

High Conservation Values in the Algoma Forest

An assessment of forest values and their conservation in the Algoma Sustainable Forestry Licence from a global, regional, and local perspective based on the Forest Stewardship Council's Principle 9



Version 8

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Update History

Version 1 of this document was prepared for Clergue Forest Management Inc. (CFMI) by Dave Euler, Birch Point Enterprises. This original document, prepared in 2004, was created to satisfy the Forest Stewardship Council's requirements for Principle 9. James S. Miller and Tim Reece of CFMI provided background information for this report.

Drafts of the report were reviewed by Al Cameron and Art Groot of the Canadian Forest Service in Sault Ste. Marie and Ministry of Natural Resources and Forestry staff including: LeeAnn Leduc, Celia Graham, Jay Nichols, Terry Taylor, and Ron Reffle. Del Parker and Robert Elliot, forestry consultants in Sault Ste. Marie, also provided input to the paper. An extensive review of the paper was provided by Kevin Cavanaugh and Tony Iacobelli of the World Wildlife Fund.

Version 2 was produced in April 2007 by James Miller with input from Tim Reece and Nathan Mudge of CFMI. Revisions made were to include changes to species at risk classifications since the first report was completed.

Version 3 was produced by Thomas Crowell of CFMI in May, 2008 to make the document more communicative (Observation 3/07) and incorporate new information into the assessment resulting in a change to the status of some HCVs on the Algoma Forest.

Version 4 was produced by Thomas Crowell of CFMI. Changes in species at risk and a re-structuring of the report to match the order of questions in Appendix E of the Great Lakes-St. Lawrence Standard was done in February 2010.

Version 5 was completed in August 2010 by Tim Reece at CFMI and examines the results of the assessment scores from 'Ontario Partners in Flight'. A minor alteration to improve document accessibility and an update of the maps was also done in this version of the report.

Version 6 includes changes made by Kandyd Szuba PhD, RPF, to reflect the species at risk listings of MNR, COSSARO, and COSEWIC up to January 7, 2015, new information on rare species occurrences in the Algoma Forest, and changes to the Forest Management Plan (FMP) for the Algoma Forest. Minor formatting changes completed by Will Byman of CFMI.

Version 7 was completed by Jason McLellan in June 2019. The document was made more accessible with updated formatting and editorial revisions. A gravesite was also identified as a new HCV.

Version 8 was completed by Jason McLellan in October 2020. The document was updated to reflect the 2020-2030 Algoma FMP.

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1.0 Introduction

The Forest Stewardship Council (FSC) introduced the concept of High Conservation Value Forests (HCVFs) in 1999 as part of its plan to develop a certification system that identifies well-managed forests. HCV Forests are described in Principle 9 of the 10 Principles that form the basis of the FSC approach to forest certification. The concept focuses on the environmental, social and /or cultural values that make a particular forest area of outstanding significance. The intent of Principle 9 is to manage those forests in order to maintain or enhance the identified High Conservation Values. By focusing on maintaining or enhancing the environmental or social values that make the forest significant, it is possible to make management decisions consistent with the protection of such values.

The FSC provides the following definition of HCVFs: High Conservation Value Forests are those forests that possess one or more of the following attributes:

- a) Forest areas containing globally, regionally, or nationally significant:
 - i. Concentrations of biodiversity values (e.g. endemism, endangered species refugia) and /or
 - ii. Large landscape level forest, contained within or containing the management unit, where viable populations of most (if not all) naturally occurring species exist in natural pattern of distribution and abundance.
- b) Forest areas that are in or contain rare, threatened, or endangered ecosystems
- c) Forest areas that provide basic services of nature in critical situations (e.g. watershed protection, erosion control)
- d) Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health) and/or critical to local communities' traditional cultural identity (areas of cultural, ecological, economic, or religious significance identified in cooperation with such local communities).

Principle 9 requires that management activities in HCVFs maintain and enhance the attributes, which defined such forests. Principle 9 contains four criteria:

- 9.1 requires an assessment to determine the presence of attributes consistent with HCVFs (as presented in the definition above);
- 9.2 is guidance to certifiers on the consultative portion of the certification process (does not normally require further interpretation, indicators or verifiers);

- 9.3 requires a precautionary level of management and activities that ensure the maintenance or enhancement of High Conservation Values;
- 9.4 requires monitoring the effectiveness of the management and activities implemented.

2.0 Purpose and Scope

The purpose of this report is to provide sufficient documentation to fulfill the Principle 9 requirements outlined in the “Certification Standard for the Great Lakes/St. Lawrence (1997)”. This report provides an assessment for the presence of High Conservation Value attributes on the Algoma Forest.

The Algoma Forest, as can be observed in Figure 1, is located in central Ontario at the junction of the boreal forest region to the north and the Great Lakes-St. Lawrence forest region to the south. These two forest regions meet along the shores of Lake Huron and Lake Superior and support a wide diversity of both plant and animal life within its boundaries. The picturesque scenery and abundant wildlife also serve as a magnet for thousands of visitors to enjoy many different recreational activities in the area. Therefore, from both a conservation of diversity point of view and a view towards maintaining forest products for the future, this forest is both complex and valuable.

Clergue Forest Management Inc. (CFMI), located in Sault Ste. Marie, Ontario, is the forest manager on the Crown portion of the Algoma Forest. The company has five shareholder wood processing mills that depend on this forest for a portion of their wood supply. Wood is also delivered from the forest to a variety of other mills in the region. Several thousand jobs, both directly and indirectly, are supported by these processing plants and the wood from the Algoma Forest.

The Algoma Forest is managed according to the programs and policies of the Ministry of Natural Resources and Forestry. The current 2020-2030 Algoma Forest Management Plan (FMP) was developed in accordance with the Forest Management Planning Manual for Ontario’s Crown Forests 2017.

Within the forest management planning process, guidelines are implemented to protect important values in the forest. These guidelines provide direction for ensuring that habitat for wildlife is provided, that the physical environment is not degraded by forest harvesting, and that the harvesting pattern on the landscape is modeled after the pattern created by natural disturbances such as fire and insects or diseases. A complete list of these guidelines can be found on the [Ministry of Natural Resources and Forestry's website](#). The purpose of these guidelines is to provide forest managers with direction to ensure forestry operations do not negatively impact forest values.

The values identified during the FSC certification process, as outlined in Principle 9 and in Appendix E of the FSC Great Lakes-St. Lawrence Standard may be the same values identified in a forest management plan. The scope of this report is to record all the values identified in the process outlined by the Great Lakes-St. Lawrence Standard and illustrate how the Algoma FMP takes these values into account.

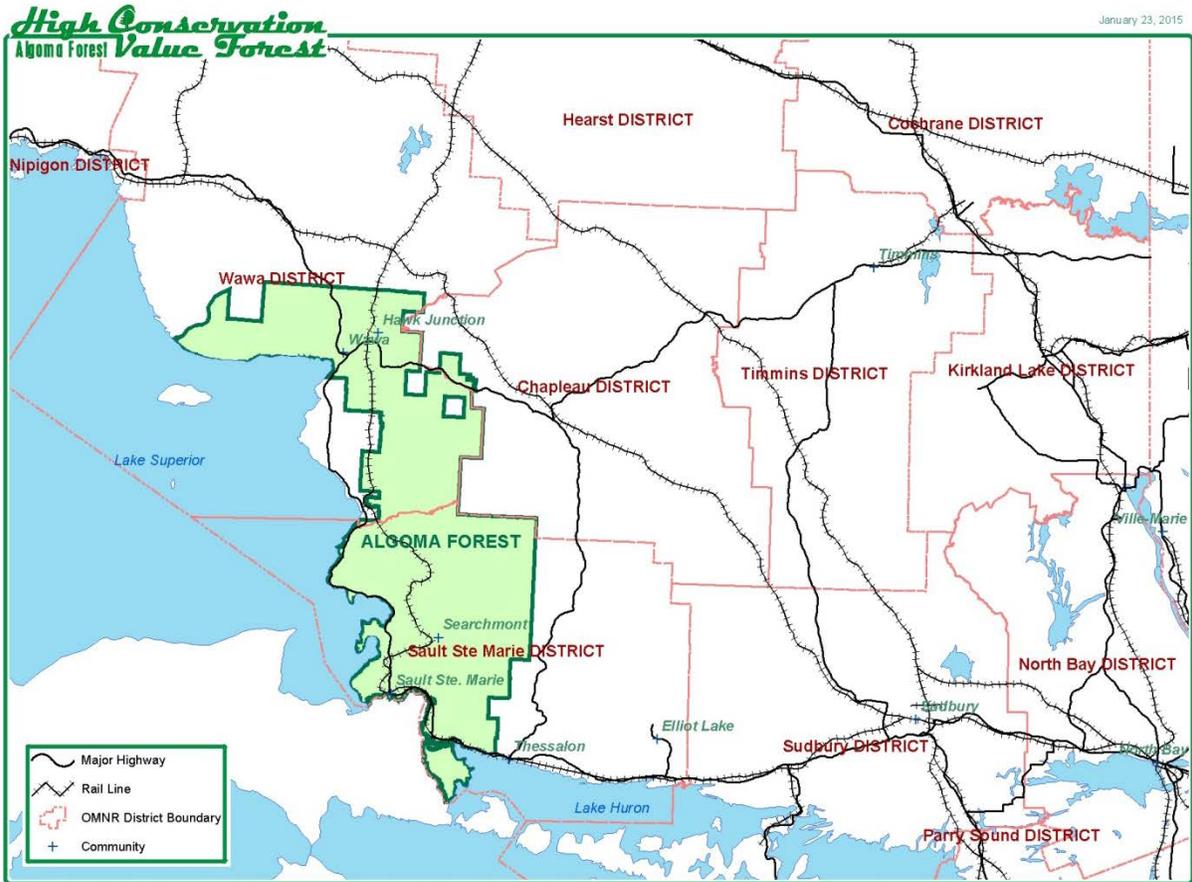


Figure 1: Geographic location of the Algoma Forest

3.0 Methods

The approach in this paper is to use the questions from the Great Lakes-St. Lawrence Standard developed by FSC Canada for the structure of the report. These questions are organized into 6 categories and 17 questions taken from Appendix E of the Great Lakes-St. Lawrence Standard (Field Tested Draft April 2007) and are listed as Appendix II of this report. These questions pertain to criteria 9.1 and 9.2 of Principle 9. Criteria 9.3 and 9.4, which cover management and monitoring, are discussed as separate items. Previous versions of the report were based on questions from Appendix 5 of the Boreal Standard for Canada. The questions posed in the two standards are essentially identical with the following exceptions: 1) the Boreal Standards for Canada includes two additional questions; and 2) the order of questions is structured slightly differently.

This paper presents an assessment of the presence of HCVF values and outlines the objectives and strategies that CFMI uses to maintain these values, as well as the monitoring program that is followed to ensure that the values are maintained.

3.1 Criteria 9.1

Criteria 9.1 requires an assessment to determine the presence of attributes consistent with HCVFs.

Based on the current Algoma FMP, sources listed in Appendix I of this report, and discussions with CFMI forest managers and local people, a number of species and ecosystems are considered for the possibility of having high conservation value. After reviewing the questions in Appendix E of the Great Lakes-St. Lawrence Standard, and the associated data, a decision must be made to place a species or ecosystem in one of three categories: HCV (High Conservation Value), Not HCV (Not High Conservation Value) or Possible HCV (Possible High Conservation Value). Clearly this decision is not a purely objective one and must be made with a measure of subjective judgment. The basic process, however, is open and can be reviewed and changed as necessary. As well, it must be remembered that the natural world changes often, and values that are considered HCV today, may not be HCV in the future, or new values may need to be labeled HCV as species or ecosystems change.

3.2 Criteria 9.2

Criteria 9.2 requires that the consultative portion of the certification process must place emphasis on the identified conservation attributes, and options for the maintenance thereof.

CFMI has provided an opportunity through an open consultative process to provide input into the identification of high conservation value forests and into the development of management objectives that protect those identified values. The management plan includes and implements specific measures that ensure the maintenance and/or enhancement of the conservation attributes consistent with the precautionary approach. This report and the associated documents are available to everyone as part of the background to the management plan.

3.3 Criteria 9.3

Criteria 9.3 requires a precautionary level of management and activities that ensure the maintenance or enhancement of high conservation values.

There are numerous interpretations of a precautionary approach. In general, they all describe an approach where a manager should demonstrate a low risk of negative impact from management activities when outcomes are not clearly understood. As HCVs are values that are deemed to be the “most important” and thus require the highest “duty of care”, the application of a precautionary approach is one way of helping to ensure that we maintain these values.

The FSC Principle 9 Advisory Panel defined a precautionary approach in the context of Principle 9 as *“planning, management activities and monitoring of the attributes that make a forest management unit a HCVF should be designed, based on existing scientific and Indigenous/traditional knowledge, to ensure that these attributes do not come under threat of significant reduction or loss of the attribute and that any threat of reduction or loss is detected long before the reduction becomes irreversible. Where a threat has been identified, early preventive acting, including halting any potentially detrimental action, should be taken to avoid or minimize such a threat despite lack of full scientific certainty as to causes and effects of the threat.”*

3.4 Criteria 9.4

Criteria 9.4 requires monitoring of the effectiveness of management and activities implemented by the forest manager.

This criteria requires that either the forest management company (in this case the sustainable forest license holder) or the responsible government agency, (in this case, the Ministry of Natural Resources and Forestry) establish a monitoring program that measures the status of the high conservation values on the forest area. The monitoring program must be capable of alerting the managers to changes in the status of a conservation attribute and determining if the conservation measures are effective in maintaining or restoring the conservation attribute. If the monitoring indicates an

increasing risk to specific conservation attribute, measures are taken to maintain or enhance that attribute, and adjust the management measures to reverse the trend.

4.0 Results

4.1 Criteria 9.1

In this section, the specific questions taken from Appendix E of the Forest Stewardship Council Great Lakes-St. Lawrence Standards for Canada are used to guide the process of identifying HCVF areas on the Algoma Forest.

Category 1) Globally, Regionally or Nationally Significant Concentrations of Biodiversity Values

Question 1) Does the forest contain concentrations of species at risk as listed by international, national, or provincial authorities?

Assessment Methodology:

This question is intended to identify critical habitat for rare (special concern), threatened or endangered species. Rare species were also assessed (*i.e.*, species ranked as provincially rare and identified as S1, S2, or S3, or globally rare and ranked as G1, G2, or G3 by NatureServe or the International Union for the Conservation of Nature). The purpose is to ensure that rare elements of biodiversity are maintained in the forest area and that forest management is able to protect the values they represent.

The approach used for the Algoma Forest assessment was to review all of the available lists and associated mapped occurrences, including data and lists available from the following sources:

- Natural Heritage Information Centre (NHIC; species lists, databases and mapping tools; see Sources in Appendix IV)
- IUCN Red List (see web site)
- NatureServe abundance rankings (see their web site)
- Committee on the Status of Endangered Wildlife in Canada (COSEWIC; see Sources in Appendix IV)
- Species at Risk in Ontario (SARO) list (see Sources in Appendix IV)
- Ministry of Natural Resources and Forestry databases used to develop the FMP for the Algoma Forest
- Northern Ontario Flora plant data base (NOF <http://northernontarioflora.ca>)
- Ontario Butterfly Atlas (see Sources in Appendix IV)

- Ontario Breeding Bird Atlas (see Sources in Appendix IV)
- Ontario Reptile and Amphibian Atlas (see Sources in Appendix IV)
- EBird web site containing bird checklists for the region (see Sources in Appendix IV)
- DFO (Dept. of Fisheries and Oceans) Aquatic Species at Risk web site
- Ontario Partners in Flight Landbird Conservation Plan for the Boreal Hardwood Transition (BCR 12)

Other sources were consulted as required, including recovery plans, management plans for species at risk, and other material (see Appendix IV).

Exclusions – The NHIC database downloaded from MNR's web site (Dec. 2014) included records for the entire province. The database was netted down by screening out all records that did not pertain to MNR's Sault Ste. Marie or Wawa districts.

Together, the above databases and web sites provided an enormous, up-to-date resource to assist in the assessment of species at risk that could be identified as high conservation values in the Algoma Forest. However, the databases accumulate records, and many records are historical. To provide greater certainty that species identified as HCVs had a reasonable likelihood of being present in the Algoma Forest today, we excluded NHIC occurrences that were recorded before 1990. We also excluded:

- species whose known occurrences did not fall within the managed portion of the Algoma Forest (*i.e.*, in the forests, wetlands, or associated waterways on Crown land within the boundaries of the Algoma Forest);
- species that were judged to be unlikely to occur in Algoma because of a lack of observations in the Algoma Forest or adjacent forests;
- species whose habitat preferences suggest there is a very low likelihood that they would be present on the managed, forest-dominated landscape (*i.e.*, extensive grasslands, coastal dunes, deep water within Lake Superior).

For example, a species known only from a single observation in 1944 within the boundaries of a provincial park would not be considered a candidate for HCV status under this question because the observation was too old to be a reliable reflection of current status, and the species was only known to occur within a provincial park (not on the managed landscape). A species known only from a recent occurrence on private land at the northern extreme of its geographic range near Sault Ste. Marie in the southernmost portion of the Algoma Forest would also be excluded. Appendices VII and VIII provide a detailed rationale for the inclusion and exclusion of individual species.

Results of the Assessment and Notes on Monitoring:

Table 1, Table 2, Table 3, and Table 4 below, and the section that follows on Partners in Flight provide the results of the assessment, including the management and monitoring in place for species identified as 7HCVs. There is a wide variety of other monitoring, in addition to the monitoring efforts identified in these tables, that helps to provide information on the status and occurrence of these species and the effectiveness of the prescriptions in place. Examples are the Ontario Breeding Bird Atlas, the annual Breeding Bird Survey, the Odonata Atlas, the Reptile and Amphibian Atlas. MNR also has a research group located at the Centre for Northern Forest Ecosystem Research in Thunder Bay that focuses on effectiveness monitoring of the official prescriptions for other values identified in MNR's Forest Management Guides (e.g., the Landscape Guide and the Stand and Site Guide). CFMI assists in these monitoring efforts by providing logistic support (information, maps) on request. In addition, CFMI holds annual start-up sessions for operators which cover aspects such as the identification of species at risk that could be encountered during operations, what to do if such species are encountered, and details on the implementation of forest management prescriptions.

