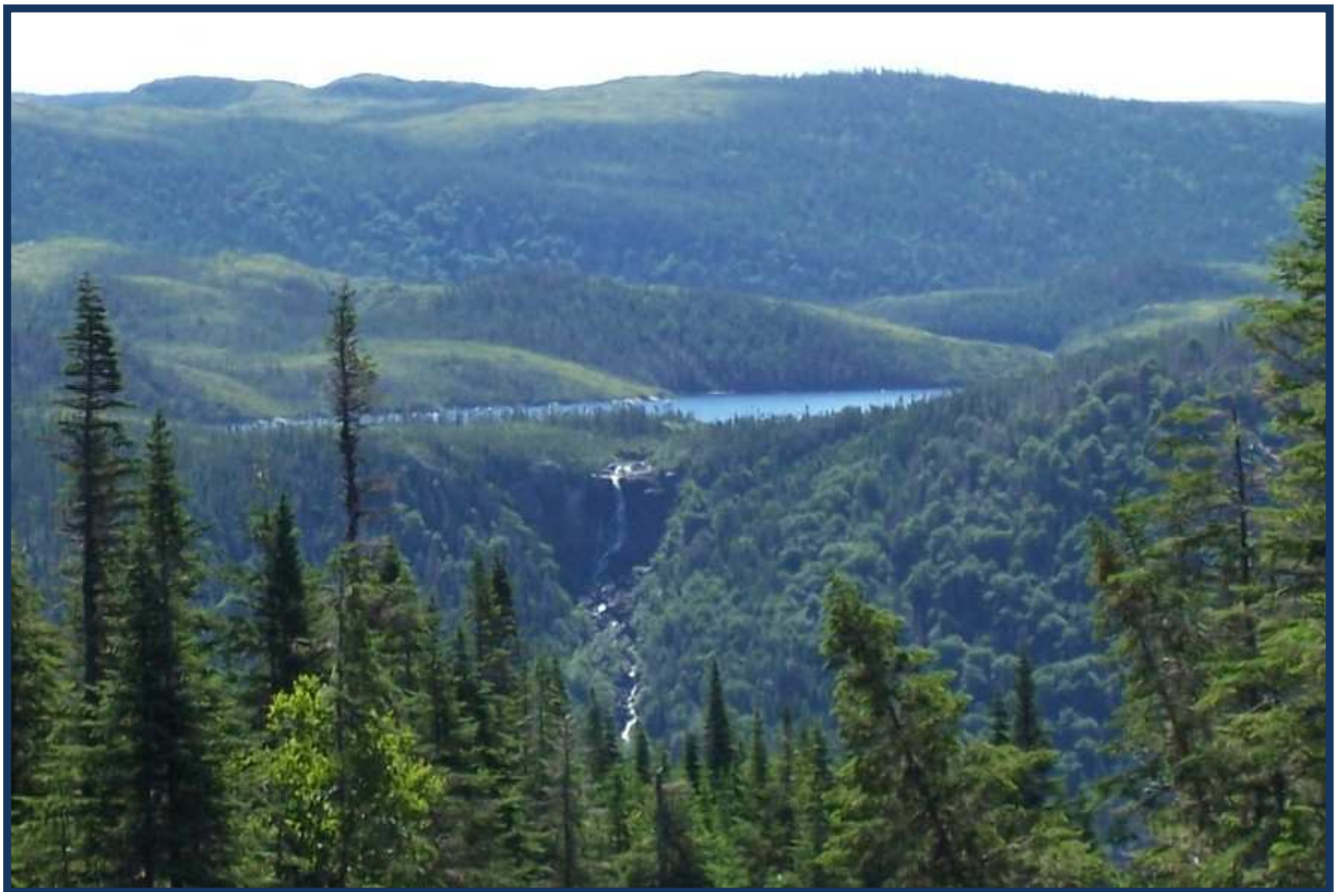
HIGH CONSERVATION VALUE FOREST ASSESSMENT REPORT



Frenchman's Pond

July, 2013

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Version 2

Corner Brook Pulp and Paper Ltd
Woodlands

Kruger
Industrial

EXECUTIVE SUMMARY

This report contains a detailed analysis of the identification of High Conservation Value Forests on the Defined Forest Area (DFA) of Corner Brook Pulp and Paper Limited (CBPPL), as a requirement for certification to the Forest Stewardship Council National Boreal Standard. The Forest Stewardship Council (FSC) is an international non-profit organization that envisions "healthy forests providing an equitable sharing of benefits from their use while respecting natural forest processes, biodiversity, and harmony among their inhabitants". The Forest Stewardship Council Canada Working Group (2004) developed the National Boreal Standard for certifying forests within the Canadian boreal forest, which promotes environmentally-appropriate, socially-beneficial, and economically-viable management.

One of the requirements of the FSC Boreal Standard (Principle 9) is the determination of High Conservation Value Forests (HCVFs) on the forest of the applicant. This report presents background information and decisions relating to the assessment for the presence of HCVFs on the DFA of CBPPL.

Principle 9, High Conservation Value Forests, is one of ten principles in the Boreal Standard. Criterion 9.1 of this principle requires an "assessment to determine the presence of the attributes consistent with High Conservation Value Forests, appropriate to the scale and intensity of the forest". HCVFs are described in the HCVF National Framework (Appendix 5 in the FSC Boreal Standard), and can be divided into six categories, namely:

- Forest areas containing globally, nationally or regionally significant concentrations of biodiversity values
- Forest areas containing globally, nationally or regionally significant large landscape-level forests
- Forest areas that are in or contain rare, threatened or endangered ecosystems
- Forest areas that provide basic services of nature in critical situations
- Forest areas that are fundamental to meeting the basic needs of local communities, and
- Forest areas critical to local communities' traditional, cultural identity.

The HCVF National Framework was developed to aid in the assessment of values on the forest, to determine if they are indeed HCVFs, and was organized as a series of questions throughout the six categories above. Each of the nineteen questions was complemented by the rationale behind the question, possible sources of information, and additional definitive and guidance questions. By researching the sources of information, candidate values to be assessed were identified. To satisfy Criterion 9.2 of Principle 9, CBPPL offered stakeholders and other interested parties the opportunity to input into the identification of HCVFs. All HCVFs suggested through these consultations were added to the list of candidate HCVs to be assessed.

CBPPL formed a HCVF Assessment Committee of local experts, CBPPL staff, and secretariats to assess the candidate HCVFs (Criterion 9.1). The Committee assessed the candidate HCVFs based on the definitive and guidance questions in the HCVF National Framework. The result of the assessment of all identified values determined the following HCVFs on CBPPL Defined Forest Area, listed by the corresponding question:

Category 1

1. **HCV:**

   Habitat for American Marten (Newfoundland populationn.)
   Habitat for Little Brown Myotis and Northern Myotis
   Habitat for Woodland Caribou
   Habitat for Harlequin Duck and Barrow's Goldeneye
   Mature Coniferous Habitat
   Open Forest Habitat

Open Barrens and Grasslands Habitat
All-age Classes Forest Habitat
Shoreline Habitat
Wet Forest Habitat
Riparian Habitat
Habitat for Plant Species at Risk and Rare and Uncommon Vascular Plant Species (Appendix 6)
Habitat for Boreal Felt Lichen
Habitat for Blue Felt Lichen
Red Pine
White Pine
Black Ash
Yellow Birch

2. No HCV

3. **HCV:** Gros Morne National Park, Upper Humber Wetland Complex, Cook's Marsh, Middle Ridge Wildlife Reserve, Woodland Caribou, Atlantic Salmon
   Possible HCV: Barney's Brook Steadies

4. Captured in Question 1

5. **HCV:** Red Pine, White Pine, Yellow Birch, Black Ash,
   Possible HCV: Balsam Poplar

6. **HCV:** Gros Morne National Park; IBP Sites: Serpentine Lakes, Crooked Bog, Brownmore Bog, Sandy Lake, Grand Lake Brook, Little Grand Lake; West Brook Ecological Reserve, Little Grand Lake Provisional Ecological Reserve, Little Grand Lake Wildlife Reserve, Middle Ridge Wildlife Reserve, Flatwater Pond Provincial Park Reserve, Jonathan's Pond Provincial Park Reserve, Barachois Pond Provincial Park, Sir Richard Squires Memorial Provincial Park, T'Railway Provincial Park

Category 2

7. No HCV

Category 3

8. No HCV

9. **HCV:** Red Pine areas – Sandy Lake (Birchy Narrows), Howley;
   Grand Lake South Area (balsam fir/spruce/healthy white pine of all ages)

10. **HCV:** Bay D'Espoire 1 (35,812ha); Bay D'Espoire 2 (27,246ha);
    Hampden Downs (33,737ha); Cat Arm 1 (18,775ha); Cat Arm 2 (6,599ha); Little Codroy (9,661ha)

11. **HCV:** <u>Serpentine Areas</u> – North Arm Hills, Northwest Gander river near bridge on Bay D'Espoir Hwy;
    <u>Limestone Areas</u> – South shore of Serpentine Lake, Goose Arm area;
    <u>Riparian Ecosystems</u> – Upper Humber River, Bottom Brook, Harry's River;
    <u>Red Pine areas</u> – Sandy Lake (Birchy Narrows), Howley

Category 4

12. **HCV:** Thirty-eight Public Water Supply Areas servicing ~32 communities that fall on CBPPL's DFA

13. No HCV

14. **HCV:** Slopes greater than 25º (46%)

15. Not Applicable

16. **HCV:** Atlantic Salmon; Freshwater fishes

Category 5

17. **HCV:** Recreation; Cutting timber for wharves and boats; Income from working in the forest; Firewood to heat homes and businesses; Company roads for access to hunting, berry picking, and cabins; Sawlogs

Category 6

18. **HCV:** Aboriginal Burial sites, Aboriginal Sacred Sites, Aboriginal Spirit Areas, Aboriginal Medicine Plants

19. No HCV

Another requirement of Principle 9 was the need for management strategies for the identified HCVFs, to ensure the maintenance of their attributes (Criterion 9.3). Criterion 9.4 further required monitoring to assess the effectiveness of these management strategies. The management strategies and monitoring plan have been included in this report as part of the CBPPL Forest Management Plan.

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1. OVERVIEW

The Forest Stewardship Council (FSC) is an international non-profit organization that envisions "healthy forests providing an equitable sharing of benefits from their use while respecting natural forest processes, biodiversity, and harmony among their inhabitants". FSC develops standards for various world forests based on 10 principles and 56 criteria, and the Forest Stewardship Council Canada Working Group (2004) developed a standard for the Canadian boreal forest, that is, the National Boreal Standard. The National Boreal Standard promotes environmentally-appropriate, socially-beneficial, and economically-viable management. In seeking certification to the FSC National Boreal Standard, Corner Brook Pulp and Paper Ltd. (CBPPL) must satisfy the requirements of all ten principles.

CBPPL Woodlands first became involved in environmental and forest management standards in 2001 when it was certified to the International Standards Organization 14001 Environmental Management System Standard. This standard ensures CBPPL manages its activities through standard operating procedures that prevent or minimize damage to the environment. Certification to the Canadian Standards Association (CSA) Z809 Sustainable Forest Management Standard followed in 2004, ensuring that forest management activities are conducted in a manner that is sustainable. Now the company seeks certification to the FSC National Boreal Standard.

Principle 9 of the National Boreal Standard addresses High Conservation Value Forests (HCVFs). All forests contain cultural, environmental and social values, and forest areas where these values are of outstanding significance or critical importance are called HCVFs. CBPPL has a mandate to recognize non-timber forest values, as the forests of Newfoundland are used extensively by residents as a livelihood for logging, outfitting, and adventure tourism, and recreationally for activities such as hunting, fishing, cabins, berry picking, hiking, snowmobiling and bird watching. CBPPL has already identified a number of non-timber values (HCVs) on its limits:

1. Through the 5-Year Planning Process, conducted by the provincial Department of Natural Resources (DNR), where Government and CBPPL present their proposed harvesting, road building, and silviculture plans for the next 5 years, and address issues raised by stakeholders:
2. And through certification to the CSA Sustainable Forest Management Standard, where a Public Advisory Committee assists CBPPL in identifying local values on CBPPL limits.

There are four criteria contained within Principle 9 that deal with the identification and management of HCVFs. Criterion 9.1 entails an assessment to determine the presence of the attributes consistent with HCVFs, appropriate to the scale and intensity of forest management. Criterion 9.2 requires a consultation process with stakeholders and other interested parties, to allow them input into the identification of HCVFs. Once HCVFs are identified, management strategies that ensure the maintenance of the attributes of the HCVFs must be developed and implemented, consistent with the precautionary approach (Criterion 9.3). Finally, Criterion 9.4 outlines the need for annual monitoring, to assess the effectiveness of the management strategies.

To aid in the assessment of potential HCVFs, the Boreal Standard contains a HCVF National Framework of 19 questions divided among six categories. The Framework ensures a thorough approach, and consistency among applicants. The six categories are:

- Forest areas containing globally, nationally or regionally significant concentrations of biodiversity values
- Forest areas containing globally, nationally or regionally significant large landscape-level forests
- Forest areas that are in or contain rare, threatened or endangered ecosystems
- Forest areas that provide basic services of nature in critical situations
- Forest areas that are fundamental to meeting the basic needs of local communities, and
- Forest areas critical to local communities' traditional, cultural identity.

For each of the 19 questions, the Framework suggests possible sources of information to look for the presence of HCVFs in the forest, and definitive and guidance questions that provide the applicant with further help in determining if the values being assessed are HCVFs. All values, whether proposed by stakeholders or the result of a search of information sources, must be assessed using the Framework.

2. PURPOSE AND METHODOLOGY

PURPOSE

The purpose of this report is to document some of the requirements of Principle 9 High Conservation Value Forests of the FSC National Boreal Standard (Version August 6, 2004). The basis of Principle 9 is the identification of High Conservation Value Forests (HCVFs) on the forest of the applicant. This complements CBPPL's commitment to manage "… for the forest's multiple uses, values and benefits" as stated in its Forest and Environmental Policy.

The mandate of this report is to describe the assessment process conducted for the Defined Forest Area (DFA) of CBPPL, the resultant HCVs identified, the management strategies necessary to ensure the attributes of these values are maintained or even enhanced, and the monitoring required to assess the effectiveness of the management strategies.

ASSESSMENT

This report was developed under contract, with data and information obtained through discussions with local experts, ENGO organizations, stakeholders, and other interested parties. The first step of the assessment process was to research the related sources of information suggested in the HCVF National Framework, to determine if there were any HCVF attributes on the DFA. This included a search of international, national, and provincial databases to determine the presence of HCVF attributes in insular Newfoundland. Spatial data was collected when available and ArcMap software (ESRI Inc.) was used to analyze this data. All of the information was studied to determine, if possible, whether or not the attributes occurred on the DFA. If the attributes occurred or could possibly occur on the DFA, then they were listed in a table where additional information about the attributes was compiled: habitat, status, risk from forest operations, and current management (Table 4 and Appendix 1).

