

2019



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ANNUAL MONITORING REPORT

WOODLANDS

PORT HAWKESBURY PAPER

Executive Summary



The 2019 Annual Monitoring Report provides a summary of Port Hawkesbury Paper's safety, environmental, and forest management progress in the Woodlands Unit. Since 2002, Port Hawkesbury Paper (PHP) has been monitoring and reporting on a suite of sustainable forest management indicators to measure its progress towards achieving targets regarding social, economic, environmental, and cultural forest values. Long-term monitoring of these values allows the public to better understand PHP's forest management activities, and the goals and objectives we set to ensure our forest management is having a positive impact and to implement action items in areas that we are not. This is an important element of continual improvement, which PHP strives for every day.

This report also summarizes the effectiveness monitoring program for High Conservation Value Forests (HCVF). These values were first identified in 2008 for Forest Stewardship Council® (FSC®) certification and updated in January 2018 to include new knowledge and information related to species at risk and protected areas. Annual monitoring is conducted to assess the effectiveness of the measures used to maintain or enhance the identified values.



The mark of
responsible forestry



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About the Woodlands Unit

 <p>2001: First forest company in Canada to achieve certification to both the Canadian Standards Association (CSA®) and Sustainable Forestry Initiative (SFI®) standards for sustainable forest management.</p>	 <p>2008: First forest company in Maritime provinces to achieve certification to the Forest Stewardship Council® (FSC®) Maritime Standard for responsible forest management. PHP is still certified to the FSC Maritime Standard today.</p>	 <p>2008: First forest company in Maritime provinces to achieve Chain-of-Custody certification to the FSC® standard for wood traceability.</p>	 <p>2014: Woodlands becomes re-certified to the SFI® Forest Management and Chain-of-Custody Standards, and the PEFC™ Chain-of-Custody standard.</p>
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With a dedicated staff of 25 people, the company's Woodlands Unit currently manages 30% of the Crown land in Nova Scotia, which represents 58% (roughly 523,000 hectares) of the Crown land in the seven eastern counties. As a result of 50 years of silviculture activities on these lands, the forest continues to see an increase in economic activity within a healthy and naturally diverse ecosystem.

Our wood supply primarily comes from the seven eastern counties of Nova Scotia with additional wood purchased in central Nova Scotia. The Woodlands Unit also provides silviculture services and information on sustainable forest management practices to private woodland owners. Additionally, we provide training on best management practices for Crown and private contractors and operators. In addition to acquiring softwood pulpwood from the managed forest, Port Hawkesbury Paper also manages its forest lands to produce softwood and hardwood logs, and other products, for sale to local sawmills and buyers.

As the largest Crown license holder in eastern Nova Scotia, we believe that good business includes strong community support and involvement, environmental awareness, continued

growth in forest management and contribution to the Nova Scotia economy. The public use of Crown lands for recreation, accessibility, hunting and fishing illustrates the wide variety of values held by the general public. To achieve sustainable forest management, the needs of all stakeholders must be assessed and managed appropriately.

Forest management certification is one of many tools to support the sustainability of Port Hawkesbury Paper. Certification is a voluntary process by which planning, procedures, systems and performance of on-the-ground forestry operations are audited by a qualified and independent third party against a predetermined standard. Forest operations found to be in conformance with the given standard are issued a certificate. Port Hawkesbury Paper supports the mutual recognition of credible forest certification systems that take into account national and regional characteristics such as natural conditions, forest ownership structures and legislation.

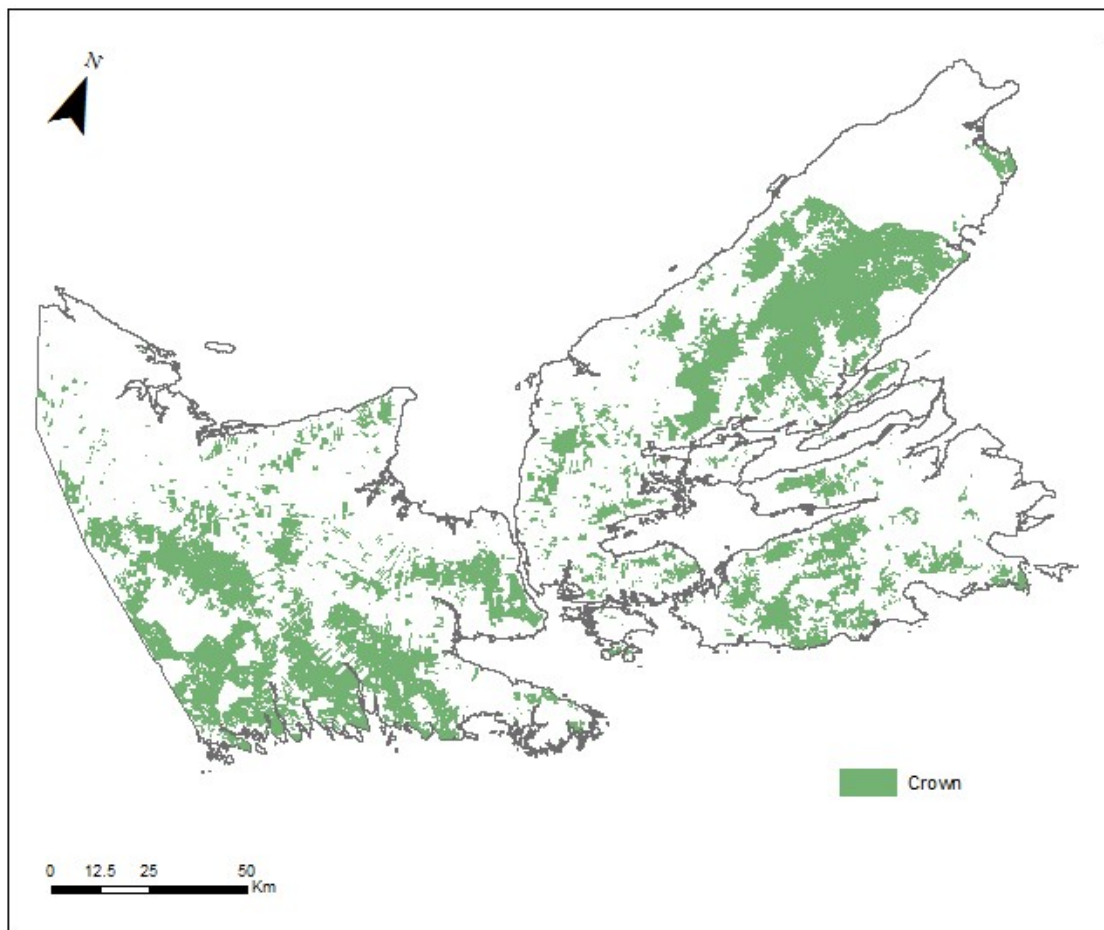
Forest operations at Port Hawkesbury Paper are carefully planned to deliver a valuable, sustainable resource that satisfies economic, social, and environmental benefits. More specifically, Port Hawkesbury Paper works diligently to ensure sustainable harvests, increased forest productivity, and protection for wildlife, water, and recreational resources. With the use of high-end computer mapping and software systems, we supervise our operations to strict standards to ensure we continually meet or exceed our expectations for a healthy productive forest for the future.

Port Hawkesbury Paper's Crown Land Forest Management Area

PHP's Defined Forest Area (DFA) is located in the seven eastern counties of Nova Scotia. The geographic extent of the DFA is shown in Figure 1. The company manages approximately 523,000 hectares of Crown lands through a license agreement with the provincial government within the DFA.

In addition to acquiring wood from PHP company managed lands, the company harvests wood from private woodland owners through short-term stumpage leases. Private wood is also procured from private suppliers that operate on private woodlands located in central and eastern Nova Scotia. Private wood is purchased at roadside and the company provides competitive pricing. In addition, the company provides silviculture services and training in sustainable forest management practices to encourage good stewardship practices.

The public use of Crown lands for recreation, accessibility, hunting and fishing, to name a few, illustrates the wide variety of values held by the general public. Tourism plays an important role in the regional economy; as a result, unique challenges in meeting the needs of all stakeholders must be assessed and managed appropriately. The NSDLF has implemented an integrated resource management (IRM) land use approach for the management of Crown lands.



PHP's Crown Land-base as per the Forest Utilization License Agreement

The Crown land-base was assembled using photo-interpreted forest inventory flown in 2008 and 2009 as a base. Historic treatment GIS data were incorporated from PHP and government databases to update the spatial boundaries and attributes of the forest inventory. Wildlife habitat, ecosystem data, special management layers, and hydrology and roads layers were compared, agreed upon and amalgamated where appropriate to create the most recent and accurate dataset possible.

As land-base layers are overlaid, attributes are coded to allow for partitioning of results based on forest and non-forest values. The total land area includes all area, crown wilderness area and non-forested land are removed to create the forested land-base. After removing permanent exclusions (off limits to forest management prescriptions such as protected areas, old growth areas, species at risk habitat buffers, and other land-use restrictions), the remainder is the working land-base which contributes to wood supply. The working land-base is largely occupied by special management lands, which dictate treatment prescription details.

Key Commitments to Safety



Safety is a vital aspect of our operating philosophy. From production to quality assurance, cost control and environmental compliance, we focus on safety in everything we do.



The Health & Safety of employees takes precedence over all other responsibilities and activities within our Company. This is the cornerstone of our safety policy.



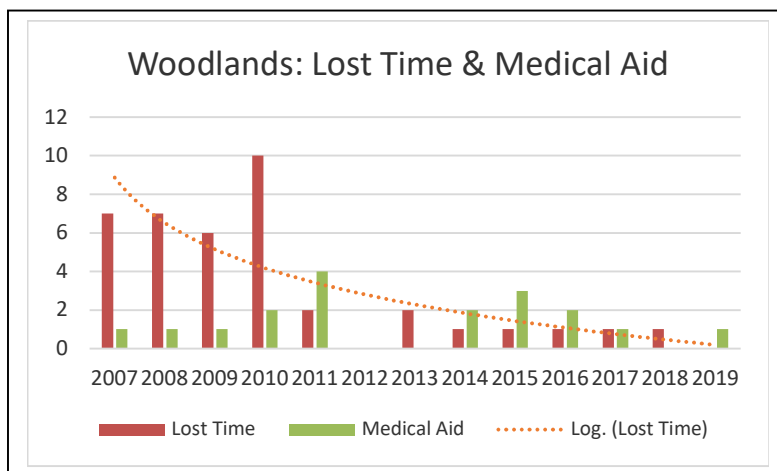
We believe that all accidents are preventable. Our success is measured by our safety performance relative to our goal of zero recordable injuries.



It is our objective to work toward continual improvement in health, safety and wellness aspects of our operations.

Woodlands Safety Results

The Woodlands Safety Results show a strong trend towards zero lost time accidents and medical aids. We continue to promote employee and worker safety through effective training programs, monitoring, and communication to strive towards our objective of zero safety incidents year after year.



A Lost Time Accident occurs when an employee or worker is injured on the job which results in lost work time. There were no lost-time accidents in 2019.

A Medical Aid occurs when an employee or worker is injured on the job and requires medical aid but did not result in lost work time. One medical aid occurred in 2019.

Key Commitments to the Environment

 <p>It is the policy of Port Hawkesbury Paper to carry out operations in ways that do not endanger the environment. Sustaining a healthy environment is an integral part of all company operations.</p>	 <p>PHP commits to continual improvement of all aspects of our sustainable forest management system for company-managed lands through experience and forest research.</p>	 <p>Utilize long-term landscape ecosystem planning, appropriate silviculture systems, and operating practices that conserve biodiversity in managing our forest areas.</p>	 <p>Meet or be better than all applicable regulations, legal obligations and other requirements to which Port Hawkesbury Paper subscribes.</p>
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Monitoring and reporting on Woodlands environmental performance is an integral part of achieving responsible forest management across the working landscape. Harvest contractors working on Crown land on behalf of the company are audited by PHP three times a year - Winter, Summer and Fall. Compliance and performance is checked against a range of items related to layout compliance, operational safety and environmental compliance, and job quality. Contractors must obtain a certain percentage or higher in each category to be eligible for a bonus payment.

With a total of 20 audits completed, harvest contractors continue to achieve a very high level of overall compliance and performance as shown in the 2019 results. This is due in large part to the long-standing working relationship between the company and its Crown land harvest contractors. Working together to monitor performance, share information, and strive to continually improve has resulted in strong on-the-ground results.

PHP also audits its private suppliers. A total of 26 suppliers were audited in 2019. Using the previous quarter's deliveries, wood suppliers are randomly chosen to be audited by a PHP Area

Supervisor. Private supplier audits are performed on active jobs when possible. However, auditing a completed job may be necessary with smaller suppliers.

Below are summaries of PHP's Crown and private supplier audit program for 2019. Areas of deficiencies are highlighted in orange. If the deficiencies are consistently on-going or deemed to be of significant concern, communications and/or training is made to suppliers to improve performance.

Crown Contractor Audit Results – Winter 2019



1 WEEKLY INSPECTIONS COMPLETED ACCURATELY

LAYOUT COMPLIANCE

- 2 Followed Cutting Boundaries
- 3 Wildlife clumps (as per instructions)
- 4 Wildlife corridors (50M min)
- 5 Properly buffered watercourses and wetlands
- 6 Residual Trees retained (10Ha)

OPERATION COMPLIANCE

- 7 First Aid Supplies
- 8 First Aid trained personnel (Copies to be made available)
- 9 Personal Protective Equipment
- Fire Protection Equipment
- 10 - Crew
- 11 - Machines
- 12 Remote Location Emergency Plan
- 13 Proper Warning Signs Posted on 2-way Public Traffic Road
- 14 System to check on Employees who Work Alone
- 15 Current Documentation (a.MSDS & Labels, b.Policies & Work Instructions, c. Safety Certificate)
- 16 Lock Out - Tag Out Policy in place
- Fuel & Oil Storage:
 - 17 - Spill Kit
 - 18 - Pumps (able to be locked for transport or off duty.)
 - 19 - Trailer Permits if not floated.
 - 20 - Central collection spot for Hazardous Material. (2,04)
 - 21 - WHMIS and TDG trained personnel (Copies to be made available)
 - 22 - Waste oil disposal system in place
 - 23 - Tanks Properly Labeled / Placarded to TDG and WHMIS Regulations
 - 24 - Storage tanks located not closer than 100m from any watercourse

Water Quality:

- 25 - Bridges used and Erosion controlled on approaches to stream crossing
- 26 - Temporary bridges removed, water courses cleared of debris
- 27 - No evidence of siltation
- 28 Machine Ruttng: Within Guidelines (or as permitted by Supervisor)
- 29 Ground Disturbance: Within Guidelines
- 30 Safety Meeting Minutes
- 31 EMS Training - New Employees
- 32 Biodegradable Chain Oil used

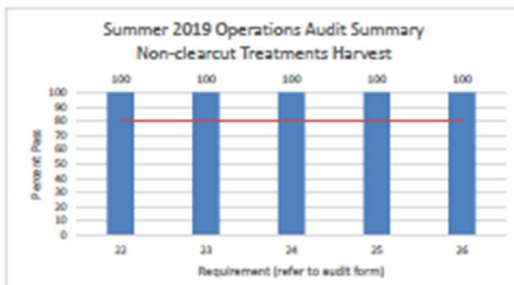
Total

JOB QUALITY

ALL JOBS

- Housekeeping:
- 33 - Garbage & Litter collected to be discarded
 - 34 - No Discarded Parts/Tires
 - 35 - Disposed of Hazardous Materials
 - 36 Road drains and culverts cleared of debris
 - 37 Unmerchantable hardwood trees protected
 - 38 Damage To Leave Trees Acceptable
 - 39 - Plantations
 - 40 - Spacing
 - 41 - Regeneration
 - 46 No Damage To Leave Trees

Crown Contractor Audit Results – Summer 2019



1 WEEKLY INSPECTIONS COMPLETED ACCURATELY

LAYOUT COMPLIANCE

- 2 Followed Cutting Boundaries
- 3 Wildlife clumps (as per instructions)
- 4 Wildlife corridors (50M min)
- 5 Properly buffered watercourses and wetlands
- 6 Residual Trees retained (10/Ha)

OPERATION COMPLIANCE

Water Quality:

- 7 - Bridges used and Erosion controlled on approaches to stream crossing
- 8 - Temporary bridges removed, water courses cleared of debris
- 9 - No evidence of siltation
- 10 Machine Rutting: Within Guidelines (or as permitted by Supervisor)
- 11 Ground Disturbance: Within Guidelines

Total

JOB QUALITY

Housekeeping:

- 12 - Garbage & Litter collected to be discarded
- 13 - No Discarded Parts/Tires
- 14 - Disposed of Hazardous Materials
- 15 Road drains and culverts cleaned of debris
- 16 Unmerchantable hardwood trees protected
- 17 Damage To Leave Trees Acceptable
- 18 - Plantations N/A
- 19 - Spacing
- 20 - Regeneration

21 UTILIZATION < = 2 MSHA

NON - CLEARCUT TREATMENTS HARVEST

- 22 Tree Spacing
- 23 Basal Area
- 24 Trail spacing
- 25 Trail width
- 26 No Damage To Leave Trees

Private Supplier Audit Results – 2019



- Legal Requirements**
1. Properly buffered watercourse and wetlands.
 2. Wildlife dumps left on site.
 3. Coarse woody debris left on site.
 4. No construction debris/debris in stream.
 5. No silt source from road entering stream.
 6. There is no evidence of un-cleaned oil spills over 100 litres.
 7. Personal protective equipment
 8. First Aid Kit
 9. Training records shown for First Aid, WHMIS, and TDG (as required)- within 1 month
 10. Fire protection equipment as required for crew and machines
 11. Fuel tanks properly labeled/placarded/stored/secured to TDG and WHMIS reg.
 12. Lock Out - Tag Out in place
- Operations Management Plan**
14. Operations Management Plan
 15. Property and out boundaries flagged.
- Roads and Landings**
16. Take off ditches or cross culverts present and functional
 18. No blockage of natural drainage.
 19. Rural roads ditched and crowned.
 21. No ditches running into stream.
 23. Proper size culvert or bridge used.
 25. Landing location minimize risk of stream siltation.
- Operating Practices**
27. Forewider trails on drier locations.
 28. Forewider approach to roadside chosen to minimize damage.
 30. Supplier has demonstrated efforts to minimize rutting.
 31. Portable bridge used.
 32. Immature stands are preserved.
 33. Harvested merchantable trees have been fully utilized.
 34. Wood is piled outside of the special management zone.
 36. Boundary lines kept clear of brush.
 37. Fuel storage is more than 30 metres from stream.
- Equipment**
38. Fuel and oil leaks are not present on machinery.
 39. Spill kit available on job.
- Housekeeping**
40. Garbage is properly contained and disposed of.
 41. Used oil is properly disposed of.
- Best Management Practices - Other**
42. Conservation of known critical wildlife habitat elements, biodiversity & species at risk
 43. SMPs followed in known Forests with Exceptional Conservation Value
 44. SMPs followed for known invasive exotic plants and animals
 45. Known characteristics of special sites preserved
 46. Harvest residues (slash, limbs, tops) adequately distributed/utilized

Sustainable Forest Management Indicators



The mission of the Woodlands Unit is to provide a reliable, cost effective and high quality supply of wood through the implementation of Sustainable Forest Management.



The vision of Port Hawkesbury Paper LP Woodlands Unit is “that the forest resources, for which we have responsibility, will sustain healthy ecosystems and natural biodiversity, provide a continuous and expanding supply of valuable wood and conserve the forest characteristics of value to society, wildlife and the environment.”



Through the Port Hawkesbury Paper Sustainable Forest Management Policy, the Woodlands Unit implements its Mission and Vision for Sustainable Forest Management (SFM) through 15 Guiding Principles of SFM, 6 Guiding Principles of Wood Procurement, and 16 Standard Practices for SFM.

Indicators of Sustainable Forest Management

For over a decade, PHP has been monitoring and reporting on a variety of sustainable forest management (SFM) indicators. To measure sustainable management over time for a range of forest values, indicators were developed to monitor progress in the maintenance or enhancement of those values.

The Woodlands monitoring program for SFM indicators consists of internal assessments and audit programs. Results from these programs are analysed and summarized on an annual basis to determine if targets are being achieved or have failed to meet set targets. Accordingly, this identifies management actions that must be adjusted to achieve desired outcomes.

Local-level SFM indicators were developed according to the Canadian Council of Forest Ministers’ criteria for sustainable forest management. These criteria are:

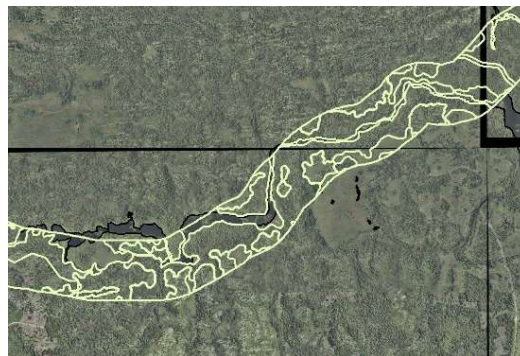
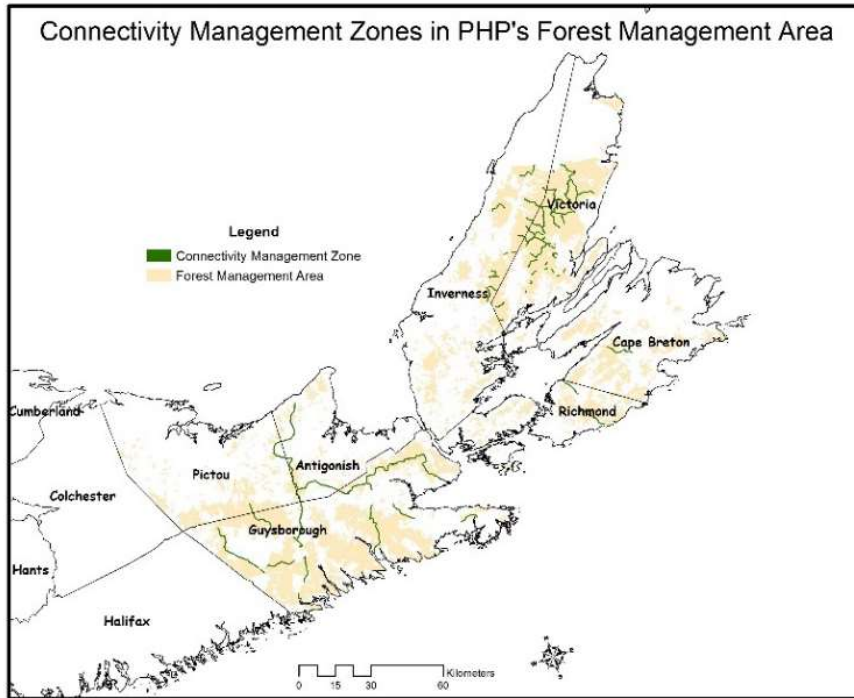
- Conservation of Biological Diversity
- Forest Ecosystem Condition and Productivity
- Conservation of Soil and Water Resources
- Forest Ecosystem Contributions to Global Ecological Cycles
- Multiple Benefits to Society
- Accepting Society's Responsibility for Sustainable Development

CRITERION 1 - CONSERVATION OF BIOLOGICAL DIVERSITY

Conserve biological diversity by maintaining integrity, function, and diversity of living organisms and the complexes of which they are part.