Table 1 identifies the endangered species that are considered to be HCVs in the Algoma Forest. All species are known to occur in the forest or have a high probability of occurring there. Table 1 also includes the management and monitoring approaches in place for these species through the Algoma FMP.

Table 1: Endangered species identified as HCV on the Algoma Forest

Species	(i) Background for HCV Decision, and (ii) Management Prescription
<p>Wood turtle <i>Glyptemys insulpta</i></p>	<p>Wood turtle nest sites, hibernacula, and areas adjacent to these sites are designated HCV.</p> <p>(i) The Algoma Forest contains significant populations of wood turtles in association with the many streams that flow into the Great Lakes system. Wood turtles are active on land from May 1 to September 30 when they return to their stream habitat. Wood turtle populations are particularly susceptible to death and injury along forest access roads, to damage and destruction of their nesting sites through predation or forestry activities and to poaching. CFMI works closely with the Ministry of Natural Resources and Forestry to implement forest management practices that minimize the effect of forest operations on turtle populations. CFMI proactively informs forest workers of the importance of avoiding wood turtles on forest access roads, avoiding potential nesting sites and not removing turtles from their native habitat. Wood turtles over-winter in hibernacula and, unusual for turtles, the females may nest in communal nest sites, where several females from a considerable distance may lay their eggs. Preferred habitat is lowland hardwood forests and open wet meadows associated with moderate to fast current streams and rivers with sand or gravel substrates. (Smith 2002).</p> <p>(ii) An area of concern (AOC) prescription to direct forestry activities within the vicinity of wood turtle habitat has been developed for the 2020-2030 Algoma FMP in consultation with MNR staff and in consideration of MNR's forest management policy. It is presented in Table FMP-11 of the 2020-2030 Algoma FMP.</p> <p>Monitoring</p> <p>Monitoring is performed by CFMI, overlapping licensees and MNR to ensure that prescriptions are carried out as planned. MNR takes the lead in effectiveness monitoring.</p>

Species	(i) Background for HCV Decision, and (ii) Management Prescription
<p>Little brown myotis <i>Myotis lucifugus</i></p> <p>Northern myotis <i>Myotis septentrionalis</i></p> <p>Tri-coloured bat <i>Perimyotis subflavus</i></p>	<p>Known hibernation and roosting sites used by the little brown myotis, northern myotis, or tri-coloured bat are considered to be HCVs.</p> <p>(i) The following information was drawn from COSEWIC (2013¹). All three species of bat are widespread with a high probability of occurring across the Algoma Forest. The little brown myotis was common all across Ontario until recently. Its populations have suffered greatly from a pathogen accidentally introduced to North America that causes a disease known as white nose syndrome, a condition that has spread greatly among little brown bats across eastern North America since 2007 and has a high probability of killing little brown bats when they are in large numbers in their hibernacula in winter (COSEWIC 2013). Winter hibernacula can be old mines or natural caves.</p> <p>The northern myotis and tri-coloured bat are also widespread species but were never as common as the little brown myotis (COSEWIC 2013). They also have a high probability of occurring in the Algoma Forest, based on published range maps and COSEWIC (2013). White nose syndrome has also affected the northern myotis and tri-coloured bat, which also hibernate in mines and caves.</p> <p>Outside the hibernation period, little brown bats and tri-coloured bats forage along and over forest edges and over water bodies. The northern myotis tends to forage over gaps in the forest. All three species roost in cavities in trees, crevices in rocks, and other suitable sites (such as buildings for little brown myotis).</p> <p>(ii) An AOC prescription for operating within the vicinity of bat hibernacula has been developed for the 2020-2030 Algoma FMP. It is presented in Table FMP-11 of the 2020-2030 Algoma FMP.</p> <p>Monitoring</p> <p>Monitoring is performed by CFMI, overlapping licensees and MNR to ensure that prescriptions are carried out as planned. MNR takes the lead in effectiveness monitoring.</p>

Table 2 identifies the threatened species that are considered to be HCVs in the Algoma Forest. All species are known to occur in the Algoma Forest or have a high probability of occurring. Table 2 also includes the management and monitoring approaches in place for these species through the 2020-2030 Algoma FMP.

¹ COSEWIC 2013. COSEWIC assessment and status report on the little brown myotis, northern myotis and tri-coloured bat in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa.. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

Table 2: Threatened species identified as HCV on the Algoma Forest

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>Woodland caribou <i>Rangifer tarandus</i></p>	<p>Potential habitat for woodland caribou in the Algoma Forest is considered an HCVF.</p> <p>(i) The last known sighting of woodland caribou on the mainland of the Algoma Forest occurred in the mid 1990s. A stable population existed on Michipicoten Island but was heavily impacted by wolf predation. In 2018, surviving members of the Michipicoten Island population were relocated by MNR and Michipicoten First Nation to another nearby coastal island called Caribou Island. In spite of caribou’s extirpation from the mainland of the Algoma Forest, an objective has been included in the 2020-2030 Algoma FMP to mitigate degradation of former mainland habitat.</p> <p>(ii) MNR has developed a detailed plan for the recovery of woodland caribou populations in Ontario - the Caribou Conservation Plan (MNR 20082). A small portion of the Algoma Forest (see map below) falls within the Lake Superior Coastal Continuous Habitat Zone in this plan, a 10 km wide band radiating out from the shore of Lake Superior. Another portion of the Algoma Forest falls within the Discontinuous Caribou Habitat Zone in the CCP. The CCP does not currently provide explicit management direction for these zones; however, MNR provided direction for the development of an objective to mitigate degradation of former mainland habitat (Table FMP-10), as well as an AOC for the protection of caribou calving sites (Table FMP-11).</p> <p>Monitoring</p> <p>MNR is engaged in a comprehensive monitoring program to test the effectiveness of caribou habitat direction in Ontario (see MNR’s web site for details). CFMI will report on the fulfillment of the FMP objective related to caribou habitat as required by MNR’s annual reporting process.</p>

² MNR. 2008. Ontario’s woodland caribou conservation plan. MNR Species at Risk Branch Peterborough, Ontario.

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>Blanding's turtle <i>Emydoidea blandingii</i></p>	<p>Nest sites and hibernacula of the Blanding's turtle in the Algoma Forest and areas adjacent to these sites are designated as HCVs.</p> <p>(i) As noted in Appendix IV, this species is likely to occur in wetlands in the extreme southern portion of the forest, based on information in the Ontario Reptile and Amphibian Atlas. Permanent wetlands with open water and submerged vegetation provide habitat for these turtles year-round and seasonal wetlands are used for foraging (MNR 2010³). There are no mapped occurrences of Blanding's turtle on the Algoma Forest.</p> <p>(ii) The 2020-2030 Algoma FMP includes a detailed prescription for hibernacula and aquatic nesting sites of the Blanding's turtle that reflects direction in MNR's Stand and Site Guide (MNR 2010) and local knowledge. Briefly, the direction involves:</p> <ul style="list-style-type: none"> • delineation (by MNR) of suitable habitat with a high likelihood of use near known occurrences • timing restrictions on operations in and near suitable habitat during the period when turtles are active (May 1-Sept. 30) • other restrictions on operations during the period when turtles are nesting (June 1-30) • restrictions on road construction and use • a requirement to cease operations and contact MNR if Blanding's turtles are located during the course of normal operations <p>Prescriptions implemented in the 2020-2030 Algoma FMP to protect wetlands in general will also protect Blanding's turtle habitat (see Table FMP-11 and conditions on regular operations in the 2020-2030 Algoma FMP).</p> <p>Monitoring</p> <p>MNR undertakes effectiveness monitoring of the direction in the Stand and Site Guide (MNR 2010). CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately.</p>

³ MNR. 2010. Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales. Toronto: Queen's Printer for Ontario.

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>Barn swallow <i>Hirundo rustica</i></p>	<p>Nesting sites of the barn swallow in the Algoma Forest are considered to be HCVs.</p> <p>(i) As noted in Appendix IV, the Ontario Breeding Bird Atlas and eBird web sites suggest that the barn swallow has a high probability of occurrence in the Algoma Forest. The barn swallow builds a nest of mud, which might be placed under bridges and in buildings that are used in forestry operations.</p> <p>(ii) An AOC prescription for barn swallow nesting sites is presented in Table FMP-11 in the 2020-2030 Algoma FMP.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR takes the lead in effectiveness monitoring.</p>
<p>Bank swallow <i>Riparia</i></p>	<p>Nesting sites of the bank swallow in the Algoma Forest are considered to be HCVs.</p> <p>(i) The bank swallow is a colonially nesting bird that may use steep, natural riverbanks, or the steep sides of aggregate pits for its nesting burrows (MNR 2010). As noted in Appendix IV, the Ontario Breeding Bird Atlas and eBird web sites suggest there have been several occurrences of the bank swallow within the boundaries of the Algoma Forest.</p> <p>(ii) An AOC prescription for bank swallow nesting sites is presented in Table FMP-11 in the 2020-2030 Algoma FMP.</p> <p>An AOC prescription meant to protect rivers has been developed for the 2020-2030 Algoma FMP that will also provide protection for bank swallow habitat. It is presented in Table FMP-11.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR takes the lead in effectiveness monitoring.</p>

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>Lake sturgeon <i>Acipenser fulvescens</i></p>	<p>Aquatic habitat occupied by lake sturgeon in the Algoma Forest is considered to be an HCV.</p> <p>(i) As noted in Appendix IV, the lake sturgeon is known to occur in many waterways that fall within the boundaries of the Algoma Forest, based on records in the NHIC database and the map provided by the federal Department of Fisheries and Oceans. Sturgeon in this area fall within the Great Lakes-St. Lawrence-Upper St. Lawrence population defined by COSEWIC. The lake sturgeon is a long-lived, large, bottom dwelling fish that feeds over substrates of mud, sand, or gravel (COSEWIC 20074). They are usually are found at depths of 5-10 m and in areas where water velocity does not exceed 70 cm/sec. Spawning sites are usually are fast-flowing waters over hardpan clay, sand, gravel, rubble, cobble, or boulders. Young-of-the-year may rest on sand bars.</p> <p>(ii) There is no specific AOC prescription for lake sturgeon in the 2020-2030 Algoma FMP. However, the 2020-2030 Algoma FMP includes an AOC prescription for the protection of rivers and lakes, some of which could be inhabited by lake sturgeon. The prescriptions are based on a detailed review of available information, including effectiveness monitoring research, that is described in MNR's Stand and Site Guide.</p> <p>Monitoring</p> <p>MNR leads the process of effectiveness monitoring for water quality prescriptions. The Stand and Site Guide describes the evidence and rationale for these prescriptions. CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately.</p>

⁴ COSEWIC 2006. COSEWIC assessment and update status report on the lake sturgeon *Acipenser fulvescens* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 107 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>Eastern whip-poor-will <i>Caprimulgus vociferus</i></p>	<p>Nesting habitat of the eastern whip-poor-will is considered to be an HCVF in the Algoma Forest.</p> <p>(i) As noted in Appendix IV, several recent occurrences of the species have been recorded within the boundaries of the Algoma Forest in the EBird database, and several atlas squares were also recorded as occupied by the whip-poor-will during 2001-2005.</p> <p>The whip-poor-will nests in open forest and forages especially along regenerating forest edges (COSEWIC 20095). Common habitat choices include rock or sand barrens with scattered trees, savannahs, old burns, or other disturbed sites in a state of early to mid-forest succession, and open conifer plantations (COSEWIC 2009).</p> <p>(ii) An AOC prescription for eastern whip-poor will habitat has been developed for the 2020-2030 Algoma FMP. It is presented in Table FMP-11.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the FMP for the Algoma Forest to ensure they are applied appropriately. MNR takes the lead in effectiveness monitoring.</p>

Table 3 identifies the species of special concern that are considered to be HCVs in the Algoma Forest. All species are known to occur in the forest or have a high probability of occurring there. Table 3 also includes the management and monitoring approaches in place for these species through the forest management plan.

⁵ COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will *Caprimulgus vociferus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Table 3: Species of Special Concern identified as HCV on the Algoma Forest

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>Bald eagle <i>Haliaeetus leucocephalus</i></p>	<p>Nest sites used by the bald eagle in the Algoma Forest are designated HCVFs.</p> <p>(i) There are 12 to 14 known occupied bald eagle nests on the Algoma Forest. The bald eagle builds a large, bulky stick nest, usually in the lowest main fork of a large, super-canopy hardwood tree such as trembling aspen or well below the top of a super-canopy white pine, on the shore of a large, productive lake where fish are abundant (MNR 2010, Cadman et al. 2007).</p> <p>(ii) An AOC prescription for the bald eagle has been developed for the 2020-2030 Algoma FMP. It is presented in Table FMP-11.</p> <p>Monitoring</p> <p>MNR reviewed the effectiveness of AOC prescriptions for the bald eagle during development of the Stand and Site Guide (MNR 2010). Local MNR performs stick nest surveys to identify bald eagle nests in the Algoma Forest for each new forest management plan. CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately.</p>
<p>Black Tern <i>Chlidonias niger</i></p>	<p>Nesting sites of the black tern in the Algoma Forest are considered to be HCVs.</p> <p>(i) As noted in Appendix IV, the EBird and OBBA databases suggest there is at least one location on crown land to the east of Sault Ste. Marie where black terns were observed during the nesting season within recent years. The black tern nests and forages in marshes, preferring "hemi-marshes" that are half open water and half emergent vegetation (Cadman et al. 2007). Its nest is on a floating mat of vegetation (MNR 2010). The species nests in small colonies (Cadman et al. 2007).</p> <p>(ii) An AOC prescription for provincially significant wetlands has been developed for the 2020-2030 Algoma FMP. It is presented in Table FMP-11. Conditions on regular operations for non-forested wetlands (CRO-1) have also been developed for the 2020-2030 Algoma FMP that will help to protect black tern nests. It is presented in section 4.2.2.2 plan documentation.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR takes the lead in effectiveness monitoring.</p>

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>Canada warbler <i>Cardellina canadensis</i></p>	<p>Nesting sites known to be occupied by the Canada warbler are considered to be HCVs.</p> <p>(i) As noted in Appendix IV, the EBird and OBBA databases suggest that the Canada warbler has been observed during the nesting season at many locations on crown land in the Algoma Forest. The species nests on or near the ground in mature forest with a shrubby understory, often near water (Cadman et al. 2007).</p> <p>(ii) Conditions on regular operations for the nesting sites of SAR birds (including Canada warbler) have been developed for the 2020-2030 Algoma FMP (CRO-4). They are presented in section 4.2.2.2 of plan documentation.</p> <p>Population abundance of the Canada Warbler appears to be linked to cycles of the spruce budworm (Sleep et al. 2009⁶); insecticides are not used to control insect outbreaks in the Algoma Forest.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR takes the lead in effectiveness monitoring.</p>
<p>Common nighthawk <i>Chordeiles minor</i></p>	<p>Nesting sites known to be occupied by the common nighthawk are considered to be HCVs.</p> <p>(i) As noted in Appendix IV, several occurrences of the nighthawk within the Algoma Forest were recently recorded in the OBBA and EBird databases. This interesting songbird nests on the ground in forest openings created by clearcuts or burns, on rock outcrops, bogs, fens, and other sites and forages high overhead for insects (Cadman et al. 2007).</p> <p>(ii) Based on its habitat preferences (Cadman et al. 2007, see above), forest management that creates openings and young forest would benefit the nighthawk.</p> <p>Conditions on regular operations for the common nighthawk have been developed for the 2020-2030 Algoma FMP (CRO-04). They are presented in section 4.2.2.2 of plan documentation.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR takes the lead in effectiveness monitoring.</p>

⁶ Sleep, D., M. Drever, and K. Szuba. 2009. Potential role of spruce budworm in the range wide decline of the Canada Warbler. *Journal of Wildlife Management* 73(4):546-555.