Once this background information was collected, stakeholders and other interested parties were invited to submit their candidate HCVFs (See Appendix 2 for list of groups and individuals). Initially, the consultant and a CBPPL staff member gave these groups and individuals a presentation detailing background information on CBPPL, the company's current environmental certifications, the Forest Stewardship Council National Boreal Standard, and Principle 9 High Conservation Value Forests. As a follow-up, the groups were sent the list of 19 questions from the HCVF Framework and the rationale behind the questions, to help them understand the attributes of HCVFs. The consultant, a CBPPL staff member, and one of the Assessment Committee local experts met with anyone that wanted to submit potential HCVF values, to discuss the value, their objective(s) for the value, ideas for management strategies, and to locate the value(s) spatially. These values (Appendix 3) were then included in the table of potential HCVFs, along with the information indicated above.

An assessment committee (Appendix 4) made up of local experts, CBPPL staff, a facilitator, and the consultant then reviewed the information in the tables. Using the definitive and guidance questions in the Framework (for questions 1-18), the Committee determined which values listed were HCVs, which were not HCVs, and those for which more information was required before they could be assessed (Possible HCV, Appendix 5). To address question 19 (values that did not meet HCV thresholds but collectively constitute HCVs), CBPPL and the Canadian Forest Service had initially considered using a GIS software package, developed to analyze multiple criteria in integrated land management plans. However after the assessment was completed, both agencies decided that since there was no apparent

overlap of values that would lead to new HCVS, and most of the submitted values were identified as HCVs, further analysis was unnecessary.

MANAGEMENT STRATEGIES
The HCV Assessment Committee used information about the HCVs from Table 4 and Appendix 1, objectives for the values submitted by stakeholders/interested parties, and their own expert knowledge to develop management strategies for the identified HCVs (Section 5). (It was impossible to develop management strategies for the maintenance of Possible HCVs as there is a knowledge gap in their occurrence, habitat preference, food availability, etc.). Summarized in this plan, the management strategies are explained in greater detail in Forest Management Plan documents. For efficiency and simplicity, monitoring of the of HCV management strategies was incorporated into existing monitoring processes.

Information about the consultation, assessment, management, and monitoring of HCVs is presented in this report. The report was subjected to a credible, outside review and subsequently revised based on recommendations from the reviewer. It was posted for public review on CBPPL's website (cbppl.com), and through newspaper advertizing CBPPL invited comments on all documents on the website concerning forest management activities on their timber limits, including the reports developed as requirements for FSC certification.

ADAPTIVE MANAGEMENT
Conditions change and knowledge evolves, providing new information and opportunities. Consequently, an analysis of new information is essential to keeping the High Conservation Value Forest Assessment Report current. CBPPL will compile annually an updated list of Species at Risk to address additions, changes in status, and new information on existing species (particularly Possible HCVs). The Environmental Management Representative will ensure an annual review of the report is conducted to analyze new information for Possible HCVs, assess new candidate HCVs, evaluate the monitoring results, and assess the need for new or revised management strategies. The HCVF Assessment Committee will review the updated information and conduct assessments as they deem necessary. Following the principles of adaptive forest management and continual improvement, the necessary changes will be made and the report will be revised as required.

FOREST MANAGEMENT PLAN
The Forest Management Plan for CBPPL timber limits is contained in a number of documents, but mainly in the 5-Year Operating Plans for each Forest Management District and the Sustainable Forest Management Plan, all available on CBPPL's website. The 5-Year Operating Plans, developed through a public consultation process, contain a description of the forest, timber supply analysis, forest values, management objectives and strategies, and proposed activities for a 5-year period. They exhibit the impact and scale of the proposed operations in each of the applicable forest management districts. The Sustainable Forest Management Plan contains targets and management strategies to address local values identified through the Canadian Council of Forest Ministers Criteria and Elements for sustainable forest management.

Any terms used in this report follow the definitions included in the FSC Boreal Standard.

3. FOREST DESCRIPTION

A part of Kruger Inc., CBPPL produces 263,000 tonnes of newsprint annually at its mill in Corner Brook, Newfoundland. CBPPL's timber limits (~ 1.5 million ha), under license from the Crown, extend from the Codroy Valley in the southwest, north to Cat Arm on the Northern Peninsula, and east to Gander, and fall into provincial Forest Management Districts 5, 6, 9, 14, 15, & 16. An Annual Allowable Cut (AAC) of 739,000m^3 from CBPPL's own limits supplies the majority of the fibre required for the mill, with the

remainder being supplied by Crown operators and pulp chips from sawmills. A small area of CBPPL's license (and the responsibility for its management) has been transferred to or exchanged with the Crown. CBPPL is seeking certification on the portion of its timber limits for which it has management responsibility, described as the Defined Forest Area (DFA). Operations on the DFA include harvesting, road construction, precommercial thinning and planting. No widespread land conversion is presently occurring nor has it occurred previous to this assessment. The DFA for CBPPL can be seen in Figure 1.

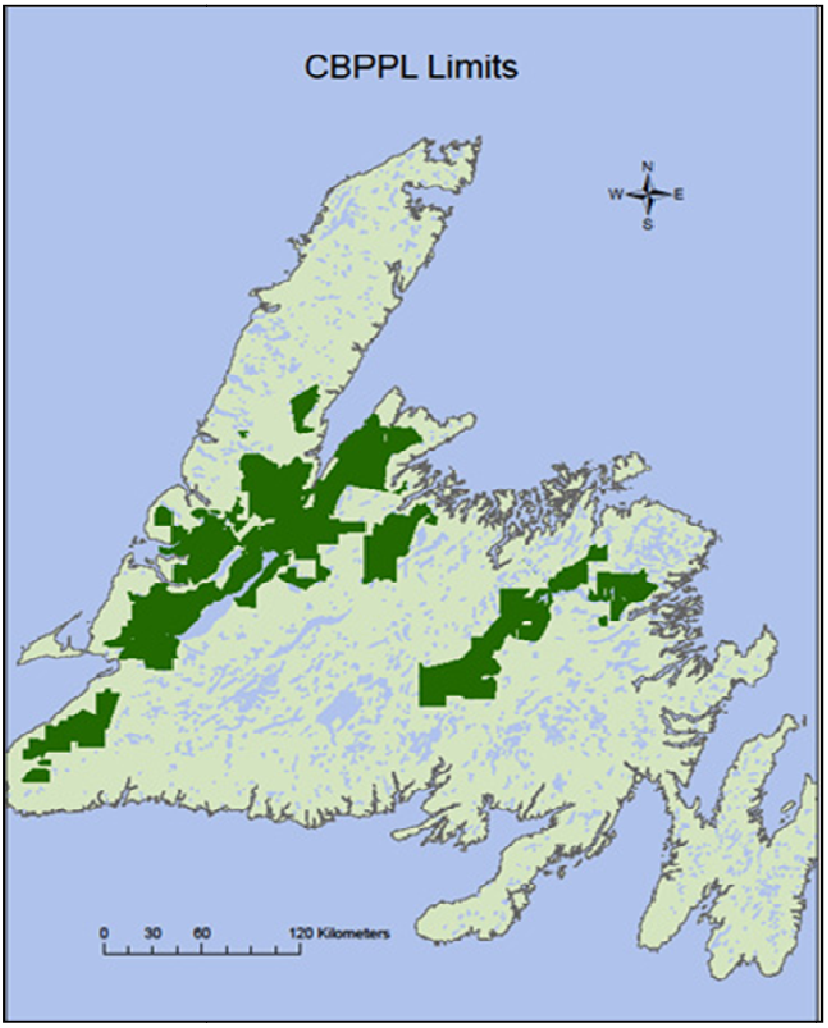

Figure 1. Defined Forest Area for CBPPL.

The island of Newfoundland forms the northern extremity of the Appalachian geological province of Eastern North America. The island has been shaped by glaciation and is rugged as a result. The DFA includes parts of the island that have been scraped bare, and many valleys and low-lying areas with thick mantles of rocky glacial deposits. The DFA – like the island – is also characterized by rolling hills, mountainous areas, upland plateaus, and numerous bogs, barrens, and ponds. There are abundant fresh water sources in the forms of large rivers, lakes, and streams. Elevation on the island peaks at 814 metres above sea level in the Lewis Hills and can average 600-800 metres above sea level on other plateaus.

The geology of the DFA is typical of the island. The surface geology is characterized by large areas of coarse-textured material (glacial till deposits), washed sediments, peat deposits, and rock outcrops. Rock types tend to be predominantly limestone, predominantly sandstone, conglomerate and shale, or predominantly volcanic rock. Under well-drained conditions, the most common form of mineral soil in the province is podzols. These soils typically have an organic layer (duff), over a distinctive red or reddish-brown layer rich in iron. Most of these soils tend to be coarse textured and very acidic.

Damman (1983) divided the island of Newfoundland into nine ecoregion classifications (Figure 2). Ecoregions are defined as areas where comparable vegetation and soil can be found on the same parent material provided that these sites have experienced a similar history of disturbance. A significant portion of CBPPL's DFA (~81%) lies within two of these ecoregions, the Central Newfoundland Forest and the Western Newfoundland Forest. Approximately 8% falls in the Long Range Barrens, over 6% in the Maritime Barrens, and almost 5% in the Northern Peninsula Forest. The North Shore Forest comprises less than 0.2% of the DFA. The ecoregions can be described briefly as follows:

- Northern Peninsula Forest – Balsam fir is the dominant forest cover except at high elevations (300-400m) on the eastern side of the peninsula where black spruce appears to be a natural component of the stands.
- Western Newfoundland Forest – Balsam fir is the dominant forest cover, with white birch and yellow birch common in protected valleys below 200m elevations.
- Central Newfoundland Forest – Much of the original balsam fir-feathermoss forest types of this area have been converted by fire to black spruce, and some of the richer site types to hardwood forests dominated by white birch and aspen.
- Long Range Barrens – This ecoregion includes the mountainous areas above treeline. The only trees that occur are stunted and of poor form shaped by wind, salt or ice (and therefore non-productive), usually dominated by black spruce, balsam fir and eastern larch.
- North Shore Forest – The vegetation in this ecoregion is similar to that of the Central Newfoundland Ecoregion, except that white spruce is more abundant in the forests.
- Maritime Barrens – This ecoregion consists of usually stunted, almost pure stands of balsam fir, broken by extensive open heathland.

A detailed description of the ecoregions in the DFA can be found in *The Pre-Industrial Condition of the Forest Limits of Corner Brook Pulp and Paper Limited* and in the 5-Year Operating Plans.

The landscape of insular Newfoundland is naturally fragmented, composed of productive forest, scrub (nonproductive forest), bog, barren, and water. The percentage of these land classes present on the DFA can be seen in Figure 2.

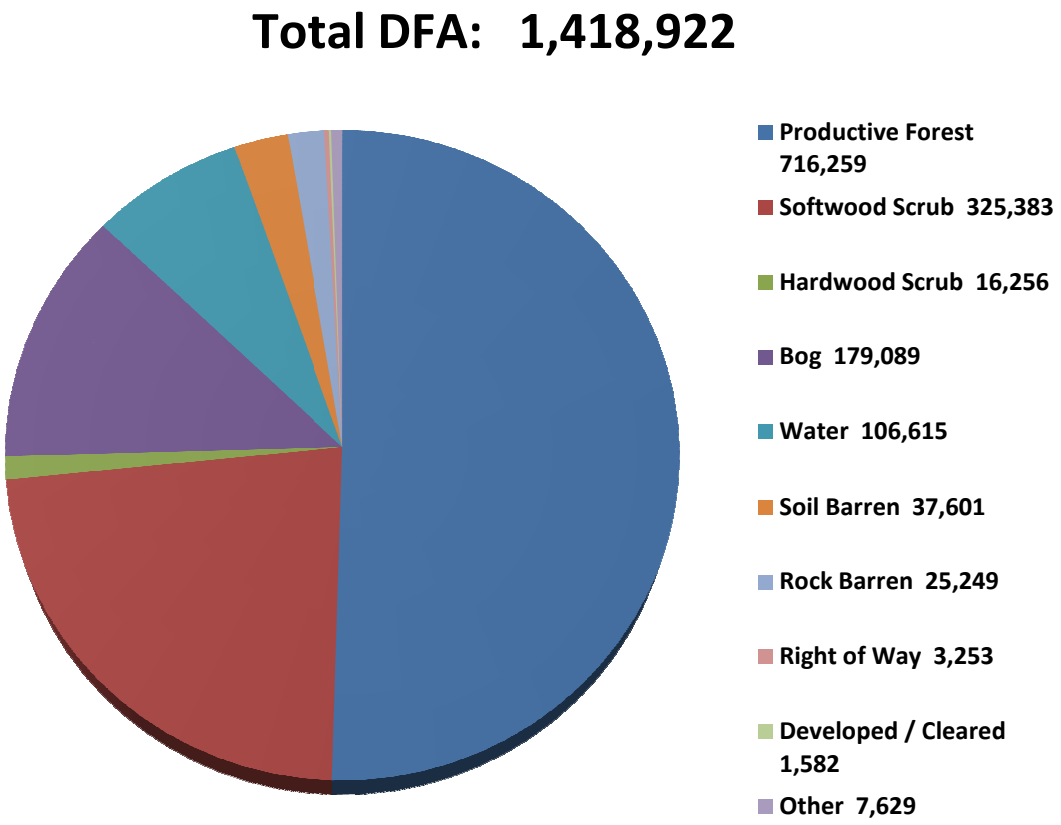

Figure 2. CBPPL Defined Forest Area by land class.

The forests of Newfoundland belong to the boreal forest, characterized by periodic, catastrophic, stand-replacement, natural disturbances such as fire and insect outbreaks. The resulting forest is even-aged and comprised of few, primarily conifer species. Additional forest disturbances include harvesting, and blow down (often occurring when another disturbance, like insect damage, has weakened a stand). The dominant species on the DFA are balsam fir and black spruce, with smaller amounts of white spruce, eastern larch, trembling aspen, and white birch. Wildfires have established black spruce as a characteristic species across much of central Newfoundland while the forests of the west coast are predominantly balsam fir.

Gros Morne National Park, designated a UNESCO World Heritage Site for its geological features, borders on the DFA, and ten provincial parks and reserves (see Question 6 in Section 4) are adjacent to or lie within CBPPL's DFA. The DFA provides habitat for six species of global concern as well as a number of nationally and provincially ranked species at risk (Question 1 in Section 4). And because there are numerous communities within or adjacent to the DFA, 38 protected public water supply areas servicing 32 communities coincide with the DFA. CBPPL Woodlands employs ~ 240 employees from nearly 50 Newfoundland communities. This total includes workers for harvesting and road-building operations and approximately 110 seasonal forestry workers who carry out silviculture operations in the summer and fall. CBPPL employs another 355 people at the Mill in Corner Brook and in the Deer Lake Power Company.

4. ASSESSMENT FOR THE PRESENCE OF HIGH CONSERVATION VALUES

CATEGORY 1: FOREST AREAS CONTAINING GLOBALLY, NATIONALLY OR REGIONALLY SIGNIFICANT CONCENTRATIONS OF BIODIVERSITY VALUES.

