

OUTCOME-BASED FORESTRY AGREEMENT #2018-1

This agreement ("Agreement") by and between the **MAINE DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY, BUREAU OF PARKS AND LANDS**, (the "Participant") and the **MAINE DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY, MAINE FOREST SERVICE** (the "MFS") is entered into pursuant to 12 M.R.S. §8003(3)(Q) and in accordance with MFS Forest Policy and Management Division procedures.

Whereas, the Maine Legislature has defined outcome-based forestry as "a science-based, voluntary process to achieve agreed-upon economic, environmental and social outcomes in the State's forests, as an alternative to prescriptive regulation, demonstrating measurable progress towards achieving statewide sustainability goals and allowing landowners to use creativity and flexibility to achieve objectives, while providing for the conservation of public trust resources and the public values of forests;" 12 M.R.S. §8868(2-B); and

Whereas, in its 1999 State of the Forest report, the MFS stated that the state has "reached the limits of what a command and control regulatory framework has to offer [with respect to regulation of forest practices]. Command and control regulation has many limitations and may result in unintended consequences, such as forest fragmentation and premature harvesting to recover equity in a forest investment. The Maine Forest Service believes that the state should begin to focus more on outcome-based forestry regulation, on the premise that this approach will do more to promote, stimulate and reward excellent forest management yet still provide a baseline of regulatory protection for critical public resources;" and

Whereas, the Maine Legislature has endorsed outcome-based forestry and directed MFS to pursue outcome-based forestry agreements consistent with legislative direction; and,

Whereas, upon review of information supplied by and activities conducted on land of the Participant, the panel of technical experts advising MFS on outcome-based forestry finds that the Participant has demonstrated that its forest management practices are protecting public values for the long-term; and,

Whereas, outcome-based forestry is intended to be a long-term approach to ensuring the sustainable management of Maine's forests; and

Now therefore, the Participant and MFS agree as follows:

1. **Authority:** Pursuant to 12 M.R.S. Chapters 801 and 805, subchapter 3-A, the MFS has regulatory authority over the activities described herein.
2. **Partner to this Agreement:** The Participant is a landowner and involved in forest management in the state of Maine. The Participant's primary office is located in Augusta, Maine.
3. **Location:** The Participant manages approximately 600,000 forested acres in the state of Maine.
4. **Application of this Agreement; forest management plan:** This Agreement applies to all forest management activities on lands in Maine managed by the Participant (the

“Property”). The Bureau of Parks and Lands Integrated Resource Policy dated December 18, 2000, as amended March 7, 2007, and supporting unit management plans are incorporated in this Agreement by reference, as they will guide the Participant in its activities on the Property. The Participant’s Integrated Resource Policy outlines policies by which it will manage the Property and target harvest levels by species group. The Integrated Resource Policy and supporting unit management plans will be updated and revised from time to time at the discretion of the Participant’s Director to reflect substantive changes. The Participant’s “Areas of Emphasis” document is included in this agreement as Appendix 2.

5. **Interpretation of this Agreement:** In the context of this Agreement, the use of terms including, but not limited to, “maximize,” “minimize,” and “optimize,” and other similar terms are understood to mean that the Participant will take reasonable measures to achieve the specific outcomes identified.
6. **Panel of technical experts:** As required by 12 M.R.S. §8869(3-A); the Governor of Maine has established a panel of technical experts (the “Panel”) to work with the Director of the MFS to implement, monitor and assess the results of outcome-based forestry agreements. The makeup of the Panel may change from time to time at the discretion of the Governor of Maine. Present membership on the panel is:
 - A. Michael Dann, Forester;
 - B. Gary Donovan, Certified Wildlife Biologist;
 - C. Maxwell L. McCormack, Jr., Research Professor Emeritus of Forest Resources, University of Maine;
 - D. Charles Simpson, Eastern Regional Manager, Bureau of Parks and Lands;
 - E. David Struble, State Entomologist, Maine Forest Service; and,
 - F. Peter Triandafillou, VP Woodlands, Huber Resources.

Charles Simpson has recused himself from panel activities related to this Agreement to avoid the perception of a conflict of interest.

7. **Desired Outcomes of Outcome-based Forestry:**
 - A. Achievement of the state’s forest sustainability goals and outcomes for soil productivity; water quality, wetlands and riparian zones; timber supply and quality; aesthetic impacts of timber harvesting; biological diversity; public accountability; economic and social considerations; and forest health (see Appendix 1).
 - B. Optimize the timber volume that can be sustainably harvested to best match market conditions and balance sustainability and other management restrictions by relying on a variety of management techniques and silvicultural treatments.
 - C. Apply traditional and innovative forest management techniques that respect natural conditions without limiting management activities in adjacent stands.
 - D. Improve timber growth, sustain forest health, and reduce mortality through active forest management which maintains or improves regeneration success and

growth of desirable species and reduces the forest's susceptibility to disease, insect infestations, and damage caused by fire, wind, and other factors.

- E. Enhance the quality and value of the forest through effective implementation of forest management designed to increase growth rates and improve standing timber value.
- F. Maintain or improve wildlife habitat for species present on the Participant's timberlands.
- G. Provide opportunities to enhance economic development in the Participant's area of operations, consistent with the Participant's own economic success, including but not limited to direct and indirect employment, forest products sales, and recreational opportunities.
- H. Continued certification to the standards of a nationally recognized sustainable forest management certification program.

