BAXTER STATE PARK

1987

ANNUAL REPORT

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Director
Baxter State Park
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A. DIRECTOR'S PROLOGUE

DIRECTOR'S PROLOGUE

It is with a great deal of pleasure that I submit our 1987 Annual Report. As you cipher through the material, it will be clear that the productivity of the past 12 months was accomplished by a strong commitment by the entire Baxter State Park family. The Baxter Park Authority's willingness to support operations and provide guidance and advice to me on critical issues is most helpful in carrying out policy. The Advisory Committee's willingness to actively work on complex issues through research, workshops and good communications provide an excellent support team. The Staff's enthusiasm, job interest, dependability and professionalism contribute to an operation that is complimentary to all of us. So it is through the combination of all these efforts that we, on an annual basis, can continue to operate, manage and plan for the future of Baxter State Park consistent with the Deeds of Gifts for the beneficiaries of this wilderness area, the people of Maine.

Governor Baxter, during his lifetime, was very proud of the people who managed his Park. He frequently made comments about the Authority and their dedication and commitment to his plans for the Park. His admiration for Helon Taylor was demonstrated on many occasions through his correspondence, visits and display of confidence. It was all this trust, advice and confidence that Governor Baxter and Helon Taylor demonstrated during those early years that instilled within the staff the importance of the Park, its purpose and its interest. Eighteen years after Governor Baxter's death the Authority/Advisory and staff continue a sense of pride, responsibility and love for the Park that Governor Baxter felt commitment to from a very early age. This spirit must follow and be present throughout the years with all who have responsibility and interest for the preservation of the wonderful and unique gift. And it is the responsibility of the Authority/Advisory and staff of today to convey this message to those protectors of tomorrow and so on through future generations.

As each year passes more quickly and with more issues facing Resource Managers, I found myself spending a considerable amount of time in 1987 meeting and working with other agencies and interested people, reporting on Baxter Park and receiving information which is helpful in considering our management needs for BSP. Authority meetings, Advisory meetings, staff meetings and workshops have been frequent on Park operations and, consequently, we have had a tremendous amount of support and assistance in operating the Park. As indicated within the volunteer report and register, greater numbers of Maine people each year are taking an active part in Park operations.

Our visiting guests numbering 82,027 during 1987 have been extremely cooperative during their visits to the Park. They have demonstrated an interest in the Park and a love for the Park which will draw many of them back in the years to come. You see the new generation has a common goal with the previous generation. The magnet of Katahdin and the beauty of the Park in the natural wild state will draw them back as users, supporters and protectors.

Our safety record during this past season is excellent. The incidents we responded to were relatively routine.

Staff and public relationships were extremely good with only a few complaints on our road, blackflies and weather. The bears behaved extremely well and although their cousins in surrounding areas such as Abol Bridge, Greenville and to our north caused some headlines, ours were happy to enjoy a summer of a congenial appearance from time to time, but maintained an overall low profile. Research went very well as demonstrated by attached reports.

The most controversial issue of the year was the future of Kidney Pond Camps. The special Kidney Pond Committee met on several occasions and submitted their report on November 5. The Authority met on December 17th and made their decision to operate the camps in the future comparable to a Daicey Pond operation, instructing the Director to develop a plan for implementing.

Chris Drew Chief Ranger, Jensen Bissell Resource Manager and Beth Gray Business Manager have done a super job in coordinating the activities of their subordinates. Mary Cummings and more recently Roxie McLean have been extremely helpful in fulfilling the day to day responsibilities of my office. Their patience, support and attention to details contribute to a smooth work flow. My special thanks to all for the long hours and hard work of pulling all of this report together.

With this summary I now refer you to the details of our report on the operation of BSP 1987. May it become part of the record and reflect in the years to come a very satisfactory and productive year within Baxter State Park.

B. OPERATIONAL REPORT
1987

NORTH DISTRICT
SOUTH DISTRICT
MAINTENANCE DIVISION
YEARLY REPORT - 1987

INFORMATIONAL DATA

Contacts by Personnel	124,349
Search and Rescue Incidents	25
Complaints Answered--Field	311
Total Work Hours for all Personnel	32,928
Auto Accidents Investigated	11
Number of Special Services Rendered	103
Special Projects Worked on--No.	81
Speaking Engagements-- No.	34
Meetings Attended--No.	155

I. PUBLIC RELATIONS

Every contact by Park staff is a public contact. In 1987 Park staff made 124,349 contacts in the field. Most contacts are with campers, hikers, fishermen, wildlife enthusiasts, camera buffs, snowmobilers, hunters, skiiers and sightseers. Park personnel generally relate information on campgrounds, trails, wildlife and history of Baxter State Park.

Baxter Park personnel participated in numerous speaking engagements in 1987. Such organizations include: Senior Citizens of Oakfield; Island Falls Fish & Game; Francis Malcom Institute of Easton; Snowmobile Clubs in Presque Isle, Brewer and Kingfield; Houlton Rotary; University of Maine Alumni; Major Search and Rescue Meeting in Brewer; Sherman Elementary School; Monticello Fish & Game; Boy Scout and Girl Scout organizations from the Millinocket area.

Camping groups in Baxter State Park had the opportunity to participate in campfire programs by Park staff at Katahdin Stream Campground, Daicey Pond Campground and Chimney Pond Campground.

Public complaints centered on the unimproved road conditions found in Baxter State Park. Spring flooding and an increase of vehicle traffic in 1987 did not help road conditions. Outlying campsites were closed due to drought conditions which also makes for dusty roads. Blackflies and mosquitoes also are on the major complaint list. Many compliments, both written and oral were received at Park Headquarters and in the field concerning the Park's neatness, cleanliness and helpful staff.

II. SAFETY

Park Rangers examined fire extinguishers in Park buildings and vehicles. All fire equipment was inspected and tested for serviceability. Faulty equipment was replaced.

Six new gas refrigerators have replaced worn and faulty refrigerators. Old gas refrigerators will be replaced by new ones on a yearly scheduled basis.

One Park employee, Hadley Coolong sustained a knee injury in the fall. He was fully recovered by December.

The relocation of the Marston Trail by Lester Kenway and the trail crew was a major safety benefit to the public hiker. The new portion of trail skirts around the South Brother Slide which had been the scene of serious and fatal accidents.

Three rapidly deteriorating cabins at Togue Pond were removed in 1987. They were a safety hazard to the public.

Motor vehicle accidents by Park staff were minor with no personal injuries.

Chimneys were inspected and cleaned in Park buildings to help alleviate fire damages. A new chimney was constructed in a Daicey Pond cabin for winter party use. This cement block chimney is a safety improvement over the former stove-pipe chimney.

III. TRAINING

Numerous training opportunities were made in 1987 which include:

1. Law enforcement training for commissioned rangers April 27-30, 1987 at Park Headquarters. This training was coordinated by Parker Tripp of Inland Fisheries and Wildlife. Training was centered on Title 12, Accident Investigation, Search and Seizure, handling of evidence, O.U.I. and drug identification.

2. Search and Rescue workshop was held in Brewer on June 6, 1987. Attended by District Rangers and Chief Ranger.

3. Volunteer organization training for the Business Manager, Chief Ranger and Volunteer Co-Ordinator at the University of Maine on May 15-16, 1987.

4. Spring Meeting orientation - May 20-21, 1987.

5. Firearm training for commissioned rangers, June 29, 1987.

6. Two fire training sessions of Baxter State Park personnel by Maine Forest Service personnel.

7. Solo First Aid training - two-day session at Roaring Brook.

8. EMT and CPR recertification of South District Ranger, Robert Howes.

9. Assertiveness Training attended by Rangers Robert Howes and Bernard Crabtree.

10. Supervisory Training in Bangor.

11. Required orientation of new state employees.

IV. MAINTENANCE

Baxter State Park puts high emphasis on maintenance of Park facilities and equipment. Major maintenance projects by Division include:

NORTH DISTRICT:

A. RUSSELL POND

1. Cleared blowdowns from trails.
2. Kept up routine cleaning and minor repairs of sites and buildings.
3. Repaired stovepipe in bunkhouse.
4. Painted bunkhouse porch - painted flagpole.
5. Peeled logs for lean-to repair.
6. Boarded in and shingled roofs of Lean-to's 1 and 2.
7. Put new rafters, boards and shingles on Lean-to's 3 and 4.
8. Repaired rotten steps at office porch.
9. Built and installed new "intake box" for spring to main camp water supply.
10. Laid new floor in Lean-to's 1 and 4.
11. Bridge repair in several areas including Wassataquoik Stream and Turner Brook.
12. Stained bunkhouse and lean-tos.
13. Cut, split and stacked firewood.
14. Cut brush from heli-pad area.
15. Prepared for-flew materials in and built new lean-to at Davis Pond.
16. Patched up canoes that were leaking.
17. Hauled stone and gravel for dock area and trails.
18. Checked bridges, measured and drew up diagrams for new bridges in the Wassataquoik Stream area.
19. Rebuilt campground water handpump.
20. Cleaned up old Davis Pond lean-to for removal.
21. Stained Wassataquoik Island camp and privy.
22. Painted interior of campground privies.
23. Repaired bunkhouse porch and painted floor.
24. Jacked up Lean-to 4. Installed new sills and deacon seat, set lean-to down on stone.
25. Nailed 1/4"-sawn strips into joints of logs in Lean-to 4, stained repairs.
26. Tore rotted roof off women's outhouse - re-boarded and re-roofed.
27. Shoveled out privies.
28. Prepared empty LP bottles, trash, etc. for winter haul out.
29. Cut and hauled sill logs during winter.
30. Had volunteer help during season at several different times. Some projects included:
    opening of campground
    trail work
    work on lean-tos both at Russell and Davis Pond.

B. SOUTH BRANCH POND

1. Painted new ceilings in ranger's camp.
2. Sanded and varnished new floors in ranger's camp.
3. Cleared blowdowns in campground, cleared up and opened for season.
4. Repaired canoe racks.
5. Turned old shed into propane storage shed.
6. Repaired door sills in ranger's station.
7. Painted interior of some lean-tos.
8. Dismantled old dock and hauled off.
9. Stained swim docks - put float out.
10. Regular repairs of outhouse and bunkhouse doors - window screens.
11. Scraped and stained picnic tables.
12. Jacked up and blocked up crew camp.
13. Beach improvement project, resurfacing, etc.
14. Installed new refrigerators.
15. Painted interiors and exteriors of outhouses as needed.
16. Resurfaced some campsites with gravel.
17. Put new sills under six lean-tos.
18. Painted lean-tos after repairs.
19. Cut, split and stacked firewood.
20. Major cleaning of garage - re-organized material.
21. Hauled loam in for bunkhouse yard and spread
22. Repaired outhouse at McCarty Field.
23. Stained crew camp and painted trim.
24. Replaced and relocated fireplace sites.
25. Spread loam in picnic area.
26. Stained garage.
27. Made repairs to swim dock.
28. Painted interior of crew camp.
29. Scraped, repaired and stained lean-to 11 from fire damage.
30. Hauled particle board to South Branch Pond in winter, put sealer on it, moved volunteers in to do ceilings and floors.
31. Some landscape work done in area with backhoe - moving rocks, leveling, etc.

C. TROUT BROOK

1. Cut firewood.
2. Cut wood for logs (lumber).
3. Cleaned out Martin garage - got ready to move
4. Cleared blowdowns after several storms.
5. Kept snow shoveled off all buildings in North District.
6. Built mouse proof bin for fire equipment.
7. Moved outhouse to Burnt Mt. site.
8. Relocated three buildings a.) snowsled shed at Matagamon parking lot, b.) Martin garage, c.) Matagamon woodshed. Put where better utilized.
9. Picnic tables, outhouses stained.
10. Worked resurfacing Tentsites 28 and 29.
11. Remove some dead trees from the site areas.
12. Started work on new crew camp at Trout Brook.

D. MATAGAMON GATE

1. Made gravel pad for woodshed/workshop.
2. Hauled workshop in and set in place.
3. Shingled gate house and workshop.

E. MISCELLANEOUS MAINTENANCE PROJECTS OF THE NORTH DISTRICT

1. Regular repair of snowsleds and trucks.
2. Hauled propane to Webster Lake.
3. Hauled propane to Russell Pond.
4. Hauled lumber, shingles and requisitions to Russell Pond.
5. Put new tile and 600' pipe in Burnt Mt. spring.
6. Cut, sawed and hauled logs for Burnt Mt. tower project.
7. Helped haul supplies to Chimney Pond.
8. Moved snowsled shed, put in new floor and doors, stained, etc.
9. Put new picnic table at Pine Pt. site, N.W. Cove and Little East.
10. Got building set up at boat landing.
11. Made new racks for 3 trucks.

F. MAINTENANCE RANGER - Hadley Coolong

1. Worked on 1400 Generator.
2. Repaired dumptruck at South Branch Pond.
3. Repaired outboard motors.
4. Worked on shop air compressor.
5. Assisted with lean-to repair at South Branch Pond.
6. Mowed roadside on South District and part of North District to new highway camps.
7. Chainsaw repair, lawnmower repair.
8. Repaired bush hog.
9. Helped with lumber operation.

SOUTH DISTRICT

A. CHIMNEY POND

1. Shingled Chimney Pond campground ranger cabin.
2. Transported 45 bundles of shingles, 3 cords of hardwood firewood, 33 propane tank cylinders, 200 bricks, 6 bundles of drip edge and numerous other campground requisitions to Chimney Pond by snowsled.
3. Loaded, flew in and unloaded 3 cords of hardwood firewood, one new stove and numerous requisitions to Chimney Pond.
4. Hauled out 60 boxes of old shingles and debris from Chimney Pond.
5. Relocated lean-to at Chimney Pond caused by flooding.

B. DAICEY POND

1. Resurfaced and graded hill on Daicey Pond road.
2. Replaced sills and bottom logs on storage building.
3. Replaced old roof on Cabin 3 in complete new one.
4. Building repairs to all cabins.
5. Replaced shower at Daicey Pond shower house.
6. Reshingled Cabin 4.
7. Built new cement block chimney in Cabin 4.

C. TOGUE POND

1. Removal of three delapitated cabins.
2. Cribbed, mulched, loamed and seeded 250 feet of shoreline of Togue Pond. A major work effort of Park staff and volunteers.
3. Renovation of Togue Pond Gate complex storage shed.
4. Replaced shower at Togue Pond district ranger camp.

D. NESOWADNEHUNK FIELD

1. Replaced sills of garage.
2. Replaced floor of garage/storage area.
3. Replaced doors of garage.
4. Jacked, leveled and straightened the gas shed.
5. Reshingled the garage/workshop complex.

E. CAMPGROUNDS

Roaring Brook and Abol had no major repairs or construction. A lot of staining, minor building repairs and maintenance was accomplished.

F. MAINTENANCE RANGER: Albert Rickards

1. Jacked, leveled, cedar shingled walls, installed over-head door, two swinging doors, replaced floor in the Nesowadnehunk garage/shop.
2. Straightened and braced gas shed at Nesowadnehunk.
3. Installed one skylight at Abol and four skylights at Togue Pond Camps.
4. Shingled ranger camp roof at Chimney Pond.
5. Recapped three chimneys with bricks at Abol, Katahdin Stream and Chimney Pond. Built new block chimney at Daicey Pond.
6. Rebuilt and shingled two roofs at Daicey Pond.
7. Installed new tile floor, rebuilt storage shelves and installed new counter tops at Togue Pond Gate booth.
8. Built two sets of steps at Togue Pond Camps.
9. Rebuilt woodshed at Togue Pond Gate.
10. Rebuilt roof on a lean-to and relocated it at Chimney Pond.
11. Replaced rotten trim on Baxter Park Ranger's camp at Katahdin Stream.
12. Reconstructed Togue Pond Gate sign.
13. Built new tool box for carpenter tools.

G. MISCELLANEOUS MAINTENANCE PROJECTS OF THE SOUTH DISTRICT

1. Cleaning and readying of the campsites: raking leaves, putting picnic tables in and out, cleaning fireplaces and stoves.
2. Painting or staining of porches, picnic tables, steps, buildings, signs, sign posts, touch-up jobs, etc.
3. Hooking up, repairing and disconnecting of waterlines.
4. Cutting of 35 cords of firewood, hauling, splitting and piling.
5. Repairing screens.
6. Clearing roads and trailheads of blowdowns and debris.
7. Hauling gravel to fill washouts, campgrounds and perimeter road.
8. Routine litter patrol.
9. Mowing grass, roadsides and fields.
10. Replacing glass in windows.
11. Transporting 200 to 300 full and empty propane cylinders to and from field installations.
12. Cleaning and storing sleds.
13. Routine service and maintenance, repairs to vehicles, lawnmowers, chainsaws, firepumps, generators, etc.
14. Putting up and taking down of seasonal signs.
15. Picnic table repairs.
16. Cleaning wood stoves and chimneys and replacing stovepipes.
17. Repair of leaky roofs at Nesowadnehunk garage/shop, Katahdin Stream highway camp, cabins 3 and 4 at Daicey Pond, picnic shelters and leantos.

18. Replacing of signs and sign posts.
19. Assisted Maintenance Division with repairs at Support Services Building and Headquarters. Building of shelves, coat racks, etc.
20. Daily cleaning of facilities.
21. Repairs to comfort station roofs and doors.
22. Shoveling of outhouses.
23. Replaced shower at Togue Pond District Ranger camp.
24. Installed two radios in new trucks 53 and 59.
25. Assisted honeywagon on pumpout of septic and toilet facilties.
26. Moved six rusty dumpsters to Millinocket, major rebuilding of dumpsters.
27. Rebuilt new sub-frame for International Dump Truck.
28. Dug holes and erected four 30' blackjacks for watertank purpose.
29. Routine service-maintenance of eleven solar-battery systems.
30. Rebuilding of three chimneys from roof up with bricks and new complete chimney in Cabin 4 at Daicey Pond.

MAINTENANCE DIVISION - MILLINOCKET

A. MAJOR MAINTENANCE DIVISION PROJECTS
1. Repaired 580 Case backhoe: rebuilt transmission, did extensive repair to the hydraulic system, rebushed and pined the backhoe, total hours: 247.
2. Maintained yards, driveways,(plowed and sanded), gates, shoveled roofs.
3. Did a valve and gasket job on the 966 Caterpillar.
4. Hooked up new equipment trailer to the international dump truck.
5. Hauled tractor to Millinocket, cleaned and stored for winter.

B. BUILDING CONSTRUCTION AND REPAIR
1. Repaired headquarters furnace during freeze-up.
2. Had a new furnace alarm installed on the circulator side of furnace.
3. Made several plumbing repairs during the year: flushes, lavatory, urinals, valves, etc.
4. Rebuilt two sections of the security fence at support service yard: recemented several posts and rehung fencing.
5. Had new locks installed on all outside doors on headquarters building.
6. Repaired lights, changed bulbs during the year at headquarters building.
7. Removed an old 750 gallon fuel tank from Togue Pond Camps.
8. Did new wiring jobs at headquarters reservation office, gatehouse at Togue Pond, Togue Pond workshop and South District Ranger's Camp.
9. Sprayed entire support service yard with grass and weed killer.
10. Made repairs to garage wood furnace damper system, serviced and cleaned.
11. Spent several days at Kidney Pond: cleaned up oil soaked floor and equipment in generator building, had 550 gallons of old motor oil pumped and hauled off, cleaned up junk from around buildings, installed padlocks on all buildings, reviewed plans on water and sewer system, met with Steve Norris on how to shut system down, hauled several loads of surplus items to Millinocket for auction.
12. Put winter entrances on headquarters building.
13. Cleaned up support services yard and pole barn for winter storage.
14. Helped crew remodel reservation office.

C. VEHICLE/EQUIPMENT INFORMATION

1. 13 - Battery Replacement
2. 19 - Battery Recharge
3. 9 - Body Repair/Painting
4. 9 - Brake Repair
5. 4 - Chain Saw Repair
6. 1 - Clutch Repair
7. 33 - Electrical Repair
8. 10 - Exhaust System Repair
9. 11 - Front End Repair
10. 2 - Motor Repair (including valves)
11. 24 - New Tires Installed
12. 3 - Rear-end Repair
13. 5 - Road Calls for Park Equipment
14. 24 - State Vehicle Inspections
15. 16 - Tires Repaired
16. 8 - Tune-ups
17. 81 - Vehicles Serviced (Grease, Oil)
18. 3 - Waterpump Repair
19. 5 - Window Replacement
20. 3 - Trailer Repair
21. 1 - Radiator Repair

TRAIL CREW

The Trail Crew worked all over the Park doing various tasks. Lester made 70 signs for the Park before his crew started. The following is a breakdown of the miles and projects that were undertaken:

Miles of trails inspected - 83
Miles of trails brushed and blazed (blowdowns removed) - 97
Treadway Projects - 17
Bridge Projects - 8

The following trails were cleared of blowdowns during the past season:

1. Russell Pond
2. Helon Taylor
3. Sandy Stream Pond
4. Chimney Pond
5. Abol
6. Wassataquoik Lake
7. Owl
8. Hunt (by John Neff & Co.)
9. North Doubletop
10. Freezeout
11. Middle Fowler Pond
12. N.W. Basin (by Hendrickson & Curran)
13. North Peaks
14. Marston
15. Appalachian (By Frank Trautman)
16. Mt. Coe (Lower 1 Mi.)
17. OJI Link

The following trails were inspected during the past season:

1. Lost Pond (Maintained by Harold Colt)
2. Saddle
3. Burnt Mt. (Maintained by MFS)
4. Baxter Peak Cut-Off
5. OJI South Slide (Maintained by Harold Colt)
6. South Doubletop (Maintained by Harold Colt)

Signs:

During the past season over 70 signs were painted and installed. All signs above treeline on Katahdin were replaced. In addition new signs were placed in the following locations:

1. Middle Fowler Pond Trail - to sign the new section of trail over Barrell Ridge.
2. Pogy Notch Trail - near the Upper Pond
3. Freezeout Trail - Bear damaged signs
4. OJI Link Jct. OJI Trail
5. Marston & Mt. Coe Trails - due to relocation
6. Northwest Basin & Russell Pond Trails - Bear damaged signs
7. Grand Falls Loop - corrected mileages

Relocation/New Trails:

1. Opened the new extension of the Middle Fowler Pond Trail in June. The trail is now blazed and signed and is being hiked on a regular basis.
2. Opened the Marston Trail relocation in August. This trail is also signed and blazed. The old route down the slide is closed off with brush, and the blazes have been painted brown. We have remarked a portion of the upper Marston Trail as the Mt. Coe Trail, and it can be used as an alternate route across the range.

Treadway Projects:

1. Chimney Pond Trail - did considerable erosion repair work on the upper half of the trail. Installed 6 rock water bars, 52 rock steps, 180 feet of drainage ditch, and built up 150 feet of Treadway. In addition, built up the side trail to the viewpoint. This side trail was often underwater.
2. Saddle Trail - repaired a short section of this trail above Saddle Spring by installing 1 rock water bar and 6 rock steps. Also cleared out water bars and maintained edge rocks on this trail.
3. Hunt - about 1 mile of the Hunt Trail from the gateway to the base of Baxter Peak was lined with stones to define the footpath. Hopeful that regeneration will occur outside the footpath in future years.
4. Middle Fowler Pond Trail - the Sierra Club service group helped dig 2,655 ft. of Side Hill Trail on the newly extended Middle Fowler Trail. The work was done on the section from Little Peaked Gap to South Branch Pond. The work was nicely done and should provide good hiking for many years.
5. Northwest Basin Trail - the crew continued to dig drainage ditch on a portion of the N.W. Basin Trail 1.5 miles from Russell Pond. There are almost no opportunities to place water bars, so the Trail must be ditched like a road. Dug 270' of ditch this season.

Bridge Projects:

1. Chimney Pond Trail - Bog bridges were built at two locations to replace rotten bridges; 150 ft. near Blacksmith Brook, and 100' near Basin Pond
2. A stringer broke on the "high" bridge and was repaired by jacking up the stringer and placing a post under it.
3. Russell Pond Trail - replaced rotten bridges on the Russell Pond Trail about 1 mile from Roaring Brook, 40 ft. of Bog Bridge and a 20' stream bridge were built.
4. A major bridge stringer cracked on the Wassataquoik Stream bridge. Made a temporary repair by jacking up the bridge and putting a post under the break.
5. Wassataquoik Stream Trail - a bridge stringer broke on the bridge over Turner Brook. This was repaired by jacking the stringer and placing a post under the break.
6. Sandy Stream Pond Trail - replaced 127 ft. of Bog Bridge leading to Big Rock and built 240 ft. of Bog Bridge on the back side of Sandy Stream Pond.
7. Freezeout Trail - with the help of the Sierra Club service group 470 ft. of Bog Bridge was built in 5 locations near Webster Stream lean-to. This will help provide dryer hiking in this low lying area.
8. Littlefield Pond Trail - with the help of the Sierra service group, 225 ft. of Bog Bridge was built on this trail about ½ mile from the road, using previously cut materials.
9. South Branch Mtn. Trail - the flood of '87 washed several Bog Bridges around in the cedar swamp near Upper South Branch lean-to. The bridges were moved back to their proper places.
10. Fowler Brook Trail - the flood of '87 also moved several bridges about where the trail crosses Fowler Brook. The bridges were moved back to their proper places.

Considerable time was spent by Trail Crew Leader, Lester Kenway, coordinating with various volunteer groups and individuals - such as the Sierra Club, SCA and others. The efforts of numerous volunteers is greatly appreciated by Baxter Park.

Efforts were hampered by a two-week loss of labor due to SCA's lack of insurance coverage. However, we had an unusually fine group of people who worked very hard, so the rest of our summer was very productive.

Major accomplishments for this summer include: Opening 6 new miles of trail, repairs to the Upper Chimney Pond Trail, repairs to the Hunt Trail and building over 1,300 ft. of Bog Bridge.

V. NEW CONSTRUCTION

A. NORTH DISTRICT

1. New lean-to built at Davis Pond to replace old one.
2. Built shed-style roof on woodshed for storage of litter and pineboard.
3. Built new docks for South Branch Pond.
4. Built new walkway to swimming dock.
5. Built new cupboard in living room of ranger camp at So. Branch Pond.
6. New lumber storage racks at So. Branch Pond garage.

7. New tool racks on garage at So. Branch Pond.
8. Constructed new framework for swim dock.
9. Built new steps for So. Branch Pond crew camp.
10. Mouseproof shed made for fire equipment at So. Branch Pond.
11. Made frame and put up a water storage tank at So. Branch Pond.
12. Began construction of duplex crew camp/bunkhouse at Trout Brook.
13. Made snowsled drag for trail grooming.
14. Put up platform and solar panels on Burnt Mt. tower for radio transmission.
15. Constructed 2 chimneys in new building at Trout Brook Farm.

B. SOUTH DISTRICT

1. Installed five skylights, one in Abol crewcamp, three in Togue Pond block building for shower room, one in Trapper John Camp.
2. Transported and installed new solar-electric system on Burnt Mt. tower.
3. Installed new tile flooring, rebuilt shelves, cabinets, countertops in Togue Booth.
4. Built new carpenter tool box for Truck 69.
5. Built new lean-to at Togue Pond; moved and set it at Katahdin Stream.
6. Built new lean-to at Davis Pond - dismantled old one. Cooperative effort of North and South District personnel.
7. New road relocation: cutting of footpath, flagging of road perimeter, hauling and installation of culverts, road-side haying, hauling of gravel for culverts, etc.
8. Many new signs were built by Lester Kenway at Support Services Building.

VI. PERSONNEL

Time spent on various phases of personnel matters include:

1. Screening of job applications and interviewing persons for seasonal positions in Baxter State Park. New persons hired in the field include:
   a. Tom Puckett - Togue Pond Gatekeeper
   b. Sandra Tardiff - Togue Pond Gatekeeper
   c. Robert Hawkins - Campground Attendant, Roaring Brook
   d. Russell Rytlewski - Campground Attendant, Katahdin Stream

   Acquainted new employees with Park procedures, policies and operations.
2. Promotions in Baxter State Park:
   a. Joel Drew - from campground attendant to campground ranger, Katahdin Stream.
3. Setting up of work schedules, including the Chimney Pond coverage agreement.
4. Evaluating employee performances.
5. Supervision of Park Volunteers.
6. Handled employee grievances/complaints. Worked at resolving disputes.

VII. SEARCH AND RESCUE

There were no fatalities in Baxter State Park in 1987. This is a most pleasant change from years past.

Search and Rescue incidents basically involved persons with sprains, strains, broken bones, abrasions and lacerations. Search and rescue incidents on record include:

1. 7-14-87: watercraft rescue of capsized canoe party at South Branch Pond
2. 7-22-87: Aircraft evacuation of Susan Coniteim of New York City out of Billfish Pond with a broken ankle.
3. 7-30-87 Greer Pagano of Camp Fernwood of Oxford, Maine injured her right knee while hiking Katahdin. Park rangers carried her down to roadside. Arthroscopy revealed multiple bone fragments.

Park personnel assisted numerous people coming off trails late due to minor injury, fatigue, poor judgment or lack of proper lighting equipment.

Baxter State Park has record of 15 injured persons taken to local hospitals with injuries or illnesses occurring in Baxter Park in 1987.

VIII. LAW ENFORCEMENT

Considerable time and effort was spent protecting the resources of Baxter State Park. Court officer, Robert E. Howes, spent many hours at Millinocket District Court on law enforcement matters.

A breakdown of law enforcement activities is as follows:

Prosecutions: 50
Written warnings: 10
Verbal Warnings: to numerous to count
Auto Accidents: 11

Most warnings center on park rule violations and speeding.

The 1987 law enforcement records are as follows:

SUMMARY OF
CRIMINAL CASES
1987

COURT OFFICER Robert Howes
DATE December 1987

* P-PHYSICAL
S-SUMMONS
B-BOND

OFFICER	BDG NO.	RESPONDENT	DOB	ARREST*	OFFENSE	PLACE OF ARREST	COLL.	DISPOSITION	TIME S
Goode	57	Rice, Kristin	07-15-64	S	Registration BSP #6	T3R9	$ 35.00	Guilty	
Goode	57	Power, Steven	06-16-64	S	Registration BSP #6	T3R9	$ 35.00	Guilty	
Goode	57	Lindstrom, Eric	01-31-64	S	Registration BSP #6	T3R9	$ 35.00	Guilty	
Goode	57	Uzzle, Kevin	08-10-67	S	Imprudent Operation Title 29	T4R10		Dismissed	
Howes	53	Nicholas, John	10-19-65	S	Theft by Unauthor-Taking Tle.17-A	T3R10		Guilty	45 days
Howes	53	Nicholas, John	10-19-65	S	Criminal Mischief Title 17-A	T3R10		Guilty	45 days
Goode	57	Hoag, Andrew	04-17-68	S	Camping BSP #5	T3R9		F.T.A.	
Goode	57	McCollen, Bradley	12-20-67	S	Camping BSP #5	T3R9	$ 38.50	Guilty	
Howes	53	Bowe, Michael	04-14-52	S	Camping BSP #5	T3R9	$ 38.50	Guilty	
Howes	53	Bowe, Michael	04-14-52	S	Fires BSP #9	T3R9	$ 38.50	Guilty	
Goode	57	Daigle, Mike	09-13-65	S	Camping BSP #5	T3R9	$ 35.00	Guilty	
Goode	57	Betes, Herbert	07-09-57	S	Camping BSP #5	T3R9	$ 35.00	Guilty	
Goode	57	Ryan, Kevin	02-17-66	S	Vehicles BSP #16	T3R10		F.T.A.	
Goode	57	Lemieux, Arthur, Jr.	11-11-53	S	Worm Fishing in FFO water Tle.12	T3R10	$ 50.00	Guilty	
Goode	57	Parker, John	01-16-69	S	Poss. of Liquor Minor Tle. 28	T2R9	$100.00	Guilty	
Goode	57	York, Andrew	10-22-68	S	Poss. of Liquor Minor Tle. 28	T3R10	$100.00	Guilty	

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OFFICER	BDG NO.	RESPONDENT	DOB	ARREST*	OFFENSE	PLACE OF ARREST	COLL.	DISPOSITION	TIME
Goode	57	St.Pierre, Troy	03-19-69	S	Poss. Liquor by a Minor Title 28	T3R10	$110.00	Guilty	
Goode	57	Roy, Rene	06-22-69	S	Poss. Liquor by a Minor Title 38	T3R10	$100.00	Guilty	
Goode	57	Doss, Wright	08-04-69	S	Camping BSP #5	T3R9	$ 35.00	Guilty	
Goode	57	Landolfi, Mark	02-09-62	S	No Life Preserver Title 12	T3R10		F.T.A.	
Chase	56	Helms, Terry	06-10-60	S	Imprudent Speed Title 29	Baxter Park		F.T.A.	
Chase	56	LaFeave, Steven	09-02-58	S	Imprudent Speed Title 29	Baxter Park	$ 44.00	Guilty	
Drew	51	Johnston, David	06-09-47	S	Camping BSP #5	T6R10	$ 35.00	Guilty	
Goode	57	Joyce, Douglas	02-24-39	S	Pets BSP #15	T3R9		F.T.A.	
Drew	51	McClain, Scott	02-10-49	S	Property BSP #23	T6R10	$ 55.00	Guilty	
Goode	57	Naylor, Ed	05-04-63	S	Lure Fishing in FFO Title 12	T4R10		F.T.A.	
Chase	56	Stanton, Jimmy	10-14-62	S	Fishing without License Title 12	T6R9	C.B. $100.00	F.T.A.	
Howes	53	Polakowski, Robert	09-27-43	S	No Life Preserver Title 12	T2R9		F.T.A.	
Goode	57	Rogers, Charles	12-26-49	S	No Life Preserver Title 12	T2R9	$ 55.00	Guilty	
Chase	56	Hews, Gerald	01-05-54	S	Littering Title 17	T6R9	$ 50.00	Guilty	
Chase	56	Hews, Floyd	09-10-49	S	Littering Title 17	T6R9	$ 50.00	Guilty	
Chase	56	Fournier, Robert	03-20-60	S	Imprudent operations Title 29	T6R9	$ 38.50	Guilty	

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OFFICER	BDG NO.	RESPONDENT	DOB	ARREST*	OFFENSE	PLACE OF ARREST	COLL.	DISPOSITION	TIME
Chase	56	Mello, Brian	11-06-62	S	F.C.W.	T4R9	$ 35.00	Guilty	
Goode	57	Desmond, Austin	03-15-66	S	OAS/FTA Title 29	T2R9	$100.00	Guilty	
MacArthur	54	Vocaturo, Michael	01-19-58	S	Camping Reg. BSP #5	T3R9	$ 35.00	Guilty	
Howes	53	Vocaturo, Michael	01-19-58	S	Camping BSP Reg. #5	T3R9	$ 35.00	Guilty	
Howes	53	Hazard, Elizabeth	06-05-47	S	Pets BSP Reg. #15	T3R10	$ 35.00	Guilty	
Chase	56	Ricci, Brian	10-13-62	S	Fires BSP Reg. #9	T6R8		F.T.A.	
Chase	56	Ricci, Brian	10-13-62	S	Camping BSP #5	T6R8		F.T.A.	
Goode	57	Kimball, Benjamin	09-12-51	S	Registration BSP #6	T3R9		F.T.A.	
Goode	57	Walker, Benjamin	10-06-51	S	Registration BSP #6	T3R9	$ 35.00	Guilty	
Goode	57	Watson, Matthew	08-64	S	Fires BSP Reg. #9	T4R9		F.T.A.	
Goode	57	Mennis, James	06-17-55	S	Registration BSP #6	T3R9	$ 38.50	Guilty	
Goode	57	Michon, Lawrence	08-12-61	S	Registration BSP #6	T3R9	$ 38.50	Guilty	
Goode	57	Lionetti, Benjamin	09-25-56	S	Registration BSP #6	T3R9	$ 38.50	Guilty	
Howes	53	Hale, Brent	07-28-69	S	Operating over Posted Spd.Tle.29	T3R9	$ 44.00	Guilty	
Goode	57	Dinapoli, Alexander	03-01-68	S	Camping BSP #5	T3R9	$ 35.00	Guilty	
Goode	57	Parker, John	01-16-69	S	Poss. of Liquor by Minor Title 28	T2R9	$110.00	F.T.A.	