1. Does the forest contain species at risk, or potential habitat of species at risk, as listed by international, national, or territorial/provincial authorities?

This indicator ensures the maintenance of vulnerable and/or irreplaceable elements of biodiversity, and allows for a single species or a concentration of species to meet HCV thresholds.

Sources of Assessment Information
Atlantic Canada Conservation Data Center (ACCDC)
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
International Union for Conservation of Nature (IUCN) Red List of Threatened Species
NatureServe Explorer
Committee on the Status of Endangered Wildlife in Canada (COSEWIC)
Species Status Advisory Committee (SSAC)
Interviews with local experts, NL Dept. of Environment and Conservation [1]

Targeting conservation towards species in greatest need requires the determination of which are rare or declining. A number of factors are used to assess the conservation status of plant, animal and fungal species, leading to the designation of a conservation status rank.

In February, 2010 at the request of CBPPL, the ACCDC conducted an analysis to map the listed plants, rare plants, and rare birds in their database that were recorded as occurring on the DFA at that time (Map 1). Although ACCDC notes that "The non-occupancy of a taxon cannot be inferred by it absence…", we did confirm the occurrence of any species at risk using this data.

Species of Global Significance

ACCDC Database (G1 and G2 ranked species): **Laurentian dandelion** (*Taraxacum laurentianum*) (G1Q), and **Rock Dwelling Sedge** (*Carix perticosa var. misandroides*) (G2G3Q) are listed in the ACCDC database as occurring on the DFA. A ranking of G1 indicates a species that is critically imperiled across its entire range; G2 indicates the species is imperiled.

CITES: Appendix I, II, and III of CITES lists species that are protected from over-exploitation through international trade. **Peregrine Falcon** (*Falco peregrines* subsp. *Anatum*) and **Newfoundland Marten** (*Martes peregrine atrata)* are the only species listed by CITES for insular Newfoundland that are also identified in the ACCDC database as occurring on the DFA.

[1] Shelley Pardy Moores, Sr. Mgr. Endangered Species and Biodiversity
Susan Squires, Ecosystem Management Ecologist, Endangered Species

IUCN: **Boreal Felt Lichen** (*Erioderma pedicellatum*) is the only species on the Red List that is found in Newfoundland. Boreal Felt Lichen is not listed in the ACCDC database as occurring on the DFA, and it is unlikely that the habitat for Boreal Felt Lichen occurs on the DFA (Claudia Hanel[2], personal communication, October 19, 2010). However, it was decided to include Boreal Felt Lichen as a species to be assessed.

NatureServe Explorer: There were 22 species ranked as G1 or G2 under NatureServe that are found in Newfoundland (Table 1).

Table 1. Natureserve species ranked as G1 or G2 in Newfoundland.

Maritime Ambersnail (*Oxyloma verrilli*)	St. Lawrence Whitlow-grass (*Draba laurentiana*)
Terre-Nueve Vallonia (*Vallonia terraenovae*)	Upward-lobed Moonwort (Botrychium ascendens)
Baltic Saltbrush (*Atriplex nudicaulis*)	Porsild's Bryum (*Mielichhoferia macrocarpa*)
Barrens Willow (*Salix jejuna*)	*Tayloria splachnoides*
Dense Whitlow-grass (*Draba pycnosperma*)	*Tetrodontium repandum*
Fernald's Braya (*Braya fernaldii*)	*Seligeria brevifolia*
Long's Braya (*Braya longii*)	*Philonotis yezoana*
Man-hater Sedge (*Carex misandroides*)	*Trematodon montanus*
Newfoundland Lettuce (*Lactuca terrae-novae*)[1]	*Pohlia sphagnicola*
Robinson's Hawkweed(*Hieracium robinsonii*)	Boreal Felt Lichen (*Erioderma pedicellatum*)
Serpentine Stitchwort (*Minuartia marcescens*)	*Porpidia hertiliana*

[1] The Endangered Species Section of NL Environment and Conservation advised that this species does not exist.

Of these species, only the **Serpentine Stitchwort** (*Minuartia marcescens*) and Man-hater Sedge (**Rock Dwelling Sedge**) (*Carex pertricosa misandroides*) are identified on the ACCDC database as occurring on the DFA. Serpentine Stitchwort is ranked globally as G2G3 by NatureServe and G3 by ACCDC. Rock Dwelling Sedge is ranked G2Q by NatureServe and G1G2Q by ACCDC.

Species of National (Canadian) Significance

In Canada, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of species that are considered to be at risk. Canada's Species at Risk Act (SARA) provides for the legal protection of wildlife species and the conservation of their biological diversity. Table 2 lists the endangered or threatened species, or species of special concern as ranked by COSEWIC that the ACCDC database identified as occurring on the DFA.

Table 2. Species on the DFA listed in Schedules 1, 2, and 3 of the Species at Risk Act and/or assessed as Endangered, Threatened, or Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

Species	COSEWIC Designation	SARA Species at Risk*
American Marten (*Martes americana atrata)*	Threatened	Schedule 1
Little Brown Myotis (*Myotis lucifugus*)	Endangered	
Northern Myotis (*Myotis septentrionalis*)	Endangered	
Barrow's Goldeneye (*Bucephala islandica)*	Special Concern	Schedule 1
Harlequin Duck (*Histrionicus histrionicus)*	Special Concern	Schedule 1
Olive-sided Flycatcher (*Contopus cooperi*)	Threatened	
Peregrine Falcon (*Falco peregrinus anatum*)	Threatened	Schedule 1

[2] Claudia Hanel, Ecosystem Management Ecologist, Botanist, NL Dept. of Environment and Conservation

Species	COSEWIC Designation	SARA Species at Risk*
Red Crossbill (*Loxia curvirostra percna)*	Endangered	Schedule 1
Rusty Blackbird (*Euphagus carolinus)*	Special Concern	Schedule 1
Short-eared Owl (*Asio flammeus)*	Special Concern	Schedule 3
Banded Killifish (*Fundulus diaphanous)*	Special Concern	Schedule 1
American Eel (*Anguilla rostrata)*	Threatened	
Blue Felt Lichen (*Degelia plumbea*)	Special Concern	

* Schedule 1 is the official list of wildlife species at risk under SARA. Species that were designated at risk by COSEWIC prior to October 1999 (Schedules 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. Species with no schedule have been recommended but have not been legislated.

Species of Importance on the Island of Newfoundland

Newfoundland and Labrador's Endangered Species Act (ESA) provides special protection for plant and animal species considered to be endangered, threatened, or vulnerable (special concern) in the province. Designation under the Act follows recommendations from the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and/or the Species Status Advisory Committee (SSAC) on the appropriate assessment of a species. SSAC is an independent, provincial committee of government and non-government scientists who determine the provincial status of species, subspecies, and populations.

Currently there are 32 species, subspecies, and populations listed under the Act. Those that ACCDC lists as occurring on the DFA are listed in Table 3. Some species have not been recorded on the DFA, but because their habitat is present on the DFA, they could possibly occur there. These species have been designated Possible HCV (Appendix 5).

Table 3. Species at Risk on the DFA listed in Newfoundland and Labrador's Endangered Species Act (NLESA) and/or assessed as Endangered, Threatened, or Vulnerable by the Species Status Advisory Committee (SSAC).

Species	NLESA	SSAC Designation
American Marten (*Martes americana atrata)*	Threatened	
Barrow's Goldeneye (*Bucephala islandica)*	Vulnerable	
Harlequin Duck (*Histrionicus histrionicus)*	Vulnerable	
Newfoundland Gray-cheeked Thrush (*Catharus minimus minimus*)		Threatened[1]
Olive-sided Flycatcher (*Contopus cooperi*)	Threatened[1]	
Peregrine Falcon (*Falco peregrinus anatum)*	Vulnerable	
Piping Plover (*Charadrius melodus melodus)*	Endangered	
Red Crossbill (*Loxia curvirostra percna)*	Endangered	
Red Knot (*Calidris canutus rufa)*	Endangered	
Rusty Blackbird (*Euphagus carolinus)*	Vulnerable	
Short-eared Owl (*Asio flammeus)*	Vulnerable	
Banded Killifish (*Fundulus diaphanous)*	Vulnerable	
American Eel (*Anguilla rostrata)*	Vulnerable[1]	
Rock Dwelling Sedge (*Carex petricosa* var. *misandroides*)		Endangered[2]
Tradescant's Aster (*Symphiotrichum tradescantii*)		Threatened[2]
Vreeland's Striped Coralroot (*Corallorhiza striata* var. *vreelandii*)		Endangered[1,2]

[1] Not listed by ACCDC as occurring on the DFA.
[2] Recommended by SSAC but not listed in Endangered Species Act.

In addition to the species identified in Table 3, the ACCDC database identified a number of species occurring on the DFA that have been ranked at the subnational (S) level in the general status of wild species. Species ranked as S1 are critically imperiled, S2 imperiled, and S3 vulnerable. This S ranking serves as a guide for the Species Status Advisory Committee in the selection of species to be assessed. Upon recommendation from Environmental Nongovernmental Organizations in the province, all S1-S3 species occurring on the DFA have been assessed as HCVs. The S1-S3 bird species are included in Table 4; the S1-S3 vascular plants are listed in Appendix 6.

The **Woodland Caribou** (*Rangifer tarandus*) was also included in the assessment as a high conservation value. The populations of Woodland Caribou on insular Newfoundland peaked at nearly 100,000 in the 1990's, then began a decline in the mid 1990's to an estimated 32,000 in 2008 (Mahoney and Weir 2009). Although Woodland Caribou on insular Newfoundland are not currently listed as a species at risk, considering the concern about their population levels, CBPPL added Woodland Caribou to the list for assessment.

The Atlantic Canada Conservation Data Center also lists four tree species as rare or sensitive, and these were also been included for assessment:
Red Pine, *Pinus resinosa*
White Pine, *Betula alleghaniensis*
Black Ash, *Fraxinus nigra*
Yellow Birch, *Betula alleghaniensis*

Species that are currently being assessed by the SSAC but not yet listed in the Endangered Species Act will be assessed by the Committee as they are listed, at each annual review of this report.

All of the species at risk identified by international, national, or provincial authorities are listed in a table (Appendix 7) which includes information on their conservation status (risk designation), the potential for the presence of their habitat on the DFA, and whether they have actually been recorded on the DFA. This table helps determine which species at risk should be assessed as a HCV.

For all the species at risk occurring on the DFA as listed in Appendix 7, information on habitat, extent of occurrence on the DFA, and threats from forest operations are compiled (Table 4). The assessment decisions – HCV, Not HCV, or Possible HCV – are also included in this table.

There are no ecological or taxonomic groups of rare species that would together constitute a HCV. However, the DFA does contain critical habitat for American Marten. To date, this is the only species at risk with identified critical habitat.

Table 4. Assessment of Species at Risk occurring on CBPPL's DFA as High Conservation Values.

Species	Focal Species	Status	Habitat[1]	DFA Occurrence[1]	Threats / Risk from Forest Operations	Current Management	Comments/ Assessment	Decision
Mammals								
American Marten – Newfoundland population *Martes americana atrata*	**Yes**	SARA – Threatened; ESA – Threatened; Population possibly rebounding	Martens select for, or use in proportion to availability, a broad range of habitat types, including recent cuts ≤5 yr old, regenerating forest <6.5 m, precommercially thinned stands, and mature and overmature forest.	Three of five subpopulations occur within or adjacent to the DFA: Georges Lake/Pinchgut Lake, Little Grand Lake, and Main River.	Extensive harvesting would temporarily remove habitat; habitat modeling of harvesting plans shows a modest increase in potential marten habitat across the DFA with harvest of 100% AAC.	Critical habitat identified; fully protected in ecological reserves and parks; snaring techniques for hare introduced to reduce incidental captures of marten[3].		**Habitat for American Marten** **HCV**
Little Brown Myotis *Myotis lucifugus*	**Yes**	*Recommended Endangered by COSEWIC*	Roost in trees in day; maternity colonies gather in barns, attics, tree cavities.[4, 5] Need mature forests across the landscape	Widespread across the DFA	Extensive harvesting would temporarily remove habitat	Bat Working Groups in Canada and the US are delineating the abundance of these species	Rapidly spreading white-nose syndrome (WNS) is ultimately expected to cause regional and likely rangewide extinction in a very short ecological	**Habitat for Little Brown Myotis** **HCV**

[3] Recovery plan for the threatened Newfoundland population of American marten (*Martes americana atrata*), 2010

[4] Status review of the little brown myotis (*Myotis lucifugus*) and determination that immediate listing under the Endangered Species Act is scientifically and legally warranted, 2010.

[5] Status review of the little brown myotis (*Myotis lucifugus*) and determination that immediate listing under the Endangered Species Act is scientifically and legally warranted, 2010.