Indicator 1.1 - Species Diversity - Significant Species

OBJECTIVE	Managing and mitigating effects on known occurrences of endangered and threatened species.													
INDICATOR	Annual review of NSDLF's Significant Species and Habitats Database and other species status lists.													
TARGET	Complete annual review of NSDLF's Significant Species and Habitats Database, and other species status lists, and implement appropriate management activities where necessary.	VARIANCE None allowed												
2019 Update	<p>The Significant Habitat database was last updated in 2018 by the provincial Department of Lands & Forestry and provided to PHP to be used in forest management planning activities. The 2018 Significant Habitat database maintained by NSDLF contains 31,028 ha of significant species habitats potentially affected by forest management activities on PHP's landbase. The areas identified in the 2018 data are categorized into the following:</p> <table border="0"> <tr> <td>Deer Wintering</td> <td>19,325 ha</td> </tr> <tr> <td>Migratory Bird</td> <td>260 ha</td> </tr> <tr> <td>Moose Wintering</td> <td>5,658 ha</td> </tr> <tr> <td>Species at Risk</td> <td>3,127 ha</td> </tr> <tr> <td>Species of Concern</td> <td>1,567 ha</td> </tr> <tr> <td>Other Habitat</td> <td>1,091 ha</td> </tr> </table> <p>These data are used in operational planning and is reviewed by NSDLF during the harvest approval process. Other species status and appropriate management strategies have been incorporated into PHP's High Conservation Value Forest (HCVF) Assessment Report.</p>		Deer Wintering	19,325 ha	Migratory Bird	260 ha	Moose Wintering	5,658 ha	Species at Risk	3,127 ha	Species of Concern	1,567 ha	Other Habitat	1,091 ha
Deer Wintering	19,325 ha													
Migratory Bird	260 ha													
Moose Wintering	5,658 ha													
Species at Risk	3,127 ha													
Species of Concern	1,567 ha													
Other Habitat	1,091 ha													



Indicator 1.3 - Protected Areas - Protected Area Strategy

OBJECTIVE	To identify and maintain areas reserved from harvest under a protected areas strategy on Crown and freehold lands.	
INDICATOR	Proportion of area reserved from harvest under a protected area strategy.	
TARGET	Maintain 12% of total area reserved from harvest under a protected area strategy.	VARIANCE +/- 1%
2019 Update	In the 7 eastern counties where PHP operates, there is a total of 209,700 ha (29%) of legally protected Crown land. Additionally, there is 6,147 ha administratively protected by PHP. These areas are also on Crown land and were identified as ecologically significant during the HCVF assessment process.	

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Source: NS Department of Environment, French River Wilderness Area

Indicator 1.4 - Protected Areas - Old Forest

OBJECTIVE	To maintain old forest conditions throughout the landscape.	
INDICATOR	Percent of forest management area protected for old forest values.	
TARGET	Maintain 8% of forest areas in old forest condition.	VARIANCE +/- 1%
2019 Update	In 2019 the total area reserved as old forest across the forest management area was 19.6%.	



Old Forest Area, Guysborough County, Andrea Doucette, PHP

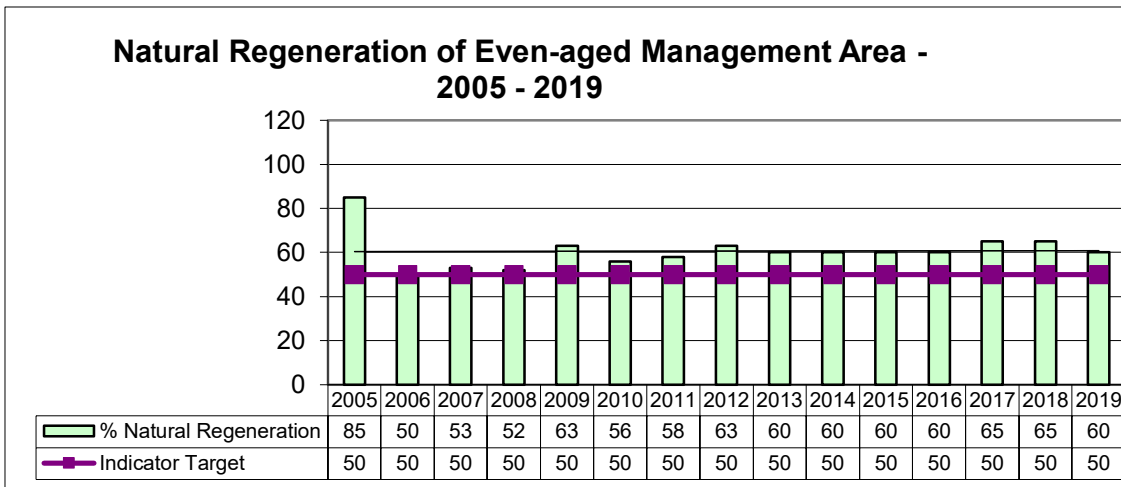
CRITERION 2 - FOREST ECOSYSTEM CONDITION AND PRODUCTIVITY

Conserve forest ecosystem condition and productivity by maintaining the health, vitality, and rates of biological production.

Indicator 2.1 - Forest Ecosystem Resilience - Natural Regeneration

OBJECTIVE	To promote Acadian forest characteristics through the use of natural regeneration.	
INDICATOR	Proportion of even-aged management regenerated naturally.	
TARGET	Naturally regenerate with appropriate species 50% of total even-aged management area.	VARIANCE +/- 10%
2019 Update	In 2019, 60% of the total even-aged management area was naturally regenerated.	

Natural Regeneration of Even-aged Management Area - 2005 - 2019





Red Spruce Natural Regeneration



Red Spruce Shelterwood, Matthew McKenna, PHP

Indicator 3.2 - Water Protection - Watersheds

OBJECTIVE	To protect hydrological functions in all watersheds.	
INDICATOR	Proportion of identified watershed area (that is managed by PHP) in a closed forest condition.	
TARGET	Each watershed shall have 80% of its area (that is managed by PHP) in a closed forest condition.	VARIANCE - 5%
2019 Update	PHP has identified 15 watersheds throughout its management area that are monitored specifically for closed forest condition (> 10 years of age). In 2019, all 15 watersheds had 80% or more of its area in a closed forest condition.	

Watershed Name	% Closed Forest 2019	% Closed Forest 2018	% Closed Forest 2017	% Closed Forest 2016	% Closed Forest 2015	% Closed Forest 2014	% Closed Forest 2013	% Closed Forest 2012
Antigonish Municipal (2,169 ha)	100%	100%	100%	100%	100%	100%	100%	100%
Guysborough 1 Municipal (2,778 ha)	86%	86%	86%	92%	91%	96%	100%	100%
Inverness Municipal (131 ha)	86%	85%	85%	93%	92%	92%	95%	95%
Victoria Municipal (974 ha)	97%	95%	97%	99%	98%	98%	96%	98%
Baddeck River (15,439 ha)	94%	95%	95%	95%	96%	94%	95%	99%
East River (9,896 ha)	93%	91%	95%	94%	93%	93%	95%	94%
Grand River (5,749 ha)	93%	92%	90%	89%	89%	85%	82%	85%
Liscomb River (14,824 ha)	96%	95%	94%	92%	91%	90%	91%	96%
Margaree River (35,929 ha)	93%	90%	92%	89%	88%	89%	98%	100%
Middle River (20,527 ha)	92%	93%	94%	89%	90%	87%	94%	99%
Mira River (13,946 ha)	92%	92%	92%	90%	91%	92%	100%	100%
New Harbour River (2,101 ha)	98%	98%	93%	95%	94%	99%	98%	98%

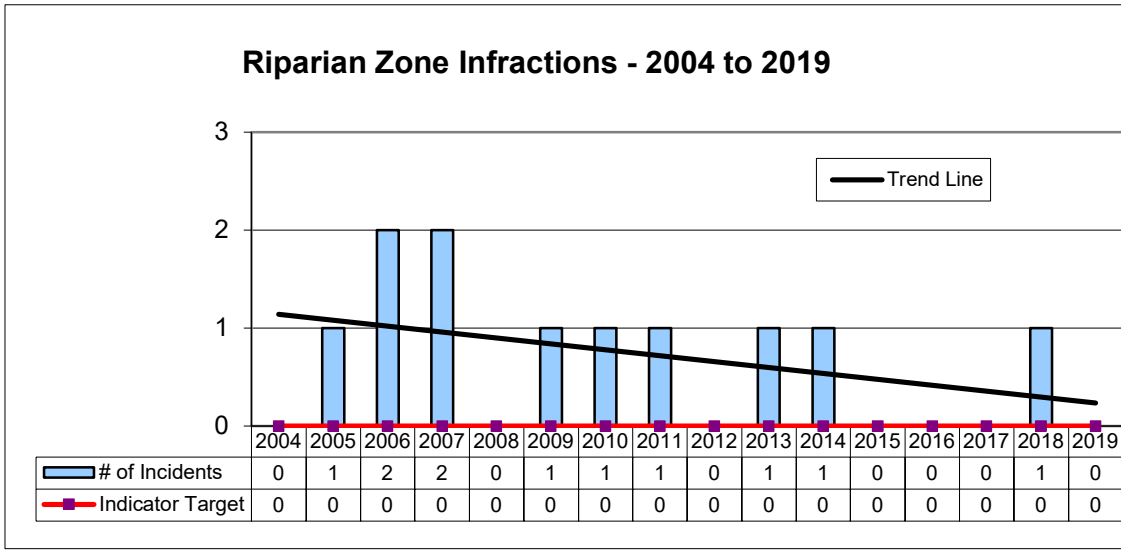
North River (15,830 ha)	85%	88%	90%	85%	86%	83%	92%	96%
River Inhabitant (7,852 ha)	96%	96%	96%	93%	90%	93%	96%	96%
St. Mary's River (53,442 ha)	91%	92%	93%	92%	92%	93%	93%	96%



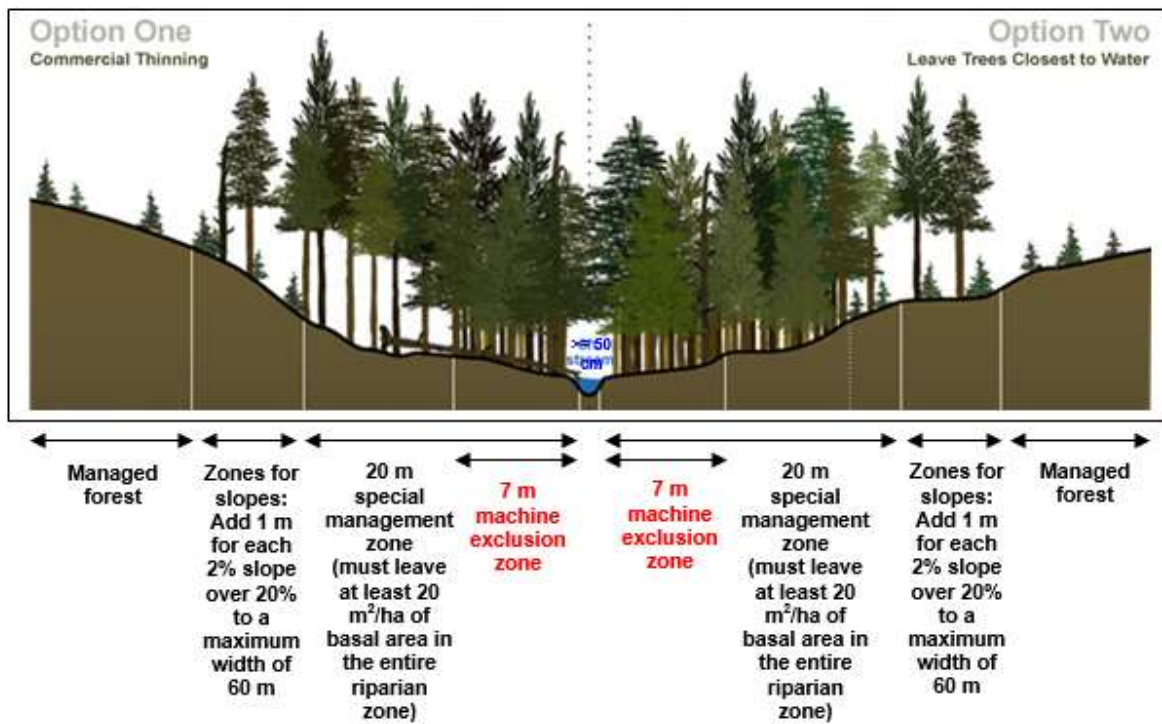
St. Mary's River Watershed, Andrea Doucette, PHP

Indicator 3.3 - Water Protection - Riparian Zone Management

OBJECTIVE	To protect and maintain all riparian functions.	
INDICATOR	Number of riparian zone non-conformance incidents.	
TARGET	To have zero non-conformance incidents.	VARIANCE None allowed
2019 Update	There were no infractions of the Wildlife Habitat and Watercourse Protection Regulations in 2019.	

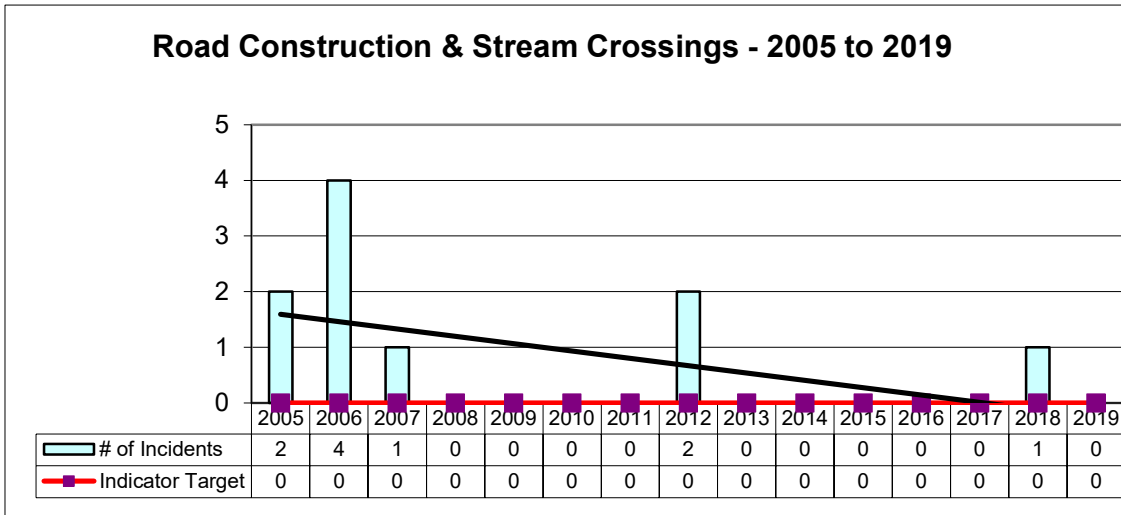


The Wildlife Habitat and Watercourse Protection Regulations can be found under Section 40 of the Forests Act. They were developed for application by people working in forestry and are applicable to watercourses and marshes, which include wetlands, lakes, ponds, rivers, streams, creek, estuary, or salt-water body that contains water for at least part of the year. The below image illustrates how special management zones must be established around watercourses and marshes when conducting forestry operations.



Indicator 3.4 - Water Protection - Roads and Stream Crossings

OBJECTIVE	To reduce negative impacts on water quality resulting from road construction.	
INDICATOR	Number of road construction and stream crossing incidents (new and upgrades) according to company guidelines.	
TARGET	To have zero non-conformance incidents.	VARIANCE None allowed
2019 Update	In 2019, there were no incidents related to road construction and stream crossings.	



New bridge installation, Paul MacDonald, PHP

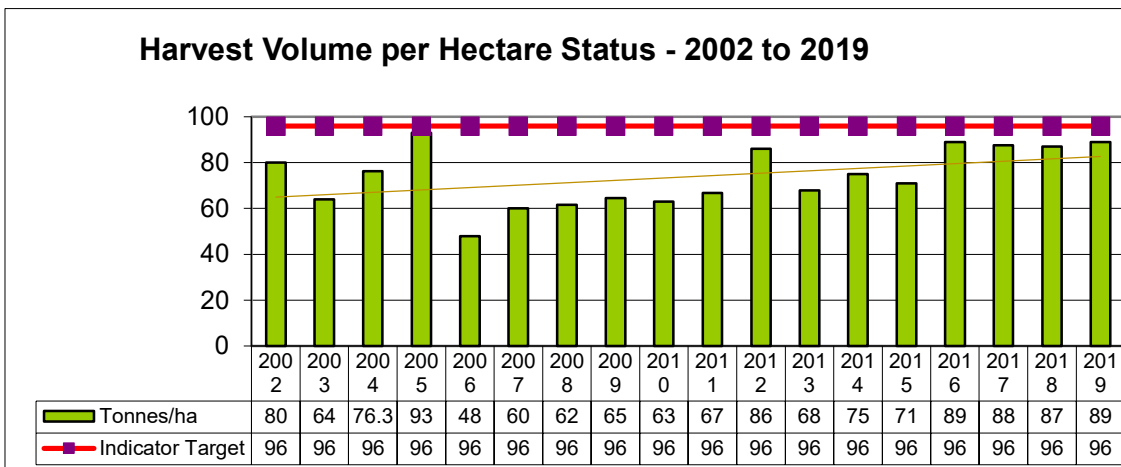
CRITERION 4 - FOREST ECOSYSTEM CONTRIBUTIONS TO GLOBAL ECOLOGICAL CYCLES

Maintain forest conditions and management activities that contribute to the health of global ecological cycles.

Indicator 4.1 - Forest Carbon - Harvest Volume

OBJECTIVE	To reduce carbon emissions.	
INDICATOR	Period average volume per hectare harvested.	
TARGET	Increase the average harvest volume by 20% within the next 25 years.	VARIANCE +/- 5 Year Period
2019 Update	The average volume per hectare harvested was 88.5 tonnes/ha. This is based on all treatments excluding commercial thinnings.	

Harvest Volume per Hectare Status - 2002 to 2019

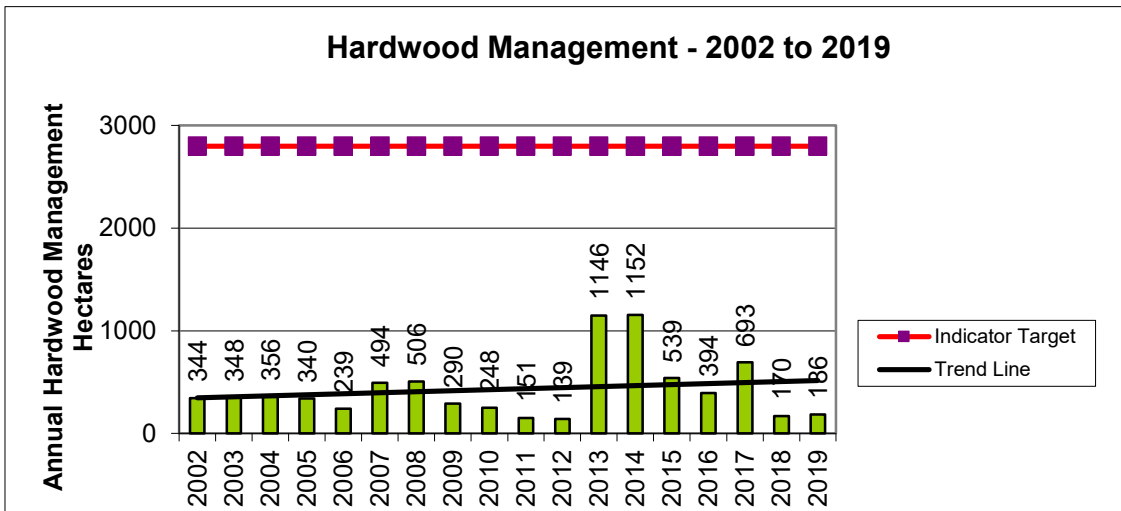


CRITERION 5 - MULTIPLE BENEFITS TO SOCIETY

Sustain flows of forest benefits for current and future generations by providing multiple goods and services.

Indicator 5.1 - Timber and Non-timber Benefits - Hardwood Management

OBJECTIVE	To increase the future value of the hardwood resource.	
INDICATOR	Area (by ha) of hardwood management.	
TARGET	Manage 2,800 hectares of hardwood in the first five-year period of the 2015 Long-Term Plan.	VARIANCE +/- 500 ha
2019 Update	In 2019, the area of hardwood management was 186 ha (3% of total area harvested). Since implementing the 2015 long-term plan, PHP has managed 1,982 ha of hardwood forests (71% of 2,800 ha target in the first 5-year period of the plan).	





Single Tree Selection, Obidary Road, Antigonish

Indicator 5.2 - Communities and Sustainability - Harvest Level

OBJECTIVE	To continue to harvest at a sustainable rate.		
INDICATOR	Annual harvest level.		
TARGET	Harvest 392,459 tonnes of softwood per year.	VARIANCE	-10%
2019 Update	In 2019, the softwood volume amount harvested was 303,697 tonnes (77% of annual harvest level).		

PHP FULA Crown Land				
Year	Softwood Sustainable Harvest Level (tonnes)	PHP Actual Softwood Harvest (tonnes)	% AAC Harvested	
2013	392,459	259,182	66%	
2014	392,459	337,418	86%	
2015	392,459	320,942	82%	
2016	392,459	292,629	75%	
2017	392,459	329,808	84%	
2018	392,459	359,026	91%	
2019	392,459	303,697	77%	
Total	2,747,213	2,202,702		



Softwood clearcut harvest, Liscomb, Matthew McKenna, PHP

Indicator 5.3 - Communities and Sustainability - Third Party Requests

OBJECTIVE	Where appropriate, provide economical, recreational and cultural opportunities to the general public.	
INDICATOR	Number of reasonable third party requests approved.	
TARGET	Approve all reasonable third-party requests received each year.	VARIANCE 10 requests
2019 Update	A total of 17 third party requests were received in 2019 and all were approved except one. The request was to use a Crown FULA parcel for depositing dredging material from a local wharf. PHP opposed this request because of the impact it could have on future wood supply on that parcel of land.	

