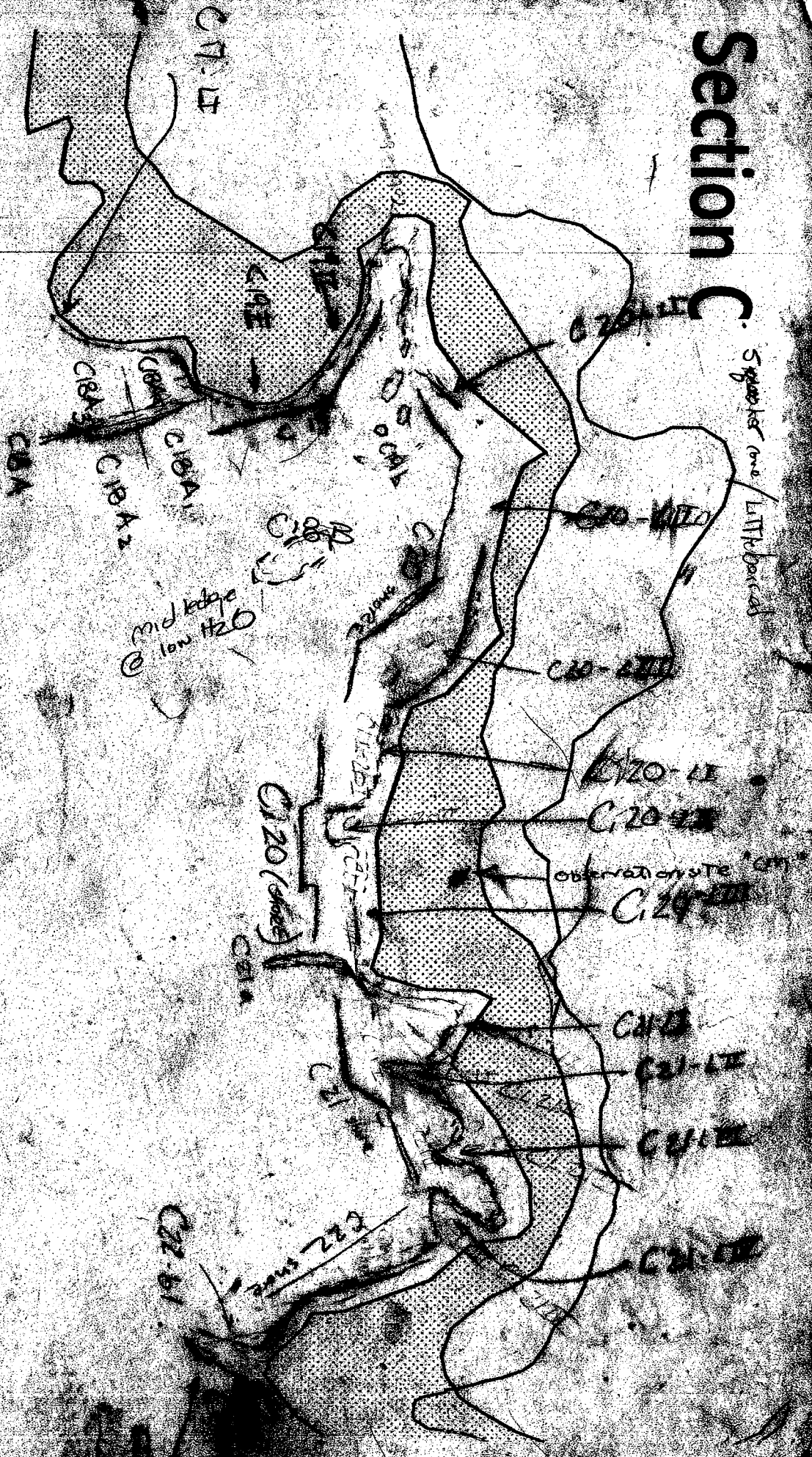


INVESTIGATOR'S
ANNUAL
REPORT
1995

Produced by ACADIA NATIONAL PARK

Section C

Speaker one / Little boxes



National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Air Quality

Report Year: 1995
Project Title: Air Quality Monitoring Program

Investigator(s): Mr. Bob Breen
Division of Natural Resources
Acadia National Park
P.O. Box 177
Bar Harbor, Me 04609

Phone: 207/288-5463
Fax : 207/288-5507
Email: bob_breen@nps.gov

Coinvestigator: Bill Gawley same

Objective: Maintain and operate air quality monitoring program at ACAD in cooperation with NPS Air Resources Division and the Maine Department of Environmental protection. Program objectives are to document baseline conditions and develop long-term monitoring program for trends analysis and to provide information for management and regulatory decision makers.

Findings: Monitoring parameters include ozone, fine particulates (IMPROVE), VOC's, wet precipitation (NADP), mercury wet deposition (MDN), Nephelometer (visibility) at McFarland Hill site; and ozone at Cadillac Mountain site. Meteorological monitoring at McFarland Hill for wind speed, wind direction, temperature and dew point. Data archived by NPS Air Resources Division, Maine DEP, NADP program, and US EPA AIRS database.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Air Quality

Report Year: 1995
Project Title: Effects of ozone on native vegetation of Acadia National Park

Investigator(s): Dr. Robert Eckert
Dept. of Natural Resources
University of New Hampshire
Durham, NH 03824

Phone: 603/862-2508
Fax : 603/862-4976
Email: rteckert@christa.unh.edu

Coinvestigator: Bob Kohut 607/254-1233
Coinvestigator: Bob Lee 603/862-1233

Objective: Assess level of precision from current monitoring design and determine level of utility of the design for assessing ozone injury at Acadia.

Investigate weather and ozone variables associated with injury on indicator plants.

Determine the incidence of ozone injury on indicator species.

Findings: Over 800 plants of spreading dogbane and over 1400 broad leafasters, were assessed. Ozone injury was observed on leaves of both species.

Radial growth of 102 eastern white pine trees in 7 of 8 stands were negatively correlated with recorded ozone levels.

Reports Produced: Bartholomay,, A. G. 1995. A dendroclimatological correlation of white pine radial growth with ozone levels overtime at Acadia National Park. M.S. Thesis, University of New Hampshire.

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Air Quality

Report Year: 1995
Project Title: Collection of scionwood of "ozone symptomatic"
eastern white pine, Acadia National Park.

Investigator(s): Dr. John Skelly
Dept of Plant Pathology
Pennsylvania State University
211 Buckhout Lab
University Park, PA 16802

Phone: 814/865-7584
Fax : 814/863-7217
Email: jms23@psu.edu

Coinvestigator:

Objective: Collection of scionwood from ozone symptomatic
Acadia National Park white pines for purposes of
grafting to root stock for subsequent outplanting
into open-top chambers at a forest site in
north-central Pennsylvania.