Species	Focal Species	Status	Habitat[1]	DFA Occurrence[1]	Threats / Risk from Forest Operations	Current Management	Comments/ Assessment	Decision
							time frame.	
Northern Myotis *Myotis septentrionalis*	**Yes**	*Recommended Endangered by COSEWIC*	Found in dense forest stands and chooses maternity roosts beneath exfoliating bark and in tree cavities[6]. Need mature forests across the landscape	Less widespread across the DFA than Little brown myotis	Extensive harvesting would temporarily remove habitat	Bat Working Groups in Canada and the US are delineating the abundance of these species	Rapidly spreading white-nose syndrome (WNS) is ultimately expected to cause regional and likely rangewide extinction in a very short ecological time frame.	**Habitat for Northern Myotis** **HCV**
Woodland Caribou *Rangifer tarandus*	**Yes**	Insular Newfoundland not assessed Population in decline	Mostly barren land during the summer months, moving to areas of mixed forests during the colder months	Caribou occur all across CBPPL limits, except in FMD 5; caribou occur in FMD 5 but not on CBPPL limits	Harvesting could impact calving and wintering areas	• No harvesting in core areas for wintering, calving and post-calving; • Maintain 30% of overmature (80+ years) forest in 10-km buffers/corridors around core areas; • Avoid areas if caribou are present during calving/post-calving or wintering seasons[7] • Trough the Canadian		**Habitat for Woodland Caribou** **HCV**

[6] http://www.batcon.org/index.php/all-about-bats/species-profiles.html?task=detail&species=2306&country=43&state=57&family=all&limitstart=0

[7] Forest Management Guidelines for Woodland Caribou (*Rangifer tarandus carbou*) for the Island of Newfoundland, 2007

Species	Focal Species	Status	Habitat[1]	DFA Occurrence[1]	Threats / Risk from Forest Operations	Current Management	Comments/ Assessment	Decision
						Boreal forest Agreement, defer harvesting in identified areas on the DFA		
Birds								
Barrow's Goldeneye *Bucephala islandica*	**No**	SARA –Special Concern; ESA – Vulnerable Population possibly still in decline	Occur only winter in insular Newfoundland, in open water in bays.	One sighting at mouth of Humber River; possible on bays; Stephenville Crossing	No impact in wintering areas; required buffers on waterways protect bays from effects of harvesting.	Birds and their nests are protected under the Migratory Birds Convention Act. Need to gather knowledge of the full extent of the breeding (and other) ranges[8]	No perceived threat from harvesting	**Habitat for Barrow's Goldeneye** **HCV**
Harlequin Duck *Histrionicus histrionicus*	**No**	SARA –Special Concern; ESA – Vulnerable Population in eastern North America well below historic levels; increases at four strategic local wintering areas	Breed along fast-flowing turbulent rivers; Wintering habitat consists of rocky coastline, subtidal ledges, and exposed headlands.	Breed along the Great Northern Peninsula – FMD 15 & 16 Sightings at mouth of Humber, Upper Humber.	Logging activities are known to increase stream siltation that may affect food availability	Birds and their nests are protected under the Migratory Birds Convention Act. Monitor population levels and understand threats; 30-m buffers in waterfowl breeding, moulting, and staging areas[9]	No nests recorded in insular Newfoundland	**Habitat for Harlequin Duck** **HCV**

[8] A management plan for Barrow's Goldeneye (*Bucephala islandica*; Eastern population) in Newfoundland and Labrador, 2006

[9] Management Plan for the Harlequin Duck (*Histrionicus histrionicus*) Eastern Population, in Atlantic Canada and Québec., 2007

Species	Focal Species	Status	Habitat[1]	DFA Occurrence[1]	Threats / Risk from Forest Operations	Current Management	Comments/ Assessment	Decision
Newfoundland Gray-Cheeked Thrush *Catharus minimus minimus*	**Yes**	*Recommended Threatened by SSAC*	On the breeding grounds, prefer dense low coniferous woods, including young regenerating forest, open-canopy old-growth forests having a dense growth of shrubs and small conifers in the understory, and dense, stunted spruce and fir on windblown sites and near the tree line.	No sightings listed in the ACCDC, however reported sightings or nests in FMDs 5, 9, 14, 15, & 16	Though tolerant of local clearcutting, loss of large proportions of forested habitat on a larger scale is likely to have a negative impact.	Birds and their nests are protected under the Migratory Birds Convention Act. Increasing knowledge about the species in Newfoundland, including population size and trends, demographics, distribution, habitat requirements and threats. [10]	At this time, current Department of Natural Resources policies are considered sufficient to maintain adequate Gray-cheeked Thrush habitat for long-term population persistence[6]	**Mature Coniferous Forest Habitat** **HCV**
Northern Goshawk *Accipiter gentilis*	**Yes**	SARA – Threatened; S3B	Prefer mature forest	Generally distributed across the DFA; sightings listed in the ACCDC	Loss of large proportions of forested habitat on a large scale is likely to have a negative impact.	No management plans exist but they are covered by the raptor protection in the Environmental Protection Guidelines.		**Mature Coniferous Forest Habitat** **HCV**
Northern Shrike *Lanius excubitor*	**No**	S3N	Prefer mature forest	Generally distributed across the DFA; sightings listed in the ACCDC	Loss of large proportions of forested habitat on a large scale is likely to have a negative impact.	Birds and their nests are protected under the Migratory Birds Convention Act. No management plans exist but they are covered by the raptor		**Open Forest Habitat** **HCV**

[10] Management Plan for the Graycheeked Thrush (*Catharus minimus*) in Newfoundland and Labrador, 2010

Species	Focal Species	Status	Habitat[1]	DFA Occurrence[1]	Threats / Risk from Forest Operations	Current Management	Comments/ Assessment	Decision
						protection in the Environmental Protection Guidelines.		
Olive-sided Flycatcher *Contopus Cooperi*	**Yes**	SARA – Threatened; ESA – Threatened	Mature coniferous, open areas: blowdown, insect-killed, clearcuts	No sightings listed in the ACCDC	Possibly low nesting success in clearcuts versus other open areas	Birds and their nests are protected under the Migratory Birds Convention Act. A provincial management plan is in progress; need to gather more information		**Collapsed Mature Coniferous Forest Habitat** **HCV** **HCV**
Peregrine Falcon ssp. *Anatum* *Falco peregrinus anatum*	**No**	SARA – Threatened; ESA – Vulnerable Population increasing nationally; decreases in some inland Labrador sites	Do not breed in insular Newfoundland, but do migrate through; habitat choice during migration is quite broad; follow leading lines such as coasts, lake edges, and mountain ranges; hunt in open areas	Near Gros Morne National Park	Probably not	Work focuses only on breeding areas in Labrador; conduct surveys every 5 years	No perceived threat from harvesting	**Open Country Habitat** **HCV**
Piping Plover *Charadrius melodus melodus*	**No**	SARA – Endangered; ESA – Endangered Population increasing	Nests on sandy beaches on the southwest and west coasts of Newfoundland.	Stephenville Crossing	Nil	Birds and their nests are protected under the Migratory Birds Convention Act Habitat protection through enforcement	No perceived threat from harvesting	**Shoreline Habitat** **HCV** **No Management Required**

Species	Focal Species	Status	Habitat[1]	DFA Occurrence[1]	Threats / Risk from Forest Operations	Current Management	Comments/ Assessment	Decision
						and landowner and public education[11]		
Red Crossbill *Loxia curvirostra percna*	**Yes**	SARA – Endangered; ESA – Endangered Population in decline	Thought to be mature spruce and fir stands capable of producing abundant cones.	Highest numbers of reports occurring in older forests in western Newfoundland; Sightings in Tompkins/Doyles	Debate as to whether harvesting could impact food source (cones)	Birds and their nests are protected under the Migratory Birds Convention Act Emphasis on reducing knowledge gap about the species[12]		**Mature Coniferous Forest Habitat** **HCV**
Red Knot *Calidris canutus rufa*	**No**	SARA – Endangered; ESA – Endangered Population in decline	Open, sandy estuaries have been identified as prime habitat, with rotting kelp deposits ranked as the second best habitat type.	Around almost the entire coast, however, the majority of sightings have been on the west coast (Stephenville Crossing)	Nil	Birds and their nests are protected under the Migratory Birds Convention Act Eastern Habitat Joint Venture has a municipal stewardship agreement with Stephenville Crossing and St. Paul's[13]	No perceived threat from harvesting	**Shoreline Habitat** **HCV** **No Management Required**
Rusty Blackbird *Euphagus carolinus*	**Yes**	SARA –Special Concern; ESA – Vulnerable Population in decline	Boreal forest, favouring the shores of wetlands and slow-moving streams, peat bogs, marshes, swamps, beaver	Sighting in Corner Brook area, Codroy Valley, Stephenville Crossing, Gander, White Bay	No impact; very rarely in interior of forest.	No specific management for the Rusty Blackbird in Newfoundland	No perceived threat from harvesting	**Wet Forest Habitat** **HCV**

[11] National Recovery Plan for the Piping Plover (*Charadrius melodus*), 2002
[12] Recovery Strategy for the Red Crossbill, percna subspecies (Loxia curvirostra percna), in Canada [Proposed], 2006
[13] Recovery Plan for Red Knot, *rufa* subspecies (*Calidris canutus rufa*), in Newfoundland and Labrador, 2010

Species	Focal Species	Status	Habitat[1]	DFA Occurrence[1]	Threats / Risk from Forest Operations	Current Management	Comments/ Assessment	Decision
			ponds					
Sharp-shinned Hawk *Accipiter striatus*	**No**	S3B	Open marshlands, deep grass fields, second-growth forest	Likely to occur o southwest coast from Stephenville to Codroy	Little to no impact		Sharp-shinned Hawks are very adaptable	**All Age-classes Forest Habitat** **HCV**
Short-eared Owl *Asio flammeus*	**Yes**	SARA –Special Concern; ESA – Vulnerable Population trend unknown; thought stable at historical levels	Relatively open habitat of marshland and deep grass fields. Not in boreal forest	Sighting in Stephenville Crossing area	No impact	Monitoring Distribution and Population Trends, Habitat Assessment[14]	No perceived threat from harvesting	**Open Country Habitat** **HCV**
Song Sparrow *Melospiza melodia*	**No**	S3B	Habitat varies; marsh and shrub areas, forest openings and edge, riparian areas.	Widespread	Minimal for this species, possibly destroying some nesting and foraging habitat but creating new opportunities.	Birds and their nests are protected under the Migratory Birds Convention Act		**Riparian Habitat** **HCV**
Winter Wren *Troglodytes troglodytes*	**Yes**	S3S4B	Mature forests with complex forest structure, such as snags, downed trees, riparian areas		Negatively affected by harvesting	Birds and their nests are protected under the Migratory Birds Convention Act		**Mature Coniferous Forest Habitat** **HCV**
Fishes								
Banded Killifish *Fundulus diaphanus*	**No**	SARA –Special Concern; ESA – Vulnerable Population	Observed in the shallows and quiet areas of clear lakes and ponds with a muddy or sandy	Majority of populations are clustered on the south and southwest coasts, with an	Forest harvesting and road building may negatively impact banded killifish habitat if	Surveys and population monitoring; development of site specific best management	No perceived threat from harvesting	**Riparian Habitat** **HCV**

[14] A management plan for the Short-eared owl (*Asio flammeus flammeus*) in Newfoundland and Labrador, 2005

Species	Focal Species	Status	Habitat[1]	DFA Occurrence[1]	Threats / Risk from Forest Operations	Current Management	Comments/ Assessment	Decision
		stable; found in more areas than thought	substrate, high detrital content and abundant submerged aquatic vegetation	outlier population in the Indian Bay watershed; also near Stephenville Crossing and St. George's	these activities result in increased sedimentation of adjacent waterbodies[15].	practices to ensure habitat protection[16,17] In the Indian Bay watershed: 100m buffers on most ponds with 150m and 200m on specific ponds.[18]		
American Eel *Anguilla rostrata*	**No**	SARA – Threatened; ESA – Vulnerable NL population unknown; probably due to changes in marine systems	Found in most coastal areas and adjacent accessible rivers in Newfoundland	Yes	No impact	Current management practices under DFO are related to the commercial eel fishery [19]	No perceived threat from harvesting	**Riparian Habitat** **HCV**
Plants[20]								
Laurentian Dandelion *Taraxacum laurentianum*	**No**	ACCDC Database (G1 and G2 ranked species Population trend unknown	Calcareous or basic substrates, such as limestone barrens or dolomite; Slatey talus	One location appears to be plotted wrong in GIS to fall into DFA, but there is a possibility of existence in DFA.	Unlikely unless disturbed during road building.	Recovery plan not completed to date	No perceived threat from harvesting	**Habitat for Laurentian Dandelion** **HCV**
Rock Dwelling Sedge	**No**	*Recommended Endangered by*	Limestone cliffs, barrens,	William Wheeler Point, Woman's	Unlikely unless disturbed during	Recovery plan not completed to	No perceived	**Habitat for Rock**

[15] Forestry Guidelines for the Protection of Fish Habitat in Newfoundland and Labrador.
[16] [Draft] Management Plan for the Banded Killifish (Fundulus diaphanus) in Newfoundland, 2006
[17] Management Plan for the Banded Killifish (Fundulus diaphanous), Newfoundland Population in Canada
[18] Memorandum of Understanding and Access Agreement between Corner Brook Pulp and Paper and Indian Bay Ecosystem Corporation.
[19] Management Plan for the American Eel (*Anguilla rostrata*) in Newfoundland and Labrador, 2010
[20] Habitat for plants taken from Meades et al, 2000

Species	Focal Species	Status	Habitat[1]	DFA Occurrence[1]	Threats / Risk from Forest Operations	Current Management	Comments/ Assessment	Decision
Carex petricosa var. misandroides		*SSAC* Population trend unknown	tablelands, talus, and screes	Cove (Goose Arm), Shag Cliff (Bonne Bay)	road building.	date, Status Report only[21]	threat from harvesting	**Dwelling Sedge** **HCV**
Serpentine Stitchwort *Minuartia marcescens*	**No**	NatureServe – G2G3; ACCDC – G3 Population trend unknown	Serpentine barrens	Northern and central Newfoundland	Unlikely unless disturbed during road building.	Recovery plan not completed to date	No perceived threat from harvesting	**Habitat for Serpentine Stitchwort** **HCV**
Tradescant's Aster *Symphyotrichum tradescantii*	**No**	*Recommended Threatened by SSAC* Population trend unknown	Rocky backwater, sedge/rush flat, sandy/muddy steady	Southwest Brook, Bottom Brook	Unlikely unless disturbed during road building.	None to date, Status Report only[22]	No perceived threat from harvesting	**Habitat for Tradescant's Aster** **HCV**
Vreeland's Striped Coralroot		*Recommended Endangered by SSAC*	Inhabits semi-open second-growth forest of Balsam Fir, Black Spruce, Balsam Poplar, Eastern Larch, Mountain White Birch, and Speckled Alder[23]	Occurs in Lomond Campground, near boundary of DFA.	Cutting of trees where the plants occur would likely lead to the demise of the plants	None to date, Status Report only		**Habitat for Vreeland's Striped Coralroot** **HCV**
Blue Felt Lichen *Degalia plumbea*		*Recommended Special Concern by COSEWIC*	Found in moist habitats or close to stream and lake margins. In Newfoundland it grows mainly on yellow birch but very occasionally occurs also on white spruce[24].	May occur on the DFA as occurs in Crabbes River area.	The harvest of mature hardwood for firewood and browsing by the large populations of moose will limit the future availability of old	Riparian buffers related to commercial forestry developments are required but are modest (~20-50m) and unlikely to conserve		**Habitat for Blue Felt Lichen** **HCV**

[21] The Status of Rock Dwelling Sedge *(Carex petricosa var. misandroides)* in Newfoundland and Labrador, 2008
[22] The Status of Tradescant's Aster *(Symphyotrichum tradescantii)* in Newfoundland and Labrador, 2008
[23] The Status of Vreeland's Striped Coralroot *Corallorhiza striata* var. *vreelandii* in Newfoundland and Labrador, 2009
[24] COSEWIC Assessment and Status Report on the Blue Felt Lichen *Degelia plumbea* in Canada, 2010

Species	Focal Species	Status	Habitat[1]	DFA Occurrence[1]	Threats / Risk from Forest Operations	Current Management	Comments/ Assessment	Decision
					yellow birch, the main host for this lichen.	adequately the macro- and micro-habitat needs.		
Boreal Felt Lichen *Erioderma pedicellatum*	**Yes**	SARA – Special Concern SARA ESA – Vulnerable	On trunks and branches of coniferous trees in moist, mature forests	In FMD 6	Loss of habitat	Suitable sites for potential Boreal Felt Lichen colonization adjacent to fertile Boreal Felt Lichen thalli are left to cycle naturally [25]		**Habitat for Boreal Felt Lichen** **HCV**
Red Pine *Pinus resinosa*		CDC – S2 Rare, may be at Risk	Deep sands or gravel soils	Sandy Lake, Howley, Birchy Narrows, Birchy Lake, West Brook	Harvesting not permitted in red pine stands	No permits issued for red pine		**HCV**
White Pine *Pinus strobus*		CDC-S2S3 Sensitive	Moist sandy soils	Yes	Risk from scarring during road construction and harvesting operations	Harvesting of white pine not permitted unless on road or a safety risk		**HCV**
Black Ash *Fraxinus nigra*		CDC-S3 Sensitive	Wet sites along rivers or the margins of swamps	South of Bonne Bay; Bottom Brook	Negligible	None		**HCV**
Yellow Birch *Betula alleghaniensis*		CDC- S3 Sensitive	Variety of sites, often in association with Balsam fir and other hardwoods	Relatively common in District 14 (e.g. Bottom Brook, Harry's River), less so in 15 & 16.	Forest resource roads provide access to yellow birch for firewood	No management to date		**HCV**