Indicator 5.4 - Fair Distribution of Benefits and Costs - Sales to Other Mills

OBJECTIVE	To ensure fair distribution of forest resources.	
INDICATOR	Proportion harvest volume sold to other buyers.	
TARGET	Sell at least 40% of annual harvest volume to other buyers.	VARIANCE +/- 5 Year Period
2019 Update	<p>In 2019, the company sold approximately 13% in 2019 of the annual harvest volume to other buyers. Products included firewood, fuelwood, palletwood, sawlogs, studwood, and veneer logs.</p> <p>Due the increased pulpwood volume requirements in the mill during 2019 to support process improvements in the paper-making process, the company had a heavier focus on supplying the PHP mill with pulpwood and did not focus on other products for other outside sources. Very little studwood or hardwood logs were produced for this reason, so the annual harvest volume is less than in previous years.</p>	

CRITERION 6 - ACCEPTING SOCIETY'S RESPONSIBILITY FOR SUSTAINABLE DEVELOPMENT

Society's responsibility for sustainable forest management requires that fair, equitable and effective forest management decisions are made.

Indicator 6.1 - Aboriginal and Treaty Rights - Respect First Nations




OBJECTIVE	To provide opportunities to better understand, recognize and respect local Mi'kmaw and Treat Rights.	
INDICATOR	Number of opportunities to meet with Mi'kmaw community representatives.	
TARGET	Ensure a minimum of six opportunities to meet with Mi'kmaw individuals annually.	VARIANCE - 1 Meeting
2019 Update	In 2019, the company met at least 9 times with Mi'kmaq organizations, communities, or individuals related to forest management agreements and other initiatives.	











Indicator 6.2 - Aboriginal and Treaty Rights - First Nation Agreements













OBJECTIVE	To build capacity within Mi'kmaq communities to provide increased employment opportunities for Mi'kmaw individuals.	
INDICATOR	Volume harvested under agreements with Mi'kmaq communities.	
TARGET	To increase the softwood volume harvested under First Nation agreements to 30,000 tonnes.	VARIANCE - 5,000 tonnes
2019 Update	<p>In 2019, the total volume harvested by Unama'ki Institute of Natural Resources was 11,068 tonnes.</p> <p>In 2019, the total volume harvested by Confederacy of Mainland Mi'kmaq was 7,014 tonnes.</p>	

Summary of SFM Indicators

Since 2002, the Woodlands Unit has developed, monitored and reported on a suite of SFM indicators. During that time, indicators have been revised or removed to be replaced with improved indicators based on a new understanding of forest dynamics. PHP has made significant progress in achieving several of our targets and others are on their way. To improve their conditions over time, management decisions and activities will be implemented to result in indicators trending towards their desired targets.

-  Target Achieved within Acceptable Variance
-  Target On-going
-  Target Not Achieved within Acceptable Variance

1.1 Annual review of NSDLF's significant species and habitats database, and other species status lists.	
1.2 Percent of CMZs meeting the 60% closed forest condition guideline.	
1.3 Proportion of area reserved from harvest under a protected areas strategy by EPU.	
1.4 Percent of defined forest area by EPU protected for old forest values.	
2.1 Proportion of natural regeneration in reforestation program.	
2.2 Proportion of total (softwood and hardwood) area harvested using unevenaged, thinning, shelterwood, selection cut and/or partial cut techniques by EPU.	
2.3 Area of forest disturbed by fire, insect and disease.	
2.4 Area (by ha) affected by budworm outbreak on the Cape Breton Highlands.	
3.1 Area (by ha) of regular harvest in steep slope areas.	
3.2 Proportion of identified watershed area (that is managed by PHP) in closed forest condition.	

3.3 Number of riparian zone non-conformance incidents.	
3.4 Number of road construction and stream crossing incidents according to company guidelines.	
4.1 Yearly average volume per hectare harvested.	
4.2 Total growing stock of both merchantable and non-merchantable species on forest lands.	
4.3 Width of permanently disturbed area due to road construction.	
5.1 Area (by ha) of hardwood management.	
5.2 Annual harvest level.	
5.3 Number of reasonable 3rd party requests approved.	
5.4 Proportion harvest volume sold to other mills.	
6.1 Number of opportunities to meet with Mi'kmaq community representatives.	
6.2 Volume harvested under agreements with Mi'kmaq communities.	
6.3 Level of investment and contribution to education and extension initiatives.	

High Conservation Value Forest Effectiveness Monitoring Program

Introduction

This HCVF Effectiveness Monitoring Program was developed to fulfill the requirements of Principle 9 of the FSC Maritimes Standard. To meet Principle 9 of the standard, forest managers must complete an assessment of their forest lands to identify high conservation values. There are six distinct categories that give an area critical conservation significance. FSC Canada defines an HCVF as:

High Conservation Value Forests are those 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 forests, contained within, or containing the management unit, where viable populations of most (if not all) naturally occurring species exist in natural patterns 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).

Once HCVF's are identified on the land-base, the forest manager must decide how these areas will be managed to maintain or enhance the values that are present. Where values exist, monitoring is needed to show that the prescribed management is effective. PHP's effectiveness monitoring program identifies two stages of monitoring for several HCVF's.

The first level of monitoring is for the basic operational procedures or special management practices that have been identified for the value (e.g. buffer zones, maintenance of special habitat characteristics, protection). This level of monitoring is typically done on an annual basis. It is also important at this stage of monitoring to ensure that PHP is aware of and implementing the best management approach, prescriptions, and/or special management practices as defined

by an outside organization. Therefore, PHP will also contact known experts and/or organizations to gather any new available information regarding management or to verify that its current management approach is the best at that time. All HCV's have an identified operational monitoring protocol that is implemented on an annual basis.

The second level of monitoring, if applicable, is strategic monitoring to determine if the HCV attribute(s) are being maintained on the landscape. For example, for a species at risk such as Boreal Felt Lichen, it is important to determine that the identified forest habitat is still suitable and that the species is still present in the habitat. Contrary to operational monitoring, not all HCV's require a strategic level of monitoring. For example, the HCV of old forest are legally protected and therefore, not available for active forest management. Therefore, the attribute of maintaining old forests on the landscape is automatically preserved. Alternatively, strategic monitoring is important for species at risk when the objective is to maintain areas of good forest habitat for a threatened species, and to ensure that the species is still present in this habitat.

For strategic monitoring, PHP recognizes that there is a required level of involvement by government agencies and/or other organizations for the monitoring of species populations and health. It is PHP's intention to collaborate with these agencies to collect the necessary information.

HCVF Category 1 – Biodiversity – Species at Risk

HCV – American Marten Habitat

HCV ATTRIBUTE		Species at Risk – Habitat and Population
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Maintain and/or enhance American Marten habitat in home range patches	
INDICATOR	Reserve stand structure as required within harvest areas located within the American Marten Habitat Management Zone	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY Habitat management requirements are implemented through the DLF approval process for Crown lands. Monitor implementation of stand structure reserve using TFM. Verify annually that special management practices are still current and/or make operational changes as needed.
DATA SOURCES	The Forest Manager (TFM); PHP & DLF field audits	COST AND DIFFICULTY Low to Moderate - Dependant on PHP's required level of involvement
LONG-TERM STRATEGIC MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	American Marten population recovery	
INDICATOR	Population estimates / use within the Marten Habitat Management Zone	
MONITORING STRATEGY DLF is responsible for population inventory and studying habitat use.		
DATA SOURCES	American Marten Recovery Team DLF Manager, Wildlife Resources Randy Milton	COST AND DIFFICULTY Low to High - Dependant on PHP's required level of involvement
FOREST MANAGEMENT PRESCRIPTION		

These prescriptions are applied throughout the Cape Breton Highlands:

- 12-14 standing and live mature trees per ha must be left evenly spaced throughout the harvest site;
- These are in addition to all other requirements of the Wildlife Habitat and Watercourse Protection Regulations;
- Large yellow birch trees should be left standing where possible;
- Special management practices for commercial thinning operations in marten patches;
- Harvest sites should maintain at least 100 m³ of coarse woody debris/ha and mean maximum diameter of downed logs should exceed 22 cm.

There are also 30 home range patches established within the Marten Habitat Management Zone. These patches may 'migrate' within the zone, but must be a minimum 500 ha in size, circular in shape, and contain a minimum 60% marten habitat as described in the marten recovery strategy.

2019 MONITORING UPDATE

1. All harvest treatments applied throughout the Cape Breton Highlands included the above management prescriptions as required and approved by DLF regional staff.
2. A total of 422 hectares (0.7%) was treated (harvest and silviculture treatments) in 2019 inside the Marten Habitat Management Zone as per DLF's approval process.
3. The American Marten Recovery Strategy (2007) estimates that the Marten population is less than 50 individuals. A re-introduction program began in 2007, which brought 130 individuals into Cape Breton from New Brunswick. A total of 35 individuals were collared, but their movements were lost approximately 6 months after release. DLF does have pictures, have live-trapped, recorded tracks in snow and have received reports/sightings of marten in the Cape Breton Highlands (Peter Austin-Smith, pers. comm., 2013). A goal of the Marten Recovery Team is to have ≥ 30 marten in Cape Breton by 2010, ≥ 100 by 2030 and ≥ 350 by 2040.
4. Information provided by R. Milton, NSDLF on May 21, 2019 states "during February and March 2018, bait and cameras were set in each of 30 patches forecast in the American Marten Special Management Practices to be available as habitat by 2019. Cameras were set for a minimum of 3 weeks to record whether American Marten visited the bait. Single and occasionally pairs of marten were recorded in 15 of the 30 patches, even though only 5 of these 'occupied' patches met desired habitat conditions described as greater than 30% softwood, greater than or equal to 6 m high and basal area greater than or equal to 18 m²/ha. Of the 30 forecasted sites from 2004, 24 will not meet desired habitat conditions by 2019. Marten not being recorded in the other 15 patches cannot be interpreted as confirming absence, but rather not recorded at this time. cursory examination of marten presence and patch conditions suggests flexibility in coarse habitat descriptors used in the Special Management Practices, or undescribed critical features common to documented occupied patches. This past winter, bait and cameras were established at 13 sites on the Keppoch north of the 2019 patches. Although 5 cameras still need to be retrieved, 3 of the 8 sites had marten present. Initial

consolidation of American Marten records is ongoing. However, it is of interest to note that since 2010, there have been nearly 200 valid reports of either tracks, visual sightings, or camera records. Nearly 150 of these reports have occurred since 2015 which indicates the augmentation project conducted from 2007 through 2009 has been successful, at least in the immediate term, in maintaining a breeding population of American Marten on the highlands.”

5. NSDLF is currently reviewing the draft NS recovery plan for marten to determine a definition of core habitat under the NS Endangered Species Act. Once completed, that definition will be implemented into the recovery plan.

SUPPORTING DOCUMENTS/REFERENCES

Marten Special Management Practices, NSDLF July 2012; Proposed Marten Recovery Strategy, NSDLF May 2006; Status Report on American Marten, F. Scott June 2001; Weasel-ing their Way Back into Cape Breton? Assessing the Feasibility of Augmenting the Cape Breton Island Marten Population Through Habitat Suitability and Individual-based Modeling, Rebecca Jepessen, Acadian University Thesis, 2010.

HCV – Mainland Moose Habitat

HCV ATTRIBUTE		Species at Risk – Habitat and Population
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Maintain and/or enhance Mainland Moose habitat	
INDICATOR	Reserve stand structure as required within harvest areas located within the five Significant Mainland Moose Population Concentration areas mapped by NSDLF	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY Habitat management requirements are implemented through the DLF approval process for Crown lands. Monitor implementation of stand structure reserve using TFM. Verify annually that special management practices are still current and/or make operational changes as needed.
DATA SOURCES	COST AND DIFFICULTY	

The Forest Manager (TFM); PHP & DLF field audits	Low to Moderate - Dependent on PHP's required level of involvement
LONG-TERM STRATEGIC MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Mainland Moose population recovery
INDICATOR	Population estimates / use of population concentration areas
MONITORING STRATEGY	
DLF is responsible for population inventory and studying habitat use.	
DATA SOURCES	COST AND DIFFICULTY
Mainland Moose Recovery Team DLF Biologist Lisa Doucette	Low to High - Dependent on PHP's required level of involvement
FOREST MANAGEMENT PRESCRIPTION	
<ul style="list-style-type: none"> - Moose shelter patches (within 250 metres of the edge of any forest harvest (partial or clearcut) a minimum of two closed canopy coniferous stands > 3 hectares in area) - The preferred conditions for shelter patches using the NSDLF forest GIS inventory specifications are: <ul style="list-style-type: none"> - FORNON = 0, and - 50-80% softwood, and - >= meters height, and - crown closure >= 60% - Moose retention patches (Smaller coniferous must also be retained within each harvest area to provide temporary shelter and concealment) - Moose buffers (Forested buffers should be retained around and or near open wetlands, watercourses, and waterbodies) - Roads and access points (Development of roads and improved trails should be avoided where extended extraction trails can be used as an alternative) - Coarse woody debris (leave tree tops and substantial amounts of woody debris on extraction trails to discourage access) - Decommission roads to reduce human access 	

2019 MONITORING UPDATE

1. All harvest treatments within the mainland moose concentration areas are in compliance with the May 2020 mainland moose SMP as required by NSDLF.
2. The Mainland Moose Recovery Plan (2007) estimates approximately 1000-1200 individuals on mainland Nova Scotia. This is the most current information available on mainland moose population numbers.
3. The Action Plan for the Recovery of Eastern Moose in Mainland Nova Scotia was released to the public in 2016. A total of 14 actions have been identified which are in different phases of completion. The action items related to the Mainland Moose include increased understanding of genetics, cause of death/illness, long-term monitoring, threats, poaching, translocation feasibility, review and adapt forest management practices as habitat requirements are better understood, public awareness and engagement. In May 2020, DLF released revised special management practices as a result of the action plan.
4. In relation to the Action Plan, PHP is a partner on a new research study to “develop tools to provide decision support in forest management planning at multiple spatial scales for moose habitat requirements”.
5. DLF has conducted flight surveys and thermal imagery surveys in moose concentration areas but have yet to determine mainland-wide provincial estimates of population size. The government does have outside help to extrapolate the survey results to the broader area, given the use of different methods and a new thermal imagery technique. The DLF will be appointing a new small recovery team which will assist in updating the current recovery/action plan and provide guidance related to on-going work.
6. On May 24, 2019 the Chronicle Herald newspaper published an article titled “From high overhead, a sobering look at a moose population in deep trouble”, which is a summary of survey results mentioned in the previous point. This information was obtained by the CBC to highlight the rapid decline of mainland moose population numbers.
(<https://www.cbc.ca/news/canada/nova-scotia/mainland-moose-nova-scotia-decline-1.5148572>)

SUPPORTING DOCUMENTS/REFERENCES

Mainland Moose Special Management Practices, NSDLF July 2012; Recovery Plan for Mainland Moose in Nova Scotia, March 2007; Action Plan for the Recovery of Eastern Moose in Mainland Nova Scotia 2014-2018

HCV – Canada Lynx Habitat

HCV ATTRIBUTE		Species at Risk – Habitat and Population
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Maintain and/or enhance Canada Lynx habitat	
INDICATOR	Reserve stand structure in lynx bog buffers within harvest areas located throughout the Cape Breton Lynx Range	
MONITORING/REPORTING FREQUENCY	MONITORING STRATEGY	
Annual	Habitat management requirements are implemented through the DLF approval process for Crown lands. Monitor implementation of stand structure reserve using TFM. Verify annually that special management practices are still current and/or make operational changes as needed.	
DATA SOURCES	COST AND DIFFICULTY	
The Forest Manager (TFM); PHP & DLF field audits	Low to Moderate - Dependant on PHP's required level of involvement	
LONG-TERM STRATEGIC MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Canada Lynx population recovery	
INDICATOR	Population estimates / use of treed bog leave areas	
MONITORING STRATEGY		
DLF is responsible for population inventory and studying habitat use. A joint project between DLF and Acadian University is assessing the efficacy of the 100-meter treed bog buffers. The project began in January 2011 and ended in 2015.		
DATA SOURCES	COST AND DIFFICULTY	
Canada Lynx Recovery Team DLF Biologist Peter Austin-Smith	Low to High - Dependant on PHP's required level of involvement	

FOREST MANAGEMENT PRESCRIPTION

- To supplement red squirrel habitat, which is an important food source for lynx, a wider buffer strip of 100 m of unharvested forest should be left around all treed bogs in the Cape Breton lynx range.
- Where possible, decommission secondary, non-main trunk forest access roads following harvest.
- Plan access roads to have dead ends.
- Plan harvesting to allow decommissioning of sectors of road networks.
- Where possible, narrow and orient road right-of-ways to create shade conditions to reduce snow compaction, thereby reducing ease of travel for coyotes.
- Maintain a continuous supply of >50ha patches of mid-regeneration (15-35-year old) conifer dominated habitat that supports high densities of snowshoe hare over each lynx management unit.
- Create a landscape that will maintain a continuous presence of a mosaic of successional stages, especially mid-regeneration patches that will support resident lynx.
- Employ silvicultural techniques that create, maintain, or prolong use of stands by high populations of snowshoe hares.
- Retain coarse woody debris for denning sites.

2019 MONITORING UPDATE

1. All harvest treatments within the Cape Breton lynx range where treed bogs were identified, a 100-meter strip of unharvested forest was left as approved by DLF regional staff.
2. The Canada Lynx Recovery Strategy (2005) estimates approximately 50-500 individuals in the Cape Breton lynx range. This is the most current information available on Canada lynx population numbers.
3. No changes have been made to the special management practices for Canada Lynx as issued by DLF.
4. Some work happening related to habitat issues for both American Marten and Canada Lynx (joint recovery team). Still being developed by DLF Species at Risk group. Looking to get more funding to do habitat modeling and management issues in CB Highlands. Nothing approved yet; still in discussion phase.
5. DLF and Acadia University collaborated on a research study in the Cape Breton Highlands from 2013 to 2015. Some results of that work include:
 - 1 km long track surveys were conducted Jan – March 2013-2015 for a total 243.9 km,
 - 87 transects were established between 350 and 500 masl
 - Transects were paired to examine use of SMP buffers with nearby treated stands
 - Buffers typically had “natural” stands although some buffer lengths did encounter short sections of treated areas

<ul style="list-style-type: none"> • The number of lynx tracks were relatively similar between 2013 and 2014 but increased dramatically in 2015 which is believed due to the increase in recorded hare tracks beginning in 2014 and extending into 2015 • All prey species have very similar overall patterns in terms of natural vs treated habitats and buffer vs non-buffer areas • Marten and coyote exhibit similar habitat use patterns to prey species while lynx exhibit higher use in natural habitat and buffer zones • Occupancy modelling reveals the highest probability of occupancy for lynx occurs in or near buffers in natural areas. Moving away from buffer areas, the probability of occupancy drops dramatically especially in treated stands • Lynx will occupy treated areas in buffers but at much lower rate • Conclusion is buffer zones with natural structure exhibit a much higher occupancy rate for lynx than treated areas even during an expanding population in response to an increased prey base <p>6. NSDLF is currently reviewing the draft NS recovery plan for lynx to determine a definition of core habitat under the NS Endangered Species Act. Once completed, that definition will be implemented into the recovery plan.</p>
SUPPORTING DOCUMENTS/REFERENCES
Canada Lynx Special Management Practices NSDLF July 2012; Lynx Recovery Strategy Feb 2007; Endangered Canada Lynx Proposed Project: Assessing the interim 100 metre buffers around highland bogs, DLF 2014; DLF Wildlife Manager Randy Milton, pers. comm. 2018

HCV – Wood Turtle Habitat

HCV ATTRIBUTE Species at Risk – Habitat and Population	
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Maintain and/or enhance Wood Turtle habitat
INDICATOR	Implementation of temporal and spatial special management practices for wood turtles
MONITORING/REPORTING FREQUENCY Annual	MONITORING STRATEGY Habitat management requirements are implemented through the DLF approval process for Crown lands. Monitor implementation of temporal and spatial requirements using TFM. Verify annually that special management practices are still current and/or make operational changes as needed.

DATA SOURCES		COST AND DIFFICULTY
The Forest Manager (TFM); PHP & DLF field audits		Low to Moderate - Dependant on PHP's required level of involvement
LONG-TERM STRATEGIC MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Wood Turtle population recovery	
INDICATOR	Population estimates	
MONITORING STRATEGY		
DLF is responsible for population inventory and studying habitat use.		
DATA SOURCES		COST AND DIFFICULTY
Wood Turtle Recovery Team		Low to High - Dependant on PHP's required level of involvement
FOREST MANAGEMENT PRESCRIPTION		
<ul style="list-style-type: none"> - Adjust the timing and location of motorized vehicle use for forest management activities to when Wood Turtles are inactive or less likely to be occupying terrestrial habitat (Nov – March) - Use temporary bridge crossings for perennial streams to avoid altering stream bank, creating erosion and sedimentation, damaging stream bed, and impacting overwintering turtles. - Forest management roads and landings should not be constructed parallel to watercourses within 200 m of watercourses where wood turtles occur. - Special management practices for overwintering, nesting, and basking (see DLF Special Management Practices 2012). 		
2019 MONITORING UPDATE		
<ol style="list-style-type: none"> 1. All harvest treatments where wood turtles are presumed to be have the above management prescriptions implemented as approved by DLF regional staff. 2. The population of wood turtles in PHP's operating area is estimated to be approximately 3,500 individuals (M. Pulsifer, pers. comm., 2013) 3. No changes have been made to the special management practices for wood turtle as issued by DLF, however, new critical wood turtle habitat areas identified by Environment Canada have been incorporated into the provincial wood turtle habitat layer. These new critical wood turtle areas are off-limits to all forest management activities including road building. 		

<p>4. Monitoring for new locations has not been a funding priority for DLF, and outside funding has been significantly reduced. A graduate student working on overwintering habitat and communal distribution has just finished his MSc at Acadia. There is nothing significantly different with DLF’s understanding of wood turtle distribution within the watershed.</p> <p>5. DLF is not receiving reports of dead turtles that can be linked directly to the forest industry.</p> <p>6. The final recovery strategy for wood turtle was expected to be released in the latter half of 2019, however it is currently not available.</p> <p>7. “A wood turtle record of variance was approved earlier this year which has not provided much further clarity on the direction relative to a draft federal Recovery Action Plan. Currently, the federal plan is still draft and also the proposed federal critical habitat is still proposed” (T. Power, pers. Comm, July 2020)</p>
SUPPORTING DOCUMENTS/REFERENCES
Wood Turtle Special Management Practices NSDLF July 2012; Protecting and Conserving Wood Turtles: A Stewardship Plan for NS, 2003

HCV – Bicknell’s Thrush Habitat

HCV ATTRIBUTE Species at Risk – Habitat and Population	
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Maintain and/or enhance Bicknell’s Thrush habitat
INDICATOR	Implementation of temporal and spatial special management practices for Bicknell’s Thrush
MONITORING/REPORTING FREQUENCY	MONITORING STRATEGY
Annual	Identify planned pre-commercial thinning activities in Bicknell’s Thrush habitat in the Highlands, so field surveys by Bird Studies Canada can first be conducted to identify presence/absence of the bird during their breeding/nesting season (May, June, July). Monitor implementation of leave patches in thinned/cleared areas using a GIS overlay. Verify annually that special management practices are still current and/or make operational changes as needed.