Findings: In early June, 1995, scionwood was collected from
several eastern white pines that had been
identified in previous studies for their
responses to ambient ozone exposures in Acadia
National Park. Scionwood was shipped via express
mail to the Pennsylvania State University
Greenhouse facilities where grafting to white
pine rootstock took place within one4 week
following scionwood arrival. Unfortunately, all
but five grafting attempts failed due to a root
disease problem which became evident in the
rootstock. Formely grafted clones have been
placed into open-top chambers in central PA and
will be followed for several years for foliar
injuries as may be induced by ambient ozone
exposures.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Coastal/ Marine Systems

Report Year: 1995
Project Title: marine algae

Investigator(s): Dr. Susan Brawley
Dept of Plant Pathology
5722 Deering Hall
University of Maine
Orono, ME 04469-5722

Phone: 207/581-2973
Fax : 207/581-2969
Email: Brawley@maine.maine.edu

Coinvestigator:

Objective: study thermal tolerances as part of zonation
study external fertilization success and
molecular systematics of Fucaceae

Findings: see abstracts and publications

Reports Produced: Li, R., S. H. Brawley. 1996. Thermal tolerance of furoid embryos. J. Phycol. (Suppl.). 32, in press (presentation will be made at annual meeting of Phycological Society of America in July, 1996).

Pearson, g. a., s. h. Brawley. 0. Reproductive ecology of Fucus distichus (Phaeophyceae): An intertidal alga with successful external fertilization. Marine Ecology Progress Series. accepted (will probably appear in 1996).

Serrao, E., G. A. Pearson, L. Kautsky, S. H. Brawley. 0. Successful external fertilization in turbulent environments. Proc. Natl. Acad. Sci. U.S.A. 93, in press.

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Coastal/ Marine Systems

Report Year: 1995
Project Title: Ecology of Intertidal Fauna

Investigator(s): Dr. Jeannett Dumas
Dept Biosciences
Drexel University, Station 18
32nd and Chestnut Streets
Philadelphia, PA 19104

Phone: 215/895-2624
Fax :
Email:

Coinvestigator:

Objective:

Findings:

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Coastal/ Marine Systems

Report Year: 1995
Project Title: Primary productivity in Somes Sound (Acadia National Park)

Investigator(s): Dr. Charles Roman
National Biological Service
University of Rhode Island
Narragansett, RI 02882

Phone: 401-874-6885
Fax : 401-874-6887
Email: croman@gso.uri.edu

Coinvestigator: Dr. Peter Doering

Objective: Somes Sound is the only true fjord-type estuary on the eastern seaboard of the US. Only 44% of the Somes Sound watershed lies within the protective boundaries of Acadia National Park. Given the physiographic uniqueness of the estuary and the potential for nonpoint source nutrient inputs from future residential growth, it seems necessary to collect baseline water quality data. The purpose of this study was to evaluate phytoplankton primary productivity in the Sound. Primary production is an initial response variable to increased nutrient loading, and thus, should serve as an important monitoring parameter.

Findings: Somes Sound has fairly high primary production levels, given its low nutrient status. An extensive photic zone (11m) appears to be the most important factor defining this high production. Because of the extensive photic zone, the Sound could be quite sensitive to small increases in nutrients.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Contaminants/ Hazardous Mat.

Report Year: 1995
Project Title: Mercury in the Aquatic Environment at Acadia National Park

Investigator(s): Dr. Terry Haines
5751 Murray Hall
Department of Zoology
University of Maine
Orono, ME 04469-5751

Phone: 207-581-2578
Fax : 207-581-2537
Email: haines@maine.maine.edu

Coinvestigator:

Objective:

1. Characterize mercury contaminated fish and their distribution, and assess the environmental factors related to mercury accumulation by aquatic organisms.
2. Demonstrate food chain transfer of mercury and identify significant physical and chemical factors affecting mercury bioavailability.
3. Determine a historical data set of trends in mercury deposition to ACAD.

Findings:

Water and fish samples were collected from 10 lakes in ACAD and 5 in CACO. Water samples were analyzed for pH, ANC, DOC, color, specific conductance, Na, K, Ca, Mg, Cl, SO₄, and NO₃. Fish were analysed for total mercury. In ACAD, smallmouth bass, chain pickerel, and white perch had the highest mercury levels, ranging from a high of 1.8 ppm to 0.5 ppm. Brook trout, lake trout, and landlocked Atlantic salmon had the lowest, ranging from 0.4 to 0.2 ppm. For CACO, yellow perch from Duck Pond had the highest mercury content, 1.2 ppm, and smallmouth bass from Great Pond were second highest, 1.0 ppm. Mercury was lowest in yellow perch from Ryder Pond, 0.3 ppm. Fish average mercury content exceeded 0.5 ppm in about half of the waters. Sediment cores from Sargent Mountain Pond and peat cores from Great Heath Bog were dated and analyzed for mercury. Chronology was similar among all cores, with mercury deposition being low and constant prior to 1900, increasing gradually from 1900-1940, then increasing rapidly to a maximum during 1960-1980. This chronology coincides with increasing human industrial

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

activity and provides indirect evidence that the source of mercury to fish in the parks is not of natural origin, but most likely represents atmospheric deposition of mercury originating from anthropogenic activity. A precipitation collection station was installed and samples of wet precipitation were collected and analyzed for mercury beginning in early October. In addition, a series of bulk precipitation collectors were operated during October and November. Mercury concentration in precipitation ranged from about 2 ng/L to about 18 ng/L. Bulk precipitation collected under a spruce canopy was substantially higher, ranging from about 30 to about 70 ng/L. This probably represents dry deposited mercury that was washed off spruce needles by rainfall.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Ecology

Report Year: 1995
Project Title: Potential Changes in Species Distribution
Patterns: Implications of Current Range Limits.
(Jack and Pitch Pine Ecology)

Investigator(s): Dr. Michael Greenwood
Dpt. of Forest Ecosystem Sci
5755 Nutting Hall
University of Maine
Orono, ME 04469-5755

Phone: 207/581-2838
Fax : 207/581-4257
Email: Greenwd@apollo.umenfa.maine.eu

Coinvestigator: Jackie Forshay 581-2842

Objective: The major objective involves the assumption that the northward expansion of pitch pine is limited by cold temperatures and the southern expansion of jack pine is limited by warm temperatures. Thus it is predicted that pitch pine might replace jack pine should the climate warm over time. The objective, then, is to examine the strength of this assumption by testing several hypotheses: 1. Radial growth of pitch pine is positively correlated with temperature whereas radial growth of jack pine is negatively correlated with temperature. 2. Seedling growth and survival are maximized at higher temperatures for pitch pine than for jack pine. 3. For single events, freezing tolerance is greater for jack pine than for pitch pine. However, with warmer average temperatures, frequent and/or substantial thaw-freeze cycles may increase the amount of winter damage in one or both species. 4. Jack pine and pitch pine will respond differently to high and low temperatures in terms of flowering and production of viable seed. 5. Progeny from the same parents will inherit unique alleles when parents are subjected to different temperatures during the reproductive cycle.