[1] Confirmed by NL Wildlife Division Personnel: Shelley Moores, Emily Herdman, Susan Squires, Claudia Hanel,

[25] A 5 Year (2006 – 2011) Management Plan For the Boreal Felt Lichen (Erioderma pedicellatum) In Newfoundland and Labrador, 2006

Identified High Conservation Values (Species at Risk)

Habitat for American Marten (Newfoundland pop'n.)	Wet Forest Habitat
Habitat for Little Brown Myotis and Northern Myotis	Riparian Habitat
Habitat for Woodland Caribou	Habitat for Plant Species at Risk and Rare and Uncommon Vascular Plant Species (Appendix 6)
Habitat for Harlequin Duck and Barrow's Goldeneye	Habitat for Boreal Felt Lichen
Mature Coniferous Habitat	Habitat for Blue Felt Lichen
Open Forest Habitat	Red Pine
Open Barrens and Grasslands Habitat	White Pine
All-age Classes Forest Habitat	Black Ash
Shoreline Habitat	Yellow Birch

Identified High Conservation Values (Focal Species)

Habitat for American Marten, Newfoundland population
Habitat for Little Brown Myotis and Northern Myotis
Habitat for Woodland Caribou
Mature Coniferous Habitat for Gray-cheeked Thrush, Northern Goshawk, Olive-sided Flycatcher, Red Crossbill
Open Barrens and Grasslands Habitat for Short-eared Owl
Wet Forest Habitat for Rusty Blackbird
Habitat for Blue Felt Lichen
Habitat for Boreal Felt Lichen

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2. Does the forest contain a globally, nationally, or regionally significant concentration of endemic species?

Endemic means being unique to a particular geographic location. Assessing the DFA for endemic species ensures the maintenance of vulnerable and/or irreplaceable elements of biodiversity.

Sources of Assessment Information

World Wildlife Fund Ecoregion Conservation Assessment
Conservation International
Birdlife International
Interviews with local experts, NL Dept. of Environment and Conservation [26]

Globally Significant Concentrations of Endemic Species

The World Wildlife Fund initiated Global 200 to create a global strategy to protect representative examples of all the world's ecosystems, as well as those areas that contain exceptional concentrations of species and endemics (Olson and Dinerstein 2002). The prioritization identified 238 ecoregions around the globe. The Canadian Boreal Forest was selected as one of the Global 200 ecoregions; however, the

[26] Shelley Pardy Moores, Sr. Mgr. Endangered Species and Biodiversity
Emily Herdman, Ecosystem Management Ecologist, Endangered Species
Claudia Hanel, Ecosystem Management Ecologist, Botanist

defined area did not include the island of Newfoundland. Olson and Dinerstein (2002) rated the Canadian Boreal Forests as "relatively stable or intact".

Conservation International has identified biodiversity hotspots characterized both by exceptional levels of plant endemism and by serious levels of habitat loss. To qualify, a region must meet two strict criteria: it must contain at least 1,500 species of vascular plants (> 0.5 percent of the world's total) as endemics, and it has to have lost at least 70 percent of its original habitat (CI 2010). There are no "hotspots" identified in Newfoundland, or even in Canada.

Birdlife International maintains a World Bird Database to assist in the management of avian species. Endemic Bird Areas is one group of data identified. Birdlife International does not identify any Endemic Bird Areas in Canada (BI 2013).

Endemic Subspecies on the DFA

There are endemic sub-species occurring on the DFA, however, these endemic sub-species do not occur in concentrations, nor would they together constitute a globally or nationally significant concentration. American Marten and the Red Crossbill are endemic sub-species on the DFA.

American Marten have a demonstrated sensitivity to forest operations, in that intensive harvesting over an extensive area, i.e., marten home-range size areas of 10-20 km^2, would reduce or eliminate marten habitat on the area (Hearn et al 2010). They also found that martens used a broad range of habitat types, including recent cuts ≤5 yr old, regenerating forest <6.5 m, precommercially thinned stands, and mature and overmature (>80-yrs) forest. Critical habitat for marten has been identified by the Newfoundland Wildlife Division, and some is within and adjacent to the DFA, specifically the subpopulations in Little Grand Lake, Georges Lake/Pinchgut Lake, and Main River.

The effect of forestry operations on Red Crossbills is not well known. While forest operations shorten rotation ages for conifers in Newfoundland, the overall availability of forest stands of cone-bearing age (i.e., 40+ years of age) is not a concern. Furthermore, forest management policy (Government of Newfoundland & Labrador 2003) requires at least 15% forest cover of stands 81+ years. Finally, fragmented landscapes created by forestry practices may not be a significant threat to the Red Crossbill subspecies, as the forest in Newfoundland is naturally fragmented (Env. Canada 2006).

Identified High Conservation Values (Endemic Species) No HCV

Note: Information used in the assessment of candidate HCVs for the remaining questions (3–19) can be found in Appendix 1.

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3. Does the forest include critical habitat containing globally, nationally or regionally significant seasonal concentration of species (one or several species, e.g., concentrations of wildlife in breeding sites, wintering sites, migration sites, migration routes or corridors – latitudinal as well as altitudinal)?

Habitat containing seasonal concentrations of species refers to areas such as breeding grounds, calving and wintering areas, and migration routes/corridors. This indicator addresses wildlife habitat requirements critical to maintaining population viability (regional "hotspots").

Sources of Assessment Information
Bird Studies Canada
Conservation International
World Database on Protected Areas
Interviews with local experts, NL Dept. of Environment and Conservation [27]

Areas of seasonal concentrations of birds, such as Important Bird Areas (IBA) and Ramsar Wetlands of International Importance have been designated by international agencies. The IBA Program is a conservation initiative coordinated by BirdLife International. The co-partners for the IBA Program in Canada are Bird Studies Canada and Nature Canada. Of the 25 IBAs identified on the island of Newfoundland, 4 are within 10 km of the DFA.

Middle Ridge Wildlife Reserve (adjacent to Bay Du Nord Wilderness Reserve) shares ~7 km (6%) of its northwestern border with the DFA. Together the two reserves cover 3513 km^2. Middle Ridge Wildlife Reserve is an upland plateau of extensive barrens, kalmia heaths, bogs, and fens which provides calving and wintering grounds for Woodland Caribou, and breeding grounds for a number of waterfowl species. The Codroy Valley (33 km^2) lies within 8 km of the DFA, and is essentially a balsam fir forest mixed with yellow birch and mountain maple thickets. Two restricted range species, Red Crossbill and Ovenbird, (although not in seasonal concentrations) are found in coniferous and deciduous forest respectively, and other species uncommon or absent in the rest of Newfoundland can be seen. Gros Morne National Park (1943 km^2)**,** a federally designated conservation area, is also designated as an IBA. The DFA is adjacent to Gros Morne National Park on the park's southern and southeastern borders. The Park is a combination of mountainous barrens, forest, and diverse coastal lowlands and provides calving and wintering grounds for Woodland Caribou. Of the 207 species of birds recorded in the Park, 3 are restricted-range species: Rock Ptarmigan, Red Crossbill, and Ovenbird.

The Codroy Valley Estuary IBA (30 km^2) is an important breeding and staging site for numerous waterfowl species in Newfoundland. West of the Codroy Valley IBA, the Estuary lies approximately 7 km southwest of the boundary of the DFA in FMD 14. This area is also a Ramsar Wetlands of International Importance (known as Grand Codroy Estuary), chosen for the diversity of the waterfowl present in migration rather than the numbers. The Ramsar boundaries lie within the Codroy Valley Estuary IBA. Another IBA site, Terra Nova National Park (396 km^2), is ~ 27 km from the DFA. This park is forested with black spruce, balsam fir, white birch, and tamarack, and also features numerous lakes and upland plateau fens and bogs. Red Crossbill, Ovenbird, and other forest birds are common as well as shorebirds, waterfowl and alcids.

Ducks Unlimited Canada has conservation agreements with CBPPL for wetland and associated upland areas in Birchy Basin and Cook's Marsh, which fall within the DFA. These areas have undergone restoration activities including construction of a water control structure and fishway. Cook's Marsh is valuable for waterfowl and the area is used by many local outdoor recreation enthusiasts. Birchy Basin (Upper Humber Wetlands Complex) reportedly has the highest known inland waterfowl breeding densities on the island of Newfoundland. Breeding species include American black duck, green winged teal, ring necked duck, common goldeneye, and common merganser. The area is also an important staging area for black duck. Two properties adjacent to CBPPL managed lands in the Northwest Gander River area (Long Island and The Narrows) consist of wetland and associated upland habitat. These areas are important breeding habitat for dabbling ducks such as black ducks and ring-necked ducks, and for Canada geese. The location of these four areas has been mapped with CBPPL's DFA (Map 2). Barney's Brook Steadies is another designated DUC Notable area. This area has been indicated as

[27] Shelley Pardy Moores, Sr. Mgr. Endangered Species and Biodiversity
Bruce Rodrigues, Ecosystem Management Ecologist, Biodiversity

being important for American black duck and Canada goose staging. This area lies within CBPP limits in forest management district 9.

Identified High Conservation Values (IBAs and Ramsar Sites) –

Gros Morne National Park
Cook's Marsh
Upper Humber Wetlands Complex
Middle Ridge Wildlife Reserve (No additional management required)

The DFA contains habitat for seasonal concentrations of Woodland Caribou. Eight caribou herds are found on the DFA: Gros Morne, Aides Pond, Hampden Downs, Gaff Topsails, Buchans, Mount Peyton, Pot Hill, and Middle Ridge. They are found on the forest or adjacent areas year round. The Provincial Wildlife Division has indicated that the most sensitive periods for caribou are calving/post-calving, wintering, and migration. As such, **Forest Management Guidelines for Woodland Caribou (*Rangifer tarandus caribou*) for the Island of Newfoundland** were developed in 2007, to be followed both in the planning and operational phases of harvesting activities. This document shows maps of core calving and wintering areas, 10-kilometer buffers around the core areas, and migration corridors, and identifies the management strategies for each area. The guidelines have been revised but not officially adopted, however, and CBPPL adheres to the newer, stricter guidelines.

The DFA also contains spawning habitat for Atlantic Salmon *(Salmo salar).* They live in the sea and spawn in freshwater streams, in gravel-bottom rapid areas above or below a pool (DFO 2010). The young stay in fresh water for 2-3 years, journey to the sea for a year or two before returning to spawn in freshwater.

Identified High Conservation Values (Seasonal Concentration of Species)

Woodland Caribou
Atlantic Salmon

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4. Does the forest contain critical habitat for regionally significant species (e.g., species representative of habitat types naturally occurring in the management unit, focal species, or species declining regionally)?

Meta-population is defined by the Encyclopaedia Britannica as "a regional group of connected populations of a species… continually being modified by increases (births and immigrations) and decreases (deaths and emigrations) of individuals, as well as by the emergence and dissolution of local populations contained within it." Meta-population viability is affected by the population trends of regional species.

Sources of Assessment Information
Atlantic Canada Conservation Data Center (ACCDC)
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
International Union for Conservation of Nature (IUCN) Red List of Threatened Species
NatureServe Explorer
Committee on the Status of Endangered Wildlife in Canada (COSEWIC)
Species Status Advisory Committee (SSAC)

Interviews with local experts, NL Dept. of Environment and Conservation [28]

Regionally significant species were determined using the same criteria as for species at risk in Question 1. Therefore, regionally specific species are those listed in Table 4.

Population trends in the species listed in Table 4 are not well documented for all species. Based on the information available, a number of the species listed in Table 4 are in decline regionally: Woodland Caribou, Barrow's Goldeneye, Harlequin Duck, Peregrine Falcon, Red Crossbill, Red Knot, Rusty Blackbird, and American Eel. However, these population declines are not a result of forest management, or solely forest management. The decline of Woodland Caribou on insular Newfoundland has been primarily associated with declines in calf recruitment affected by increased mortality of calves by predators, e.g., Black Bears (*Ursus americanus*), coyotes (*Canis latrans*), and Golden eagles (*Aquila chrysaetos*) (Mahoney and Weir 2009). Although harvesting could impact calving and wintering areas Forest Management Guidelines for Woodland Caribou (*Rangifer tarandus carbou*) for the Island of Newfoundland, implemented since October 2006, are being followed to ensure sufficient caribou habitat. The breeding areas of Barrow's Goldeneye and Harlequin Duck are currently protected by the required buffers on waterways. Peregrine Falcon, Red Knot, and Rusty Blackbird do not frequent forests, preferring coastlines, estuaries, and shores of streams, bogs, and wet areas. The exact reason for the decline of Red Crossbill is currently unknown, (although red pine stands are important sources of cones) and the Recovery Strategy is focused on reducing the knowledge gap.

It appears American Marten populations are slowly recovering in insular Newfoundland (Hearn per com.). A map of the critical habitat for the marten can be seen in the **Recovery Plan American marten (*Martes americana atrata*) in Newfoundland,** and we have mapped the critical habitat in relation to the DFA (Map 3).

Identified High Conservation Values (Critical Habitat)

American Marten

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

Vulnerability against range contraction and potential genetic variation at range edge are relevant conservation issues. Outlier and edge of range populations may also play a critical role in genetic/population adaptation to global warming.

Sources of Assessment Information

Atlantic Canada Conservation Data Center (ACCDC)
Committee on the Status of Endangered Wildlife in Canada (COSEWIC)
Species Status Advisory Committee (SSAC)
Interviews with local experts[29]

[28] Shelley Pardy Moores, Sr. Mgr. Endangered Species and Biodiversity
Bruce Rodrigues, Ecosystem Management Ecologist, Biodiversity

[29] Claudia Hanel, Ecosystem Management Ecologist, Botanist, NL Dept. of Environment and Conservation
Basil English, Supervisor, Silviculture and Research Section, NL Dept. of Natural Resources
Dr. Brian Hearn, Wildlife Ecologist, Canadian Forest Service, Natural Resources Canada

Most North American endemic species are at their easterly range in Newfoundland. The majority of these species found on the DFA is not at risk, and is widely distributed and found abundantly throughout the remainder of insular Newfoundland.