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>Eastern wood-pewee <i>Contopus virens</i></p>	<p>Nesting sites known to be occupied by the eastern wood-pewee are considered to be HCVs.</p> <p>(i) As noted in Appendix IV, the OBBA database contains several records of the eastern wood-pewee in the Algoma Forest during the nesting season. The species nests in trees (usually on a small branch of a deciduous tree well out from the trunk) and prefers "deciduous or mixed woods" with forest openings and edges nearby (Cadman et al. 2007).</p> <p>(ii) Conditions on regular operations for the nesting sites of SAR birds (including eastern wood-pewee) have been developed for the 2020-2030 Algoma FMP (CRO-04). They are presented section 4.2.2.2 of plan documentation.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR takes the lead in effectiveness monitoring.</p>
<p>Evening grosbeak <i>Coccothraustes vespertinus</i></p>	<p>Nesting sites known to be occupied by the evening grosbeak are considered to be HCVs.</p> <p>(i) As noted in Appendix IV, iNaturalist identifies multiple observations of evening grosbeak in the Algoma Forest during the breeding season. The species is generally found in open, mature mixed-wood forests dominated by fir species, white spruce and/or trembling aspen. Its abundance is strongly linked to the cycle of its primary prey, the spruce budworm. Outside the breeding season, the species depends mostly on seed crops from tree species in the boreal forest such as firs and spruces.</p> <p>(ii) Conditions on regular operations for the nesting sites of SAR birds (including evening grosbeak) have been developed for the 2020-2030 Algoma FMP (CRO-04). They are presented section 4.2.2.2 of plan documentation.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR takes the lead in effectiveness monitoring.</p>

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>Olive-sided flycatcher <i>Contopus cooperi</i></p>	<p>Nesting sites known to be occupied by the olive-sided flycatcher are considered to be HCVs.</p> <p>(i) As noted in Appendix IV, several occurrences of the olive-sided flycatcher within the Algoma Forest were recently recorded in the OBBA and EBird databases. This songbird calls and hunts for flying insects from the top of a tall tree (usually a conifer) in a burn, cutover, bog, or riparian zone (Cadman et al. 2007). Preferred habitat is conifer forest types.</p> <p>(ii) Based on its habitat preferences (Cadman et al. 2007; see above), the olive-sided flycatcher probably benefits from forest management that creates openings in conifer forest and retains trees that could be used as perches.</p> <p>Conditions on regular operations for the olive-sided flycatcher have been developed for the 2020-2030 Algoma FMP (CRO-04). Conditions on regular operations that require retention of residual trees, protect non-forested wetlands, and protect hydrological flow have also been developed for the 2020-2030 Algoma FMP and contribute to the protection of olive-sided flycatcher habitat. Conditions on regular operations are presented in section 4.2.2.2 of plan documentation.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR takes the lead in effectiveness monitoring.</p>

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>Peregrine falcon <i>Falco peregrinus</i></p>	<p>Nest sites used by the peregrine falcon in the Algoma Forest are designated HCVFs.</p> <p>(i) The peregrine falcon is known to nest in the Algoma Forest. Nesting sites are typically high cliffs near water adjacent to open areas for hunting (Cadman et al. 2007⁷). This bird of prey hunts for birds over water and forests.</p> <p>(ii) An AOC prescription for peregrine falcon has been developed for the 2020-2030 Algoma FMP. It is presented in Table FMP-11.</p> <p>Monitoring</p> <p>MNR has conducted or supported an intensive monitoring program for the peregrine falcon for many years (Armstrong and Ratcliff 2010⁸). CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately.</p>
<p>Red-headed woodpecker <i>Melanerpes erythrocephalus</i></p>	<p>Mapped patches of suitable habitat used by breeding pairs are considered to be HCVs.</p> <p>(i) As noted in Appendix IV, red-headed woodpecker has been observed multiple times on iNaturalist in the areas of Echo Bay and St. Joseph Island. While present on the management unit, its observations primarily overlap with private land. Local populations may also be supported by beech-present forest on St. Joseph Island, which is not affected by Crown forest management.</p> <p>(ii) An AOC prescription for red-headed woodpecker has been developed for the 2020-2030 Algoma FMP (RHW). It is presented in Table FMP-11.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR takes the lead in effectiveness monitoring.</p>

⁷ Cadman, M., D. Sutherland, G. Beck, D. Lepage, and A. Couturier (editors). 2007. Atlas of the breeding birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto.

⁸ Armstrong, T. (E.R.) and B. Ratcliff. 2010. Ontario's recovering Peregrine Falcon population – Results of the 2005 survey. Ontario Birds 28(1): 32-42.

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>Rusty blackbird <i>Euphagus carolinus</i></p>	<p>Nesting sites known to be occupied by the rusty blackbird are considered to be HCVs.</p> <p>(i) As noted in Appendix IV, the rusty blackbird was observed in several OBBA squares in the Algoma Forest in 2001-2005 and was recently noted on several EBird checklists. This songbird nests in forested wetlands and swamps, and near beaver ponds, bogs, and fens (Cadman et al. 2007). It builds its nest in small trees or shrubs near water and will use regenerating cutovers (Cadman et al. 2007). The rusty blackbird forages for insects and other small invertebrates on the shore and in the shallow waters of the water bodies it nests beside.</p> <p>(ii) Based on its habitat preferences (Cadman et al. 2007; see above), the rusty blackbird no doubt benefits from forest management that creates young forest near the small ponds and lakes preferred by the species.</p> <p>An AOC prescriptions for water features (HPS, MPS, LPS) has been included in the 2020-2030 Algoma FMP. These AOC prescriptions help protect and support rusty blackbird habitat. They are presented in Table FMP-11.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR takes the lead in effectiveness monitoring.</p>
<p>Short-eared owl <i>Asio flammeus</i></p>	<p>Nesting habitat known to be occupied by the short-eared owl is considered to be an HCV.</p> <p>(i) As noted in Appendix IV, MNR SAR range maps suggest the short-eared owl does not occur in Algoma, but it was found in a few OBBA squares east of Sault Ste. Marie in 2001-2005, and was recently noted on several EBird checklists in the Algoma Forest. This owl nests on the ground in grasslands, wetlands (Cadman et al. 2007), and has also been observed to use young conifer forest (jack pine or spruce; K.S. personal observations).</p> <p>(ii) Conditions on regular operations that restrict operations in habitats used by short-eared owl (e.g.CRO-01) have been developed for the 2020-2030 Algoma FMP. They are presented in section 4.2.2.2 of plan documentation.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR takes the lead in effectiveness monitoring.</p>

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>Wood thrush <i>Hylocichla mustelina</i></p>	<p>Nesting sites known to be occupied by the wood thrush are considered to be HCVs.</p> <p>(i) As noted in Appendix IV, the wood thrush is known from several OBBA squares in the Algoma Forest, and sightings reported to EBird in the southern parts of the forest primarily on private land. The species has a beautiful flute-like song, builds its small but conspicuous nest in trees, and prefers to use mature deciduous and mixedwood forest with a thick understorey as nesting habitat (Cadman et al. 2007).</p> <p>(ii) Conditions on regular operations for the wood thrush have been developed for the 2020-2030 Algoma FMP (CRO-04). They are presented in section 4.2.2.2 of plan documentation.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR takes the lead in effectiveness monitoring.</p>
<p>Yellow rail <i>Coturnicops noveboracensis</i></p>	<p>Wetlands known to be occupied by the yellow rail are considered to be HCVs.</p> <p>(i) As noted in Appendix IV, MNR SAR range maps show no occurrences of the yellow rail in Algoma, but the species was observed in 2 OBBA squares north of St. Joseph Island in the southeast corner of the Forest and there are a few EBird records from the region within recent years. This inconspicuous bird nests and forages in sedge-dominated wetlands (Cadman et al. 2007).</p> <p>(ii) An AOC prescription for yellow rail has been developed for the 2020-2030 Algoma FMP (SARW). It is presented in Table FMP-11.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR takes the lead in effectiveness monitoring.</p>

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>Northern brook lamprey <i>Ichthyomyzon fossor</i></p>	<p>Habitat occupied by the northern brook lamprey is considered to be an HCV.</p> <p>(i) As noted in Appendix IV, MNR's SAR web site, the DFO Aquatic SAR web site, and NHIC databases suggest the northern brook lamprey could occur in streams that flow through Crown land in the Algoma Forest. This non-parasitic lamprey eats microorganisms, detritus and pollen in the creeks and small rivers which it inhabits (Scott and Crossman 1973⁹).</p> <p>(ii) An AOC prescription meant to protect water quality (HPS, MPS, LPS) has been developed for the 2020-2030 Algoma FMP. It is presented in Table FMP-11.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR leads the process of effectiveness monitoring for water quality prescriptions.</p>
<p>Silver lamprey <i>Ichthyomyzon unicuspis</i></p>	<p>Habitat occupied by the silver lamprey is considered to be an HCV.</p> <p>(i) As noted in Appendix IV, the DFO Aquatic SAR web site and NHIC database suggest that it is possible that the silver lamprey could occur in streams that flow through the managed portion of the Algoma Forest. This native, parasitic lamprey lives when young in burrows made in the soft sand and silt of streams where it eats microorganisms (COSEWIC 2011¹⁰). When it reaches adulthood, the lamprey inhabits lakes and parasitizes a wide variety of fish species (COSEWIC 2011).</p> <p>(ii) An AOC prescription meant to protect water quality (HPS, MPS, LPS) has been developed for the 2020-2030 Algoma FMP. It is presented in Table FMP-11.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR leads the process of effectiveness monitoring for water quality prescriptions.</p>

⁹ Scott, W. and E. Crossman. 1973. Freshwater fishes of Canada. Fisheries Research Board of Canada, Bulletin 184, DFO, Ottawa.

¹⁰ COSEWIC. 2011. Assessment and status report on the silver lamprey, Great Lakes-Upper St. Lawrence populations and Saskatchewan-Nelson Rivers population *Ichthyomyzon unicuspis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>Monarch butterfly <i>Danaus plexippus</i></p>	<p>Habitat occupied by the monarch butterfly is considered to be an HCV.</p> <p>(i) As noted in Appendix IV, there have been many records of the monarch butterfly in and around the Algoma Forest since 2001. This large, showy orange butterfly requires milkweed (<i>Asclepias</i>) plants (found on roadsides and in wetlands) for its larvae to feed on, but adults drink nectar from a wide variety of flowers, including goldenrods and asters (COSEWIC 2010¹¹), which are common on cutovers, burns, and roadsides.</p> <p>(ii) The monarch butterfly is more likely benefitted than harmed by forest management activities in the Algoma Forest. There is no doubt that forest management creates the open conditions suitable for wildflowers that adult monarchs feed upon. The building of forest access roads probably also creates suitable conditions for common milkweed plants.</p> <p>AOC prescriptions that protect wetlands and protect monarch butterfly habitat have been developed for the 2020-2030 Algoma FMP. They are presented in Table FMP-11.</p> <p>Conditions on regular operations that protect wetlands and protect monarch butterfly habitat have also been developed for the 2020-2030 Algoma FMP. They are presented in section 4.2.2.2 of plan documentation.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately.</p>

¹¹ COSEWIC. 2010. COSEWIC assessment and status report on the Monarch *Danaus plexippus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Species	(i) Background for HCV decision, and (ii) Management Prescription
<p>West Virginia white butterfly <i>Pieris virginiensis</i></p>	<p>Habitat occupied by the West Virginia white butterfly is considered to be an HCV.</p> <p>(i) As noted in Appendix IV, the West Virginia white butterfly is a butterfly of the forest interior that prefers mature tolerant hardwood forest (Burke 2013¹²). Sault Ste. Marie district MNR biologists have confirmed the presence of the West Virginia white butterfly on the Algoma Forest.</p> <p>(ii) An AOC prescription for the West Virginia white butterfly has been developed for the 2020-2030 Algoma FMP. It is presented in Table FMP-11.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR leads the process of effectiveness monitoring.</p>
<p>Yellow-banded bumble bee <i>Bombus terricola</i></p>	<p>Nest sites of yellow-banded bumble bee are considered to be HCVs.</p> <p>(i) As noted in Appendix IV, yellow-banded bumblebee has been observed multiple times on iNaturalist within the Algoma Forest. Nest sites are often underground in abandoned rodent burrows or decomposing logs and are therefore susceptible to damage if driven over with heavy machinery.</p> <p>(ii) An AOC prescription for red-headed woodpecker has been developed for the 2020-2030 Algoma FMP (RHW). It is presented in Table FMP-11.</p> <p>Monitoring</p> <p>Conditions on regular operations for the yellow-banded bumble bee have been developed for the 2020-2030 Algoma FMP (CRO-04). They are presented in section 4.2.2.2 of plan documentation.</p>

A detailed analysis of rare species (G1, G2, G3 or S1, S2, S3) that could occur in the Algoma Forest is presented in Appendix V. This resulted in two species being identified as HCVs (Table 4): oval-leaved bilberry and Braun's holly fern.

¹² Burke, P. 2013. Management Plan for the West Virginia White (*Pieris virginiensis*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.

Table 4: Rare species (not species-at-risk) identified as HCV on the Algoma Forest

Species	(i) Background for HCV Decision, and (ii) Management Prescription
<p>Oval-leaved or blue bilberry <i>Vaccinium ovalifolium</i></p> <p>G5/S2 ranking</p>	<p>Oval-leaved bilberry habitat is designated as an HCV.</p> <p>(i) The NHIC database suggests there were two observations of this bilberry on Crown land possibly outside parks in 1998. The Northern Ontario Plant database describes the habitat of this species as "very moist to well-drained rocky soils of shady mixedwood forests, at the base of rocky ledges and slopes, and often occupying a narrow zone of moist soil near the base of slopes adjacent to ponds and peatlands." It notes that the primary range of the species is the mountains of western North America but that there are smaller, separate (disjunct) populations in the Algoma region of Ontario and elsewhere.</p> <p>(ii) AOC prescriptions that protect riparian zones and help protect oval-leaved bilberry habitat have been developed for the 2020-2030 Algoma FMP. They are presented in Table FMP-11.</p> <p>Conditions on regular operations that help mitigate site damage on sensitive soils and help protect oval-leaved bilberry habitat (CRO-14 - CRO-16) have been developed for the 2020-2030 Algoma FMP. They are presented in section 4.2.2.2 of plan documentation.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR leads the process of effectiveness monitoring.</p>

Species	(i) Background for HCV Decision, and (ii) Management Prescription
<p>Braun's holly fern <i>Polystichum braunii</i></p> <p>G5/S2 ranking</p>	<p>Habitat known to contain the Braun's Holly Fern is considered to be an HCV.</p> <p>(i) Appendix V identifies 23 occurrences within the boundaries of the Algoma Forest (in both Sault Ste. Marie and Wawa Districts), with some apparently on managed Crown land. The Northern Ontario Plant database describes the habitat of this species as "moist, shaded conifer and mixedwood boreal forests" and "moist, shaded ravines and rocky slopes". It notes that Braun's holly fern is native to northeastern and coastal northwestern North America, as well as northern Eurasia, that it is considered rare in most regions of Ontario, and that it is locally common along the eastern shore of Lake Superior, between Sault Ste. Marie and Wawa.</p> <p>(ii) Conditions on regular operations that help mitigate site damage on sensitive soils and help protect Braun's holly fern habitat (CRO-14 - CRO-16) have been developed for the 2020-2030 Algoma FMP. They are presented in section 4.2.2.2 of plan documentation.</p> <p>Monitoring</p> <p>CFMI, overlapping licensees and MNR monitor implementation of the prescriptions in the 2020-2030 Algoma FMP to ensure they are applied appropriately. MNR leads the process of effectiveness monitoring.</p>

Partners in Flight Birds of Regional Concern

The draft Forest Stewardship Council Great Lakes-St. Lawrence Standard advises forest managers to use a broad definition of "species at risk" that includes vulnerable species that may not be officially listed by COSEWIC or COSSARO, but for which there may be conservation concern. Therefore, the list of birds identified by Ontario Partners in Flight (PIF 2008; <http://www.bsc-eoc.org/PIF/PIFOntario.html>) in their Landbird Conservation Plan for the Boreal Hardwood Transition (Bird Conservation Region 12) is relevant under this question.

PIF (2008, p. 23) identifies 51 "priority species" of birds for the Bird Conservation Region (BCR) 12, based on species that meet at least one of these criteria:

- Continental concern,
- Regional concern,
- Continental stewardship,
- Regional stewardship,
- Listed as at risk by COSSARO or COSEWIC, or
- Of management interest.

The BCR is very large and encompasses a region that extends well beyond the borders of the Algoma Forest. Some of the species on the priority list therefore do not occur in the Algoma Forest and have been excluded from the assessment. Some of the rest that could occur in the Algoma Forest, such as those of "continental concern", are species that have been listed by COSEWIC or COSSARO as "at risk" and have already been assessed above in Table 1, Table 2, and Table 3. The species "of regional concern" that could occur in the Algoma Forest (based on the Ontario Breeding Bird Atlas, OBBA) and have not been assessed yet under this question include:

- Bay-breasted warbler,
- Brown thrasher,
- Northern flicker,
- Purple finch, and
- Veery.

These are widely distributed, relatively common birds. The OBBA (Cadman et al. 2007, pp. 656-657) estimated that there were 5,000,000 bay-breasted warblers, 700,000 northern flickers, 100,000 brown thrashers, 700,000 purple finches, and 2,000,000 veeries in Ontario at the time of the survey (2001-2005). The OBBA did not note a decline at the provincial level between atlas periods (1981-85 to 2001-2005) for any of these species except the brown thrasher (24% decline) and purple finch (18% decline). The brown thrasher prefers early successional, shrubby conditions (Cadman et al. 2007) and is therefore unlikely to be at risk from forest management operations. The purple finch has broad habitat preferences (coniferous, mixed coniferous-deciduous, or open forest with scattered conifers; Cadman et al. 2007). According to a detailed analysis by Landriault and Mills (2009¹³), the habitat needs of all of the species in this list (the thrasher was not assessed) are addressed during forest management through implementation of the coarse-filter fine-filter strategy described in the Forest Management Guide for Great Lakes-St. Lawrence Landscapes (MNR 2009¹⁴) and the Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales (MNR 2010).

¹³ Landriault, L. and S. Mills. 2009. Synthesis of forest-bird habitat requirements with reference to forest management planning in Ontario. MNR Northeast Science and Information, Timmins, Ontario, and Southern Science and Information, North Bay, Ontario. Unpublished Report.

¹⁴ MNR. 2010. Forest Management Guide for Great Lakes-St. Lawrence Landscapes. Queen's Printer for Ontario, Toronto.

For the above reasons, none of the PIF species appeared to qualify as a "species at risk" under this question, and none was identified as an HCV.

Question 2) Does the forest contain a concentration of species having a restricted geographical range?

Assessment Methodology:

The following information was reviewed in order to determine if the Algoma Forest contains a globally, nationally or regionally significant concentration of endemic species.

- Conservation International Biodiversity "Hotspots"
- Birdlife International
- WWF Ecoregion Conservation Assessment
- Terrestrial Ecosystems of North America (Ricketts et al. 1999)

Conservation International does not show any biodiversity "hotspots" in Ontario and Birdlife International does not identify any Endemic Bird Areas in Canada.