8. **Exemptions from certain requirements of 12 M.R.S. §8869 and §8883-B, MFS Chapter 20 Rule, Forest Regeneration and Clearcutting Standards, and MFS Chapter 26 Rule, Forest Operations Notification Standards:** Provided that the Participant satisfies the outcomes and the commitments set forth in Section 7 and Section 10, respectively, of this Agreement, the Participant is exempt from the following requirements of law and rule:
- A. Chapter 20 Rule Sections 4.A. and 5. The Participant will not create clearcuts larger than 250 acres without securing express written approval from the MFS.
 - B. 12 M.R.S. §8869 (2-A) and Chapter 20 Rule Sections 4.B.1 and 4.C.2. (clearcut separation zones).
 - C. 12 M.R.S. §8869 (3) and Chapter 20 Rule Section 4.C.1. (forest management plans for individual clearcuts larger than 20 acres).
 - D. 12 M.R.S. §8883-B (1) and Chapter 20 Rule, Section 4.C.1.d. and Chapter 26 Rule, Section 3.B. (prior notification, submission of harvest plans to the MFS for individual clearcuts larger than 75 acres).
9. **Modifications to certain requirements of 12 M.R.S. §8883-B and MFS Chapter 26 Rule, Forest Operations Notification Standards:** The Participant may operate subject to the following modifications of law and rule:
- A. Chapter 26 Rule, Section 3. The Participant must file one harvest notification per township harvested per two years. The Participant is not required to file harvest notification amendments with the MFS. However, the Participant is required to internally maintain adequate documentation of harvest activities by township to permit harvest inspections by the MFS and to facilitate the work of the panel.
10. **Participant commitments:** The Participant agrees to and commits to the following as good faith demonstrations of its commitment to practice forestry in a manner that provides at least the equivalent forest and environmental protection provided by existing rules and any applicable local regulations:

- A. The Participant will provide sufficient data to enable the panel to monitor progress toward achievement of the state's sustainability goals and outcomes (see Appendix 1).
- B. The Participant shall maintain certification status with a nationally recognized sustainable forest management certification program.
- C. A member(s) of the panel or a mutually agreeable designee(s) will be permitted to participate in any independent third party certification review of the Participant's forest management practices, if any, and to provide input to the independent third party on behalf of the panel.
- D. Per the understanding reached with the Legislature's Agriculture, Conservation and Forestry Committee during its deliberations on LD 1847, which was enacted as Public Law 2013, Chapter 542, An Act to Clarify Outcome-Based Forestry, the Participant will invite annually members of the Committee to review the Participant's operations and management in the field upon request of the Committee.
- E. The Participant will provide documentation of attainment of the desired outcomes described in Section 7 of this Agreement using the metrics outlined in Section F, below.
- F. The Participant will annually report to the MFS information about its harvest management and silvicultural metrics including, but not limited to:

STATUS/TREND METRICS

- 1. Acreage and changes in forest inventory by major species group: spruce-fir, cedar, hardwood, poplar, other softwood, and white pine.
- 2. Acreage of forest type by species group and development stage distribution (acres by development stage within each broad cover type class by management unit). Development stages to be reported are: regeneration, sapling, poletimber, and sawtimber.
- 3. Acres of currently designated clearcut separation zones, organized by management unit and timeout year.
- 4. Acres and changes in silvicultural investments, including, but not limited to planting, precommercial thinning and competition control, organized by individual township.
- 5. Road density (Percent of acreage of ownership by management unit).

PLANNING METRICS

- 6. Estimated harvest acreage summarized for the coming five-year period by silvicultural prescription, for example: overstory removal, commercial thinning, shelterwood, clearcut, seed tree, and selection.
- 7. A specific annual harvesting plan that describes the planned harvest acreage for the upcoming year in each township, by prescription, with clearcuts exceeding 250 acres individually mapped, identified, and approved by the Panel. The harvesting plan must be keyed to forest type maps.

ACCOMPLISHMENT METRICS

8. Annual harvest summary for the previous year, provided within 60 days of year end, specifically:
 - a. summary of the area harvested by prescription (actual versus planned);
 - b. total volume harvested by species group; and
 - c. average overstory removal and clearcut harvest sizes.

Harvest outcomes must be keyed to forest type maps. Information will be made available for sites visited by the Panel. The Participant will continue to provide information on acres harvested by harvest type, by township, as required on the "Confidential Report of Timber Harvest." Harvest summary should also be compared to predicted growth for the period.

9. Annual regeneration report for clearcuts:
 - a. acres planted by species and site class; and,
 - b. acres closed out as naturally regenerated.

Regeneration report must be organized by individual township. Where available, information will be provided for sites where the Panel conducts field verifications.

- G. The Participant must provide a copy or copies of its policies addressing wildlife habitat features including, but not limited to, smooth-barked beech trees and stands, late successional forest, snags, and vernal pools.
 - H. A Maine Licensed Forester in the employ of the Participant must review and approve the landowner's Forest Management Plan.
 - I. The Participant must document the presence of available working knowledge in specific silvicultural technologies that involve the use of pesticides.
 - J. Harvests will be laid out with consideration for aesthetics in areas of moderate and higher visual sensitivity as determined by the Participant. The Participant's forest management staff will be proficient in managing and receive periodic training for aesthetics.
 - K. The Participant will prepare an annual report regarding its efforts and any active management undertaken to maintain and protect important wildlife habitat.
 - L. The Participant will prepare an annual report on its efforts to support economic development in its area of operations.
 - M. The Participant will accommodate other reasonable requests for information made by the MFS and the Panel as mutually agreed upon.
11. **Reimbursement:** The Participant will pay for reasonable expenditures incurred by MFS and the panel that result from its participation in outcome-based forestry, including, but not limited to, mileage reimbursement, meals, and lodging.

12. **Duration of this Agreement:** This agreement takes effect on 01 June 2018 and terminates on 21 May 2023. It is renewable at any time by mutual, written agreement between the MFS and the Participant.

13. **Amendments; Entire Agreement:** This Agreement may be amended at any time by mutual, written consent of the parties. This agreement constitutes the entire agreement between or among the parties hereto with respect to the subject matter hereof, and supersedes all prior oral or written expressions, agreements or understandings with respect thereto.

14. **Termination of this agreement:** This Agreement may be terminated prior to the expiration of the term:

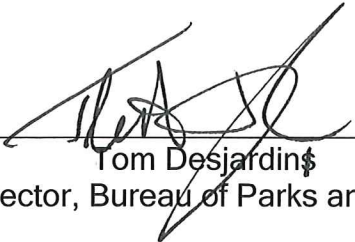
- A. By mutual agreement of the parties.
- B. By the Participant, effective upon at least ninety (90) days prior written notice to the MFS.
- C. By the MFS effective upon at least ninety (90) days prior written notice to the Participant in the event that the Participant has materially breached any provision of this agreement and has failed to cure such breach to the reasonable satisfaction of the MFS within such ninety (90) day period (or, in the event that such cure cannot reasonably be effectuated within such ninety (90) day period, such longer period as may reasonably be required, provided that the Participant continues to diligently pursue such cure.