There are, however, commercial tree species on the DFA that have been categorized by ACCDC as at risk: white pine, red pine, black ash, and yellow birch are all species at the northeastern limit of their range, and are considered rare. White pine has declined in abundance since the late 1800s, initially due to harvest for lumber, and subsequently by the introduction at the turn of the century of the white pine blister rust fungus (*Cronartium ribicola)*. To prevent further decline, provisions were implemented in 1999 and white pine was protected. No permits are issued for the harvest of red pine and black ash. However, permits are issued by the provincial government for the harvest of hardwood species including yellow birch, and they are a preferred browse species for moose.

Natural populations of red pine exist on or adjacent to CBPPL limits, at West Brook Ecological Reserve (protected) and Sandy Lake (currently not protected). There also exist areas where it is suspected that healthy white pines of various ages are interspersed with other naturally existing species, in the Grand Lake South operating area.

Arctic hares (*Lepus arcticus*) are at the southern limits of their continental range in insular Newfoundland. They are found primarily in upland alpine forests, at elevations >1500m and in rugged topography. It is unlikely they occur in productive forests of commercial interests, so there is likely very little potential conflict with forest harvesting.

Identified High Conservation Values (Edge of Range/Outlier Species)

Red Pine
White Pine
Yellow Birch
Black Ash

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

This indicator looks at designated conservation areas within or adjacent to the forest, to ensure compliance with the intent of the conservation area, and to ensure regionally significant forests are evaluated for consistency with the conservation intent.

Sources of Assessment Information
Canadian Commission for UNESCO
Wetlands International
Parks Canada
Canadian Heritage Rivers System
Nature Conservancy of Canada
NL Parks and Natural Areas
Humber Valley Regional Planning Advisory Authority
Model Forest of Newfoundland and Labrador

Interviews with local experts, NL Dept. of Environment and Conservation [30]

Internationally Designated Conservation Areas

The United Nations Educational, Scientific and Cultural Organization (UNESCO) seeks to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity. Identified areas are called World Heritage Sites, where industrial activities are not permitted. The Canadian Commission for USECO lists Gros Morne National Park as a World Heritage Site for its geological features. The DFA is adjacent to Gros Morne National Park on the park's southern and southeastern borders.

The Convention on Wetlands of International Importance, called the Ramsar Convention, is an intergovernmental treaty. The Convention's mission is "the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world". Wetlands International lists Grand Codroy Estuary as the only Ramsar site in Newfoundland. The DFA is ~ 7 km from the estuary, but potential identified threats do not include forest management activities.

The International Biological Program (IBP) (1964-1974) identified sites across the globe which represented the world's major ecosystems, giving priority to those sites that are most vulnerable to disturbance. These areas have no formal protection. Five of the seventy-seven identified IBP sites in Newfoundland fall on the DFA:
Serpentine Lake shares a 12 km boundary with the DFA on the southeast corner.
Crooked Bog is completely surrounded by the DFA.
Brownmore Bog is completely surrounded by the DFA.
Sandy Lake lies within the DFA and is bounded by the lake.
Grand Lake Brook is completed surrounded by the DFA.

Identified High Conservation Values (International Conservation Areas)

Gros Morne National Park
Serpentine Lake IBP Site
Crooked Bog IBP Site
Brownmore Bog IBP Site
Sandy Lake IBP Site
Grand Lake Brook IBP Site

Federally/Provincially Designated Conservation Areas

Federal/National

Gros Morne National Park is also a federally designated conservation area, part of the National Parks system. National Parks are a "country-wide system of representative natural areas of Canadian significance, and are protected by law to be maintained in an unimpaired state for future generations". Approximately 17% of the Gros Morne National Park boundary borders the DFA.

The Canadian Heritage Rivers System, a national river conservation program, promotes, protects and enhances Canada's river heritage, and ensures that Canada's leading rivers are managed in a sustainable manner. The Canadian Heritage Rivers System designated Main River as a Canadian Heritage River in 2001. The Main River Canadian Heritage River is comprised of a 152 km^2 river corridor

[30] Jeri Graham, Manager, Natural Areas Program

(the Main River Waterway Provincial Park), and a Special Management Area of 49 km^2. Currently, industrial activities are not permitted in the Park, and it is expected the same restrictions will soon apply for the Special Management Area. The northwestern tip of Main River Canadian Heritage River lies ~1km northeast of a small outlier parcel of the DFA, and the southeastern tip is within ~2 km of the DFA.

The Nature Conservancy of Canada (NCC) is a private organization that "works for the direct protection of Canada's biodiversity through the purchase, donation, or placement of easements on ecological significant lands". NCC has identified the Southwest Newfoundland Natural Area (the boundaries of the Western Newfoundland Forest Ecoregion) as one of the most diverse and significant natural regions in the province. Within the Southwest Newfoundland Natural Area, NCC has purchased properties that are included in/defined by the following conservation areas: the Grand Codroy Estuary Ramsar site mentioned previously, Sandy Point, and The Grassy Place. In relation to the DFA, the Sandy Point area lies ~12km north, and the Grassy Place is ~10km east. Another NCC property, Lloyd's River, is 48km east of the DFA. NCC's Natural Area Conservation Plan for the Southwest Newfoundland Natural Area outlines seven biodiversity targets. Three of the targets (representative forests (balsam fir), riparian and wetlands ecosystems, and Newfoundland marten) are considered threatened by forest harvesting, while the remaining (limestone and serpentine heath barrens, sandy beaches and dunes, piping plover, and salt marshes) are threatened by access which could include forest resource roads. NCC has also identified old growth forests as another value in existing and proposed Natural Area Conservation Plans. NCC has tentative future plans to create a Natural Area Conservation Plan for central Newfoundland.

Provincial

In Newfoundland and Labrador, there are four main types of protected areas for which the Province is responsible: provincial parks, wilderness reserves, ecological reserves, and wildlife reserves. The protection of these areas is legislated under a variety of Acts, and industrial activities are not permitted in all of the protected areas within the DFA, with the exception of Special Management Areas outside the Main River Waterway Provincial Park. The following provincial protected areas are within or adjacent to the DFA:

West Brook Ecological Reserve (both parcels) are inside the DFA.

Little Grand Lake Provisional Ecological Reserve is adjacent to the DFA. The western boundary of the south block of the Reserve borders on the DFA for ~ 16 km and the southeastern tip of the north block of the Reserve borders on the DFA for ~ 55 km; 50% of the reserve boundary borders the DFA

Little Grand Lake Wildlife Reserve shares a 1 km boundary with the DFA in the south block and ~ 6 km of boundary in the north block; 19% of the reserve boundary borders the DFA

Middle Ridge Wildlife Reserve shares 7 km of its northwestern border with the DFA; 6% of the reserve boundary borders the DFA

Flatwater Pond Provincial Park Reserve lies completely within the DFA.

Jonathan's Pond Provincial Park Reserve is almost totally within the DFA; 76% of the park boundary borders the DFA.

Barachois Pond Provincial Park is adjacent to the DFA sharing ~3 km along the eastern border of the park; 19% of the park boundary borders the DFA.

Sir Richard Squires Memorial Provincial Park is surrounded on the north, east, and south by the DFA, sharing ~ 15 km of boundary; 82% of the park boundary borders the DFA.

T'Railway Provincial Park runs through the DFA in most forest management districts; 25% of the park boundary borders the DFA. (The T'Railway Provincial Park is essentially a linear recreational trail with little conservation value *per se*.)

Main River Waterway Provincial Park and Special Management Area – see above.

The Department of Environment and Conservation is developing a Natural Areas System Plan (NASP) which will "establish a comprehensive system of publicly supported parks and protected areas for citizens present and future that protects the province's rich biodiversity and natural heritage, helps support a vibrant culture and sustainable economy, and enhances public understanding, appreciation, and enjoyment of our natural environment" (DEC 2008). The basis of the NASP is to protect representative natural features based on Damman's (1983) classification of insular Newfoundland into

nine ecoregions and 21 subregions. CBPPL limits fall into 11 ecoregions, 5 of which do not have sufficiently protected areas. However, the NSAP has not been released yet, so CBPPL does not know where the candidate protected areas for these subregions are.

A "Connectivity Working Group" did exist between 2000 and 2006, bringing together stakeholders to develop scientifically-based solutions that ensured Gros Morne National Park remains ecologically connected to its broader landscape, much of which was in the DFA. In March 2001, CBPPL ended clear cutting in the adjacent Main River Watershed and several months later, in May, the Minister of Canadian Heritage approved the designation of the Main River as a Canadian Heritage River.

Conditions for harvesting near any protected area are contained in the Certificate of Managed Land issued by the Department of Natural Resources. This certificate is required before CBPPL can conduct any forestry activities. The Certificate of Managed Land states: *All roads proposed within 500m of a protected or proposed protected area must be referred to Parks and Natural Areas Division prior to approval.*

Two of the provincial parks/reserves listed above (Main River Waterway Provincial Park/ Special Management Area, and Little Grand Lake Wildlife Reserve/ Little Grand Lake Provisional Ecological Reserve) were once part of the timber limits of CBPPL. As a result of concerns from outfitters and the public over the harvesting of old growth forest in the Main River area, CBPPL announced a no-harvesting policy for a large area along the main stem of the river. This led to the acceptance of the designation of the Main River as a Heritage River, and later its designation as a Canadian Heritage River (the Main River Waterway Provincial Park). A Special Management Area was also delineated around the no-harvesting zone where there would be no clearcut harvesting. Although harvesting trials were conducted in the watershed in 2001, outside of the Provincial Park and special management area, there was no further harvesting in the entire watershed after that date. In 2010, the timber rights for entire Main River watershed were sold back to the Crown.

Little Grand Lake Wildlife Reserve, Little Grand Lake Provisional Ecological Reserve, and Glover Island Public Reserve were all also once part of CBPPL timber limits. In 1985, CBPPL was asked by the provincial government to exclude these areas in any of their harvesting plans in the future, so they could become reserves to protect habitat, areas with white pine, and ecological diversity. CBPPL agreed, and the areas became "provisional" reserves. In 2010 CBPPL's timber rights for these areas and for an additional corridor along the north side of Grand Lake were returned to the Crown as part of a larger sale of timber rights. This enabled the progression from provisional reserves to legal reserves.

A map (4) of the protected and conservation areas on and near the DFA is in Appendix 8.

Identified High Conservation Values (Federal/Provincial Conservation Areas)

Gros Morne National Park
West Brook Ecological Reserve
Little Grand Lake Provisional Ecological Reserve
Little Grand Lake Wildlife Reserve
Middle Ridge Wildlife Reserve
Flatwater Pond Provincial Park Reserve
Jonathan's Pond Provincial Park Reserve
Barachois Pond Provincial Park
Sir Richard's Squires Provincial Park
Trailway Provincial Park

Regional Land Use or Conservation Plans

A portion of CBPPL's DFA resides within the Humber Valley Regional Planning area (Map 5). Although the timber rights for the whole Humber Valley were owned by CBPPL until 2010, no harvesting has occurred in the area since 2005 when CBPPL voluntarily ceased operations there. The main concern in this area was the viewscape. The timber rights to a corridor from Deer Lake to Gros Morne National Park was relinquished to the Crown for similar reasons at the same time.
The Humber Valley Regional Planning Advisory Authority released a draft Humber Valley Regional Land Use Plan in January 2011. The Plan's proposed land use policy for forestry stated "Existing practices and policies concerning domestic harvesting on Corner Brook Pulp and Paper Ltd. Limits will remain the same". There have been neither further developments nor legislation to support the plan since 2011.

Identified High Conservation Values (Regional Conservation Areas)

None identified.

CATEGORY 2) FOREST AREAS CONTAINING GLOBALLY, REGIONALLY OR NATIONALLY SIGNIFICANT LARGE LANDSCAPE LEVEL FORESTS, CONTAINED WITHIN, OR CONTAINING THE MANAGEMENT UNIT, WHERE VIABLE POPULATIONS OF MOST IF NOT ALL NATURALLY OCCURRING SPECIES EXIST IN NATURAL PATTERNS OF DISTRIBUTION AND ABUNDANCE.

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

Large landscape level forests must be large enough to potentially support most or all native species, and so that long-term, large-scale natural disturbances can take place without losing their resilience to maintain the full range of ecosystem processes and functions.

Sources of Assessment Information

Global Forest Watch
Newfoundland Forest Inventory
Interviews with local experts, NL Dept. of Environment and Conservation [31]

Global Forest Watch (GFW) defines an intact forest landscape as a contiguous mosaic of natural ecosystems in a forest ecozone, essentially undisturbed by human influence, including both treed and naturally treeless areas (Lee et al, 2010). An intact forest landscape must be large enough to contain and support natural biodiversity and ecological processes, and to provide a buffer against human disturbance from surrounding areas. In their Canadian study using high resolution satellite imagery, GFW examined forest tracts of 50,000 hectares or larger that were at least 10 kilometres wide (intact forest landscapes). The study found that most intact forest landscapes are found in northern Canada and at higher elevations in western Canada: Quebec, the Northwest Territories, Ontario, and British Columbia contain two-thirds of these large landscape forests. Newfoundland, with 6.9% of Canada's total intact forest landscapes, was shown as having 86.3% of its forest as intact forest landscape.

Using parameters outlined in Lee et al (2010), CBPPL conducted a GIS exercise (Appendix 9) with provincial forest inventory data on the timber limits of CBPPL, to identify intact forest landscape. The

[31] Jeri Graham, Manager, Natural Areas Program

inventory data provided a higher standard of reliability than the use of high resolution satellite imagery. The results showed no intact forest landscape of 50,000ha or over on CBPPL's DFA (see Table 5 under question 10).

The Canadian Forest Service – Corner Brook will be conducting an assessment of forest intactness for the island of Newfoundland using the same parameters as those in the studies conducted by Global Forest Watch in 2003 and 2010. However, the Canadian Forest Service will use be using higher resolution imagery which will provide more accurate results. Once this assessment is complete, CBPPL will then be able to determine if the DFA forms part of any intact forest landscapes of 50,000 ha or larger.

Protected areas exist within insular Newfoundland, and those of note with reference to landscape level forests are the Bay du Nord Wilderness Reserve (289,500 ha) and three reserves surrounding Little Grand Lake (a total of 147,700 ha), previously part of the DFA: Little Grand Lake Provisional Ecological Reserve, Little Grand Lake Wildlife Reserve, and Glover Island Public Reserve. The first two of these areas are adjacent to CBPPL limits.

Identified High Conservation Values (Intact Forest Landscape)

No HCV

CATEGORY 3) FOREST AREAS THAT ARE IN OR CONTAIN RARE, THREATENED OR ENDANGERED ECOSYSTEMS.

8. Does the forest contain naturally rare ecosystem types?

These forests contain many unique species and communities that are adapted only to the conditions found in these rare forest types.

Sources of Assessment Information
Conservation International
World Wildlife Fund Ecoregion Conservation Assessment
Atlantic Canada Conservation Data Center (ACCDC)

Conservation International does not identify any biodiversity hotspots or areas of conservation concern in Canada. NatureServe has nothing identified in the database for Newfoundland as G1, G2, or G3 (critically imperiled, imperiled, or vulnerable). The Atlantic Canada Conservation Data Centre does not yet have information on an ecosystem or community basis for Newfoundland.