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OFFICER	BDG NO.	RESPONDENT	DOB	ARREST*	OFFENSE	PLACE OF ARREST	COLL.	DISPOSITION	TIME S
Goode	57	Guinn, Timothy	09-13-64	S	Camping BSP #5	T3R9		F.T.A.	
Goode	57	Guinn, Joy	03-22-57	S	Camping BSP #5	T3R9		F.T.A.	

IX. SPECIAL ACTIVITIES

The Student Conservation Assoc. (SCA) gave 2,260 hours of trail maintenance - a major work load. Other volunteers donated 960 hours toward trail maintenance.

The Maine Forest Service coordinated two fire training sessions with Park staff in the field. Also flight support was provided by the Forest Service for the Davis Pond lean-to construction project, the S.F.M.A., and various fire control flights during the summer drought. The Forest Service has been most help to Baxter State Park.

The Dept. of Transportation assisted in road resurfacing and the construction of a housing facility for the road maintenance crew at the north branch of Trout Brook.

Campground Ranger, Keith Smith, provided a loon count for the Audubon Society. Keith also assisted in trout creel census information and assisted National Geographic personnel do research for the National Geographic Magazine.

The Dept. of Environmental Protection collected water samples at numerous remote locations in Baxter Park with park staff assistance. These samples are for acid rain data.

Over 10 miles of Baxter Park boundary was repainted by park staff and volunteers.

The 112th Med-Evac of Bangor flew materials both in and out of Chimney Pond and Russell Pond. Much construction materials, firewood and requisitions were moved.

4,000 trout were stocked at So. Branch Pond.

Joe DeSisto of the Suttell party was flown out of Russell Pond for a court appearance out-of-state.

Many special services were performed by park staff for the benefit of the public. These services include: towing of vehicles out of ditches; boosting of batteries; hauling packs and hikers; repairing camping gear, vehicles and anything else imaginable; loaning tools (axes), gas and oil; and unlocking vehicles with keys on the inside.

Construction of the new portion of perimeter road around Nesowadnehunk Lake and within the confines of Baxter State Park was greatly enhanced by the efforts of Jensen Bissell.

Various meetings with Great Northern Paper personnel on matters of west access to Nesowadnehunk Lake.

The burning of brush and slash in the S.F.M.A. and the chipping of slash in the SFMA helped alleviate some of the visible reminders of cuttings past.

Camp Pheonix - Daicey boundry despute has yet to be settled. Camp Phoenix may become a condominium type operation

Holly Duvaul completed a study of Woodland Raptors (Hawks) in Baxter State Park during the summer.

Baxter Park provided camping space at Abol Field for the American-Soviet physicians camping group.

The High Adventure Scout organization was also permitted to use the Abol Field facility at Baxter Park for the summer when the AMC August Camp was filled due to activities of the 50th anniversary of that organization.

Kidney Pond Camps, after much study and meetings, will not be leased as a private sporting lodge. Baxter Park will operate this facility similar to the Daicey Pond operation.

BAXTER STATE PARK VOLUNTEER PROGRAM - 1987

One hundred-fifty-three Baxter State Park volunteers donated 9,158 hours of work. A summary of projects completed are as follows:

A. Park Boundary - A Millinocket native, Curt Stiffel, completed his Eagle Scout project by repainting approximately 2½ miles of the Baxter State Park boundary in T2, R6. Curt had other local scouts assist him on this helpful project.

B. Telos gatehouse was operated by volunteers continually from May 8 to October 28, 1987. Telos gate will also be operated by volunteers in 1988 from May 1 to June 14.

C. South Branch Pond: Volunteers assisted in the opening preparation and winter closing of South Branch Pond Campground: such working includes putting in and taking out of the swimming float, canoes, docks, picnic tables and general cleaning of facilities. A winter carpenter volunteer project at South Branch during the winter of 1987 consisted of laying a new floor and hanging a new ceiling in the CRI cabin.

Russell Pond: A May volunteer project consisted of setting new rafters and reshingling of the Russell Pond leantos. The new shingles blend in with the wilderness setting very well.

The Davis Pond leanto was completely rebuilt by a team of Park staff and able volunteers. The Maine Forest Service assisted in the hauling of men and supplies for this major project.

Togue Pond: A Volunteer for Peace crew of international volunteers put 572 hours of labor into restoring the eroded shoreline around the cabins at Togue Pond. Log cribs were installed, loam and mulch spread, and the area was seeded to grass. A very major undertaking.

A Millinocket native, Scott Martin, completed his Eagle Scout project by completing a portion of about 300' of shoreline renovation similar to the Volunteer for Peace project. Scott had other local boyscouts assist him on this project.

D. A Daicey Pond and Chimney Pond campfire program was initiated by Jane Thomas, a member of the Park Advisory Committee. Jane scheduled a campfire program at Chimney Pond on July 6-7, July 20-21, Aug. 10-11, Aug. 24-25, 1987 and at Daicey Pond on July 8, July 22, Aug. 12 and Aug. 26, 1987.

E. John Howard of Orrington has been of great assistance to Chris Drew in co-ordinating the Baxter State Park volunteer program. John also used his mapping skills in making current maps of Baxter State Park campgrounds.

F. The Sierra Club and other individuals annually give over 1000 hours of donated labor in assisting the Park Trail Crew. The removal of many blowdowns and trail repair is invaluable to our trail program.

G. Maine Conservation Corp. crews were busy in Baxter State Park this fall. Projects included the cutting, splitting and stacking of 15 cords of firewood at the Garage complex, the mulching of approximately 1½ miles of the new Baxter State Park perimeter road and general carpenter assistance work at the Trout Brook Farm crew camp. MCC worked 720 hours.

H. Mike Haskell, a professional surveyor, assisted in a resurvey project near Nesowadnehunk Lake. Mike is willing to assist in other areas of boundary resurvey. Mike and Lester Kenway brushed out over 2 miles of boundary that was a combination heavy blowdown/budworm damage - a tough job!

I. Webster Lake volunteers, Bennie and Verna Boyinton of Millinocket gave 5 months of volunteer service by checking parties on Webster Lake and Webster Stream. The Park facilities are much nicer kept in this remote part of Baxter due to their labors. Baxter State Park has a better handle on the public use in this area due to their efforts.

Major Contributions of Volunteer Groups or Individuals:

Maine Snowmobile Association - 1,668 hours at Telos Gate/South Branch Pond Campground.
Bennie & Verna Boyinton - 1,380 hours at Webster Lake.
Sierra Club - 960 hours Trail Maintenance.
John Howard, Volunteer Co-ordinator - 590 hours and 4,917 miles.
Volunteers for Peace, International Volunteer Group - 572 hours, Togue Pond Reclaimation program.

X. OVERVIEW

The winter of 1987 gave Baxter State Park a large quantity of snow early which stayed in the woods well. This created slush problems on park lakes. Consequently, ice conditions for ice fishermen were poor for most of the winter.

Park rangers re-marked and painted better than 10 miles of the park boundary during the winter months. During the summer and fall an additional three miles of boundary was repainted for a total of 13 miles in 1987.

Baxter Park volunteers are of immense help to the maintenance and operation of Baxter State Park. They donated 9,158 hours of service which is a labor of love toward Baxter Park.

The volunteer program has expanded to the point where a coordinator is needed. John Howard of Orrington has served in this capacity very well.

Major volunteer projects in 1987 included: Telos Gate operation, winter Chimney Pond coverage, Webster Lake ranger station, trail maintenance, Togue Pond camp renovations, boundary maintenance, campground maintenance and administrative assistance.

The construction of the Davis Pond lean-to and the rebuilding of lean-tos at Russell Pond was a coordinated effort of staff and hearty volunteers.

Lester Kenway did a superb job in planning and implementing all trail maintenance projects. Lester also supervised large volunteer programs that gave 960 hours of trail maintenance.

The Togue Pond Campground has a much improved natural appearance. The Volunteers for Peace crew, composed of multi-national volunteers, completed a major landscaping project of cribbing, mulching and loaming the heavily eroded banks in front of the cabins at Togue Pond. Scott Martin completed his Eagle Scout project by renovating the nearly 300 feet of shoreline at the Togue Pond Camps.

The Student Conservation Association personnel gave 2,260 hours of trail maintenance service. The Maine Conservation Corp. crew completed 720 hours of service during the fall of 1987. Jeff DeHart did an outstanding job in coordinating the MCC crew.

A drought during the summer of 1987 made the risk of forest fires very high. Outlying campsites were closed and increased patrols by the Maine Forest Service and Baxter Park personnel were implemented. There were several wild fires just outside the Park boundaries but none inside Baxter Park. This drought will undoubtedly have a negative impact on Park fisheries. The brooks, streams and rivers became very low. Little Wassataquoik Lake was reduced to half its original size.

A good report for search and rescue activities in Baxter Park in 1987-no fatalities. The most serious injuries were broken ankles and knees. This was a welcome relief for the staff and public users.

Bear problems were minimal. This is the second consecutive year of no major bear problems with no evictions necessary. Two years with no bear evictions is a new Baxter Park record. The geese population at Trout Brook did not harass the campers in 1987.

Major items in the park operation included the Togue Pond renovation, boundary remarking, construction of the Trout Brook Farm crew facility, the renovation of the Nesowadnehunk Field garage/workshop complex and the renovation of the Russell Pond and Davis Pond lean-tos.

Easier access to Baxter Park due to the increase of logging roads to our boundaries has created a registration problem. A rule change will help alleviate this matter.

Spring flooding in 1987 created some road and trail damages that have been basically repaired.

The Baxter Park Authority hired Jensen Bissell as the Resource Manager. He quickly adapted to the responsibilities of his position and became very familiar with all of his areas of responsibility in the Park. During the year we have found him to be a tremendous asset to Park operations and appreciate his expertise, support and fine working relationship with all park personnel.

In 1988 we look forward to the challenges of renovating Kidney Pond Camps according to the Authority decision of 1987.

Great Northern Paper opened a new west road to the Nesowadnehunk Lake Dam in 1987. This created a third west access to Baxter Park. Consequently, the relocation of the perimeter road around the Nesowadnehunk Lake region was implemented in the fall of 1987. This road, which is entirely inside Baxter Park is presently 80% completed with surfacing and grading to be completed in the spring in 1988.

Baxter State Park plans to close the Nesowadnehunk Field and old Telos Road access points and maintain a west gate near Nesowadnehunk Lake in 1988.

Day use increased in Baxter Park in 1987. Good but dry weather and the road use fees implemented by Great Northern Paper created more traffic on park roads.

Park staff did an exceptional job in park operations in 1987. Complaints were few and compliments were many. They are to be commended for the manner in which they served Baxter State Park and the people of Maine.

C. SCIENTIFIC FOREST MANAGEMENT AREA

SCIENTIFIC FOREST MANAGEMENT AREA
YEAR-END ACTIVITY SUMMARY

Jensen Bissell
Resource Manager

I. Overview

As I approach the completion of my first year with Baxter Park and the Scientific Forest Management Area I stand in awe at the overwhelming speed with which time can pass. A 3600-mile cross-country move, settling of a family, and orientation to a new environment and different set of working rules can really work up a sweat (as well as a good set of nerves). By the time I had a chance to look up, it seemed that 1987 had pretty much slipped by. It's a long jump from the douglas-fir forests of Oregon to the spruce-fir forests of Maine, but one thing's for sure - the landing was made softer by the friendly faces and helping hands of those who make up the Baxter Park Family.
As far as the SFMA is concerned, I found lots of work and plenty of challenge. Here's how it went in 1987:

II. Administration

The early month's of 1987 involved orientation of all sorts as everything was new to me. Orientation involved historical reviews of the creation of the SFMA as a separate management area of Baxter State Park, and the series of administrative arrangements that have been used to manage the area, as well as the operational history of the area including recreational use, timber harvesting and road construction.

Another large part of orientation involved people - lot's of them. During six meetings and an on-site tour as well as many individual discussions, the twelve-member SFMA Advisory Committee played an invaluable role in providing perspective on past and present problems on the SFMA and support and guidance in the planning necessary to tackle those problems. Chuck Gadzik and Bob Seymour have my sincerest thanks for their outstanding commitment in time and effort toward helping resolve existing problems on the SFMA. The variety of philosophies and expertise present on the SFMA Advisory Committee is vital to the consideration of long-term management goals consistent with the ideals of the SFMA. I hope that in years to come, as the membership changes, the SFMA Advisory Committee will maintain the high degree of cooperation, commitment and comraderie that has existed with the Committee of 1987. Along with the SFMA Advisory Committee came a host of other individuals including the all-important Baxter Park Authority, the Baxter Park Advisory Committee, the 50 or so people who work for the Park and make Baxter Park what it is in the summer, as well as many, many people within State or Private circles who I have worked with over the past year.

My final step in orientation involves an area I expect will never be completed. The SFMA involves 28,000 acres of forest, lakes, streams, bogs, ledge and everything in between. 1987 marked the happy beginning of my orientation to the forests of the SFMA - a job I hope never to finish. Orientation to the physical area generated alot of attention to the information files that quantify the area. The late spring-early summer months involved a consolidation, revision and updating of existing maps, aerial photos and other forest resource inventory data. Most of the revisions were aimed at creating a system that can track and document future changes on the SFMA in an orderly and logical manner so future managers can easily determine what, when and why something happened on any given acre of the SFMA. The Park's acquisition of two personal computers has greatly facilitated this effort.

A final administrative endeavor has been the revision of the existing SFMA Management Plan. The revision of the plan has evolved into more of a recomposition than a revision as discussions concerning the long-term goals of the SFMA reinforce the fact that there are no clear-cut (no pun intended) solutions to resource development and allocation in today's complex and ever-changing society. I'm aiming to have a working version of the SFMA Management Plan up and running in the spring of '88, but it is my firm belief that such guides should be constantly scrutinized and revised in pace with our growing knowledge and experience.

III. Operations

Forest operations on the SFMA, specifically road building and wood harvest operations, ceased in February of 1986. The most commonly asked question of people interested in the SFMA is "when are you going to start cutting wood again?" The establishment of ecologically, silviculturally and economically acceptable operations on the SFMA is a critical step in effective management of the area and has accordingly recieved much attention this year. Any operations on the SFMA must first come to grips with the existing markets, contracting, labor, housing, access, and reputation and the effects these factors have regarding forest operations. The year's planning efforts can be summarized in a few points. The SFMA cannot be a drain on Park funds. Much information is presently not known concerning the economics of marketing wood products from the SFMA given the variety of cutting prescriptions, timber stands and markets available. Efforts to date have focused on starting a system that can begin to answer these questions and produce positive results. The existing roading plan for the SFMA has been modified and based on revised primary road locations, an operational area has been selected in compartments 4 and 9. This summer and fall, initial reconnaisance was accomplished on about 3 miles of primary road location north of Murphy Brook. Approximately 120 prism plots were established in the area to provide pre-operational cruise

data. Road construction cost estimates were developed and alternative methods of contracting examined. In September, the Baxter Park Authority approved funding to begin road construction operations in the SFMA. Unlike past arrangements, new road construction will not be tied to a timber sale through stumpage prices, but will remain separate from harvest operations to improve the Parks' control over the quality of road constructed and to maintain a better handle on the flow of money into and out of the forest. Present plans are striving to begin road construction in May or June of '88 with modest harvesting beginning upon completion of road work. The scale of operations will then be reviewed and adjusted based on the quality and economic balance achieved.

1987 did result in the beginning of one type of operation on the SFMA. Previous harvest operations utilized full-tree yarding in combination with roadside delimbing. 3000 cords of roadside delimbing creates lots of slash, as I'm sure anyone who has been in the SFMA will agree. Two different endeavors begun in the summer both bore fruit in the fall and made positive steps toward cleaning up the SFMA. With the cooperation of Lester Kenway, I enjoyed the help of two of Lester's trail crew and together we covered about 1000' of piled slash on the Murphy Brook road. With the excellent cooperation of the Island Falls office of the Maine Forest Service, this material plus another 500' was burned in early November. Overall, consumption rates were excellent and costs were very low. Much was learned as well and more of the same is planned for next year after some piling work in the spring. On the south end of the SFMA, negociations begun in June with H.O. Bouchard resulted in all the slash along the primary road being chipped and hauled to GNP's East Millinocket burner in late October. Results here were also excellent with a cost of about $3000.00. I feel it was money well spent as the fire hazard, visual blight and loss of growing space that the slash piles presented is removed for good. Seeding of the sites is planned for late spring of '88. Hopefully, in a few years it will be hard to believe that piles of such a size occupied the site.

Looking back, maybe it's not so surprising that the time went by so quickly. Although there's still plenty of "challenges" to be faced, I'm looking forward to 1988 as a year of productive activity and accomplishment as we work toward bringing the SFMA closer to Governor Baxter's ideal and a managed forest Baxter State Park can be proud of.

IV.

SFMA ACTIVITY PLAN - CALENDAR 1988

Objectives

1. Continue improvement of existing roads and harvested areas

2. Initiate successful forest operations in accordance with the Management Plan:
   - -develop contract procedures
   - -develop contractor relationships, improve reputation of area.
   - -accomplish silviculturally and environmentally sound forest practices
   - -begin movement toward self-marketing of wood products

3. Determine average costs/revenues per operating unit

4. Determine overall management strategies for next 50-100 years including:
   - -sustainable annual harvest levels
   - -harvest plan through regulation period.

5. From 4. determine 1989 budget:
   - -capital needs
   - -staffing
   - -operating levels

6. Improve data collection system
   - -stand exam/history
   - -review of proposed plans
   - -post operational review

Administration

1. Complete revision of SFMA Management Plan
   -determine sustainable harvest levels through regulation period.
   -determine operational harvest levels
   -settle outstanding key issues *

2. Arrange and execute contracting for 88 activities

3. Road layout and design for 88 construction

4. Harvest preparation
   -block and sale layout
   -stand prescriptions
   -marking

5. Data collection
   -stand exams on 1985 operating areas
   -stand exams on 1989 operating areas

6. Deer yard survey
   -in coordination with BPL/IFW

7. Access examination

Operations

1. General housekeeping
   -install/erect informational signing
   -install gates**
   -spring tile installation**
   -block stabilized secondary roads**

2. Site preparation
   -machine pile distributed slash (Murphy Brook road)
   -cover machined piles (prep. for fall burning)***
   -broadcast seeding (areas chipped/burned in '87, new road construction)***

3. Road construction
   -approx. 3 miles primary and secondary roads, 6/88 - 8/88

4. Harvest operations
   -Compartment 9, 1000 to 3000 cords, 1-4 crews

* Need organized Advisory Committee input on key issues, i.e.:
  - use of herbicides on the SFMA
  - acceptable species for planting
  - location and design of SFMA housing

** If accomplished in 1988, will need at least partial assistance from BSP personnel/equipment

*** Would benefit from brief (2-4 days total) assistance from BSP regular or volunteer personnel

D. ADMINISTRATIVE SERVICES

I. INTRODUCTION

RESERVATIONS:

Calendar year 1987 can best be described as a "record" year for the Administrative Office. We counted more advance reservations, more phone calls, more visitors and more fees collected than any previous year. The summer was very dry resulting in fewer weather related cancellations, and causing some fire danger potential as the season progressed. For approximately two weeks, no reservations were made for outlying sites.

The new transfer regulation went into effect July 1st, 1987. There were a few questions at first, but overall the policy met with little resistance. Visitors did not mind paying the $5.00 fee to change sites or dates. Total income from Transfer fees for 1987 was $1,520.00.

Total visitor days were 118,429 , an increase of more than 10% from 1986. The largest part of this increase came from non-resident Day use and Transients with 4,543 or 30% more visitors than last year. Resident Day use and Transients only increased by 589 visitors or 2% in comparison.

Another change this year was the administrative procedure to allow advance reservations for 1 night only at Davis Pond Leanto and for 2 nights at Wassatoquoik Lake Island. This change saved us from many early morning phone calls and requests from Campgrounds of people wanting to transfer to these two outlying sites.

Sales of books and maps also increased this year. The Delorme map was the hot item with over 700 sold. Thanks to Lester Kenway we updated the $.50 hiking guide, which is also a great seller. We are currently looking at new ways to market the "Legacy" book. Over 90 were sold this year.

Modification of the reservation office was begun in December. The counter was extended to provide better visibility and access for the clerks to assist visitors. A side benefit that was found after modifications were started was the result of more natural light in both the reservation area and the lobby.

PERSONNEL:

Changes in personnel this year are as follows:

Retirements -

Shirley Brewster from her position as Clerk Typist III with over 11 years with the State of Maine.

Promotions, Demotions and Transfers -

Judy Hafford promoted to Clerk Typist III from Clerk Typist II

Joel Drew promoted to Campground Ranger at Katahdin Stream from Campground Attendant

Jeff Snedgen voluntarily demoted to Assistant Trail Crew Leader from Campground Attendant

Jean Howes voluntarily demoted to a year-round Clerk Typist II from seasonal Gatehouse Attendant

Dave Tardiff transferred from a 20 to a 23 week Gatehouse Attendant

New Employees -

Russ Rytlewski, Campground Attendant at Katahdin Stream
Bob Hawkins, Campground Atendant at Roaring Brook
Sandra Tardiff, Gatehouse Attendant at Togue Pond
Tom Puckett, Gatehouse Attendant at Togue Pond
Julie Smart, Clerk II at Park Headquarters
Roxanna McLean, Secretary to the Director
D. Jensen Bissell, Resource Manager for the SFMA
Rosemary James, Clerk Typist I at Park Headquarters

Administrative Personnel participated in training throughout the year in courses such as Business Systems Analysis, New Employee Orientation and Training in Assertiveness. In addition, almost all personnel participated in a special Public Relations seminar as part of our annual spring orientation. Dr. Paul Risk of the University of Maine put on the workshop for us at Park Headquarters. This training was very well received and will probably be repeated within the next few years.

CONTRACT SERVICES:

The contract for operation of Daicey Pond Campground was awarded to Linda Ives and Latona Torrey this season. Both had previously worked for Baxter Park as volunteers. They have the management, public relations and maintenance skills necessary and have done an excellent job for us this season. At their request and our agreement we have exercised the renewal option of their contract and have finalized a new contract for next summer.

Rubbish removal services were provided by Dave Condon d/b/a The White Knight again this year. Septic Tank pumping was done by David Thorpe of Greenville. This was the second year of two year contracts for each.

The contract for janitorial services at Park headquarters was put out for bid this spring. Wayne Lyle of Millinocket was awarded the contract.

Other services contracted this year were for yard maintenance at Park headquarters by Chad Brodeau. Forest management in the SFMA by John Mills, slash chipping in the SFMA by H. O. Bouchard and the perimeter road relocation by Randy K. Cyr, Inc.

A complete inventory was taken and preliminary plans are being discussed to set the groundwork for the development of an operational plan to convert KPC to a Daicey Pond style of operation. All surplus items such as wiring, plumbing and equipment no longer needed at this facility or the Park will be disposed of through the Bureau of Purchases, Surplus Property Division in Augusta. Some furniture is now in the process of being repaired and refinished.

FINANCIAL REPORTS:

An analysis of the comparative statement of revenues and expenditures for fiscal years 1986 and 1987 reflect a modest increase in park fees overall. No revenue was received from SFMA operations this year, therefore Trust Fund Contributions increased by an amount necessary to cover the operating costs of the Park.

Personal services costs increased due to contract settlements. Overtime costs decreased since compensatory time was allowed in 1987 and had not been allowed for most of 1986. The largest increases in All Other costs were due to utilities, insurance and STA-CAP charges. The large decrease in capital spending helped to keep the overall increase in expenditures to 3.4%.

STATEMENT OF REVENUES AND EXPENDITURES
FISCAL YEAR ENDING JUNE 30, 1987

Balance Forward, July 1, 1986			$ 6,265.72
REVENUE:			
PARK OPERATIONS:			
Use Fees	$ 233,999.50		
Entrance Fees	52,045.00		
Sale of Maps and Guides	9,910.05		
Cash Over/Short F. Exchange	1.04		
SUB-TOTAL		$ 295,955.59	
LESS: Overpayments	(3,283.45)		
Refunds	(7,466.00)		
SUB-TOTAL		(10,749.45)	
Net Revenue from Operations		$ 285,206.14	
FORESTRY OPERATIONS:			
Sale of Pulp	-0-		
Sale of Timber	-0-		
*Reg. Transfer-Me. Forest Service	(2,757.65)		
Net Revenue from S.F.M.A.		(2,757.65)	
TRUST FUNDS:			
Boston Safe Deposit & Trust Co.	500,000.00		
Casco Bank & Trust Co.	270,000.00		
Net Revenue from Trusts		770,000.00	
MISCELLANEOUS REVENUE:			
License Fees	82.40		
Interest on Bonds	4,467.42		
Witness Fees	208.00		
Misc. Services & Fees	6,197.70		
Misc. Income	288.00		
Sale of Equipment	36.90		
Net Revenue from Miscellaneous		11,280.42	
Net Revenue - All Sources		$ 1,063,728.91	
Adjustment to Balance Forward		530.93	
			$ 1,064,259.84
TOTAL REVENUE AVAILABLE			$ 1,070,525.56

EXPENDITURES:	Operations	S.F.M.A	Total	
PERSONAL SERVICES:				
Salaries, Permanent	$307,525.93	$10,351.20	$317,877.13	
Salaries, Seasonal	182,817.79	-0-	182,817.79	
Retro Lump Sum Payment	11,309.88	-0-	11,309.88	
Overtime	10,932.11	-0-	10,932.11	
Retirement Contributions	88,399.29	1,792.84	90,192.13	
Other Benefits	51,934.75	748.45	52,683.20	
TOTAL PERSONAL SERVICES	$652,919.75	$12,892.49	$665,812.24	
ALL OTHER:				
Contractual Services	$209,930.61	$ 4,731.89	$214,662.50	
Commodities	58,229.44	1,089.94	59,319.38	
STA-CAP Charges	19,761.05	355.69	20,116.74	
TOTAL ALL OTHER	$287,921.10	$ 6,177.52	$294,098.62	
CAPITAL:				
Building	$ 2,479.29	-0-	$ 2,479.29	
Equipment	32,087.68	-0-	32,087.68	
Structures	1,190.00	-0-	1,190.00	
TOTAL CAPITAL	$ 35,756.97	$19,070.01	$ 35,756.97	
TOTAL EXPENDITURES				$ 995,667.83
Balance Forward, June 30, 1987				$ 74,857.73

BAXTER STATE PARK
Financial Analysis - Budget vs. Expenditures
For FY Ending June 30, 1987

	PERSONAL SERVICES	BUDGET PLUS OLD YEAR ENCUMBRANCES	EXPENDITURES PLUS CURRENT ENCUMBRANCES	BALANCE
3100	Permanent Regular	$ 338,904	$ 317,877	$21,027
3300	Seasonal	187,678	182,818	4,860
3600	Overtime		10,932	(10,932)
3600	Retro LumpSum Payments		11,310	(11,310)
3800	Unemployment Compensation	29,000	15,516	13,484
3901	Health Insurance	42,800	30,415	12,385
3905	Dental Insurance	2,800	1,954	846
3910	Retirement	102,931	90,192	12,739
3911	Group Life Insurance	3,846	1,395	2,451
3912	Employee Medicare Cost		1,167	(1,167)
3971	Uniform Allowance	2,500	2,236	264
3979	Other Benefits	2,500	-	2,500
	TOTAL PERSONAL SERVICES	712,959	665,812	47,147
	ALL OTHER			
4000	Professional Services - Not State	57,749	61,849	(4,100)
4100	Professional Services - State	100	736	(636)
4200	Travel Expense - In State	2,500	3,249	(749)
4300	Travel Expense - Out of State	600	401	199
4400	Operation of State Vehicles	39,000	32,242	6,758
4500	Utilities	18,000	21,702	(3,702)
4600	Rentals	5,500	4,052	1,448
4700	Repairs	85,300	42,583	42,717
4800	Insurance	18,000	23,746	(5,746)
4900	General Operating	24,000	35,155	(11,155)
5100	Food	2,300	1,207	1,093
5200	Fuel	6,500	4,382	2,118
5300	Office Supplies	2,000	2,559	(559)
5400	Clothing	2,299	7,675	(5,376)
5600	Miscellaneous Supplies	31,099	44,949	(13,850)
5800	Highway Materials	2,000	477	1,523
	TOTAL ALL OTHER	296,947	286,964	9,983
	CAPITAL			
7100	Buildings & Improvements	23,950	14,272	9,678
7200	Equipment	39,481	47,041	(7,560)
7300	Structures & Improvements		1,190	(1,190)
	TOTAL CAPITAL	63,431	62,503	928
8008	Interest		88	(88)
8511	Sta Cap	8,593	20,029	(11,436)
	TOTAL EXPENDITURES	$1,081,930	$1,035,396	$46,534

COMPARATIVE STATEMENT OF REVENUES AND EXPENDITURES
FISCAL YEAR 1986 and 1987

REVENUE	FY-1987	FY-1986	Inc./Dec.	%
Use Fees	$ 233,999.50	$ 235,874.92	$ 1,875.42	.8
Entrance Fees	52,045.00	44,915.00	7,130.00	15.9
Sale of Maps and Guides	9,910.05	9,088.69	821.36	9.0
Cash Over/Short	1.04	(23.85)	24.89	104.4
Refunds	(7,466.00)	(7,389.00)	(77.00)	1.0
Overpayments	(3,283.45)	(5,022.30)	1,738.85	(34.6)
Misc. Revenue	11,811.35	19,018.30	(7,206.95)	(37.9)
Forestry Operations	(2,757.65)	156,772.99	(159,530.64)	(101.8)
Trust Fund Contributions	770,000.00	635,028.00	134,972.00	21.3
NET REVENUE	$1,064,259.84	$1,088,262.75	$(24,533.84)	(2.3)
EXPENDITURES				
Personal Services				
Salaries Permanent	$ 317,877.13	$ 298,925.12	$ 18,952.01	6.3
Salaries Seasonal	182,817.79	170,095.30	12,722.49	7.5
Retro Pay	11,309.88		11,309.88	--
Overtime	10,932.11	14,440.12	(3,508.01)	(24.3)
Retirement Contribution	90,192.13	83,748.45	6,443.68	7.7
Other Benefits	52,683.20	50,525.05	2,158.15	4.3
TOTAL PERSONAL SERVICES	$ 665,812.24	$ 617,734.04	$ 48,078.20	7.8
All Other				
Contractual Services	$ 214,662.50	$ 190,210.02	$ 24,452.48	12.9
Commodities	59,319.38	61,457.98	(2,138.60)	(3.5)
STA-CAP Charges	20,116.74	14,631.36	5,485.38	37.5
TOTAL ALL OTHER	$ 294,098.62	$ 266,299.36	$ 27,799.26	10.4
Capital				
Building	$ 2,479.29	$ 145,266.81	$(142,787.52)	(98.3)
Equipment	32,087.68	68,816.87	(36,729.19	(38.8)
Structures	1,190.00		1,190.00	--
TOTAL CAPITAL	$ 35,756.97	$ 214,083.68	$(178,326.71	(83.3)
TOTAL EXPENDITURES	$ 995,667.83	$1,098,117.08	$(102,449.25)	(9.3)
Togue Pond Purchase		- 135,028.00	135,028.00	(100.0)
	$ 995,667.83	$ 963,089.08	$ 32,578.75	3.4

E. TRUST FUND INFORMATION

I. BAXTER STATE PARK AUTHORITY'S FINANCIAL POLICY - TRUST FUND INFORMATION

The Baxter State Park Authority's Financial Policy requires the following information to be reported to the Authority at the end of each calendar year:

I. The Market Value of all trusts generating revenue for the support of Park operations:

Market Value = $20,280,809.26 (12-31-87)

II. A. The amount of Trust Fund monies used to support Park operations during calendar year 1987.

Boston Trust.	$500,000.00
Casco Trust	270,000.00
Total Funds Used.	$770,000.00

B. The percent that total Trust Fund monies used represents in relation to the market value of trusts. 3.8%

III. The rate of inflation for 1987 as measured by the Consumer Price Index. (12 months ending 12-31-87) 4.5%

IV. A. Yearly growth rate of all Trusts (2.1%)

B. Percent change of market value (year ending):

1.	Boston principle	(4.8%)
2.	Boston Investment Income	2.0%
3.	Casco Trust	(4.2%)
4.	State Treasurer's (Cash Pool)	201.3%

V. The change in Trust Fund purchasing power during calendar year 1987.

Yearly growth rate of trust less inflation rate less % of Funds Used = % Change in purchasing power

(2.1)	-	4.5	-	3.8	=	(10.4)

VI. The total amount of monies from trusts allowed to support fiscal year 1988 (Re: BSPA Financial Policy - 5% of market value as of 12-31-87) $20,280,809.26 = $1,014,040.46

Baxter State Park Authority's Financial Policy - Trust Fund Information

Significant changes since the Financial Policy Report of 12-31-86 include:

An decrease of $443,992.47 in the market value of the Trusts.

