Report to Monhegan Associates and Offices of the Plantation of Monhegan on the Status of Woodlands on Monhegan Island

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OVERVIEW

Several trips to Monhegan Island were made in 1986 by Maine Forest Service staff to evaluate the condition of the forested area, and were charged with submission of a report to address any problems found. Mrs. Gladys Russell reviewed common insect and disease problems encountered, Douglas Stark addressed the dwarf mistletoe problem, Jack Dirkman the soils problem, George Bourassa the fire hazard problem, and Vladek Kolman the forest management aspect. A preliminary report listing several management options addressing problems noted was submitted to Monhegan Associates following these visits (see Preliminary Report - 1986, by Stark and Kolman).

On June 24 and 25, Stark and Kolman again visited the island, and had a opportunity to walk many of the trails not traveled on the one-day trips of 1986. The following is a brief account of the forest types and sub-types encountered in these most recent walks (see enclosed map):

I. **Southern Sector** (White Spruce Type and sub-types)

a. Immediate Shoreline Strip - This sub-type extends from the height of land to the ocean, and is characterized by good soil and good water drainage. The white spruce in this narrow, coastal band is infected with dwarf mistletoe, but trees are surviving and mistletoe-caused mortality is minimal. Stocking is heavy, causing early lower branch natural mortality. This perhaps is somewhat responsible for the decreased impact by the mistletoe.

b. Height-of-Land Toward Island Center - This site is primarily wet, almost swampy. Stocking of white spruce is sparse, trees retain live branches to the ground, thus increasing chances for re-infestation by dwarf mistletoe. Trees contain high numbers of "brooms," and tree mortality is high. Reinfestation of white spruce regeneration is high, so a high level of mortality in the white spruce type is expected to continue. In the heaviest areas of tree mortality, hardwoods are coming in; shrubs and low quality hardwoods are reclaiming the sites.

c. "Island" Subtype - Within the subtype described in "b" above are a few "islands" of good spruce located on deeper soils and better drained sites. In these areas, stocking is high. Trees retain green crowns only in the upper portions of the bole, so there is little infestation by dwarf mistletoe on these "islands."

II. Northern Sector

a. Red Spruce Type - The central part of the island is a red spruce stand approximately 80-90 years old. Some mortality and dieback is occurring, but of natural causes, augmented by a root rot fungi; e.g. the velvet top conk, Polyporus schweinitzii. Regeneration of red spruce is excellent and occurs naturally wherever openings are produced from blowdowns or natural tree mortality. Regeneration in this type is around 98% red spruce.

b. Mixed Type - This type is on the high, upland site in the Pebble Beach area. Stand composition is mixed: red spruce, white spruce and balsam fir. This site has extremely shallow soils, suffers from drought and possible (but not proven) acid deposition. The red spruce is beginning to die back from the tops. The balsam woolly aphid is attacking the upper crowns of the balsam fir, causing a loss of apical dominance, and a flattening of the upper crown. Attack by this insect also causes a brashness of wood; thus, entire tops break off during ice storms or heavy, wet snow accumulations. This loss of tree tops limit production of cones, thus lessening the chance of natural reseeding.

The white spruce is heavily infected with dwarf mistletoe, and is in the process of dying out. Hardwoods and ground shrubs; e.g., juniper, appear to be the succession species on this site.

c. West Shore Subtype- The westerly shore of the north section supports white spruce stands on deeper soils. These stands, similar to those in the South Section, are resisting the effects of dwarf mistletoe. Where mortality had occurred, hardwoods are reclaiming the site.

d. North and East Slope Subtype - The height-of-land to the cliffs supports mixed stands of white spruce, quaking aspen, white birch, mountain maple, and moosewood. This area appears to be the result of past fires which consumed several acres, primarily north from Blackhead. Mistletoe is present, but because of the mixed species and strength of the young white spruce, mistletoe-caused mortality is not high.

e. Central Portion Subtype - The central portion of the north section is occupied by two swamps which support mostly red maple, alder, and a variety of shrubs and wetland plants in the understory. Both of these swamps will retain their character, as they serve as a natural water reservoir, collecting most of the precipitation from snow, rain and fog which falls on the island. Seasonal or semi-seasonal water courses originate in these swamps.