The parties agree and acknowledge that the termination of this Agreement shall result only in the prospective loss to the Participant and the Property of the exemptions set forth in Section 8 hereof, and that any actions, omissions, conditions or circumstances arising or prevailing prior to such termination or expiration shall be covered by the exemptions provided pursuant to Section 8 hereof.

15. **Official Record:** This agreement shall not be effective nor become part of the official record unless and until it is signed by the Director of the Maine Forest Service.

(Signatures on next page)

IN WITNESS WHEREOF, the parties hereto have executed this Outcome-based Forestry Agreement consisting of 21 (twenty-one) pages, including Appendixes 1 and 2.
Department of Agriculture, Conservation and Forestry, Bureau of Parks and Lands

By:  _____ Date: 5/31/18
Tom Desjardins
Director, Bureau of Parks and Lands

Department of Agriculture, Conservation and Forestry, Maine Forest Service

By:  _____ Date: 5-31-2018
Douglas Denico
Director, Maine Forest Service

APPENDIX 1. State of Maine Criteria, Goals, and Outcomes of Forest Sustainability.

1. Criterion 1: Soil productivity
 - a. Goal: Maintain site productivity.
 - b. Outcome: Site productivity will be maintained or improved, and the area in roads and yards will be minimized.
2. Criterion 2: Water quality, wetlands and riparian zones
 - a. Goal: Maintain or improve the chemical, physical, and biological integrity of aquatic systems in forested areas and riparian forests.
 - b. Outcomes: Forest management in shoreland areas protects water quality and aquatic and riparian forest biodiversity.
3. Criterion 3: Timber supply and quality
 - a. Goal: Improve the quantity and quality of future timber supply when appropriate.
 - b. Outcome: The management strategy and harvest levels for the lands will increase the quality and quantity of the forest resource as appropriate in the medium and long term (20 - 50 years).
4. Criterion 4: Aesthetic impacts of timber harvesting
 - a. Goal: Minimize adverse visual impacts of timber harvesting.
 - b. Outcomes:
 1. The landowner will minimize visual impacts of harvests, roads, landings and other management activities.
 2. The landowner's planning staff is trained in and applies principles of visual quality management.
 3. The landowner identifies areas with high and moderate visual sensitivity, and takes appropriate measures to avoid significant visual impacts whenever necessary.

5. Criterion 5: Biological diversity

- a. Goal: Maintain biological diversity with healthy populations of native flora and fauna, forest communities and ecosystems.
- b. Outcomes:
 1. Management addresses the habitat needs of the full range of species present.
 2. Maintain or manage for acreage in the late successional (LS) condition through management and protection.
 3. Maintain a reasonable component of standing dead trees, live cull trees, and down logs across the landscape (not necessarily on every acre).
 4. High Conservation Value Forests are properly identified and values are protected on the ownership.
 5. Rare, threatened and endangered species habitats are properly identified, and the land is managed to protect the habitats and occurrences of rare, threatened and endangered species.
 6. Important plant communities are properly identified, and the land is managed to protect important plant communities.
 7. Deer wintering areas are properly identified and managed to maintain or improve their value as winter cover for deer.

6. Criterion 6: Public accountability

- a. Goal: Demonstrate sustainable forestry and build public confidence that forest management is protecting public values for the long-term.
- b. Outcomes:
 1. A Licensed Forester within the company will review and approve the landowner's Forest Management Plan.
 2. The landowner will employ Licensed Foresters who are actively involved in the management, planning and supervision of operations on the land.
 3. All timber harvesting contractors will employ at least one person possessing Certified Logging Professional or Qualified Logging Professional certifications or the equivalent.

7. Criterion 7: Economic considerations

- a. Goal: Optimize benefits to the local and regional economy while also achieving the goals specified for the other criteria, to the extent allowed by market conditions.
- b. Outcome: The landowner's management activities support as vibrant and diverse a forest products industry as is practicable, including loggers, truckers, and production facilities.

8. Criterion 8: Social considerations

- a. Goal: The landowner supports the communities surrounding their lands and operations, and except where special circumstances dictate otherwise, the landowner continues to provide historic and traditional recreational opportunities that do not conflict with the landowner's objectives or values.
- b. Outcome: The landowner provides opportunities for appropriate historic and traditional recreational uses that do not conflict with the landowner's values or objectives.

9. Criterion 9: Forest Health

- a. Goal: The forest is healthy and vigorous with no serious insect infestations or disease outbreaks.
- b. Outcome: The landowner does what is prudent and practicable to monitor for and prevent and control insects, disease, and fire, consistent with good practice in the industry and assists MFS in forest health monitoring programs on the ownership.

APPENDIX 2. Areas of emphasis for 2018 - 2023 OBF agreement

I. WEST REGION: Cold Stream Forest Unit

Background: BPL acquired the Cold Stream Forest in 2016 to preserve cold water fisheries habitat and to ensure effective management of a significant deer wintering area. In 2016, BPL signed a Memorandum of Understanding (MOU) with the Maine Department of Inland Fisheries and Wildlife (DIFW) to create a 3,221-acre Habitat Management Area (HMA) on the Cold Stream Forest Unit that will be managed for wintering deer.

The area within the HMA was intensively managed prior to acquisition and contains extensive areas of spruce-fir regeneration and young mixed-wood and hardwood stands. Preliminary field reconnaissance indicates the HMA currently contains few stands that meet the criteria for winter shelter. Potential treatments to enhance the progression of existing stands to quality shelter include aerial application of herbicide to control competing hardwood regeneration, pre-commercial thinning to stimulate growth of desirable softwood species, regeneration cuts (including clearcuts) to establish shelter species on softwood growing sites, and planting to improve species composition.