An increase of the inflation rate of 3% (from 1.5% to 4.5%).

A decrease in Trust Fund purchasing power of 10.4% during 1987 substantially due to the market crash in October 1987.

Of the $1,360,402 estimated annual income as of 12-31-86, 56.6% was used to support Park operations during 1986 with the remainder reinvested for growth.

BAXTER STATE PARK
SUMMARY OF ACCOUNTS
AS OF JUNE 30, 1987

TRUST GENERATING OPERATING REVENUE	BOOK VALUE	MARKET VALUE	ESTIMATED VALUE	CURRENT YIELD	% OF ASSETS
I. PRINCIPAL ACCOUNT Boston Trust (14-0068-00-8)	$10,844,237.91	$14,025,261.20	$ 805,662.00	5.7	64.5
II. INVESTED INCOME Boston Trust (14-0068-81-8)	4,262,656.35	4,406,487.10	343,945.00	7.8	20.2
III. STATE TRUST Casco Bank (A-48381)	2,734,658.13	2,810,861.67	194,415.00	6.9	12.9
IV. STATE (Invested Income) TREASURER'S (Cash Pool) (82460)	104,779.23	104,779.23	8,068.00	7.7	.4
SUB TOTALS	$17,946,331.62	$21,347,392.20	$ 1,352,090.00	6.3	98.2
SPECIAL TRUSTS					
Baxter MacWorth Trust (83071) Land Acquisition)	386,149.37	384,135.98	28,264.00	7.4	1.8
SUB TOTAL					
TOTAL ALL TRUSTS	$18,332.480.99	$21,731,528.18	$ 1,380.354.00	6.4	100.0

IV. BAXTER STATE PARK
SUMMARY OF ACCOUNTS
as of December 31, 1987

TRUSTS GENERATING OPERATING REVENUE	BOOK VALUE	MARKET VALUE	ESTIMATED VALUE	CURRENT YIELD	% OF ASSETS
I. PRINCIPAL ACCOUNT Boston Trust (14-0068-00-8)	$11,449,725.03	$12,658,892.57	$784,670.00	6.2	62.4
II. INVESTED INCOME Boston Trust (14-0068-81-8)	4,408,653.83	4,497,520.45	359,238.00	8.0	22.2
III. STATE TRUST (Casco Bank (A-48381)	2,813,234.48	2,629,983.98	200,378.00	7.6	13.0
IV. STATE (Invested Income) Treasurer'S (Cash Pool) (82460)	100,154.47	100,154.47	6,409.89	6.4	.5
SUB TOTALS	$18,711,767.81	$19,886,551.47	$1,350,695.89	6.7	98.1
SPECIAL TRUSTS					
Baxter MacWorth Trust (83071 Land Acquisition)	399,391.12	394,257.79	29,455.00	7.5	1.9
SUB TOTAL					
TOTAL ALL TRUSTS	$19,171,158.93	$20,280,809.26	$1,380,150.89	6.8	100.00

BAXTER STATE PARK

MARKET VALUE OF TRUST ASSETS

June 30, 1979 to June 30, 1987

	BOSTON TRUST PRINCIPAL	INVESTED INCOME	STATE HELD TRUST	TOTAL
1979	$ 6,709,749	$ 707,511	$1,769,369	$ 9,186,629
1980	$ 7,003,738	$ 947,302	$1,791,821	$ 9,742,861
1981	$ 7,320,493	$1,169,962	$1,645,692	$10,136,147
1982	$ 6,819,945	$1,166,239	$1,698,045	$ 9,684,229
1983	$ 9,064,737	$1,497,313	$2,229,054	$12,791,104
1984	$ 8,678,249	$2,081,655	$2,084,622	$12,844,526
1985	$10,777,407	$2,718,503	$2,405,893	$15,901,803
1986	$13,736,002	$3,774,155	$2,779,121	$20,289,278
1987	$14,025,261	$4,406,487	$2,810,862	$21,242,610

PERCIVAL BAXTER TRUST

ESTIMATED INCOME 1978 - 1987

YEAR	14-0068-81-8	14-0068-00-8	COMBINED INCOME TOTAL	DOLLAR CHANGE	PERCENT CHANGE
1978	$ 36.756	$387.624	$ 424.380	-	-
1979	55.740	469.596	525.336	$100.956	23.8
1980	111.912	532.728	644.640	119.304	22.7
1981	155.292	522.356	666.648	22.008	3.4
1982	134.988	585.684	720.672	54.024	8.1
1983	102.324	568.092	670.416	(50.256)	(7.0)
1984	171.888	621.636	793.524	123.108	18.3
1985	234.924	670.440	905.364	111.840	14.1
1986	263.856	717.912	981.768	76.404	8.4
1987	330.000	767.196	1.097.196	115.428	11.7

1/8/88
S. SALAS

F. STATISTICAL REPORT

BAXTER STATE PARK
GATE STATISTIC - 1987
PERMITS ISSUED - BY GATE

	TOTAL # OF VEHICLES	RESIDENT	NON RESIDENT
Togue Pond Gate			
May	1831	1316	515
June	3269	2144	1125
July	5332	3069	2303
August	6491	3089	3362
September	4083	2106	1977
October	1381	720	661
Total	22387	12444	9943
Nesowadnehunk Gate			
May	244	215	29
June	444	360	84
July	505	369	136
August	474	298	176
September	531	437	94
October	23	18	5
Total	2221	1697	524
Matagamon Gate			
May	503	412	91
June	689	533	156
July	1234	829	405
August	1273	740	533
September	750	460	290
October	291	183	108
Total	4740	3157	1583
Total All Gates	29348	17298	12050

BAXTER STATE PARK
GATE STATISTIC - 1987
PERMITS ISSUED - BY GATE

BY GATE	TOTAL #OF PEOPLE	CAMPER RES.	CAMPER NON-RES.	LODGE RES.	GUESTS NON-RES.	DAY RES.	USE NON-RES.	TRANSIENT RES.	TRANSIENT NON-RES.
Togue Pond Gate									
May	4822	940	466	50	79	2430	530	244	83
June	9115	1566	1278	71	94	4197	1257	452	200
July	16523	2536	2537	42	80	6888	3465	529	446
August	18859	1855	3099	37	143	6908	5347	717	753
September	10576	1280	1815	62	79	3951	2352	699	338
October	3605	545	679	0	0	1380	744	135	122
Total	63500	8722	9874	262	475	25754	13695	2776	1942
Nes. Gate									
May	511	10	4	1	0	32	8	399	57
June	1008	22	11	1	0	47	29	740	158
July	1334	70	38	3	0	236	126	661	200
August	1165	26	59	0	0	228	285	419	148
September	1174	9	16	2	0	98	80	847	122
October	46	1	0	0	0	6	4	25	10
Total	5238	138	128	7	0	647	532	3091	695
Mat. Gate									
May	1338	228	67	0	0	594	59	300	90
June	1949	329	147	0	0	797	97	408	171
July	3653	693	364	0	0	1141	269	727	459
August	3706	486	488	0	0	946	410	830	546
September	1906	246	230	0	0	584	137	409	300
October	737	90	60	0	0	240	78	167	102
Total	13289	2072	1356	0	0	4302	1050	2841	1668
Total all Gates	82027	10932	11358	269	475	30703	15277	8708	4305

BAXTER STATE PARK
STATISTICS - 1987
PERMITS ISSUED - BY MONTH

	TOTAL # OF VEHICLES	RESIDENT	NON RESIDENT
May			
Togue Pond Gate	1831	1316	515
Nesowadnehunk Gate	244	215	29
Matagamon Gate	503	412	91
Total May	2578	1943	635
June			
Togue Pond Gate	3269	2144	1125
Nesowadnehunk Gate	444	360	84
Matagamon Gate	689	533	156
Total June	4402	3037	1365
July			
Togue Pond Gate	5332	3069	2303
Nesowadnehunk Gate	505	369	136
Matagamon Gate	1234	829	405
Total July	7071	4267	2844
August			
Togue Pond Gate	6491	3089	3362
Nesowadnehunk Gate	474	298	176
Matagamon Gate	1273	740	533
Total August	8238	4127	4071
Sept.			
Togue Pond Gate	4083	2106	1977
Nesowadnehunk Gate	531	437	94
Matagamon Gate	750	460	290
Total Sept.	5364	3003	2361
Oct.			
Togue Pond Gate	1381	720	661
Nesowadnehunk Gate	23	18	5
Matagamon Gate	291	183	108
Total Oct.	1695	921	774
Grand Total	29348	17298	12050

BAXTER STATE PARK
STATISTICS - 1987
PERMITS ISSUED - BY MONTH

BY MONTH	TOTAL #OF PEOPLE	CAMPER RES.	CAMPER NON RES.	LODGE GUESTS RES.	LODGE GUESTS NON-RES.	DAY USE RES.	DAY USE NON-RES.	TRANSIENT RES.	TRANSIENT NON-RES.
May									
Togue Pond Gate	4822	940	466	50	79	2430	530	244	83
Nesowadnehunk Gate	511	10	4	1	0	32	8	399	57
Matagamon Gate	1338	228	67	0	0	594	59	300	90
Total May	6671	1178	537	51	79	3056	597	943	230
June									
Togue Pond Gate	1566	1566	1278	71	94	4197	1257	452	200
Nesowadnehunk Gate	1008	22	11	1	0	47	29	740	158
Matagamon Gate	1949	329	147	0	0	797	97	408	171
Total June	12072	1917	1436	72	94	5041	1383	1600	529
July									
Togue Pond Gate	16523	2536	2537	42	80	6888	3465	529	446
Nesowadnehunk Gate	1334	70	38	3	0	236	126	661	200
Matagamon Gate	3653	693	364	0	0	1141	269	727	459
Total July	21510	3299	2939	45	80	8265	3860	1917	1105
August									
Togue Pond Gate	18859	1855	3099	37	143	6908	5347	717	753
Nesowadnehunk Gate	1165	26	59	0	0	228	285	419	148
Matagamon Gate	3706	486	488	0	0	946	410	830	546
Total August	23730	2367	3646	37	143	8082	6042	1966	1447
Sept.									
Togue Pond Gate	10576	1280	1815	62	79	3951	2352	699	338
Nesowadnehunk Gate	1174	9	16	2	0	98	80	847	122
Matagamon Gate	1906	246	230	0	0	584	137	409	300
Total Sept.	13656	1535	2061	64	79	4633	2569	1955	760
Oct.									
Togue Pond Gate	3605	545	679	0	0	1380	744	135	122
Nesowadnehunk Gate	46	1	0	0	0	6	4	25	10
Matagamon Gate	737	90	60	0	0	240	78	167	102
Total Oct.	4388	636	739	0	0	1626	826	327	234
Grand Total	82027	10932	11358	269	475	30703	15277	8708	4305

BAXTER STATE PARK

Camper Days Use by Location and Activity

WINTER SEASON 1986-1987

OVERNIGHT CAMPING										
MONTH	ROARING BROOK	DAICEY POND	CHIMNEY POND	KATAHDIN STREAM	RUSSELL POND	ABOL	SO. BRANCH POND	NESOWA-DNEHUNK	TOTAL NUMBER OF PEOPLE	TOTAL CAMPER NIGHTS
December	-	-	-	8	-	-	-	--	4	8
January	40	9	125	-	-	-	31	-	92	205
February	115	55	151	77	46	-	30	12	252	486
March	50	69	44	6	14	25	12	-	111	220
April	-	-	-	-	-	-	-	-	-	-
TOTALS	205	133	320	91	60	25	73	12	459	919

CAMPING ACTIVITIES					
CAMPER NIGHTS			DAY-USE		
MONTH	GENERAL CAMPING	TECHNICAL CLIMBING	SKIING/ SNOW-SHOEING	SNOW MOBILING	TOTAL
December		8			
January	80	125			
February	258	228			
March	145	75			
April	-	-			
TOTALS	483	436	32	1,168	1,200 - estimated

Prepared By:_____

4/84

BAXTER STATE PARK COMPARATIVE STATISTICS-1987

GATEHOUSE STATISTICS:

Persons:	1984	1985	1986	1987	SUMMER DETAIL USE 1987 Day Use Transients	Campers, Lodge Guests
Resident	47,564	46,321	49,459	50,612	39,406	11,201
Non-Resident	22,611	26,492	25,579	31,415	19,582	11,833
TOTAL	70,175	72,813	75,038	82,027	58,988	23,034
Day Use	41,727	40,613	41,589	45,980	45,980	-
Transient	8,903	10,501	12,267	13,013	13,013	-
Campers	18,819	21,033	20,415	22,290	-	22,290
Lodge Guests	726	666	767	744	-	744
TOTAL	70,175	72,813	75,038	82,027	58,993	23,034
Vehicles:						
Togue	18,883	19,813	20,106	22,387		
Matagamon	3,830	4,234	4,331	4,740		
Nesowadnehunk	737	919	2,237	2,221		
Telos	192	-	-	-		
TOTAL	23,642	24,966	26,674	29,348		

CAMPGROUND STATISTICS:

CAMPER DAYS: Campgrounds:	1984	1985	1986	1987	DETAIL CAMPER USE 1987 Campgrounds	Group Areas
Roaring Brook	10,516	10,470	9,622	10,473	7,711	2,762
Abol	5,387	5,380	4,988	5,415	5,415	-
Katahdin Stream	8,861	9,241	9,476	9,992	7,456	2,536
Daicey Pond	4,173	4,500	4,635	4,863	4,863	-
Nesowadnehunk	4,888	4,975	4,703	5,787	4,541	1,246
Trout Brook Farm	2,755	3,102	2,500	3,266	2,331	935
South Branch Pond	8,453	9,174	8,472	9,375	9,375	-
Russell Pond	2,929	2,811	2,719	2,890	2,890	-
Chimney Pond	3,756	3,786	3,623	3,688	3,688	-
SUB-TOTAL CAMPGROUNDS	51,718	53,439	50,738	55,749	48,270	7,479
Outlying Sites:						
South Branch Area	394	342	381	466		
Fowler Area	712	685	680	785		
Webster Area	923	1,004	909	1,101		
AT Shelter	128	97	111	324		
Davis Pond Area	203	225	240	243		
Wassataquoik Area	623	835	717	773		
SUB-TOTAL OUTLYING AREAS	2,983	3,188	3,038	3,692		
TOTAL SUMMER CAMPER DAYS	54,701	56,627	53,776	59,441		

VISITOR DAYS:	83-84	84-85	85-86	86-87
Camper Days/Summer	54,701	56,627	53,776	59,441
Day Use/Transient	50,630	51,114	53,856	58,988
TOTAL SUMMER VISITOR DAYS	105,331	107,741	107,632	118,429
Camper Days/Winter	1,549	1,403		
Day Use/Winter	977	1,126		
TOTAL WINTER VISITOR DAYS	2,526	2,529		
TOTAL PARK VISITOR DAYS	107,857	110,270		

Trail Use Summary 1987

Trail:	May	June	July	August	Sept.	Oct.	Total Hikers
Katahdin Stream:							
Hunt	261	649	1,387	1,897	793	468	5,455
Owl	37	70	203	411	156	45	922
Marston	4	12	16	5	16	8	61
Mt. Coe	5	11	9	18	2	1	46
Grassy Pond	58	129	148	178	89	71	673
Double Top So.	0	1	22	23	30	2	78
O.J.I.	2	13	6	6	9	8	44
Abol:							
Abol Falls	17	12	94	92	41	36	292
Abol Trail	401	437	1,058	1,538	838	273	4,545
Abol Beach	383	436	1,075	983	168	36	3,081
Roaring Brook:							
Chimney	484	1,737	3,408	4,376	2,562	854	13,421
Helon Taylor	156	266	623	912	443	186	2,586
Sandy Stream	558	953	2,237	1,728	1,155	519	7,150
So. Turner	113	192	347	601	405	93	1,751
Russell Pond	81	376	553	652	310	120	2,092
Nature Trail	17	51	92	238	111	52	561
South Branch Pond:							
So. Br. Falls	19	47	136	132	57	15	406
Ledges	11	16	65	89	34	14	229
Howe Brook	40	104	221	236	73	20	694
No. Traveler	44	134	226	301	140	47	892
Center Ridge	12	13	52	89	66	24	256
So. Br. Mtn.	16	16	122	150	126	10	440
Pogy Notch	66	119	199	240	154	57	835
Lower Fl. Pond Tr.	15	13	68	86	36	7	225
Nesowadnehunk:							
Double Top	2	13	98	105	114	15	347
Marston	0	2	2	2	17	0	23
Center Mtn.	0	2	0	0	6	0	8
Burnt Mt.	0	0	0	0	2	0	2
No. Brother	0	0	0	2	0	0	2
So. Brother	0	0	0	0	0	0	0
O.J.I.	0	0	1	2	0	0	3
Chimney Pond:							
Dudley	41	478	995	1,353	562	172	3,601
Cathedral	292	464	778	1,233	747	246	3,760
Saddle	37	828	1,846	2,288	1,206	460	6,665
Hamlin	6	100	78	128	117	42	471
No. Basin	21	109	112	80	169	53	544
No. Peaks	0	9	16	23	13	7	68
N.W. Basin	0	41	59	82	70	39	291

Trail Use Summary 1987 (con.)

Trail:	May	June	July	August	Sept.	Oct.	Total Hikers
Russell Pond:							
Russell Pond Tr.	93	392	656	703	290	178	2,312
Wass. Str. Tr.	36	138	287	284	92	64	901
N.W. Basin Tr.	14	124	179	241	103	84	745
No. Peaks Tr.	3	7	19	51	8	7	95
Pogy Notch Tr.	64	105	124	204	80	33	610
Wass. Lake Tr.	75	263	302	432	151	67	1,290
Lookout Tr.	2	62	52	54	18	20	208
Grand Falls Tr.	19	77	156	201	35	6	494
Daicey Pond:							
Niagra Falls		239	837	1,291	772	171	3,310
Lost Pond		8	22	36	33	4	103
Nature Tr.		34	59	191	120	8	412
Sentinel Tr.		19	39	151	35	5	249
AT to Kat.		5	17	133	56	27	238
Daicey to Grassy		5	64	270	79	36	454
Daicey to Elbow		3	29	154	56	27	269
AT to Pk. Boun.		0	32	40	23	8	103
Total Persons:	3,505	9,334	19,226	24,715	12,788	4,745	74,313

CLASS DAYS SUMMARY - 1987

CONDITIONS CONCERNING WHEN KATAHDIN IS CLOSED OR OPEN ABOVE TREELINE

Class 1 - Open - A good day.

Class 2 - Open but not recommended for climbing.

Class 3 - Open but not recommended; one or more trails closed - trails closed to be named by Ranger when setting Class Day.

Class 4 - Mandatory closure of all trails above treeline.

The Ranger at Chimney Pond is responsible for determining the Class Day of Katahdin. Closing applies only to portions of trails above treeline. Portions of trails below treeline will remain open.

NUMBER OF CLASS DAYS

YEAR	CLASS 1	CLASS 2	CLASS 3	CLASS 4
1982	51	80	7	0
1983	50	93	2	0
1984	47	70	22	6
1985	53	84	9	2
1986	36	102	13	0
1987	47	97	12	0

BAXTER STATE PARK
Camper Days Summary
1987

Campgrounds	May	June	July	Aug.	Sept.	Oct.	Total	% of Total Camper Day
Roaring Brook	606	1,183	1,844	2,128	1,482	468	7,711	13.0
Abol	399	681	1,421	1,569	1,040	305	5,415	9.1
Katahdin Stream	614	1,052	1,835	2,081	1,321	553	7,456	12.5
Daicey Pond	475	832	1,124	1,164	895	373	4,863	8.2
Nesowadnehunk	201	432	1,332	1,627	737	212	4,541	7.6
Trout Brook Farm	141	119	728	1,054	247	42	2,331	3.9
South Branch Pond	644	899	2,949	2,941	1,496	446	9,375	15.8
Russell Pond	147	541	729	856	456	161	2,890	4.9
Chimney Pond	34	670	954	983	758	289	3,688	6.2
Sub-Total	3,261	6,409	12,916	14,403	8,432	2,849	48,270	81.2
Group Areas								
Avalanche Field	187	342	731	863	485	154	2,762	4.6
Foster Field	257	140	793	862	356	128	2,536	4.3
Nesowadnehunk	48	142	400	470	140	46	1,246	2.1
Trout Brook Farm	156	108	236	332	102	1	935	1.6
Sub-Total	648	732	2,160	2,527	1,083	329	7,479	12.6
Outlying Sites								
South Branch Pond	26	81	105	133	91	30	466	.8
Fowler	135	147	181	248	59	15	785	1.3
Webster	182	174	229	385	100	31	1,101	1.9
AT Shelter	8	19	61	151	56	29	324	.5
Davis	0	43	51	69	45	35	243	.4
Wassataquoik Area	21	142	197	241	111	61	773	1.3
Sub-Total	372	606	824	1,227	462	201	3,692	6.2
TOTAL CAMPER DAYS	4,281	7,747	15,900	18,157	9,977	3,379	59,441	100.0

% Camper Days Per Month

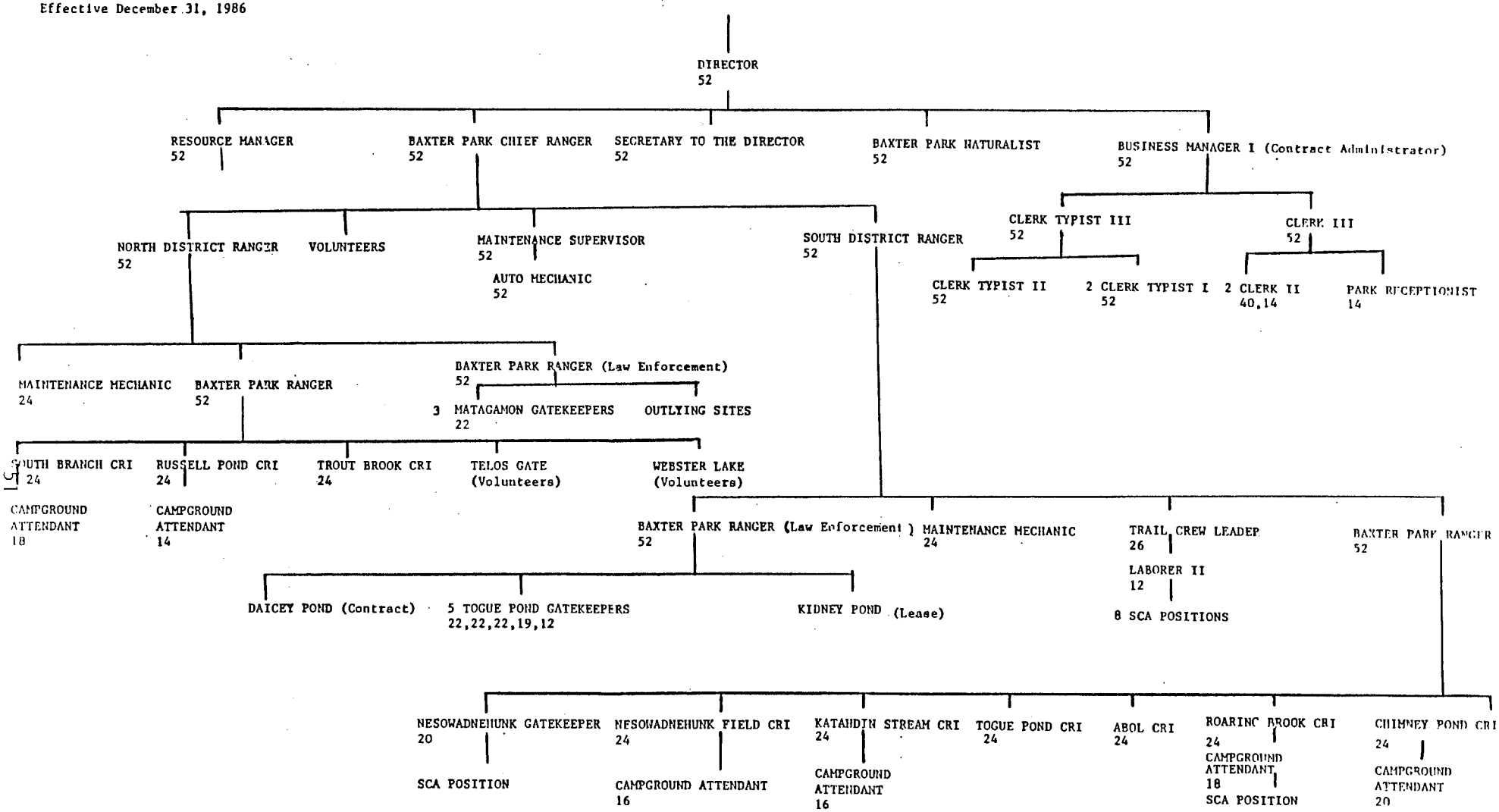
6. PERSONNEL LISTING

50 Classified Positions
2 Contract Services
10 SCA Positions

Effective December 31, 1986

BAXTER STATE PARK AUTHORITY

Comm, Inland Fisheries & Wildlife
Attorney General
Dir., Maine Forest Service



BAXTER STATE PARK

YEAR-ROUND POSITIONS - 1987

Title/ Position Number:	Name:	Location:
BSP Director 9429-0811	Irvin C. Caverly, Jr.	Headquarters, Millinocket
BSP Chief Ranger 9428-0966	Chris M. Drew	Headquarters, Millinocket
Business Manager I 0041-0481	Elizabeth M. Gray	Headquarters, Millinocket
Forester II 9452-0968	D. Jensen Bissell	Headquarters, Millinocket
BSP Maintenance Supv. 9427-0121	Philip M. McGlauflin	Headquarters, Millinocket
BSP District Rangers 9404-0946	Barry MacArthur	North District
9404-0945	Robert E. Howes	South District
BSP Rangers 9434-0946	Thomas P. Chase	North District
9434-0944	Loren Goode	South District
9434-0943	Bernard Crabtree	South District
9434-0942	Charlie Kenney	North District
Interpretive Spec 0479A-0947		Headquarters, Millinocket
Auto Mechanic II 8303-0926	Tim Sides	Headquarters, Millinocket
Clerk III 0003-0091	Janice T. Caverly	Headquarters
Clerk Typist III 0013-1081	Judith A. Hafford	Headquarters, Millinocket
Clerk Typist II 0012-0871	S. Jean Howes	Headquarters, Millinocket
Clerk Typist I 0011-0927	Rosemary K. James	Headquarters, Millinocket
Secretary 005-0969	Roxanna F. McLean	Headquarters, Millinocket

SEASONAL POSITIONS - 1986

Title/ Position Number	Name/Location			
MAINTENANCE RANGERS				
8281-0965 - 2	Coolong - North	24	5-4	10-16
8281-0041 - 1	Rickards - South	24	5-4	10-16
CAMPGROUND RANGERS				
9425-0631 - 7	Cushman - Nesowadnehunk	24	5-10	10-24
9425-0021 - 1	Curran - Russell Pond	24	5-10	10-24
9425-0221 - 3	Smith - South Branch Pond	24	5-10	10-24
9425-0611 - 9	Ward - Trout Brook Farm	24	5-10	10-24
9425-0351 - 4	Hendrickson - Chimney Pond	24	5-10	10-24
9425-0641 - 8	Hamer - Roaring Brook	24	5-10	10-24
9425-0601 - 6	Johnston - Abol	24	5-10	10-24
9425-0391 - 5	Drew - Katahdin Stream	24	5-10	10-24
9425-0151 - 2	Tetrault - Togue Pond	24	5-10	10-24
CAMPGROUND ATTENDANTS				
9424-0841 - 5	Thompson - Chimney Pond	20	5-24	10-10
9424-0741 - 3	Hawkins - Roaring Brook	18	5-24	9-26
9424-0922 - 6	Jacques - South Branch Pond	18	5-24	9-26
9424-0461 - 2	Leiter - Nesowadnehunk	16	5-24	9-12
9424-0831 - 4	Gordon - Russell Pond	14	5-30	9-5
9424-0421 - 1	Rytlewski - Katahdin Stream	18	5-24	9-26
	SCA Student - South			
GATEHOUSE ATTENDANTS				
9422-0171 - 3	D. Tardiff - Togue Pond	23	5-10	10-17
9422-0511 - 5	S. Tardiff - Togue Pond	23	5-10	10-17
9422-0361 - 7	Pratt - Matagamon	23	5-10	10-17
9422-0441 - 8	Pratt - Matagamon	23	5-10	10-17
9422-0201 - 9	Matthews - Matagamon	23	5-10	10-17
9422-0501 - 4	Johnston - Togue Pond	23	5-10	10-17
9422-0521 - 6	Miller - Nesowadnehunk	20	5-17	10-3
9422-0531 - 1	Puckett - Togue Pond	20	5-17	10-3
9422-0541 - 2	Howes - Togue Pond	12	6-21	9-12
	SCA Student - South			
TRAIL CREW				
9435-0141 - 1	Kenway - Trail Crew Leader	28	4-6	10-16
8002-0940 - 1	Snedgen - Laborer II	14	5-24	8-29
	8 SCA Students			
HEADQUARTERS				
0002-0731 - 1	King - Clerk II	40	1-12	10-17
0002-0941 - 2	Smart - Clerk II	14	5-26	8-29
9210-0967 - 1	Osgood - Park Receptionist	20	5-4	9-18

H. NEW POLICY - GUIDELINES FOR SCIENTIFIC STUDY

GUIDELINES FOR CONSIDERING SCIENTIFIC
STUDIES IN BAXTER STATE PARK

1. The Park will consider scientific research studies that conform to the general terms of Governor Baxter's Deeds of Trust. These studies will result in an improved understanding of biological and geological processes representative of northern Maine and Baxter State Park. In general these studies will be non-consumptive and will have minimal impact on the wilderness environment of the Park and on the users of the Park.