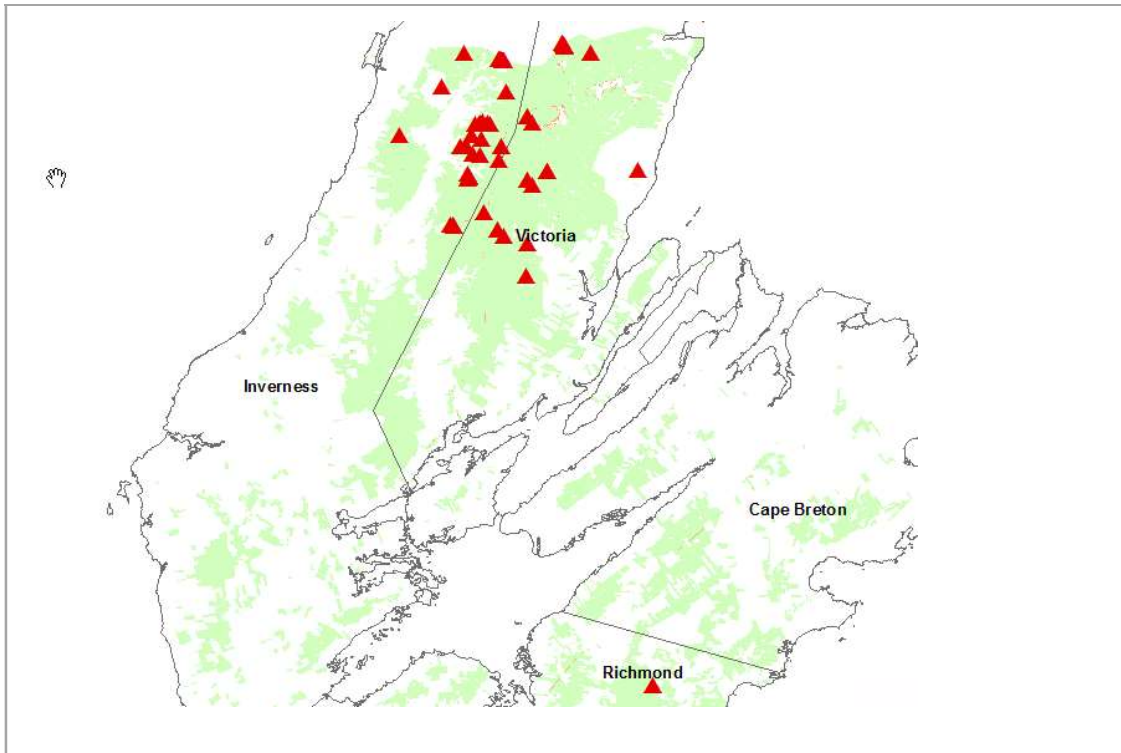
DATA SOURCES		COST AND DIFFICULTY	
The Forest Manager (TFM); PHP and Bird Studies Canada & MTRI field audits		Low – Bird Studies Canada has consistently completed Bicknell’s Thrush surveys each spring if PHP has pre-commercial thinning activities planned for that summer.	
LONG-TERM STRATEGIC MONITORING PROGRAM			
MANAGEMENT OBJECTIVE	Bicknell’s Thrush population recovery		
INDICATOR	Population estimates		
MONITORING STRATEGY			
<p>Bird Studies Canada annually monitors high elevation bird species through the High Elevation Landbird Program. Since 2002, the Bicknell’s Thrush has been monitored in the Cape Breton Highlands to gather critical information about population status and habitat use. Approximately 20 to 30 routes are monitored each June with the continued goal of monitoring long-term trends of the Bicknell’s Thrush.</p>			
DATA SOURCES		COST AND DIFFICULTY	
<ul style="list-style-type: none"> - Bird Studies Canada - Becky Stewart/Holly Lightfoot - Cape Breton Highlands National Park – Matt Smith - International Bicknell’s Thrush Conservation Group (http://www.bicknellsthrush.org/) - High Elevation Landbird Report: 10-year Summary, March 2012 		Low – Bird Studies Canada has consistently taken the lead on Bicknell’s Thrush habitat and population research.	
FOREST MANAGEMENT PRESCRIPTION			
<ul style="list-style-type: none"> - Industrial forest stands that support Bicknell’s Thrush should remain un-thinned until the trees are no longer at a successional stage that is suitable for nesting, as determined by further research. - If clearing, construction and/or thinning in Bicknell’s Thrush breeding habitat cannot be avoided, activities should be performed outside of the bird breeding season, before June 1st 			

and after July 31st, to prevent the direct destruction of nests, eggs, nestlings, fledglings or adult birds.

- When forest clearing and thinning in Bicknell's Thrush breeding habitat cannot be avoided, patches of intact forest should be left whenever possible. These patches should:
 - cover at least one quarter hectare;
 - be located 20 to 50 metres from the uncut or unthinned edge; and
 - contain intact undisturbed underbrush.

2019 MONITORING UPDATE

1. A total of 8 unthinned BITH habitat areas were scheduled for pre-commercial thinning during spring 2020. Bicknell's Thrush surveys by Mersey Tobetic Research Institute were conducted in these areas prior to any start of active management activities. BITH was not observed to be present in any of these areas.
2. The current population estimate for the Bicknell's Thrush in Canada is between 40,570 and 49,258 birds, and it was previously estimated that approximately 1,200 breed in NB and NS (HELP Report, March 2012).
3. No changes have been made to the special management practices for Bicknell's Thrush as issued by Bird Studies Canada.
4. In March 2012, Bird Studies Canada released a 10-year summary report of their High Elevation Landbird Program. The results for Bicknell's Thrush monitoring found that the sampling intensity was not enough to detect statistically significant trends in population and habitat use.
5. In 2012-13, Bird Studies Canada refined HELP, using a Generalized Random Tessalation Stratified sampling design to randomly select routes and increase sampling intensity in Cape Breton, thus enabling them to meet international, national and regional information needs (HELP Report, March 2012).
6. In July 2020, the federal Bicknell's Thrush Recovery Strategy was finalized. The definition of critical habitat for bicknell's thrush is provided for Nova Scotia, which will help guide habitat management for bicknell's thrush in Nova Scotia.
7. On PHP's Crown license area, there are 66 locations in ACCDC's sensitive species dataset dated July 2020 (no change from 2019). These locations range in observation dates from 1987 to 2013 (see below map).



SUPPORTING DOCUMENTS/REFERENCES

Conserving the Bicknell’s Thrush: Stewardship and Management Practices for High Elevation Forest, 2009; High Elevation Landbird Program: 10-year Report, March 2012

High Elevation Landbird Program: Annual Report for Cape Breton Highlands National 2013-2014

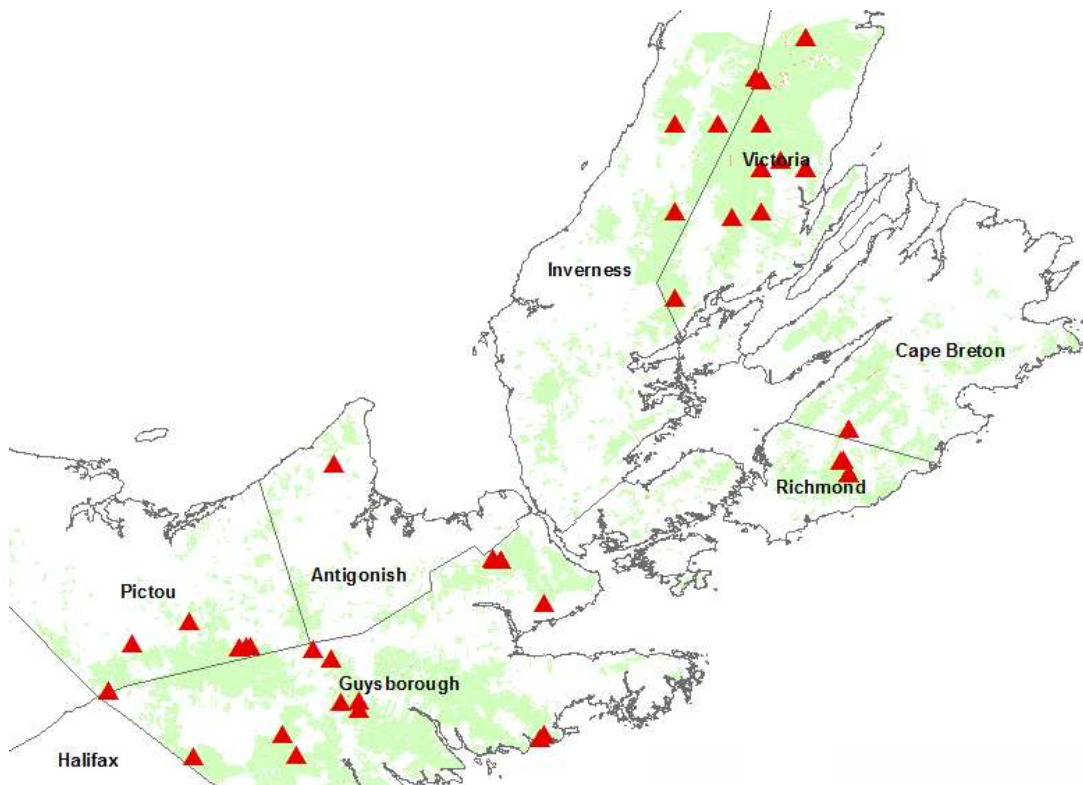
HCV – Rusty Blackbird Habitat

HCV ATTRIBUTE Species at Risk – Habitat and Population	
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Maintain and/or enhance Rusty Blackbird habitat
INDICATOR	Reserve stand structure in Rusty Blackbird habitat
MONITORING/REPORTING FREQUENCY	MONITORING STRATEGY Monitor implementation of reserve stand structure using field audits. Verify annually that special

Annual	management practices are still current and/or make operational changes as needed.
DATA SOURCES The Forest Manager (TFM); PHP field audits	COST AND DIFFICULTY Low – PHP currently monitors for riparian buffer management on its operational field audits
LONG-TERM STRATEGIC MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Rusty Blackbird population recovery
INDICATOR	Population estimates
MONITORING STRATEGY DLF is responsible for population inventory and studying habitat use.	
DATA SOURCES NSDLF	COST AND DIFFICULTY Low to High - Dependent on PHP's required level of involvement
FOREST MANAGEMENT PRESCRIPTION	
<ul style="list-style-type: none"> - PHP implements the Wildlife Habitat and Watercourse Protection Regulations, which is deemed sufficient for Rusty Blackbirds since they tend to occupy forests near the edges of wetlands, bogs, rivers and streams. - PHP also establishes 100-meter buffers around all treed bogs in Cape Breton for Canada Lynx habitat management, which is also presumed to be beneficial for Rusty Blackbird. 	
2019 MONITORING UPDATE	
<ul style="list-style-type: none"> - The population of Rusty Blackbird in Nova Scotia is currently unknown. - On PHP's Crown license area, there are 59 locations in ACCDC's sensitive species dataset dated July 2020. A new location was added in 2019, which has been the most recent record since 2010. These locations range in observation dates from 1987 to 2018 (see below map). Deferral of management activities in these locations during the breeding season of May to August may occur depending on data quality, year of original sighting, and input from regional NSDLF biologists. - PHP is an active partner on a Habitat Stewardship Fund project titled 'Conserving Habitat for Canada Warbler, Olive-sided Flycatcher and Rusty Blackbird in Mainland Nova Scotia'. The main objectives of this project are to build partnerships with landowners and forest managers on breeding habitat conservation as well as develop and test beneficial management 	

practices for the three species in the working forest of mainland Nova Scotia. Project work began in the fall of 2020 and will end in March 2023.

- NSDLF is currently renewing the provincial species at risk recovery programs by developing new recovery teams for listed species. As of April 2019, a new recovery team was established for all listed birds in the province, including Rusty blackbird. These teams will “set the goals and objectives to address data gaps or threats, monitor the success of recovery and provide recovery-related advice to government to resolve management questions” (www.novascotia.ca/news).



SUPPORTING DOCUMENTS/REFERENCES

COSEWIC assessment and status report on the Rusty Blackbird *Euphagus carolinus* Canada (2006)

HCV – Roseate Tern Habitat

HCV ATTRIBUTE	Species at Risk – Habitat
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Maintain Roseate Tern Habitat

INDICATOR	Reserve stand structure in Roseate Tern habitat	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY Maintain a 200-meter buffer zone along the coast at Fisherman's Harbour. Within this buffer zone, no management will occur.
DATA SOURCES	The Forest Manager (TFM)	COST AND DIFFICULTY Low – PHP does not conduct forest management activities within the 200-meter buffer zone.
FOREST MANAGEMENT PRESCRIPTION		
<ul style="list-style-type: none"> - PHP does not conduct forest management activities within the 200-meter buffer zone at Fisherman's Harbour. - Other critical habitat for the Roseate Tern is located on offshore islands. 		
2019 MONITORING UPDATE		
A GIS overlay using completed harvest treatment data from 2019 shows that there have been no forest management activities within the 200-meter buffer zone at Fisherman's Harbour.		
SUPPORTING DOCUMENTS/REFERENCES		
Roseate Tern Recovery Strategy 2006		

HCV – Olive-Sided Flycatcher Habitat

HCV ATTRIBUTE	Species at Risk – Habitat	
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Olive-sided Flycatcher Habitat	
INDICATOR	Reserve stand structure in Olive-sided flycatcher habitat	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY Monitor COSEWIC and NSDLF's websites for recovery strategies, actions plans, and/or

	special management practices developed for this species.
DATA SOURCES	COST AND DIFFICULTY
ACCDC	Low – PHP does not yet implement SMP's
FOREST MANAGEMENT PRESCRIPTION	
<p>The habitat characteristics of olive-sided flycatcher are minimally impacted by forestry activities due to where they typically inhabit. PHP leaves snags throughout its operations and the presence of tall trees can be found in several PHP silviculture treatments (e.g. single selection, group selection, partial cuts, shelterwoods, patch cuts, red spruce management). PHP also provides habitat features such as forest edges, openings, and clearcuts. Therefore, specific special management practices are deemed to be not necessary at this time and PHP believes there is adequate habitat across the forest management area. However, if special management practices are developed by government or other agencies, they will be implemented as applicable to forest management. If an active nest is located during regular operational activities, the activity will be stopped and the local DLF Wildlife Biologist will be notified so appropriate measures can be implemented.</p>	
2019 MONITORING UPDATE	
<p>A recovery strategy for Olive-sided Flycatcher was finalized by COSEWIC in March 2016.</p> <p>Regarding critical habitat for this species, the recovery strategy states:</p> <p><i>“The available information is not adequate to enable the identification of critical habitat at the landscape scale for the following reasons:</i></p> <ul style="list-style-type: none"> • <i>There is a lack of understanding and data to indicate the suitable configuration of important landscape biophysical attributes.</i> • <i>Habitat requirements may vary across the range of the species. Management units (i.e., geographic units within which critical habitat would be managed) need to be identified in such a way to best reflect variation in habitat use.</i> • <i>There is a lack of data related to Olive-sided Flycatcher presence and abundance in large portions of its range. Without this information any model used to predict critical habitat with current data may have a limited ability to do so in these areas.</i> • <i>For Olive-sided Flycatcher, it is unknown whether certain habitats with specific biophysical attributes may be functionally more important than others. For example, specific habitats may have greater densities of individuals or pairs and/or result in higher reproductive success. There are few data regarding the relative importance of suitable habitat types for Olive-sided Flycatcher population numbers and indices of habitat quality.</i> • <i>The relationships between anthropogenic disturbance and habitat quality are poorly known. A better understanding of these relationships is needed to ensure sufficient</i> 	

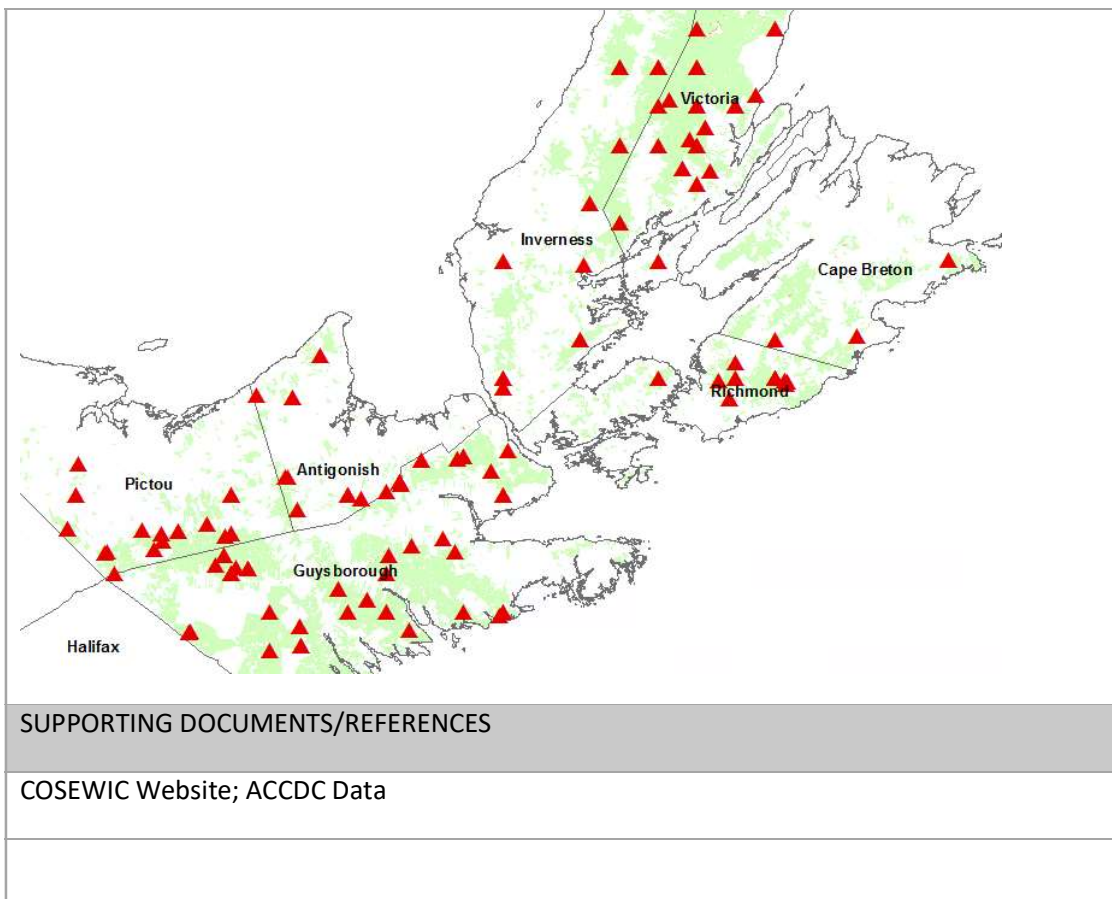
suitable habitat is available for Olive-sided Flycatcher and to identify at what scale and intensity activities would be likely to destroy the critical habitat.

A Schedule of Studies (Table 4) has been developed to provide the information necessary to identify the critical habitat that will be sufficient to meet the population and distribution objectives. The identification of critical habitat will be included in a revised recovery strategy or an action plan.”

- On PHP's Crown license area, there are 170 locations in ACCDC's sensitive species dataset dated July 2020. There are 12 new locations from the 2018 dataset. All locations range in observation dates from 1987 to 2017 (see below map). Deferral of management activities during the breeding season of May to August may occur depending on data quality, year of original sighting, and input from regional NSDLF biologists.

- PHP is an active partner on a Habitat Stewardship Fund project titled 'Conserving Habitat for Canada Warbler, Olive-sided Flycatcher and Rusty Blackbird in Mainland Nova Scotia'. The main objectives of this project are to build partnerships with landowners and forest managers on breeding habitat conservation as well as develop and test beneficial management practices for the three species in the working forest of mainland Nova Scotia. Project work began in the fall of 2020 and will end in March 2023.

- NSDLF is currently renewing the provincial species at risk recovery programs by developing new recovery teams for listed species. As of April 2019, a new recovery team was established for all listed birds in the province, including Olive-sided flycatcher. These teams will "set the goals and objectives to address data gaps or threats, monitor the success of recovery and provide recovery-related advice to government to resolve management questions" (www.novascotia.ca/news).