Desired Outcomes: Maintain or increase the spruce, fir, cedar, or hemlock component on softwood sites, maintain connectivity between quality shelter stands, and achieve effective replacement of quality shelter distributed throughout the HMA.

Methods: Managing this unit to achieve optimum levels of deer wintering shelter may require clearcuts to establish desirable shelter species on softwood growing sites. For example, the unit contains several red and jack pine plantations that do not currently provide adequate shelter for deer. These stands could be converted to shelter using a combination of clearcutting and planting of shelter species. A field inventory of the HMA will be completed during summer 2018 to identify stands currently comprised of winter shelter, as well as those that are candidates for management to accelerate the advancement of softwood. DIFW will develop a Shelter Management Plan by December 2018, which will identify locations of current shelter and desired future shelter. Management activities to promote the advancement of softwood shelter will commence as early as January 2019.

Benefit of OBF: Under FPA, clearcuts larger than 20 acres require considerable added administrative work. Operating under OBF would relieve BPL of this additional office and fieldwork required under the general FPA rules. In addition, BPL's Integrated Resource Policy requires that clearcuts larger than 20 acres be done only after gaining the written approval of the Bureau Director. Having such harvests done under OBF, with said approval part of the document, avoids another administrative hurdle.

Measuring Outcomes: Harvest areas should be visited semi-annually to track their progression to secondary and/or primary deer cover, with evidence of deer use also recorded using DIFW protocols. Permanent growth plots could be established along with some controls in areas not harvested.

II. WEST REGION: Seboomook Unit

Background: In 2014, BPL signed a MOU with the DIFW to create a Habitat Management Area (HMA) on the Seboomook Unit that will be managed for lynx and snowshoe hare. The MOU identifies a 22,046-acre area on the eastern side of the Seboomook Unit, where the objectives are to: 1) ensure no net loss of High Quality Hare Habitat (HQHH) through 2029 and 2) create the conditions necessary to produce HQHH on at least 6,200 acres by 2029. HQHH is defined as dense regenerating softwood stands with between 6,000 and 14,000 stems per acre that are between 15 and 35 feet in height. These stands typically allow snowshoe hare to reach high densities and provide optimal lynx foraging habitat.

The HMA currently contains 5,152 acres of HQHH, and 5,653 acres that do not currently meet the definition of HQHH, but have established regeneration with the potential to become HQHH by 2029 if managed appropriately. Of the acres currently in HQHH, 2,318 acres are comprised of stands that will likely exceed 35 feet in height by 2029, while 2,060 acres will likely remain HQHH through 2029 without further management, and 774 acres could remain HQHH through 2029 with appropriate management.

Meeting the goal of 6,200 acres of HQHH within the HMA by 2029 will require treating approximately 4,200 acres to release established softwood regeneration. Treatments to create HQHH will not occur within riparian zones or within areas designated as visual buffers. Within DWAs, BPL will work with DIFW to prioritize treatment in stands comprised of high-risk overstory trees that are no longer providing adequate cover for deer. Stands will be treated with either an Overstory Removal with Retention, or Irregular Shelterwood, depending on existing conditions. These treatments will follow BPL's standard forest management prescription guidelines:

Overstory Removal with Retention – Remove merchantable overstory while retaining a minimum of 10 ft²/acre of mature trees. Generally, retain large, longer lived trees that are short bodied with high live crown ratios. Favor trees such as den or cavity trees for wildlife. Even Aged Management.

Irregular Shelterwood – Application of three single-age shelterwood methods into one treatment. 1) Thinning 10-20% from below to capture high-risk trees across species and diameters with are unlikely to survive to the next entry. 2) Release of existing and establishment of new regeneration by expanding existing or creating new gaps in the crown, generally of ¼ acre or less. 3) Overstory removal with retention in areas where advance regeneration is adequate, while retaining a minimum of 10 ft²/acre of mature trees. Goal is to retain a continuous cover of trees while maintaining desirable growing stock and regeneration throughout the stand. Multi-Aged Management.

All harvests will seek to increase the softwood component within stands managed for HQHH. Where appropriate, treatments will occur during winter using directional felling to minimize damage to established regeneration.

Desired Outcome: Establish at least 6,200 acres of HQHH within the HMA portion of the

Seboomook Unit by 2029, with no net loss of HQHH throughout the duration of the program.

Methods: The number of acres treated to create HQHH each year will depend on markets for forest products and numerous operational considerations that must be assessed on an annual basis. However, it is anticipated that an average of approximately 1400 acres will be treated every four years. Approximately 337 acres were treated to create HQHH within the HMA in 2016-2017, with another 126 acres scheduled for Winter 2018. Approximately 1,200 additional acres are tentatively planned for harvest from 2018-2020, of which approximately 950 will become HQHH. Through 2020, harvests likely will all occur in the western portion of the HMA. Accessing the eastern portion of the HMA will require significant roadwork to allow transport of equipment and forest products. These plans are based on current market conditions for forest products, and are subject to change. Forecasting the timing of entry into specific stands is impractical beyond 2020.

Benefit of OBF: In some cases, established regeneration in areas harvested to create HQHH may not meet height requirements to be considered an overstory removal under FPA. Under FPA, clearcuts larger than 20 acres require considerable added administrative work. Operating under OBF would relieve BPL of this additional office/fieldwork required under the general FPA rules. In addition, BPL's Integrated Resource Policy requires that clearcuts larger than 20 acres be done only after gaining the written approval of the Bureau Director. Having such harvests done under OBF, with said approval part of the document, avoids another administrative hurdle.

Measuring Outcomes: Harvest areas should be visited semi-annually to track their progression to HQHH, with evidence of hare and lynx use also recorded. DIFW will continue to monitor snowshoe hare density and lynx occupancy on the Seboomook Unit using existing protocols.

III. NORTH REGION - Hardwood Seed-Tree Harvest and Mixed Wood Thinning

Background: Round Pond (The initial project)

Note: This section below applies specifically to the Round Pond Unit, but as noted below, could be applied on many acres of BPL forest.