In the absence of any rare ecosystem types identified locally, the HCVF Assessment Committee has suggested parameters that could be used to search the provincial forest inventory for rare ecosystem types. These could include Damman forest types (based on soil moisture and fertility), seral stages, intact forest with no history of harvesting (age class 5+ and a considerable distance from habitation), and slope class. The Ecosystem Sustainability and Research section of the Newfoundland Department of Natural Resources is interested in conducting this project.

Identified High Conservation Values (Rare Ecosystem Types)

No HCV at this time

9. Are there ecosystem types within the forest or ecoregion that have significantly declined?

This indicator concerns vulnerability and meta-population viability, and includes anthropogenically rare forest ecosystem types (e.g. late seral red and white pine in eastern Canada).

Sources of Assessment Information
World Wildlife Fund Ecoregion Conservation Assessment[i]
Interviews with local experts[32]

While the World Wildlife Fund Ecoregion Conservation Assessment and the Parks and Natural Areas division have identified no ecosystem types on the DFA that have significantly declined, there are individual species of trees that have declined in abundance, namely white pine and red pine. As discussed in question 5, natural populations of red pine exist on CBPPL limits, at West Brook Ecological Reserve (protected) and Sandy Lake (currently not protected). There also exists an area where CBPPL suspects healthy white pines of various ages occur, interspersed with other naturally existing species, in the Grand Lake South operating area. This particular area may more closely resemble the forest before white pine was harvested for lumber and before the arrival of white pine blister rust. This very rich site is wet and not easily accessed, which is why it was never harvested. It boasts very tall trees and plants uncommon elsewhere in the province. The boundaries of this area have not been specifically outlined nor has there been a detailed survey of the area.

During the assessment process, there was much discussion about the definition of "ecosystem types", as the standard offers a broad definition. To determine ecosystem types in decline, suggestions were made for parameters such as, Damman forest types (based on soil moisture and fertility), seral stages, intact forest with no history of harvesting, anything age class 5 + and some distance from habitation, and slope class. The Ecosystem Sustainability and Research section is interested in studying this question and their results will be assessed before the second FSC audit.

Identified High Conservation Values (Ecosystem Types in Decline)

Sandy Lake Red Pine,
Grand Lake South Area (balsam fir/spruce/healthy white pine of all ages)

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

In regions or forests where large functioning landscape level forests are rare or do not exist, many of the remnant forest patches require consideration as potential HCVs (best of the rest).

Sources of Assessment Information
Newfoundland Forest Inventory

[32] Wayne Brown, Forester

This attribute applies to forests where large landscape level forests are absent. A GIS exercise (Appendix 9) using provincial forest inventory data of the timber limits of CBPPL identified no intact forest landscape over 50,000ha. However, unfragmented forest areas (both treed and naturally treeless) of significance were found on the DFA (table below). A map of these areas can be seen in Appendix 8 (Map 7).

Table 5 Area of unfragmented forest on CBPPL's DFA.

Area	Hectares
Bay D'Espoire 1	35,812
Bay D'Espoire 2	27,246
Hampden Downs	33,737
Cat Arm 1	18,775
Cat Arm 2	6,599
Little Codroy	9,661

Identified High Conservation Values (Large Landscape Level Forests)

Bay D'Espoire 1
Bay D'Espoire 2
Hampden Downs
Cat Arm 1
Cat Arm 2
Little Codroy

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11. Are there nationally/regionally significant diverse or unique forest ecosystems?

This indicator concerns vulnerability, species diversity and significant ecological processes.

Sources of Assessment Information
World Wildlife Fund Ecoregion Conservation Assessment
Interviews with local experts, NL Dept. of Environment and Conservation[33]

The World Wildlife Fund has identified 238 ecoregions worldwide (The Global 200), and estimated the conservation status for each one (Olson and Dinerstein 2002). Newfoundland falls within the Boreal Forest /Taiga, Nearctic, Canadian Boreal Forests, whose conservation status is estimated to be relatively stable or intact.

At the regional level however, in the Main River watershed area of the northern peninsula, a portion of the forest is characterized by small-scale, gap-dynamic old-growth boreal forest stands (McCarthy and Weetman 2006). This ecological process differs from balsam fir stands on the rest of the island whose life cycles are naturally insect-driven. The Main River watershed area is currently protected through its designation as the Main River Waterway Provincial Park. Some of the DFA which lies to the north of Main River, the Cat Arm Operating Area, may contain similar examples of this gap-dynamic old-growth boreal forest. This has not been confirmed to date however.

[33] Claudia Hanel, Ecosystem Management Ecologist, Botanist

The DFA does include unique geological areas that strongly influence vegetation cover. There are serpentine soils on the DFA in the North Arm Hills and on the Bay D'Espoir Highway near the bridge over the Northwest Gander River. Some of these areas are lightly forested, dominated either by eastern larch and white pine, or by black spruce, but the quality of the trees is low and they are unlikely to be targeted for harvesting. Any rare species would be located in the openings where the serpentine soil is exposed. This type of geology, however, is well represented in the bordering Gros Morne National Park to the northeast, and by Blow Me Down Provincial Park.

There are regionally significant limestone areas on the DFA which have a number of rare plants, several not found on the limestone barrens of the Northern Peninsula. They are found on steep cliffs and the talus slopes underneath, and they would not be forested. In the DFA such areas are located on the south shore of Serpentine Lake, and in the Goose Arm area. Outside the DFA they are found in the Humber Gorge.

Other ecosystems of significance due to high plant diversity and rare plant occurrences are riparian ecosystems. The most significant ones in the DFA include the Upper Humber River, Bottom Brook near the Burgeo Highway turnoff, and Harry's River. However, the significant areas would not be forested, and would be within the buffers on scheduled Salmon Rivers. The estuary of Hughes Brook near Corner Brook would also be significant and inside the DFA, but again not forested.

Another significant ecosystem on the DFA would be red pine stands as red pine is a rare tree species in Newfoundland. Only found on dry sites in central Newfoundland, these ecosystems are somewhat fragile in the sense that they are dependent on fire for renewal and fire has generally been suppressed. There are a few of these stands in the Howley area, at Birchy Narrows at the east end of Sandy Lake.

Identified High Conservation Values (Diverse or Unique Forest Ecosystem)

Serpentine Areas – North Arm Hills, Northwest Gander River near bridge on Bay D'Espoir Hwy
Limestone Areas – South shore of Serpentine Lake, Goose Arm area
Riparian Ecosystems – Upper Humber River, Bottom Brook, Harry's River
Red Pine areas – Sandy Lake (Birchy Narrows), Howley

CATEGORY 4) FOREST AREAS THAT PROVIDE BASIC SERVICES OF NATURE IN CRITICAL SITUATIONS (E.G., WATERSHED PROTECTION, EROSION CONTROL).

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

Although many forests provide a source of drinking water for communities, this indicator is concerned with a potential impact so significant as to be catastrophic, leading to significant loss of productivity, or sickness and death, and there are no alternative sources of drinking water.

Sources of Assessment Information
NL Water Resources Division[34]

[34] Annette Tobin, Environmental Scientist
Krista Ramsay, Environmental Scientist

Corner Brook Pulp and Paper's DFA covers approximately 1.5 million hectares, and as such covers a large area. It is no surprise then that all or a portion of 38 public water supply areas servicing 32 communities (Table 6) coincide with the DFA (Map 6)

Table 6. Communities serviced by public water supply areas occurring on the DFA.

Appleton	Gander Bay South	Pynn's Brook
Baie Verte	Glenwood	Reidville
Beaches	Hampden	Seal Cove (White Bay)
Benton	Howley[§]	South Brook[§]
Black Duck*	Humber Arm South	Steady Brook
Centreville-Wareham-Trinity	Indian Bay	St. Jude's
Corner Brook	Irishtown-Summerside	Stephenville*
Cox's Cove	King's Point	Stephenville Crossing
Deer Lake	Massey Drive	Westport
Gallants	Mount Mariah	Wild Cove*
Gander	Pasadena	

* Unprotected ground water zone

§ Unprotected surface water natural drainage

The majority of drinking water sources on the island are from surface water, due to the abundance of, easy access to, and the reliability of lakes, ponds, and rivers. In order to have their drinking water sources protected, municipal authorities must apply to the provincial Department of Environment and Conservation, which works through the Water Resources Act to designate Protected Water Supply Areas (PWSA). Anyone wishing to conduct a development activity in a PWSA must complete an application for a Permit for a Development Activity in a Public Water Supply Area. The permit is processed by the Water Resources Division, and sent to the municipal authority responsible for the drinking water supply, which may object to the activity, or it may agree to the activity but add operating conditions to the permit. Commercial forest harvesting may be (and has been) permitted in a PWSA if it does not impair water quality, and must adhere to the *Environmental Protection Guidelines for Ecologically Based Forest Resource Management* which includes a section Guidelines for Forestry Operations in Protected Water Supply Areas. Included are buffers ranging from 30m to a minimum of 150m, depending on the size of the waterbody and the proximity to the intake. Many municipalities require conditions in addition to the guidelines.

Research has shown that the most significant impacts to forested watersheds following timber harvest are changes in water table levels and stream flow. It is likely that similar changes occur after fire. As a general rule, harvesting impacts on stream flow regimes are usually short-lived and less severe than those brought about by land-use changes, provided that forests soils are protected and vegetation recovery is rapid. In more well-watered areas, rapid revegetation often limits meaningful water yield increases to the first 3-5 years after treatment (Megahan & Hornbeck 2000). Literature reviews also indicate that effects of forest harvesting are negligible on water quality when disturbance levels are below 30% (Kotak et al 2005), and minor on water yield (quantity) at harvesting levels of 30-40% of a watershed area (Rothwell 1997). This level of disturbance is generally used as an upper limit for harvesting in watersheds in forest management plans.

Public water supply areas on the DFA range in size from 0.2 km^2 to 812 km^2, servicing populations ranging from a maximum of 22,000 (Corner Brook) to a little as 25. CBPPL sits on the watershed monitoring committees for Corner Brook, Steady Brook, and Gander. Water sampling results from 1989 to the present are available for the Corner Brook watershed, where second-cut harvesting has been on-going since 1987. The nine parameters tested are the same as those tested by the provincial Water Resources Division for all drinking water sources. In all the years of testing, the only parameter that did not meet the Canadian Drinking Water Quality Guidelines was color, which is naturally a "tea" color. This applied whether there was harvesting activity or not.

Identified High Conservation Values (Significant Source of Drinking Water)

All PWSAs occurring on CBPPL's DFA as listed in Table 4 were determined to be HCV.

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

Forest areas play a critical role in maintaining water quantity and quality, and breakdown of this service has catastrophic impacts or is irreplaceable.

Sources of Assessment Information
Geological Disasters in Newfoundland and Labrador
NL Water Resources Division[35]

Insular Newfoundland is a mosaic of forest, water, bogs, and barrens with very little cleared land, and the productive forest is naturally highly fragmented. All forests and treed wetlands play a significant role in mediating flooding and/or drought, stream flow regulation, and filtering groundwater and runoff. This indicator, however, deals with ecological services in critical situations.

Flooding is part of natural environmental processes. In Newfoundland it is often caused by heavy rainfalls in combination with rapid melting of snow on the ground, and less frequently by ice jams in rivers, and high tides with storm surges along the coast. (Liverman et al 2001). Two flood risk areas, Black Duck and Appleton, are within CBPPL's DFA. A number of other flood risk areas such as Stephenville, Steady Brook and Deer Lake are downstream of CBPPL's DFA. However there is no information to indicate that the harvested areas in these watersheds at any one time are large enough to have an effect on these flood zones.

Identified High Conservation Values (Significant Ecological Service)

No HCV

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14. Are there forests critical to erosion control?

This indicator relates to the impacts of soil, terrain or snow stability in the control of erosion, sedimentation, landslides, or avalanches.

Sources of Assessment Information
NL Geochemistry, Geophysics and Terrain Sciences Section[36]

[35] Dr. Ali Khan, Manager, Hydrologic Modeling Section
[36] Dr. Martin Batterson, Section Manager

Movement of land mass down slope is influenced by gravity. Landslides are widespread in Newfoundland. They are usually triggered by excess quantities of either rainfall or snowfall to the slope. Other factors that commonly cause mass movement that could be influenced by forest operations include changes in slope angle (road construction across steep slopes), and changes in vegetation (forest harvesting). Generally slopes in excess of 25º (46%) are prone to slope failure, depending on the underlying material.

Identified High Conservation Values (Erosion Control)

Slopes over 25º (46%)

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15. Are there forests that provide a critical barrier to destructive fire (in areas where fire is not a common natural agent of disturbance)?

The High Conservation Value Forest National Framework indicates that this question is not relevant in Canada.

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16. Are there forest landscapes (or regional landscapes) that have a critical impact on agriculture or fisheries?

Forests mediate wind and microclimate at the ecoregion scale, affecting agricultural and fisheries production. Riparian forests play a critical role in maintaining fisheries by providing bank stability, sediment control, nutrient inputs, and microhabitats.

Sources of Assessment Information

There are no significant agricultural production areas within CBPPL's DFA. These areas were removed from the DFA in the sale of limits back to the Crown in 2010. However, watersheds within the DFA provide irrigation on agriculturally developed land, primarily in the Deer Lake, Cormack, Reidville, Howley, Green Bay, and Robinsons to St. Fintan's areas, with smaller hobby type farms dispersed throughout. Given the expanse of forest adjacent to these agricultural areas, no significant impacts are anticipated.

There are many lakes and ponds on the DFA – 7.6% of the limits is in waterbodies of some sort. These waterbodies are home to a number of species of fish that provide a sport fishery for both locals and tourists. Major fishing rivers on the DFA include: Humber, Gander, Harry's, and Indian. Fish habitat is currently protected by riparian widths outlined in the Environmental Protection Guidelines for Ecologically Based Forest Resource Management.

Identified High Conservation Values (Critical Impact on Agriculture or Fisheries)

Freshwater fishes

Atlantic Salmon

CATEGORY 5) FOREST AREAS FUNDAMENTAL TO MEETING BASIC NEEDS OF LOCAL COMMUNITIES (E.G., SUBSISTENCE, HEALTH).

17. Are there local communities? Is anyone within the community making use of the forest for basic needs/ livelihoods?

Sources of Assessment Information
CBPPL Sustainable Forest Management Plan, 2011
CBPPL Socio-Economic Impact Assessment Report, 2011

There are many communities (~65) of varying sizes within or in close proximity to the DFA that use and benefit from the forest. Uses/benefits of the forest include: employment (675 employees directly in the mill, woodlands, and power house), sawlogs for sawmills, tourism and recreation, timber for wharves and boats, firewood for homes and businesses, and cabins, hunting, fishing, trapping, and berry picking. Although some of these uses may be recreational, for a portion of residents these uses fill basic needs. Den Otter & Beckley (2002) found that hunting, berry-picking, fishing, and wood-cutting supplement incomes, particularly in smaller communities.