2. Types of Studies. The Park encourages authorized scientific studies that will lead to a greater understanding and appreciation of the natural systems of northern Maine.

3. Impact to the Park. Emphasis and priority will be given to research projects that have a minimal impact on the natural resources of the Park but consideration will be given to reasonable scientific studies. In general, the Park will not allow research that involves removal of botanical, geological or zoological specimens. Alteration of terrain or the permanent structures are prohibited.

4. Funding. In general, the Park will not fund scientific research from its annual budget. The Park will consider funding research that will provide data and management recommendations for specific management issues within the Park. If funding is requested, applications must be made two years prior to expected fundings.

5. Applications. Applications for permission to conduct research in the Park must be made six (6) months prior to expected issuance of a permit. The Park will circulate the proposal to a scientific studies review committee.

An application must contain the following:

1. Title
2. Name of Researcher
3. Researcher's credentials

4. Benefits to be derived from the research
5. Detailed description of research
6. Area(s) of the Park for the research
7. Impact on the Park
8. Budget
9. Time table for research and completion on application.
10. Limited to 5 pages.

6. All applications must be received at Park Headquarters by September 1st of each year. The Scientific Study Review Committee will meet on the second Tuesday of October each year to review applications and make recommendations to the BSP Director. Whenever possible Committee meeting will be held at the University of Maine at Orono. Agendas will precede the meetings by two weeks.

7. Permit. Research will only be allowed in the Park upon the issuance of a permit by the Park's Director. The Director, upon the advice of the Scientific Studies Review Committee may attach conditions to the permit.

8. Staff Coordination. The Park Director shall assign a staff member to monitor the research site and program. The research shall coordinate implementation of the research project with the appropriate Park staff.

9. Rules, Regulations, and Fees. Researchers in the Park shall be subject to the existing Park rules, regulations, and fees and provide a justification for research in Baxter State Park.

10. Revoking of Permit. The Park Director, at his discretion, at any time, may revoke the research permit by informing the researcher of the revocation, orally or in writing, and if orally revoked such shall be confirmed in writing.

11. Liability. The Park will not be liable for the researcher's equipment or property installed or left in the Park during the course of the project.

12. Final report. Following the completion of a research project, all researchers are required to submit within sixty (60) days a complete report to the Baxter State Park Director identifying the results of that research project. All reports will be kept on file for reference material at Park Headquarters, the University of Maine and the Maine State Archives in Augusta.

APPLICATION FOR
SCIENTIFIC STUDY IN
BAXTER STATE PARK

1. TITLE:

2. NAME OF RESEARCHER:

3. RESEARCHER'S CREDENTIALS:

4. BENEFITS TO BE DERIVED FROM RESEARCH:

5. DETAILED DESCRIPTION OF RESEARCH:

6. AREA(S) OF THE PARK FOR THE RESEARCH:

7. IMPACT ON THE PARK:

8. BUDGET:

9. TIMETABLE FOR RESEARCH AND COMPLETION OF APPLICATION:

(Use additional sheets if necessary)

I. DIRECTOR'S CONCLUDING REMARKS

DIRECTOR'S CONCLUDING REMARKS

Although we can take a great deal of pride in what we have accomplished in 1987, we have many challenges ahead of us in 1988 and beyond. Therefore, I take this opportunity to identify an agenda of goals we should shoot for in 1988.

Boundary protection each year becomes more important as the country around us opens up. We have roads developed on the east boundary that allow vehicle access to within a 20 minute walk of Twin Ponds. We have a boundary dispute on the west line that has been ongoing since 1971 and we have boundary on the northwest and south lines obliterated by Budworm Blowdown and past fire. Our emphasis will be to address each of those issues in 1988.

We have made major steps forward in the subject of access in 1987 with the development of the new road at Nesowadnehunk Lake on Park property and the plans to implement a control station in June of this upcoming year at Nesowadnehunk Lake. The closing of Nesowadnehunk Field Gate, Telos Gate and regeneration of the roads to these facilities will be a high priority.

Renovations of Kidney Pond Camps to a Daicey Pond style operation in 1988 in preparation for a small operation in 1989 is a major step forward and we make it with enthusiasm and positive anticipation. Preliminary planning is already in early stages.

In 1988 we will accomplish a complete revision of the Baxter State Park Management Plan. Good progress is being made to date thanks to the imput and support of Advisory Committee members and general public.

Togue Pond Camps will continue to receive renovation of grounds and buildings as resources allow each year. During the last three years, the facility has become more of an asset to Baxter State Park each year and we must continue our efforts.

The continual upgrading of facilities and equipment Park wide will be an ongoing agenda item. Our Park is second to none and its profile and dependance on equipment and facilities must be of the highest standards.

Our top agenda items for 1988 will be the continued protection of Baxter State Park according to the Deeds of Trust set forth by Governor Percival P. Baxter.

During the year Baxter State Park has received the support and assistance of many people who are are not paid for service to the Park, went above and beyond the call of duty to assist in the administration of B.S.P. These people acted solely because of their interest and love for Baxter State Park or supported and assisted the Park as cooperative good neighbors who responded when called upon. To all of you, my sincerest thanks.

A very special thanks to the following:

The Baxter State Park Advisory Committee and Walter Birt, Chairman
The BSP SFMA Advisory Committee and Chuck Gadzik, Chairman
The Kidney Pond Review Committee and Rob Gardiner, Chairman
The BSP Communications Committee
All volunteers
Paul Stern, Attorney for the BSP Authority
Chip Ahrens, Attorney General's office
Vickie Ostertag, Jim Tierney's Personal Secretary
Judy Anderson, John Cashwell's Personal Secretary
George Bourassa, Roger Milligan, David White and Hal Doughty of the Maine Forest Service
Skip Trask, Cecile Sibley, Janet Potter and Wendy Bolduc of the Augusta office Department of Inland Fisherie and Wildlife
Lt. Steve Hall and Dave Sewall and their Wardens in the Katahdin area Department of Inland Fisheries and Wildlife
Baxter State Park Support Search and Rescue Teams, namely:

A. Wildnerness Rescue Team
B. Dirigo Search and Rescue Team
C. Lincoln Search and Rescue Team
D. Camden Mtn. Rescue Team

Major Jim Tinkham and the Maine Army National Guard 112th Air Aviation Support Unit, Bangor, Maine.

J. APPENDIXES

AUDIT REPORT

BAXTER STATE PARK AUTHORITY

FISCAL YEAR ENDED

JUNE 30, 1987

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STATE OF MAINE
DEPARTMENT OF AUDIT
STATE HOUSE STATION 66
AUGUSTA, MAINE 04333
Area Code 207
Tel. 289-2201

RODNEY L. SCRIBNER, CPA
STATE AUDITOR

Auditors' Report on Financial Statements Prepared in Accordance With a Comprehensive Basis of Accounting Other Than Generally Accepted Accounting Principles

To the President of the Senate and the
Speaker of the House of Representatives

We have examined the component unit financial statements of the Baxter State Park Authority, as of and for the year ended June 30, 1987, as listed in the table of contents. Our examination was made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

As described in Note 1 to the financial statements, the Authority's policy is to prepare its financial statements on the basis of accounting practices prescribed by the State Controller. Those practices differ in some respects from generally accepted accounting principles. Accordingly, the accompanying financial statements are not intended to present financial position and results of operations in conformity with generally accepted accounting principles.

Because of the Authority's policy to prepare its financial statements on the basis of accounting as discussed in the preceding paragraph, in our opinion, the financial statements referred to in the first paragraph do not present fairly the financial position of the Baxter State Park Authority at June 30, 1987, or the results of its operations or changes in its financial position for the year then ended, in conformity with generally accepted accounting principles.

However, in our opinion, the financial statements referred to in the first paragraph present fairly the assets, liabilities, and fund equity of the Baxter State Park Authority at June 30, 1987, and the results of its operations and changes in its financial position for the year ended, in conformity with accounting practices prescribed by the State Controller of the State of Maine, which have been applied in a manner consistent with that of the preceding year.

Rodney L. Scribner CPA

Rodney L. Scribner, CPA
State Auditor

November 20, 1987

EXHIBIT A

BAXTER STATE PARK AUTHORITY

COMBINED BALANCE SHEET - ALL FUND TYPES AND ACCOUNT GROUP

June 30, 1987

ASSETS	Governmental Fund Type Special Revenue	Fiduciary Fund Type Trust and Agency	Account Group General Fixed Assets	Total (Memorandum Only)
Cash:				
Equity in treasurer's demand cash and/or investments	$92,414.47	$ 104,779.23	$	$ 197,193.70
Other fiscal agent or fiduciary		485,316.46		485,316.46
Petty cash	1,710.00			1,710.00
Investments - at amortized cost		2,597,482.55		2,597,482.55
Accounts receivable	84.00			84.00
General fixed assets			499,643.39	499,643.39
Total assets	$94,208.47	$3,187,578.24	$499,643.39	$3,781,430.10
LIABILITIES AND FUND EQUITY				
Liabilities:				
Accounts payable	$25,678.25	$	$	$ 25,678.25
Fund equity:				
Investment in land, buildings, and equipment			499,643.39	499,643.39
Fund balance -				
Reserved for encumbrances	39,739.16			39,739.16
Unreserved	28,791.06	3,187,578.24		3,216,369.30
Total fund equity	68,530.22	3,187,578.24	499,643.39	3,755,751.85
Total liabilities and fund equity	$94,208.47	$3,187,578.24	$499,643.39	$3,781,430.10

See accompanying notes to financial statements

BAXTER STATE PARK AUTHORITY

EXHIBIT B

COMBINED STATEMENT OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCES - ALL GOVERNMENTAL FUND TYPES AND EXPENDABLE TRUST FUNDS

Fiscal Year Ended June 30, 1987

	Governmental Fund Type Special Revenue	Fiduciary Fund Type Expendable Trust	Totals (Memorandum Only) 1987	Totals (Memorandum Only) 1986
Revenues:				
Other taxes on specific businesses	$ 82.00	$	$ 82.00	$ 79.75
From use of money and property	4,467.42	203,943.60	208,411.02	241,750.71
Service charges for current services	291,899.84	9,500.00	301,399.84	484,935.72
Contributions and transfers from other state agencies/funds	770,000.00	230,000.00	1,000,000.00	735,028.00
Sale and compensation for loss of property	36.90		36.90	3,490.22
Total revenues	1,066,486.16	443,443.60	1,509,929.76	1,465,284.40
Expenditures:				
Personal services -				
Salaries and wages	538,453.04		538,453.04	499,288.18
Fringe benefits	127,359.20		127,359.20	118,445.86
Capital expenditures	35,756.97		35,756.97	214,083.68
All other -				
Contractual services	214,662.50		214,662.50	190,470.72
Commodities	59,319.38		59,319.38	61,457.98
Interest payment/late fee				24.32
Transfers to General Fund	20,116.74		20,116.74	14,611.56
Transfers to Special Revenue Fund		100,000.00	100,000.00	
Charges to asset and liability accounts		670,000.00	670,000.00	500,000.00
Total expenditures	995,667.83	770,000.00	1,765,667.83	1,598,382.30
Excess (deficiency) of revenues over expenditures	70,818.33	(326,556.40)	(255,738.07)	(133,097.90)
Other financing sources (uses):				
Operating transfers out	(2,757.65)		(2,757.65)	(28,595.86)
Non-revenue receipts		18,223.74	18,223.74	29,242.69
Total other financing sources (uses)	(2,757.65)	18,223.74	15,466.09	646.83
Excess (deficiency) of revenues and other financing sources over expenditures and other (uses)	68,060.68	(308,332.66)	(240,271.98)	(132,451.07)
Fund balance at beginning of year (adjusted)	26,147.79	769,851.16	795,998.95	927,919.09
Fund balance at end of year	$ 94,208.47	$461,518.50	$ 555,726.97	$ 795,468.02

See accompanying notes to financial statements

EXHIBIT C

BAXTER STATE PARK AUTHORITY

COMBINED STATEMENT OF REVENUES, EXPENDITURES,

AND CHANGES IN FUND BALANCES

BUDGET AND ACTUAL - SPECIAL REVENUE FUND

Fiscal Year Ended June 30, 1987

	Departmental Operations		
	Budget	Actual	Variance
Revenues:			
Other taxes on specific licenses	$ 100.00	$ 82.00	($ 18.00)
From use of money and property		4,467.00	4,467.00
Service charges for current services	264,000.00	291,900.00	27,900.00
Contributions and transfers from other state agencies/funds	806,031.00	770,000.00	(36,031.00)
Sale and compensation for loss of property	2,000.00	37.00	(1,963.00)
Total revenues	1,072,131.00	1,066,486.00	(5,645.00)
Expenditures:			
Personal services -			
Salaries and wages	555,582.00	538,453.00	17,129.00
Fringe benefits	157,367.00	127,359.00	30,008.00
Capital expenditures	63,431.00	35,757.00	27,674.00
All other -			
Contractual services	239,139.00	214,663.00	24,476.00
Commodities	54,578.00	59,319.00	(4,741.00)
Transfers to General Fund	8,593.00	20,117.00	(11,524.00)
Total expenditures	1,078,690.00	995,668.00	83,022.00
Excess (deficiency) of revenues over expenditures	(6,559.00)	70,818.00	77,377.00
Other financing sources (uses):			
Operating transfers out		(2,758.00)	(2,758.00)
Excess (deficiency) of revenues and other financing sources over expenditures and other (uses)	(6,559.00)	68,060.00	74,619.00
Fund balance at beginning of year (adjusted)	26,148.00	26,148.00	-
Fund balance at end of year	$ 19,589.00	$ 94,208.00	$74,619.00

BAXTER STATE PARK AUTHORITY

NOTES TO FINANCIAL STATEMENTS

June 30, 1987

(1) Summary of Organizational Structure and Significant Accounting Policies

The Baxter State Park Authority was established to operate and maintain Baxter State Park for the use and enjoyment of the people of Maine in accordance with the wishes of the donor, former Governor Percival P. Baxter, that this Park "...shall forever be retained and used for state forest, public Park and public recreational purposes...shall forever be kept and remain in the natural wild state...shall forever be kept and remain as a sanctuary for beasts and birds."

The Baxter State Park Authority, a three-man Authority consisting of the State's Attorney General, the Director of the Bureau of Forestry and the Commissioner of Inland Fisheries and Wildlife, has full power in the control and management of the Park pursuant to Title 12, Sections 900-907, Maine Revised Statutes Annotated of 1964, as amended. The primary responsibilities of the Authority are to operate and maintain various campgrounds and campsites within the 200,000 acre wilderness Park; to protect the wildlife, fauna, and flora within the Park for the enjoyment of present and future generations; to receive and expend moneys from trusts and other income for maintenance and operation; to acquire additional land for the Park as authorized by law, to establish rules and regulations as necessary for the protection and preservation of the Park, monuments and structures thereon and for the protection and safety of the public; and to exercise police supervision over the Park.

The accounting policies of the Baxter State Park Authority conform to generally accepted accounting principles as applicable to governments. The following is a summary of the more significant policies:

A. Fund Accounting

The accounts of the Baxter State Park Authority are organized on the basis of funds each of which is considered a separate accounting entity. The operations of each fund are accounted for with a separate set of self-balancing accounts that comprise its assets, liabilities, fund equity or balance, revenues, and expenditures or expenses, as appropriate. Government resources are allocated to and accounted for in individual funds based upon the purposes for which they are to be spent and the means by which spending activities are controlled. The various funds are grouped, in the financial statements in this report, into two generic fund types and two broad fund categories as follows:

GOVERNMENTAL FUNDS

Special Revenue Fund - The Special Revenue Fund is used to account for the proceeds of specific revenue sources that are legally restricted to expenditures for specified purposes.

Fiduciary Funds

Trust Funds - Trust Funds are used to account for assets held by the state in a trustee capacity or as an agent for the Baxter State Park Authority. These include Nonexpendable and Expendable Trusts. Nonexpendable Trust Funds are accounted for in essentially the same manner as proprietary funds since capital maintenance is critical. Expendable Trust Funds are accounted for in essentially the same manner as governmental funds.

B. Basis of Accounting

Governmental fund and Expendable Trust Funds revenues and expenditures are recognized on the modified accrual basis. Under the modified accrual basis applied in accordance with generally accepted accounting principles, revenues are recognized in the accounting period in which they become measurable and available. Expenditures are recognized in the accounting period in which the fund liability is incurred, if measurable, except for unmatured interest on general long-term debt, which is recognized when due.

In certain respects, the Authority's accounting practices differ from generally accepted accounting principles. At June 30, 1987, material differences were as follows: It is the Authority's policy not to record accounts payable in the Governmental Fund types. Payroll expenditures are recorded as paid rather than at the time services are rendered. Certain non-payroll obligations are recorded as encumbrances and reservations of fund balances (appropriations carried forward) rather than as accounts payable. In addition, funds expended for items of inventory are recorded under the purchase option method, but no entry is made at year end to record on the balance sheet the amount of inventory on hand.

C. Encumbrances

Encumbrance accounting, under which purchase orders, contracts, and other commitments for the expenditure of money are recorded in order to reserve that portion of the applicable appropriation, is employed as an extension of formal budgetary integration in the Special Revenue Fund. Encumbrances outstanding at year end are reported as reservations of fund balances since they do not constitute expenditures or liabilities.

D. Investments

Investments are stated at cost.

E. Total Columns on Combined Statements - Overview

Total Columns on Combined Statements - Overview are captioned Memorandum Only to indicate that they are presented only to facilitate financial analysis. Data in these columns do not present financial position, results of operations, or changes in financial position in conformity with generally accepted accounting principles.

(2) Dedicated Revenue

Dedicated revenue credited to the Authority during the fiscal year amounted to $1,509,929.76, an increase of $44,645.36 as compared with the previous fiscal year. The increase occurred, for the most part, in the revenue from contributions and transfers from other state agencies/funds, offset in part by a decrease in service charges for current services.

(3) Expenditures

Total expenditures for the Authority's operations amounted to $1,765,667.83, an increase of $167,285.53 as compared with the previous fiscal year. The increase occurred, for the most part, in the personal services, transfers to the Special Revenue Fund and charges to asset and liability accounts categories.

(4) Transactions Between Funds

We noted that the fiduciary Fund records as expenditures moneys transferred to the Governmental Fund. The Governmental Fund records these same moneys as dedicated revenue. During the fiscal year, these interfund transactions totaled $770,000.00. The elimination of these transactions from revenue and expenditures on the Combined Statement of Revenues, Expenditures, and Changes in Fund Balance (Exhibit 2) would result in dedicated revenue of $739,929.76 and expenditures of $995,667.83, which we feel would more clearly reflect the results of operations.

(5) Boston Safe Deposit and Trust Company

Boston Safe Deposit and Trust Company is the trustee appointed by the late Governor Baxter to hold the main body of the trust property and manage, invest, reinvest, and administer the same. Funds reported by the trustee as of June 30, 1987 are $10,844,237.91 in the principal account and $4,262,656.35 in invested income. By the terms of the trust agreement, the net income of the trust is available for the care, protection and operation of the forest land known as Baxter State Park and for other forest lands hereinafter acquired by the State of Maine under the provisions of the trust for recreational or reforestation purposes. Funds may be withdrawn from the principal account for the purchase or other acquisition of additional lands for Baxter State Park or other lands for recreational or reforestation purposes.

Funds held be the trustee are not reflected on the records of the State Controller and accordingly are not presented on the accompanying financial statements. These funds have not been audited by us and accordingly we offer no opinion as to the fairness of presentation of the financial position of the funds as reported by the trustee.

(6) Defined Benefit Contributory Pension Plan

All Authority employees participate in the Maine State Retirement System, a multiple-employer public employee retirement system. The payroll for the year ended June 30, 1987 was $665,812.24.

All Authority employees shall become members of the retirement system as a condition of their employment. Employees who retire at or after age 60 with 10 years of creditable service are entitled to a retirement benefit, payable monthly for life, equal to 1/50 of the member's average final compensation multiplied by the number of years of his membership service and up to 25 years of his prior service. Average final compensation is the employee's average salary over the last three years of creditable service. Benefits fully vest on reaching 10 years of service. Vested employees may retire after 25 years of creditable service and receive reduced retirement benefits. The system also provides death and disability benefits. Benefits are established by State statute.

Covered employees are required by State statute to contribute 6.5 percent of their earnable compensation to the plan. The Authority is required by the same statute to contribute the remaining amounts necessary to pay benefits when due. The contribution requirement for the year ended June 30, 1987 was $124,188.26, which consisted of $90,192.13 from the Authority and $33,990.90 from employees; these contributions represented 14% and 5% of payroll, respectively.

STATE OF MAINE
DEPARTMENT OF AUDIT
STATE HOUSE STATION 66
AUGUSTA, MAINE 04333
Area Code 207
Tel. 289-2201

RODNEY L. SCRIBNER, CPA
STATE AUDITOR

Auditors' Report on Internal Accounting Controls at the Component Unit Financial Statement Level

We have examined the component unit financial statements of the Baxter State Park Authority for the year ended June 30, 1987, and have issued our report thereon, dated November 20, 1987. As part of our examination, we made a study and evaluation of the system of internal accounting control of the Baxter State Park Authority, to the extent we considered necessary to evaluate the system as required by generally accepted auditing standards and the standards for financial compliance audits contained in the U.S. General Accounting Office Standards for Audit of Governmental Organizations, Programs, Activities, and Functions. For the purpose of this report, we have classified the significant internal accounting controls in the following categories:

Revenues and expenditures
Purchasing and receiving
Property and equipment
Payroll

Our study included all of the control categories listed above. The purpose of our study and evaluation was to determine the nature, timing, and extent of the auditing procedures necessary for expressing an opinion on the entity's financial statements. Our study and evaluation was more limited than would be necessary to express an opinion on the system of internal accounting control taken as a whole or on any of the categories of controls identified above.

The management of the Baxter State Park Authority is responsible for establishing and maintaining a system of internal accounting control. In fulfilling this responsibility, estimates and judgements by management are required to assess the expected benefits and related costs of control procedures. The objectives of a system are to provide management with reasonable, but not absolute, assurance that assets and safeguarded against loss from unauthorized use or disposition, and that transactions are executed in accordance with management's authorization and recorded properly to permit the preparation of financial statements in accordance with generally accepted accounting principles. Because of inherent limitations in any system of internal accounting control, errors or irregularities may nevertheless occur and not be detected. Also, projection of any evaluation of the system to future periods is subject to the risk that procedures may become inadequate because of changes in conditions or that the degree of compliance with the procedures may deteriorate.

Our study and evaluation made for the limited purpose described in the first paragraph would not necessarily, disclose all material weaknesses in the system. Accordingly, we do not express an opinion on the system of internal accounting control of the Baxter State Park Authority, taken as a whole or on any of the categories of controls indentified in the first paragraph. However, our study and evaluation disclosed no condition that we believe to be a material weakness.

This report is intended solely for the use of management and should not be used for any other purpose. This restriction is not intended to limit the distribution of this report which, upon acceptance by the Baxter State Park Authority, is a matter of public record.

Rodney L. Scribner CPA

Rodney L. Scribner, CPA
State Auditor

November 20, 1987

STATE OF MAINE
DEPARTMENT OF AUDIT
STATE HOUSE STATION 66
AUGUSTA, MAINE 04333
Area Code 207
Tel. 289-2201

RODNEY L. SCRIBNER, CPA
STATE AUDITOR

Auditors' Report on Compliance at the Component Unit Financial Statement Level

We have examined the component unit financial statements of the Baxter State Park Authority for the year ended June 30, 1987, and have issued our report thereon dated November 20, 1987. Our examination was made in accordance with generally accepted auditing standards and the standards for financial and compliance audits contained in the Standards for Audit of Governmental Organizations, Programs, Activities, and Functions, issued by the U.S. General Accounting Office, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In connection with our examination referred to above, we selected and tested transactions and records to determine compliance with laws and regulations noncompliance with which could have a material effect on the component unit financial statements of the Baxter State Park Authority.

The results of our tests indicate that for the items tested, the Baxter State Park Authority complied with those provisions of laws and regulations noncompliance with which could have a material effect on the component unit financial statements. Nothing came to our attention that caused us to believe that for the items not tested the Baxter State Park Authority was not in compliance with laws or regulations noncompliance with which could have a material effect on the component unit financial statements.

Rodney L. Scribner CPA

Rodney L. Scribner, CPA
State Auditor

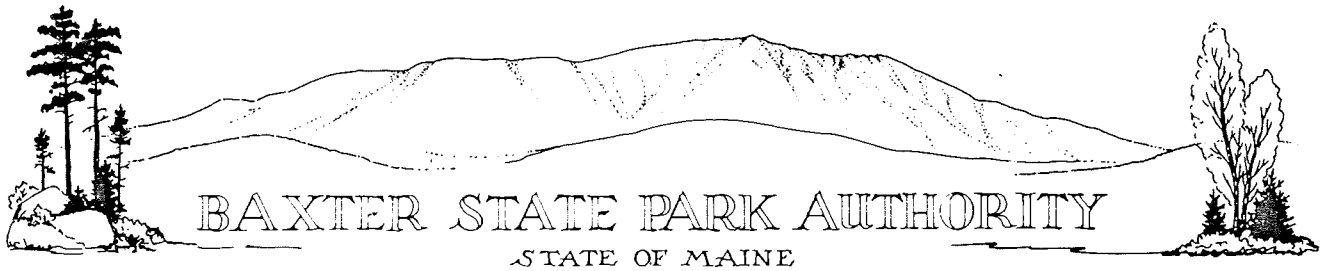
November 20, 1987

SCHEDULE OF FINDINGS AND QUESTIONED COSTS

Supply Inventory Control

A review of the supply inventory records revealed that the perpetual inventory system used by the Park is not maintained on a current basis and does not contain cost information for the various inventory items. In addition there are a number of employees with access to the supply areas. Personnel changes have made it difficult to maintain the records on a current basis. The lack of a current perpetual inventory system leads to poor control over supplies on hand. The supply inventory records should reflect an accurate balance of supplies on hand at all times, to include cost information of these items.

We recommend that a perpetual inventory system including cost information be maintained on a current basis for supply items on hand and that access to supply areas be as limited as possible without interfering with operational needs.



AUTHORITY MEMBERS

JAMES E. TIERNEY, CHAIRMAN
ATTORNEY GENERAL

WILLIAM J. VAIL, COMMISSIONER
INLAND FISHERIES AND WILDLIFE

JOHN H. CASHWELL, DIRECTOR
MAINE FOREST SERVICE

INFORMATION

(207) 723-5140

BUSINESS OFFICE
(207) 723-9616

PARK HEADQUARTERS

IRVIN C. CAVERLY, JR., DIRECTOR

64 BALSAM DRIVE
MILLINOCKET, MAINE 04462
(207) 723-9500

DIRECTOR'S NOTE

FOLLOW-UP ACTION TAKEN ON THE AUDITOR'S RECOMMENDATION EFFECTIVE AS OF JANUARY 15, 1988

At the time of this report the perpetual inventory system is being maintained on a current basis. Access to supply areas has been limited to some extent. Modifications are under way for timing of spring requisitions to avoid overloading of warehouse facilities and assure accurate distribution of supplies. Emergency supplies and rescue equipment are to be relocated to an area accessible to the duty officer, thereby eliminating the need for emergency access to the warehouse area.

Supply control is not a new problem and will not be totally resolved until a dust free efficient centrally located supply storage area is available. The nature of our operation requires, in some respects, access by commissioned rangers and duty officers to emergency related stock items.

What the auditor is saying, and I agree with, is that the Inventory Clerk needs a facility with total access control. Supplies presently are distributed in three different locations at the Millinocket complex. We will proceed in an effort to consolidate supplies for better control for the Inventory Clerk and implement a feasibility study which will be helpful in developing a proposal for an effective warehouse supply facility.

II. VOLUNTEER PROGRAM

1987 BAXTER STATE PARK VOLUNTEERS

ARMPRIEST, Cincinnati, OH (***)
WALTER E. APPLEBY JR., Bryant Pond, ME
TERESA W. ARSENAULT, Brooks, ME (*)
RYAN P. BATES, Patten, ME
GREG BECK, Northport, NY (***)
IVER BECK, Northport, NY (***)
MARIANNE BECK, Northport,NY (***)
PHIL & PAT BECKWITH, Skowhegan, ME (*)
MICHAEL BERNIER, Millinocket, ME (**)
JOHN BIRNE, Ipswich, MA (***)
MICHAEL BLASCHKE, Longview, WA (***)
STEPHEN & DEBORAH BOBOTAS, Laconia, NH (**)
LEE BOWEN, Fort Royal, VA (***)
BENNIE & VERNA BOYINGTON, Millinocket, ME (*)
RICHARD P. BRAY, Lisbon Falls, ME
CHARLES S. BURWELL, Dixmont, ME
ROBERT & JEAN BURNHAM, Hebron, ME (*)
RUTH E. BUTTLER, Brewerton, NY
STANLEY L. CATON, Bath, ME
NANCY L. CATON, Bath, ME
ALMA CHASE, Patten, ME
BERNARD L. CHENEY, Machias, ME (**)
ALICE CRABTREE, Monson, ME
MICHAEL W. CRANMER, Dover-Foxcroft, ME
WARREN K. CURTIS, Camden, ME
BETTE-ANN CUSHMAN, Hebron, ME
MATT CYR, Millinocket, ME (**)
JEFFREY DeHART, Bangor, ME
CHRISTINA DUBBLEDAM, Leiden, The Netherlands (****)
EMILE & DORTHY DUBOIS, Dexter, ME (*)
STEVEN J. DURGO, Brewer, ME
ANITA F. ELLICOTT, Phillips, ME (*)
LANDON FAKE, Brunswick, M
SUSAN FULFORD, Exeter, RI (***)
GREG FURY, Camden, ME
REGINA B. GOODE, Patten, ME
CARLA A. GREANEY, Brownville, ME
CLIFFORD & ALICE GROSS, Bucksport, ME (*)
FRENK & EMILY GUERTIN, Stoughton, MA
ROLANAD & MARGARET HANSCOM, Orrington, ME (**)
J. MICHAEL HASKELL, Bowdoinham, ME
JOSEPH W. HATCH, Willmington, DEL (***)
RENE & LORETTA HEBERT, Limestone, ME (*)
HOMER & BARBARA HINKLEY, Turner, NE (*)
JOHN & BETTY HOWARD, Orrington, ME (**)
J. ALAN HOWARD, Newtown, PA (**)
JENNIFER A. HOWARD, Newtown, PA (**)
JOSHUA D. HOWARD, Newtown, PA (**)
MATTHEW J. HOWARD, Newtown, PA (**)
THOMAS A HOWARD, Meredith, NH (**)
WILLIS & BERNICE HOWE, Detroit, ME (*)
CHUCK HOWELL, Millinocket, ME (**)

S. JEAN HOWES, Millinocket, ME
MICHAEL S. HYMAN, Washington, DC (***)
LINDA J. IVES, Gouldsboro, ME
STEPHEN R. JACKSON, Dover-Foxcroft, ME
KELLY J. JACQUES, Oakland, ME
ANDRE JENNY, Atlanta, GA
LAURA KENNEY, Patten, ME
DIRK KESSEMAYER, Bielfeld, West Germany (****)
HYDIE KIESERMAN, Philadelphia, PA (***)
LINDA KIM, Penn Hills, PA (***)
HOMER KING, Millinocket, ME
STEVE & LINDA LANEY, Skowhegan, ME
JASON LaPLANT, Millinocket, ME (**)
ERNEST LARSON, Orrington, ME (**)
DANA & BARBARA LEAVITT, St. Albans, ME (*)
JOZE LENIC, Slovenija, Yugoslavia (****)
HARRY LEVINS, Dublin, OH (***)
RONALD & JEAN LOBDELL, Bath, ME
DEAN LOBDELL, Bath, ME
RONALD LOBDELL JR, Bath, ME
CHARLOTTE LOWELL, Island Falls, ME (*)
AVA M. MAC ARTHUR, Island Falls, ME
VINCENT & THERESA McBREAIRTY, Island Falls, ME (*)
HAROLD E. McNELLY, Island Falls, ME
ANDREW MADORE, Millinocket, ME (**)
JOEY MALCOM, Millinocket, ME (**)
SCOTT MARTIN, Millinocket, ME (**)
AARON MARQUIS, Millinocket, ME (**)
WINONA MIKLOVICH, Swanville, ME (*)
DORCAS S. MILLER, Augusta, ME
CHRISTINE MONTFORT, Paris, France (****)
ROBERT MORRISON, Millinocket, ME (**)
BRUCE MUNGER, Auburn, ME
JAMIE NYMAN, Millinocket, ME (**)
STEPHEN PARKHURST, Bangor, ME
CAROL PEABODY, Princeton Junc. NJ (***)
THOMAS PELIKAN, Jackson Heights, NY (***)
JASON PERRY, Millinocket, ME
LAWRENCE & CHARLOTTE C. PHILPOTT, Readfield, ME (*)
KATHRIN PIAZZOLO, Rosenheim, West Germany
SCOTT QUARTUCCIO, Millinocket, ME (**)
BARBARA A. ROLFE, Brownville Junc., ME
PATRICK W. ROY, Westbrook 2e
HELEN SAALER, Caterham, Surrey, England (****)
STEVEN SHORE, Chicago, ILL (***)
KEVIN SLATER, Behtel, ME
EDWARD J. SMITH, Pasadena, MD
ERIC S. SMITH, Morrill, ME
MARIE L. SMITH, Patten, ME
WILLIAM C. SMITH, Camden, ME
STUART SORENSEN, Fountain Valley, CA (***)
MONICA STAUBACH, Milwaukee, WI (***)

DALE STEPHENS, Garfield Heights, OH (***)
KURT STIFFEL, Millinocket, 2
ROGER SWING, Rockford, ILL (***)
JANE I. THOMAS, Surry, ME
GEORGE W. THURSTON, Machias, ME (**)
MONTY TOOTHAKER, Phillips, ME (*)
LATONA K. TORREY, Winter Harbor, ME
BENJAMIN P. TOWNSEND, Augusta, 2
H. FRANK TRAUTMANN, Islesboro, ME
MICHAEL URBAN, Essen, West Germany
PAUL & MAVIS VARNEY, North Turner, Me (*)
EUGENE VERNIER, Louisville, OH (***)
MAY WEILER, Fredericksburg, VA (****)
SCOTT WHITCOMB, Lynn, MA (***)
MARY WHITEHEAD, Darien, CT (***)
JAMES W. YARNELL, Upton, ME
PETER & SUSAN ZAREMBA, York Harbor, ME
ANNE ZASLOFF, Chicago, ILL (****)
NANCY ZIMMERMAN, Trenton, NJ (***)

(*) Contributed to Maine Snowmobile Association's 1668 hours of service.
(**) Contributed to BSA's total of 1,660 hours of service.
(***) Contributed to Sierra Club's total of 960 hours of service.
(****) Contributed to Volunteers for Peace's total of 572 hours of service.