Please note: This project has both greenhouse/programmable chamber and field components. The findings and status reported here pertain to the field related projects. Please contact me (J. Forshay) if you would like information regarding the controlled climate work.

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Findings:

Summary of work from 6/95 to 12/95:

1. Data collected describing stand characteristics of Cadillac Mountain site:

a. Stand data- Three north-south transects were laid out on southern arm of Cadillac Mt. Pitch pine is more prevalent than jack pine and has greater basal area, mean diameter and density. There also appears to be more regeneration of pitch pine. Relative to their numbers, pitch and jack pine have same percentages of dominant and intermediate trees. More pitch than jack is codominant (35 vs. 22%). Jack has a greater percentage of suppressed trees (30%) than pitch (15%). Again, in respect to their numbers, both species have similar percentages in various ranks of crown condition. About 65% of both species are in classes 1 or 2 (class 1=good w/normal foliage, class 2=dead lower branches). About 19% of both species are in class 3 (=foliage loss<50%), 13% in class 4 (=crown dieback, foliage loss>50%) and 5% in class 5 (=dead).

b. Vegetative cover- Cover type was recorded at plots set up within transects. In general, rock, deciduous scrub and ericaceous scrub are the largest cover types. Monospecific plots of jack pine seem to have more rock (43%) and deciduous scrub (24%) than monospecific plots of pitch pine (36% and 18%, respectively). Monospecific pitch pine plots seem to have more organic duff (5 vs. 2 %) and ericaceous scrub (10 vs. 2 %) than jack pine.

c. Cone Inventory- 30 trees of each species were tagged and are being monitored to track the life history of individual cones. On each tree, 3 branches were selected and the number of first, and second year and old cones were recorded. A total of 136 first year, 41 second year and 101 old cones were found on pitch pine. There were 94 first year, 84 second year and 98 old ones found on jack pine.

2. Seed bank study: The intent of the seed bank study was to get an idea of whether viable seed is limiting for regeneration by either species and to estimate the relative contributions of each species to the seed bank. Fifty-one soil samples were taken along each transect with 10cm diameter corer to a depth of 3-6cm. Soil depths were also measured along each transect. Each sample was sorted by hand to remove jack and pitch pine seeds. Many seed fragments were found, but only 22 pitch and 11 jack pine seeds were found whole. We are currently trying to see if these seeds will germinate (no results yet).

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

3. A thaw-freeze experiment was performed in December to see if frequent thaw-freeze cycles would increase the amount of winter injury in both or either species. Foliage (27 fascicles) from each of 10 jack pines and 10 pitch pines was collected and brought back to UMO, where fascicles experienced up to 4 thaw-freeze cycles. Damage was assessed visually and by looking at absorption ratios of chlorophyll to phaeophytin (phaeophytin is a breakdown product of chlorophyll). Results showed that no significant damage occurred in either jack or pitch pine (ANOVA, $p > 0.10$). This lack of injury indicates that thaw-freeze cycles are not limiting to pitch pine's northward expansion.

Status

Spring 1996: Flower production will be monitored on cone inventory trees at the field site on Cadillac Mountain.

Summer 1996: Cones will continue to be monitored to track survival of first and second year cones.

Seedling surveys of jack and pitch pine will be conducted to look at regeneration. Tree cores may be taken; exact amount is not yet known. If time permits, a more detailed vegetation survey will be completed to see if any understory differences exist in monospecific jack or pitch pine plots.

Fall 1996: By continuing to monitor cone inventory trees, we'll have a complete developmental history for 136 and 94 jack pine cones. A yet-to-be-determined-number of seed traps covered with hardware cloth will be set out along the cone inventory trees to estimate the number of viable seed produced. We will also need to harvest a large quantity of seed for future use.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Ecology

Report Year: 1995
Project Title: Historic Forest Stand Dynamics

Investigator(s): Dr. George Jacobson
Institute for Quaternary Study
University of Maine
5722 Deering Hall
Orono, ME 04469-5722

Phone: 207/581-2784
Fax : 207/581-3007
Email: jacobson@maine.maine.edu

Coinvestigator: Molly Schauffler 207/581-2784

Objective: Spruce became dominant on Maine's landscape only recently, during the last 1000 years. apparently it expanded earlier along the cooler-climate coast than it did inland and may have even persisted throughout the warmer mid-Holocene in cool coastal microsites. Project objective is to determine the developmental history of spruce-fir stands in Acadia National Park using pollen and charcoal records preserved in sediments from wet depressions in the forest floor. We will assess the possible relationship between the development of spruce stands and historic changes in climate and local fire history, and related implications of climate warming. We will also develop a research strategy for a coastal ecosystems global climate change research program that focuses on coastal national parks along the Atlantic coast.

Findings: A. Cores from 2 wet depressions on Isle au Haut (north end and south end) were sampled in October 1995. Both cores contain adequately preserved charcoal and pollen; analyses are in progress. Preliminary radiocarbon dating indicates basal dates older than 1500 years BP (north core) and 2500 years BP (south core). Fossil spruce pollen is relatively abundant throughout each core.

B. Arrangements for the preparation and assembly of research strategies are in progress in cooperation with Charles T. Roman, National Biological Service, Cooperative Park Studies Unit Leader.

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Ecology

Report Year: 1995
Project Title: Winter injury and needle fungi on spruce

Investigator(s): Dr. William Livingston
Dept of Forest Ecosystem Sci
5755 Nutting Hall
University of Maine
Orono, ME 04469-5755

Phone: 207/581-2881
Fax :
Email:

Coinvestigator:

Objective: Isolate a needle fungus, *Rhizosphaera kalkhoffii*, for use in studies on winter injury on red spruce.

Findings: Isolations from red spruce of *Rhizosphaera kalkhoffii* were highest during the dormant season (15-20% of needles) than during the growing season (7-8% of needles). On 4 yr old spruce seedlings, fungal inoculations resulted in increased damage to needles frozen to -35 or -45C. This study suggests that fungal infection is another factor which influences winter injury on red spruce. Field work has been completed and the information will be published this June (1996) in the Canadian Journal of Forest Research.