SUPPORTING DOCUMENTS/REFERENCES

COSEWIC Website; ACCDC Data

HCV – Eastern Whip-Poor-Will Habitat

HCV ATTRIBUTE		Species at Risk – Habitat
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Eastern Whip-poor-will Habitat	
INDICATOR	Reserve stand structure in Eastern Whip-poor-will habitat	
MONITORING/REPORTING FREQUENCY	Annual	Monitor COSEWIC and NSDLF’s websites for recovery strategies, actions plans, and/or special management practices developed for this species.
DATA SOURCES	ACCDC	COST AND DIFFICULTY Low – PHP does not yet implement SMP’s

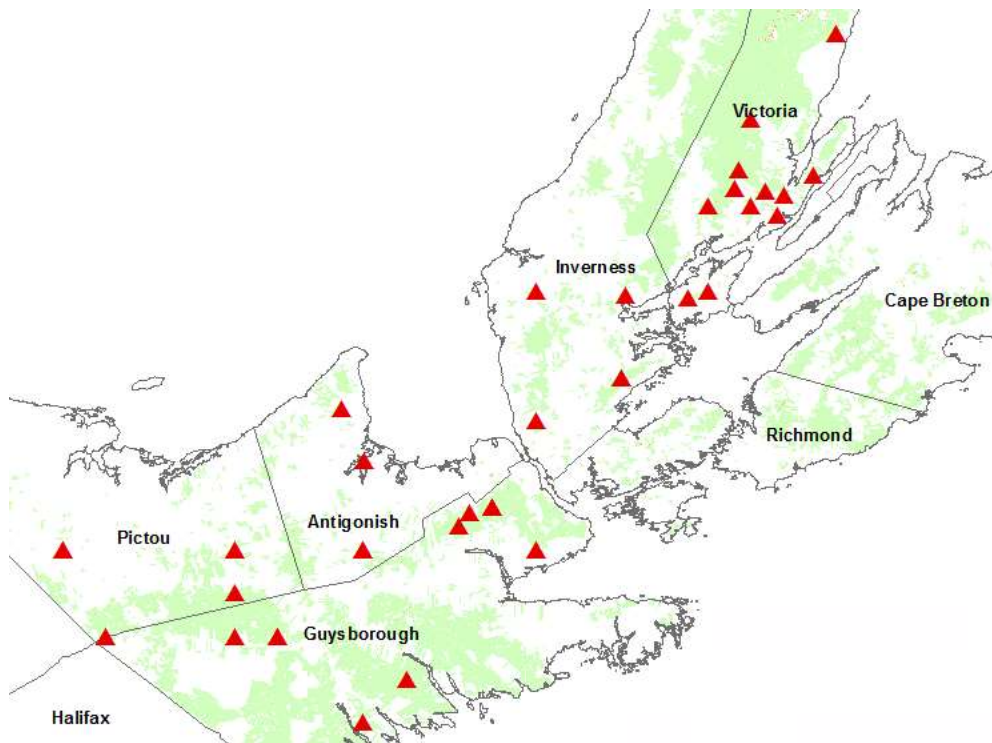
FOREST MANAGEMENT PRESCRIPTION
<p>The habitat characteristics of whip-poor-will are minimally impacted by forestry activities due to where they typically inhabit. PHP creates forest edges and openings through active management, as well as even-aged stands that can contain well-spaced trees. Therefore, precautionary specific special management practices are deemed to be not necessary at this time and PHP believes there is adequate habitat across the forest management area. However, if special management practices are developed by government or other agencies, they will be implemented as applicable to forest management. If an active nest is located during regular operational activities, the activity will be stopped and the local DLF Wildlife Biologist will be notified so appropriate measures can be implemented.</p>
2019 MONITORING UPDATE
<p>A COSEWIC recovery strategy was finalized for this species in 2018.</p> <p>There are no locations of Eastern Whip-poor-will in ACCDC's July 2020 dataset.</p> <p>- NSDLF is currently renewing the provincial species at risk recovery programs by developing new recovery teams for listed species. As of April 2019, a new recovery team was established for all listed birds in the province, including Eastern Whip-poor-will. These teams will "set the goals and objectives to address data gaps or threats, monitor the success of recovery and provide recovery-related advice to government to resolve management questions" (www.novascotia.ca/news).</p>
SUPPORTING DOCUMENTS/REFERENCES
COSEWIC Website; ACCDC Data

HCV – Eastern Wood Peewee Habitat

HCV ATTRIBUTE		Species at Risk – Habitat
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Eastern Wood Peewee Habitat	
INDICATOR	Reserve stand structure in Eastern wood peewee habitat	
MONITORING/REPORTING FREQUENCY	MONITORING STRATEGY	
Annual	Monitor COSEWIC and NSDLF's websites for recovery strategies, actions plans, and/or	

	special management practices developed for this species.
DATA SOURCES ACCDC	COST AND DIFFICULTY Low – PHP does not yet implement SMP's
FOREST MANAGEMENT PRESCRIPTION	
<p>The Eastern wood peewee can be impacted by forest management activities since this species of bird prefers mature and intermediate age stands of deciduous and mixed forests. However, PHP manages the forest management area by creating a range of age classes through forest modeling, long-term planning, and operational planning. Also, PHP manages deciduous and mixed forest stands with a variety of harvest treatments that can still maintain adequate forest structure (e.g. single selection, group selection, partial cuts, shelterwoods, patch cuts). The above figure shows the Maritime Breeding Bird Atlas data for the species. In eastern Nova Scotia where PHP operates, the breeding evidence shows a variety of results with the most common type being 'possible' evidence.</p> <p>Forestry practices that maintain large tracts of intermediate aged forest with closed canopy and limited clear cuts (less than 10 ha) along with thinning to remove mature trees and large-diameter woody growth should provide adequate habitat for Eastern Wood-Peewees (Stauffer and Best 1980, Crawford et al. 1981).</p> <p>Therefore, precautionary specific special management practices are deemed to be not necessary at this time and PHP believes there is adequate habitat across the forest management area. However, if special management practices are developed by government or other agencies, they will be implemented as applicable to forest management. If an active nest is located during regular operational activities, the activity will be stopped and the local DLF Wildlife Biologist will be notified so appropriate measures can be implemented.</p>	
2019 MONITORING UPDATE	
<p>Currently, there is no recovery strategy, action plan and/or special management practices issued by either COSEWIC or NSDLF.</p> <p>On PHP's Crown license area, there are 45 locations in ACCDC's sensitive species dataset from July 2020. There are 7 new locations since the 2018 dataset and range in observation dates from 1986 to 2018 (see below map). Deferral of management activities during the breeding season of May to August may occur depending on data quality, year of original sighting, and input from regional NSDLF biologists.</p> <p>- NSDLF is currently renewing the provincial species at risk recovery programs by developing new recovery teams for listed species. As of April 2019, a new recovery team was established for all listed birds in the province, including Eastern Wood Pewee. These teams will "set the</p>	

goals and objectives to address data gaps or threats, monitor the success of recovery and provide recovery-related advice to government to resolve management questions” (www.novascotia.ca/news).



SUPPORTING DOCUMENTS/REFERENCES

COSEWIC Website; ACCDC Data

HCV – Canada Warbler Habitat

HCV ATTRIBUTE		Species at Risk – Habitat
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Canada Warbler Habitat	
INDICATOR	Reserve stand structure in Canada warbler habitat	
MONITORING/REPORTING FREQUENCY	MONITORING STRATEGY	
Annual	Monitor COSEWIC and NSDLF’s websites for recovery strategies, actions plans, and/or	

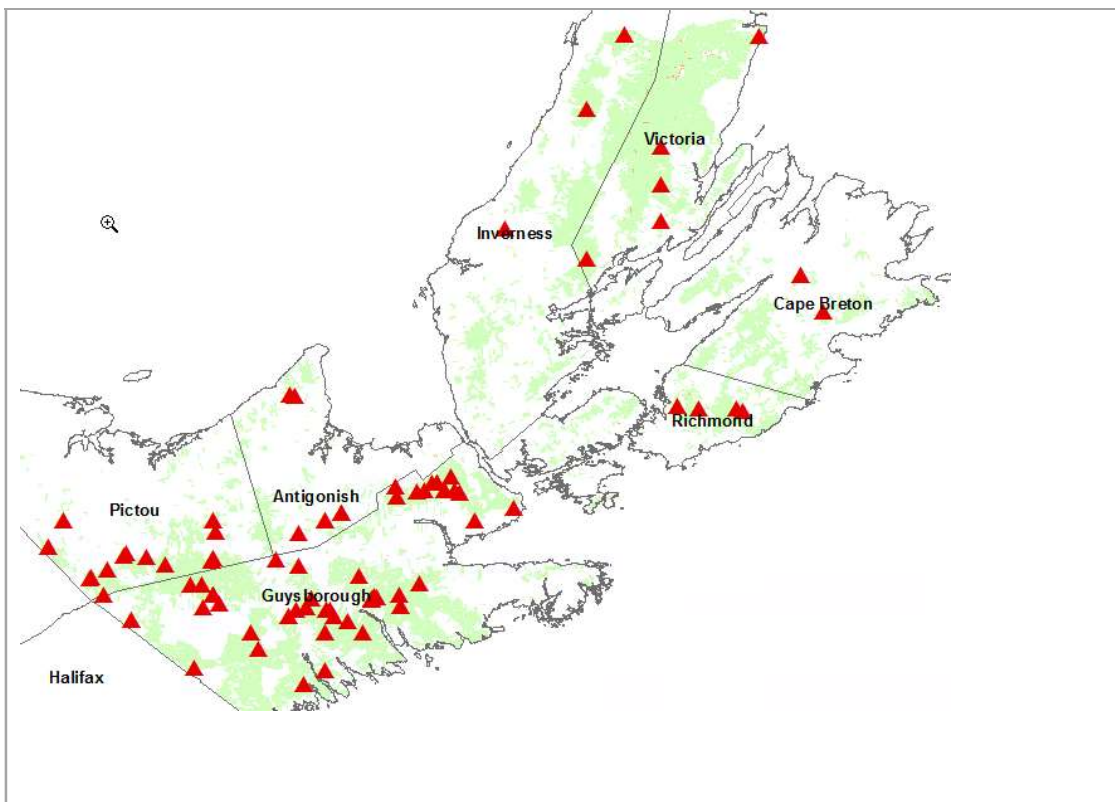
	special management practices developed for this species.
DATA SOURCES	COST AND DIFFICULTY
ACCDC	Low – PHP does not yet implement SMP's
FOREST MANAGEMENT PRESCRIPTION	
<p>The habitat characteristics of Canada warbler are minimally impacted by forestry activities due to where they typically inhabit. PHP creates regenerating stand structures and forest edge through active management, which is preferred by this species, but also avoid steep slope areas, ravines, swamps, and bogs. The provision of stumps and coarse woody debris left by PHP is also believed to create understory conditions preferred by the Canada warbler. Furthermore, PHP does not contribute to habitat loss by converting swamp forests to agricultural land. Therefore, precautionary special management practices are deemed to be not necessary at this time and PHP believes there is adequate habitat across the forest management area. However, if special management practices are developed by government or other agencies, they will be implemented as applicable to forest management. If an active nest is located during regular operational activities, the activity will be stopped and the local DLF Wildlife Biologist will be notified so appropriate measures can be implemented.</p>	
2019 MONITORING UPDATE	
<p>A COSEWIC recovery strategy was finalized for Canada Warbler in March 2016.</p> <p>Regarding critical habitat for this species, the recovery strategy states:</p> <p><i>“The available information is not adequate to identify critical habitat at a landscape scale for the following reasons:</i></p> <ul style="list-style-type: none"> • <i>There is a lack of understanding and data to indicate the appropriate configuration of important landscape biophysical attributes.</i> • <i>Habitat requirements may vary across the range of the species. Management units (i.e., geographic units within which critical habitat would be managed) need to be identified in such a way to best reflect variation in habitat use and management patterns.</i> • <i>There is a lack of data related to Canada Warbler presence and abundance in large portions of its range. Without this information any model used to predict critical habitat with current data may have a limited ability to do so in these areas.</i> • <i>For Canada Warbler, it is unclear whether certain habitats with specific biophysical attributes may be functionally more important than others. For example, specific habitats may have greater densities of individuals or pairs and/or result in higher reproductive success.</i> • <i>The relationships between anthropogenic disturbance and habitat quality are poorly known. A better understanding of these relationships is needed to ensure sufficient suitable habitat is available for Canada Warbler and to identify at what scale and intensity activities would be likely to destroy the critical habitat.</i> 	

A Schedule of Studies has been developed to provide the information necessary to identify the critical habitat that will be sufficient to meet the population and distribution objectives. The identification of critical habitat will be included in a revised recovery strategy or an action plan.

On PHP's Crown license area, there are 111 locations in ACCDC's sensitive species dataset from July 2020. There are 13 new location since 2018 and range in observation dates from 1987 to 2018 (see below map). A location with a singing male likely at a nest site was detected in an area to be planned for harvest. A leave patch of 10 hectares was left unmanaged to minimize disturbance to the nesting area. Deferral of management activities during the breeding season of May to August may occur depending on data quality, year of original sighting, and input from regional NSDLF biologists.

- PHP is an active partner on a Habitat Stewardship Fund project titled 'Conserving Habitat for Canada Warbler, Olive-sided Flycatcher and Rusty Blackbird in Mainland Nova Scotia'. The main objectives of this project are to build partnerships with landowners and forest managers on breeding habitat conservation as well as develop and test beneficial management practices for the three species in the working forest of mainland Nova Scotia. Project work began in the fall of 2020 and will end in March 2023.

- NSDLF is currently renewing the provincial species at risk recovery programs by developing new recovery teams for listed species. As of April 2019, a new recovery team was established for all listed birds in the province, including Canada Warbler. These teams will "set the goals and objectives to address data gaps or threats, monitor the success of recovery and provide recovery-related advice to government to resolve management questions" (www.novascotia.ca/news).



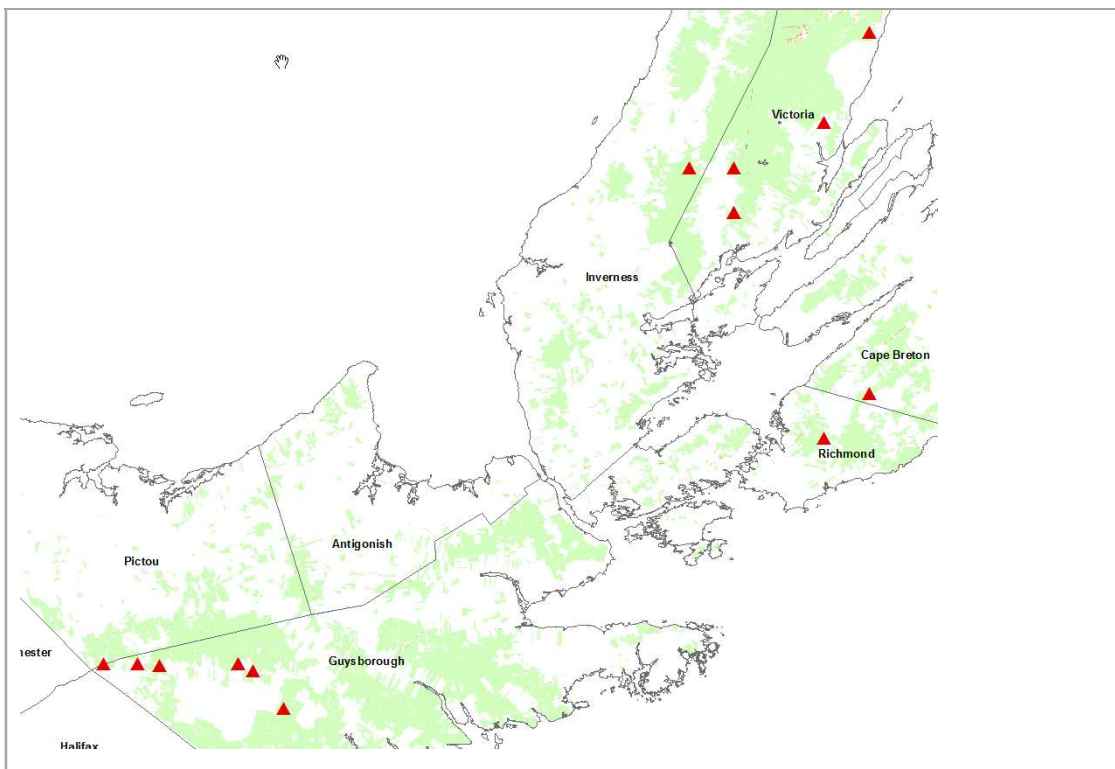
SUPPORTING DOCUMENTS/REFERENCES

COSEWIC Website; ACCDC Data

HCV – CHIMNEY SWIFT Habitat

HCV ATTRIBUTE		Species at Risk – Habitat	
OPERATIONAL MONITORING PROGRAM			
MANAGEMENT OBJECTIVE	Chimney Swift Habitat		
INDICATOR	Reserve stand structure in Chimney swift habitat		
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY	Monitor COSEWIC and NSDLF’s websites for recovery strategies, actions plans, and/or special management practices developed for this species.
DATA SOURCES		COST AND DIFFICULTY	

ACCDC	Low – PHP does not yet implement SMP's
FOREST MANAGEMENT PRESCRIPTION	
<p>The Chimney swift can be impacted by forest management activities since this species of bird may nest in wooded areas with large diameter trees. Currently, there are no special management practices identified for forest managers regarding Chimney swift habitat. Additionally, feeding and nesting habitat relies heavily on urban and suburban areas where there is an abundance of chimneys for nesting, so PHP believes it currently has a low impact on Chimney swift populations.</p>	
2019 MONITORING UPDATE	
<p>Currently, there is no recovery strategy, action plan and/or special management practices issued by either COSEWIC or NSDLF.</p> <p>On PHP's Crown license area, there are 16 locations in ACCDC's sensitive species dataset from July 2020 (no change from 2019). These locations range in observation dates from 1986 to 2011 (see below map). Deferral of management activities during the breeding season of May to August may occur depending on data quality, year of original sighting, and input from regional NSDLF biologists.</p> <p>- NSDLF is currently renewing the provincial species at risk recovery programs by developing new recovery teams for listed species. As of April 2019, a new recovery team was established for all listed birds in the province, including Chimney swift. These teams will "set the goals and objectives to address data gaps or threats, monitor the success of recovery and provide recovery-related advice to government to resolve management questions" (www.novascotia.ca/news).</p>	



SUPPORTING DOCUMENTS/REFERENCES

COSEWIC Website; ACCDC Data

HCV – COMMON NIGHTHAWK Habitat

HCV ATTRIBUTE		Species at Risk – Habitat	
OPERATIONAL MONITORING PROGRAM			
MANAGEMENT OBJECTIVE	Common Nighthawk Habitat		
INDICATOR	Reserve stand structure in Common nighthawk habitat		
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY	
		Monitor COSEWIC and NSDLF’s websites for recovery strategies, actions plans, and/or special management practices developed for this species.	
DATA SOURCES	ACCDC	COST AND DIFFICULTY	
		Low – PHP does not yet implement SMP’s	

FOREST MANAGEMENT PRESCRIPTION

The Common Nighthawk prefers some habitats where PHP does not operate such as rocky areas, sandy areas, and wetlands. However, they do prefer open wooded areas, which PHP does create through its forest management (e.g. clearcuts, partial cuts, shelterwoods, selection cuts). The Common Nighthawk Recovery Strategy lists a variety of threats including changes in natural processes, climate and natural disasters, accidental mortality, pollution, exotic or invasive species, and habitat loss or degradation. Types of habitat loss include change in roof construction and materials, residential and commercial development, agriculture, and logging and wood harvesting. It is currently unknown if logging and wood harvesting causes a significant severity to populations with a low causal certainty that there is a high degree of evidence linked to the threat of logging.

2019 MONITORING UPDATE

COSEWIC finalized a recovery strategy for the Common Nighthawk in March 2016.

Regarding critical habitat for this species, the recovery strategy states:

“The available information is not adequate to enable the identification of critical habitat for the following reasons:

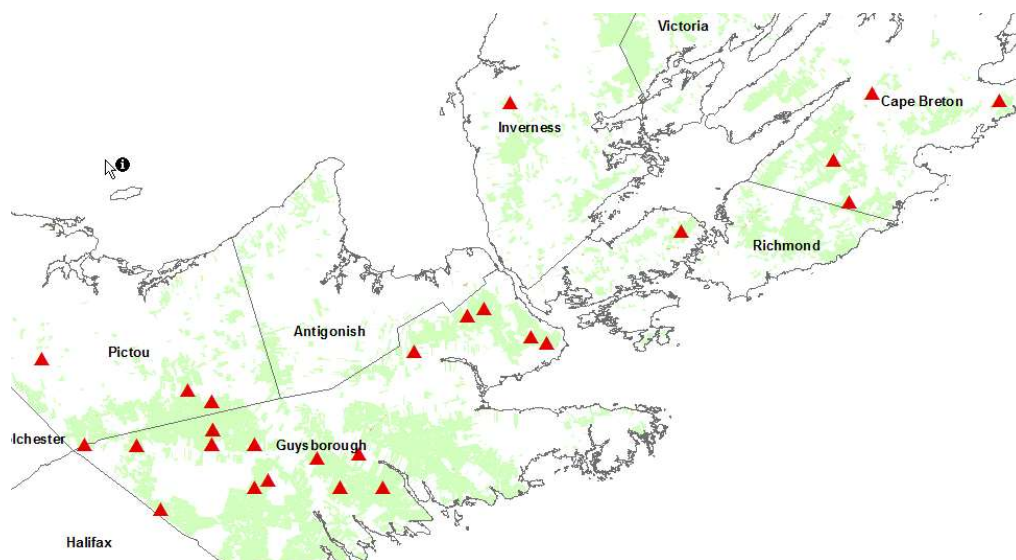
- *There is a lack of understanding and data to indicate the appropriate biophysical attributes required by the species and their configuration at a landscape scale.*
- *Habitat requirements may vary across the range of the species. Management units (i.e., geographic units within which critical habitat would be managed) need to be identified in such a way to best reflect variation in habitat use and land planning processes.*
- *There is a lack of data related to presence, site usage where detected (e.g., foraging, roosting, defending a territory, nesting, transiting), and abundance in large portions of the species’ range and the northern limit of the species’ range is unknown. Without this information any model used to predict critical habitat with current data may have a limited ability to do so.*
- *For Common Nighthawk, it is unknown whether certain habitats with specific biophysical attributes may be functionally more important than others. For example, specific habitats may have greater densities of individuals or pairs and/or result in higher reproductive success.*
- *The relationships between anthropogenic disturbance and habitat quality are poorly known. A better understanding of these relationships is needed to ensure sufficient suitable habitat is currently available for Common Nighthawk and to identify at what scale and intensity activities would be likely to destroy critical habitat.*

Locating nests is difficult and determining general nesting locations is problematic using typical point-count survey methodology. Common Nighthawks defend a large area and their foraging habitats can be separated from nest sites by many kilometers, so it is not possible to determine how an individual is using the habitat where it is detected (e.g., foraging, defending a territory, transiting). Furthermore, traditional point-count survey methodology in the morning is not appropriate for this crepuscular species (Government of Alberta 2013; Saskatchewan Ministry of Environment 2014).

A schedule of studies has been developed to provide the information necessary to identify the critical habitat that will be sufficient to meet the population and distribution objectives. The identification of critical habitat will be included either in a revised recovery strategy or an action plan.”

On PHP’s Crown license area, there are 38 locations in ACCDC’s sensitive species dataset from July 2020. There are two new locations since the 2018 dataset and range in observation dates from 2006 to 2019 (see below map). The location documented in 2019 was not near any on-going or planned harvest, however a planting was undertaken in a stand nearby. Deferral of management activities during the breeding season of May to August may occur depending on data quality, year of original sighting, and input from regional NSDLF biologists.

- NSDLF is currently renewing the provincial species at risk recovery programs by developing new recovery teams for listed species. As of April 2019, a new recovery team was established for all listed birds in the province, including Common nighthawk. These teams will “set the goals and objectives to address data gaps or threats, monitor the success of recovery and provide recovery-related advice to government to resolve management questions” (www.novascotia.ca/news).



