter creek; overflow brook Somesville. **May-August.**

Habitat - Wet places and borders of quiet water.

2. Apios americana (Leguminosae) -- West shore, Great pond; Cromwell Brook, Bar Harbor. **July-September.**

Habitat - Rich thickets.

3. Antennaria canadensis (Compositae) -- Seal Harbor; A.fallax - Somesville; A.munda -- Roadside near high head; A.neodioica -- Seal Harbor, Somesville; A.neodioica var. chlorophylla -- Somesville, Town Hill, near Jordan pond, Northwest arm, Great pond; A.parlinii -- Somesville; A.petaloides -- Bar Harbor, SW Harbor; A.petaloides var. subcorymbosa -- Seal Harbor. **June-July.**

Habitat -- Open woods, pastures, fields and rocky barrens.

4. Botrychium spp. (Ophioglossaceae) -- B.lanceolatum var. angustisegmentum -- Woods, Seal Harbor; B.multifidum var. intermedium -- High head Meadow, Woods East of Emery district; B.simplex -- High head, Beach Cliffs, North of Jordan Pond,

Wonderland; B.virginianum -- Hunter's Brook Valley, Western Mountain notch, Rich woods. **June-August.**

Habitat -Meadows, peaty slopes and clearings, deciduous and mixed woods and openings. Rich woods.

5. Calamagrostis stricta ssp. inexpansa (Gramineae) -- Jordan Ridge. Introduced to Pemetic Mountain (1992). **July-August.**

Habitat -- Rocky, gravelly, peaty soils at high altitudes.

6. Carex bigelowii (Cyperaceae) -- Alpine meadows, Black cap Mountain. **July-September.**

Habitat -- Treeless barens, alpine areas.

7. Clethra alnifolia (Clethraceae) -- Upper Hadlock, meadow, Denning Brook. **July-September.**

Habitat - Swamps, damp thickets, and sandy woods.

8. Cypripedium reginae (Orchidaceae) -- Swamp, NEH, Swamp on Jordan Pond Trail, South of Rt. 233 just east of High School, North of Rt. 233 just west of Power station at Norway Drive, Right turn at Somesville fire station next left onto private drive, along driveway of third house (Greene, pers. comm.) **Mid May-Mid August.**

Habitat -- Mossy calcareous swamps, bogs or woodland glades, damp calcareous slopes or shores.

9. C.calceolus var. parviflorum -- Damp woods near Jordan stream.
var. pubescens -- Jordan Mountain, Seal Harbor. Other localities -- Trail to Wonderland, Beehive and Day Mountains, Woods along carriage roads East side of Eagle lake, Woods along little Harbor brook and up into amphitheater, woods around Jordan Stream and other rich woods and edges of Cedar

swamps. **May-July.**

Habitat - Calcareous bogs, mossy swamps and woods, wet shores, damp rocks.

10. Decodon verticillatus (Lythraceae) -- Swamp, Somes Pond. West of head of pond on Oak Hill road. **July-August.**

Habitat- Swamps and shallow pools.

11. Elatine americana (Elatinaceae) -- Somes Stream. **July-October.**

Habitat - Muddy shores and margins of ponds and streams.

12. Isoetes spp. (Isoetaceae) -- I. macrospora -- Somes Stream; I. riparia - Somes Stream, Ripples Brook.

Habitat - Fresh or tidal shores and shallow water, margins and shores of fresh pools, lakes and streams, ascending to alpine ponds.

13. Iris setosa var. canadensis (Iridaceae) -- Along Ship Harbor, Wonderland, Great Head (Brenda Les pers. comm). **June-August.**

Habitat - Turfy crests of headlands, rocky slopes, upper borders of beaches, dunes, within reach of ocean spray,

14. Juncus greenei (Juncaceae) -- Sargent Mountain, SWH.

June-September.

Habitat - Dry to moist siliceous or argillaceous soil, sand dunes, mountain slopes.

15. Juncus secundus (Juncaceae) -- St. Sauveur Mountain. **June - October.**

Habitat - Dry, open, sterile soils, rock pockets, clearings.

16. Lindernia dubia (Scrophulariaceae) -- Somesville. **June - October.**

Habitat - Shores, damp open spots, disturbed soil.

17. Listera auriculata (Orchidaceae) -- Alder thickets, head of Barcelona meadow, Old Norway Drive, Along Pray's Brook, Indian Point. L.convallarioides -- woods, head of Barcelona meadow. L.cordata -- Cold Brook. Cedar Swamp South and SW of Jordan Pond. **June-August.**

Habitat - Alluvial banks, calcareous silts or crevices, alder thickets, and cedar swamps.

18. Lobelia cardinalis (Campanulaceae) -- Duck Brook, Somesville cemetery, and ditch next to Somesville fire station when going towards SWH.

July - September.

Habitat - Damp shores, meadows and swamps.

19. Lycopodium selago (Lycopodiaceae) -- Cadillac Mountain, Pemetic Mountain, Sargent Mountain, and Penobscot Mountain.

July - September.

Habitat - Damp or mossy rocks, barrens, cold woods, bare mountains.

20. Najas flexilis (Najadaceae) -- Ripples Pond. **July-October.**

Habitat - Shallow fresh to brackish water.

21. Oenothera parviflora (Onagraceae) -- Seal harbor, near Hunter's Beach, Bracy cove. **July-September.**

Habitat - gravelly shores, talus, sands and dry openings.

22. Polygala paucifolia (Polygalaceae) -- Lakewood, South and East of Salisbury Cove, Sand Point Road. **May-July.**

Polygala verticillata - Norwood road, SWH.

Habitat - Woods in light soil.

23. Potamogeton spp. (Zosteraceae) -- Ripples Pond, Bear Brook, West of Great Meadow, South end of Bubble Pond, Witch hole pond, South end Great Pond, Aunt Betty's Pond, NE Creek, Little Long Pond, Somes Pond, Round Pond. **June-August.**
Habitat - Ponds, lakes, calcareous and brackish waters.
24. Ranunculus trichophyllus (Ranunculaceae) -- Pray's Brook. **July-September.**
Habitat - Fresh to brackish waters.
25. Sagina nodosa (Caryophyllaceae) -- Seal Harbor. **July-September.**
Habitat - Damp, rocky, gravelly or peaty soil.
26. Selaginella rupestris (Selaginellaceae) -- Flying Mountain, Dog Mountain. **July-October.**
Habitat - Dry rocks or packed sand.
27. Senecio aureus and S. robbinsii (Compositae) -- High Head Meadow and Ship Harbor. **May-August.**
Habitat - Rich calcareous woods and bottom or upland swamps, peaty meadows, swales, thickets, fields.
28. Suaeda americana and S. richii (Chenopodiaceae) -- Norwood Cove, SWH. **August-October.**
Habitat - Salt marshes and sea-strands.
29. Subularia aquatica (Brassicaceae) -- Bubble pond, Eagle lake. **July-October.**
Habitat - Sandy or gravelly margins (emersed or immersed) of lakes and slow streams.
30. Utricularia resupinata (Lentibulariaceae) -- Breakneck ponds, pond north of road by eagle lake parking lot, aunt Betty's

pond, Ripples pond, Sargent mountain pond. **July-September.**

Habitat - Pond, lake, and river shores and margins.

31. Vaccinium boreale (Ericaceae) -- Cadillac summit ? **June-July.**

Habitat - Mountain summits-growing with V.angustifolium.

Copies to Ms. Linda Gregory, Dr. C.W. Greene, Mr. George Clark and
Ms. Brenda Les.