Ricketts et al. (1999) in their publication *Terrestrial Ecoregions of North America: a conservation assessment*, Island Press, Washington, D.C., indicate that the Algoma Forest is in the Eastern Forest/Boreal Transition ecoregion and points out that this is a region of low endemic species. The entire ecoregion covers several million square kilometers and has a center of biodiversity and endemism in the Appalachian Mountains of the United States. The only endemic species that may occur in Algoma are some snails, although this is not known with certainty. The northern part of the Eastern Forest /Boreal Transition (Region 8) suggests there may be 1-22 species of snails that could be endemic to this area. These small, slow moving animals sometimes are restricted to very local areas and some endemism has developed as a result. Early in 2004 COSEWIC released a request for proposals to develop a list of land snails that may require protection in Canada. This work may develop and provide some evidence for land snail conservation; however, as there is no evidence of endemic snails in the Algoma Forest, they are not considered either HCV or possibly HCV at this time.

Question 3) Does the forest include regionally significant seasonal concentrations of species?

This question focuses on sites in the forest that are of key importance to particular species. The purpose is to identify areas that have specific value to selected species of wildlife for some portion of the year. Wildlife often uses specific breeding sites or areas to spend a specific harsh season in, such as winter. Other times, areas that are used

for feeding or reproduction can be important to the overall health of the population or ecosystem.

Assessment Methodology:

The following data sets were examined to answer this question:

- Bird Studies Canada
- Ducks Unlimited Canada
- Ontario Partners in Flight
- Land Information Ontario database (LIO)
- 2005-2025 Algoma Forest Management Plan
- Birdlife International
- Conservation International

Table 5 summarizes those feature species that have critical habitat on the Algoma Forest including moose, white-tailed deer, American marten, and common raptors. MNR refers to moose, deer, and marten as featured species.

Moose populations are currently declining on the Algoma Forest. The primary mortality factor influencing their population is hunting and illegal harvest (poaching). Access to clearcut harvested areas and the use of all-terrain vehicles for hunting have contributed to an over-harvest of this species (MNR Moose Program Review, 2009). Moose are highly susceptible in recently harvested areas which attract moose in the fall period for food and breeding purposes.

Harvesting operations generally improve habitat conditions for moose. Browse from regeneration within recently harvested areas becomes abundant and sought after by moose during the fall, winter, and early spring periods, when aquatic vegetation is unavailable. Aquatic feeding areas are specific locations on the forest that are important to moose in spring and summer when aquatic plants, *etc.* become the preferred forage for these large animals. Forest operations do not occur within aquatic feeding areas, and protection buffers in the Algoma FMP for water quality/fisheries habitat provide more than adequate protection of these areas. Moose aquatic feeding areas are not designated HCVs.

White-tailed deer are a common mammal on the Algoma Forest, especially on the southern portions of the forest. Wintering areas are critical to survival of this species, although virtually all of the deer wintering areas are on private land. Deer wintering areas are mapped fairly precisely by MNR. These wintering areas are designated as

HCVs, but CFMI does not have responsibility for managing these areas on the Algoma Forest. In the few isolated areas that are on Crown land, where CFMI does forest management, the Algoma FMP contains operational guidelines for managing these areas.

American marten have a preference for mature conifer areas which are designated in the Algoma FMP. Forest managers may harvest these areas, as long as other areas are available for these mammals to occupy. Marten core areas are not designated as HCVs.

Several raptors nest on the Algoma Forest including barred owl, great horned owl, goshawk, sharp shinned hawk, red-tailed hawk, broad winged hawk, and turkey vulture. All of these species are healthy and their habitat is not under threat (McCracken and Heagy 2004). Due to their sensitivity with respect to noise and interaction with humans, goshawk and sharp shinned hawk nest sites are designated HCV.

Table 5: Critical wildlife habitat areas for featured species

Value	Summary of HCV Attributes	HCV Threshold/Decision
Moose aquatic feeding areas	<ol style="list-style-type: none"> 1) Description - aquatic feeding areas surrounded by woodlands 2) Occurrence - very common, good distribution info 3) Status info - moose are hunted; economically valuable 4) Risks - logging impacts possible if cutting too heavy to feeding area 5) Current management - management objectives for moose emphasis areas 	<ol style="list-style-type: none"> 1) Stability - stable and distribution known 2) Risks - appropriate harvest with selection protects value 3) Threshold - moose are an important game species; benefit of precaution <p>Designated as HCV</p>
White-tailed deer wintering areas	<ol style="list-style-type: none"> 1) Description - high conifer component (He, Ce) 2) Occurrence - very common, good distribution info 3) Status info - deer are hunted; economically valuable 4) Risks - logging impacts possible if conifer diminished 5) Current management - detailed prescription exists, monitoring for large ones 	<ol style="list-style-type: none"> 1) Stability - stable or increasing, wintering areas are key 2) Risks - inappropriate harvesting could impair wintering areas 3) Threshold - deer are an important game species; benefit of precaution <p>Designated as HCV</p>

Value	Summary of HCV Attributes	HCV Threshold/Decision
American marten	1) Description - conifer component required >80 years 1) Occurrence - common species on Algoma Forest, marten core habitat areas mapped and modeled 2) Status info - trapping important activity, but population stable throughout its range 3) Risks - logging impacts of conifer diminished significantly 4) Current management - significant impact if widespread conifer reduction.	1) Stability - extensive occurrence; modeled in FMP 2) Risks - risk if long term decline in old conifer component 3) Threshold - abundant species, no current conservation issues. Not HCV

Question 4) Does the forest support regionally significant species (e.g. species declining regionally, culturally important species)?

Assessment Methodology:

Species of concern that are listed nationally or provincially have already been assessed and discussed under Question 1. This assessment considers both provincially featured species and potential regional focal species. Both of these elements were assessed on current literature and local knowledge in order to identify any that may be experiencing regional or local declines.

Species that are in decline were reviewed in Question 1. Determining whether some of those species have stable populations, at least regionally is difficult, and more appropriate for an organization with a broader view than just the Algoma Forest.

Wildlife species (Table 6, Figure 4) that are representative of habitat types naturally occurring in the Algoma Forest include: moose, white-tailed deer, black bear, American marten, snowshoe hare, northern flying squirrel, deer mouse, broad-winged hawk, barred owl, ruffed grouse, pileated woodpecker, least flycatcher, ruby-crowned kinglet, white-throated sparrow, red-backed salamander, and blue-spotted salamander. None of these species are in decline and the habitat for them is abundant. Habitat for these species is not considered HCV.

Table 6: Habitat for regionally significant species

Species	
Moose	Moose populations are healthy on the Algoma Forest and habitat for these animals is widely available.

Species	
White-tailed deer	The Algoma Forest represents the northern limit of white-tailed deer and these mammals are abundant in the southern portions of the area. They are abundant, the habitat for deer is abundant and the animals are not declining.
Black bear	Black bears are common on the forest and their habitat is excellent.
American marten	American marten habitat is abundant and the population of these animals is healthy.
Northern flying squirrel	This squirrel is abundant and common on the Algoma Forest.
Broad-winged hawk	Broad-winged hawk habitat is widely available and this raptor is abundant on the Algoma Forest.
Pileated woodpecker	This provincially featured species is common on the forest and habitat is available to support these populations.
Blue-spotted salamander	Habitat for this species is widely available on the Algoma Forest.

Table 6 is based on information from Ministry of Natural Resources and Forestry records and from the Ontario Breeding bird atlas.

Question 5) Does the forest support concentrations of species at the edge of their natural ranges or outlier populations?

Assessment Methodology:

The following data sets were examined to answer this question:

- Red listed species
- Focal species
- Major forest tree species
- Species identified as ecologically significant through consultation
- List of selected species for the region identified by the MNR biologists compared to natural range maps to see if there are concentrations of species at the edge of the natural ranges

The purpose of this question is to identify species that are at the edge of their range, and thus may be vulnerable to depletions because the environmental conditions are marginal and some risk may be present that would reduce the overall range, and thus the population. As well outlier populations may be important to the species because they may maintain a reservoir of genetic material that is important as a buffer against future changes in environmental conditions.

The Great Lakes-St. Lawrence forest transition to boreal forest occurs within the Algoma Forest. This means that many species of plants and animals are either at the northern or southern limit of their range. Most of these species are secure according to COSEWIC, NHIC. The Algoma Forest does not contain any species that are vulnerable because they are at the edge of their range. All of the tree species, except hemlock, that occur here and are near the edge of their natural range have healthy populations. Hemlock has decreased in the Algoma Forest because of over-exploitation earlier this century, and is designated as a HCV (Table 7, Figure 2). The bird species listed are all healthy, and no evidence of serious decline is present (McCracken and Heagy).

Table 7: A listing of species at the edge of their natural range in the Algoma Forest

Category	Species	General population status	HCV status
Trees	Ash, white <i>Fraxinus Americana</i>	Healthy	Not HCV, occurs in southern part of the Algoma Forest,
	Basswood <i>Tilia Americana</i>	Healthy	Not HCV, occurs in southern part of the Algoma Forest, (personal communication).
	Beech, American <i>Fagus grandifolia</i>	Healthy	Not HCV, occurs in southern part of the Algoma Forest
	Hemlock <i>Tsuga Canadensis</i>	Much reduced populations in Algoma Forest	Designated as HCV because it has declined substantially in the Algoma Forest and is a rare ecosystem type.
	Ironwood <i>Ostrya Virginiana</i>	Healthy	Not HCV, occurs in southern part of the Algoma Forest
	Oak, bur <i>Quercus macrocarpa</i>	Healthy	Not HCV, occurs in southern part of the Algoma Forest
	Oak, red <i>Quercus rubra</i>	Healthy	Not HCV, occurs in southern part of the Algoma Forest
Birds	Cuckoo, yellow-billed <i>Coccyzus americanus</i>	Healthy	Not HCV, occurs in southern part of the Algoma Forest
	Heron, green-backed <i>Butorides striatus</i>	Healthy	Not HCV, occurs in southern part of the Algoma Forest

Category	Species	General population status	HCV status
	Meadowlark, Eastern <i>Sturnella magna</i>	Healthy	Not HCV, occurs in southern part of the Algoma Forest
	Upland sandpiper <i>Bartramia longicauda</i>	Healthy	Not HCV, occurs in southern part of the Algoma Forest
	Warbler, Connecticut <i>Oporornis agilis</i>	Healthy	Not HCV, occurs in southern part of the Algoma Forest
	Woodpecker, three-toed <i>Picoides tridactylus</i>	Healthy	Not HCV, occurs in southern part of the Algoma Forest
	Red-shouldered Hawk <i>Buteo lineatus</i>	Stable	<p>Nests of the red-shouldered hawk are considered to be HCVs. This hawk nests in mature tolerant hardwood forest, and the nest is often in the lower fork of a large hardwood tree (MNR 2010 Stand and Site Guide Background and Rationale). The FMP contains a detailed AOC prescription for nests occupied by the red-shouldered hawk (Table FMP-11). Briefly, the prescription consists of a 400 m AOC centred on the nest tree which restricts the timing and intensity of operational activities. The prescription results in retention of 28 ha of suitable habitat around the nest tree. According to effectiveness monitoring conducted by MNR (MNR 2010), this prescription is effective.</p> <p>CFMI, overlapping licensees, and MNR monitor implementation of the prescription to ensure it is applied appropriately.</p>

Question 6) Does the forest lie within, adjacent to, or contain a conservation area: a) designated by an international authority, b) legally designated or proposed by relevant federal/provincial/territorial legislative body or c) identified in regional land use plans or conservation plans.

Assessment Methodology:

The following data sets were examined to answer this question:

- UNESCO World Heritage Sites
- RAMSAR sites

- International Biological Program sites
- Canadian Conservation Areas Database
- Areas under deferral pending completion of land use planning and/or completion of protected areas system
- Ontario Crown Land Atlas (MNR)

Part a) of this question refers to UNESCO World Heritage Sites, RAMSAR sites, or International Biological Program sites. There are none of these on the Algoma Forest. As a result, this attribute **is not considered to be an HCV**.

Under Part b) there are a number of protected areas in the Algoma Forest that are either regulated or are officially designated to be regulated as protected areas. This is part of the Ontario's Living Legacy process (MNR 1999). All of the parks and other protected areas in the Algoma Forest are enshrined in legislation. No timber harvest is permitted in these areas and thus there is no risk from forestry. Each protected area in Table 8 is a high conservation value forest, and for the purpose of this paper are **identified as HCVs**. All responsibility for management and monitoring of these areas lies with the Ontario Ministry of Natural Resources and Forestry.

Part c) is examined to ensure that regionally significant forests are evaluated for consistency with the conservation intent. The completion of conservation plans implies high conservation value for the associated land. Any core, corridor or linkage zones identified in a conservation plan should be evaluated for HCV designation. Examination of the regional and district land use planning documents did not reveal any known conservation areas of this nature. Based on this assessment, it has been concluded that this **HCV attribute does not exist** on the Algoma Forest.

Table 8: A listing of provincially regulated protected areas in the Algoma Forest

Conservation Reserves	Management Strategy
C1517 South Michipicoten River Superior Shoreline 2,923 ha	Mixed forest links two provincial parks. A statement of conservation interest governs management.
C1519 Lake Superior Highlands CR 46,734 ha	Critical habitat for caribou, follows a waterline to Lake Superior, facilitates gene flow. A statement of conservation interest governs management.
C1520 Magpie River Terraces CR	Distinct terraces represent dropping lake levels in the Superior basin from 9,500 years before present.
C1526 North Montreal R. Moraine 361 ha	Ground moraine deposits which support forests of poplar, yellow birch, and white pine.
C1535 Windermere Goldie Lake 17,864 ha	Remote recreation area, older mixed forest with poplar and jack pine on exposed bedrock.
C245 Jollineau 780 ha	An uncommon combination of vegetation and landforms, containing old growth white pine and maple, plus other stands of cedar, white spruce, and yellow birch.
C246 Echo River Hardwoods CR 10,541 ha	Best example in site district 4E-3 of extensive sugar maple dominated forests, headwaters of several tributaries of the Echo River
C248 La Verendrye/Ogidaki 791 ha	Old deciduous forest growing on top of hilly moraine deposits, yellow birch, sugar and red maple and white and black spruce.
C258 Thessalon River Delta/Rock Lake Red Oak CR 240 ha	River delta with open bog and fen habitats; includes rare plants and combinations of landforms and vegetation and landforms unique in site district 5E-1.
C260 Rose Lake Dune Peatland Complex CR 202 ha	Dune habitat, poorly drained, supporting stands of black spruce surrounded by lichens, and classic bog habitat, one of few examples in site region 5E-1.
C262 Stuart Lake Wetland CR 635 ha	Best example of sugar maple, balsam fir, white birch, yellow birch, and cedar growing on steep hills of glacial till and bedrock in site district 5E-1.
C263 Garden Lake Forest 291 ha	Old growth white pine and a four km stretch of riparian vegetation along the river that is also significant.
C281 Tilley Creek West 598 ha	Old sugar maple forests growing on hilly ground moraine deposits of sand and gravel.
C284 Wabos North 900 ha	Steep hill of moraine deposits mixed with flat pickets of sediments, red maple, and ash forest over the valley bottoms, while uplands have sugar maple, yellow birch, white spruce.
C286 Wabos South 559 ha	Flat lacustrine deposits covered by red maple sugar maple and yellow birch.

C289 Searchmont South Forest CR 580 ha	Rugged bedrock landscape dominated by poplar.
C291 Goulais River Beach Ridges CR 1,008 ha	Ancient beach ridges and a modern river environment of exceptional quality, includes rich sedge meadows, cedar “savannah” bogs with black and white spruce, tamarack, and ridge-fringe upland forests.
C294 O'Connor 891 ha	Old growth white pine, sugar maple and spruce on lacustrine deposits.
C298 Harmony Forest 1,008 ha	Lacustrine landform with hardwood forests that include old stands of sugar maple, yellow birch, and red maple.
C307 Ile Parisienne CR 933 ha	Island habitat for several species of wildlife, Jacobsville Sandstone bedrock, small vegetative dunes, and postglacial beaches.
C1914 Ranger North 7008 ha	Largest identified area of old-growth white and red pine forest in north-eastern Ontario; this is also one of the oldest pine forests in Ontario with some pines older than 350 years.
C1763 Tikamaganda Lake 2957 ha	Stands of scattered old growth white pine with some trees older than 350 years.
Provincial Parks	
P273 Algoma Headwaters PP (Natural Environment Class)	Seven major forest types, pine is the dominate species, but cedar, maple spruce and fir are also present, some tourism activity in the Park.
P278 Pancake Bay PP (Recreation Class)	Part of Natural Heritage Coastal area, high outlooks over Lake Superior
P282 Batchawana River PP (Waterway Class)	Wide variety of features, including stream and river ecosystems, terraces from glacial lakes and rivers and shoreline wetlands.
P253 Goulais River PP (Waterway Class)	Sloping glacial outwash landforms support forest of balsam fir, white birch, black and white spruce, and sugar maple and includes a prehistoric delta created at the outlet of a massive channel of glacial melt water.
P277 Aubinagong-Nushatogani Rivers PP (Waterway Class)	An 85 kilometre network of rivers, lakes connect to the Algoma Headwaters Provincial Park.
P292e Lake Superior Provincial Park, 160,810 ha	Natural environment park, contains rounded hills which are remnants of ancient mountain ranges, steep valleys, and extensive vista plus a wide variety of Boreal wildlife.
P292 Lake Superior Additions	Contains “arctic coastal” disjunct species along with more typical forest areas.
P1511 University river Complex	Several river complexes occur here as well as University River Terraces, habitat for woodland caribou.
Forest Reserves	
F1716 Lake Superior Highlands 14,354 ha	Contains moderately broken bedrock with cut and burn mixed conifer forests, mixed deciduous forest and sparse forest, the area provides critical habitat for Caribou. HCV.

Enhanced Management Areas	
E280n Batchawana Bay-Carp Lake Raised Delta 869 ha	Forest management must be consistent with protection of earth science natural heritage values. HCV.
E283n Achigan Lake Area 2,524 ha	This Enhanced Management area was developed to protect old growth white pine and yellow birch, water quality, recreation, and remote road access values. Old growth harvest has been deferred until 2023. HVC.
E290n Bellevue hanging Delta 158 ha	Forest management must be consistent with protection of earth science natural heritage values. HCV.