SUPPORTING DOCUMENTS/REFERENCES

COSEWIC Website; ACCDC Data

HCV – WOOD THRUSH Habitat

HCV ATTRIBUTE		Species at Risk – Habitat	
OPERATIONAL MONITORING PROGRAM			
MANAGEMENT OBJECTIVE	Wood Thrush Habitat		
INDICATOR	Reserve stand structure in Wood thrush habitat		
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY	
		Monitor COSEWIC and NSDLF's websites for recovery strategies, actions plans, and/or special management practices developed for this species.	
DATA SOURCES	ACCDC	COST AND DIFFICULTY	
		Low – PHP does not yet implement SMP's	
FOREST MANAGEMENT PRESCRIPTION			
<p>Currently, there are no required management practices for Wood Thrush in Nova Scotia or Canada. Regardless, given the preferred breeding habitat of Wood Thrush in mature deciduous and mixed-wood forests, PHP believes its uneven-aged and mixed-wood forest management techniques in these forest types do not greatly impact the breeding requirements of the Wood Thrush. The COSEWIC 2012 report supports this notion by stating that “the species is relatively tolerant of forest management activities that are conducted on a small spatial scale (i.e. single-tree, group selection cuts, uneven-age forest management, selective removal of mature trees). The report further states that Sugar Maple and American Beech are preferred species for nesting. PHP manages tolerant Sugar Maple stands using only single or group selection depending on tree quality. American Beech is present throughout the forest management area and pure stands are not managed, but if found dispersed throughout a hardwood stand, it is managed as necessary to meet the forest management prescription. Additionally, PHP does not apply herbicides in its forest management area, which allows for the continued natural growth of deciduous trees and shrubs in forest stands.</p>			
2019 MONITORING UPDATE			
Currently, there is no recovery strategy, action plan and/or special management practices issued by either COSEWIC or NSDLF.			

On PHP's Crown license area, there are 2 locations in ACCDC's sensitive species dataset from July 2020 (no change from 2019). These locations range in observation dates from 2008 to 2009 (see below map). Deferral of management activities during the breeding season of May to August may occur depending on data quality, year of original sighting, and input from regional NSDLF biologists.



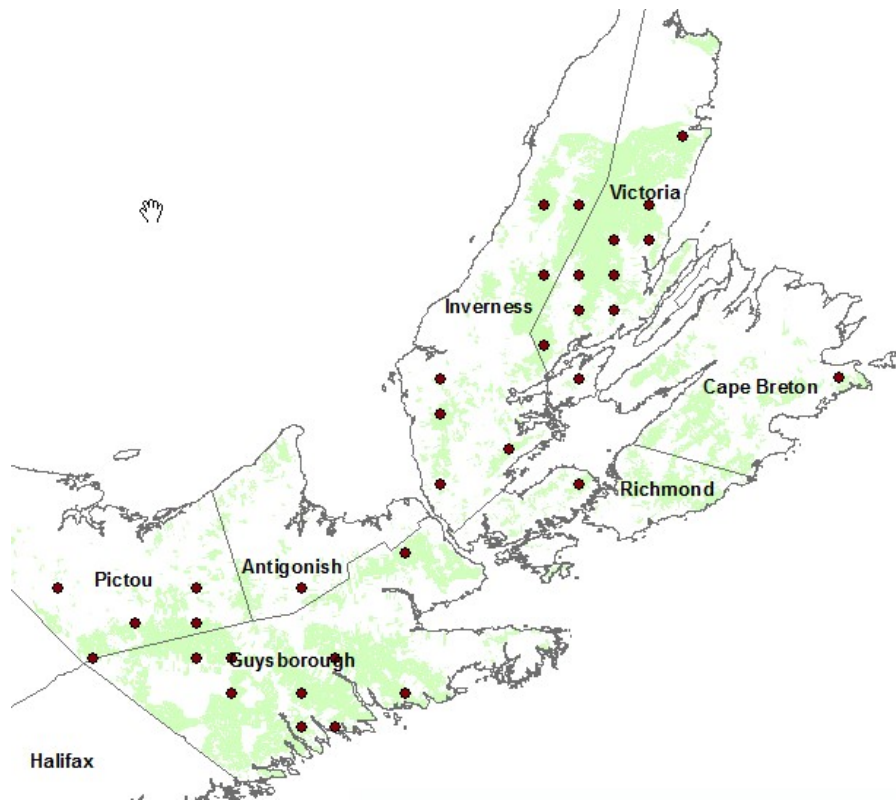
SUPPORTING DOCUMENTS/REFERENCES

COSEWIC Website; ACCDC Data

HCV – EVENING GROSBEEK Habitat

HCV ATTRIBUTE Species at Risk – Habitat	
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Evening Grosbeak Habitat
INDICATOR	Reserve stand structure in Evening Grosbeak habitat
MONITORING/REPORTING FREQUENCY	MONITORING STRATEGY
Annual	Monitor COSEWIC and NSDLF's websites for recovery strategies, actions plans, and/or special management practices developed for this species.
DATA SOURCES	COST AND DIFFICULTY
ACCDC	Low – PHP does not yet implement SMP's
FOREST MANAGEMENT PRESCRIPTION	
<p>Currently, there are no required management practices for Evening Grosbeak in Nova Scotia or Canada. Regardless, given the preferred breeding habitat of Evening Grosbeak in large mature and old mixedwood forest stands, PHP may have an impact on the breeding success of Evening Grosbeak. Fluctuations of spruce budworm populations are likely a key factor in fluctuations of Evening Grosbeak populations. Other known threats include window strike mortality in winter, reduction of mature and old-growth mixedwood forests, and road collision mortality. On a large landscape scale, PHP manages the forest land-base to ensure a diversity of stand types and ages, which includes mature and old mixedwood stands. Currently, PHP is actively involved in assessing mature and old forest stands for old-growth protection under the provincial Old Forest Policy. Where stands meet the Old Forest Policy stand definition, measures are put in place to allocate the stand as protected under the Old Forest Policy which will benefit Evening Grosbeak habitat. In 2019, 14 stands that were assessed for old-growth characteristics were confirmed as old-growth and are now protected under the provincial Old Forest Policy. The COSEWIC Assessment and Status Report for Evening Grosbeak (2016) has identified the loss, alteration and fragmentation of breeding habitat due to commercial logging as a low threat overall.</p>	
2019 MONITORING UPDATE	
Currently, there is no recovery strategy, action plan and/or special management practices issued by either COSEWIC or NSDLF.	

On PHP's Crown license area, there are 73 locations in ACCDC's sensitive species dataset from July 2020 (no change from 2019). These locations range in observation dates from 1986 to 2010 (see below map). Deferral of management activities during the breeding season of May to September may occur depending on data quality, year of original sighting, and input from regional NSDLF biologists.



SUPPORTING DOCUMENTS/REFERENCES

COSEWIC Website; ACCDC Data

HCV – BLACK-FOAM LICHEN Habitat

HCV ATTRIBUTE		Species at Risk – Habitat
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Black-foam Lichen Habitat	
INDICATOR	Reserve stand structure in Black-foam lichen habitat	
MONITORING/REPORTING FREQUENCY	MONITORING STRATEGY	
Annual	Confirm with NS Department of Lands & Forestry, NS Environment, Atlantic Canada Conservation Data Centre, and Mersey Tobeatic Research Institute if any new locations of black-foam lichen have been discovered on PHP's Crown lease.	
DATA SOURCES	COST AND DIFFICULTY	
ACCDC	Low – PHP does not yet implement SMP's	
FOREST MANAGEMENT PRESCRIPTION		
<p>In May 2018, the NSDLF released new Special Management Practices for At-Risk Lichens for several lichen species including: boreal felt lichen, vole ears, Hibernia jellyskin lichen, powdered moon lichen, eastern waterfan, wrinkled shingle lichen, frosted glass-whiskers, black-foam lichen, blue felt lichen, and poor-man's shingles lichen. The SMP is triggered by areas of overlap between planned forest management activities and the modelled lichen habitat for boreal felt lichen. Where there is overlap, a lichen survey is conducted and if any of the listed species in the SMP is found, a protection zone is established around the site. The sizes of these protection zones vary depending on the species. There are also restrictions related to road construction and maintenance.</p> <p>For black-foam lichen, a 100 metre radius protection zone is established around each site. This zone does not permit harvesting or silviculture, mineral exploration drill sites, or new road or trail construction (unless in exceptional circumstances and under approval by DLF). Existing road maintenance is permitted subject to review and conditions.</p>		
2019 MONITORING UPDATE		
<p>No new locations of black-foam lichen have been found on PHP's Crown lease. Currently, there is still only one known location of this lichen in the seven eastern counties where PHP operates and it is in the Cape Breton Highlands National Park. An expert lichenologist also verified that this lichen is still most commonly found in southwest Nova Scotia.</p>		

SUPPORTING DOCUMENTS/REFERENCES
NS Department of Lands & Forestry, NS Environment, ACCDC, MTRI

HCV – LITTLE BROWN MYOTIS Habitat

HCV ATTRIBUTE		Species at Risk – Habitat
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Little Brown Myotis Habitat	
INDICATOR	Reserve stand structure in Little brown myotis habitat	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY Monitor Environment Canada’s work on the development of beneficial management practices for the forest industry. Monitor Crown contractor audits to verify that unmerchantable trees, such as snags, wolf trees, and cavity trees, are being retained on site. Monitor ACCDC data for any known locations.
DATA SOURCES	ACCDC	COST AND DIFFICULTY Low – PHP does not yet implement SMP’s
FOREST MANAGEMENT PRESCRIPTION		
Currently in Nova Scotia, there are no best forest management practices required for bats. Regarding wolf trees which are important for roosting, the NS Forest Wildlife Guidelines of 1988, which is now a Crown land policy, recommends that snags, wolf trees, and cavity trees be left on harvest sites as much as possible. Most often, wolf trees are so large and difficult to harvest because of many branches, and have low economic value, that PHP leaves on site. PHP is currently managing the forest in a variety of ways that benefit bat habitat needs, based on a 2006 report called “Forest Management & Bats” by Bat Conservation International which lists a variety of forest management activities that can support bat habitat needs.		
2019 MONITORING UPDATE		
Currently, there are no beneficial management practices developed for the forest industry. A large colony of approximately 300 females was recently found (July 2016) in Nova Scotia. Due to the highly sensitive nature of bat populations, its location was not made publicly available.		

However, it was confirmed to PHP by a DLF management executive that the colony was not found on PHP's Crown lease. The 2019 Crown operations audits show that unmerchantable trees were left on harvest sites. ACCDC does have two locations for this species in the July 2020 dataset and both are in the Plaster Bat Cave which is located in a protected nature reserve.

SUPPORTING DOCUMENTS/REFERENCES

NS Department of Lands & Forestry, Environment Canada

HCV – TRI-COLORED BAT Habitat

HCV ATTRIBUTE		Species at Risk – Habitat
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Tri-colored Bat Habitat	
INDICATOR	Reserve stand structure in Tri-colored bat habitat	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY Monitor Environment Canada's work on the development of beneficial management practices for the forest industry. Monitor Crown contractor audits to verify that unmerchantable trees, such as snags, wolf trees, and cavity trees, are being retained on site. Monitor ACCDC data for any known locations.
DATA SOURCES	ACCDC	COST AND DIFFICULTY Low – PHP does not yet implement SMP's
FOREST MANAGEMENT PRESCRIPTION		
Currently in Nova Scotia, there are no best forest management practices required for bats. Regarding wolf trees which are important for roosting, the NS Forest Wildlife Guidelines of 1988, which is now a Crown land policy, recommends that snags, wolf trees, and cavity trees be left on harvest sites as much as possible. Most often, wolf trees are so large and difficult to harvest because of many branches, and have low economic value, that PHP leaves on site. PHP is currently managing the forest in a variety of ways that benefit bat habitat needs,		

based on a 2006 report called “Forest Management & Bats” by Bat Conservation International which lists a variety of forest management activities that can support bat habitat needs.
2019 MONITORING UPDATE
Currently, there are no beneficial management practices developed for the forest industry. The 2019 Crown operations audits show that unmerchantable trees were left on harvest sites. There are no locations of this bat species in the ACCDC dataset available to PHP.
SUPPORTING DOCUMENTS/REFERENCES
NS Department of Lands & Forestry, Environment Canada

HCV – NORTHERN MYOTIS Habitat

HCV ATTRIBUTE		Species at Risk – Habitat
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Northern Myotis Habitat	
INDICATOR	Reserve stand structure in Northern myotis habitat	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY Monitor Environment Canada’s work on the development of beneficial management practices for the forest industry. Monitor Crown contractor audits to verify that unmerchantable trees, such as snags, wolf trees, and cavity trees, are being retained on site. Monitor ACCDC data for any known locations.
DATA SOURCES	ACCDC	COST AND DIFFICULTY Low – PHP does not yet implement SMP’s
FOREST MANAGEMENT PRESCRIPTION		
Currently in Nova Scotia, there are no best forest management practices required for bats. Regarding wolf trees which are important for roosting, the NS Forest Wildlife Guidelines of 1988, which is now a Crown land policy, recommends that snags, wolf trees, and cavity trees be left on harvest sites as much as possible. Most often, wolf trees are so large and difficult		

to harvest because of many branches, and have low economic value, that PHP leaves on site. PHP is currently managing the forest in a variety of ways that benefit bat habitat needs, based on a 2006 report called “Forest Management & Bats” by Bat Conservation International which lists a variety of forest management activities that can support bat habitat needs.
2019 MONITORING UPDATE
Currently, there are no beneficial management practices developed for the forest industry. The 2019 Crown operations audits show that unmerchantable trees were left on harvest sites. There are no locations of this bat species in the ACCDC dataset available to PHP.
SUPPORTING DOCUMENTS/REFERENCES
NS Department of Lands & Forestry, Environment Canada

HCV – New Jersey Rush Habitat

HCV ATTRIBUTE		Species at Risk – Habitat
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Maintain New Jersey Rush Habitat	
INDICATOR	Administratively protect New Jersey Rush habitat identified in NSDLF’s Significant Habitat database and the Atlantic Coastal Plain Flora database	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY Monitor annual harvest operations to ensure New Jersey Rush habitat is administratively protected from all forest management activities.
DATA SOURCES	The Forest Manager (TFM)	COST AND DIFFICULTY Low – PHP does not conduct forest management activities within New Jersey Rush habitat

FOREST MANAGEMENT PRESCRIPTION
- PHP does not conduct forest management activities within New Jersey Rush habitat identified in NSDLF's Significant Habitat database and/or the Atlantic Coastal Plain Flora database
2019 MONITORING UPDATE
Known locations of New Jersey Rush are protected through the Atlantic Coastal Plain Flora dataset which is provided by NSDLF.
SUPPORTING DOCUMENTS/REFERENCES
Recovery Strategy and Management Plan for Multiple Species of Atlantic Coastal Plain Flora 2010; ACCDC Dataset

HCV – Boreal Felt Lichen Occurrences

HCV ATTRIBUTE Species at Risk – Habitat and Population	
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Protect identified locations of Boreal Felt Lichen
INDICATOR	Administratively protect identified locations of Boreal Felt Lichen by establishing 100-meter buffer around site
MONITORING/REPORTING FREQUENCY Annual	MONITORING STRATEGY Monitor annual harvest operations to identify areas needing Boreal Felt Lichen presence/absence surveys prior to active operations. Locations of Boreal Felt Lichen are buffered by 100 meters and excluded from forest management activities.
DATA SOURCES The Forest Manager (TFM); Boreal Felt Lichen Potential Habitat Layer	COST AND DIFFICULTY Moderate – PHP financially contributes annually to Boreal Felt Lichen surveys. Surveys are conducted by an expert lichenologist.
LONG-TERM STRATEGIC MONITORING PROGRAM	
MANAGEMENT	Boreal Felt Lichen population recovery

OBJECTIVE	
INDICATOR	Population estimates
MONITORING STRATEGY	
DLF is responsible for population inventory and studying habitat use.	
DATA SOURCES	COST AND DIFFICULTY
NSDLF; NSDOE	Low to High - Dependent on PHP's required level of involvement
FOREST MANAGEMENT PRESCRIPTION	
<p>In May 2018, the NSDLF released new Special Management Practices for At-Risk Lichens for several lichen species including: boreal felt lichen, vole ears, Hibernia jellyskin lichen, powdered moon lichen, eastern waterfan, wrinkled shingle lichen, frosted glass-whiskers, black-foam lichen, blue felt lichen, and poor-man's shingles lichen. The SMP is triggered by areas of overlap between planned forest management activities and the modelled lichen habitat for boreal felt lichen. Where there is overlap, a lichen survey is conducted and if any of the listed species in the SMP is found, a protection zone is established around the site. The sizes of these protection zones vary depending on the species. There are also restrictions related to road construction and maintenance.</p> <p>For boreal felt lichen, a 500 metre radius special management zone is established around each site. Within this zone is a protected zone (200 m out from occurrence) and a restricted zone (300 m from edge of protected zone). In the protected zone, harvesting or silviculture, mineral exploration drill sites, or new road or trail construction (unless in exceptional circumstances and under approval by DLF) are permitted. Existing road maintenance is permitted subject to review and conditions.</p> <p>In the restricted zone, partial harvesting is favoured by using the 'restoration' pathway in DLF's Forest Management Guides (FMG). If the FMG determines that a clearcut is the appropriate treatment, areas of clearcut shall not exceed 10 ha and the distance between clearcuts must not be less than 100 metres. Buffers are also established around forested wetlands and provisions are made based on the state of regenerating development within the zone.</p>	
2019 MONITORING UPDATE	
<p>- In 2019, there were 17 planned harvest sites surveyed where Boreal Felt Lichen potential habitat was identified. Of the 17 sites surveyed, BFL was present on 1 planned harvest area. A protected zone of 200 metres was established around the site with another 300 metres that met the special management practices for BFL.</p>	

- Since 2008, PHP has worked with the Mersey Tobeatic Research Institute to conduct Boreal Felt Lichen surveys. Prior to these surveys, there were three known locations of Boreal Felt Lichen in Nova Scotia. Since MTRI's surveys began for PHP, the number of known locations has increased to 516 in PHP's forest management area.

- NSDLF recently published a paper entitled "Forest Harvesting Impacts on Mortality of an Endangered Lichen at the Landscape and Stand Scales". This paper supports protection buffers around known Boreal Felt Lichen sites to maintain the micro-climate around the site. NSDLF is also currently working on a habitat supply research paper. NSDLF will also be working on improving the predicted habitat model for Boreal Felt Lichen. NSDLF will also be monitoring how different buffer widths affect microclimate using iButtons (micro-climate data loggers). Currently, there are about 24 iButtons in the field which are being used to assess the variation between and within stands. This information will help determine the sample size needed for a future buffer width study.

- PHP is a supporting partner on a recently approved Dalhousie University PhD research project by Mitacs. The project titled "Disturbance thresholds and factors influencing community dynamics of epiphytic cyanolichens in Nova Scotia, with an emphasis on rare and at-risk species". The project began in January 2018 and is expected to last two years. The researcher is expected to spend at least 35% of his time on PHP Crown licensed lands each year for site selection and planning, field work, and advisory meetings.

SUPPORTING DOCUMENTS/REFERENCES

Boreal Felt Lichen Recovery Strategy; Boreal Felt Lichen Recovery Team

HCV – Vole Ears Lichen Occurrences

HCV ATTRIBUTE		Species at Risk – Habitat and Population
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Protect identified locations of Vole Ears Lichen	
INDICATOR	Administratively protect identified locations of Vole Ears Lichen according to SMP	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY
		Spatial data of known vole ears lichen has been provided to PHP by the NS Department of Environment. There are no known locations of

	vole ears lichen in the 7 eastern counties where PHP operates.
DATA SOURCES The Forest Manager (TFM); Boreal Felt Lichen Potential Habitat Layer	COST AND DIFFICULTY Low – There are no known locations of Vole Ears Lichen in PHP’s management area
FOREST MANAGEMENT PRESCRIPTION	
<p>In May 2018, the NSDLF released new Special Management Practices for At-Risk Lichens for several lichen species including: boreal felt lichen, vole ears, Hibernia jellyskin lichen, powdered moon lichen, eastern waterfan, wrinkled shingle lichen, frosted glass-whiskers, black-foam lichen, blue felt lichen, and poor-man’s shingles lichen. The SMP is triggered by areas of overlap between planned forest management activities and the modelled lichen habitat for boreal felt lichen. Where there is overlap, a lichen survey is conducted and if any of the listed species in the SMP is found, a protection zone is established around the site. The sizes of these protection zones vary depending on the species. There are also restrictions related to road construction and maintenance.</p> <p>For vole ears lichen, a 200 metre radius protection zone is established around each site. In the protected zone, harvesting or silviculture, mineral exploration drill sites, or new road or trail construction (unless in exceptional circumstances and under approval by DLF) are permitted. Existing road maintenance is permitted subject to review and conditions.</p>	
2019 MONITORING UPDATE	
There are two known locations (year 2010 and 2015) of vole ears lichen in PHP’s forest management area that are buffered with a 200 metre protection zone. No surveys completed in 2019 resulted in new locations of vole ears lichen.	
SUPPORTING DOCUMENTS/REFERENCES	
COSEWIC Assessment and Status Report, 2009; NSDLF; ACCDC 2019 Database	

HCV – Blue Felt Lichen Occurrences

HCV ATTRIBUTE	Species at Risk – Habitat and Population
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Protect identified locations of Blue Felt Lichen

INDICATOR	Administratively protect identified locations of Blue felt lichen according to SMP	
MONITORING/REPORTING FREQUENCY Annual	MONITORING STRATEGY Spatial data is collected annually by ACCDC for all rare species. Also, new locations are being found on PHP's Crown license during boreal felt lichen surveys.	
DATA SOURCES The Forest Manager (TFM); Boreal Felt Lichen Potential Habitat Layer	COST AND DIFFICULTY Low – A survey was conducted for the two known locations of blue felt lichen in PHP's management area.	
FOREST MANAGEMENT PRESCRIPTION		
<p>In May 2018, the NSDLF released new Special Management Practices for At-Risk Lichens for several lichen species including: boreal felt lichen, vole ears, Hibernia jellyskin lichen, powdered moon lichen, eastern waterfan, wrinkled shingle lichen, frosted glass-whiskers, black-foam lichen, blue felt lichen, and poor-man's shingles lichen. The SMP is triggered by areas of overlap between planned forest management activities and the modelled lichen habitat for boreal felt lichen. Where there is overlap, a lichen survey is conducted and if any of the listed species in the SMP is found, a protection zone is established around the site. The sizes of these protection zones vary depending on the species. There are also restrictions related to road construction and maintenance.</p> <p>For blue felt lichen, a 100 metre radius protection zone is established around each site. In the protected zone, harvesting or silviculture, mineral exploration drill sites, or new road or trail construction (unless in exceptional circumstances and under approval by DLF) are permitted. Existing road maintenance is permitted subject to review and conditions.</p>		
2019 MONITORING UPDATE		
<p>There were three new locations of blue felt lichen found in PHP's forest management area during lichen surveys conducted in 2019. A 100-meter no harvest buffer was applied to each location. In total, there are 110 locations of blue felt lichen on PHP's Crown license area (below map).</p>		
SUPPORTING DOCUMENTS/REFERENCES		
COSEWIC Assessment and Status Report, 2009; NSDLF; ACCDC 2019 Database		