This is a two-pronged strategy aimed at improving deer habitat on an important wintering-area township while managing for high value timber products. The tract has considerable acreage in younger stands with good fir and spruce content but overtopped by aspen and white birch. It also holds a smaller but significant area in northern hardwoods of modest quality, relatively near to those younger stands, and close to zoned deer wintering area with good cover. The plan seeks to accelerate the young stands' development into core winter cover while the current cover is still useful, by removing the taller hardwoods. At the same time, the harvest in hardwoods will provide abundant browse nearby to cover areas, and should increase the stocking of valuable species in the new stand, especially yellow birch.

Desired outcome: Replacing beech-dominated regeneration with a mix of yellow birch, sugar maple, beech and spruce.

Method: Seed-tree harvests in blocks of 20 to 50+ acres, leaving 10-25 square feet basal area of good quality yellow birch and sugar maple, and spruce, if windfirm.

Benefit of OBF: Under FPA, clearcuts larger than 20 acres require considerable added administrative work. Furthermore, it is a bit unclear whether the above method meets any of the acceptable reasons for larger clearcuts shown in the FPA rules, Chapter 20, section 5(C)(1)(b)(8), which might also require BPL to obtain a variance. Operating under OBF would relieve BPL of this additional office/fieldwork required under the general FPA rules, while permitting a practice that should increase future timber values and also provides near-term browse and edge for wildlife. In addition, BPL's Integrated Resource Policy requires that clearcuts larger than 20 acres be done only after gaining the written approval of the Bureau Director. Having such harvests done under OBF, with said approval part of the document, avoids another administrative hurdle.

The seed-tree practice will be accompanied by an initial commercial thinning in young mixed wood - aspen/birch above spruce/fir. This will accelerate the development of quality winter shelter for deer, often adjacent to important zoned deer wintering areas, while increasing growth on valuable timber species. This practice, per se, does not require the provisions of OBF, but is an integral part of the two-pronged strategy to provide value to both wildlife and timber. Where nearly pure aspen is found, patch cuts would regenerate this species and provide early successional habitat. Alder swales on which that species is beginning to lose the site to taller trees could have all woody stems felled, so that young alders would be established as woodcock habitat.

Benefits of these practices:

Seed tree harvests in Northern hardwoods: Ninety acres of seed tree harvests were conducted at Round Pond in 2012, and the outcome of this method, if successful, can then be applied to the many thousands of acres holding Northern hardwood stands degraded by decades of poor to non-existent markets for low-grade products. Repeated light harvests in these stands, taking only what was marketable, have lowered overall

quality and encouraged the regeneration of beech. The widespread impact of beech bark disease has further degraded these stands.

Thinning and patch cuts in younger mixed wood stands: Very little of the mixed wood operations and/or patch cuts have been possible at Round Pond, due to poor markets for the products thus harvested. However, markets change, and the BPL forest has tens of thousands of acres of similar stands, on which removal of intolerant hardwoods from above spruce and fir would encourage growth on higher value products while hastening the creation of winter shelter for deer and other animals. Patch cuts where aspen is very dominant will maintain a component of early successional habitat, which is less common on BPL lands than elsewhere. Felling of mature stands of alder would allow regeneration of that species, preventing such areas from becoming like the surrounding forest, and thus less attractive to woodcock.

Measuring Outcomes:

Semi-commercial thinning: Harvest areas should be visited annually to track their progression to secondary and/or primary deer cover, with evidence of deer use also recorded. Permanent growth plots could be established along with some controls in areas not thinned. These latter could be in areas where proximity to the Waterway make extensive harvests less practical.

Early successional habitat: At the same time the semi-commercial harvests are monitored, these hardwood/alder patch cuts could be visited to check on resprouting of desired species. Spring visits to check for potential woodcock use would also be useful.

Hardwood seed-tree harvests: An initial visit at harvest plus two years could evaluate several of the clearcuts for regeneration species and stocking. However, the success of yellow birch and sugar maple regeneration will not be fully apparent before year five or later, as trees grow up through the inevitable *Rubus*. Results from elsewhere give confidence that desirable regeneration will be present in sufficient numbers to produce a high value stand dominated with yellow birch and sugar maple, with some healthier appearing beech also retained to ensure mast production.

IV. LOW-DENSITY PINE MANAGEMENT

Background: EAST REGION: Tunk-Donnell Mixed Wood/Pine Stands

Dr. Robert Seymour, then of the University of Maine, has established a six-acre research plot to evaluate low density management of white pine for high quality sawtimber production. The hypothesis is that if white pine crop trees were managed under much wider spacing than conventional wisdom indicates, they should develop into large sawtimber trees much more quickly with greater economic return. This assumes these trees would be pruned to a height that would result in at least the first sawlog providing clear lumber for optimum value. It also assumes control of competing vegetation so trees are free to grow.

In 2007 and 2008, a commercial harvest on Compartments 50 and 51 of the Donnell Pond Unit was completed. One mixed wood area of about 50 acres was well stocked with white pine trees of varying diameters, the highest quality pines being 6-10" dbh and about 40 years old. A moderate thinning removed most hardwoods and some softwoods around potential pine crop trees. The site is well suited for pine. A quick survey of the stand in 2011 indicated a basal area of 130 sq.ft. per acre, with 80 sq.ft. of white pine, the remainder being some red pine, aspen, and other hardwoods.

The second thinning, done in 2012, covered about 40 acres and reduced basal area to less than 30 sq.ft. per acre, nearly all white pine (a few red pine, red oak, and red spruce) with an average dbh of 8.8". A year later, approximately 30 crop trees per acre were pruned to 17 feet, and a skidder-applied herbicide treatment was done during summer, 2015. There has been very little loss to windthrow following the two thinnings. The double thinnings, four years apart, may have helped in establishing greater windfirmness, though the initial treatment was done with no plans for an early subsequent entry. BPL's entry into the OBF program several years after that first thinning resulted in the second thinning being proposed and implemented. Another heavy thinning of a pine-rich multi-species stand was conducted on the Bradley Unit early in 2013 and had 40-50 crop trees per acre pruned later that year. When viewed in August of 2015, very little windthrow was noted. The fate of this single-thin treatment offers a useful comparison with the work done at Tunk-Donnell, both for growth and for windfirmness.