Category 2) Landscape Level Forests where Viable Populations of Naturally Occurring Species Exist

Question 7) Does the forest constitute or form part of a globally, nationally, or regionally significant forest landscape that includes populations of most native species and sufficient habitat such that there is a high likelihood of long-term species persistence?

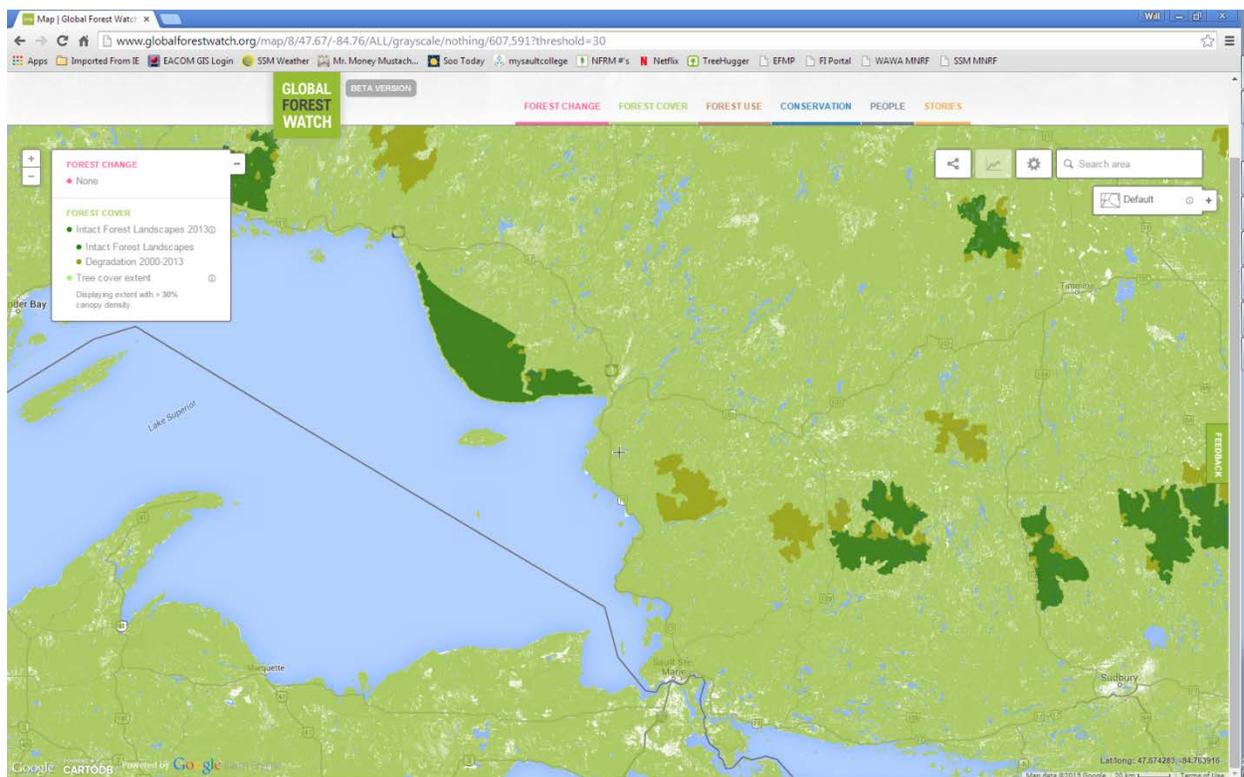


Figure 2: Map of large forest areas in Ontario (source: Global Forest Watch)

Assessment Methodology:

- Review of historic land use pattern, and scale

This question examines forest condition from the perspective of species composition in comparison to the original forest. The FSC Boreal Standard defines large, intact forest landscapes as unfragmented by permanent infrastructure and of a size to maintain viable populations of most species. If these landscapes are greater than 500,000 ha, they are globally significant, if greater than 200,000 ha but less than 500,000 ha, they are nationally significant, and if greater than 50,000 ha but less than 200,000 ha they are regionally significant. The World Wildlife Fund, as part of Ricketts (1999) defines these large landscape forests as intact areas that represents relatively undisturbed areas with little logging or human settlement, where usually less than 10% of the area has been disturbed. Algoma Forest is located within the Eastern Forest/Boreal Transition zone, which, based on Ricketts (1999) has had a variety of disturbances that affect over 90% of the area within the last 100 years.

While the Algoma Forest does not contain any forests that fall in this category, the ecosystems in the Algoma Forest are functioning such that most species that have occurred naturally will continue to persist for the foreseeable future. **This attribute is not designated as HCV.**

Question 8) Are large landscape level forests, (i.e. large unfragmented forests) rare or absent in the forest or ecoregion?

Assessment Methodology:

- WWF Eco-regional assessment
- Global Forest Watch Intactness Mapping
- Roads Layer for Algoma Forest
- Nature Serve
- Conservation International
- Ontario Living Legacy

The 2005 Forest Management Plan for the Algoma Forest assessed forest fragmentation. Landscape pattern indices and forest diversity indices were calculated for the forest in order to establish a baseline for comparison. The degree of landscape “intactness” or remoteness was also used as a major criterion in the identification and designation of parks, conservation reserves and enhanced management areas during the Ontario’s Living Legacy land use planning exercise.

Fragmentation is mainly roads, rail lines, and utility corridors in the part of the forest that is public land. Overall, however, the long-lived impacts of humans on the landscape are still visible.

Virtually all of the Algoma Forest has been harvested at least once since the early 1900s. In order to harvest that wood, roads have been built throughout the forest, and as a result there are no “intact” forests left in the area. The largest areas left have been captured in conservation reserves such as the Ranger North Conservation Reserve where over 7,000 ha are protected.

WWF Global 200 Ecoregions at www.panda.org, Conservation International at www.birdlife.net and NatureServe at www.natureserve.org do not show any large landscape level forests in this forest area or in northern Ontario.

No HCVs were designated as a result of this analysis, primarily based on the strength of the land use strategy in place, and recently revisited through OLL.

Category 3) Forest areas that are in or contain rare, threatened, or endangered ecosystems.

Question 9) Does the forest contain naturally rare ecosystem types?

Assessment Methodology:

- Nature Serve
- Natural Heritage Information Centre

Conservation International does not identify any biodiversity hotspots within Canada. The Nature Serve Ecological Associations database reveals a total of 91 rare communities or “associations” in Ontario. However only three naturally rare ecosystems occur on the Algoma Forest, and are listed by the NHIC. Two of the communities listed in Table 9 are located near the waters of the Great Lakes, either on sandy dunes near the water, or rocky areas that are habitat for arctic disjunct plants whose main populations are in the Arctic. The tamarack organic swamp community is not available for harvest and remains stable on the forest. These communities are not at risk from forestry because forest operations cannot occur in the Great Lakes Heritage Coast, or in tamarack swamp; however, because they represent high conservation values, **they are designated as HCVs.**

In addition, a *picetum*, located at 47°00' N and 84°25' W is part of an array of experimental spruce plantations established on a complete range of major climatic zones in which spruce occurs. A technical report is available at the CFMI office. This is an experimental site, where no forest harvest will occur, and is the responsibility of the Ontario Ministry of Natural Resources and Forestry. **It is an HCV area.**

Table 9: A list of rare plant communities on the Algoma Forest

Name of Community	Rank of Rareness	Designation
Great Lakes Arctic-Alpine Basic Open Bedrock Shoreline Type	S3	HCV
American Dune Grass Beach Pea Sand Cherry Dune Grassland type	S2, G3	HCV
Tamarack Coniferous Organic Swamp Type	S2	HCV

Question 10) Are there ecosystem types within the forest or ecoregion that have significantly declined?

Assessment Methodology:

- Nature Serve
- Natural Heritage Information Centre

- FRI Historic Forest Conditions and Trends

This question aims to detect ecosystem types that may have been reduced in area to such an extent that they are vulnerable, and the populations they contain may not be sustainable due to isolation or other factors. This includes forest ecosystem types that may be rare due to human factors or natural factors.

Through historical records kept at the CFMI office, e.g. the 1953 Forest Resources Inventory prepared for the Ontario Department of Lands and Forests, it is clear that the following ecosystems have declined substantially on the Algoma Forest over the last 100 years. As a result, CFMI managers have identified these ecosystems in the Algoma FMP, and have developed special prescriptions to insure they are maintained and regenerated wherever possible.

Hemlock has declined from the early part of the 20th century due to high-grading when the species was desired for its strength and resistance to rot. There is a risk to hemlock dominated sites if improper monitoring and management occurs. Hemlock dominated sites are not harvested commercially on the Algoma Forest and are considered to be HCV.

Table 10: Rare ecosystem types that have declined on the Algoma Forest

Ecosystem type	Cause of the decline	HCV Designation
White pine and red pine	Long term harvests, reduction in regenerating fires	Not Designated HCVF
Spruce dominated mixed wood	Long term harvests, reduction in regenerating fires	Not Designated HCVF
Red oak dominated ecosystem	Long term harvests, reduction in regenerating fires	Not Designated HCVF
Hemlock dominated	Long term harvests, little regeneration	Designated HCVF

Question 11) Are there sites with unique or exceptional ecological circumstances?

Assessment Methodology:

- NHIC Natural Areas
- Nature Serve Communities
- Ontario Areas of Natural and Scientific Interest
- WWF/MNR Lands for Life Assessment (protected areas “gap” analysis)
- WWF Ecoregion Conservation Assessment

The purpose of conservation reserves is to capture all of the rare, threatened or endangered ecosystems in the forest, and the list of parks and conservation reserves in question 6 includes the known rare, threatened and endangered ecosystems.

In this assessment, all of the sites with unique or exceptional ecological circumstances in the forest have been represented in protected areas, either prior to, or during the Ontario's Living Legacy program. Life science ANSIs (provincially significant ANSIs) are encompassed by OLL Land Use Strategy new protected areas and therefore are not designated as HCV.

Category 4) Forest areas that provide basic services of nature in critical situations (e.g. watershed protection, erosion control)

The Algoma Forest falls entirely within the Great Lakes watershed. It is a well-traveled area transected by the Trans-Canada Highway. The four questions that fall into Category 4 focus on the role of forests in maintaining the quality of the environment, in the sense of providing services to people. Forest managers must not compromise the forest's natural processes that provide drinking water, fish, and agricultural products, and that create a stable environment free from flood and fires. The Algoma Forest surrounds two major cities – Sault Ste. Marie and Wawa – and a host of smaller rural communities and individual homes. Many of these people depend on the forest for forest products and a clean environment including clean water and flood protection.

Question 12) Does the forest provide a significant source of drinking water?

Assessment Methodology:

- Known usage of water by local communities
- OBM base maps showing topography
- Provincially Significant Wetlands

Due to the size and extent of the forest it is natural that to some degree many of the basic services are provided by the forest in terms of stream flow regulation, quality and quantity of water supply, flood and drought prevention.

Given the absence of large communities (other than Sault Ste. Marie) and the abundant supply of clean fresh water, there have been no issues with the supply of water. The Algoma Forest borders on the Great Lakes, the world's largest supply of fresh water. Major lakes and rivers are also in the boundaries of the forest.

Although the Algoma FMP does not identify a specific AOC for a municipal water supply, the FMP process has a number of provisions for the protection of water quality,

for any purpose. Forest managers must establish reserves, whose width corresponds with the slope of the land to prevent erosion into the water body. Prescriptions for reserves vary according to the ecology of a given body of water. Coldwater trout streams and lakes, critical fish habitat, and headwaters have more significant and continuous tree reserves than a warm water lake or stream would have. Construction of stream crossings is subject to the provisions and prohibitions of the federal Fisheries Act, and is conducted according to the standards and guidelines of the “Environmental Guidelines for Access Roads and Water Crossings” (MNR, 1995). As well, the Stand and Site Guide provides direction for the protection of water quality during forest operations.

Due the size of the source, low population density, and the strict regulations about working near water, there is no evidence that supports the designation of water supply as an HCV.

Question 13) Are there forests that provide a significant ecological service in mediating flooding and/or drought, controlling stream flow regulation, and water quality?

Assessment Methodology:

- Government policy, monitoring and response programs
- Provincially significant wetlands

In general, all forests help mediate flooding and drought, control stream flow and improve water quality. Provincially significant wetlands have been identified on the Algoma Forest, which can play a role in mediating flooding and in improving water quality. These wetlands provide functions such as water recharge and discharge, flood damage reduction, shoreline stabilization, sediment trapping and nutrient retention and removal. Wetlands also provide important habitat for several species of wildlife, including beaver, waterfowl and many species of birds, amphibians, reptiles, and mammals. There are many types of small wetlands throughout the Algoma Forest which serve important ecological functions. These wetlands are protected in the forest management plan through the applications of AOC prescriptions that follow the recommendations in various guidelines. Where harvesting occurs adjacent to other wetlands not identified as AOCs, the “Code of Practice for Timber Management Operations in Riparian Areas’ and the “Forest Management Guidelines for the Protection of the Physical Environment” are applied to minimize site disturbance.

Provincially significant wetlands are possible HCV areas. Wetlands adjacent to Lake Superior and the North Channel of Lake Huron are almost all provincially significant

because of the role they play in the ecology of the Great Lakes and adjacent watersheds. These wetlands are generally on private land. Forestry operations on Crown land within two kilometres of the coasts may occur. The implementation of these operations will take into account the wetlands and recreational values of the coastal area.

Question 14) Are there forests critical to erosion control?

Assessment Methodology:

- OBM base maps showing topography
- Review local terrain mapping

Erosion control can be a local concern, depending of the slope of the potential forest operation. Forest operations adjacent to streams and lakes are governed by MNR guidelines and the Federal Fisheries Act, which protects fish habitat. In addition, on slopes not near streams or lakes, local guidelines mandate use of erosion limited structures that will minimize the loss of soil under those conditions.

The MNR's Stand and Site Guide directs how operations on sensitive sites should occur. The general rule provided is to harvest no more than 50% of the watershed in a single operation or over several operations, where the previously cut areas have not yet reached free-to-grow. In general, forest cover changes must meet or exceed a 20-25% threshold to detect a measurable response in water flow as a result of forest disturbance (Borsch and Hewlett 1982 Hornbeck et al. 1993). There are no areas on the Algoma Forest that are designated HCV because of erosion concerns.

Category 5) Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health).

Question 15) Are there local communities? Is anyone within the community making use of the forest for basic needs/ livelihoods?

Assessment Methodology:

- LIO data
- Socio-economic Description in 2005-2025 FMP and 2010-2020 FMP
- Discussions and correspondence with First Nations and Stakeholders during forest management planning consultation

Table 11 summarizes information from various consultations and sources. These activities have a varying degree of interaction with forestry. Two possible HCVs have been identified: heritage, tourism and recreations trails and historic artifacts.

Table 11: Making use of the forest for basic needs / livelihoods

General description	Value	Summary	HCV designation
Economic and cultural activity	Traplines	Traplines are a source of income, part of rural culture, designated trap lines cover the forest, trapping is active and viable, ongoing dialogue with trappers to minimize impact because traplines are abundant and cover all areas of the forest each trapline is not considered a HCV	Not HCV
Economic and cultural activity	Bear management areas	Bear management areas are assigned to local people to use to guide bear hunters, local income to tourist operators, MNR and CFMI develop management prescriptions, BMAs cover much of the land area of the forest and cannot have a specific designation as HCV	Not HCV
Economic and cultural activity	Areas adjacent to cottage lakes	Area around cottage lakes is attractive and an important recreation area, viewscapes are protected and CFMI prepares specific management prescriptions when operating in areas around cottage lakes.	Not HCV
Economic and cultural activity	Heritage, tourism, and recreations trails	Trails are an important part of the tourism infrastructure, a wide range of trails exist including snowmobiles, ATV and walking trails, tourism is a major activity in the area and trails are a major aspect of the industry, forest manages apply major efforts to maintain trails and the trail environment	Possible HCV

General description	Value	Summary	HCV designation
Economic and cultural activity	Historic artifacts e.g. old settlements and cemeteries, old trading sites	These areas are identified by the forest manager, local people and MNR personnel. A gravesite was recently discovered on the Algoma Forest in October 2018 and is considered an HCV .	HCV



Figure 3: Gravesite on Algoma Forest.

Trail Systems on the Algoma Forest

The Voyageur Trail crosses the southern portion of the Algoma Forest from Gros Cap, easterly to an area north of Bruce Mines. The trail also extends north towards Batchewana Bay. The longer-term intent is to lay out the trail through to Lake Superior

Provincial Park and join it up with segments along the north shore of Lake Superior. This trail system is part of the Trans-Canada Trail Network. This trail is particularly significant to local communities and does generate economic activity through tourism. The location of this trail system is provided in this report.

A portion of the cross country ski trails maintained by the Stokely Creek Lodge and Cross Skiing Touring Center is located within the Algoma Forest. This trail system has a world class reputation. CFMI has worked closely with the staff at the lodge to ensure that forest operations and skiing activities are complementary. The location of this trail system is provided in this report.

The Sault Trail Blazers Snowmobile Club maintains a series of trails north of Sault Ste. Marie. These trails are part of a larger system that accesses much of northeastern Ontario. The trail system is particularly attractive to American tourists who support the tourism sector. The location of this trail system is provided in this report.

The Algoma Forest has a variety of canoe routes that pass through. The more popular ones are included in provincial waterway parks and include the Batchewana River, the Goulais River, and the West Aubinadong River/Gong Lake/Ranger Lake route.

CFMI works closely with local tourist operators to develop harvest and renewal plans that do not negatively impact the quality of experience provided to tourism clients.

The MNR administers trapping, bait fishing and bear hunting through zones which are assigned to specific individuals. Sustainable levels of extraction are established and the harvesters must maintain an acceptable level of use to maintain their licenses. CFMI works with these resource users in a cooperative manner.

A map of these trails is available as a companion document to this report and is available from CFMI.

Category 6) Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health).

Question 16) Is the traditional cultural identity of the local community particularly tied to a specific forest area?