AREAS OF MAJOR VOLUNTEER ACTIVITY-1987

CHIMNEY POND	582 hours
DAVIS/RUSSELL PONDS	258 "
HEADQUARTERS	984 "
ROARING BROOK	210 "
SOUTH BRANCH	236 "
TELOS GATE	2,223 "
TOGUE POND DAY USE AREA	1,002 "
TRAIL CREW	1,880 "
TROUT BROOK FARM	415 "
WEBSTER LAKE	1,368 "
TOTAL	9,158 hours

01-227-88/jch

III. REPORTS - RESEARCH PROJECTS

Changes in Bird Population in Response to Spruce Budworm Induced Habitat Changes

ACKNOWLEDGMENTS

Special thanks are extended to Buzz Caverly, Director, and the staff of Baxter State Park for their kind cooperation during this study.

ABSTRACT

The bird community of a spruce-fir forest changed in response to habitat disruption caused by a severe spruce budworm infestation. The most noticeable changes occurred in those species adapted to inhabit early seral states, where the total number of territories increased 120%. At the same time, species adapted to a mature softwood canopy decreased 76%.

INTRODUCTION

During the spruce budworm outbreak of the 1970's and 80's, nearly all spruce-fir stands in Maine were subjected to repeated defoliation. Many stands experienced substantial amounts of mortality, particularly of balsam fir but also of white spruce and red spruce. More than 300,000 acres of spruce-fir forest experienced fir mortality rates of 25% or more (Trial et al 1984).

Among the hardest hit areas were the spruce-fir forests of Baxter State Park. These mature stands were essentially unprotected from spruce budworm defoliation and experienced extremely high mortality rates.

In 1982, about the same time that fir mortality was peaking and spruce mortality was becoming evident, a study was conducted to compare bird populations in a protected stand (i.e. an unprotected (moribund) stand stand (Oliveri and Famour 1983). That study showed that, despite the heavy fir mortality, the composition of the bird communities in the two stands remained similar, especially for those species generally associated with the upper canopy of a mature softwood forest. Birds characteristic of early successional stages and sapling size softwood stands were becoming well represented on the moribund site and mixed wood species were also more numerous than on the protected site.

Since 1982, the upper canopy of the moribund site, located in Baxter State Park, has deteriorated extensively. No living fir survive in the overstory, and much of the spruce have succumbed either to budworm defoliation, bark beetle

infestation,or windthrow. As a result, the mature softwood stand has gradually been replaced by shade intolerant pioneer species such as raspberry, pin cherry, gray birch, quaking aspen and mountain ash. In some areas, abundant softwood regeneration is present. The subsequent changes in bird habitat are obvious, and the response of the bird community to these changes is documented in this report.

STUDY SITE

The study plot was located in Maine's Baxter State Park in T4 R10 WELS, immediately north of Nesowadnehunk field along both sides of the perimeter road (Figure 1). This area had not been sprayed for budworm suppression since 1973 and can essentially be considered an unprotected stand.

This site includes a series of tree mortality study plots established in 1977 (Seymour 1980). In 1978, the composition of the forest in this area was 42% fir, 50% spruce, and 8% hardwoods, based on basal area (Solomon, unpublished data), with an average of 182 square feet of basal area per acre. By 1985, the last year in which data was collected on the site, the composition of the overstory had changed to

.

METHODS

Site Selection

It was not possible to use the same plot location used in 1982. Extensive blowdown coupled with impenetrable patches of raspberries and dense sapling stands, made the original plot unsuitable for conducting bird censuses. To overcome this obstacle, a plot was delineated using the Nesowadnehunk tote road as a center line. This plot was 1 mile (1.6 kilometers) long and included the area on either side of the edge of the road out to a distance of 50 meters. Total plot size was 16 hectares. This plot lay parallel to, and overlapped, the 1982 census plot.

Census Procedures

The same spot mapping method was used in 1982 and 1987 with one modification. Instead of censusing along a series of numbered grid lines, the 1987 census was conducted along one continuous line. This created a long, linear plot in contrast to the shorter, rectangular plot used in 1982. To compensate for the narrower width, the 1987 plot was extended to include an additional 6 hectares (16 in 1987 vs 10 in 1982).However, for comparison, data from both years are presented on the basis of a 10 hectare unit.

RESULTS

During the 2 seasons of field work, a total of 52 species of birds were encountered on the study site (Table 1). The species diversity of the area has not changed greatly; in 1982, 23 bird species held territories, in 1987 there were 21 territorial species. Despite the changes in habitat 14 bird species held territories in both census years, indicating that change has been gradual and the plot still retains some of the habitat components present in 1982.

However, change is more evident when the complex of bird species is scrutinized at the level of habitat associations (Table 2). The most striking changes are: (1) the decrease in the number of territories in the mature softwood/upper canopy association, and (2) the increase in the early successional stage/softwood sapling association.

Six species were represented in the mature softwood/upper canopy association in 1982, occupying a total of 25 territories (per 10 hectare unit). The dominant species were the blackburnian and yellow-rumped warblers, each represented by 9 territorial pairs. By 1987, the blackburnian warbler had been eliminated from the plot; it was not even recorded as a transient. The yellow-rumped warbler fared somewhat better, with 4 territorial pairs per 10 hectare unit in 1987. The number of species present declined to 3, with only 6 territorial pairs recorded, a reduction of 76%. The yellow-rumped warbler represented 67% of the upper canopy territories in 1987. The ruby-crowned kinglet and the northern parula were the only other upper canopy species present, with 1 territory each.

The yellow-rumped warbler is numerous and widely distributed in Maine, occuring in a great variety of habitats. It is not surprising that it has persisted in the study area. The yellow-rumped warbler is apparently able to successfully utilize the scattered residual spruce and occasional overstory pine for foraging, nesting, and singing. The blackburnian warbler is more restricted in habitat requirements, generally preferring dense, contiguous softwood stands. Its abundance in 1982 may also have been influenced by an ample supply of spruce budworm larvae to feed on. The combination of habitat loss and reduction of a once abundant food supply has eliminated the blackburnian warbler from this site. Of the other species that are no longer territorial in the plot, the Cape May warbler is similar to the blackburnian in habitat requirements and may be even more dependant upon spruce budworm as a food source. Historical records (Kendeigh 1947, Lloyd-Evans 1982, Robbin et al 1986) indicate that the Cape May warbler increases its population during budworm outbreaks. Conversely, Cape May warbler populations apparently decline during years of low budworm numbers.

In the early successional/softwood sapling stage, the total number of territories per 10 hectares increased from 20 in 1982 to 44 in 1987, a 120% increase. The major components of this increase were the magnolia warbler, white-throated sparrow, and winter wren. The magnolia warbler benefited from the abundant sapling-sized stems of spruce and fir regeneration, which have responded with rapid, vigorous growth to the opening of the canopy. The white-throated sparrow is one of the most abundant breeding birds in the state, only the European starling and American robin are encountered more frequently in breeding bird surveys (Robbins et al 1986). In the commercial forests of northern Maine, the white-throat has exhibited a very strong population response to forest disturbance and is the dominant bird in early successional stage forest land. It has benefited on the study site from the abundant blowdowns and regenerating thickets in which it prefers to nest and forage. The nearly impenetrable blowdowns have also benefited the winter wren.

The number of standing dead trees has declined since 1982 due to decay and windthrow. The relatively few dead trees that are still standing are bereft of bark. In 1982 most of the snags retained a substantial covering of bark that harbored a variety of insects. This attracted black-backed woodpeckers, which specialize in foraging under loose bark, to the plot. In the initial study year the 2 territorial pairs were very evident, being observed on the plot during each census period. Within a few years most of the bark had been sloughed off the snags and black-backed woodpeckers abandoned the area in 1984 (Adamus et al 1985). They were replaced, during 1987, by a pair of three-toed woodpeckers and a pair of downy woodpeckers. The three-toed woodpeckers were observed foraging on live spruce that were apparantly infested with bark beetles.

DISCUSSION

Crawford and Titterington (1979) characterized 5 stages of plant succession that occur following a severe disturbance in upland spruce-fir forests: (1) open ground slash - abundant open ground and dense slash; lasts from 0 to 2 years after disturbances; (2) bramble-herbaceous - dense low layer of brambles and herbaceous plants with scattered small regenerating tree species; lasts 3 to 10 years after disturbances; (3) shrub-sapling - dominated by hardwood and softwood regeneration taller than 2 m; lasts 4 to 20 years after a disturbance; (4) immature second growth - pole sized hardwood and/or softwoods 10 to 20 cm dbh; lasts from 20 to 50 years after disturbances; (5) mature second growth - dominated by softwood > 20 cm dbh; lasts from 40 to 80 years after disturbances.

They found the winter wren and dark-eyed junco to be most closely associated with the first seral stage, the magnolia warbler with the third, and the white-throated sparrow with all 3 of the initial seral stages. The study area is currently undergoing a transition and will soon be dominated by saplings;

the earlier stages will gradually give way to later stages as the young softwoods escape and eventually overtop the rasberries and other competing shrubs.

The dominance of the magnolia warbler and white-throated sparrow confirm that this is indeed occurring. It is expected that the common yellowthroat, chestnut-sided warbler, and mourning warbler will continue at low population densities until the pole size stage is reached and eventually find the habitat no longer suitable. Because some windthrow of the surviving overstory spruce is expected to continue, the winter wren may persist well into the pole stage. Sapling stage species should remain dominant for another 5 to 15 years. At that time some of the presently displaced species, such as the ovenbird, Tennessee warbler, and Swainson's thrush should begin to return.

In some portions of the study area hardwoods such as quaking aspen and red maple will persist for some time producing patches of mixedwood stands. The presence of mixedwood associated species indicates that the transition from mature spruce fir forest to early seral stages back through mature spruce-fir forest is not a simple process. The scenario has been complicated by the invasion of hardwoods as mortality of the overstory fir progressed. In some areas, where the fir succumbed very early, paper birch, grey birch and quaking aspen have advanced beyond the sapling stage to the pole stage, providing patches of habitat suitable for a variety of species not normally associated with softwood forest stands.

CONCLUSION

The bird species composition in the Nesowadnehunk region of Baxter State Park has changed over the past 5 years due to changes in habitat. These habitat changes are the result of a severe spruce budworm outbreak that caused rapid mortality of overstory fir, followed by more gradual mortality of spruce. Windthrow of dead as well as living trees has been extensive and is expected to continue. The forest has changed from a closed canopy softwood stand to a sparsely stocked overstory of surviving spruce and occasional pines surrounded by patches of shrubs, tolerant hardwoods and spruce-fir regeneration in various stages of advancement. This habitat still maintains some of the characteristics of the mature forest but is predominantly a shrub-sapling seral stage.

Though the bird species inhabiting the area have changed, the change has been gradual and the diversity of species represented has remained about the same. The dominant species, based on number of territories per 10 hectare unit, are the white-throated sparrow and magnolia warbler, birds characteristic of the shrub-sapling stage. The birds that have been most adversely affected by the changes are the blackburnian warbler, Cape May warbler, golden crowed Kinglet, and ovenbird.

Woodpeckers should continue to prosper as long as some snags remain standing although there has been a transition from the bark stripping black backed woodpeckers to the rarer three-toed woodpecker and the ubiquitous downy woodpecker.

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Table 1. Status of all species encountered on the study site, 1982 & 19
(Common names follow the 6'th edition of the AOU Checklist of North American Birds)

Common Name	1982	1987
common goldeneye	absent	transient
broad-winged hawk	transient	transient
ruffed grouse	territorial	territorial
northern flicker	transient	absent
yellow-bellied sapsucker	transient	transient
downy woodpecker	absent	territorial
black-backed woodpecker	territorial	absent
three-toed woodpecker	absent	territorial
yellow-bellied flycatcher	territorial	territorial
eastern wood pewee	transient	transient
olive-sided flycatcher	absent	transient
gray jay	absent	transient
blue jay	transient	transient
common raven	absent	transient
boreal chickadee	transient	transient
red-breasted nuthatch	transient	transient
brown creeper	territorial	territorial
winter wren	territorial	territorial
American robin	transient	territorial
wood thrush	transient	absent
hermit thrush	territorial	territorial
Swainson's thrush	territorial	transient
veery	absent	territorial
golden-crowned kinglet	territorial	transient
ruby-crowned kinglet	transient	territorial
cedar waxwing	territorial	territorial
solitary vireo	absent	transient
red-eyed vireo	territorial	absent
Tennessee warbler	territorial	absent
Nashville warbler	territorial	territorial
northern parula warbler	territorial	territorial
magnolia warbler	territorial	territorial
Cape May warbler	territorial	transient
black-and-white warbler	absent	territorial
yellow-rumped warbler	territorial	territorial
blackburnian warbler	territorial	absent
chestnut-sided warbler	absent	territorial
ovenbird	territorial	absent
common yellowthroat	territorial	territorial
mourning warbler	territorial	territorial
Canada warbler	transient	transient
northern waterthrush	absent	transient
American redstart	transient	absent
common grackle	transient	transient
rose-breasted grosbeak	transient	transient
evening grosbeak	transient	transient

purple finch		
pine siskin	territorial	transient
red crossbill	transient	absent
dark-eyed junco	transient	absent
chipping sparrow	territorial	territori
white throated sparrow	transient	absent
	territorial	territori

TOTALS:

Number of species encountered	41	41
Territorial species	23	21
Transient species	18	20

Total number of species encountered, both years: 52

Table 2. Number of territories by habitat association

Habitat Association	Species	Number of Territories 1982	1987
Standing Dead Trees	downy woodpecker	0	1
	black-backed woodpecker	2	0
	three-toed woodpecker	0	1
	brown creeper	1	1
	Subtotal	3	3
Mature Softwood a. upper canopy	ruby-crowned kinglet	0	1
	golden-crowned kinglet	2	0
	northern parula warbler	1	1
	Cape May warbler	3	0
	yellow-rumped warbler	9	4
	blackburnian warbler	9	0
	purple finch	1	0
	Subtotal	25	6
b. sub canopy	yellow-bellied flycatcher	2	2
	Swainson's thrush	2	0
	Tenessee warbler	1	0
	Subtotal	5	2
Early Successional Stage/ Softwood Saplings	winter wren	1	5
	magnolia warbler	5	13
	chestnut-sided warbler	0	1
	mourning warbler	2	3
	common yellowthroat	1	3
	white-throated sparrow	7	16
	dark-eyed junco	4	3
	Subtotal	20	44

Mixedwood	ruffed grouse	1	1
	cedar waxwing	1	1
	American robin	0	2
	veery	0	1
	hermit thrush	1	3
	red-eyed vireo	1	0
	black-and-white warbler	0	1
	Nashville warbler	4	7
	ovenbird	3	0
	Subtotal	11	16
	Total Number of Territories	64	71

WILDLIFE STUDY COMPARISON MANAGED - WILDLANDS NATURAL

WINTER ECOLOGY

Question #1:
Basic approach to the question: Break stands into similar groups and compare the different groups.

Clearcut and Treated with Herbicide (Stands 6,7,8)

Primarily conifer regeneration--little cover except in the oldest clearcut. Little browse because of herbicide. Large cuts with little edge. Begin to see use by hares in only the oldest cuts. Volunteer browse/some HW, white pine. More hare use near edge.

Poor habitat (winter) for wildlife.

No mature trees so observed few birds (1 raven).

Clearcut without Herbicide treatment (Stands 9-11)

Stand 11 was a 1-yr cut and was no better than herbicided cuts. These cuts become better areas for wildlife sooner than herbicided areas because more browse species (more hardwood regeneration). We observed more bird species in the oldest cuts. However, even though food was available there was not much use by animals--primarily because of snow depth and lack of cover.

These cuts also tend to be large and do not provide much edge. Much summer/fall browsing by ungulates (especially #10).

Budworm (Stands 12-14)

Better for wildlife than cut areas because usually smaller area affected. Some standing timber (alive & dead), moderate hardwood regeneration as well as softwoods. More species observed along transects and the patches of softwoods were good for hare.

Food and cover is better than in cut areas.

Also, areas with black spruce (rather than monoculture of herbicide-treated areas) had some cover even after budworm killed red spruce and fir. Standing stems for birds.

Mature Undamaged Forest (Stands 1-4)

More species and numbers of wildlife because of cover--even though browse is limited. More birds because of more complex structure of vegetation. Small mammal populations may be greater or more accessible so that predators occur (including sasquatch, stand 3!!).

Strip Cut (Stand 5)

Lots of edge--light can penetrate to the forest floor in the residual so that more browse is available even if they do not use the cut areas. Most of the tracks occurred in the residual because of the cover and reduced snow depth. Because the cut areas were not large they could be traversed.

Note the result of the roadside edge effect transects. Also, stand 16 had all the tracks in the residual and not in the cut. Probably predator rates higher.

Old Field (Stand 15)

This is a special case from all the other stands. It has a mixture of tree and shrub species than provide lots of food and cover especially hares!!

General Conclusions

The mature forest provides good cover even though little browse is available. Gaps with regen. imp. Its structural diversity is good for birds and mammals.

The herbicided clearcuts are the worst for wildlife because they are usually large and food is eliminated. It takes at least 10 years for cover to develop.

Cut areas are nearly as bad as herbicided sites but they have more food because of hardwood regeneration. Cover, however, still takes a long time to develop. Strip cuts are the best cutting practice for wildlife, primarily because the residual stands provide cover and food increases with regeneration of hardwoods in cleared areas (and in the residual).

Budworm damaged areas are similar to cut areas but they provide more cover (blowdown) and food. Standing trees provide cavities for animals and searching areas for chickadees and nuthatches.

Also, although not stucied, blowdown and budworm areas will provide extensive habitats (dead and down materials) for small mammals, insects, etc., for the next generation.

Question #3:

Thick pelage
Hollow hair
Larger bodies, shorter limbs
(Surface area to volume0
Reduce weight loading on appendages
Hibernation
Torpor
Yarding--thermal and locomotion aspects
Seed, needle and twig diet
Rumen changes
Reduce BMR
Select favorable microclimates--snow roosts, cavities, etc.
Change pelage color--weasel and hare

Question #2:

Deer	Moose
70% crown closure	less
softwoods dominate	all types
35' tall	variable
snow--17-20" travel	40-50"
restriction	
use of trails	less use of trails
bed in sun and on small hills for predator observation	variable - no predators
browse--cedar, hemlock, lichens, numerous hardwoods	hardwoods and fir
browse, 1-2 m	1-5 m
often in river valleys	variable
cover is dominant feature	food is dominant feature

Question #4:

Insulation - Roosting of grouse, microhabitat for small mammals.

Travel - Energy costs for travel increase greatly with sinking depth.

Supporting crusts - enable herbivores to reach more food and travel easily. Supporting crusts for predators but not for herbivores increase predation greatly.

Provides neutral background for those animals that change their pelage to white in winter.

Inhibits gas exchange if deep and contains crusts.

Covers available food e.g., herbivorous layer).

Concentrates animals in yards and makes them more susceptable to predation.

WINTER ECOLOGY - FINAL EXAM 1987

Name _____ Home Phone No. _____
(Notification for scat analyses)

Grade P/F ( ), ± ( )

Exam due Monday, January 19, 4PM, Room 240 Nutting.

Answer questions 1 and 2 and EITHER 3 or 4 (5 pages maximum for exam).
(Please attach this sheet, your course evaluation and $10+ (if you still owe) to your answers.)

1. Using the data provided, discuss in some detail the impact of man-induced and natural changes on the fauna and flora of the spruce/fir forest.

2. Compare and contrast the characteristics of deer and moose wintering areas.

3. Describe the adaptations of animals which occupy northern Maine forests in the winter.

4. Snow can have both positive and negative effects on an animal's well-being. Discuss.

AREAS SAMPLED DURING 1987 - WINTER ECOLOGY CLASS

Site No.	Name	Description
"Control"		
1	Mature-Mixed Growth	
2A	Mature Spruce-Fir-N.	Location of transect: Approx. midway between clearcuts 1 and 2; north of road. Fir dead, numerous blowdowns.
2B	Mature Spruce-Fir-S.	Located approx. 150 m west of clearcut 2, in stand south of road. Wetter site than 2A, numerous cedar.
3	Mature Black Spruce	Dense black spruce stand intact with little understory.
4	Mature Red Spruce	Moderately dense red spruce stand with little understory.
5	Strip Cuts	Two 400 m transects, run parallel to road, so as to alternately cross cut→ uncut→ cut ... etc. Some blowdown in residual, little regeneration visible in strips.
Herbicide		
6	Treated 1981/Conifer Regeneration	Clearcut 1976 and planted. Treated with herbicides 1981. Two transects placed parallel to road, midway between road and forest. Spruce regeneration 3+ m.
7	Treated 1983	Clearcut 1980 and planted; treated with herbicides 1983. Transect run north of road, just east of "Y" in road. Spruce regeneration 1-2 m.
8	Treated 1984	Clearcut 1979 and planted; treated with herbicides 1984. Transect run west from road. Begin approx. 60 m south of road intersection. Spruce regeneration 1 m.
No Herbicide		
9A	10 yr Natural North	Cut 1976 and planted. No herbicides applied. Located north of road, east of Soper Brook. Regeneration spotty, 2-3 m spruce and fir, hardwood >3 m.
9B	10 yr Natural South	Cut 1976 and planted. No herbicides. Located south of road, west of Soper Brook. Regeneration spotty, 2-3 m spruce and fir. Hardwood >3 m.
10	Hardwood Regeneration	Clearcut 1979 and planted. No herbicides applied. Dense hardwood regeneration 2+ m. Transect run west of road approx. 120 m north of uncut residual stand.
11	other side of page	

Table 1. Number of tracks (corrected for days since last snow), mean track depth, and mean snow depth for all species observed by plot, 1986.

Stand	Species	Number	Track depth	Snow depth	Days since snow
1	Red squirrel	0.67	2	35	3
	Fisher	0.33	5	25	3
	Coyote	0.33	17	40	3
	Moose	0.33	30	55	3
2A	Mouse	3.33	-	18.26	3
	Red squirrel	0.88	0.57	17	3
	Hare	3.78	2.59	18.58	3
	Weasel	2.44	2.45	19.91	3
	Fisher/Marten	0.22	5.00	16.00	3
2B	Shrew	1	-		3
	Vole	1	-		3
	Mouse	0.67	-		3
	Red squirrel	5.67	4	mean=50	3
	Hare	35.67	-		3
	Weasel	2.33	3		3
3	Shrew	25.3	-	54	1.5
	Vole	0.67	-	43	1.5
	Hare	6	3.4	47.3	1.5
	Weasel	0.67	7	50	1.5
	Sasquatch	45	45	40	1.5
4	Shrew	2	-		1.5
	Vole	0.67	-		1.5
	Red squirrel	1.33	3	mean=26.5	1.5
	Hare	15.3	2		1.5
	Marten	10	4.3		1.5
5A Residual	Shrew	0.33	-		3
	Red squirrel	6	2.9		3
	Weasel	2.67	2.4	mean=37.25	3
	Fisher	0.33	6		3
5A Strip	Weasel	2	3.5	mean=52.67	3
5B Residual	Shrew	0.33	-	35	3
	Mouse	0.33	-	32	3
	Red squirrel	0.33	3.5	50	3
	Hare	7	2.58	42.65	3
	Weasel	2	3.33	35.33	3
5B Strip	Weasel	0.33	3.5	60	3

Table 1. Continued.

Stand	Species	Number	Track depth	Snow depth	Days since snow
6A	Shrew	2	-	-	2.5
	Red squirrel	0.4	2	25	2.5
	Hare	6.4	-	-	2.5
6B	Shrew	4.8	-	mean=50.3	2.5
	Hare	3.2	8		2.5
7	Vole	0.33	-	35	3
	Weasel	1.67	2.6	46.8	3
8	Weasel	0.67	1.5	31.5	3
	Moose	0.67	15	20	3
9A	Hare	1.11	5.2	63.4	3
	Weasell	0.22	3	55	3
9B	Shrew	0.67	-	-	3
	Vole	0.33	-	18	3
	Red squirrel	0.33	3	11	3
10	-	-	-	(43)	3
11A	Weasel	0.33	2	35	3
	Moose	0.33	25	38	3
11B	-	-	-	-	3
12A	-	-	-	-	1.5
12B	Hare	5.3	7	29.5	1.5
	Deer	1.3	22	33.5	1.5
13	Mouse	1.33	-		1.5
	Red squirrel	0.67	3		1.5
	Hare	2.67	4	mean=28	1.5
	Marten	1.33	6		1.5
	Coyote	1.33	24		1.5
14	Mouse	0.67	-	63	1.5
	Red squirrel	0.67	6	66	1.5
	Hare	2	4.3	57	1.5
	Weasel	0.67	5	46	1.5
	Marten	1.33	5	55.5	1.5
15	Mouse	1	-		1.5
	Hare	131.33	4.7	mean=25.5	1.5
	Weasel	0.33	3		1.5
	Coyote	2	13		1.5

Table 3. Bird species observed in the plots, 1986.

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Boreal chickadee												X			
Black-capped chickadee		X							X			X			
Hairy woodpecker												X			
R-breasted nuthatch		X							X			X			
W-breasted nuthatch				X											
Gray Jay			X												
Blue jay		X							X						
Pine Grosbeak												X			
White-winged crossbill			X	X											
Redpoll									X						
American Crow									X						
Common Raven				X				X							

Table 3. Average shrub class and dominant shrub species per 400m transect.

Stand	Shrub class	Dominant species
1	0	Striped maple
2A	0	Striped maple, spruce, fir
2B	1	Aspen, cedar, viburnum
3	1	Kalmia, black spruce
4	1	Spruce, nannyberry, cherry
5A	2	Kalmia, viburnum, red maple
5B	1	Red spruce, fir, red maple
6A	1	White spruce, white pine, red spruce
6B	1	Cherry, aspen, beaked hazel
7	1	Spruce, fir, white pine
8	2	Spruce, fir, birch
9A	1	Fir, birch, red maple
9B	3	Fir, birch, red maple
10	3	Birch, aspen, fir
11A	1	Red spruce, birch, fir
11B	1	Spruce, birch, white pine
12A	1	Fir, birch, elderberry
12B	2	Fir, birch, cherry
13	2	Cherry, birch, fir
14	1	Fir, birch, red spruce
15	1	Cherry, birch, aspen

Table 4. Number of plants browsed by ungulates per 400m transect.

Species	1	4	5As	5Br	5Bs	7	9A	9B	11A	11B	12A	12B	13	14
Fir				3		14	11.3			1				5
R Maple			1		14		8	1.3				1		1
St Maple	1				1							1		
Cherry							4.6	2.6				4	1	
Birch							10.7	2.6	1	2	1	4		8
Aspen							0.7						1	
Cedar										1				
Cranberry						1	6							2
Elderberry								0.67			1			
Nannyberry		1												
Total	1	1	1	3	15	15	41.3	7.17	1	4	2	10	2	16

"C" Strip Herb. No Herbicide Burdon

Table 5. Number of plants browsed by hare per 400m transect.

Plant species	1	2B	9B	12A	15
Balsam Fir			1		
Ilex		2			
Aspen		1			
Cherry					1
Viburnum					2
Balsam poplar				1	
Yellow birch	1				

All other stands had no browsing recorded

Table 6. Dominant tree species.

Species	1	2	3	4	5	9	11	12	14	15
Yellow birch	2					1				
Red spruce	2	14.5		24	7.5			13	18	16
Black spruce			24							
Balsam fir	10	4			3.5					
Cedar		3.5					0.5			
White pine		1			1	0.5	8		1	
White birch	1	0.5			2	4.5		0.5		
Aspen		0.5				0.5				5
Red maple	9				0.5	0.5				
Total	24	24	24	24	14.5	7	8.5	13.5	19	24

Note: The maximum value possible for any species is 24 (6 plots × 4 trees/plot).

9 JANUARY
1.5 DAYS SINCE SNOW

EDGE EFFECT

	DEAD			ROAD	FOREST			
	← 10 m →	← 10 m →	← 10 m →		← 10 m →	← 10 m →	← 10 m →	
1	–	–	3 hare		2 hare	–	–	1
2	–	–	3 hare		4 hare 1 shrew	–	–	2
3	–	1 hare	1 hare		5 hare	3 hare	1 hare	3
4	–	–	1 hare		3 hare 1 marten	5 hare	–	4
5	5 hare	4 hare	4 hare		4 hare	3 hare 1 shrew	1 hare 1 coyote	5
TOTAL	5 hare	5 hare	12 hare		18 hare 1 shrew 1 marten	11 hare 1 shrew	2 hare 1 coyote	

Notes - #3 Forest - on trail
#5 Dead - lots of blowdown, slash habitat
There is a band (2-3 m wide) of thick regeneration (10' tall) on either side of the road.