Desired outcomes: Production of rapidly grown white pine sawtimber containing a high proportion of clear, knot-free wood. Successful regeneration of white pine at the appropriate time.

Method: Heavy thinning in relatively young (generally 30-60 years old) pine stands or mixed species stands with a significant white pine component. This would be followed by pruning 30-50 trees per acre to a height of 17 feet, unless the crop trees had already self-pruned, and by vegetation management to remove any main crown stems competing with crop trees, and to allow pine to regenerate without being overtopped by other species.

Benefit of OBF:

One example of this done under OBF had a residual basal area of less than 30 sq.ft. per acre, and with little or no regeneration meeting guidelines, could not have qualified as overstory removal. The harvest thus created a clearcut of nearly 40 acres, a size at

which the administrative requirements under both FPA and the BPL Integrated Resource Policy become more burdensome.

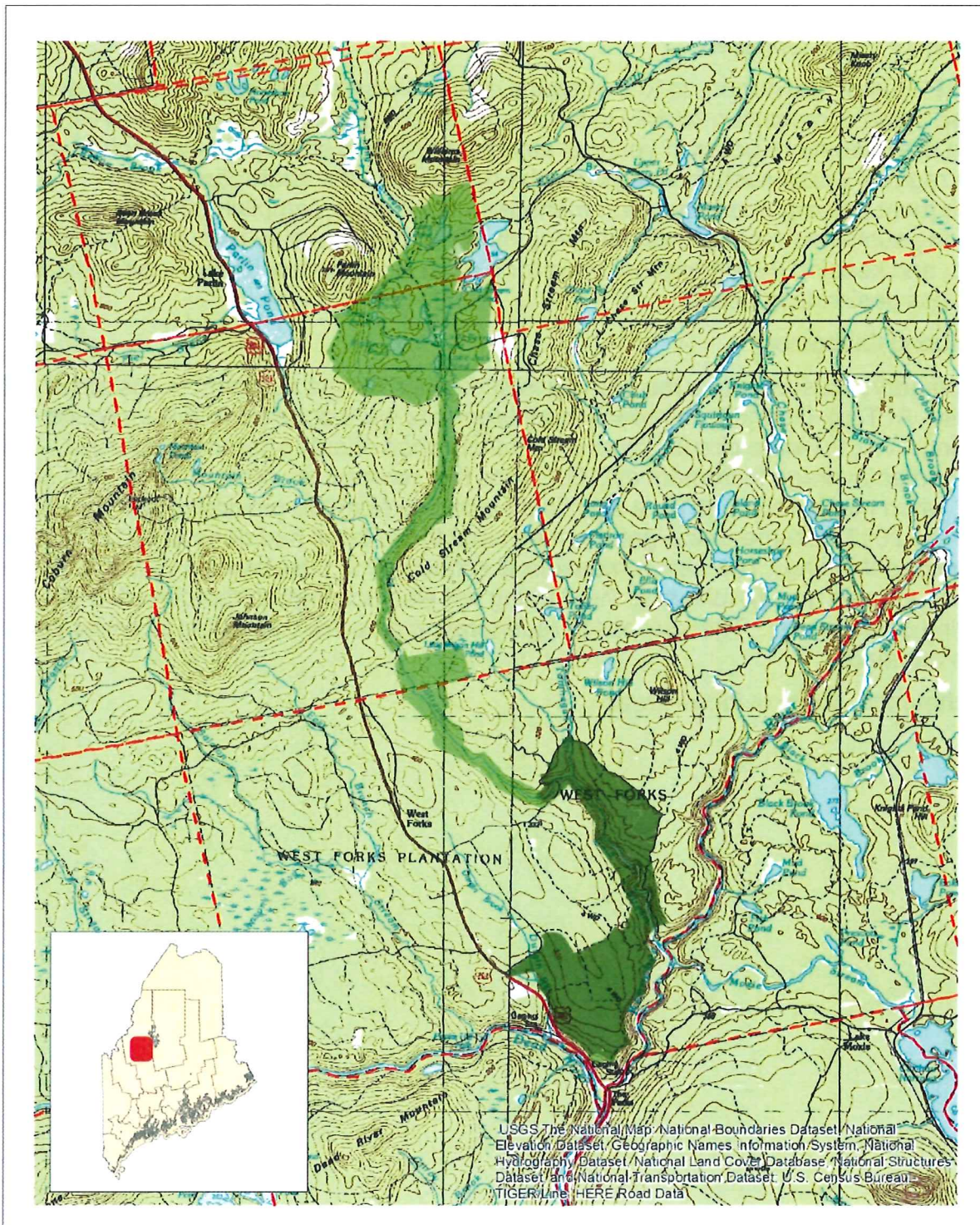
Benefits of these practices:

The BPL forest has hundreds to thousands of acres where previous thinnings have moved stand composition heavily in favor of white pine, mainly in the Eastern Region. There are even more acres of younger stands - sapling to small pole - in each of the three regions where such thinnings may be desirable in the near future. The subsequent pruning and vegetation management would accomplish three things: ensuring sustained rapid growth, allowing much of that growth to be high value clear wood, and keeping the understory open for pine to regenerate with reduced competition from less desirable species.

Measuring Outcomes:

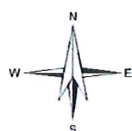
The primary measure, once the pruning is accomplished (as needed), is sustained rapid growth. At Tunk-Donnell, no growth measurements were done prior to the second thinning. Ten 0.1-acre circular plots were established shortly after that treatment. White pine had an average increment of 0.29" in the first remeasure, done in 2013, and of 0.40" when measured in 2014, a significant increase from the previous year. It's also likely the 2013 increment was greater than what those trees had done in 2012, before the second thinning. The next remeasure is scheduled at post-harvest year 7 in 1919. Sustained rapid growth following the pruning will also accomplish the objective of growing clear lumber. The success in regenerating pine will be evaluated some years down the road.