The question can only be answered in co-operation with local communities. Non-native cultural heritage values are protected through normal planning processes.

There are three individual First Nations communities within the Algoma Forest. Some important cultural sites are distributed though the forest including trading routes, gathering places, sacred or religious sites, and seasonal camp sites. Exact locations of

values and places of importance to the First Nations are not available as a map for this report but are described in Table 12 below which provides a general description of Indigenous values that are found on the forest. Where encountered, these native values will be maintained or protected during the FMP process.

These generic values identified in Table 12 have been considered in this assessment as being possible HVCs on the Algoma Forest.

Table 12: Traditional cultural identity of the local communities

General description	Value	Summary	HCV designation
First Nation and Métis cultural and social values	Trails	Trading routes, village to village routes, historical trading trails, trail prescriptions, when known, are built into the forest management plan. Based on the wishes of the First Nation Communities, these areas are not mapped.	Possible HCV
First Nation and Métis cultural and social values	Habitation	Village and seasonal camp sites, stockades, caves caches, trapper's cabins, lookouts, guard posts, gathering places and places of sanctuary, when sites are known, management plan protects them. Based on the wishes of the First Nation Communities, these areas are not mapped.	Possible HCV

Question 17) Is there a significant overlap of values (ecological and/or cultural that individually did not meet HCV thresholds but collectively constitute HCVs)?

Assessment Methodology:

- Review of previous values (Questions 1 to 18)

There are no apparent overlaps of values that would lead to new HCVs. Most values either make HCV on their own merits, or are not particularly associated with other values that would collectively bring them over a threshold. No HCV is identified with this question.

4.2 Criteria 9.2

The first component of the consultation process was a broad review, based on the Forest Management Plan, of the potential values on the forest. This included discussion with local people, staff of CFMI, and the Local Citizens Committee. A second component was to review all the scientific evidence available from all sources that indicates there may be high conservation values on the forest. Appendix I lists the scientific sources consulted for this work. The third component was a focused review by stakeholders of the values and the management approach used on the Algoma Forest. A meeting with the Sault Ste Marie Ministry of Natural Resources staff was held on August 24, 2004, a presentation to the Local Citizens Committee for the forest was made and a workshop was held on September 14, 2004 for Ministry staff, federal government staff and staff from local industry. Drafts of the paper were reviewed by staff at the local Ministry of Natural Resources office, by staff from the Great Lakes Forestry Research Centre and staff at the World Wildlife Fund, Toronto.

4.3 Criteria 9.3

Guidance for Contractors

As part of their operating procedures, CFMI has developed guidance for their contractors to take precautionary steps to avoid damaging the long-term sustainability of the forest. A manual has been developed called the CFMI Standard Operational Field Procedures that gives detailed instructions to everyone that operates equipment and harvests timber of the Algoma Forest. This manual was developed following an Independent Forest Audit carried out as required by the Crown Forest Sustainability Act. An outline of the subjects in this manual conveys the basic ideas provided to people who work on the forest:

- Site Disturbance - detailed instructions to avoid damage to soil
- Access roads and water crossings - detailed instructions to prevent damage
- Five year operating plan - meetings to discuss logging practices and avoid damage
- Standard Operational Field Procedures - cover basic instructions to minimize damage
- Residual Trees - rules for leaving individual trees
- Pileated Woodpecker habitat - guidance for following habitat guidance
- Marten Habitat- guidance for following habitat guidance

Maintaining Values in the Forest

An area of concern (AOC) is a defined geographic area which has a value to users which may be affected by forest management operations. A detailed prescription is developed for the AOC in order to prevent, minimize or mitigate adverse effects of forest management operations on values. A prescription may be prepared for an individual AOC or a group of Areas of Concern with common values. The location and description of values is found in the Land Information Ontario (LIO) maintained by the MNR. Prescriptions are generally developed from direction found in the various guidelines and manuals which direct the development of the forest management plan.

Generic AOC Prescriptions

Generic prescriptions for AOCs within the blocks selected for operations during the five-year operating plan period are presented in Table FMP-11 of the 2020-2030 Algoma FMP. Specific sites that contain several values on the same land base (e.g. moose habitat, cold water fishery) will have one AOC prescription that offers protection for all of the values identified.

Table 13 provides information on generic prescriptions within AOCs.

Table 13: AOC prescriptions developed for use on the Algoma Forest

Category	AOC ID	AOC Description
Anthropological Values	APA	Archeological potential areas
	ARCH	Archaeological sites
	CEM	Cemeteries
	CHV	Cultural heritage values
	CL	Cottaging lots
	COT	Cottaging lakes identified by the Planning Team: Ranger, Vixen, Devil, Patton, Bass (Aberdeen), Maki, McMahan, Trout (Aweres), Achigan, Diamond, Weckstrom Lake
	OTH	Customizable, discreet prescription for cultural heritage values.
Parks	PBL	Prairie Bee Lake
	PRK	Provincial parks and conservation reserves
	PUK	Pukaskwa National Park
Physical Features	CLD	Crown Land dispositions

Category	AOC ID	AOC Description
	CRa	Canoe Routes Category "A"
	CRb	Canoe Routes Category "B"
	HWY	Provincial Highways
	HYD	Hydro transmission lines
	PP	Private property
	RR	Railways
	RS	Residential structures
	OFSC	Ontario Federation of Snowmobile Clubs trails
	TFCS	Tarentorus fish culture station
	TRAIL	Recreational trails
Research Values	MSIM	Multi-species inventory and monitoring plots
	OFBN	Ontario Forest Biomonitoring Network plots
	ORP	Other research plots
	PGP	Permanent growth plots
	PSP	Permanent sample plots
Tourism	TvNR	Non-remote tourism lakes -
	TvRS	Designated remote tourism lakes (SSM):
	TvRW	Designated remote tourism lakes (Wawa)
Water Quality	BTL	Brook trout lakes
	BTRA	Brook trout recharge areas
	HPS, MPS, LPS	Lakes, rivers, streams, and ponds.
	LTL	Lake trout lakes
	PSW	Provincially Significant Wetlands
Special Habitat Features	BEAV	Beaver ponds and meadows requiring management
	BGC	Bonaparte's gull nests and colonies
	CAV	Nesting raptors cavities and roosts
	Den_B	Black bear dens
	Den_W	Wolf dens
	DWA	Dear wintering areas

Category	AOC ID	AOC Description
	GNR	Ground nests
	HER	Great blue heron colonies
	ML	Mineral licks
	OSP	Osprey nests
	RAP	Common stick-nesting raptors
	RAPU	Uncommon stick-nesting raptors
Species at Risk	BaSw	Bank swallow colonies
	BAT_H	Bat hibernacula
	BSN	Barn swallow nests and colonies
	BT	Blanding's turtle habitat
	CAR	Woodland caribou calving and nursery habitat
	EAG	Bald eagle nests
	EWPW	Eastern whip-poor-will habitat
	PER	Peregrine falcon nests
	RHW	Red-headed woodpecker habitat
	SARW	Species at risk wetland habitat
	SNK_H	Snake hibernacula
	SNK_Y	Snake gestation/oviposition sites
	SNTH	Snapping turtle habitat
	WT	Wood turtle habitat
WVW	West Virginia white habitat	

Water quality buffer widths are based on the fish-sensitivity of water features. For high-potential sensitivity features, the buffer width is determined by ground slope within the AOC. Depending on the accuracy of the OBM maps, slope determination may not be exactly the same as that found in the field. Actual slope measurements will be confirmed at the time reserves are established in the field and adjusted accordingly.

Water quality AOC widths as identified on operations maps are measured beginning at the high water mark of the water body. Normal high water mark can be determined by locating the point on the shore of the water body where the presence and action of water is so common and usual, as to mark the soil in a distinct pattern from that of the abutting upland. It may be determined even using slight ground contour changes or differences in vegetation ground cover.

The fish-sensitivity of waters are designated based on direction in the Stand and Site Guide and MNR aquatic resource surveys.

Warm water fish species such as smallmouth bass are less sensitive to the effects of forest management activities than are cold-water species. Warm water fish are more tolerant of higher water temperatures; have less stringent requirements for dissolved oxygen; and due to their spawning habits, are less subject to the affects of sedimentation or fluctuation of water flows. Accordingly, where erosion is minimized, banks are protected, and debris kept from watercourses, harvesting operations may be permitted without having an impact on warm water fish habitat (low potential sensitivity).

Lakes with populations of lake trout and brook trout are subject to intense fishing pressure on the Algoma Forest. Efforts to control this fishing pressure include no roads zones and the requirement for road de-commissioning upon the completion of silviculture activities to ensure that access is not improved as a result of forestry operations. Lakes have been classified based on their current level of access within 180 metres, 400 metres, and 1,000 metres of the lake.

Caribou have been extirpated from their mainland range along the shore of Lake Superior from Pukaskwa National Park to Lake Superior Provincial Park. Nevertheless, the range has been identified in the 2020-2030 Algoma FMP and an objective has been developed to avoid degradation of caribou coastal habitat and a discontinuous habitat zone that could serve as a travel corridor between future coastal populations and larger inland populations.

As of 2014, there are four active peregrine falcon nesting sites confirmed on the Algoma Forest. Forest operations for the 2010 to 2020 period have been identified within the three kilometre zone from the nest sites. A nest site management plan is being prepared by the MNR for those nests applicable. The MNR (1988) Peregrine Falcon Habitat Management guidelines have been replaced by the Forest Management Guide for the Conservation of Biodiversity at the Stand and Site Scales (2010), which will be followed in the preparation of the nest site management plan.

Tourism lakes on the Algoma Forest are listed in the Crown Land Use Policy Atlas (CLUPA). When changes to the Crown Land Use Policy Atlas are made, an

administrative amendment to the FMP will be completed to reflect the actual changes to the tourism values when they are different from the plan.

Popular canoe routes on the Algoma Forest have mostly been protected through the Ontario's Living Legacy land use strategy. For designated canoe routes identified in LIO and not currently protected, an AOC prescription has been developed.

The identification of an Archaeological Potential Area (APA) AOC Prescription for areas MNR believe as having high cultural heritage potential was prepared for the 2010 FMP. They are Areas of Concern and are identified using a predictive model. This tool uses various land base features, such as lakes, rivers, topography, and soils information to predict areas where in the past there is a fair to good likelihood for individuals or groups to stop or settle for periods. At these locations, there may be evidence of their use of the area.

Specific AOC Prescriptions

Specific AOC prescriptions are developed for value protection of localized areas on the forest. The value may be for individuals or groups (e.g. cottage lake), or for a specific value requiring additional protection beyond the generic prescription identified in the FMP. Presently there are no specific AOC prescriptions identified in the 2010 FMP. During implementation of the 2010 FMP a specific prescription may be developed and implemented, and at that time would be documented in one of several ways: FMP amendment, AWS revision, or compliance inspection report.

Sensitive Values Protection and Update Protocol

The need to have a separate protocol to ensure protection of sensitive values was identified during the implementation of the 2000 forest management plans. As this data comes from a number of different sources, and not all of it is part of the Land Information Ontario, it is necessary to implement a protocol to ensure protection of all values occurs. Currently the following data sets not housed in LIO are as follows:

- Natural Heritage Information Centre (NHIC) Values
- Cultural Heritage Values
- Aboriginal Community Values (five datasets for the Algoma Forest)

MNR has been identified as the data custodian of all identified sensitive data for forest management purposes. As the data custodian, MNR is not responsible for the maintenance of the values data that originated from external data sources to themselves. Values management of these data sets (aboriginal and cultural heritage values) lies with the First Nation or Métis community or non-MNR government agency.

First Nation Background Information Reports and Values Mapping

There are five aboriginal communities (four First Nations, one Métis) located on the Algoma Forest. Background Information reports and values maps for each of the four First Nation communities were part of previous Algoma Forest Management Plans (FMP): two of the communities submitted reports for the 2005-2010 plan; reports were prepared for the other two communities for the 2000-2005 plan. None of the information in those reports has been modified since the reports were originally submitted. If in future any of the First Nation or Métis communities provide new information about their interests on the Algoma forest and/or values located therein, the reports and/or maps will be revised accordingly. The Background Information Reports now on file at the Sault Ste. Marie district office include:

- Thessalon First Nation Background Information Report (2004)
- Aboriginal Background Information Report Michipicoten First Nation (2004)
- Native Background Information Report for the Algoma Forest Management Plan 2000-2020: Garden River First Nation, Batchewana First Nation (1998)

The reports provide information regarding the First Nations' past use of timber resources, and other forest resources on the Algoma Forest, as well as forest management related issues, successes and failures, and valuable historical background information.

Values information shared by communities has been digitized and is stored electronically in the Sault Ste. Marie district's geographic information system.

In respect of First Nations authors and communities, none of the specific information in these reports is included in this HCV report. However, the information is available to managers as needed and is incorporated in the management program.

4.4 Criteria 9.4

Monitoring

Both CFMI and the MNR have responsibility for monitoring the values in the areas designed as High Conservation Value Forests. The intent of monitoring is to assess the impact that actions may have on HCVFs as a result of forest management activities. This information will be used as the basis for adaptive management actions to improve forest management practices. Compliance activities are a component of monitoring and are implemented to ensure that forest management plans are properly adhered to.

Table 14 identifies the current responsibility for monitoring HCVs in the Algoma Forest and the methods used to monitor protection efforts.

Table 14: Summary of monitoring activities of HCVs on the Algoma Forest

HCV	Attribute	Responsibility for monitoring	Prescription	Current monitoring
Red-shouldered hawk	Nesting sites	MNR biologists and CFMI Tree markers are required to determine presence of nests, whether they are active or inactive. MNR has responsibility for monitoring effectiveness of prescription and protection measures.	See Table FMP-11 in 2020-2030 Algoma FMP - RAPU AOC.	MNR compliance staff monitors adherence to prescription. MNR develops and implements effectiveness monitoring program. Status: appear stable
Goshawk / Sharp-shinned hawk	Nest sites	MNR has responsibility for monitoring effectiveness of prescription and protection measures.	See Table FMP-11 in 2020-2030 Algoma FMP - RAPU AOC.	MNR compliance staff monitors adherence to prescription. MNR develops and implements effectiveness monitoring program. Status: appear stable
Moose aquatic feeding area, mineral licks, and calving sites	Feeding areas and areas for reproduction	MNR responsibility for inventory, annual surveys of moose populations, moose aquatic feeding areas are mapped using methods outlined in the manual " Selected Wildlife and Habitat Features: Inventory Manual.	See Table FMP-11 in 2020-2030 Algoma FMP - ML AOC. See sections 6.2.7.6.1.1 and 6.2.7.6.1.4 in 2020-2030 Algoma FMP - MAFA direction.	Both MNR and CFMI staff routinely monitor compliance to ensure prescription applies appropriately. MNR develops and implements effectiveness monitoring program. Status: This value appears to be stable
White-tailed deer wintering area	Wintering areas	MNR keeps inventory of deer yards and monitors the use of these areas by deer. AOC Prescriptions: FMP-11 DY	AOC is established, prescriptions are developed for each area. AOC consist of modified harvest only (no reserve).	MNR compliance staff monitors adherence to prescription. MNR develops effectiveness monitoring program. Status: mapping difficult to keep up to date.

HCV	Attribute	Responsibility for monitoring	Prescription	Current monitoring
Hemlock dominated	Unique ecosystems that have declined on the Algoma Forest	These areas are identified in the Forest Management Plan. Hemlock is generally not harvested. Objectives for promoting hemlock are included in the FMP.	In most cases the prescription is no harvest of hemlock. Efforts are employed to regenerate hemlock.	Compliance and monitoring occurs in the forest planning process and is checked by the Independent Forest Audits.
E280n Batchawana Bay-Carp Lake Raised Delta 869 ha	Ancient lakebed, delta where ancient rivers emptied into Lake Superior is raised	MNR develops policy for management, conducts inventory, and provides guidance as to appropriate management.	Specific prescriptions are developed in cooperation with CFMI and local municipalities	Compliance and monitoring occurs in the forest planning process and is checked by the Independent Forest Audits
E283n Achigan Lake Area 2,524 ha	Old growth white pine and yellow birch, water quality, recreation, and remote road access	MNR develops policy for management, conducts inventory, and provides guidance as to appropriate management.	Specific prescriptions are developed in cooperation with CFMI and local municipalities	Compliance and monitoring occurs in the forest planning process and is checked by the Independent Forest Audits
E290n Bellevue hanging Delta 158 ha	Glacial Lake Algonquin emptied into Lake Superior and formed an ancient raised delta	MNR develops policy for management, conducts inventory, and provides guidance as to appropriate management.	Specific prescriptions are developed in cooperation with CFMI and local municipalities	Compliance and monitoring occurs in the forest planning process and is checked by the Independent Forest Audits

5.0 Appendix I - References as Background for This Report

- Armstrong, T. (E.R.) and B. Ratcliff. 2010. Ontario's recovering Peregrine Falcon population – Results of the 2005 survey. *Ontario Birds* 28(1): 32-42.
- Brinker, S. and C. Lewis. 2013. Improving our knowledge of lichens. *NHIC Newsletter* 18:3-6.
- Burke, P. 2013. Management Plan for the West Virginia White (*Pieris virginiensis*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.
- Cadman, M.D., P.F.J. Eagles, F.M. Helliener. 1987. *Atlas of Breeding Birds of Ontario*. University of Waterloo Press. 616 pp.
- Cadman, M., D. Sutherland, G. Beck, D. Lepage, and A. Couturier (editors). 2007. *Atlas of the breeding birds of Ontario, 2001-2005*. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto.
- COSEWIC. 2006. COSEWIC assessment and update status report on the lake sturgeon *Acipenser fulvescens* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 107 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
- COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will *Caprimulgus vociferous* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
- COSEWIC. 2010. COSEWIC assessment and status report on the Monarch *Danaus plexippus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp. (www.sararegistry.gc.ca/status/status_e.cfm).
- COSEWIC. 2011. Assessment and status report on the silver lamprey, Great Lakes-Upper St. Lawrence populations and Saskatchewan-Nelson Rivers population *Ichthyomyzon unicuspis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa

- COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis *Lucifugus*, Northern Myotis *septentrionalis* and Tri-colored Bat *Perimyotis subflavus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).
- COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow *Riparia* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).
- Dunkle, S.W. 2000. Dragonflies through binoculars; a field guide to dragonflies of North America. Oxford University Press, New York.
- Farrar, J.L. 1995. Trees in Canada. Fitzherny & Whiteside Ltd., and the Canadian Forest Service, Markham, Ontario.
- Jobes, A.P., E. Nol and D.R. Voigt. 2004. Effects of selection cutting on bird communities in contiguous eastern hardwood forests. *Journal of Wildlife Management* 68(1): 51-60.
- Lambeck, R.J. 1997. Focal Species: a multi-species umbrella for nature conservation. *Conservation Biology* 11(4): 849-856.
- Landriault, L. and S. Mills. 2009. Synthesis of forest-bird habitat requirements with reference to forest management planning in Ontario. MNR Northeast Science and Information, Timmins, Ontario, and Southern Science and Information, North Bay, Ontario. Unpublished Report.
- MNR. 1998. A Silvicultural Guide for the Tolerant Hardwood Forest in Ontario. Ont. Min. Nat. Resour. Queen's Printer for Ontario. Toronto. 500p.
- MNR. 2003. Silvicultural Guide to Managing Spruce, Fir, Birch, Aspen Mixedwood in Ontario's Boreal Forest. Version 1.0. Ont. Min. Nat. Resour., Queen's Printer for Ontario. 286 pp. + Appendices
- MNR. 2005. Forest Management Plan for the Algoma Forest 2005-2025.
- MNR. 2008. Ontario's woodland caribou conservation plan. MNR Species at Risk Branch Peterborough, Ontario.
- MNR. 2010. Forest Management Plan for the Algoma Forest 2010-2020: Phase I.
- MNR. 2010. Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales. Toronto: Queen's Printer for Ontario.