HCV – Eastern White Cedar

HCV ATTRIBUTE		Species at Risk – Habitat and Population
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Protect identified locations of Eastern White Cedar	
INDICATOR	Protection of all known locations of Eastern White Cedar	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY Ensure all known locations of Eastern White Cedar in PHP's management area are protected from harvest activities.
DATA SOURCES	The Forest Manager (TFM); NSDLF, NSE, ACCDC databases	COST AND DIFFICULTY Low – PHP does not conduct include the harvest of Eastern White Cedar in its management
FOREST MANAGEMENT PRESCRIPTION		
- PHP does not include the harvest of Eastern White Cedar in its forest management. Queries of the NSDLF forest inventory, as well as reviews of the rare species databases from NSDLF, NSE, and ACDCC, did not identify eastern white cedar stands for lands managed by PHP.		
2019 MONITORING UPDATE		
No known stands of eastern white cedar occur within PHP's area of operation.		
SUPPORTING DOCUMENTS/REFERENCES		
A Management Plan for Native Occurrences of Eastern White Cedar in Nova Scotia, 2010		

HCV – Black Ash

HCV ATTRIBUTE		Species at Risk – Habitat and Population
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Protect identified locations of Black Ash	
INDICATOR	Protection of all known locations of Black Ash	
MONITORING/REPORTING FREQUENCY	MONITORING STRATEGY	
Annual	Ensure all known locations of Black Ash in PHP's management area are protected from harvest activities.	
DATA SOURCES	COST AND DIFFICULTY	
The Forest Manager (TFM); NSDLF, NSE, ACCDC databases	Low – PHP does not conduct include the harvest of Black Ash in its management	
FOREST MANAGEMENT PRESCRIPTION		
- PHP does not include the harvest of Black Ash in its forest management. Queries of the NSDLF forest inventory, as well as reviews of the rare species databases from NSDLF, NSE, and ACCDC, did not identify black ash stands for lands managed by PHP.		
2019 MONITORING UPDATE		
No known stands of black ash occur within PHP's area of operation.		
SUPPORTING DOCUMENTS/REFERENCES		
NSDLF, NSE, ACCDC databases		

HCV – Frosted Glass Whiskers Habitat

HCV ATTRIBUTE		Species at Risk – Habitat
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Maintain Frosted Glass Whiskers Habitat	

INDICATOR	Administratively protect Frosted Glass Whiskers habitat identified in NSDLF's Significant Habitat database and Atlantic Canada Conservation Data Centre database	
MONITORING/REPORTING FREQUENCY Annual	MONITORING STRATEGY All known locations of frosted glass whiskers are protected.	
DATA SOURCES The Forest Manager (TFM)	COST AND DIFFICULTY Low – PHP does not conduct forest management activities within Frosted Glass Whiskers habitat	
FOREST MANAGEMENT PRESCRIPTION		
<p>In May 2018, the NSDLF released new Special Management Practices for At-Risk Lichens for several lichen species including: boreal felt lichen, vole ears, Hibernia jellyskin lichen, powdered moon lichen, eastern waterfan, wrinkled shingle lichen, frosted glass-whiskers, black-foam lichen, blue felt lichen, and poor-man's shingles lichen. The SMP is triggered by areas of overlap between planned forest management activities and the modelled lichen habitat for boreal felt lichen. Where there is overlap, a lichen survey is conducted and if any of the listed species in the SMP is found, a protection zone is established around the site. The sizes of these protection zones vary depending on the species. There are also restrictions related to road construction and maintenance.</p> <p>For frosted glass whiskers, a 100 metre radius protection zone is established around each site. In the protected zone, harvesting or silviculture, mineral exploration drill sites, or new road or trail construction (unless in exceptional circumstances and under approval by DLF) are permitted. Existing road maintenance is permitted subject to review and conditions.</p>		
2019 MONITORING UPDATE		
<ul style="list-style-type: none"> - One location of frosted glass whiskers was found in 2019 during regular lichen surveys. A 100 metre protection zone was established around the site. - There are eight known locations of frosted glass whiskers in eastern Nova Scotia. Five of these locations occur on privately owned land. The other three locations are on PHP's Crown license area and are buffered with a protection zone. 		
SUPPORTING DOCUMENTS/REFERENCES		
Management Plan for the Frosted Glass Whiskers, Nova Scotia Population, 2011; ACCDC 2019 Database; Boreal Felt Lichen Surveys, 2017-18		

HCV – Wrinkled Shingle Lichen Habitat

HCV ATTRIBUTE		Species at Risk – Habitat	
OPERATIONAL MONITORING PROGRAM			
MANAGEMENT OBJECTIVE	Maintain Wrinkled Shingle Lichen Habitat		
INDICATOR	Administratively protect Wrinkled Shingle Lichen habitat in identified locations by NSDLF, ACCDC, or PHP lichen survey results.		
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY	All known locations of wrinkled shingle lichen are protected.
DATA SOURCES	The Forest Manager (TFM)	COST AND DIFFICULTY	Low – PHP does not conduct forest management activities within wrinkled shingle lichen habitat
FOREST MANAGEMENT PRESCRIPTION			
<p>In May 2018, the NSDLF released new Special Management Practices for At-Risk Lichens for several lichen species including: boreal felt lichen, vole ears, Hibernia jellyskin lichen, powdered moon lichen, eastern waterfan, wrinkled shingle lichen, frosted glass-whiskers, black-foam lichen, blue felt lichen, and poor-man’s shingles lichen. The SMP is triggered by areas of overlap between planned forest management activities and the modelled lichen habitat for boreal felt lichen. Where there is overlap, a lichen survey is conducted and if any of the listed species in the SMP is found, a protection zone is established around the site. The sizes of these protection zones vary depending on the species. There are also restrictions related to road construction and maintenance.</p> <p>For wrinkled shingle lichen, a 100 metre radius protection zone is established around each site. In the protected zone, harvesting or silviculture, mineral exploration drill sites, or new road or trail construction (unless in exceptional circumstances and under approval by DLF) are permitted. Existing road maintenance is permitted subject to review and conditions.</p>			
2019 MONITORING UPDATE			
No new locations of wrinkled shingle lichen were found on PHP’s Crown license area in 2019. There is one known location of wrinkled shingle lichen in eastern Nova Scotia, which was discovered in 2014. This location has a 100-meter no harvest buffer applied to it.			
SUPPORTING DOCUMENTS/REFERENCES			

COSEWIC Assessment and Status Report, 2017; ACCDC 2019 Database; Boreal Felt Lichen Surveys, 2017-18

HCV – Cold Water Refugia Sub-watersheds

HCV ATTRIBUTE		Long-term hydrologic functions
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Maintenance of thermal cover for Atlantic Salmon and Brook Trout habitat	
INDICATOR	Maintain minimum 50% crown closure at the stand level in cold water refugia areas (total 12,218 hectares) with the exception of stands containing non-wind firm trees.	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY Monitor implementation of stand structure reserve using GIS overlay of completed harvest treatments with cold water refugia sub-watershed areas.
DATA SOURCES	The Forest Manager (TFM)	COST AND DIFFICULTY Low – PHP monitors this internally with resources currently available.
FOREST MANAGEMENT PRESCRIPTION		
<ul style="list-style-type: none"> - Cold water refugia areas are managed to maintain as much thermal cover as possible by leaving a minimum 50% crown closure wherever possible at the stand level following harvest treatments. - The only exception is in stands containing a high proportion of non-wind firm trees, such as balsam fir, black spruce, or white spruce that are vulnerable to blowdown. - No intensive forest management will occur in these HCVF's (i.e. establishing FSC defined plantations). 		
2019 MONITORING UPDATE		
A total of 89 hectares (0.3% of total cold water refugia area) was clearcut or overstory removal in cold water refugia areas in 2019. Since the stand condition was not conducive to maintaining minimum 50% crown closure because they were predominantly black spruce,		

white spruce, and/or balsam fir, the clearcut or overstory method was applied. That is, these stands were dominated by non-wind firm trees such as fir or spruce.
SUPPORTING DOCUMENTS/REFERENCES
N/A

HCV – International Bird Areas

HCV ATTRIBUTE Migratory birds habitat	
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Maintain and/or enhance migratory bird habitat
INDICATOR	Reserve stand structure in Important Bird Areas (IBA's)
MONITORING/REPORTING FREQUENCY Annual	MONITORING STRATEGY Currently, all identified IBA's in PHP's operating area are not impacted by forest management activities due to their location (i.e. off shore islands or inaccessible forest areas). Specific protocols for monitoring birds at IBAs are in development and will leverage and adapt existing monitoring programs that are directly relevant to the IBA Program (IBA Canada website). Verify annually that spatial list of IBA's is up-to-date for PHP's operating area.
DATA SOURCES The Forest Manager (TFM); IBA Canada	COST AND DIFFICULTY Low – PHP does not conduct forest management activities in IBA's, therefore, monitoring is not considered necessary.
FOREST MANAGEMENT PRESCRIPTION	
<ul style="list-style-type: none"> - The Scaterie Island IBA site is located within the boundaries of a legally-designated protected wilderness area. No harvesting is permitted to occur within this site. - Coastal IBA sites are not impacted by PHP's forest management activities, therefore, no special management practices are required. - IBA sites Cape North and Central Cape Breton Highlands have been addressed in Category 1, Question 1 for Bicknell's thrush. Additionally, the Cape North IBA site contains significant 	

concentrations of Boreal owl. For this HCVF, no harvesting currently occurs and is not expected to occur in the future. Should harvest plans be developed, a management strategy for this HCVF will be developed.
2019 MONITORING UPDATE
PHP has not conducted any forest management activities in IBA's identified within the forest management area.
SUPPORTING DOCUMENTS/REFERENCES
IBA Canada website http://www.ibacanada.ca/

HCV – Red Spruce

HIGH CONSERVATION VALUE – RED SPRUCE	
HCV ATTRIBUTE	Natural Red Spruce Stands
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Manage red spruce stands according to PHP Work Instruction for red spruce
INDICATOR	Management and maintenance of red spruce stands to improve the quality of uneven-aged conditions over time.
MONITORING/REPORTING FREQUENCY	MONITORING STRATEGY
Annual	Verify that annual harvest completions in natural red spruce stands were implemented using PHP's work instruction for red spruce management.
DATA SOURCES	COST AND DIFFICULTY
The Forest Manager (TFM)	Low – PHP has forest cover and historical data that shows natural red spruce stand locations. The PHP planner identifies these areas for management.
FOREST MANAGEMENT PRESCRIPTION	
<u>Objectives for Red Spruce Dominated Stands</u>	
<ul style="list-style-type: none"> - Strive for two to three cohort stand structures. - Over time, we will strive to increase the area of multiple ages in many stands. 	

- Promote natural red spruce regeneration
- At harvest (other than tending), trees should be large and of high value. Management (spacings, thinnings) should be carried out to help meet this objective.
- Retain some overstory structure, including snags; future snags; other tolerant species; and residual red spruce component – both individuals when windfirm and in clumps (structure and seed).

Immature stands

Commercial thinning when windfirm.

An option for non-windfirm immature red spruce stands is to partially remove the overstory in 2-3+ stages separated by a period of 10 to 20 years. The trees retained should be windfirm and quality immature trees. This helps ensure increased value of residual stand and regeneration establishment, and subsequent regeneration release(s).

Maturing stands

Shelterwood to promote regeneration.

As an option, a modified shelterwood treatment providing increased retention will be implemented, with a plan for two ages initially, with the intent of a third as the newly regenerated stand grows in to the existing overstory canopy. As possible considering tree ages and wind firmness:

- Step One: Initial shelterwood harvest is modified to include more patch retention, by doubling the present wildlife clump retention – move to 20 trees per hectare, with patches scattered throughout the treatment area. ie an irregular shelterwood
- Step Two once regeneration is 60 cm tall (5-10 yrs): Overstory harvest to release regeneration is needed (regeneration protection harvest techniques implemented). The retention includes both small patches of residuals, as well as individuals (as available, few isolated pines/hemlock/hardwoods, and snags with designated red spruce retention). Ten living trees per hectare are required.
- Shelterwood completed with adequate established regeneration.
- Step Three: 15-35 yrs The young and immature stand is tended as it grows (space – thin).
- Longer term: As trees grow in to the upper canopy, some of the patches and individual trees will be harvested, excluding designated wildlife clumps and legacy trees.
- At this time (in the future), three cohorts are introduced in to the stand with the intent of patterning an uneven-aged structure.

In some instances, trees in the forest stand planned for treatment are not wind-firm and excessive blowdown and significant wood losses would occur following implementing one of the treatments described above. If the stand is determined to be a high risk for blowdown, an alternative treatment may be implemented (over story removal and planting), or it should be left to grow until maturity then harvested.

2019 MONITORING UPDATE

A GIS overlay using completed harvest treatment data from 2019 shows that no hectares of natural red spruce stands were managed using PHP's work instruction for red spruce management.

HCV – Protected Areas

HCV ATTRIBUTE	Protected Area	
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Establish protected areas (legal, pending, and/or administrative) in PHP's management area	
INDICATOR	Establishment of legal, pending, and/or administrative protected areas	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY Continue to monitor provincial government's protected lands process for the establishment and legal protection of new wilderness areas and/or other decisions made regarding areas.
DATA SOURCES	The Forest Manager (TFM); NSDLF; NSDOE	COST AND DIFFICULTY Low
FOREST MANAGEMENT PRESCRIPTION		
<ul style="list-style-type: none"> - All identified forest lands for legal or pending protection by the provincial government have been delineated in TFM and are clearly marked as legal or pending protected areas. - All identified forest lands for administrative protection by PHP have been delineated in TFM and are clearly marked as administrative protected areas. - PHP staff is aware that no forest management activities are allowed to occur in these areas. 		

Protected Area Category	# of Sites	Total Hectares
New Provincial Protected Area	89	98,184
Provincial Parks and Reserves	21	1,492
Provincial Nature Reserves	7	1,868
Provincial Wilderness Areas	19	106,526
National Migratory Bird Sanctuaries	1	392
National Parks	1	94,870
TOTAL HECTARES		303,332

Administratively Protected Area Category	# of Sites	Total Hectares
Old Forest Areas	N/A	84,717
PHP Protected Area	8	6,147
IBP Sites & Sites of Ecological Significance	12	3,107
TOTAL HECTARES		93,971

2019 MONITORING UPDATE
A GIS overlay using completed harvest treatment data from 2019 shows that there have been no forest management activities conducted in legal or administrative protected areas.
SUPPORTING DOCUMENTS/REFERENCES
Our Parks and Protected Areas: A Plan for Nova Scotia, 2013; TFM Data; NSE Protected Areas

HCV – Special Management Zone Adjacent to Protected Area Boundaries

HCV ATTRIBUTE		Limit Protected Area Access
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Minimize road construction	
INDICATOR	Minimize road construction to reduce access points into protected areas by implementing a 200-meter wide special management zone.	
MONITORING/REPORTING FREQUENCY	MONITORING STRATEGY	
Annual	Assess whether new roads have been built in the special management zone using GIS overlay.	
DATA SOURCES	COST AND DIFFICULTY	
The Forest Manager (TFM)	Low – PHP currently monitors the special management zone and road construction using TFM.	

FOREST MANAGEMENT PRESCRIPTION
- Minimize road construction to reduce access points into the protected area. If roads are needed, they are to build parallel to the protected area boundary to minimize access points.
2019 MONITORING UPDATE
A GIS overlay using completed road construction data from 2019 shows that there have been no new roads built in the special management zone adjacent to protected area boundaries.
SUPPORTING DOCUMENTS/REFERENCES
N/A

HCVF Category 2 – Large Landscape Level Forests

HCV – Intact Forest Landscapes

HCV ATTRIBUTE	Intact Forest Landscapes	
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Adhere to FSC requirements for management of Intact Forest Landscapes	
INDICATOR	Maintain the integrity and intactness of intact forest landscapes.	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY
		Assess whether more than 20% of the IFL has been impacted, and if the IFL has been reduced in size below 50,000 ha.
DATA SOURCES	The Forest Manager (TFM)	COST AND DIFFICULTY
		Low – PHP currently monitors the IFL using TFM.
FOREST MANAGEMENT PRESCRIPTION		
<ul style="list-style-type: none"> - Do not impact more than 20% of Intact Forest Landscapes within the Management Unit, and - Do not reduce any IFLs below the 50,000 ha threshold in the landscape. 		
2019 MONITORING UPDATE		
<ul style="list-style-type: none"> - There have been no harvest, silviculture, or road building activities inside the IFL in 2019. 		

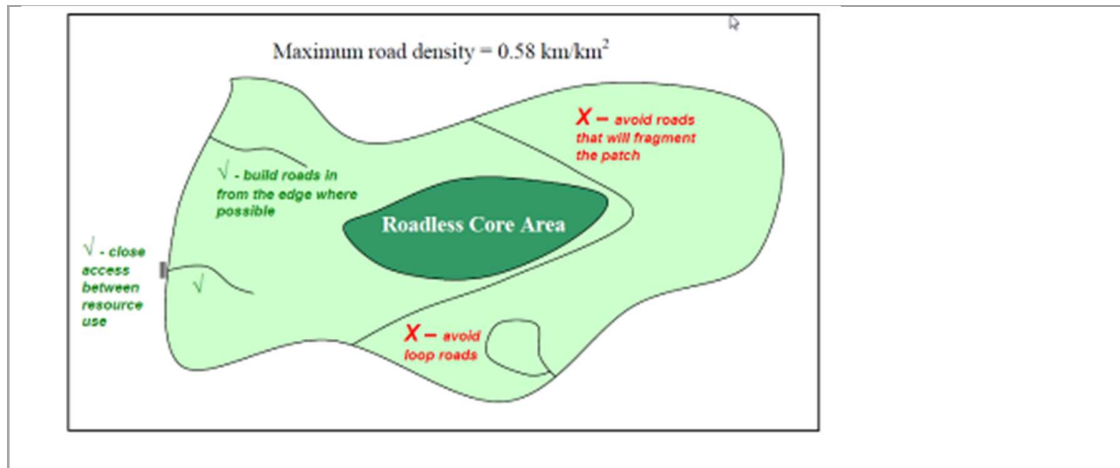
Note: There is one known Intact Forest Landscape as identified by Global Forest Watch Canada in PHP's forest management area. It is 103,849 ha and encompasses the Cape Breton Highlands National Park as well as other area outside the park. The total area of Crown land managed by PHP inside the IFL is 20,402 ha (20%). Of that 20%, approximately 10,000 ha has been identified as a pending new protected area by the provincial government with an existing additional 1,260 ha already established as a Crown Wilderness Area. This leaves approximately 9% as potential operable forest area by PHP. Therefore, it is not expected that PHP could impact up to or more than 20% of the total IFL or reduce it in size below 50,000 ha, but continued monitoring and reporting will occur to ensure FSC requirements are being met.

SUPPORTING DOCUMENTS/REFERENCES

Global Forest Watch; FSC Advice Note on Intact Forest Landscapes

HCV – Large Landscape Level Forests

HCV ATTRIBUTE		Biodiversity and Intactness	
OPERATIONAL MONITORING PROGRAM			
MANAGEMENT OBJECTIVE	To maintain biodiversity values and intactness in large landscape level forests		
INDICATOR	Manage large landscape level forests with special practices in protected areas, core roadless areas, and special management areas		
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY	
		Assess management activities within large landscape level forests to ensure practices comply with requirements outlined for protected areas, core roadless areas, and special management areas.	
DATA SOURCES	The Forest Manager (TFM)	COST AND DIFFICULTY	
		Low – PHP currently monitors large landscape level forests using TFM.	
FOREST MANAGEMENT PRESCRIPTION			
<ul style="list-style-type: none"> - No new roads in Core Roadless areas - For HCV area outside core roadless, follow road design objectives as shown below. Road Index value at HCV level not to exceed 0.58 km/km². If feasible and where necessary, block off access to reduce road travel. 			



- Use the provincial Forest Ecosystem Classification Guide to identify ecosite level prescriptions that:
 - o Promote ecosite patches by combining stands through treatment
 - o Employ 'extensive' management practices that support:
 - natural regeneration
 - longer rotations with consideration of natural disturbance processes
 - tree species diversity consistent with the vegetation type, while promoting those that support long-term resilience (i.e. best options for future)
- No full-tree logging
- Reduce road length by increasing average forwarding distance targets by 20% (from 250 m to 300 m)
- Bridge construction may be temporary and removed as practical
- Retain minimum 60% area in non-clearcut condition (at the HCV level). Non-clearcut defined as forest stand greater than 10 years of age.
- No FSC plantations / Intensive management
- No planting of exotic species
- Acadian Forest Restoration (considering N.S. Forest Code; FSC)
- Management will align with natural disturbance regimes
- Application of Forest Ecosystem Classification to identify appropriate treatments
- Appropriate forest covertime management: Use of hardwood management keys
- Appropriate forest covertime management: Use of mixedwood management keys
- Natural regeneration where appropriate
- Appropriate use of PHP's 12 different harvest techniques (CC, PC, SW, ST, Single, Group, Patch, CT, OR, CTR, RS, SC)
- Species at Risk Recovery Strategy/SMP Implementation
- No herbicides
- Steep Slope Exclusion
- Leave patches (e.g. active eagle/hawk nest sites, inoperable areas, vernal pools, DLF requests during approval process)

2019 MONITORING UPDATE

PHP uses the provincial Forest Ecosystem Classification manual for all forest management decisions. PHP does not conduct full-tree logging, plant exotic species, use herbicides, and

has not implemented intensive management in these areas. All other management prescriptions mentioned above are implemented across the entire forest management area.

The below table summarizes the current status of each large landscape level forest with respect to road index and minimum non-clearcut condition. Non-clearcut condition is defined as anything greater than 10 years of age. No new roads were built in large landscape level forests in 2019, so the road index remains the same as in 2016.