Reports Produced: Manter, D. K. 1994. Measuring the effects of freezing injury on red spruce (*Picea rubens* Sarg.) needles. M.S. Thesis, University of Maine, Orono. 41 pp.

Manter, D. K., W. H. Livingston. 1996. Influence of thawing rate and fungal infection by *Rhizosphaera kalkhoffii* on freezing injury in red spruce (*Picea rubens*) needles. Canadian Journal of Forest Research. 26:(in press).

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Environmental Monitoring

Report Year: 1995
Project Title: Primary production of macroalgae, *Ruppia* maritima, and phytoplankton in Bass Harbor Marsh, Maine

Investigator(s): Dr. Charles Roman
National Biological Service
University of Rhode Island
Narragansett, RI 02882

Phone: 401-874-6885
Fax : 401-874-6887
Email: croman@gso.uri.edu

Coinvestigator: Eleanor Kinney 401-874-6885

Objective: Growing coastal populations threaten estuarine water quality, and shallow coastal systems worldwide are exhibiting increased algal growth in response to nutrient enrichment. Previous studies have documented that nutrient inputs to Bass Harbor Marsh (ACAD) may be contributing to nutrient enriched environmental conditions. This study evaluates production patterns of three primary producers (macroalgae, *Ruppia*, and phytoplankton) as they respond to ambient conditions in the marsh.

Findings: Total system primary production in Bass Harbor Marsh is dominated by the macroalgae community. Production of *Ruppia*, a submerged angiosperm with high habitat value, may be depressed by competition with macroalgae. These results indicate that Bass Harbor Marsh is exhibiting patterns typical of shallow eutrophied systems, despite relatively low levels of nutrient enrichment.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Exotic Species - Plants

Report Year: 1995
Project Title: Management of Purple Loosestrife

Investigator(s): Ms. Linda Gregory
Acadia National Park
Division of Natural Resources
P.O. Box 177
Bar Harbor, ME 04609

Phone: 207/288-5463
Fax : 207/288-5507
Email: linda_gregory@nps.gov

Coinvestigator:

Objective: To determine distribution of purple loosestrife
on MDI

To assess quantitative changes in purple
loosestrife abundance in selected wetlands.

To eliminate purple loosestrife from park
wetlands.

Findings:

In 1995, management of purple loosestrife (*Lythrum salicaria*), a non-native invasive plant species, was conducted for the eighth consecutive year in Acadia National Park (ANP) on Mount Desert Island, Maine, following guidelines in the ANP Integrated Pest Management Plan (Connery 1991). All sites known to have purple loosestrife in the last eight years were field checked; eight of these 24 sites contained purple loosestrife. Quantitative monitoring of purple loosestrife was conducted at three sites; a total of seven monitoring grids were surveyed. All purple loosestrife plants found within park boundaries were sprayed with a solution of 1% Rodeo (glyphosate) herbicide and 0.5% ~~to water~~ solution and Arborchem aquatic surfactant diluted with water in mid-August using hand-held backpack sprayers. Approximately 50 acres were treated during mid-August; a total of 0.14 gallons undiluted glyphosate was applied. Areas outside park boundaries that contain purple loosestrife were noted on a base map; no management action on these lands is taken by the park.

*Mr. I thought
our objectives were merely
to control - don't think
we really ever expected
to eliminate - 100%*

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Fungi

Report Year: 1995
Project Title: The role of fungi in the needle blight of eastern white pine in Acadia National Park.

Investigator(s): Dr. Bill Merrill
Dept of Plant Pathology
Pennsylvania State University
211 Buckhout Lab
University Park, PA 16802

Phone: 814/863-7236
Fax : 814/863-7217
Email: wxml@psu.edu

Coinvestigator: Nancy G. Wenner same

Objective: To identify the fungi involved in the needle blighting of white pine, and to determine their roles in the syndrome. To compare the changes in pathological anatomy caused by the fungi to each other. To investigate the relative roles of fungi, insects and ozone as causal agents.

Findings: In 1995, few fungus fruiting bodies occurred on blighted white pine needles with the exception of those of *Hendersonia pinicola*, an apparent competitor which inhibits the development of other fungi. Indeed, a related species has been used for biological control of needlecast fungi in Europe. Clonal materials were established from normally symptomatic and normally asymptomatic trees for use in subsequent inoculation trials with the needlecast fungus which is associated with all asymptomatic trees.

Reports Produced: Merrill, W., N. G. Wenner. 1996. Secondary fungi associated with needlecasts of *Pinus strobus* [abstract]. *Phytopathology*. 85:1558.

Merrill, W., N. G. Wenner, T. A. Dreisbach. 0. *Canavirgella banfieldii* gen. and sp. nov.: A needlecast fungus on pine. *Canadian Journal of Botany*.

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Geochemistry

Report Year: 1995
Project Title: A geochemical analysis of lake waters and soils associated with three granites of variable fluoride content in Maine and New Hampshire, U.S.A.

Investigator(s): Ms. Leah Kittredge
Dept. of Geological Sciences
Boardman Hall
University of Maine
Orono, ME 04469

Phone: 207-942-6049
Fax :
Email:

Coinvestigator:

Objective: Compare lake chemistries on the Cadillac, Lucerne, and Conway granites (low, med., and high F, respectively) to determine the control that bedrock composition has on lake chemistry, while also considering factors such as soil chemistry, element mobility, complexation, and precipitation chemistry.

Findings:

1. Bedrock F concentrations are reflected in lake water F concentrations.
2. Fluoride concentrations in soils are primarily dependant upon soil type and texture; coarse soils hold little F.
3. Fluoride complexation with Al is important, and dependant upon pH, total dissolved F concentration, and total dissolved Al concentration.
4. The majority of lakes sampled had circum-neutral pH, and the Al species were dominated by Al-OH and Al-F complexes.
5. Direct correlation was found between increase in F concentration and increase in dissolved Al.
6. A weak, but positive, correlation exists between LOI and water soluble F in soils.
7. The three lake districts are characterized by strong differences in concentration of Cl, F, and SO₄.

Reports Produced: Kittredge, L. E. 0. A Geochemical Analysis of Lake Waters and Soils Associated with Three Granites of Variable Fluoride Content in Maine and New Hampshire U.S.A. Master of Science

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Thesis in Geological Sciences University of
Maine, Orono, August 1996 (Unpublished).