- MNR. 2010. Forest Management Guide for Great Lakes-St. Lawrence Landscapes. Queen's Printer for Ontario, Toronto.
- MNR. 2014. State of the Woodland Caribou Resource Report. Species at Risk Branch, Thunder Bay, Ontario. + 156 pp.
- MNR. 2015. Forest Management Plan for the Algoma Forest 2010-2020: Phase II.
- MNR. 2020. Forest Management Plan for the Algoma Forest 2020-2030: Phase II.
- Olson, D.M. et al. 2001. Terrestrial ecoregions of the world: a new map of life on earth. *Bioscience* 5 (11): 933-938.
- Osko, T.J., M.N. Hiltz, R.J. Hudson and S.M. Wasel. Moose habitat preferences in response to changing availability. *Journal of Wildlife Management* 68(3): 576-584.
- Perera, A.H., D.H. Euler and I.D. Thompson (Editors). 2003. Ecology of a Managed Terrestrial Landscape. University of British Columbia Press, Vancouver and the Ministry of Natural Resources and Forestry.
- Redside Dace Recovery Team. 2010. Recovery Strategy for Redside Dace (*Clinostomus elongatus*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 29 pp.
- Ricketts, T.H., E. Dinerstein, D.M. Olson and C. Louches. 1999. Who's where in North America. *Bioscience* 49 (5): 369-381.
- Scott, W. and E. Crossman. 1973. Freshwater fishes of Canada. Fisheries Research Board of Canada, Bulletin 184, DFO, Ottawa.
- Sleep, D., M. Drever, and K. Szuba. 2009. Potential role of spruce budworm in the range wide decline of the Canada Warbler. *Journal of Wildlife Management* 73(4):546-555.

Web Sites Consulted

CITES (Convention on International trade in Endangered Species) can be found www.cites.org

Conservation International Hotspots (global areas of outstanding conservation values) can be found at www.birdlife.net

COSEWIC – this site lists rare, threatened and endangered species in Canada, www.cosewic.ca

DFO (Dept. of Fisheries and Oceans) Aquatic SAR web site: <http://www.dfo-mpo.gc.ca/species-especies/species-especies/>

EBird web site: <http://ebird.org/ebird/eBirdReports?cmd=Start>

Ecological Monitoring and Assessment Network identifies in Canada and lists areas of conservation concern www.eman-rese.ca

Important bird areas in Canada can be found at www.bsc-eoc.org

IUCN Red Data List of Threatened Species can be found at www.iucn.org

MNR SAR web site: <http://www.ontario.ca/environment-and-energy/species-risk-type?name=Birds>

NHIC (Natural Heritage Information Centre) online data and mapping tool : <http://www.ontario.ca/environment-and-energy/make-natural-heritage-area-map>

NatureServe provides a searchable database distribution on ecosystem distribution in North America www.natureserve.org

Ontario Butterfly Atlas: http://www.ontarioinsects.org/atlas_online.htm

OBBA - Ontario Breeding Bird Atlas web site: <http://www.birdsontario.org/atlas/maps.jsp?lang=en>

Ontario Ministry Natural Resources' Crown Land Use Atlas (1999 Living Legacy Strategy) can be found at <http://crownlanduseatlas.MNR.gov.on.ca/>

Ontario Reptile and Amphibian Atlas: http://www.ontarionature.org/protect/species/herpetofaunal_atlas.php

UNESCO World Heritage Sites can be found at www.unesco.org

WWF Global Ecoregions, globally important ecoregions based on species richness, endemism, taxonomic uniqueness can be found at www.panda.org

Consultations for this Report

- Broad review based on the forest management plan, to determine forest values generally in the Algoma Forest.
- Meeting with the Local Citizen's Committee on September 13, 2004 to review the paper and the process. Names to be added.

- Workshop on September 14, 2004
- Meeting with local staff of the Sault Ste. Marie District, Ministry of Natural Resources and Forestry
- Staff of Clergue Forest Management Inc.
- Technical Reviews (CFS, MNR, Forestry Consultants, WWF)

Additional Sources of Information

Bowman, I. and J. Siderius. 1984. Management guidelines for the protection of heronries in Ontario. MNR, Wildlife Branch, Toronto.

Cadman, M., P. Eagles, and F. Helleiner. 1987. Atlas of the breeding birds of Ontario. University of Waterloo Press, Waterloo, Ontario.

Dobbyn, J. 1994. Atlas of the mammals of Ontario. Federation of Ontario Naturalists, Don Mills, Ontario.

DeGraaf, R.M. 1987. Managing northern hardwoods for breeding birds. In 'Managing northern hardwoods. Proceedings of a Silvicultural Symposium 23-26 June 1986'. (ed. R. D. Nyland) pp. 348-362. (Society of American Foresters Publication No. 87-03: Syracuse, NY.)

DeGraaf, R.M. 1992. Effects of even-aged management on forest birds at hardwood interfaces. *Forest Ecology and Management* 46, 95-110.

Glassberg, J. 1999. Butterflies through binoculars – the east. Oxford University Press, New York.

Harding, J. 1997. Amphibians and reptiles of the Great Lakes region. University of Michigan Press, Ann Arbor, Michigan.

Holloway, G.B. Naylor, and R. Watt. 2004. Habitat relationships of wildlife in Ontario – revised habitat suitability models for the Great Lakes-St. Lawrence and boreal east forests. MNR, Northeast Science and Information, Timmins, and Southern Science and Information, North Bay. Joint technical Report No. 1.

Holmes, A., Q. Hess, R. Tasker, and A. Hanks. 1991. The Ontario butterfly atlas. Toronto Entomologists' Association. Toronto.

Johnsgard, P. 1988. North American owls, biology, and natural history. Smithsonian Institution Press, Washington, D.C.

- Lambeck, R.J. 1997. Focal Species: A multi-species umbrella for nature conservation. *Conservation Biology* 11(4): 849-860.
- McLaren, M., I. Thompson, and J. Baker. 1998. Selection of vertebrate wildlife indicators for monitoring sustainable forest management in Ontario. *Forestry Chronicle* 74(2):241-248.
- McCracken, J. D., and Heagy, A.E. 2004. Monitoring the state of Ontario's landbirds. *Bird Studies Canada* 20 pp.
- Naylor, B., J. Baker, D. Hogg, J. McNicol, and W.R. Watt. 1996. Forest management guidelines for the provision of pileated woodpecker habitat. MNR Queen's Printer for Ontario, Toronto.
- Naylor, B., D. Kaminski, S. Bridge, P. Elkie, D. Ferguson, G. Lucking and B. Watt. 1999. User's guide for OWHAM99 and OWHAMTool (Ver. 4.0). MNR, Southcentral Science and Information, Tech. Rep. No. 54.
- MNR. 2002. Forest management guide for natural disturbance pattern emulation, version 3.1. MNR, Queen's Printer for Ontario, Toronto.
- MNR. 2003. Old growth policy for Ontario's Crown forests. MNR, Queen's Printer for Ontario.
- MNR. 2003. Draft recovery strategy for forest-dwelling woodland caribou (*Rangifer tarandus caribou*) in Ontario. Version 8, April 8, 2003.
- MNR. 2003. Old growth forest definitions for Ontario. MNR, Queen's Printer for Ontario.
- MNR. 2003. Forest roads and water crossings initiative – water crossing inventory project instruction manual.
- Ontario Partners in Flight. 2008. Ontario Landbird Conservation Plan: Boreal Hardwood Transition, North American Bird Conservation Region 12. Ministry of Natural Resources and Forestry, Bird Studies Canada, Environment Canada.
- Proforest. 2002. Identifying High Conservation at a national level: a practical guide Open review Draft 31, October 2002.
- Ranta, W.B. 1998. Selected Wildlife & Habitat Features Inventory Manual. Version 1.0. MNR. Queen's Printer for Ontario.

- Schafer, James. A. and William O. Pruitt Jr. 1991. Fires and woodland caribou in southeastern Manitoba. *Wildlife Monographs* 116, 1-39.
- Smith, K. A. 2002. Demography and spatial ecology of wood turtles (*Clemmys insculpta*) in Algonquin Provincial Park. University of Guelph, Ph. D. Thesis.
- Szuba, K. and B. Naylor. 1998. Forest raptors and their nests in central Ontario. MNR, Southcentral Sciences Section, Field Guide FG-03. MNR Queen's Printer for Ontario, Toronto.
- Taylor, K., R. Arnup, B. Merchant, J. Parton, and J. Nieppola. 2000. A field guide to forest ecosystems of northeastern Ontario. Second Edition. MNR, Northeast Science and technology, NEST Field Guide FG-001.
- Thompson, I. 2000. Forest vertebrates of Ontario: patterns of distribution. pp. 54-73 *In*. Perera, A.H., D.H. Euler and I.D. Thompson (Editors) 2003. *Ecology of a Managed Terrestrial Landscape*. University of British Columbia Press, Vancouver and the Ministry of Natural Resources and Forestry.
- Schappert, P. 1996. Distribution, status and conservation of the Monarch Butterfly., *Danaus plexippus* (L.) in Canada, York University. Unpublished Report (available at: www.esb.utexas.edu/philjs/Monarch/monrep97.htm)
- Watt. R.W., J. A. Baker, D. M. Hogg, J. McNicol, and B. J. Naylor. 1996. Forest management guidelines for the provision of marten habitat. MNR Queen's Printer for Ontario, Toronto.
- World Wildlife Fund. 2001. WWF Terrestrial Ecoregions of North America: a conservation assessment.. Island Press.

6.0 Appendix II - Questions from Appendix E of the Great Lakes/St. Lawrence

The questions from Principle 9 are:

Category 1) Forest areas containing globally, regionally, or nationally significant concentrations of biodiversity values

- Question 1) Does the forest contain concentrations of species at risk as listed by international, national, or provincial authorities?
- Question 2) Does the forest contain a concentration of species having a restricted geographical range?
- Question 3) Does the forest include regionally significant seasonal concentrations of species?
- Question 4) Does the forest support regionally significant species (e.g. species declining regionally, culturally important species)?
- Question 5) Does the forest support concentrations of species at the edge of their natural ranges or outlier populations?
- Question 6) Does the forest lie within, adjacent to, or contain a conservation area: a) designated by an international authority, b) legally designated or proposed by relevant federal/provincial/territorial legislative body or c) identified in regional land use plans or conservation plans.

Category 2) Forest areas containing globally, regionally, or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most of not all naturally occurring species exist in natural patterns of distribution and abundance

- Question 7) Does the forest constitute or form part of a globally, nationally, or regionally significant forest landscape that includes populations of most native species and sufficient habitat such that there is a high likelihood of long-term species persistence?
- Question 8) Are large landscape level forests, (i.e. large unfragmented forests) rare or absent in the forest or ecoregion?

Category 3) Forest areas that are in or contain rare, threatened, or endangered ecosystems

Question 9) Does the forest contain naturally rare ecosystem types?

Question 10) Are there ecosystem types within the forest or ecoregion that have significantly declined?

Question 11) Are there sites with unique or exceptional ecological circumstances?

Category 4) Forest areas that provide basic services of nature in critical situations (e.g. watershed protection, erosion control)

Question 12) Does the forest provide a significant source of drinking water?

Question 13) Are there forests that provide a significant ecological service in mediating flooding and/or drought, controlling stream flow regulation, and water quality?

Question 14) Are there forests critical to erosion control?

Category 5) Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health)

Question 15) Are there local communities? Is anyone within the community making use of the forest for basic needs/ livelihoods?

Category 6) Forest areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic, or religious significance identified in cooperation with such local communities)

Question 16) Is the traditional cultural identity of the local community particularly tied to a specific forest area?

Question 17) Is there a significant overlap of values (ecological and/or cultural that individually did not meet HCV thresholds but collectively constitute HCVs)?

7.0 Appendix III - Ranking Species Based on Their Abundance & Distribution

Four systems are used to rank species of plants and wildlife based on their rarity and distribution. The systems have a lot in common; however, the process used is different in each case and the rankings, while similar in many cases, also come to different conclusions based on the characteristics of the ranking system. A brief description is provided here and citation for more details are available on the websites listed.

Ministry of Natural Resources and Forestry Endangered Species Act found at http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_07e06_e.htm puts species at risk in one of 5 categories:

Extinct: Any species that no longer exists, e.g. Passenger Pigeon

Extirpated: Any native species that no longer exists in the wild in Ontario but still exists elsewhere in the wild, e.g. Tiger Salamander

Endangered: Any native species that is at risk of becoming extinct in all or most of Ontario, e.g. Wood Turtle

Threatened: Any native species that is at risk of becoming endangered in Ontario, e.g. Peregrine Falcon

Special Concern: Any native species that is sensitive to human activities or natural events, e.g. Golden Winged Warbler

In addition to species listed under the Endangered Species Act, the Ministry of Natural Resources and Forestry also has the Natural Heritage Information Centre (NHIC) that keeps track of species that are not covered under the Endangered Species Act. The NHIC website, found at <http://nhic.MNR.gov.on.ca/>, carries a complete description of a ranking system that is used for that purpose. Only the first 5 categories are relevant to the purpose of the paper. They are:

S1 Extremely rare in Ontario; usually 5 or fewer occurrences in the province.

S2 Very rare in Ontario; usually between 5 and 20 occurrences in the province.

S3 Rare to uncommon in Ontario; usually between 20 and 100 occurrence in the province.

- S4 Common and apparently secure in Ontario; usually with more than 100 occurrences in the province.
- S5 Very common and demonstrably secure in Ontario.

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) also has devised a ranking system for species that are considered to be at risk in Canada. Their system is similar to the others but slightly different in some respects:

Extirpated: a species that no longer exists;

Endangered: a species facing imminent extirpation or extinction throughout its range;

Threatened: a species likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction;

Special Concern: a species of special concern because of characteristics that make it particularly sensitive to human's activities or natural events

Indeterminate: a species for which there is insufficient information to support a status designation

Not at Risk: a species that has been evaluated and found not to be at risk

Because it has global responsibilities, the World Wildlife Fund has also developed a ranking system to guide managers for endangered wildlife. A complete description is on the Ministry of Natural Resources and Forestry website and is summarized as follows:

- G1 Extremely rare, usually 5 or fewer occurrences in the overall range.
- G2 Very rare; usually between 5 and 20 occurrences in the overall range.
- G3 Rare to uncommon; usually between 20 and 100 occurrence in the overall range.
- G4 Common usually with more than 100 occurrences
- G5 Very common, demonstrably secure under present conditions.