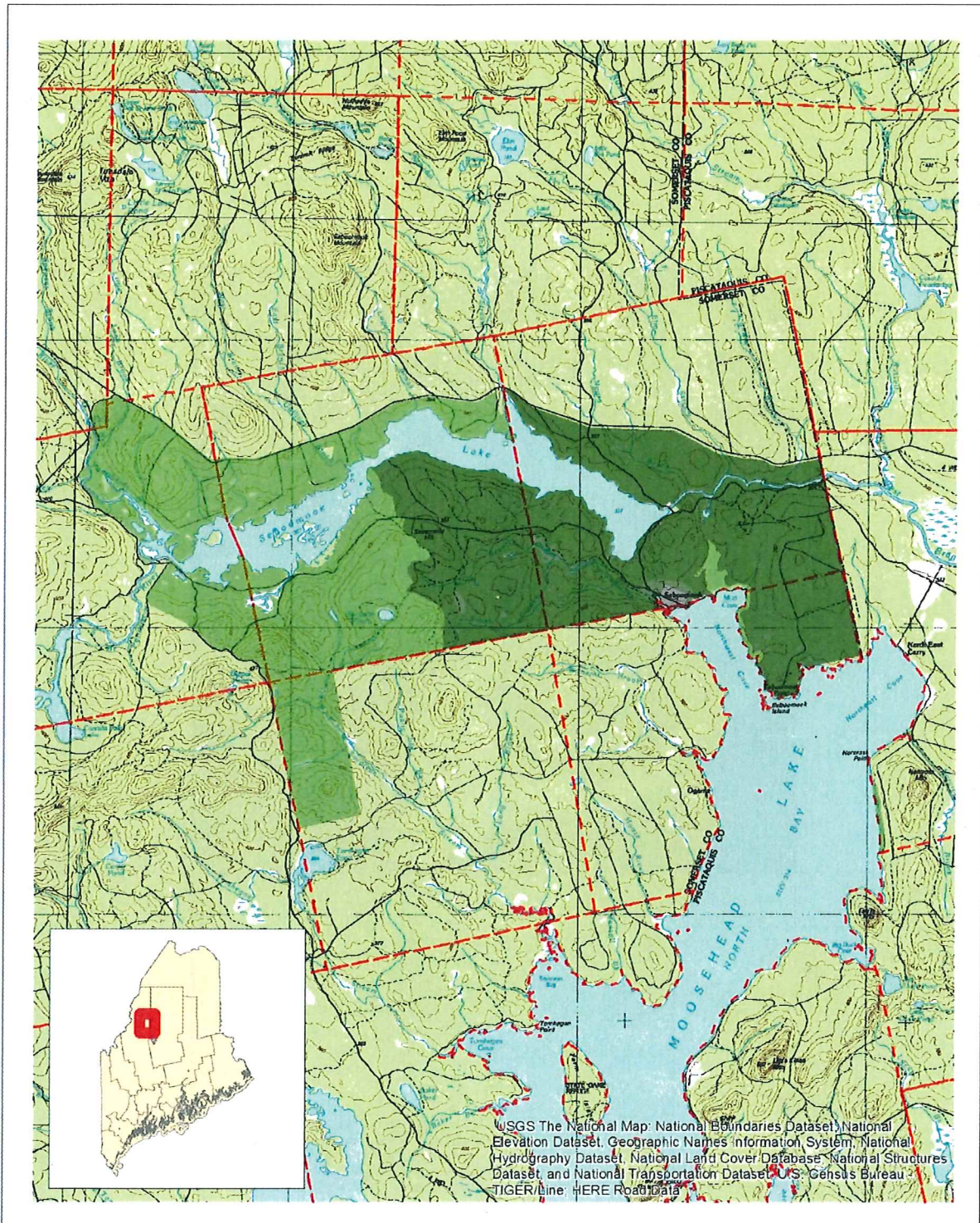
Attachments: Maps of focus areas





Legend

- Deer Wintering Area HMA
- Cold Stream Forest

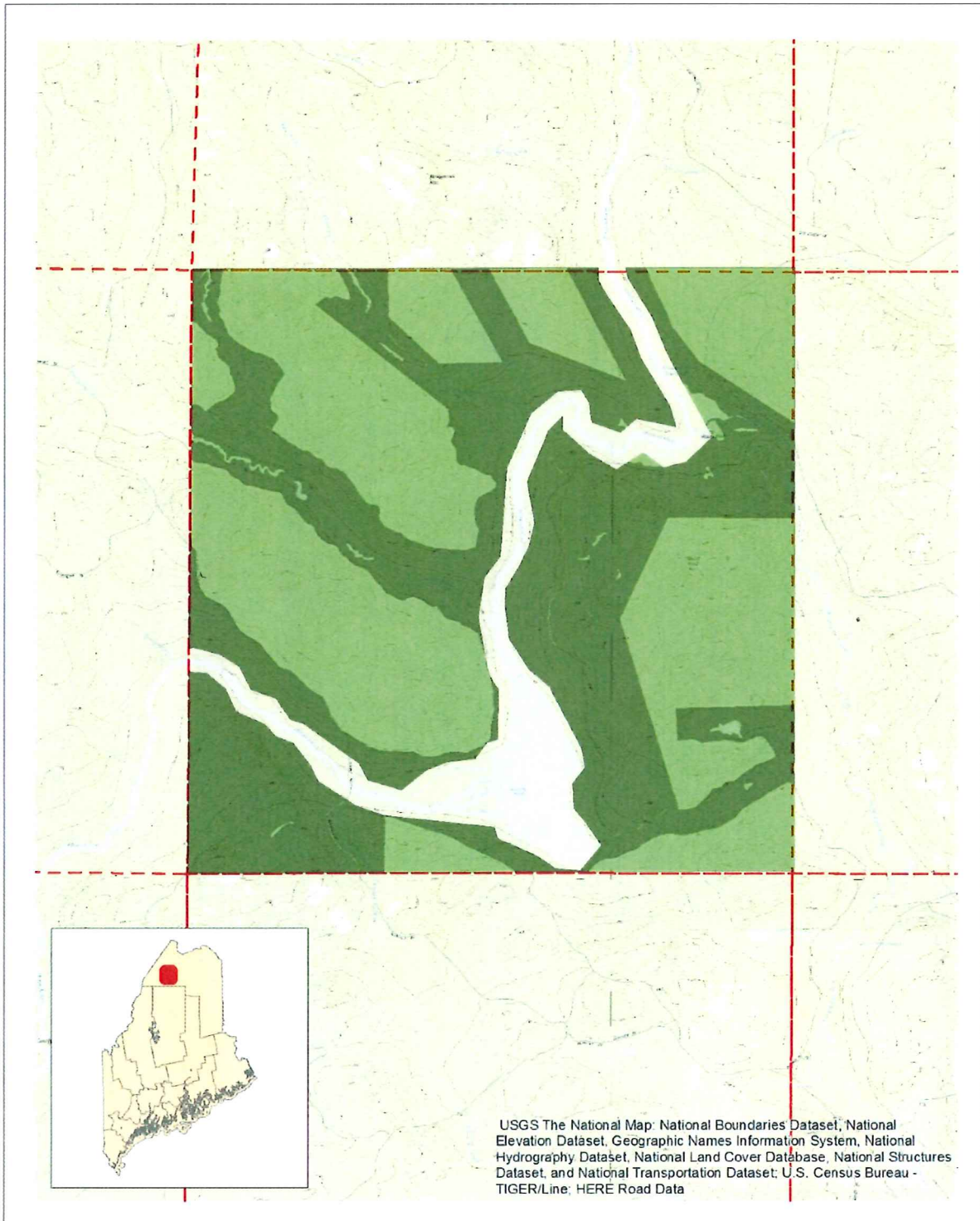




Legend

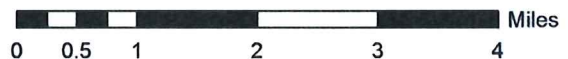