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Geology - General

Report Year: 1995
Project Title: Geology of Mt. Desert Island

Investigator(s): Dr. Robert Dymek
Dept. of Earth & Planetary Sci
Washington University
Campus Bx 1169, 1 Brookings Dr
St. Louis, MO 63130-4899

Phone: 314/935-5344
Fax :
Email:

Coinvestigator:

Objective:

Findings:

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Geology - Structural

Report Year: 1995
Project Title: Composite layered intrusions in the
Bays-of-Maine igneous complex

Investigator(s): Dr. Robert Wiebe
Franklin and Marshall College
Department of Geosciences
P.O. Box 3003
Lancaster, PA 17604-3003

Phone: 717/291-4133
Fax : 717/291-4186
Email: r_wiebe@acad.fandm.edu

Coinvestigator:

Objective: To understand the physical and chemical processes
within magma chambers that produced inter-layered
granitic and gabbroic rocks.

Findings: Well documented models for the plutonic rocks on
MDI and the Schoodic Peninsula are nearing
publication. A new 3-year NSF Grant will test
these models with Sr and nd isotopic studies.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Herpetology

Report Year: 1995
Project Title: The turtles of Mount Desert Island, Maine

Investigator(s): Dr. Anders Rhodin
Chelonian Research Foundation
168 Goodrich Street
Lunenburg, MA 01462

Phone: 508/534-9440
Fax : 508/840-8184
Email: rhodincrf@aol.com

Coinvestigator: Stephen J. Ressel 207/288-5015

Objective: Continuation of the long-term studies of freshwater turtles on Mt. Desert Island and in Acadia National Park, begun in 1991 and continued annually since then.

Findings: Studies in 1995 concentrated on the reproductive biology of painted turtles at Aunt Betty's Pond. Nesting females were monitored, 20 nests were marked and monitored. Ten animals were radio telemetered. Trapping with marking and releasing was accomplished to determine population size and sex ratios. Preliminary nest temperature data were obtained. Of the 20 nests monitored, only 2 hatched, but none emerged, for 0% reproductive success.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Mammalogy

Report Year: 1995
Project Title: A Biological Inventory of Acadia National Park
and U.S. Navy Lands on the Schoodic Peninsula,
Maine

Investigator(s): Mr. Bruce Connery
Acadia National Park
P.O. Box 177
Bar Harbor, ME 04609

Phone: 207-288-5463
Fax : 207-288-5507
Email: bruce_connery@nps.gov

Coinvestigator: Glen Mittelhauser 207-963-4130

Objective:

1. develop species lists of vascular plants and terrestrial vertebrates in the major community types.
2. identify federal and Maine-listed endangered/threatened species and species of management concern.
3. identify non-native species found during field investigations and evaluate the extent of intrusion for the most invasive species.
4. quantitatively characterize the forest communities.

Findings:

1. Identified nine herptiles in the three study sites
2. Verified the presence of 31 mammals.
3. Identified five forest communities.
4. Identified 335 vascular plant species, seven varieties and subspecies.
5. Found no federally listed species, but found several Maine-listed species.
6. Specimens were collected and are stored at the College of Atlantic or at Acadia National Park.

Reports Produced: (None)

Navy report?

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Mammalogy

Report Year: 1995
Project Title: Relative abundance of snowshoe hare on MDI, Maine
compared to mainland

Investigator(s): Dr. Daniel Harrison
Nutting Hall
University of Maine
Orono, ME 04469

Phone: 207 581-2867
Fax : 207 581-2858
Email: harrison@apollo.umenfa.maine.e

Coinvestigator: Allan O'Connell 207 581-2873

Objective: Determine the abundance of snowshoe hares on MDI,
ME (using stem counts as an index) for comparison
to an area on the mainland. Using this index, to
more fully evaluate the role of coyotes as a
predator on MDI compared to the mainland (eastern
Maine).

Findings:

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Mammalogy

Report Year: 1995
Project Title: Coyote Deer Interactions on MDI, Maine

Investigator(s): Dr. Daniel Harrisoon
Cutting hall
University of Maine
Orono, ME 04469

Phone: 207 581 2867
Fax : 207 581 2858
Email: harriosn@apollo.umenfa.maine.u

Coinvestigator: Allan O'Connell 207 581 2873

Objective: determine the interactions between deer and a recently established coyote population on MDI, Maine

Findings: research is complete and report is being prepared
- should be complete by fall 1996.

Reports Produced: (None)

6. Position Classification

a. I have verified and agree with the information in 5.a. through 5.i., except as noted and explained.

b. Do the functions in the proposed position differ from those in the present position only in level (i.e., independent or complexity) rather than kind (i.e., different, especially within the occupation or different series)? Yes NO .

This review has verified documentation that the employee is continuing to perform the same basic function in the new position and that the former position is absorbed into the new one.

Position Classification

Date

7. Employment

a. The incumbent is qualified for the proposed position.

b. When initially filled by incumbent, this position had known promotion potential. Yes No Or,

c. Career promotion may be made and the incumbent promoted without competition in accordance with the NPS Merit Promotion Plan. This promotion does not directly affect other employees in the unit who report to the same immediate supervisor.

Employment

Date

 Approved as an exception under the Merit Promotion Plan.

 Disapproved. Proposed action does not meet criteria outlined in the National Park Service Merit Promotion Plan.

Superintendent, Acadia National Park

Date

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Ornithology

Report Year: 1995
Project Title: Reproductive success of Leach's storm petrel

Investigator(s): Dr. John Anderson
College of the Atlantic
Bar Harbor, ME 04609

Phone: 207 288 5015
Fax : 207 288 4126
Email: jga@ecology.coa.edu

Coinvestigator: Kris Yaggi 207 288 5015

Objective: To determine the possible nesting status of Storm Petrels on Schoodic Island. This is in conjunction with collaborative work with the U.S. Fish & Wildlife Service and the State of Maine Dept. of Inland Fisheries and Wildlife to assess the seabird resources of the Gulf of Maine

Findings: No burrows of Leach's Storm Petrels were located on Schoodic, however a number of individual birds (< 50) were observed over the island at times similar to those seen at nesting islands. Additional observations of petrels feeding in thick fog immediately to the East of Schoodic, coupled with the seemingly ideal nesting substrate on the island leads us to believe that there is almost certainly a small nesting population. Discussion with Glen Mittelhauser (opers. comm.φ) reveals that intensive ground surveys of the island in 1992 failed to reveal any nest burrows, although again birds were seen and heard over the island. It is possible that this is a relatively new colony similar to that presently occupying Petit Manan Island (Washington Co). We suggest that follow-up surveys be conducted perhaps every other year to determine whether nesting is indeed occurring.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Ornithology

Report Year: 1995
Project Title: Contaminants of bald eagles in and adjacent to
Acadia National Park

Investigator(s): Dr. Jim Gilbert
Nutting Hall
Univ. of Maine
Orono, ME

Phone: 207581-2862
Fax : 207 581 2858
Email: gilbert@apollo.umenfa.maine.ed

Coinvestigator: Allan O'Connell 207 581-2873

Objective: Determine the contaminant levels in nesting bald
eagles in and adjacent to Acadia National Park,
Maine.