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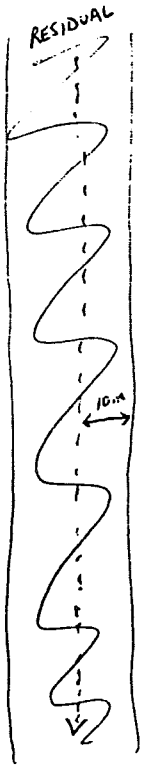
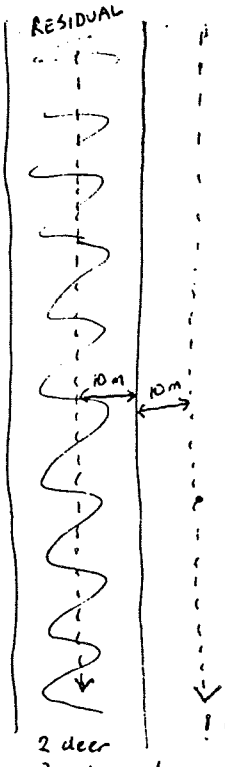
6 JANUARY
3 DAYS SINCE SNOW



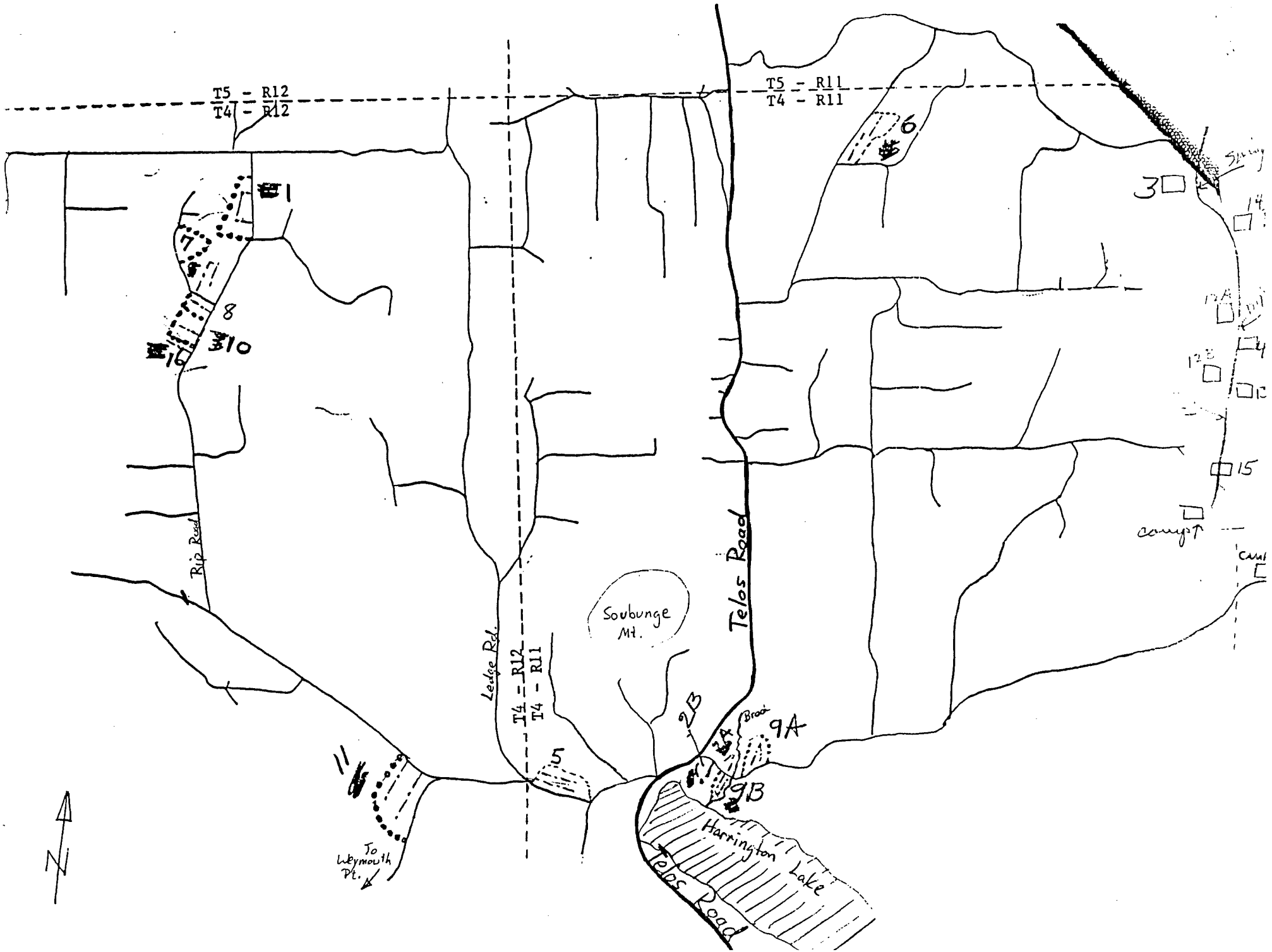
STRIP CUT

1 deer
1 moose
1 weasel
1 grouse



CLEAR CUT

2 deer
3 r. squirrel
4 moose
2 shrew
1 weasel
1 mouse
1 weasel


T5 - R12
T4 - R12
T5 - R11
T4 - R11
T4 - R12
T4 - R11
Telos Road
Ledge Rd.
Rip Road
Soubunge Mt.
Harrington Lake
Telos Road
To Lakemouth Pt.
Broad
N
1
2A
2B
3
5
6
7
8
9A
9B
10
12A
12B
15
16

1987 PROGRESS REPORT

Survey of Woodland Hawks: A comparison of breeding communities in 2 areas of different forest management

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Abstract

A road-side survey of woodland breeding hawks was conducted in a harvested area (Telos) and an unharvested area (Baxter) during the summer of 1987. Forty stations in each of the adjacent study areas, located in north-central Maine, were visited 9-11 times for a total of 870 10-minute observation periods. Great-horned owl calls were broadcast at each station to increase the detectability of the birds. Of the 8 species potentially present, 4 species (broad-winged hawk , red-tailed hawk , red-shouldered hawk and sharp-shinned hawk) were seen in the unharvested region, whereas 5 species (broad-winged hawk, red-tailed hawk, sharp-shinned hawk, American kestrel, and northern harrier) were seen in the harvested region. The northern goshawk and Cooper's hawk were not observed in either area. Data were analysed to calculate the proportion of area occupied by each species in each area using the method of Geissler and Fuller (1987). Comparison of species between the two areas suggests differences in occurrence,(i.e. broad-wings occupied all of Baxter and approximately 40% of Telos whereas red-tails occupied all of Telos and less than 10% of Baxter), but these differences are not statistically significant ($P>0.05$) as a result of very low detection rates. Additional work addressing future application and limitations of the technique are discussed.

Introduction

The status of breeding birds of prey in Maine is not well-known. Although the Atlas of Breeding Birds in Maine (Adamus 1987) provides information on distribution, quantitative surveys in specific habitat types are lacking. This project was initiated to address this need, focusing on the relationship between communities of breeding woodland hawks and large-scale forest management practices in north-central Maine. Intensive commercial harvesting occurs over a large portion of northern Maine, modifying potential breeding habitat on an annual basis. Raptors characteristically have large home ranges, are easily disturbed at the nest site, and often return to the same nest or tract of land year after year (Craighead and Craighead 1956). Land-use practices and disturbance by humans influence the suitability of an area, which is reflected in the use of an area by a raptor species. It is important to know how various land uses affect the species composition of breeding birds of prey before large areas are so modified as to become unsuitable. A knowledge of the current status of breeding diurnal raptors in relation to existing habitat, and the ability to predict and monitor changes in breeding populations are fundamental to managing these species.

To accomplish this, an efficient survey technique that produces reliable results is required. Research in this area has focused on increasing the detectability of breeding hawks by broadcasting calls of target species and of great horned owls (Fuller and Mosher 1981, 1987 Fuller 1984). In addition, a new index of abundance has been proposed for secretive and rare species that estimates the proportion of area occupied by a species in a particular habitat (Geissler and Fuller 1987). The analysis takes into account the differences in detectability of different species and habitats. These two methods are currently the newest approach to the task of monitoring woodland hawks, and were chosen to be field-tested in this first season of survey work.

Six species of woodland hawks potentially breed in north-central Maine (Adamus 1987): broad-winged hawks (*Buteo platypterus*), red-tailed hawks (*Buteo jamaicensis*), red-shouldered hawks (*Buteo lineatus*), sharp-shinned hawks (*Accipiter striatus*), northern goshawks (*Accipiter gentilis*), and Cooper's hawks (*Accipiter cooperii*). In addition, American kestrels (*Falco sparverius*) and northern harriers (*Circus cyaneus*) may be found in open areas and marshy areas, respectively (Adamus 1987). Confirmed breeding of red-tails, broad-wings, sharp-shins, and goshawks extend into north-central Maine, while Cooper's hawks are considered possibly breeding and red-shouldered hawks listed as probably breeding in that region (Adamus 1987). There is a distinct contradiction concerning the occurrence of Cooper's hawks in Maine; local opinions vary from falconers considering them restricted to southern Maine (S. Keniston, master falconer, pers. comm.) to occurring solely in the northern part of the state (Waters 1959).

Encounters with all the aforementioned species were possible and I expected that the relative abundance of a particular species would be affected by different land-use in different areas. A number of studies have investigated the effect of habitat modification on breeding communities of birds. Webb et al. (1977) looked primarily at songbirds, but also included broad-wings in their analysis of the effect of logging on birds. They concluded that logging had a positive effect on broad-wings, based on an increase in sightings of broad-wings in the experimentally logged areas compared with the unlogged "natural area." There was, however, no correction for increased detectability of the birds in the more open areas, thus this conclusion may be biased. Noon et al. (1979) also point out that rare species such as the other woodland hawks detected on Webb's surveys were excluded from the overall analysis, and suggest that from a conservation perspective these are the species most in need of accurate censusing to determine the effect of various management practices on their populations (Noon et al. 1979)

Robbins (1979) identifies red-shouldered hawks and broad-winged hawks as "area-sensitive species," defined as species dependent on extensive forest systems. Based on 500 Breeding Bird Survey stops in central and eastern Maryland, he estimates the minimum forest area required to sustain a viable breeding population of red-shoulders to be 250 acres (100ha). Bryant (1986) has investigated the effect of selective logging on red-shouldered hawks in Ontario, using nest records and aerial photos to identify land-use changes associated with territory abandonment by red-shoulders or the replacement of that species by red-tailed hawks. He concluded that reducing mean tree density and tree-crown diameter (as occurs with selective logging) may result in the replacement of red-shouldered hawks by red-tailed hawks, and that uncut buffer zones are necessary to avoid the local extirpation of this species.

Most studies of raptor nest site selection have taken place in deciduous forests where nests can be located prior to leaf-out, or in areas where local raptor enthusiasts have historic and current nest records (Titus and Mosher 1981, Speiser and Bosakowski 1987, Morris and Lemon 1983). Dense mixed and coniferous forests in Maine make this approach difficult and labor intensive, thereby restricting the size of the study area. In dense woodland and regions with low population densities, a census technique that takes into account the difficulty in detecting hawks, and that does not require nests be located, allows for greater areal coverage and can begin to address the effect of different forest settings on the relative abundance of woodland breeding hawks.

Objectives

1) Estimate the proportion of area occupied by woodland hawk species in comparable blocks of land representing different forest management practices, and relate the location of breeding raptors to forest characteristics.

2) Evaluate the usefulness of current survey techniques in a northern Maine setting, providing results from Maine for a comparison with previous and concurrent studies in other eastern and midwestern locations.

Study Areas and Methods

Two areas were surveyed during the 1987 field season; an unharvested region (Telos) and an adjacent commercially harvested region in north-central Maine (Baxter State Park)(Fig. 1). With the exception of a scientific forestry area in the north, Baxter has been left unmanaged for over 50 years, with no cutting, blowdown removal or chemical applications occurring. An

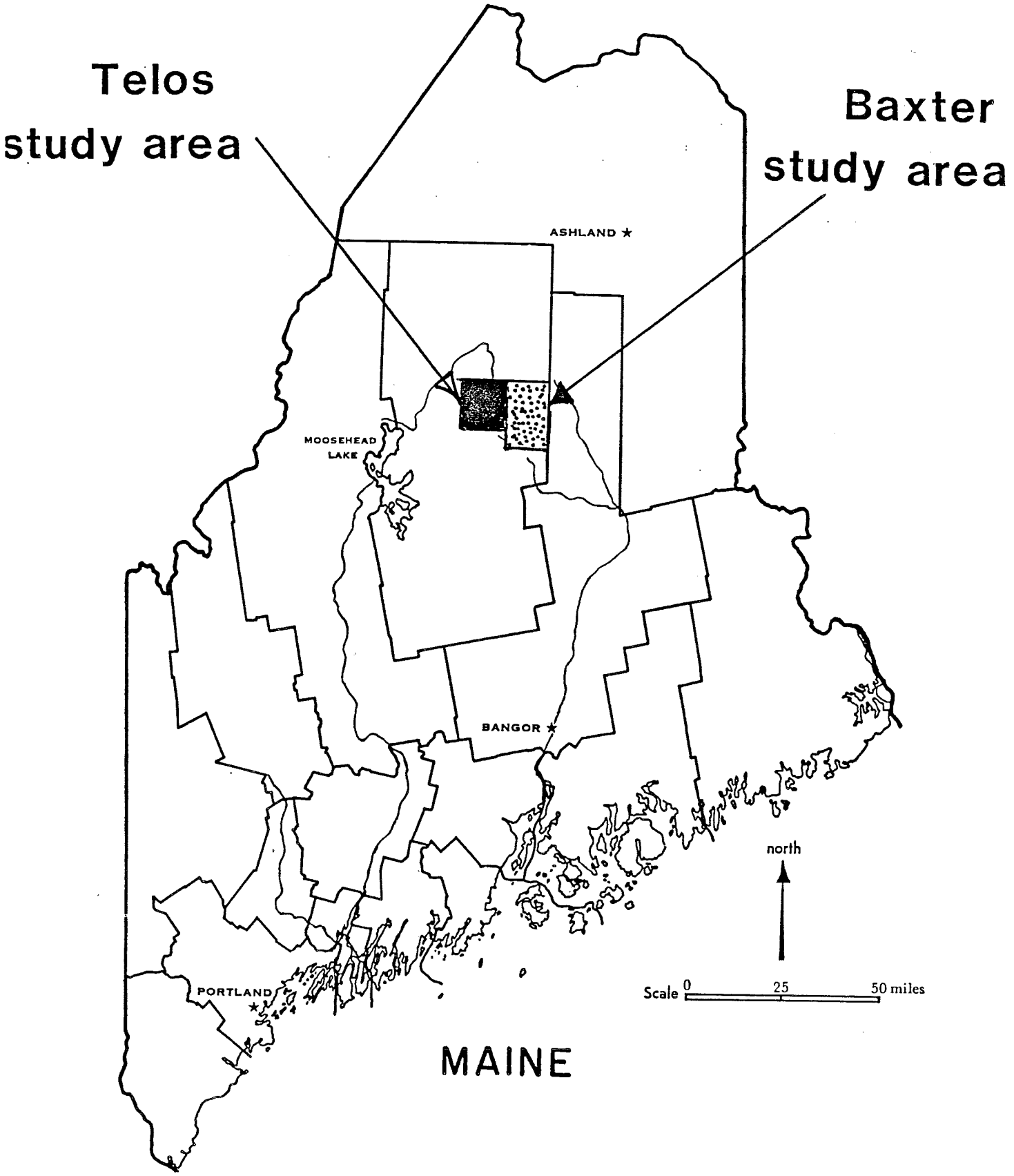

Fig. 1. Map of Maine showing location of Telos and Baxter study areas.

unimproved perimeter road around the northern, western, and southern boundaries provides access by vehicle. Telos is immediately west of Baxter and shares a boundary with the park. Telos is owned by Great Northern Paper Co. and is intensively managed, providing a mosaic of various-sized clearcuts, stripcuts, and areas of regrowth, mostly cut within the last decade. Forty sample stations were designated in each study area, spaced at least 1.28 km (0.8 mi) apart along existing roadways (Fig. 2 and 3). Only areas which were not scheduled for harvest during the course of the study were chosen in Telos, and the scientific forestry area in Baxter was excluded. Stations in Telos were confined to a 4-township block of land (1 township equals 36 mi^2), while stations in Baxter were distributed along the only road in the park, occurring within the bounds of 6 townships. Transects routes were conducted between dawn and noon, following the weather constraints specified by the Breeding Bird Survey (Robbins et al. 1986). Each station was visited on a weekly basis to assure independence of the observations, resulting in 9-11 visits to each station. The survey was conducted from mid-May to mid-August to encompass the nestling period of all possible species, a period when territoriality and defensive behavior would be expected to occur.

At each station a standard pattern of great horned owl calls was broadcast for 5 minutes. The tape was supplied by Mark Fuller, Patuxent Wildlife Research Center (PWRC) and Chris Iverson, Indiana Department of Natural Resources. This tape has the same sequence of calls used in their past and ongoing work. A 5-minute broadcast period consisted of 6 15-second vocalizations separated by approximately 40 seconds of silence. A Johnny Stewart cassette tape animal and game caller, provided by Maine Dept. of Inland Fisheries and Wildlife (MDIFW), was used. The speaker was placed on the roof of a vehicle, approximately 2 m above the ground, directed toward the side of the road and rotated 180^{0} after each 15-second set of calls. Volume was set to produce 100-110db 1 meter from the source and was measured with a portable sound meter (Realistic cat. no. 33-2050). The broadcast period (B) was followed by a 5 minute listening period (P).

Beginning and end time for each station was recorded, regardless of whether any raptors were "contacted." A contact is defined as a visual or aural detection of a raptor species. A station was considered occupied if a contact occurred at at least one of the visits to the station. A sample data form and codes for species, contact type, and behavior are provided in Appendix A.

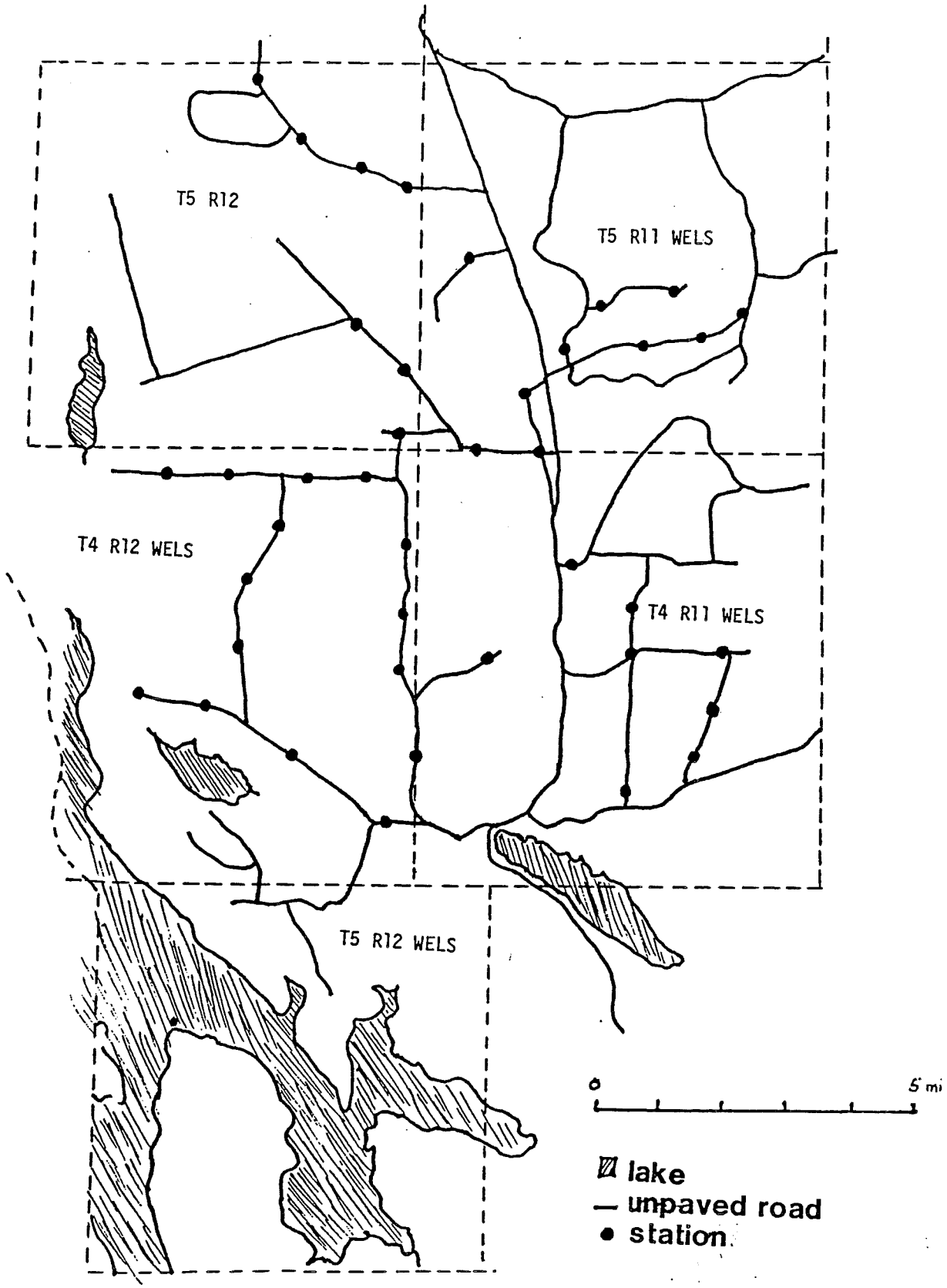

Fig. 2. Location of sample stations, in Telos (harvested study area), 1987.

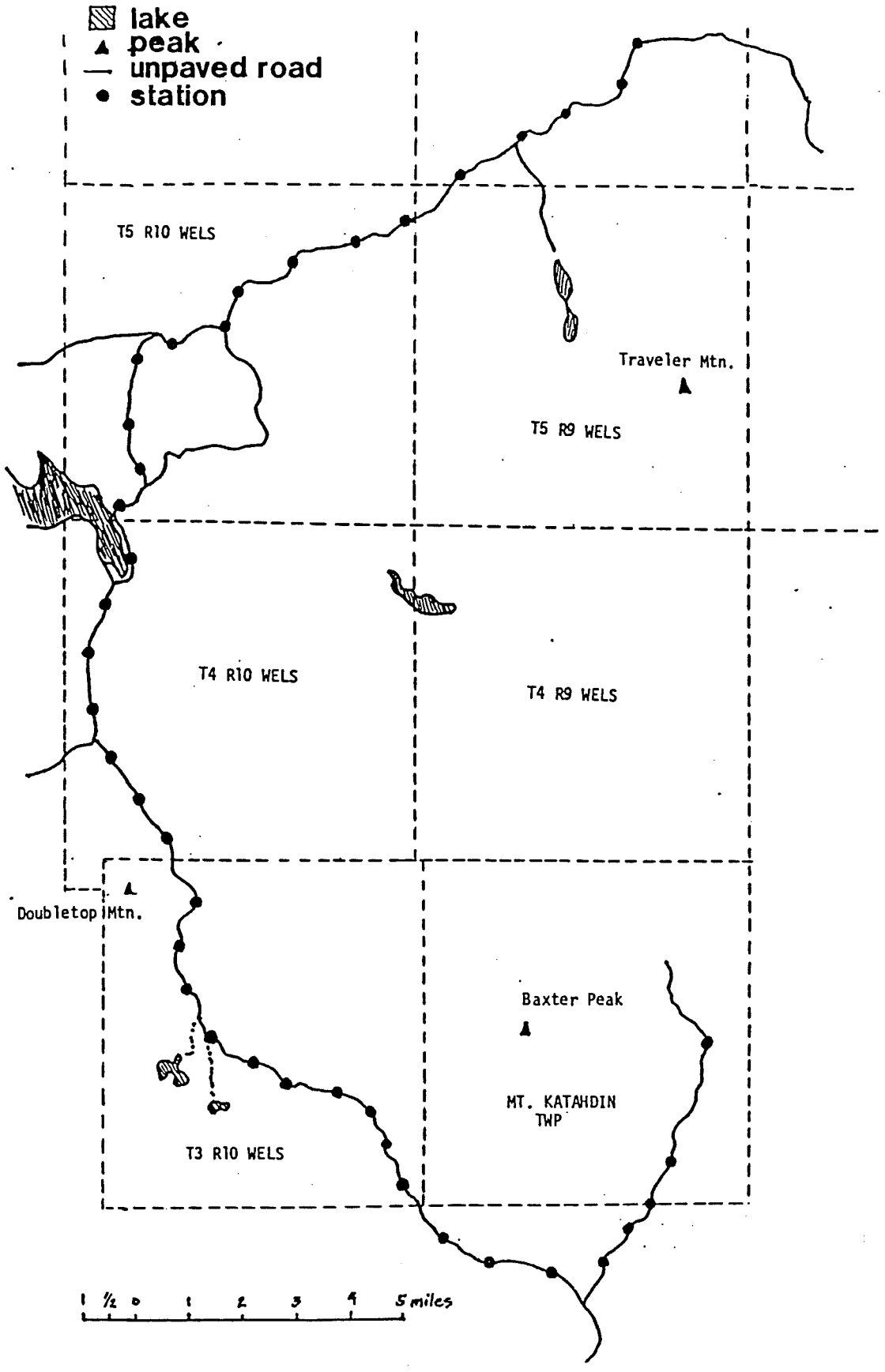

Fig. 3. Location of sample stations in Baxter (unharvested study area), 1987.

Canopy cover at each station in each study area was measured using a spherical densiometer. Habitat variables will be measured from aerial photos this winter, for a quantitative assessment of the overall habitat and to look at species occurrence in relation to selected variables.

Data were analysed to calculate the conditional probability of detection (PD) and proportion of area occupied (AO) for each species in each habitat using a computer program supplied by P. Geissler of PWRC. PD values indicate the probability of detecting a species at a station known to be occupied during any one visit to that station. This value is used as a correction factor to estimate AO, a relatively new index of abundance. AO is an estimation of how much of an area or habitat type is used by a particular species. The conditional probability of detection corrects for differences in the detectability of a species in different habitat types. This allows for comparison of the relative abundance of a species in the different habitats. Comparison between species is not possible, as the responsiveness of a species to the call may differ (Fuller and Mosher 1987), and the degree to which the technique corrects for detectability may not be constant among all raptor species. Interpretation must therefore be restricted to comparing the relative abundance of each species in the two study areas.

Because detection probability varies among points, bootstrap estimates (Efron 1982) are used to avoid the assumption of a binomial distibution (Geissler and Fuller 1987). This procedure reduces the bias of the ratio estimator and provides a non-parametric variance estimate by creating pseudoreplicates from the original data set. A large number (201 to 1001) of bootstrap samples of n points (40 in this study) are taken with replacement from the actual n points and used to calculate PD and AO estimates, from which variance estimates are then derived. The program supplied by PWRC calculates both mean and median bootstrap estimates and the unadjusted estimate for both PD and AO. Because the resulting distribution is assymmetric, Geissler and Fuller recommend using the more stable median bootstrap estimates.

PD values are based on *conditional* probability of detection, that is, the number of observations divided by the number of visits subsequent to the initial observation at a station. The initial observation is not averaged in to the raw PD or "d" value. Thus a station could be considered occupied by having one observation occur, but if no additional observations occur "d" would equal zero. Because raptors are secretive and do not always respond to an owl call, many repetitions are needed to generate a reliable probability of detection. Fuller and Geissler are

currently working on simulations to assess how many repetitions are necessary at different levels of PD. I used my data on broad-wings in Telos to perform simulations addressing this question, and to look at the effect of numerous stations with only one observation (occupied, but d=0).

Results

A total of 440 and 430 station-visits were made in Baxter and Telos, resulting in 37 and 117 observations, respectively (Table 1). In Baxter 26 of 40 stations (65%) were occupied by a raptor species, compared with 35 of 40 stations (87.5%) in Telos (Table 2). Of the 8 possible species, 5 were seen in Telos, 4 were seen in Baxter. Neither the goshawk nor the Cooper's hawk were observed in either study area. American kestrels and northern harriers were seen only in Telos, and red-shouldered hawks were seen only in Baxter (Table 1 and Appendix B).

American kestrels (*Falco sparverius*) accounted for approximately 54% of the sightings in Telos (63 of 117, Table 1) and were by far the most visible species encountered (PD = 0.23, Table 3). Kestrels are not strictly woodland breeding hawks and their absence in Baxter is not surprising. Discounting kestrel sightings brings the total number of sightings in Telos to 54, compared with 37 in Baxter (Table 1). Harriers were also seen only in Telos (5 observations at 4 stations, Tables 1 and 2), and were thought to be of a single pair. The birds were seen rarely, but are thought to have successfully raised at least one young, based on the observation of an immature on 14 August 1987. This observation extends the confirmed breeding range of this species as represented in Adamus (1987).

Red-tailed hawks, broad-winged hawks, and kestrels were seen more than once on a particular station allowing the AO analysis to be performed (Table 3). The AO estimate of 1.02 in Baxter indicates use of the entire area (102%) compared with 0.41 (41%) in Telos; red-tails show the opposite pattern, occupying the entire area in Telos (AO=1.30) and only 9% of Baxter (AO=0.09) (Table 3). Kestrels occupied 69% of Telos (AO=0.69) and were absent in Baxter. PD values ranged from 0.04 for red-tails in Telos to 0.23 for kestrels in Telos. Red-tails in Baxter had a PD =0.10, but this is based on only 3 observations at 2 stations, and is not considered a reliable estimate. Broad-wings show the expected trend of increased detectability in the more open harvested area (0.09) compared with the densely vegetated unharvested area (0.06). In all species, except American kestrels, the lack of repeated sightings resulted in low PD values and wide confidence intervals about both AO and PD estimates, and the differences between the areas were not statistically significant (Table 3).

Table 1. Total number of observations by species, in each study area, 1987.

	BAXTER	TELOS
Total no. observations:	37	117
Total no. observations by species:		
Broad-winged hawk	22	15
Red-tailed hawk	3	22
Red-shouldered hawk	4	0
Unidentified *Buteo*[1]	3	2
Sharp-shinned hawk	5	7
American kestrel	0	63
Northern harrier	0	5

1 - *Buteo* not identified to species, and sighting not used in subsequent AO and PD calculations.

Table 2. Number of occupied stations in each study area, 1987.

	BAXTER	TELOS
Total no. stations surveyed:	40	40
No. of occupied stations: (all spp. combined)	26 (65%)	35 (87.5%)
No. of occupied stations by species:		
Broad-winged hawk	17	10
Red-tailed hawk	2	17
Red-shouldered hawk	4	0
Unidentified *Buteo*[1]	2	2
Sharp-shinned hawk	5	7
American kestrel	0	25
Northern harrier	0	4

1 *Buteo* not identified to species, and station not used in analysis of PD and AO.

Table 3. Median bootstrap estimates[a] of probability of detection (PD) and proportion of area occupied (AO)[b] in an unharvested area (Baxter) and a harvested area (Telos), 1987.

STUDY AREA	BAXTER		TELOS	
SPECIES	PD (95% C.I.)	AO (95% C.I.)	PD (95% C.I.)	AO (95% C.I.)
Broad-winged hawk	0.06 (0.0-0.12)	1.02 (0.0-1.0 [c])	0.09 (0.01-0.17)	0.41 (0.0-0.83)
Red-tailed hawk	0.10 (0.0-0.56)	0.09 (0.0-1.0[c])	0.04 (0.0-0.08)	1.30 (0.0-1.0[c])
American kestrel	----	----	0.23 (0.14-0.32)	0.69 (0.51-0.88)

a-501 bootstrap samples were used.
b- 1.0 = 100% occupied.
c- confidence interval truncated to 0.0-1.0, actual C.I. greater than 1 and less than 0.

Discussion

The survey and analysis techniques used in this study have been used successfully in deciduous woodlands and agricultural lands, including Connecticut, Wisconsin, Indiana, and Maryland (Fuller 1984, Iverson 1987). In contrast, this study was the first full-scale application of the technique in a northern mixed and coniferous forest, and has provided insight into the limitations of the technique. Low PD values encountered in this study were probably caused by a combination of factors. In Baxter, dense vegetation limits sightings and makes identification of species difficult. Two observers looking in opposite directions increased the chances of seeing a bird, but the lack of overhead visibility at most of the stations reduced the probability of detection dramatically. In Telos, visibility was not a problem at most stations yet sightings remained scarce. Here I believe the problem lies in the unpredictability of the environment from year to year, and the disturbance caused by harvest operations. Although in any one year harvest operations present only a localized source of disturbance that may be avoided, the cumulative effect is a lack of predictability in finding appropriate nest sites that can be returned to year after year. A successful nest site one year may be unavailable in the following year. Or an area may begin the season as an appropriate one, but may be cut or disturbed later in the season causing the birds to abandon for that year and possibly for many years. Though site tenacity may influence older birds to return to an area despite it's degradation, this may not occur if nesting attempts fail (Hilden 1965, Moore and Henny 1984). Thus I believe that in the two areas different factors are operating to produce the same result: low probability of detection.