-  Lynx HMA
-  Seboomook Unit

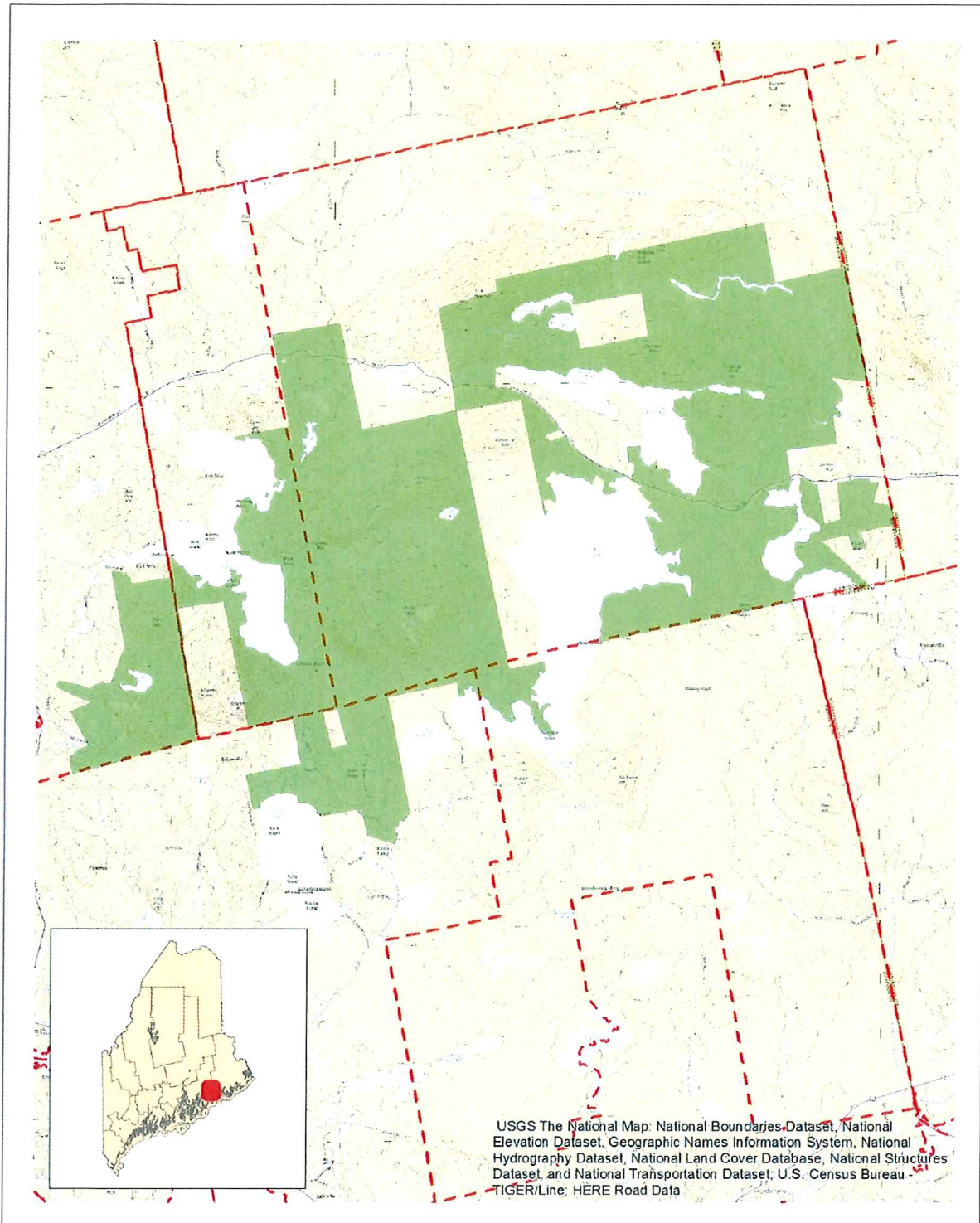




Legend

-  Deer Wintering Area HMA
-  Round Pond Unit






Legend

 Tunk Lake/Donnell Pond Unit



 Miles
0 0.5 1 2 3 4