MANAGEMENT OPTIONS/SUGGESTIONS

Fire Control

1. Locate seven portable pump stations as indicated on the enclosed map. Create deep holes by digging or blasting to allow for a minimum of sedimentation being sucked through the pumps.

2. Purchase two or three light, portable pumps. Have a collapsible, canvas water tank and 500 to 600 feet of one-inch hose for each pump. Conduct periodic maintenance checks of equipment, and training programs to allow for several persons to know how to properly run the equipment over extended periods of use.

3. Purchase a 4-wheel/ATV (plus trailer) to haul fire fighting equipment (portable pumps, hoses, collapsible water tanks) into areas not accessible with the fire truck.

4. Gradually remove mistletoe-infected white spruce from the proximity of residences, public buildings and the immediate vicinity of trails. Start with removal of dead trees, progressing to removal of diseased, green, trees. Lightly broomed trees can be sanitized (except during late September - mid-October when mistletoe seeds are being projected); however, this will be a continuing operation in future years. Substitution of mistletoe-resistant species in these areas will minimize fire danger.

5. When the Governor proclaims woods closure (because of extreme drought, as in 1947), there should be no hikers in the woods. This is the law. Placement of fire danger rating poster boards may assist in public recognition of the fire danger.

6. Red spruce (dead) on the height-of-land should be felled because of the hazard from lightning strikes. This is also true for dead white spruce snags in the extensively killed areas in the Southern Sector; however, in areas where hardwoods and shrubs are already overtopping downed, dead trees, do not remove the dead trees. Allow the hardwoods to overtake the site.

   Also, remove dead trees which lean against live trees. These sometimes allow a ground fire to change into a dangerous crown fire by allowing flames to spread rapidly upwards.

Hiker Safety

Any pruning of branches done along trails should be performed in such a way as to eliminate branch stubs. Persons falling against projecting stubs could suffer abrasions, or worse. We live in a suit-oriented society, so this is a small, but not insignificant item.

Demonstration Areas

Create small, clearcut blocks in areas suffering from severe mistletoe infection to determine the reaction by wildlife, and to create a barrier to dwarf mistletoe reinfestation of white spruce. Plant these areas with red spruce, when available, or species naturally found in coastal areas; e.g., jack pine and pitch pine. Do not plant exotics. Plant the seedlings in as natural a way as is possible (not in rows) at a 5x5 or 6x6 foot spacing. Particularly when jack pine is planted, stick brush around the seedlings to prevent browsing by deer. Planting should be done in the spring, rather than in the fall, to obtain maximum seedling survival.

Spruce Management

Although red spruce is also susceptible to dwarf mistletoe attack, brooming response is much less, and less of the tree's vigor is therefore diverted to the broom. Stress by dwarf mistletoe is much less for red than for white spruce. In any management situations where cutting must be done in mixed stands of red and white spruce, discriminate against the white spruce.

Insect Problems

The balsam woolly aphid has been previously addressed. White spruce suffered from attack of the spruce bud moth, Zeiraphera ratzeburgiana. This damage appears as needle feeding on shoots-of-the year, and a persistent bud cap. The larvae of this small moth feeds under the bud cap as the shoots elongate, and webs in the bud cap so that it is not cast off.

Disease Problems

Dwarf mistletoe has continuously been referred to. Root rot was only seen in one instance and was previously mentioned. Exposed worn roots along trails are a good avenue of entrance for root rot fungus organisms.

Animal Problems

Deer browse on young spruce may, on occasion, be confused with dwarf mistletoe injury. Bark injury from scraping by bucks was noted in several areas.

Yellow-bellied sapsucker injury was especially common on apple and birch. Damage takes on a "cribbage board" appearance.

Trail Reclamation

Increased pedestrian traffic is beginning to show deterioration of the trails through the wooded area of the island. Soil is slowly eroding and the tree roots are showing injury by the feet of the people using the trails. Wherever possible, the trails should be reclaimed by the use of wood chips,

obtained from trees removed for sanitation purposes. Where the trails lead through excessively wet areas, trail should be reclaimed by elevating the walking surface on split logs, supported by two or three short crosspiles. On steeper slopes, ocassional slope interruptions should be made by placing sections of wood across the trail, thus shortening the slope and preventing the runoff of chips after heavy rains. Use of larger chips should be encouraged on the inclines as well. These do not wash away so easy.