Findings: PCB levels appear to be very high - research
still ongoing.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Ornithology

Report Year: 1995
Project Title: Handbook for Monitoring Songbird Populations and
Habitat on Mount Desert Island and Acadia
National Park.

Investigator(s): Mr. Matt Sharp
College of the Atlantic
105 Eden Street
Bar Harbor
ME 04609

Phone: 288-5015
Fax :
Email:

Coinvestigator: Bruce Connery 288-5463

Objective: 1. Track population trends of songbirds species
using measures of relative abundance from year
to year.
2. Quantatively describe songbird habitats at
each point count location and for each survey
route.

Findings: 1. Established three surveys routes with 150
point count locations.
2. Determined percentages of habitat communities
for the three survey routes.
3. Developed a songbird monitoring handbook.
4. Determined the relative abundance of breeding
songbirds for each route, species that were
rarely encountered and those expected but not
identified in this initial survey.
5. Identified recommendations for future surveys.

Reports Produced: Fowler, J., L. Cohen. 0. Statistics for
Ornithologists. British Trust for Ornithologists,
Guide No. 22.

Frances, J. A., H. Shugart, Jr. 1970. A
Quantitative Method of Habitat Description.
Audubon Field Notes, Vol. 24, No. 6.

Harrison, H. H. 1984. Wood Warblers World.

Ralph, J. C., M. J. Scott. 1981. Estimating
numbers of terrestrial birds: Proceedings of an
International Symposium held at Asilomar
California.

*These are
references,
not
reports
produced.*

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Recreation/ Aesthetics

Report Year: 1995
Project Title: Carriage Road Visitor Use Monitoring

Investigator(s): Mr. Charles Jacobi
Division of Natural Resources
Acadia National Park
P.O. Box 177
Bar Harbor, Me 04609

Phone: 207 288 5463
Fax : 207 288 5507
Email: charlie_jacobi@nps.gov

Coinvestigator:

Objective: Estimate visitor use levels on carriage road system.

Findings: Carriage road monitoring plan is still developing. Electronic trail counters have been used to estimate traffic at points throughout the system with some success.

Comprehensive one day counts of entries to the system have also been used successfully. A strong relationship between the Eagle Lake Trail counter and the one day counts has emerged. Eagle Lake trail counter can be used to predict system use with confidence. There are 1000-2000 entries during the summer months. Results are expected to be used in simulation model of carriage road use under development. Percentage of entries to the carriage road system by user type, location, and hours are now known well.

Monitoring of behavior of carriage road users is less advanced, but expected to develop. Behaviors of users are known to be important to the visitor experience.

Reports of two years work on trail counters and one day counts are progressing slowly.

Reports Produced: Manning, R., C. Negra, W. Valliere, C. Jacobi. 1996. Acadia National Park Carriage Road Study. Technical Report NPS/NESO_RNR/NRTR/96-07 January 1996, Dept. of the Interior, National Park Service, New England System Support Office.

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Recreation/ Aesthetics

Report Year: 1995
Project Title: Visitor Crowding and Conflict on the Carriage
Roads of Acadia National Park: Phase II Research

Investigator(s): Dr. Robert Manning
School of Natural Resources
356 George D. Aiken Center
University of Vermont
Burlington VT 05405-0088

Phone: (802) 656-2684
Fax : (802) 656-8683
Email: rmanning@moose.uvm.edu

Coinvestigator: Charles Jacobi (207) 288-5463

Objective: Fifty-six miles of carriage roads were constructed on Mount Desert Island (MDI) between 1913 and 1940 at the direction of John Rockefeller, Jr. Most of the roads and associated lands were eventually donated to Acadia National Park. The roads were built with great sensitivity to the landscape to provide scenic carriage driving access to the natural resources and scenic beauty of MDI and the park. Their construction was in part a response to the admission of automobiles to MDI in 1913. The carriage roads of Acadia National Park represent a unique cultural and recreational resource of national significance.

Visitor use of the carriage roads has dramatically increased and changed character over the past decade. For most of their history, the carriage roads accommodated pedestrians, equestrians, and bicyclists in relatively low numbers. Since the development of the mountain bike in the early 1980s, biking has become the dominant use and the primary contributor to the overall increase in use. Bikers outnumber walkers at least two to one. Complaints from all users about crowding, bicycle speed and courtesy, and safety have become more frequent. Carriage road use is expected to continue to increase.

To resolve these conflicts and manage the carriage roads for a high quality experience, the park adopted the Visitor Experience Resource Protection process (VERP). VERP is the National Park Service carrying capacity framework. It

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

requires detailed information about resources, visitor attitudes, and recreation patterns. Virtually no information was available about carriage road use and users. In 1994, the park began estimating carriage road visitor use and started a three-phase research process with Phase I, a survey of 900 carriage road users. Phase I confirmed the existence of a growing problem and identified the number of visitors and several visitor behaviors as important indicators of a high quality carriage road experience. The primary objective of Phase II research was to determine standards of quality for two types of indicator variables: the number of visitors using the carriage roads at any one time and the number of problem behaviors on the carriage roads. Secondary objectives included determining the extent to which visitors were aware of the "rules of the road" for carriage road use and visitor attitudes toward alternative carriage road management actions.

Findings:

A visual approach was used to assess normative standards of quality for numbers of users on the carriage roads. We asked visitors to rate the acceptability (on a scale of +4 to -4) of and respond to specific questions about 19 photos of carriage road use (the long form). Photos were created using a computer-based photo-editing system. These photos represented various patterns (biker/walker ratios) and amounts of use on a typical 100-meter section of the carriage roads. We also asked respondents to choose the one photo (short form) that showed the highest pattern of visitor use that:

- a) was acceptable to respondents,
- b) was so unacceptable to respondents that they would no longer use the carriage roads or would shift use to a different location or time,
- c) most other visitors would find acceptable,
- d) that the National Park Service should allow.

We then asked which photo looked most like what respondents typically saw on the carriage roads on the day they were sampled. Finally, visitors were asked to estimate the maximum number of visitors acceptable without reference to the photographs.

For six problem behaviors identified in Phase I

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

research, we asked visitors if the behavior was a problem, the number of times the behavior was acceptable, and the number of times they experienced it on the day they were sampled.