		Road Index Maximum Allowed = 0.58 km/km ²		Minimum Non-clearcut Condition = 60%
HCVF LLLF Name	Total HA	2019 Road Index	Future Road Index	Non-clearcut Condition in 2019
Barren Hill	1,318	0.08 km/km ²	0.20 km/km ²	91%
Boisdale Hills	5,630	0.40 km/km ²	0.52 km/km ²	96%
Bornish Hill (fully protected)	2,106	0 km/km ²	0 km/km ²	100%
Country Harbour	8,202	0.03 km/km ²	0.03 km/km ²	99.9%
East Bay Hills	1,865	0.23 km/km ²	0.31 km/km ²	89%
French River	25,226	0 km/km ²	0 km/km ²	99%
Hill Lake	877	0.55 km/km ²	0.65 km/km ²	99%
Ingonish River	15,210	0.01 km/km ²	0.01 km/km ²	100%
Isaacs Harbour River	6,157	0.25 km/km ²	0.42 km/km ²	94%
Jim Campbells Barren (fully protected)	4,586	0.21 km/km ²	0.21 km/km ²	100%

Masons Mountain (fully protected)	1,022	0.06 km/km ²	0.06 km/km ²	100%
North River	6,328	0.20 km/km ²	0.20 km/km ²	100%
Oban	1,618	0.57 km/km ²	0.78 km/km ²	89%
Petit Lake Ruiss Noir (fully protected)	1,612	0 km/km ²	0 km/km ²	100%
Salmon Gaspereaux	2,357	0.30 km/km ²	0.61 km/km ²	93%
Upper Liscomb River	7,398	0.07 km/km ²	0.07 km/km ²	99%
TOTAL HECTARES	91,512		Future index may exceed maximum 0.58 km/km ² . Will need to manage road index to meet target.	

HCVF LLLF Name	Total HA	2019 Total Area Treated	Treatment Used
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Barren Hill	1,318	No area treated	
Boisdale Hills	5,630	No area treated	
Bornish Hill (fully protected)	2,106	No area treated	
Country Harbour	8,202	No area treated	
East Bay Hills	1,865	No area treated	
French River	25,226	No area treated	

Hill Lake	877	No area treated	
Ingonish River	15,210	No area treated	
Isaacs Harbour River	6,157	No area treated	
Jim Campbells Barren (fully protected)	4,586	No area treated	
Masons Mountain (fully protected)	1,022	No area treated	
North River	6,328	No area treated	
Oban	1,618	No area treated	
Petit Lake Ruiss Noir (fully protected)	1,612	No area treated	
Salmon Gaspereaux	2,357	No area treated	
Upper Liscomb River	7,398	No area treated	
TOTAL HECTARES	91,512	No area treated	

HCVF Category 3 – Rare, Threatened or Endangered Ecosystems

HCV – Significant Ecosites

HCV ATTRIBUTE		Rare, threatened or endangered ecosystems	
OPERATIONAL MONITORING PROGRAM			
MANAGEMENT OBJECTIVE	Maintain rare, threatened or endangered ecosystems		
INDICATOR	Rare, threatened or endangered ecosystems administratively protected from forest management activities		
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY	Monitor rare, threatened or endangered ecosystems to ensure they are administratively protected from forest management activities. Exception applies if the mapped ecosystem type does not match on-the-ground characteristics.
DATA SOURCES	The Forest Manager (TFM); NSDOE	COST AND DIFFICULTY	Low
FOREST MANAGEMENT PRESCRIPTION			
<p>- All significant ecosites are administratively protected from forest management activities with the following exceptions:</p> <ul style="list-style-type: none"> - Karst conifer forest, karst hardwood forest, calcareous forest, and hemlock forest that have been previously managed will continue to be managed to maintain and restore mature climax conditions. - Significant ecosites are identified using the provincial forest inventory data and there has been limited field verification, so there is a certain amount of ambiguity within the dataset. Since there may be data inaccuracies between the digital information versus on-the-ground characteristics, stands that do not match the inventory data are exempt from special management activities as outlined here. 			
2019 MONITORING UPDATE			
A GIS overlay using completed harvest treatment data from 2019 and significant ecosite data shows that there was 12 hectares managed in a significant ecosite. The significant ecosite database shows these stands were a coastal or inland barren, however, these stands were forested with a mix of species based on pre-treatment assessment data, so they did not qualify as significant ecosites.			

SUPPORTING DOCUMENTS/REFERENCES
Significant Ecosite data layer, NSDOE

HCV – Significant, Old or Unique Forests

HCV ATTRIBUTE Rare, threatened or endangered ecosystems	
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Maintain rare, threatened or endangered ecosystems
INDICATOR	Rare, threatened or endangered ecosystems administratively protected from forest management activities
MONITORING/REPORTING FREQUENCY Annual	MONITORING STRATEGY Monitor rare, threatened or endangered ecosystems to ensure they are administratively protected from forest management activities. Exception applies if the mapped ecosystem type does not match on-the-ground characteristics.
DATA SOURCES The Forest Manager (TFM); NSDOE	COST AND DIFFICULTY Low
FOREST MANAGEMENT PRESCRIPTION	
<p>- All significant, old or unique forests (SOUF) are administratively protected from forest management activities that meet the following species composition (SOUF code in brackets). Exception applies if the mapped ecosystem type does not match on-the-ground characteristics.</p>	
Species composition	Stand height
70% or more spruce or red spruce (SPRU)	≥17m
50% or more eastern hemlock (HEML)	≥15m
50% or more white pine (WHPI)	≥18m
70% or more climax coniferous species with the most common species no more than 60% (MCCO)	≥17m
50% or more sugar maple (SUMA)	≥17m
70% or more climax deciduous species or tolerant hdwd (MCDE)	≥17m

70% or more climax coniferous or deciduous species with neither group exceeding 60% (MCCD)	≥17m
30% or more red pine (excl. plantations) (REPI0)	≥12m
50% or more Beech	≥18m
2019 MONITORING UPDATE	
<p>A GIS overlay using completed harvest treatment data from 2019 shows that there was one SOUF stand managed as part of a larger harvest area. The detail for this harvest is below and show that the SOUF stands within did not meet the stand characteristics as identified above based on the pre-treatment assessment data collected prior to harvest.</p> <p>SOUF stand MCDE (7 ha treated – partial cut)</p> <p>Details of stand harvested:</p> <p>Species – yellow birch (54%), red maple (14%), balsam fir (12%), white birch (11%), sugar maple (6%), white spruce (2%)</p> <p>Average stand height - 12 m (heights calculated on stand plots ranged from 10 m to 13 m)</p> <p>MCDE Definition – 70% or more climax deciduous species or tolerant hdwd with >= 17 m stand height</p>	
SUPPORTING DOCUMENTS/REFERENCES	
Significant, old or unique data layer, NSDOE	

HCV – Old Forest

HCV ATTRIBUTE	Old Forest Protected Area	
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Establish old forest protected areas on land-base	
INDICATOR	Establishment and legal protection of old forest protected areas	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY
		Monitor old forest protected areas TFM to ensure no forest management activities are conducted.

DATA SOURCES	COST AND DIFFICULTY
The Forest Manager (TFM); NSDLF; NSDOE	Low
FOREST MANAGEMENT PRESCRIPTION	
<ul style="list-style-type: none"> - All identified old forest areas are legally protected by the provincial government. - PHP staff is aware that no forest management activities are allowed to occur in these areas. 	
2019 MONITORING UPDATE	
<p>A GIS overlay using completed harvest treatment data from 2019 shows that there have been no forest management activities conducted in the old forest areas identified by the provincial government. However, an area that contained old forest characteristics was harvested in 2018, but these areas did not appear on the provincial old forest layer. This resulted in a change in how old forest areas are identified and mapped. A new potential old-growth layer has been created based off a GIS query of mature climax hardwood species with an 11 m height in the provincial forest inventory data. Planned harvest and silviculture management that overlap with these potential old-growth areas require an on-the-ground assessment to collect data on tree species, diameter, and tree cores. Stands that meet the old forest condition as defined by the provincial government are flagged as old-growth and incorporated into the provincial Old Forest Policy and GIS layer. This process has been developing since mid-2018 and to date, 58 forest stands of the 1,007 stands assessed have met the old forest condition. These 58 stands are now protected under the Old Forest Policy.</p>	
SUPPORTING DOCUMENTS/REFERENCES	
Old forest GIS layer, NSDLF	

HCV – Poorly Represented Ecosystems

HCV ATTRIBUTE	Protection of Poorly Represented Ecosystems	
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Establish protection of poorly represented ecosystems on land-base	
INDICATOR	Establishment and administrative protection of poorly represented ecosystems	
MONITORING/REPORTING FREQUENCY	MONITORING STRATEGY	

Annual	Monitor poorly represented ecosystems in TFM to ensure no forest management activities are conducted.																				
DATA SOURCES	COST AND DIFFICULTY																				
The Forest Manager (TFM)	Low																				
FOREST MANAGEMENT PRESCRIPTION																					
<p>- All identified poorly represented ecosystems are administratively protected by PHP. - PHP staff is aware that no forest management activities are allowed to occur in these areas.</p>																					
<table border="1"> <thead> <tr> <th>Poorly Represented Ecosystem</th> <th>Total Hectares</th> </tr> </thead> <tbody> <tr> <td>Masons Mountain</td> <td>197</td> </tr> <tr> <td>Jim Cambells Barren</td> <td>2,844</td> </tr> <tr> <td>Boisdale Hills</td> <td>1,727</td> </tr> <tr> <td>Country Harbour</td> <td>829</td> </tr> <tr> <td>North River</td> <td>27</td> </tr> <tr> <td>Oban</td> <td>170</td> </tr> <tr> <td>Hill Lake</td> <td>113</td> </tr> <tr> <td>Salmon Gaspereaux</td> <td>240</td> </tr> <tr> <td colspan="2" style="text-align: center;">TOTAL HECTARES 6,147</td> </tr> </tbody> </table>		Poorly Represented Ecosystem	Total Hectares	Masons Mountain	197	Jim Cambells Barren	2,844	Boisdale Hills	1,727	Country Harbour	829	North River	27	Oban	170	Hill Lake	113	Salmon Gaspereaux	240	TOTAL HECTARES 6,147	
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2019 MONITORING UPDATE																					
There have been no management activities in the above PHP administratively protected areas.																					
SUPPORTING DOCUMENTS/REFERENCES																					
PHP Gap Analysis Report																					

HCV – Connectivity Management Zones

HCV	Continuous Canopy cover
ATTRIBUTE	
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Maintain continuous canopy cover between protected areas and old forest areas
INDICATOR	Maintain a 100-meter wide continuous canopy cover (minimum 30%) corridor within the 500-meter wide Connectivity Management Zone (CMZ)

<p>MONITORING/REPORTING FREQUENCY</p> <p>Annual</p>	<p>MONITORING STRATEGY</p> <p>Monitor 100 meters within the CMZ to ensure a continuous canopy cover and CMZ's are not severed across their width.</p>
<p>DATA SOURCES</p> <p>The Forest Manager (TFM)</p>	<p>COST AND DIFFICULTY</p> <p>Low</p>

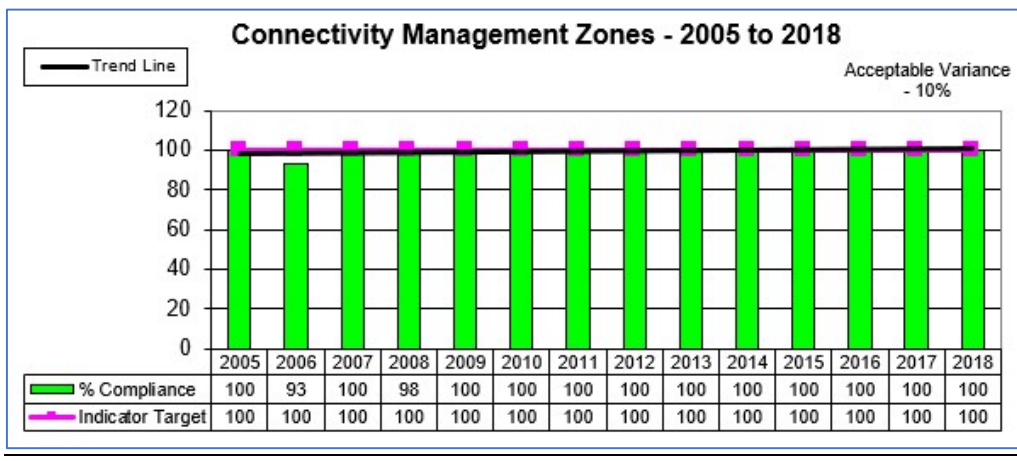
FOREST MANAGEMENT PRESCRIPTION

- The Connectivity Management Zones will be managed to provide continuous canopy cover (minimum 30%) within the 500-meter wide corridors, which will include a solid 100-meter wide core zone. Although harvesting can occur within the CMZ's, these corridors will not be severed across their width.

- The 500-meter wide CMZ's are static on the landscape, but the 100-meter wide core zone can 'move' within the CMZ.

2019 MONITORING UPDATE

The Connectivity Management Zones continue to maintain a continuous canopy cover within the 100-meter wide core zone.



SUPPORTING DOCUMENTS/REFERENCES

The Forest Manager

HCV – Margaree & St. Mary’s River Watershed

HIGH CONSERVATION VALUE – MARGAREE & ST. MARY’S RIVER WATERSHED	
HCV ATTRIBUTE	Non-clearcut Condition
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	To maintain a high level of non-clearcut condition in St. Mary’s and Margaree Watersheds, and restoration management
INDICATOR	Each watershed shall have minimum 80% of its area (that is managed by PHP) in a non-clearcut condition, and 90% of each watershed shall be managed for restoration (i.e. no more than 10% of each watershed will be established as a FSC plantation).
MONITORING/REPORTING FREQUENCY	MONITORING STRATEGY
Annual	Monitor non-clearcut condition in each watershed to ensure target of minimum 80% is met.
DATA SOURCES	COST AND DIFFICULTY
The Forest Manager (TFM)	Low
FOREST MANAGEMENT PRESCRIPTION	
<p>- The St. Mary's and Margaree watersheds will be managed to maintain 80% or more of all lands managed by PHP in the watershed in a closed forest condition (> 12 years of age).</p> <p>- Additionally, PHP will maintain at least 90% of the St. Mary's and Margaree watersheds in a natural condition for restoration, and will establish 200 m forest restoration zones (i.e. non-intensive management) along all main watercourses.</p>	
2019 MONITORING UPDATE	
<p>PHP has been monitoring the non-clearcut condition in these watersheds for several years. See Indicator 3.2 on page 25 for current condition of St. Mary’s and Margaree watersheds. Since 2008, these two watersheds have maintained minimum 80% non-clearcut condition. Additionally, PHP has not yet identified areas on the land base that will be established as an FSC defined plantation (up to 10% of the total forest lands), therefore, all forest areas are</p>	

currently being managed for restoration and/or maintenance of existing Acadian forest characteristics.
SUPPORTING DOCUMENTS/REFERENCES
The Forest Manager

HCVF Category 4 – Basic Services of Nature

HCV – Legally Protected Municipal Water Supply Areas

HCV ATTRIBUTE		Water Health
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Maintain water health for communities	
INDICATOR	Implement water protection measures in legally protected municipal water supply areas	
MONITORING/REPORTING FREQUENCY	MONITORING STRATEGY	
Annual	Monitor implementation of water protection measures.	
DATA SOURCES	COST AND DIFFICULTY	
The Forest Manager (TFM); NSDOE	Low	
FOREST MANAGEMENT PRESCRIPTION		
There is no land managed by PHP within the water supply areas unless requested or approved by the municipality through a watershed committee.		
2019 MONITORING UPDATE		
A GIS overlay using completed harvest treatment data from 2019 shows that there was no harvest inside designated municipal water supply areas.		
SUPPORTING DOCUMENTS/REFERENCES		
Nova Scotia Department of Environment		

HCV – Water Supply Intake Areas

HCV ATTRIBUTE Water Health	
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Maintain water health for communities
INDICATOR	Implement water protection measures around water supply intake areas.
MONITORING/REPORTING FREQUENCY Annual	MONITORING STRATEGY Monitor implementation of water protection measures.
DATA SOURCES The Forest Manager (TFM); NSDOE	COST AND DIFFICULTY Low
FOREST MANAGEMENT PRESCRIPTION	
- Water protection measures include the Wildlife and Habitat Watercourse Protection Regulations, monitoring of % closed forest condition, steep slope management, HCVF aquatic watershed management, and rutting and ground disturbance guidelines.	
2019 MONITORING UPDATE	
A GIS overlay of completed harvest treatments and water supply intake areas shows 0 hectares were managed within the intake areas.	
SUPPORTING DOCUMENTS/REFERENCES	
Nova Scotia Department of Environment	

HCV – Steep Slopes

HCV ATTRIBUTE Soil Health; Community Health	
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Maintain soil health and community health

INDICATOR	No conventional harvesting in steep slope areas (30% average slope or greater)	
MONITORING/REPORTING FREQUENCY	MONITORING STRATEGY	
Annual	Monitor steep slope areas and conventional harvesting activities.	
DATA SOURCES	COST AND DIFFICULTY	
The Forest Manager (TFM)	Low	
FOREST MANAGEMENT PRESCRIPTION		
- Conventional harvesting is not permitted in areas with 30% average slope or greater. Non-conventional harvesting such as cable logging is permitted, however, PHP is currently not using this practice.		
2019 MONITORING UPDATE		
See page 24, indicator 3.1 for update.		
NOTE: This indicator is based on spatial data that identifies slopes > than 30% average using contour data. It is not based on the actual % slope for any given area as could be determined on-the-ground. Therefore, to calculate the results for the indicator, a GIS exercise is done which overlaps the steep slope data with completed harvest jobs to determine non-conformances. Most often, the areas showing as harvested are slivers due to inaccuracies in the data.		
SUPPORTING DOCUMENTS/REFERENCES		
The Forest Manager		

HCVF Category 5 – Basic Needs of Local Communities

HCV – Cattle Grazing on Cape Breton Highlands

HCV ATTRIBUTE	Local communities
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Support needs of local communities
INDICATOR	Cattle grazing on the Cape Breton Highlands is allowed

MONITORING/REPORTING FREQUENCY Annual	MONITORING STRATEGY Monitor any issues arising from cattle grazing on Cape Breton Highlands
DATA SOURCES N/A	COST AND DIFFICULTY Low
FOREST MANAGEMENT PRESCRIPTION	
<ul style="list-style-type: none"> - Local farmers have let their cattle graze on the Cape Breton Highlands for several years during the summer/fall months. - PHP does not restrict this use. 	
2019 MONITORING UPDATE	
No issues have arisen in 2019 regarding cattle grazing in the Cape Breton Highlands.	
SUPPORTING DOCUMENTS/REFERENCES	
N/A	

HCV – Viewshed Areas

HCV ATTRIBUTE	Local Communities
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Minimize visual impacts to local communities from harvest activities
INDICATOR	Implement work instruction 'Harvest View from Roadside'
MONITORING/REPORTING FREQUENCY Annual	MONITORING STRATEGY Monitor any issues in identified viewshed areas arising from harvest activities.
DATA SOURCES The Forest Manager (TFM); Harvest View from Roadside Work Instruction	COST AND DIFFICULTY Low

FOREST MANAGEMENT PRESCRIPTION
<p>- District staff is responsible for determining the visibility rating using the TFM layer 'Viewsheds'. A harvest area determined to be within the low category will not require any specific landscape planning beyond regular housekeeping measures and removal of unsightly damaged residual trees.</p> <p>- Cut blocks falling in the medium category on the visibility grid should be designed using the "Landscape Level" instructions in the Harvest View from Roadside Work Instruction. Blocks falling into the high visibility category will follow the "Landscape level", "Stand level" and "Road design" practices as applicable.</p>
2019 MONITORING UPDATE
<p>Forest stands treated in 2019 did not overlap with low, medium or high viewshed areas, so viewshed management was not required on 2019 harvest areas.</p>
SUPPORTING DOCUMENTS/REFERENCES
<p>Viewshed layer in TFM; Harvest View from Roadside Work Instruction</p>

HCVF Category 6 – Traditional Cultural Identity

HCV – Forest Values and Uses

HCV ATTRIBUTE		First Nations Forest Values and Uses
OPERATIONAL MONITORING PROGRAM		
MANAGEMENT OBJECTIVE	Minimize impacts to First Nations Forest Values and Uses	
INDICATOR	Implement work instruction 'Aboriginal Value – Suspending Operations'	
MONITORING/REPORTING FREQUENCY	Annual	MONITORING STRATEGY Monitor any issues identified during annual review of operations plans with First Nations communities. PHP also maintains a public inquiry database, which captures concerns or questions the general public may have regarding planned operations.
DATA SOURCES	COST AND DIFFICULTY	

The Forest Manager (TFM); Public Inquiry Database	Low
FOREST MANAGEMENT PRESCRIPTION	
- If operations plans are known to affect First Nations forest values or uses through a review of annual operating plans or public inquiries, PHP will suspend all activities until a resolution is found.	
2019 MONITORING UPDATE	
- There were no public inquiries in 2019 related to PHP's operating plans that may affect First Nations.	
SUPPORTING DOCUMENTS/REFERENCES	
PHP Work Instruction 'Aboriginal Values – Suspending Operations'	

HCV – Traditional Cultural Identity

HCV ATTRIBUTE First Nations Traditional Cultural Identity	
OPERATIONAL MONITORING PROGRAM	
MANAGEMENT OBJECTIVE	Minimize impacts to First Nations Traditional Cultural Identity
INDICATOR	Successful implementation of Impact Benefit Agreement and Environmental Agreement with The Assembly of Nova Scotia Mi'kmaq Chiefs
MONITORING/REPORTING FREQUENCY Annual	MONITORING STRATEGY Monitor successful completion and implementation of Impact Benefit Agreement and Environmental Agreement with The Assembly of Nova Scotia Mi'kmaq Chiefs
DATA SOURCES The Forest Manager (TFM); Public Inquiry Database	COST AND DIFFICULTY Moderate
FOREST MANAGEMENT PRESCRIPTION	

Once the Impact Benefit Agreement and Environmental Agreement are finalized, forest management prescriptions will be developed in collaboration with Nova Scotia Mi'kmaq.

2019 MONITORING UPDATE

PHP has been working with the The Assembly of Nova Scotia Mi'kmaq Chiefs to finalize an Impact Benefits Agreement and Environmental Agreement, which will include provisions for the protection of Mi'kmaq Aboriginal and Treaty Rights and Archaeological and Cultural Resources. This work has been on hold since 2016 as other issues outside of PHP's control were being addressed by the Assembly. PHP will also begin work on a Free Prior Informed Consent process with Mi'kmaq communities to meet new requirements in the FSC National Forest Management Standard, which will ensure Mi'kmaq values and rights are not negatively impacted by PHP's forest management activities.