To look at the question of how many visits are necessary to obtain acceptable confidence intervals, I performed simulations using the broad-winged hawk data from Telos. First the data were adjusted to a standard 11 visits to each station. At 8 of the stations only 9 or 10 visits were made compared with 11 at all others. Zeroes were added prior to the first sighting at a station to keep the station "d" values the same as was obtained in the actual survey. Data files were created using 11, 22, 33, and 55 visits to each station, the additional visits being the data from the first eleven visits added on in the exact pattern as obtained in the actual survey. This approach assumes that the pattern of observations would remain the same if the additional repetitions were actually performed. Standardizing the data to 11 visits adjusts the AO estimate from 0.41 to 0.42 and does not alter the PD (0.09) (Table 3 and Fig. 4). Increasing visits to 22 decreases the median AO estimate from 0.414 (0.0-0.94, 95% C.I.) to 0.27, and the confidence interval tightens about the mean to (0.11-0.44) at the 95% level. Increasing visits

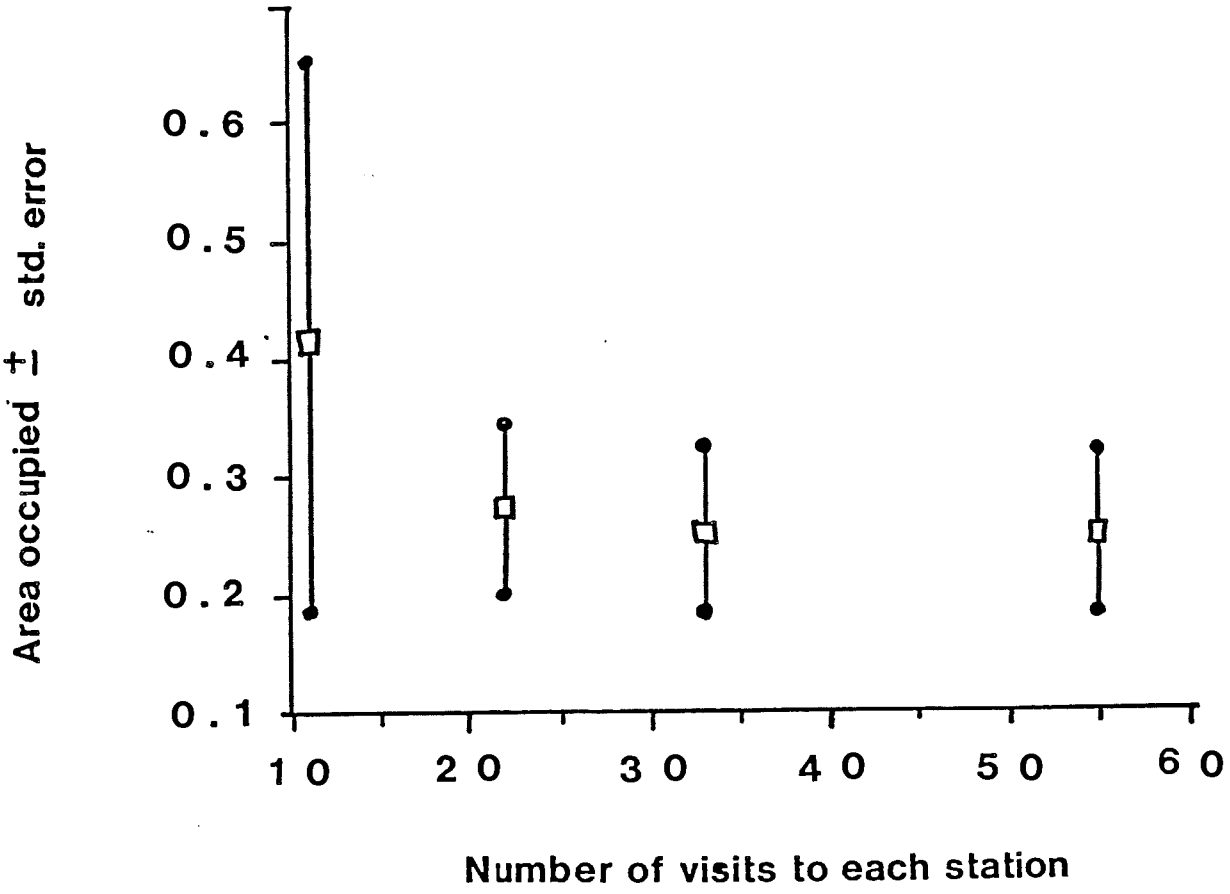

Fig. 4. Effect of increased visits on estimates of Area Occupied and standard error, using broad-winged hawk data from Telos, 1987.

to 33 and 55 decreases the median AO only slightly to 0.25, and the confidence intervals change little (Fig. 4). In this simulation the number of stations with only one observation has a strong influence on the variance of the estimate. The change in the AO from the 11 visit data set to the 22 visit data set is a result of the PD values changing at the stations at which only one sighting occurred. By adding the additional visits, repeat sightings were added to stations which previously had d =0. Thus data sets containing many stations without repeat sightings increases variance and widens confidence intervals.

I examined the effect of stations with only one observation using the 11-visit broad-winged hawk data from Telos. This data set contained 10 occupied stations, 5 of which had repeat sightings (d>0) and 5 with only one sighting (d=0). I added a sighting at the last visit to the stations with d=0 one by one, to test the effect of the number of occupied stations with d=0 on the AO estimate and confidence intervals. As the number of stations with only one sighting decreased from 5 to 0 the AO estimate decreased (0.42 to 0.30) and the confidence intervals tightened appreciably (0.00-0.90 to 0.11-0.49)(Fig. 5). PD estimates increased from 0.09 to 0.16 as would be expected from the addition of sightings to the existing occupied stations (Fig. 5).

I also looked at the 22-visit data set to see if AO estimates would increase and the confidence intervals widen as the number of stations with only one observation (d=0) increased. One by one I removed the second sighting that had been added to each of the 5 stations by doubling the data, running the AO analysis on each. AO estimates were not as drastically affected by increasing the number of stations with d=0 from 0 to 5, rising only slightly from 0.27 to 0.29 (Fig.6). The confidence intervals did change noticeably however, broadening with increasing numbers of stations with d=0. With 22 visits the effect of occupied stations with d=0 is not significant with regard to the AO estimate, but it does affect the confidence with which one can make the estimate. Additional simulations are planned to examine the interaction of the number of visits made to a station and the number of stations with only one observation in data sets with low numbers of observations.

The above simulations suggest that many more visits are required to obtain acceptable confidence intervals in the areas I surveyed. This is in keeping with recent work by Geissler and Fuller, presented in the documentation of the AO program. They predict that as PD values decrease from 0.5 to 0.1, the required field effort increases from 4 visits per station to 22 visits per station. My estimates of PD range from 0.04 to 0.10 for buteos, then jump to 0.23

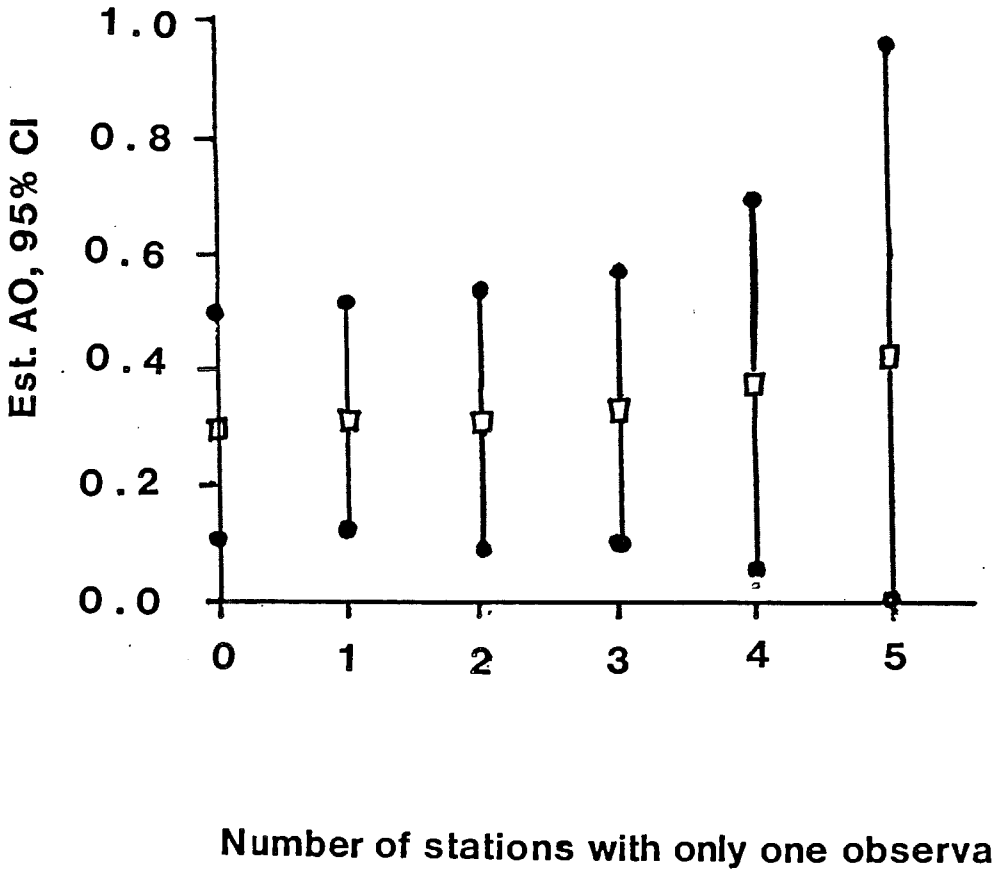

Fig. 5. Effect of increased number of stations with only one observation, (d=0) on Area Occupied and 95% C.I., using broad-winged hawk data from Telos, 11 visits to each station, 1987.

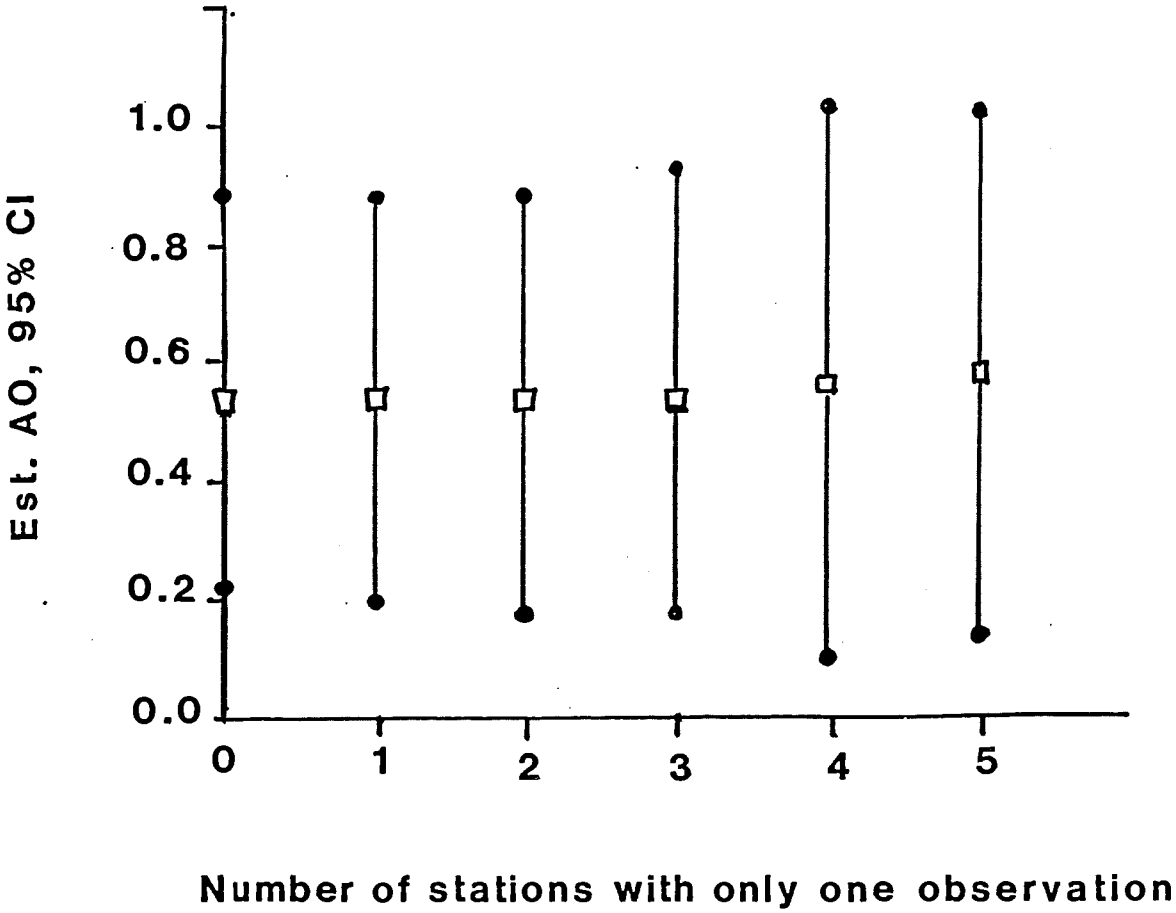

Fig. 6. Effect of increased number of stations with only one observation, (d=0) on Area Occupied and 95% C.I., using broad-winged hawk data from Telos, simulated 22 visits to each station, 1987.

for kestrels (Table 3). My sample size of 9-11 visits per station in Telos was sufficient for kestrels but not for buteos or accipiters. The low PD estimates for these species suggest that approximately 25-30 visits are necessary for a reliable estimate of AO. In a 90 day field season, this would require complete coverage of all stations every third day if only one field team were available. Difficulties associated with this are increased field time and personnel costs, the weather constraints of the survey protocol, and habituation (positively or negatively) of the birds to the calls broadcast at the station. Considering Maine's climate and the probability of the appropriate weather conditions occurring in the proper sequence I must conclude that this technique is not applicable in the habitats I surveyed when implemented with only one team in study areas 4 townships or larger. If weather conditions are appropriate for the entire period between dawn and noon, 20 stations can be sampled in one day by one team. If more personnel were involved in the survey an entire study area could be covered in a single day, and a greater number of observations are possible over the course of the breeding season. Only with these improvements would I suggest using this technique in areas where low PD's are expected.

Future Plans

Additional analysis relating the location of breeding raptors to forest characteristics currently underway. Preliminary assessment shows that in both areas there was very little overlap in the stations at which red-tails were seen and the stations at which broad-wings were seen (Appendix B). Analysis of habitat will focus on determining if any significant differences exist between the stations used by the various species. Results of these analyses will be forwarded upon completion.

The next step in this study is to apply the technique in an area more similar to the areas of other surveys. The Monroe area in Waldo County is being considered for the 1988 field season. This area is characterized by small woodlots and agricultural land, softwood uplands and hardwood lowlands. Local knowledge considers this area to be raptor-rich; this survey would attempt to confirm and quantify this and assess the usefulness of the technique in an area of different land use. A comparable study design will be used, with at least 60 sampling points designated along roadways, 30 along hardwood ridges and 30 in predominantly softwood bottomland. By restricting the study to one area surveys can be conducted only under the best weather conditions and more visits are possible. The same pattern of owl calls will be used, but

an effort will be made to enhance the quality of the tape and possibly also the broadcast equipment.

In addition to woodland hawks the area occupied technique can be used to sample and make statistical inferences about other rare or uncommon species. The question of whether or not a certain area or habitat supports a species of concern is often more important to the resource manager than estimates of relative abundance (Geissler and Fuller 1987). Currently, Maine has 83 species listed as endangered, threatened, of special concern, indeterminate status , or on the watch list. All of these are rare or uncommon, thus posing a unique problem for censusing. This technique may be applicable in assessing the status of number of these species, particularly birds. A part of my work will focus on computer simulations to evaluate the use of the AO method for sampling rare species so that the limitations of the technique are more thoroughly understood. The results of this work may have greater overall applicability, while providing information on a particular group of animals. Two species on the watch list are known to occur in the study area proposed for 1988 , the red-shouldered hawk and the Cooper's hawk. This study will increase our knowledge of the status of these species in central Maine.

Acknowledgments

This study was funded through the Maine Endangered Species and Non-game Wildlife Fund administered by Maine Dept. of Inland Fisheries and Wildlife, and the Maine Cooperative Fish and Wildlife Research Unit (MCFWRU), and the University of Maine, Orono (UM). I wish to express my appreciation to the many who encouraged and guided me in the development of this project, including Charles Todd(MDIFW), William Krohn and Ray Owen (MCFWRU and UM), and Mark Fuller and Paul Geissler(PWRC). I would also like to thank my field assistant, Josianne Volel, for her patience and assistance. This project would not have been possible without the consent of the landowners and managers of Baxter State Park and Great Northern Paper Co., both of whom granted me access and logistical support.

Appendix A. Data collection codes and data form used in survey of breeding woodland raptors in north-central Maine, 1987.

SPECIES:

SSHA - sharp-shinned hawk
COHA - Cooper's hawk
GOHA - Northern goshawk
BWHA- broad-winged hawk
RTHA - red-tailed hawk
RSHA - red-shouldered hawk
AMKE - American kestrel
HARR - Northern harrier
PEFA - peregrine falcon
BAEA - bald eagle
GOEA - golden eagle
UNAC - unidentified Accipiter
UNBU - unidentified Buteo
UNFA - unidentified falcon
UNHA - unidentified hawk

Weather: Recorded at beginning and end of transect route:
temperature in degrees Farenheit; wind speed in mph, magnetic compass direction.

Sky condition codes: (consistent with BBS codes, except code "9")

0 - clear or a few clouds
1 - partly cloudy (scattered) or variable sky
2 - cloudy (broken) or overcast
4 - fog
5 - drizzle
7 - snow
8 - showers
9 - recently stopped raining

Contact codes:

1 - seen only
2 - heard only
3 - seen and heard

Behavior codes:

01 - perching: not at nest or not known if at nest
02 - soaring, circling
03 - directed flight toward source of call
04 - directed flight at low altitude- not toward sound source
05 - observed sitting at nest-does not fly off
06 - observed sitting at nest-flies off
07 - perching near nest (same tree or adjacent tree)
08 - attack observers
09 - directed flight at high altitude (above canopy), not toward source of call
10 - hovering overhead
11 - flight with prey item
12 - harassing other raptor

APPENDIX A.

RAPTOR SURVEY 1987

SA	T #	DATE	Time beg	end	weather temp	begin. wind sp.	dir.	end temp	wind sp.	dir.

St.#	Time beg.	end	SPECIES	Contact	time obs/per.	direct.	dis. (m)	Behav.	Notes

Appendix B. Stations at which hawks were observed (⊙), by species, in Baxter and Telos, 1987, Figs. B1-B8.

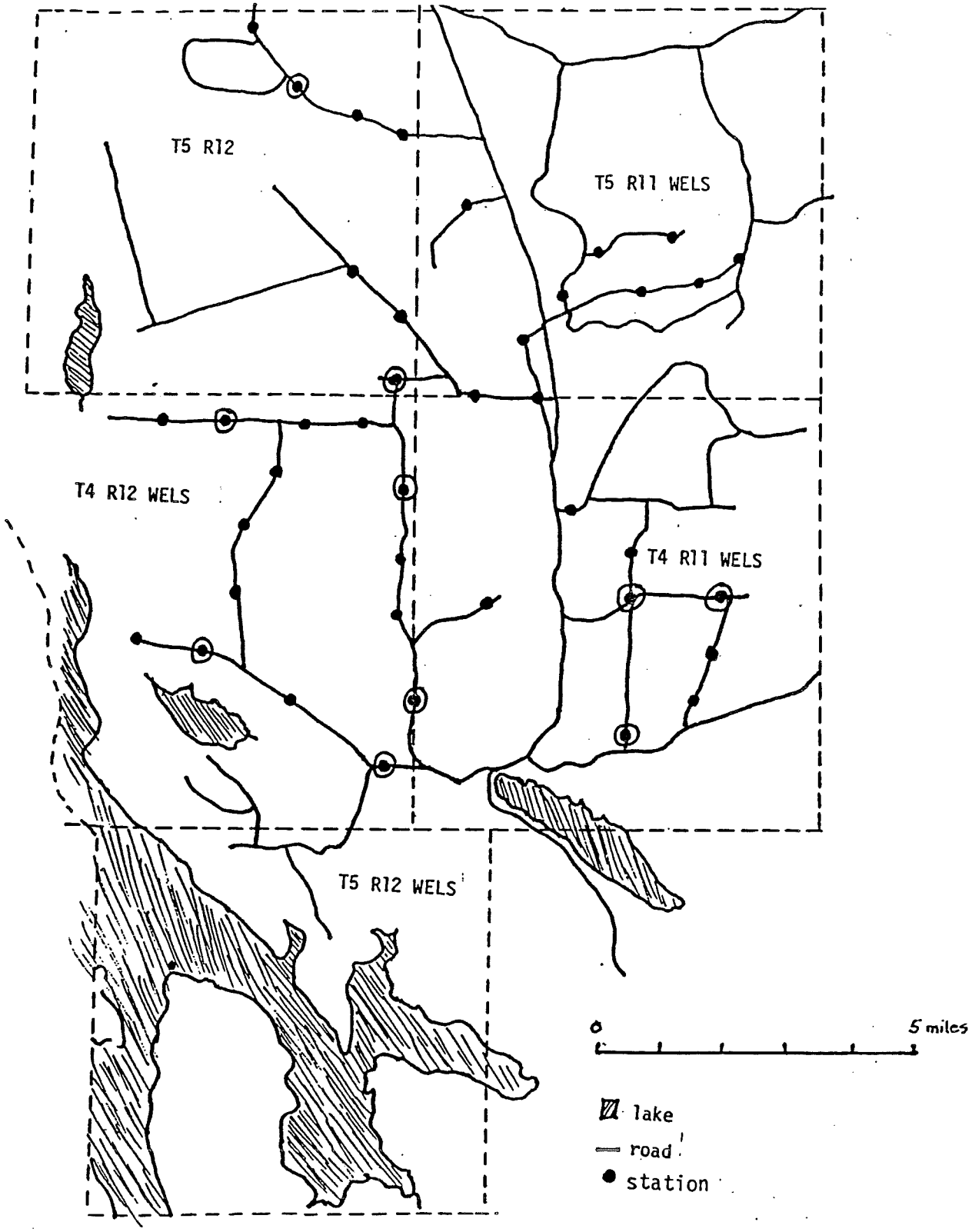

Fig. B1. Stations at which broad-winged hawks were seen (⊙), Telos, 1987

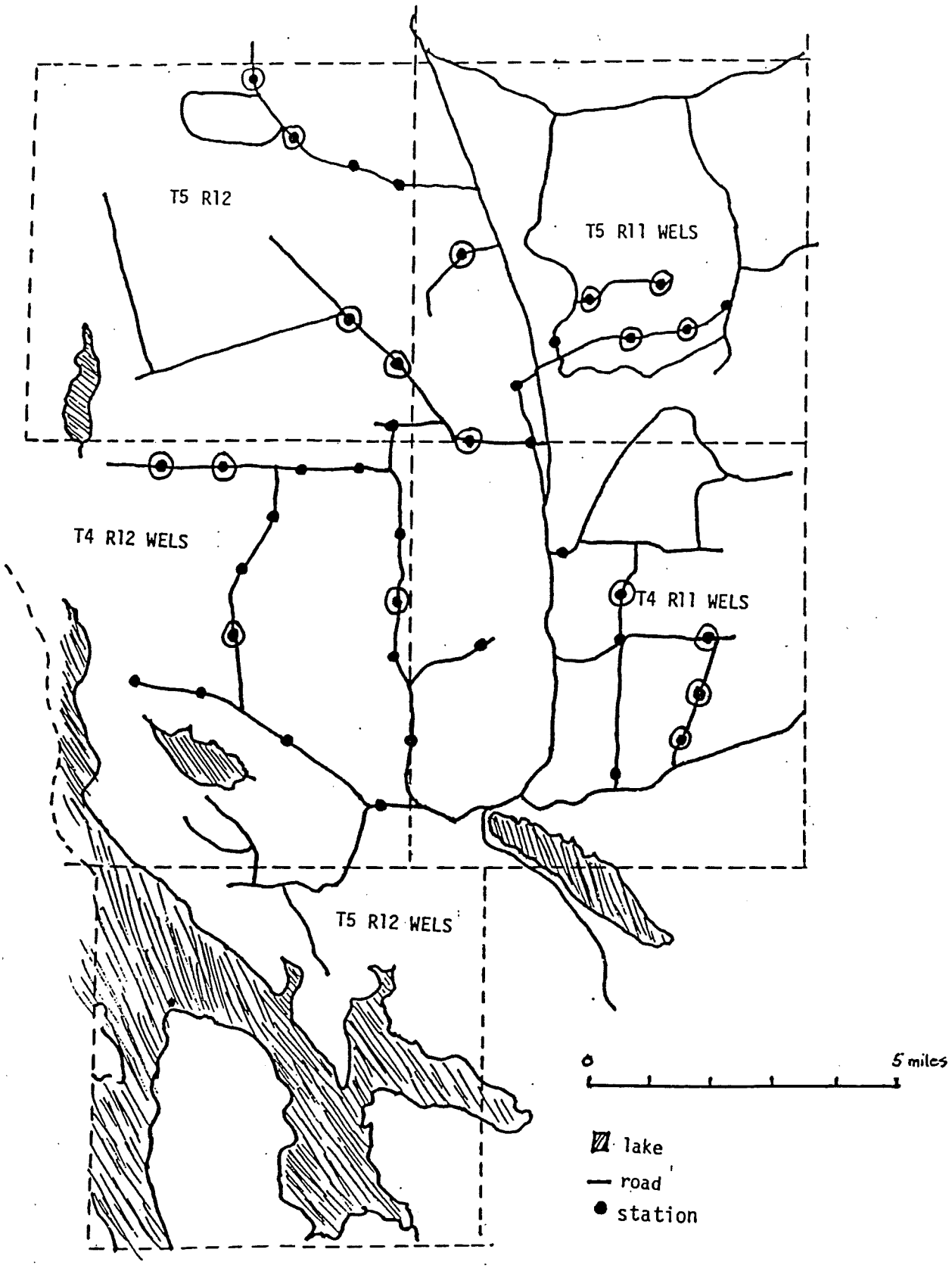

Fig. B2. Stations at which red-tailed hawks were seen (⊙), Telos, 1987.

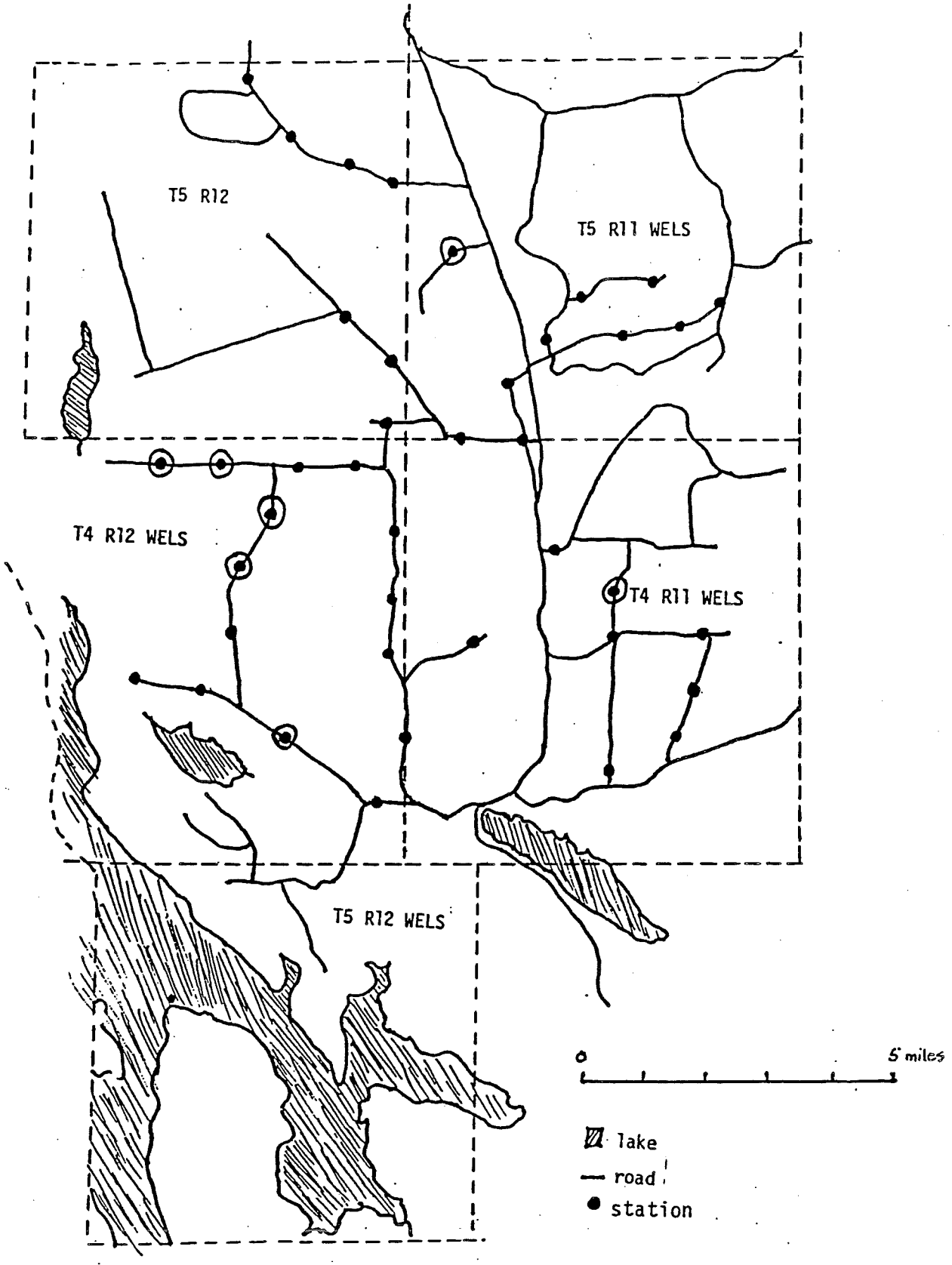

Fig. 63. Stations at which sharp-shinned hawks were seen (⊙), Telos, 1987.

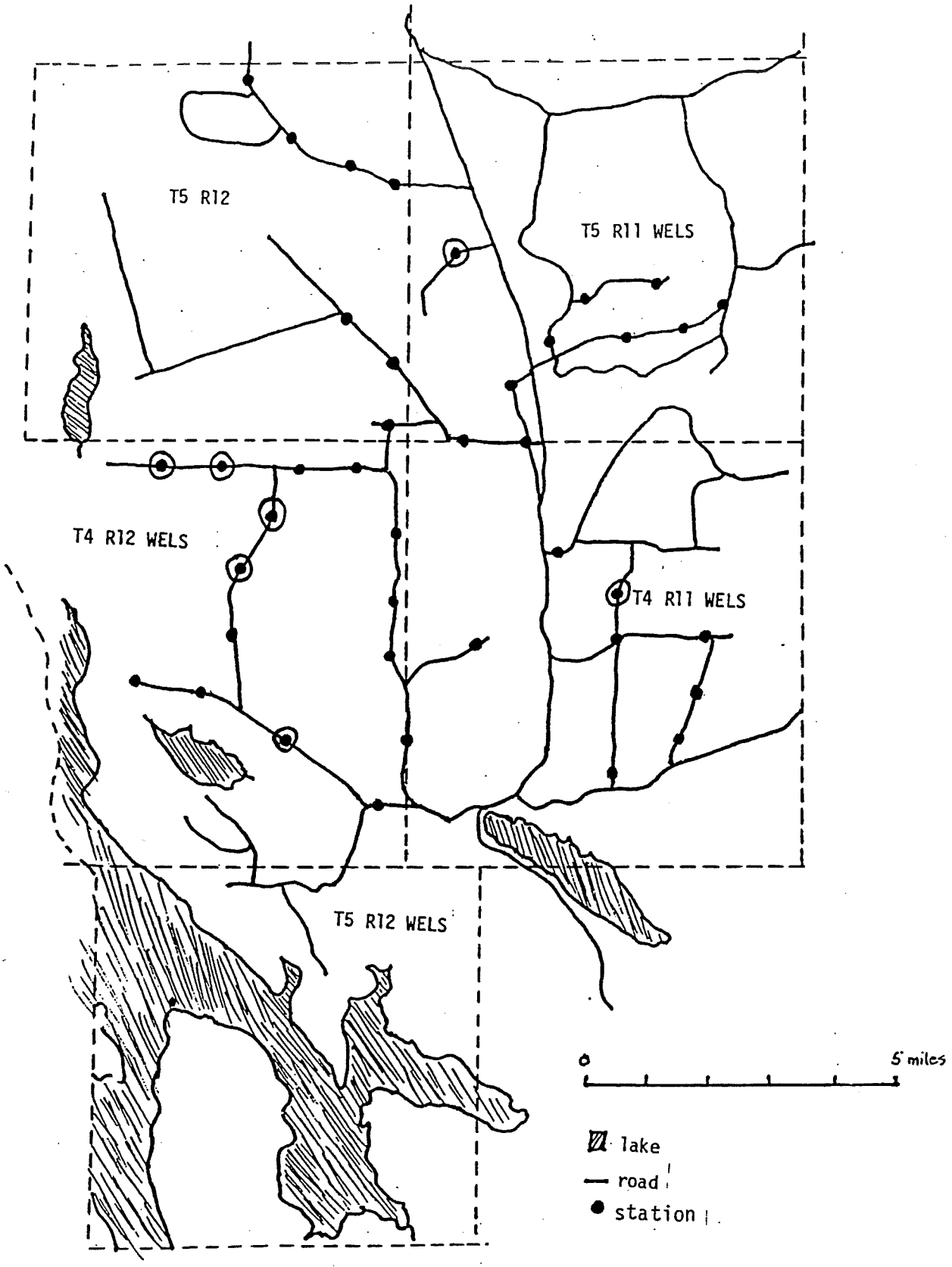

Fig. B3. Stations at which sharp-shinned hawks were seen (⊙), Telos, 1987.