Other parts of the survey dealt with visitor attitudes toward potential management actions and visitor knowledge, attitudes, compliance with, and sources of information about the "Rules of the Road," a set of courtesy guidelines developed by the park.

We used a stratified random sample of carriage road visitors based on entry/exit location. Five hundred eleven usable questionnaires were collected from visitors who had completed at least a 10-minute visit on the carriage roads.

Average acceptability ratings for all respondents for the 19 photos were graphed. Similar graphs were generated using acceptability ratings of different subgroups of analyses like this and found few differences. We also found the ratio of walkers and bikers to be less important than the number of people in the photo. A key point in all these figures is where the norm curve falls out of the range of acceptability. The number of walkers and bikers can be approximate for this point, suggesting a norm acceptability for the average visitor.

Alternative norms of acceptability for the number of walkers and bikers as approximated from the graphs described above (long form), from the more specific questions (short form) and from numerical estimations were calculated and compared. The most striking finding is the relative uniformity of the norms across various measurement techniques. All except the displacement norm are within the 11-18 persons range.

When asked which photo showed the pattern of visitor use typically seen on the carriage road, the average was five persons. This suggests that existing conditions are well within potential standards of acceptability.

The number of persons seen at one time on the carriage roads (what the photos represent) is only a snapshot of the total carriage road experience. We asked visitors to report the maximum percentage of time it would be acceptable

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

to see the highest pattern of visitor use. Most visitors are not willing to see the highest pattern of use acceptable all of the time.

Norms were also calculated for six problem behaviors identified in Phase I research. The first four behaviors are the most important to visitors. For all but one of these behaviors (visitors obstructing or blocking the carriage roads) existing conditions are within potential standards of acceptability.

Reports Produced: Jacobi, C., R. Manning, W. Valliere, C. Negra. 1996. Visitor Use and Conflict on the Carriage Roads of Acadia National Park. Proceedings of the 1995 Northeastern Recreation Research Symposium. USDA Forest Service General Technical Report NE-2181, pp. 109-112.

Manning, R., W. Valliere, C. Jacobi. 1996. Crowding Norms for the Carriage Roads of Acadia National Park: Alternative Measurement Approaches. Paper presented at the Northeastern Recreation Research Symposium, Lake George, New York.

Manning, R., W. Valliere, C. Jacobi. 1996. Visitor Use and Conflict on Acadia National Park Carriage Roads. Paper presented at the Conference on Wilderness and Natural Areas in Eastern North America, Gatlinbury, Tennessee.

Manning, R., W. Valliere, C. Jacobi. 0. Visitor Crowding and Conflict on the Carriage Roads of Acadia National Park: Phase II Research. Study Completion Report.

Manning, R. E., W. Valliere, C. Jacobi. 1996. Crowding Norms for the Carriage Roads of Acadia National Park. Paper presented at the Sixth International Symposium on Society and Resource Management, University Park, Pennsylvania.

Wang, B., R. Manning. 1996. Simulation as a Tool in Park And Recreation Management. Paper presented at the Sixth International Symposium on Society and Resource Management, University Park, Pennsylvania.

Wang, B., R. Manning. 1996. Simulation for Recreation Management on the Carriage Roads of Acadia National Park. Paper presented at the Northeastern Recreation Research Symposium, Lake

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

George, New York.

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Restoration - Natural

Report Year: 1995
Project Title: Revegetation of Disturbed Sites at Acadia
National Park

Investigator(s): Ms. Linda Gregory
Division of Natural Resources
Acadia National Park
P.O. Box 177
Bar Harbor, Me 04609

Phone: 207/288-5463
Fax : 207/288-5507
Email: linda_gregory@nps.gov

Coinvestigator:

Objective: *X To use genetically native plants + seed when
revegetating park lands*

Findings: During 1995 the Acadia National Park native plant revegetation program revegetated six new sites which included seeding portions of the Park Loop roadsides following road construction with genetically native seed. Revegetation success was evaluated at the seventeen sites revegetated in 1994 (Hazen Connery, Gregory, & Bailey 1995). Additional plantings were made at three of these sites. A list of possible sites for future revegetation was developed; of these two sites were visited and evaluated.

The original nursery site established in 1992 in Hull's Cove was abandoned and converted back to lawn in 1995 to avoid spreading non-native fire ants present at the site. This year the nursery established in 1993 behind Sand Beach at the former ozone fumigation site was also maintained and upgraded. A wooden lathe house was built to shade potted plants.

Staff involved in the 1995 revegetation program included maintenance and natural resources personnel, a Student Conservation Association volunteer and a College of the Atlantic intern. Funding support was provided by the National Park Service Denver Service Center, Acadia National Park, the Natural Resources Conservation Service (NRCS), and the Garden Club of Mount Desert.

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Restoration - Natural

Report Year: 1995
Project Title: INTERAGENCY AGREEMENT FOR COLLECTING, GROWING AND
INCREASING OF PLANT MATERIALS FOR THE
REVEGETATION OF ROADS IN ACADIA NATIONAL PARK

Investigator(s): MR. MARTIN VAN DER GRINTEN
USDA, NRCS
Big Flats Plant Materials Ctr.
Box 360A, RD#1, Rt. 352
Corning, NY 14830

Phone: 607-562-8404
Fax : 607-562-8516
Email:

Coinvestigator: JOHN A. DICKERSON 315-477-6535

Objective: To collect seed or plant material of selected
species from within Acadia National Park
boundaries, use this plant material to produce
seed increase fields, and make available seed or
transplants to Acadia National Park for
revegetation of the Federal Lands Highways
Program road projects in the Park.

Findings: Plant materials of 3 grasses, 9 forbs, 9 shrubs
and 7 trees have been collected and are in the
seed increase stage on the plant materials
center. In May 1995, nearly 3 miles of Park Loop
* Road was seeded with grasses and forbs and larger
disturbed areas were planted with trees and
shrubs, with good survival.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Threatened/ Endangered Animals

Report Year: 1995
Project Title: 1995 Peregrine Monitoring Report for Acadia National Park

Investigator(s): Mr. Bruce Connery
Acadia National Park
P.O. Box 177
Bar Harbor, Maine
04609

Phone: 207-288-5463
Fax :
Email:

Coinvestigator: Mr. Paul Super

Objective: Monitor and protect nesting pairs of peregrine falcons

Findings: Two pairs of falcons were protected in the park and four chicks successfully fledged. Prey remains were collected from the Precipice Cliff and will be analyzed with the data from other years. Collections will be destroyed in the analysis.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Threatened/ Endangered Animals

Report Year: 1995
Project Title: Distributional survey of Bicknell's Thrush in Coastal Maine, 1993-1995

Investigator(s): Mr. Christopher Rimmer
Vermont Institute
of Natural Science
Woodstock, NY 05901

Phone: 802/457-2779 x216
Fax :
Email: vtinst@sover.net

Coinvestigator: Kent McFarland same

Objective: Determine the status of the Bicknell's thrush (*Catharus bicknelli*) in coastal Maine evergreen forests.