Respectfully submitted,

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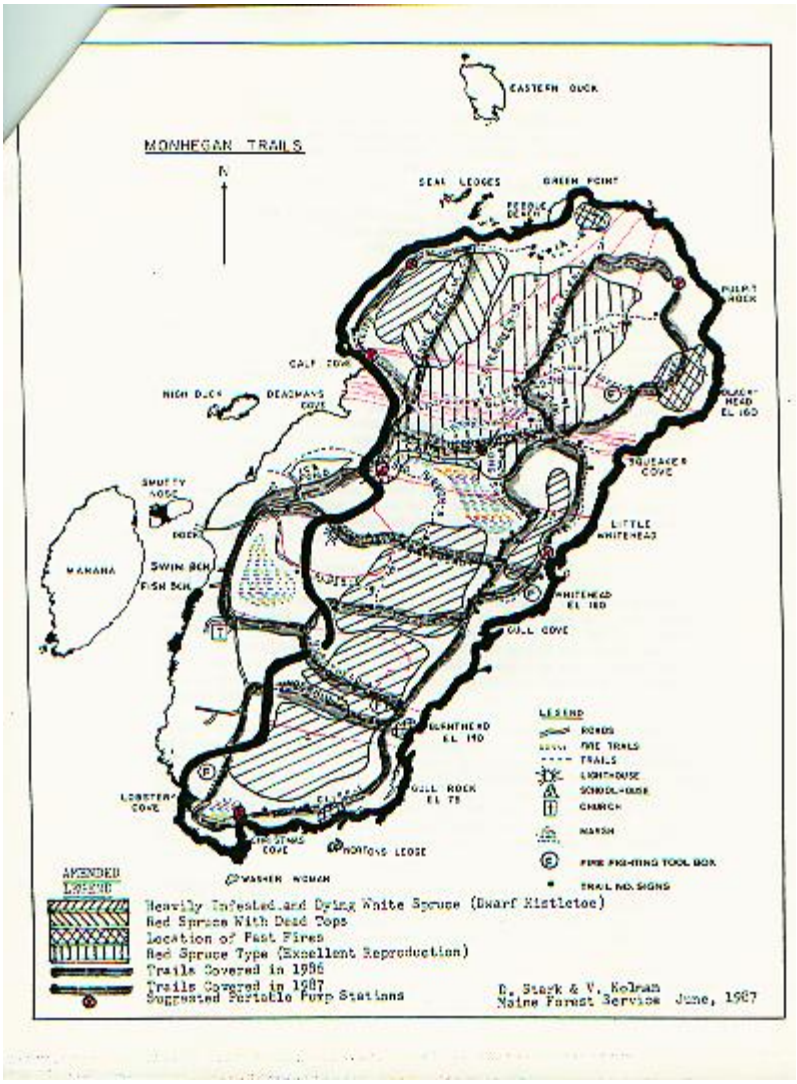
MONHEGAN TRAILS
N
EASTERN DUCK
SEAL LEDGES
GREEN POINT
PULPIT ROCK
CALF COVE
HIGH DECK
DEADMANS COVE
BLACK HEAD EL 160
SQUEAKER COVE
SMUTTY NOSE
ISLAND POND
MANANA
SWIN BOH
FISH BOH
LITTLE WHITEHEAD
WHITEHEAD EL 180
GULL COVE
LIGHTHEAD EL 140
LOBSTER COVE
GULL ROCK EL 78
FIRE STAND COVE
NORTONS LEDGE
WASHER WOMAN
LEGEND
ROADS
FIRE TRAILS
TRAILS
LIGHTHOUSE
SCHOOL-HOUSE
CHURCH
MARSH
FIRE FIGHTING TOOL BOX
TRAIL NO. SIGNS
AMENDED LEGEND
Heavily Infested and Dying White Spruce (Dwarf Mistletoe)
Red Spruce With Dead Tops
Location of Past Fires
Red Spruce Type (Excellent Reproduction)
Trails Covered in 1986
Trails Covered in 1987
Suggested Portable Pump Stations
D. Stark & V. Kolman
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