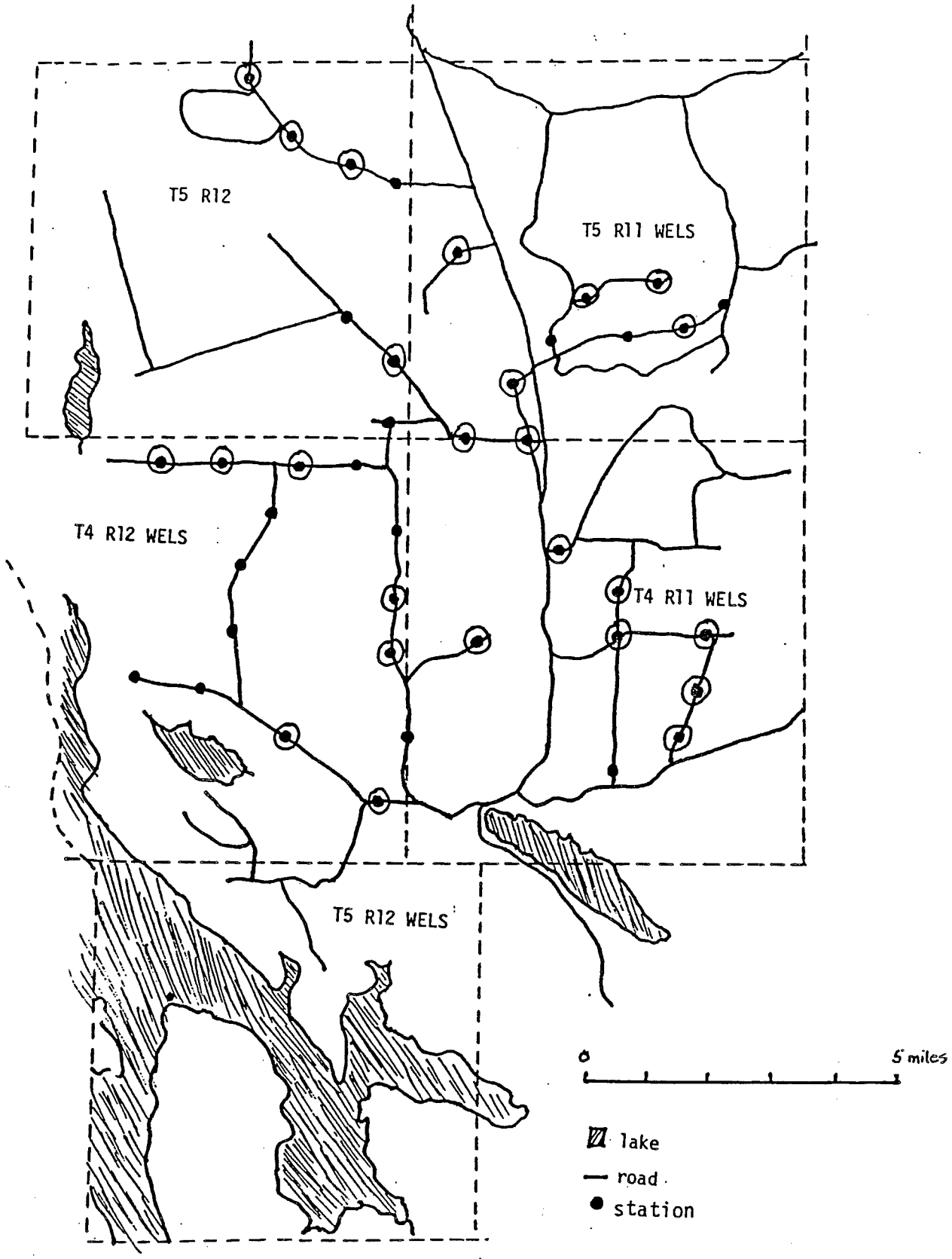

Fig. B4. Stations at which American kestrels were seen (⊙), Telos, 1987.

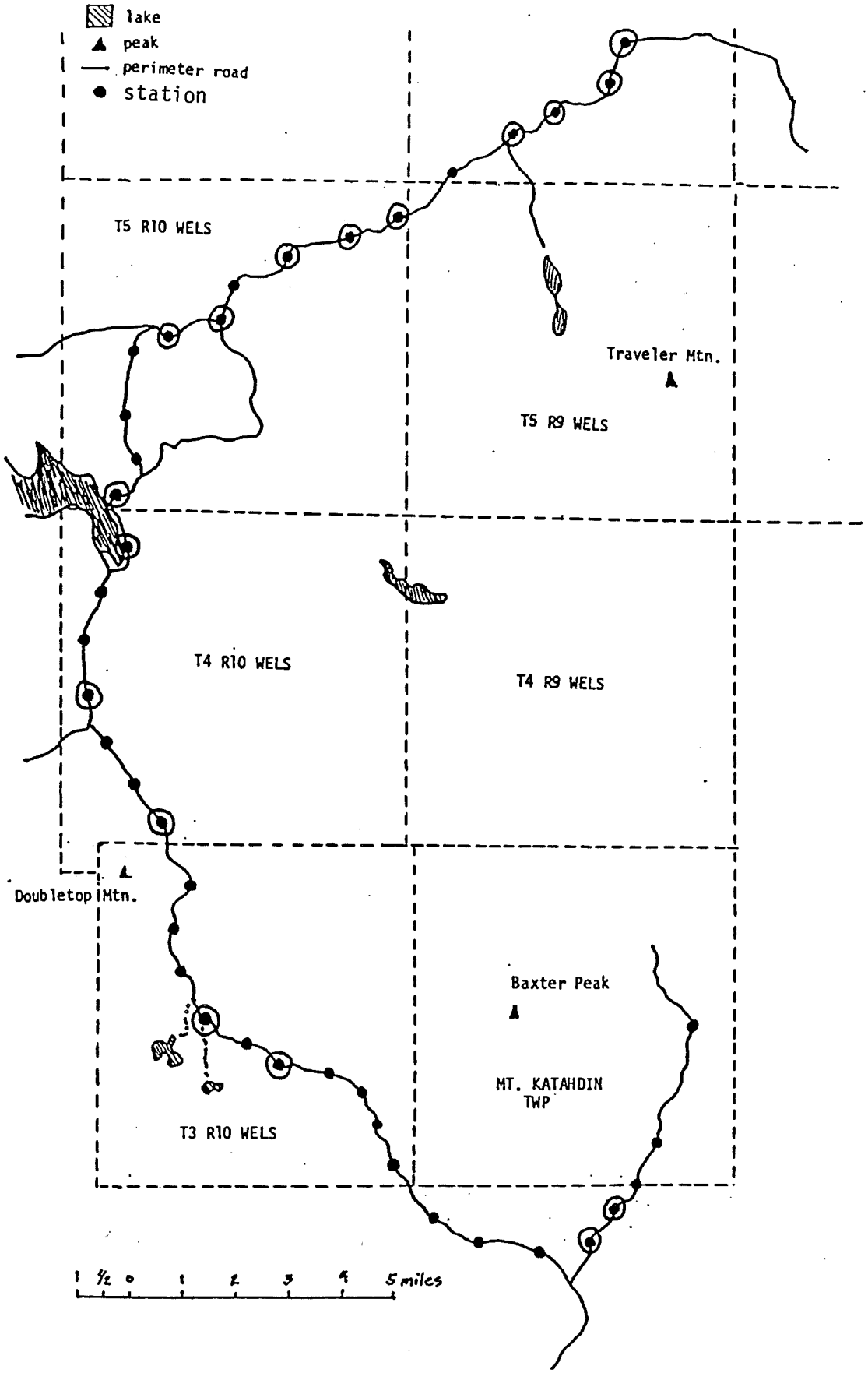

Fig. B5. Stations at which broad-winged hawks were seen (⊙), Baxter, 1987.

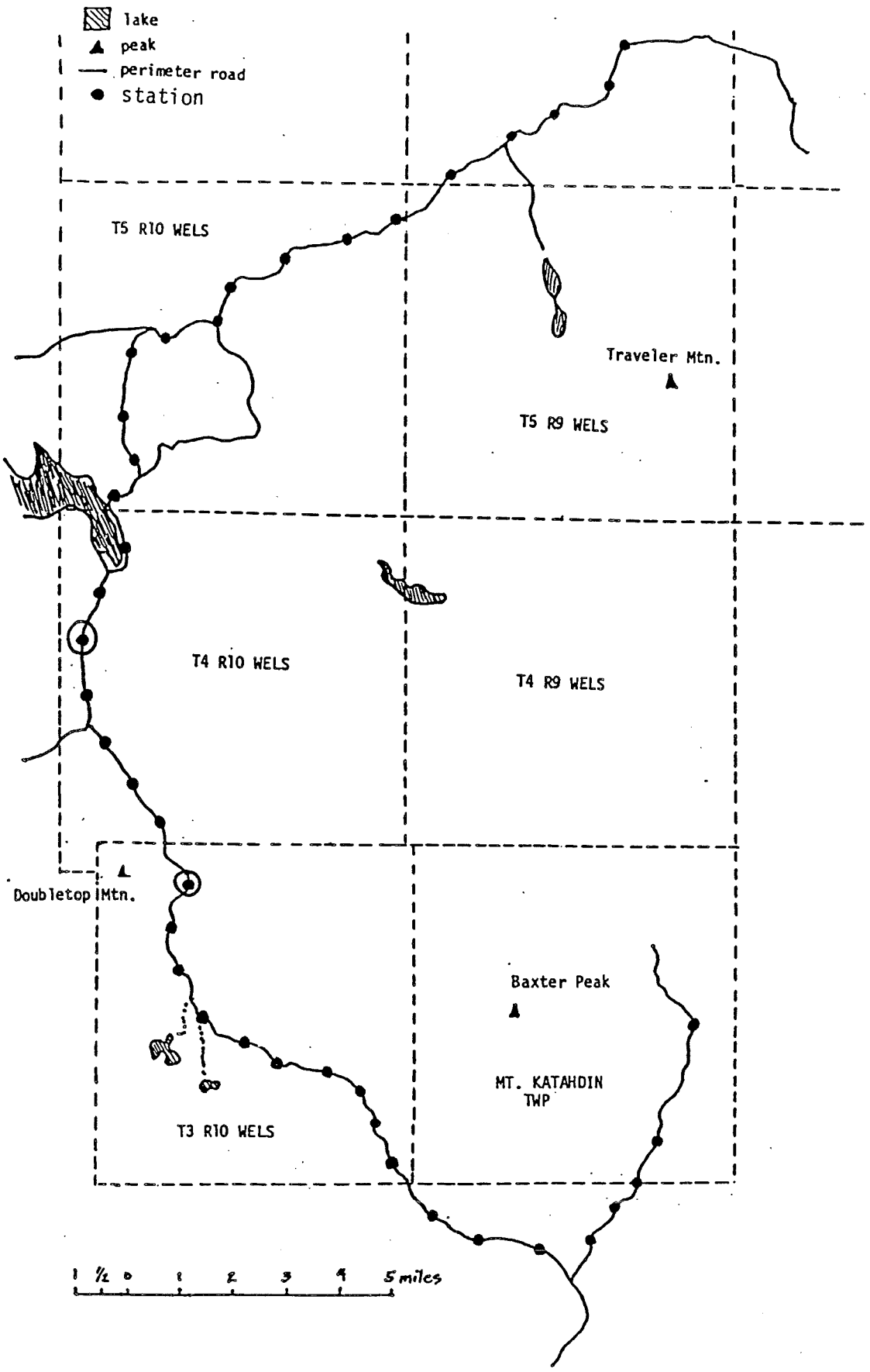

Fig. B6. Stations at which red-tailed hawks were seen (⊙), Baxter, 1987.

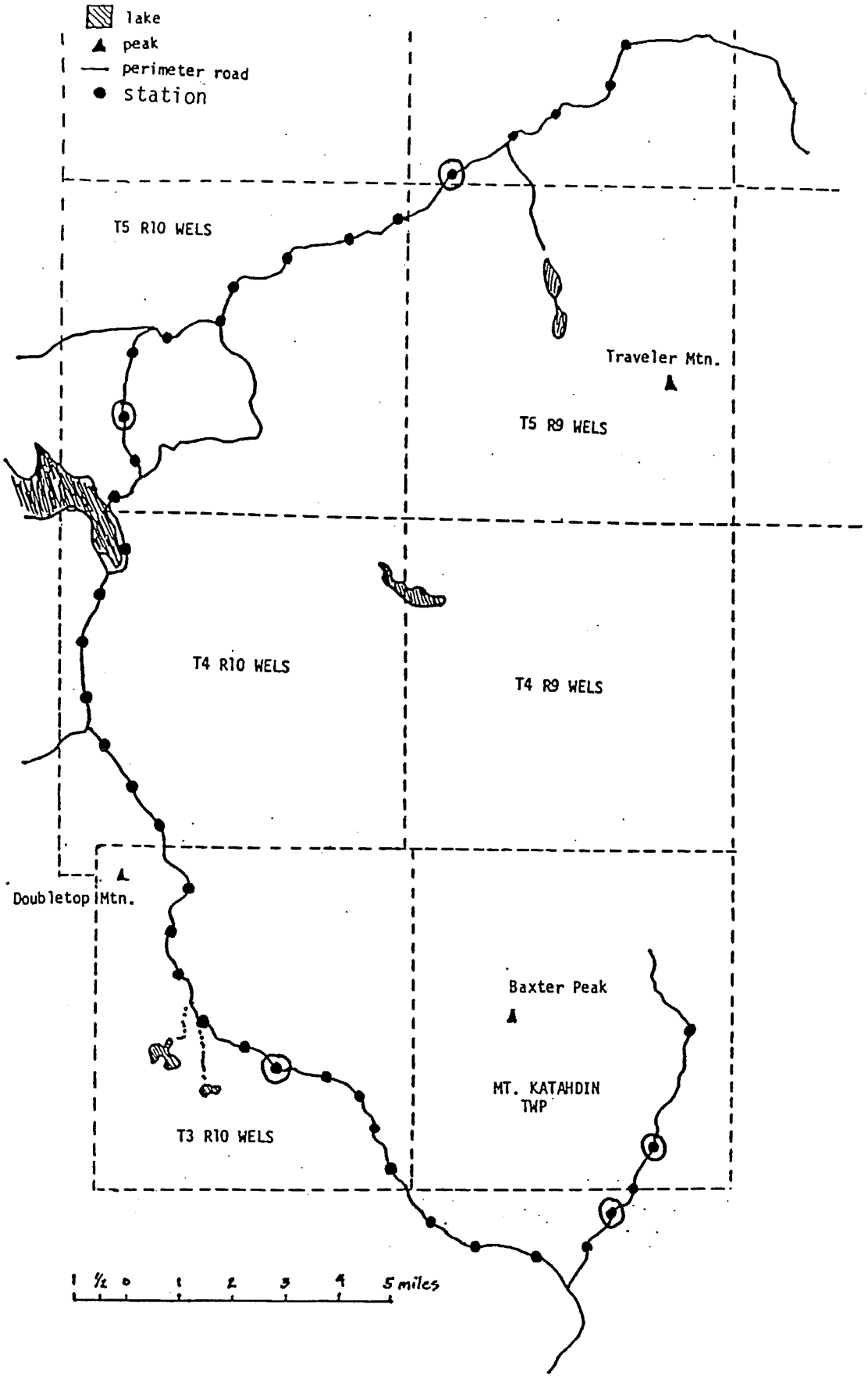

Fig. B7. Stations at which sharp-shinned hawks were seen (⊙), Baxter, 1987.

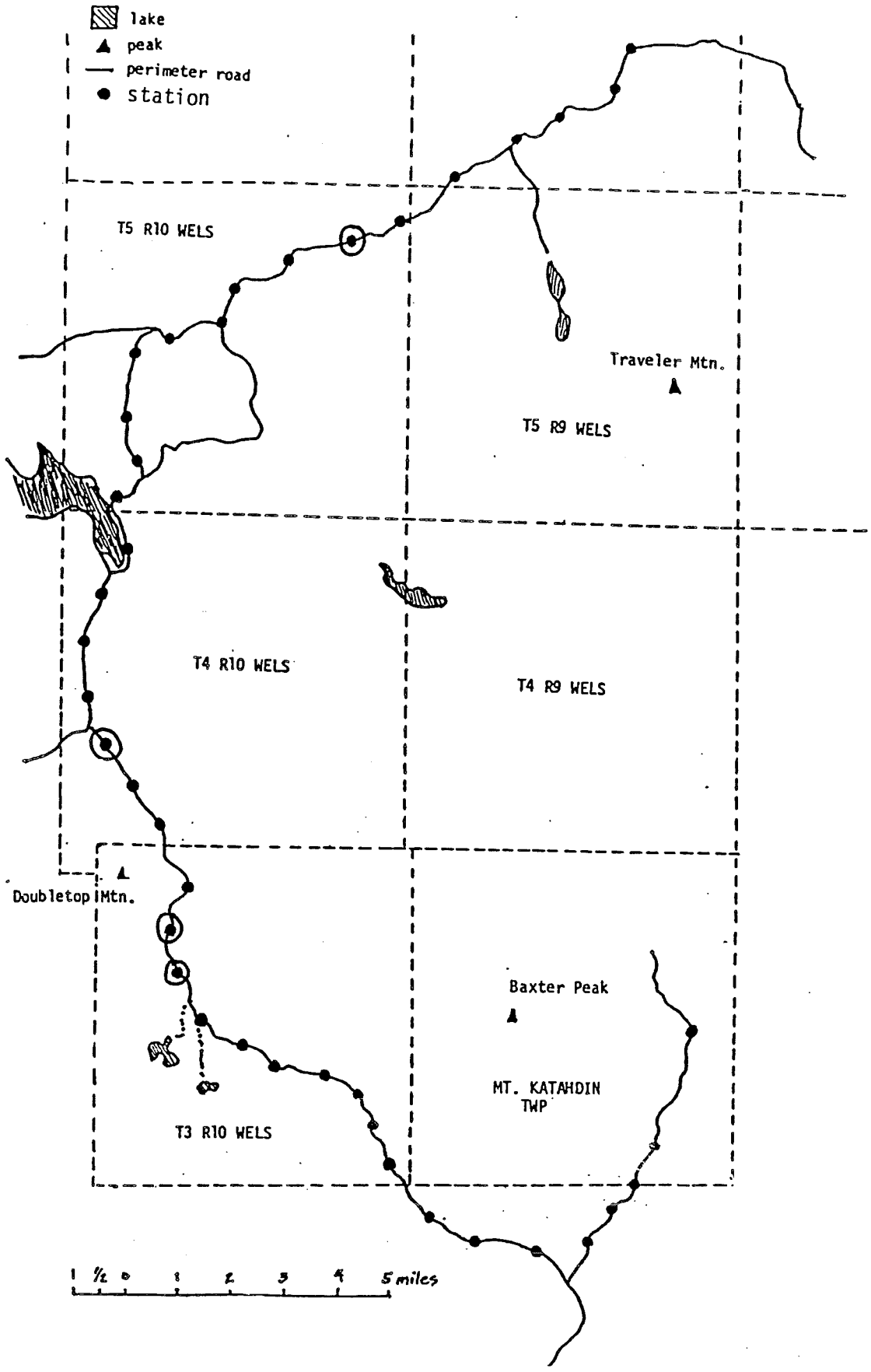

Fig 88. Stations at which red-shouldered hawks were seen (◉), Baxter, 1987.

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5526 Pilot Peak Road
Laramie, WY 82070
15 December 1987

Mr. Chris Drew, Head Ranger
% Baxter State Park Headquarters
64 Balsam Drive
Millinockett, Maine 04462

Dear Mr. Drew;

On June 7th of this year you gave me permission through radio communication with Linda Ives at Daicey Pond Campground to collect benthic macroinvertebrates. I was requested to submit a list of the organisms identified from the collection.

The following organisms were collected from the stream along the road into the campground:

Diptera: Chironomidae, Subfamily Tanypodinae
Trichoptera: Glossosomatidae, Glossosoma sp.
Lepidostomatidae, Lepidostoma sp.
Limneplilidae, Pycnopsyche sp.

Unforseen circumstances at the outset of my collecting activities precluded my making a more extensive survey, as originally planned. Regardless, thank you for the opportunity to sample, even this small amount. Perhaps on another visit I might be allowed to attempt a more complete sampling of the aquatic organisms in the streams of your lovely Baxter State Park.

In passing, I would like to tell you that in the mid '60's I had the pleasure of camping in Baxter State Park, and climbing Mt. Katadin. It was an experience I shall always remember.

Sincerely,

Howard A. Rhodes

Howard A. Rhodes
Freshwater Ecologist

Colby College

WATERVILLE, MAINE 04901 207/872-3246

Department of Geology

1 February, 1988

Mr. Irvin C. Caverly, Jr.
Director, Baxter State Park
64 Balsam Drive
Millinocket, Maine 04462

Dear Mr. Caverly:

I apologize for not having gotten this to you sooner; it was my intention to have it in the mail to you a week ago, as promised. Please accept my sincere apologies for the delay.

I was unable to conduct as extensive a sampling program as I had anticipated within the confines of Baxter State Park last August, but was able to collect beetle specimens in three localities. Although the specimens have not yet been mounted and studied thoroughly, some preliminary observations can be made.

FIRST, I was able to collect within the extensive marshes along the northern margins of Abol Pond. Here, I found primarily small specimens of Hydrophilidae (which feed on decaying organic matter), several specimens of the Carabid species Pterostichus lecontei, and a small series of perhaps a half dozen Omaliine Staphylinids. None of these were any surprise and are relatively common in such habitats throughout central and northern Maine.

SECOND, I was able to collect a large number of specimens from the gravel and sand bars along Sandy Stream, upstream and immediately downstream from the crossing by the trail that leads from the Avalanche Brook campground to Katahdin Lake. Here, I recovered a large series of specimens of the Carabid species Nebria pallipes, and smaller numbers of Diplous rugicollis. I also collected a number of specimens of Bembidion, a genus of very small Carabid species which is taxonomically very complex (at least 165 species in the Canada-Alaska fauna alone, which would include anything in B.S.P.). This is a typical assemblage of taxa in this area for a free-flowing stream with clear, unpolluted waters and sand and gravel bed and banks.

THIRD, I was able to collect a nice, although smaller, series of specimens from the treeless zone just below the summit on the west flank of South Turner Mountain. I'm sure you are aware that the summit of Katahdin has been extensively collected throughout this century, as it and the alpine habitats of the White Mountains of New Hampshire are known as island refuges of Arctic taxa that became isolated here following the retreat of the late Pleistocene glacial ice. You may find it of interest to know that at least some of these taxa are also found in this similar habitat on South Turner Mountain. The specimens I recovered were all Carabids, and included Notiophilus borealis and at least one species of Pterostichus, subgenus Cryobius. This subgenus, with the exception of a single species in coastal British Columbia and

southeastern Alaska, is exclusively a tundra inhabitant. It is taxonomically very difficult, and though the subgenus was revised fairly recently (1966), is in need of revision once again, in part as a result of large series I have collected in Alaska that have blurred the distinctions between several species pairs hitherto recognized.

In sum, I can say that the results of my collecting in the marsh along Abol Pond and along Sandy Stream were nothing that would not have been expected. The specimens from South Turner Mountain, however, are possibly among the first collected here, and show that at least several of the Arctic-Alpine taxa so well known from Katahdin itself occur also in this relatively small island of alpine treeless environment.

I would like to thank you very sincerely for allowing me access to collecting in the Park, and apologize again for not having reported to you sooner with the results of my studies. I had been hoping to be able to find time to mount and more critically identify some of these specimens, but time has not allowed this.

You will find your permit enclosed, as you requested when issuing it to me. If you should have any questions, please do not hesitate to contact me. I can be reached by phone at 872-3247.

Sincerely,

Robert E. Nelson
Assistant Professor

PRELIMINARY ESTIMATES OF THE ACIDITY STATUS OF MAJOR LAKES AND STREAMS IN BAXTER STATE PARK

Steve Kahl and Matthew Scott

Maine Department of Environmental Protection
Bureau of Water Quality Control
Division of Environmental Evaluation and Lake Studies
Augusta, Maine

August, 1987

NOTE: The information contained in this document is preliminary and has not been reviewed or fully verified. It does not represent public release of these data.

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Background

In the fall of 1984, the U.S. Environmental Protection Agency conducted the Eastern Lake Survey (ELS), an extensive statistical sampling of lakes in areas sensitive to 'acid rain' east of the Mississippi River. In Maine, this study sampled 227 lakes larger than 10 acres (4 hectares). Based on the statistical design of the study, EPA concluded that between 8 and 21 of the nearly 2000 Maine lakes considered, were currently acidic. No conclusions were drawn regarding the direct impact of acidic precipitation on these lakes.

For logistical reasons, the EPA study did not sample the small or high elevation lakes in Maine--those lakes thought to be most vulnerable to the effects of acidic deposition. The Maine High Elevation Lake Monitoring (HELM) project was designed to complement the Eastern Lake Survey by sampling high elevation lakes not covered by EPA. In 1986 and 1987, all 90 Maine lakes above 1950 feet (600 meters) elevation, at least 1 acre (0.4 hectares) in size, and at least 3 feet (1 meter) in depth were sampled by helicopter for chemistry relating to 'acid rain'. Many of these were lakes smaller than those considered by EPA in their study. The HELM project was designed to look at lakes in areas where acid lakes might be, in contrast to the broad overview of Maine lake chemistry provided by EPA.

Significance of Baxter State Park Waters

Eight of the HELM lakes are in Baxter State Park, and are the most northeasterly of the high elevation lakes in the state. This location is of special significance when the air patterns that transport 'acid rain' are considered. In the northeast U.S., Baxter State Park is the mountainous area that is farthest downwind from the industrialized regions that are implicated in producing much of the acid rain in the region. Combining this fact with the poorly buffered granitic bedrock and soils that are common in Baxter, means that the Park waters are very sensitive to the effects of acid rain, although receiving precipitation that is less acidic than in most of the northeastern United States. Thus, Baxter waters should represent the worst-case scenario for lakes and streams in central and northern Maine, and perhaps even in waters farther downwind in portions of New Brunswick. For these reasons, the Maine Department of Environmental Protection has emphasized sampling of the highest elevation lakes in the Park, and enlisted support from the Park staff in July, 1987, to test additional Baxter waters.

Chemistry of Baxter State Park Waters

The Baxter surface waters are generally very clear waters draining bedrock and soils known to poorly buffer inputs of acids. As a group, the lakes and streams are very near acid neutrality, meaning that both acidity in rain and naturally-produced acids have been neutralized. The only known exceptions are two small special interest ponds on Katahdin: Pamola Pond and Cathedral Pond are very small (about 1 acre and 1/4 acre, respectively). Pamola Pond has a pH of 4.9, although probably due more to natural organic acids than acid rain, and Cathedral Pond has a pH of 5.7 (an acidic lake is generally considered to have a pH less than 5). These values can be put into perspective with the following information: pH 7 is neutral; the lowest pH clearwater lake known in Maine is 4.5; some bog waters in Maine have pH less than 4, and rain has a pH of about 4.4 in southern Maine to 4.6 in northern Maine. The average pH for Maine lakes is 7.2. A complete list for the Baxter waters sampled in summer, 1987 is included in Table 1.

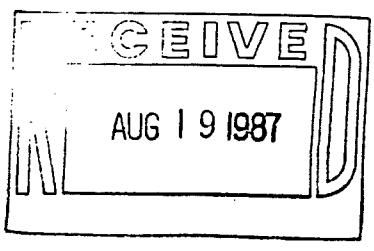


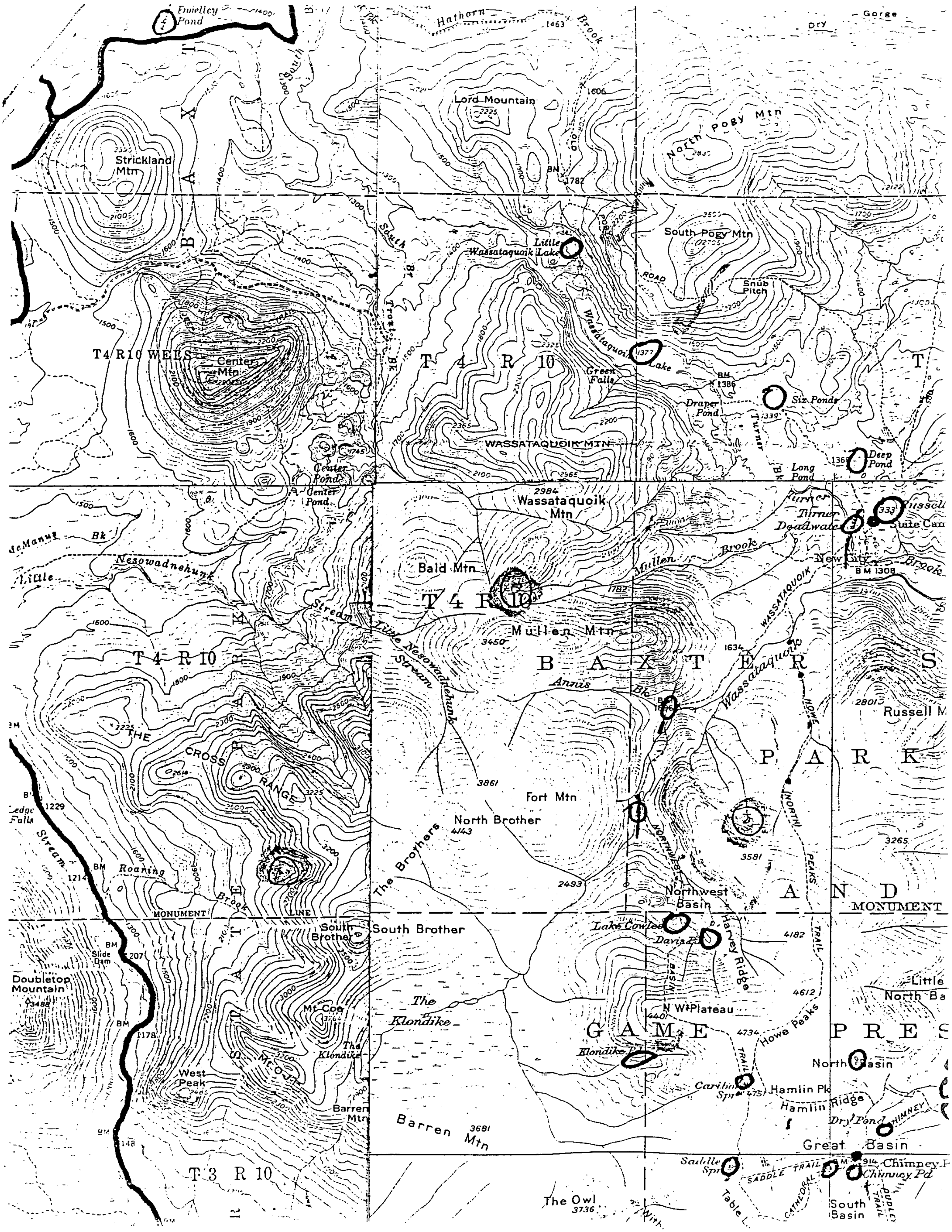
TABLE 1. MAJOR LAKES AND STREAMS IN BAXTER STATE PARK

pH of waters sampled in Summer, 1987

(pH 7 is neutral; pH values less than 7 are acidic; greater than 7 are basic or alkaline. Rain in north-central Maine has a pH of about 4.6).

Lake	pH
Chimney Pond	6.5
South Basin Pond	6.8
North Basin Pond	6.9
Depot Pond	6.5
Klondike Pond	6.7
Davis Pond	6.7
Lake Cowles	6.3
Sandy Stream Pond	7.2
South Whidden Pond	6.1
Russell Pond	7.0
Deep Pond	7.0
Wassataquoik Lake	7.2
Little Wassataquoik Lake	7.2
Pogy Pond	6.7
Upper South Branch Pond	7.3
Lower South Branch Pond	7.2
Daicey Pond	7.1
Kidney Pond	7.2
Abol Pond	7.4

Stream	pH
Katahdin Stream	7.1
Abol Stream	7.4
Roaring Brook	6.9
Pamola Brook	6.2
Avalanche Brook	7.5
Rum Brook	7.3
Trout Brook	7.6
Wassataquoik Stream	6.9



Hathorn
Brook
Lord Mountain
North Pogy Mtn
Strickland Mtn
South Pogy Mtn
Little Wassataquoik Lake
Snub Pitch
T4 R10 WELS
Center Mtn
T 4 R 10
Wassataquoik Lake
Green Falls
Draper Pond
Six Ponds
WASSATAQUOIK MTN
Deep Pond
Long Pond
Center Pond
Wassataquoik Mtn
Turner Deadwater
McManus Bk
Nesowadnehunk
Little
Bald Mtn
Mullen Brook
New City
WASSATAQUOIK
Mullen Mtn
Little Nesowadnehunk Stream
T 4 R 10
B A X T E R S
Annis Bk
Wassataquoik
Russell M
THE CROSS RANGE
P A R K
Fort Mtn
North Brother
The Brothers
Ledge Falls
Stream
Roaring Brook
Northwest Basin
A N D
MONUMENT LINE
MONUMENT
South Brother
Lake Cowles
Davis Pd
Harvey Ridge
Doubletop Mountain
Slide Dam
The Klondike
Mt Coe
N W Plateau
G A M E
P R E S
Howe Peaks
North Basin
Klondike Pd
Caribou Spr
Hamlin Pk
Hamlin Ridge
West Peak
Barren Mtn
Barren Mtn
Dry Pond
Great Basin
Saddle Spr
SADDLE TRAIL
Chimney Pd
T 3 R 10
The Owl
Table L
CATHEDRAL
South Basin