Findings: Field surveys to determine the presence of Bicknell's thrushes in coastal spruce-fir forests of Maine were conducted in June of 1993- 1995, using tape recorded playbacks. a total of 50 areas were surveyed between Mt Desert Island, Maine and Grand Manann Island, New Brunswick. In 1993, Bicknell's thrushes were reported at five sites in coastal Maine and one site in New Brunswick. Singing males (two birds) were reported from Western Mountain on MDI on 7/1/93. More intensive field surveys in 1994 and 1995, using volunteer birders and a full-time experienced observer, and including multiple visits to each of the reported 1993 sites of encounter, failed to locate any Bicknell's thrushes. We suspect that some of the birds reported in 1993 may have been misidentified or transient, non-breeding individuals.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Threatened/ Endangered Plants

Report Year: 1995
Project Title: Survey of Freshwater Aquatic Vegetation of Acadia National Park

Investigator(s): Dr. Craig Greene
College of the Atlantic
Bar Harbor, ME 04609

Phone: 207-288-5015 x261
Fax :
Email:

Coinvestigator: C. Barre Hellquist (413) 662-5342
Coinvestigator: Linda Gregory (207) 288-5463

Objective: Checklist of freshwater flora of ANP and Mt. Desert Island; population status of endangered or threatened species; assess impact of water quality on species persistence.

Findings: In first year of field survey, 80 species were recorded in 24 lakes and ponds and 3 streams. 4 of 5 state-listed rare species were located and 2 species recommended for state listing as endangered were located. An additional 15 locally rare species were recorded. Preliminary analysis of species distribution in relation to water chemistry (pH, alkalinity, total nitrogen, total phosphorus) shows no apparent correlation with species distribution among ponds.

110 plant collections made in conjunction with this project are preserved at the Herbarium of the College of the Atlantic (HCOA), Bar Harbor, Maine 04609. A list of collections (hard copy) accompanies this report.

Reports Produced: Greene, C. W. 1990. Rare Vascular Plants of Acadia National Park and the Mount Desert Island Region of Maine. Technical Report, National Park Service, North Atlantic Region. pp. vii + 131.

*again - a
reference - this
report not part
of listed
study*

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Water Quality

Report Year: 1995
Project Title: Freshwater monitoring of park lakes and bacterial
monitoring of swim beaches

Investigator(s): Mr. Bob Breen
Division of Natural Resources
Acadia National Park
P.O. Box 177
Bar Harbor, Me 04609

Phone: 207/288-5463
Fax : 207/288-5507
Email: bob_breen@nps.gov

Coinvestigator: Bill Gawley

Objective: obtain baseline data on lake water quality

Findings: Monitored for pH, conductivity, alkalinity,
transparency, color, dissolved oxygen,
temperature, total nitrogen, total phosphorous,
chlorophyll a at park lakes. Monitored bacterial
densities (E.coli) at Echo lake, Lakewood and
(enterococcus) at Sand Beach, and Sand Beach
lagoon.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Water Quality

Report Year: 1995
Project Title: Lake Chemistry Sampling, 1995

Investigator(s): Dr. Steve Kahl
Water Research Institute
University of Maine
Orono, me 04469

Phone: 207/581-3286
Fax : 207/581-3290
Email: kahl@maine.maine.edu

Coinvestigator:

Objective: Re-sample lakes last sampled in 1984

Provide necessary background data in support of mercury research being conducted by Terry Haines, NBS

Findings: The major lakes of Acadia National Park and MDI are poorly buffered, with low nutrient concentrations. Compared to data in the 1980's, Acid Neutralizing Capacity is slightly higher, and sulfate and non-marine base cations are slightly lower, consistent with regional trends. Lake trophic levels range from very oligotrophic (the major lakes) to eutrophic and dystrophic (smaller and/or wetland ponds). There are insufficient data to report on trends in nutrient concentrations. The pattern of higher nutrients proximal to developed shorelines was noted in earlier studies, and this pattern continues. In general, these lakes are dilute poorly buffered waters, vulnerable to changes in nutrient or acid inputs.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Water Quality

Report Year: 1995
Project Title: The effect of tidal water transport and macroalgae on nutrient exchange rates in subtidal marsh habitats (Acadia National Park)

Investigator(s): Dr. Charles Roman
National Biological Service
University of Rhode Island
Narragansett, RI 02882

Phone: 401-874-6885
Fax : 401-874-6887
Email: croman@gso.uri.edu

Coinvestigator: Charles Farris 508-349-3785

Objective: Studies have been completed in the Bass Harbor Marsh estuary to evaluate the sources of nutrients (nitrogen and phosphorus) to the ecosystem (i.e., streams and oceanic sources). The Bass Harbor Marsh estuary currently exhibits some indications that it may be tending toward a nutrient-enriched condition. The purpose of this study is to begin understanding how those nutrients are being processed within the estuary. More specifically, this study will quantify the release and uptake of nutrients by the marsh subtidal sediments and macroalgal habitats, and evaluate oxygen dynamics within the estuary.

Findings: This study has demonstrated that macroalgal habitats, an initial response to nutrient-enrichment, in the marsh ecosystem can cause dramatic diurnal swings in water column oxygen dynamics. Fishes and macroinvertebrates may tend to avoid habitats with widely fluctuating oxygen levels. Macroalgae tended to assimilate the available nitrogen. It is postulated that with additional nitrogen loading (i.e., from human sources), macroalgal abundance will be enhanced.

Reports Produced: (None)

National Park Service
Research Report
Sorted by Subject + Park + Year + Researcher
Years included: 0-1995

Park Name: Acadia National Park
Subject: Wildlife Management

Report Year: 1995
Project Title: Cause-specific mortality of white-tailed deer
fawns on MDI, ME

Investigator(s): Dr. Allan O'Connell
NBS-CPSU
5768 South Annex A
Univ. of Maine
Orono, ME 04469

Phone: 207 581-2873
Fax : 207 581-1743
Email: oconnell@apollo.umenfa.maine.u

Coinvestigator: Danife Harrison 207-581-2867

Objective: Determine cause-specific mortality of deer fawns
on MDI, Maine. Recent arrival of coyotes coupled
with anthropogenic causes of mortality are
holding MDI deer population in check.

Findings: coyotes and anthropogenic causes of mortality are
having a significant effect on deer fawns

Reports Produced: (None)