8.0 Appendix IV - 2021 List of Species at Risk in the Algoma Forest and Rationale

Proposed ACTION	Species	HCV in Algoma Forest?	Occurrence in the Algoma Forest		At Risk Status**		Comments	Primary Sources of Information*
			During Breeding Season?	On Managed Crown Area in Algoma?	Ontario ESA	Federal SARA		
BIRDS								
Retain	Bald eagle	Yes	Yes	Yes - many occurrences	SC	NAR	Known to occur in the Algoma Forest.	FMP, NHIC, OBBA
Retain	Bank swallow	Yes	Yes	Yes	THR	THR	Could nest in aggregate pits or natural riverbanks in the Algoma Forest. Several OBBA squares in the Algoma in 2001-2005 and on several EBird checklists in the area within recent years.	COSEWIC (2013), OBBA, EBird
Retain	Barn swallow	Yes	Yes	Possible	THR	THR	Use of man-made structures on Crown land (bridges, garages) is possible	OBBA, EBird
Retain	Black tern	Yes	Yes	Yes	SC	No status	EBird and the OBBA suggest there is at least one location on crown land to the east of Sault Ste. Marie where black terns were observed during the nesting season within recent years.	MNR SAR range maps, EBird, OBBA
Retain	Canada warbler	Yes	Yes	Yes	SC	THR	Mapped habitat occurs in Bow Lake windfarm area.	MNR SAR range maps, EBird, OBBA
Retain	Common nighthawk	Yes	Yes	Yes	SC	THR	Several occurrences on EBird within recent years, and several in OBBA	MNR SAR range maps, EBird, OBBA

Proposed ACTION	Species	HCV in Algoma Forest?	Occurrence in the Algoma Forest		At Risk Status**		Comments	Primary Sources of Information*
			During Breeding Season?	On Managed Crown Area in Algoma?	Ontario ESA	Federal SARA		
Retain	Eastern whip-poor-will	Yes	Yes	Yes	THR	THR	Several occurrences on EBird within recent years and also OBBA.	MNR SAR range maps, EBird, OBBA
Retain	Eastern wood-pewee	Yes	Yes	Yes	THR	THR	Known to occur in the Algoma Forest based on several OBBA squares.	OBBA, EBird
Add	Evening grosbeak	Yes	Yes	Yes	SC	SC	Multiple observations on iNaturalist	iNaturalist
Retain	Olive-sided flycatcher	Yes	Yes	Yes	SC	THR	Several OBBA squares and EBird observations within recent years.	OBBA, MNR SAR range maps, EBird
Retain	Peregrine falcon (<i>anatum/tundrius</i> subspecies)	Yes	Yes	Yes	SC	No status	Known to occur in Algoma.	FMP, OBBA, MNR SAR range maps; NHIC
Add	Red-headed woodpecker	Yes	Yes	Possibly	SC	END	Multiple observations on iNaturalist in Echo Bay and St. Joseph's Island areas	iNaturalist
Retain	Rusty blackbird	Yes	Yes	Yes	SC	SC	In several OBBA squares in the Algoma Forest in 2001-2005, and several EBird observations within recent years.	OBBA, EBird
Retain	Short-eared owl	Yes	Yes	Yes	SC	SC	MNR SAR range maps suggest does not occur in Algoma, but found in a few OBBA squares east of Sault Ste. Marie in 2001-2005, and in several EBird checklists in the Algoma Forest within recent years.	MNR SAR range maps, OBBA, EBird

Proposed ACTION	Species	HCV in Algoma Forest?	Occurrence in the Algoma Forest		At Risk Status**		Comments	Primary Sources of Information*
			During Breeding Season?	On Managed Crown Area in Algoma?	Ontario ESA	Federal SARA		
Retain	Wood thrush	Yes	Yes	Yes	SC	THR	Assumed to be present on Crown managed forest given recorded observations on private land and recorded calls on Crown.	OBBA, EBird, iNaturalist
Retain	Yellow rail	Yes	Yes	Possible	SC	SC	MNR SAR range maps suggest no occurrence in Algoma but was observed in 2 OBBA squares N of St. Joseph island and a few EBird records within recent years.	MNR SAR range maps, OBBA, EBird; NHIC
REPTILES								
Retain	Blanding's turtle	Yes	Yes	Yes	THR	END	iNaturalist observation near Batchawana Bay	Ontario Reptile and Amphibian Atlas, MNR SAR range maps, iNaturalist
Retain	Snapping turtle	Yes	Yes	Yes	SC	SC	Commonly known to occur on the Algoma Forest	Ontario Reptile and Amphibian Atlas, MNR SAR range maps
Retain	Wood turtle	Yes	Yes	Yes	END	THR	Known to occur on the Algoma Forest	MNR
MAMMALS								
Retain	Little brown myotis (<i>Myotis lucifugus</i>)	Yes	Yes	Yes	END	END	Very likely to occur in the managed forest. It would be roosting in tree cavities and under bark, under bridges, in rock crevices, foraging over water, and hibernating in mines and caves.	Published range maps; COSEWIC 2013

Proposed ACTION	Species	HCV in Algoma Forest?	Occurrence in the Algoma Forest		At Risk Status**		Comments	Primary Sources of Information*
			During Breeding Season?	On Managed Crown Area in Algoma?	Ontario ESA	Federal SARA		
Retain	Northern myotis (<i>Myotis septentrionalis</i>)	Yes	Yes	Yes	END	END	Very likely to occur in the managed forest. Would be roosting in tree cavities, under bridges, in rock crevices, foraging over gaps in the forest, and hibernating in mines and caves.	Published range maps; COSEWIC 2013
Retain	Tri-coloured bat (<i>Perimyotis subflavus</i>)	Yes	Yes	Yes	END	END	Very likely to occur in the managed forest. Would be roosting in trees and in clumps of lichens in trees, foraging over water, along waterways, and forest edges.	Published range maps; COSEWIC 2013
Retain	Woodland caribou	Yes	Yes	Possible	THR	THR	The last known sighting of a woodland caribou in the Algoma Forest was in the 1990s. However, caribou may still be present and are known to occur in Pukaskwa National Park, to the northwest of the Algoma Forest.	2015-2020 FMP, MNR-SAR caribou occurrence map
INVERTEBRATES								
Retain	Monarch butterfly	Yes	Yes	Yes	SC	SC	Commonly known to occur on the Algoma Forest.	Ontario Butterfly Atlas
Retain	West Virginia white butterfly	Yes	Yes	Yes	SC	NAR	The West Virginia white is a butterfly of the forest interior that prefers mature tolerant hardwood forest (Burke 2013).	MNR

Proposed ACTION	Species	HCV in Algoma Forest?	Occurrence in the Algoma Forest		At Risk Status**		Comments	Primary Sources of Information*
			During Breeding Season?	On Managed Crown Area in Algoma?	Ontario ESA	Federal SARA		
Add	Yellow-banded bumble bee	Yes	Yes	Yes	SC	SC	Multiple observations on iNaturalist of yellow-banded bumble bee within Algoma Forest.	iNaturalist
FISH								
Retain	Lake sturgeon (Great Lakes-upper St. Lawrence population)	Yes	Yes	Yes	END	THR	The sturgeon is known to occur in many waters within the boundaries of the Algoma Forest based on NHIC data and DFO range maps.	DFO Aquatic SAR web site; NHIC;
Retain	Northern brook Lamprey	Yes	Yes	Yes	SC	SC	Range maps suggest the northern brook lamprey could occur in streams that flow through Crown land in the Algoma Forest.	MNR SAR web site; DFO Aquatic SAR web site; NHIC
Retain	Silver lamprey	Yes	Yes	Yes	SC	SC	It is possible that the silver lamprey could occur in streams that flow through the managed portion of the Algoma Forest.	DFO Aquatic SAR web site; NHIC

*Results are based on a detailed review of COSEWIC and COSSARO designations as of October 15, 2021 and information on occurrences depicted by the sources listed in this table. List updated by Kandyd Szuba, PhD, RPF

Web Sites Consulted as Sources:

MNR SAR web site: <http://www.ontario.ca/environment-and-energy/species-risk-type?name=Birds>

DFO (Dept. of Fisheries and Oceans) Aquatic SAR web site: <http://www.dfo-mpo.gc.ca/species-especes/species-especes/>

EBird web site: <http://ebird.org/ebird/eBirdReports?cmd=Start>

NHIC (Natural Heritage Information Centre) online data and mapping tool : <http://www.ontario.ca/environment-and-energy/make-natural-heritage-area-map>

OBBA - Ontario Breeding Bird Atlas web site: <http://www.birdsontario.org/atlas/maps.jsp?lang=en>

Ontario Reptile and Amphibian Atlas: http://www.ontarionature.org/protect/species/herpetofaunal_atlas.php

Ontario Butterfly Atlas: http://www.ontarioinsects.org/atlas_online.htm

Other Cited References:

Brinker, S. and C. Lewis. 2013. Improving our knowledge of lichens. NHIC Newsletter 18:3-6.

Burke, P. 2013. Management Plan for the West Virginia White (*Pieris virginiensis*) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.

COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis *Lucifugus*, Northern Myotis *septentrionalis* and Tri-colored Bat *Perimyotis subflavus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow *Riparia* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

MNR. 2020. Forest Management Plan for the Algoma Forest 2020-2030.

Redside Dace Recovery Team. 2010. Recovery Strategy for Redside Dace (*Clinostomus elongatus*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 29 pp.

9.0 Appendix V - 2015 List of Rare Species in the Algoma Forest and Rationale

Common Name <i>Scientific Name</i>	HCV Designation and Rationale	HCV Report Rationale & Designation
A Lichen <i>Anaptychia setifera</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014.	Given the G5/S3 rating and the number of reports on the Algoma Forest this species is designated as a Possible HCV where it occurs.
A Liverwort <i>Diplophyllum taxifolium</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014.	Given the G5 rating and the number of reports on the Algoma Forest this species is designated as a Possible HCV where it occurs.
A Moss <i>Tetraplohn mnioides</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014.	Given the G4 rating and the number of reports on the Algoma Forest this species is designated as a Possible HCV where it occurs.
American Beachgrass <i>Ammophila breviligulata</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014.	Given the G5/S3 rating and the number of reports on the Algoma Forest this species is designated as a Possible HCV where it occurs.
Blue Bilberry (Oval-leaved Bilberry) <i>Vaccinium ovalifolium</i>	HCV. 2 observations on Crown land outside parks in 1998.	Given the G5/S2 rating and the number of reports on the Algoma Forest this species is designated as an HCV where it occurs.
Blue Wild-rye <i>Elymus glaucus</i>	Not HCV. 8 observations within the boundaries of the Algoma Forest but appears to be restricted to the coastline at Batchawana Bay and Pancake Bay. Therefore, unlikely to occur in the managed forests, wetlands, or associated waterways of the Algoma Forest.	Given the G5/S1 rating and the number of reports on the Algoma Forest this species is designated as an HCV where it occurs.
Boreal Bedstraw <i>Galium kamtschaticum</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014.	Given the G5/S2 rating and the number of reports on the Algoma Forest this species is designated as an HCV where it occurs.
Braun's Holly Fern <i>Polystichum braunii</i>	HCV. 23 occurrences within the boundaries of the Algoma Forest (in both Sault Ste. Marie and Wawa Districts), and some appear to be on managed Crown land.	Given the G5/S2 rating and the number of reports on the Algoma Forest this species is designated as an HCV where it occurs.
Flat-stemmed Danthonia <i>Danthonia compressa</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014	Given the 2 recent sightings under NOF this is designated as an HCV where it occurs.

Common Name Scientific Name	HCV Designation and Rationale	HCV Report Rationale & Designation
Giant Pinedrops <i>Pterospora andromedea</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014	Given its rating and low number of reports this species is designated as not HCV.
Greene's Rush <i>Juncus greenei</i>	Not HCV. A few records within the boundaries of the Algoma Forest but appears to be restricted to the coast and to coastal parks. Unlikely to be encountered in the managed forests, wetlands, or associated waterways of the Algoma Forest.	Given its rating and the geographical isolation of reported occurrences this species is designated as not HCV.
Haircap <i>Pogonatum dentatum</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014	Given its rating and number of reports this species is designated as a Possible HCV where it occurs
Large-leafed Sandwort <i>Moehringia macrophylla</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014	Given its rating and number of reports this species is designated as a Possible HCV where it occurs
Laurentian Bladder Fern <i>Cystopteris laurentiana</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014	Given its rating and low number of reports this species is designated as not HCV.
Pale Moonwort <i>Botrychium pallidum</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014	Given the low number of reports and lack of knowledge regarding this species is designated as not HCV.
Rattlesnake Hawkweed <i>Hieracium venosum</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014	Given the G5/S2 rating and number of reports this is designated as an HCV where it occurs.
Roundleaf Groundsel <i>Packera obovata</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014	Given the G5/S3 rating and recent sightings under NOF this is designated as a Possible HCV where it occurs.
Sand Reed Grass <i>Calamovilfa longifolia var.</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014	Given the indeterminate status globally and low number of reports is designated as not HCV.
Sand-heather (Woolly Beach-heath) <i>Hudsonia tomentosa</i>	Not HCV. Several occurrences within the boundaries of the Algoma Forest but appears to be restricted to coastal areas on private land and in parks. Unlikely to be encountered in the managed forests, wetlands, or associated waterways of the Algoma Forest.	Given the low number of sightings under NOF this is designated as a not HCV.

Common Name <i>Scientific Name</i>	HCV Designation and Rationale	HCV Report Rationale & Designation
Western Moonwort <i>Botrychium hesperium</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014.	Given the G3/S1 rating and the number of reports on the Algoma Forest this species is designated as an HCV where it occurs.
Wiegand's Sedge <i>Carex wiegandii</i>	Not HCV. A few occurrences within the boundaries of the Algoma Forest but appears to be restricted to coastal areas on private land and in parks. Unlikely to be encountered in the managed forests, wetlands, or associated waterways of the Algoma Forest.	Given the G3/S1 rating and the number of reports on the Algoma Forest this species is designated as an HCV where it occurs.
Beach-dune Tiger Beetle <i>Cicindela hirticollis</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014	This species occurs in dune (beach) areas near water and therefore is designated as not HCV .
Brush-tipped Emerald <i>Somatochlora walshii</i>	Not Assessed in 2015. From late 2014 through early 2015, the Ontario Odonata Atlas was "temporarily unavailable". Therefore, records of occurrence of dragonflies and damselflies in the Algoma Forest could not be searched.	The species occurs near water which is protected by fisheries & water quality AOCs and therefore is not HCV .
Delta-spotted Spiketail <i>Cordulegaster diastatops</i>	Not Assessed in 2015. From late 2014 through early 2015, the Ontario Odonata Atlas was "temporarily unavailable". Therefore, records of occurrence of dragonflies and damselflies in the Algoma Forest could not be searched.	The species occurs near water which is protected by fisheries & water quality AOCs and therefore is not HCV .
Horned Clubtail <i>Arigomphus cornutus</i>	Not Assessed in 2015. From late 2014 through early 2015, the Ontario Odonata Atlas was "temporarily unavailable". Therefore, records of occurrence of dragonflies and damselflies in the Algoma Forest could not be searched.	The species occurs near water which is protected by fisheries & water quality AOCs and therefore is not HCV .
Kennedy's Emerald <i>Somatochlora kennedyi</i>	Not Assessed in 2015. From late 2014 through early 2015, the Ontario Odonata Atlas was "temporarily unavailable". Therefore, records of occurrence of dragonflies and damselflies in the Algoma Forest could not be searched.	The species occurs near water which is protected by fisheries & water quality AOCs and therefore is not HCV .

Common Name Scientific Name	HCV Designation and Rationale	HCV Report Rationale & Designation
Zebra Clubtail <i>Stylogomphus scudderi</i>	Not Assessed in 2015. From late 2014 through early 2015, the Ontario Odonata Atlas was "temporarily unavailable". Therefore, records of occurrence of dragonflies and damselflies in the Algoma Forest could not be searched.	The species occurs near water which is protected by fisheries & water quality AOCs and therefore is not HCV .
Least Clubtail <i>Stylogomphus albistylus</i>	Not Assessed in 2015. From late 2014 through early 2015, the Ontario Odonata Atlas was "temporarily unavailable". Therefore, records of occurrence of dragonflies and damselflies in the Algoma Forest could not be searched.	The species occurs near water which is protected by fisheries & water quality AOCs and therefore is not HCV .
Moustached Clubtail <i>Gomphus adelphus</i>	Not Assessed in 2015. From late 2014 through early 2015, the Ontario Odonata Atlas was "temporarily unavailable". Therefore, records of occurrence of dragonflies and damselflies in the Algoma Forest could not be searched.	The species occurs near water which is protected by fisheries & water quality AOCs and therefore is not HCV .
Ocellated Darner <i>Boyeria grafiana</i>	Not Assessed in 2015. From late 2014 through early 2015, the Ontario Odonata Atlas was "temporarily unavailable". Therefore, records of occurrence of dragonflies and damselflies in the Algoma Forest could not be searched.	The species occurs near water which is protected by fisheries & water quality AOCs and therefore is not HCV .
Ocellated Emerald <i>Somatochlora minor</i>	Not Assessed in 2015. From late 2014 through early 2015, the Ontario Odonata Atlas was "temporarily unavailable". Therefore, records of occurrence of dragonflies and damselflies in the Algoma Forest could not be searched.	The species occurs near water which is protected by fisheries & water quality AOCs and therefore is not HCV .
Riffle Snaketail <i>Ophiogomphus carolus</i>	Not Assessed in 2015. From late 2014 through early 2015, the Ontario Odonata Atlas was "temporarily unavailable". Therefore, records of occurrence of dragonflies and damselflies in the Algoma Forest could not be searched.	The species occurs near water which is protected by fisheries & water quality AOCs and therefore is not HCV .

Common Name Scientific Name	HCV Designation and Rationale	HCV Report Rationale & Designation
Ski-tailed Emerald <i>Somatochlora elongata</i>	Not Assessed in 2015. From late 2014 through early 2015, the Ontario Odonata Atlas was "temporarily unavailable". Therefore, records of occurrence of dragonflies and damselflies in the Algoma Forest could not be searched.	The species occurs near water which is protected by fisheries & water quality AOCs and therefore is not HCV .
Williamson's Emerald <i>Somatochlora williamsoni</i>	Not Assessed in 2015. From late 2014 through early 2015, the Ontario Odonata Atlas was "temporarily unavailable". Therefore, records of occurrence of dragonflies and damselflies in the Algoma Forest could not be searched.	The species occurs near water which is protected by fisheries & water quality AOCs and therefore is not HCV .
Small-footed Bat <i>Myotis leibii</i>	Not HCV. No NHIC records for the managed portion of the Algoma Forest during 1990-2014.	Given its Global/Regional ranking & number of sightings this species is designated as a Possible HCV where it occurs.
Northern Long-eared Bat <i>Myotis septentrionalis</i>	HCV. Identified as an HCV because of its status as an endangered species at risk with a high probability of occurring in the managed portion of the Algoma Forest (see Table 1).	Given its G4 rating, Indeterminate Regional ranking & number of sightings this species is designated as a Possible HCV where it occurs.
Eastern Pipistrelle <i>Pipistrellus subflavus</i>	Not HCV. No NHIC records or other known occurrences for the managed portion of the Algoma Forest during 1990-2014.	Given the indeterminate status and low number of sightings this species is designated as not HCV .