Identified High Conservation Values (Critical to Basic Needs)

Recreation
Cutting timber for wharves, and boats
Income from working in the forest
Firewood to heat homes and businesses
Company roads for access to hunting, berry picking, and cabins
Sawlogs for local sawmills

CATEGORY 6) FOREST AREAS CRITICAL TO LOCAL COMMUNITIES' TRADITIONAL CULTURAL IDENTITY (AREAS OF CULTURAL, ECOLOGICAL, ECONOMIC OR RELIGIOUS SIGNIFICANCE IDENTIFIED IN COOPERATION WITH SUCH LOCAL COMMUNITIES).

18. Is the traditional cultural identity of the local community particularly tied to a specific forest area?

Sources of Assessment Information
Federation of Newfoundland Indians[37]

[37] Roger Gallant, Biologist

Aboriginal People on the island of Newfoundland are primarily Mi'kmaq. They have identified culturally important areas for burial and sacred sites, spirit areas and medicine plants. Maps 8-11 provided by the Qalipu Mi'kmaq First Nation Band indicate the general locations of these areas. However, since the maps weren't available to us in GIS format, we have not been able to determine where some of the locations lie with reference to the DFA.

Identified High Conservation Values (Traditional Cultural Identity)

Burial Sites
Sacred Sites
Spirit Areas
Medicine Plants

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

A comprehensive review of candidate HCVs for the DFA was conducted with many of the candidates identified as HCVs. CBPPL feels there is no significant overlap of values that would lead to new HCVs or HCVFs.

Identified High Conservation Values (Collective Overlap of Values)

No HCV

5. MANAGEMENT AND MONITORING STRATEGIES FOR HCVS AND HCVFS

Criteria 9.3 and 9.4 of the FSC Boreal Standard state respectively:

“The management plan shall include and implement specific measures that ensure the maintenance and/or enhancement of the applicable conservation attributes consistent with the precautionary approach. “

“Annual monitoring shall be conducted to assess the effectiveness of the measures employed to maintain or enhance the applicable conservation attributes.”

Management strategies for HCVs and HCVFs vary, from total protection of a species or area, to special strategies undertaken that allow harvesting, road building and silviculture operations but with conditions. Some of the management strategies are found in the 5-Year Operating Plans, others in the Sustainable Forest Management (SFM) Plan within Indicator profiles. All applicable management strategies and special considerations are relayed to CBPPL contractors during Pre-work Meetings.

Monitoring of HCV management strategies can be through a number of processes. Superintendents monitor harvesting operations by daily contact with contractors and by checking their progress through on-line operating maps that are updated daily. They also perform on-site monitoring at least weekly. Another process is through the Environmental Management System (EMS) compliance inspections. Contractors monitor their own work through monthly #1 EMS Compliance Inspections. CBPPL conducts a comprehensive #2 EMS Compliance Inspection of harvesting contractor activity 3 times per year, and road building activity 1-2 times per year. CBPPL conducts a final #3 EMS Compliance Inspection or a Final Road Inspection after the operating area activity (harvesting or road building) is completed. A Cutover Assessment Survey is done in conjunction with the #3 inspection to determine utilization rates, amount of soil disturbance, and number of wildlife/snag trees. Any HCVs that are to be monitored through the EMS Compliance Inspections and Cutover Assessment Surveys have be added to the inspection forms and guidelines. The annual EMS and SFM Standards internal and external environmental audits also serve as monitoring processes. To determine the effectiveness of the management strategies, in many cases CBPPL relies on agencies with which it has “agreements” related to the High Conservation Values.

For each HCV/ HCVF identified in the previous section, the following table indicates at least one management strategy, the monitoring responsibilities, and the effectiveness of the management strategies.

Table 7. Management and Monitoring Strategies for HCVs and HCVFs on Corner Brook Pulp Paper's DFA.

HCV	Management Objective	Management Strategy	Indicator and Threshold	Operational Monitoring	Strategic Monitoring (Effectiveness of Management Strategies)
Habitat for Newfoundland Marten	No net loss of suitable habitat for marten district by district	If proposed operating areas in the 5-Year Plan coincide with areas currently occupied by marten, CBPPL will adhere to directives issued by the provincial Wildlife Division, Endangered Species Section, concerning the **Recovery Plan for the Threatened Newfoundland Population of American Marten (*Martes americana atrata*)**. The 5-Year Plan proposal also goes through the Environmental Assessment process. Newly available predictive marten occupancy models are used to assess the proposal. If the proposal is approved, a limit may be put on the volume of wood removed. During the prework meeting CBPPL advises harvesting contractors of special concerns in the operating area, such as marten habitat, and what restrictions apply. More detailed management strategies for pine marten are found in the 5-Year Operating Plans, Section 4.2.1, and in the Sustainable Forest Management Plan, Indicator 1.2.2 Pine Marten Habitat	1) Hectares of suitable habitat, based on baseline information, determined by habitat model. 2) Evidence of marten occupying adjacent areas.	CBPPL Operations Superintendents monitor their contractors to ensure they are not harvesting outside the designated operating area. This is done through the #2 and #3 EMS inspections, and environmental auditing of Indicator 1.2.2. Monitoring also includes review of track logs of harvesting equipment. DNR Conservation Officers conduct similar but separate monitoring of CBPPL contractors.	The Dept. of Environment and Conservation/Canadian Forest Service will determine hectares of suitable habitat and hectares of habitat occupied. (Need to rely on trends as well) CBPPL will ask DNR to continue conduct hair snag surveys.
Habitat for Little Brown Myotis and Northern Myotis	Ensure suitable habitat	The wood supply model removes 15% old growth from the productive forest before determining AAC. CBPPL commits to leaving 20% in age	Percentage of 81+ age class on the DFA	CBPPL Planners will ensure that a minimum of 20% of the DFA is in the 81+ years age class through the 5-Year and	The Dept. of Environment and Conservation will assess if enough suitable habitat remains for bats across the landscape.

HCV	Management Objective	Management Strategy	Indicator and Threshold	Operational Monitoring	Strategic Monitoring (Effectiveness of Management Strategies)
		class 81+ years.		Annual Operating Plans.	
Habitat for Woodland Caribou	To ensure that adequate caribou habitat is available at all times on the DFA.	Follow the **Forest Management Guidelines for Woodland Caribou (Rangifer tarandus caribou) For the Island of Newfoundland** as developed by the provincial Wildlife Division. New guidelines under development have been incorporated into the 5-Year Operating Plans since 2012: No harvesting in core areas for wintering, calving and post-calving; Maintain 30% of overmature (80+ years) forest in 10-km buffers/corridors around core areas; Avoid areas if caribou are present during calving/post-calving or wintering seasons. Through the Canadian Boreal Forest Agreement CBPPL is also involved in the maintenance of self-sustaining woodland caribou populations within the DFA. Five areas (intact forest landscapes) have been set aside where harvesting is deferred for 5 years. More detailed management strategies for woodland caribou are found in the 5-Year Operating Plans, Section 4.2.1, and in the Sustainable Forest Management Plan, Indicator 1.2.1 Caribou Habitat	Compliance with caribou guidelines	CBPPL Operations Superintendents monitor contractors to ensure they are not harvesting outside the designated operating area through the #2 & #3 EMS inspections. The Report of Past AOPs, as well as soft updates of cutovers, report on the previous year's harvesting. The environmental auditing process monitors Indicator 1.2.1. DNR Conservation Officers conduct similar but separate monitoring of CBPPL contractors. Additional monitoring required in the new guidelines will be followed.	On an annual basis, the Environment and Conservation will assess habitat availability on the DFA and on the Island. The Wildlife Division will assess the effectiveness of the guidelines and update the kernals.
Habitat for: Harlequin Duck	Protect suitable habitat	Buffers required in the **Environmental Protection**		CBPPL Operations Superintendents monitor	The Canadian Wildlife Service will assess the

HCV	Management Objective	Management Strategy	Indicator and Threshold	Operational Monitoring	Strategic Monitoring (Effectiveness of Management Strategies)
Barrow's Goldeneye		**Guidelines for Ecologically Based Forest Resource Management (Stand Operations Level)** cover the management of nesting Harlequins. Sensitive waterfowl habitat is protected through increased buffers of 50m on breeding, moulting, and staging areas identified by the Canadian Wildlife Service. These will be incorporated into the 5-Year Plans (which are reviewed by the Canadian Wildlife Service) and the Annual Operating Plans. **A Management Plan for the Harlequin Duck (*Histrionicus histrionicus*) Eastern Population, in Atlantic Canada and Québec** proposes 30-m buffers in waterfowl breeding, moulting, and staging areas. More detailed management strategies for harlequin duck are found in the 5-Year Operating Plan for Districts 15 & 9, Section 4.2.1.		that contractors are leaving the required buffers on waterways through the #2 & #3 EMS inspections. DNR Conservation Officers conduct similar but separate monitoring of CBPPL contractors.	effectiveness of existing buffer requirements.
Mature Coniferous Habitat for: Gray-Cheeked Thrush, Northern Goshawk, Olive-sided Flycatcher, Red Crossbill, Winter Wren	Protect suitable habitat	Buffers currently required in the **Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Operations Level)** [EPG] provide some protection for most if not all of the species listed. If additional management strategies are required they will be specified by the Wildlife Division during the 5-Year	Percentage of 81+ age class on the DFA	Through environmental compliance inspections, CBPPL Operations Superintendents will determine if contractors are following the Environmental Protection Guidelines. CBPPL Planners will ensure that a minimum of 20% of the DFA is in	The Wildlife Division will assess the effectiveness of the management strategy.

HCV	Management Objective	Management Strategy	Indicator and Threshold	Operational Monitoring	Strategic Monitoring (Effectiveness of Management Strategies)
		Planning process, and/or incorporated into the Annual Operating Plans. The wood supply model removes 15% old growth from the productive forest before determining AAC. CBPPL commits to leaving 20% in age class 81+ years.		the 81+ years age class through the 5-Year and Annual Operating Plans.	
Open Forest Habitat for Northern Shrike	Protect suitable habitat	The wood supply model removes 15% old growth from the productive forest before determining AAC. CBPPL commits to leaving 20% in age class 81+ years.	Percentage of 81+ age class on the DFA	CBPPL Planners will ensure representative amount of all age classes exists on the DFA through the 5-Year and Annual Operating Plans.	The Wildlife Division will assess the effectiveness of the management strategy.
Open Barrens and Grasslands Habitat for: Peregrine Falcon ssp. *Anatu;,* Short-eared Owl		CBPPL cannot impact open barrens and grasslands habitat			
All Age-classes Forest Habitat for Sharp-shinned Hawk	Protect suitable habitat	CBPPL will ensure a representative amount of all age classes exists on the DFA.	Representation of all age classes	CBPPL Planners will ensure representative amount of all age classes exists on the DFA through the 5-Year and Annual Operating Plans.	Dept. of Natural Resources conducts a wood supply analysis every 5 years that indicates the age class structure of the forest in Newfoundland and Labrador.
Shoreline Habitat for: Piping Plover; Red knot		CBPPL cannot impact shoreline habitat.			
Wet Forest Habitat for Rusty Blackbird	Protect suitable habitat	Buffers currently required in the **Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Operations Level)** provide	Availability of habitat for these species on the DFA.	Through environmental compliance inspections, CBPPL Operations Superintendents will determine if contractors have left the required	The Wildlife Division will assess the effectiveness of the management strategy.

HCV	Management Objective	Management Strategy	Indicator and Threshold	Operational Monitoring	Strategic Monitoring (Effectiveness of Management Strategies)
		protection for nests of Rusty Blackbird. If additional management strategies are required they will be specified by the Wildlife Division during the 5-Year Planning process, and/or incorporated into the Annual Operating Plans.		buffers on waterways.	
Habitat for: Laurentian Dandelion Rock Dwelling Sedge Serpentine Stitchwort Tradescant's Aster Other S1-S3 Species	Protect suitable habitat	Buffers currently required in the **Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Operations Level)** provide protection for most if not all of the species listed. If additional management strategies are required they will be specified by the Wildlife Division during the 5-Year Planning process, and/or incorporated into the Annual Operating Plans. The Endangered Species and Biodiversity Section of the Wildlife Division will identify "hot spots" on the DFA, defining the general location of the rarest of the rare plant species, and areas with an abundance of rare plant species. These "hot spots" will be removed from areas to be harvested during the planning stage.	Availability of habitat for these species on the DFA.	Through environmental compliance inspections, CBPPL Operations Superintendents will determine if contractors have left the required buffers on waterways.	The Wildlife Division will assess the effectiveness of the management strategy.
Boreal Felt Lichen	Maintain existing populations of Boreal Felt Lichen.	Follow **A 5 Year (2006 – 2011) Management Plan For the Boreal Felt Lichen (*Erioderma pedicellatum*) In Newfoundland and Labrador** by considering a Landscape Management	Presence or absence of lichen	Implementation of the management plan will be monitored and evaluated by the Endangered Species Section every year for level of	1) Reconnaissance surveys on areas identified by the Department of Environment and Conservation (DEC) in

HCV	Management Objective	Management Strategy	Indicator and Threshold	Operational Monitoring	Strategic Monitoring (Effectiveness of Management Strategies)
		approach based on ecological forest site types whereby suitable sites for potential Boreal Felt Lichen colonization adjacent to fertile Boreal Felt Lichen thalli are left to cycle naturally. CBPPL Planners and Contractor Foremen will be trained to identify Boreal Felt Lichen and suitable sites for potential Boreal Felt Lichen colonization. It is expected that priorities may change as the understanding of Boreal Felt Lichen biology and management increases. CBPPL is providing support to a Masters project to develop a predictive relationship between ecological variables and the distribution of Boreal Felt Lichen in managed landscapes. Most lichen will be covered off in caribou areas. If proposing to harvest in District 6, confer with Endangered Species and Biodiversity Section during planning stage.		completion and where necessary, resources will be redirected. CBPPL Planners are trained to identify Boreal Felt Lichen and suitable sites for potential Boreal Felt Lichen colonization.	the 5-Year Planning Process and review of Annual Operating Plans (DEC, DNR) 2) Regeneration surveys will determine if balsam fir is regenerating in areas with Boreal Felt Lichen (CBPPL)
Red Pine and Red Pine Stands at: Sandy Lake, Birchy Narrows, and Birchy Lake	Protect existing red pine on the DFA from harvesting by CBPPL.	CBPPL can only protect existing red pine on their limits by following provincial legislation to exclude red pine trees and stands from harvesting plans. In addition, CBPPL has included in their Domestic Wood Cutting Regulations (distributed with each fire wood permit) that cutting of red pine is not permitted More detailed management strategies for red pine are found	Incident reports of harvesting red pine on the DFA by CBPPL.	Through environmental compliance inspections and cutover assessment surveys, CBPPL Operations Superintendents will determine if contractors have harvested any red pine on CBPPL limits.	Persistence of red pine on the DFA as indicated by DNR through the provincial forest inventory or monitoring programs.

HCV	Management Objective	Management Strategy	Indicator and Threshold	Operational Monitoring	Strategic Monitoring (Effectiveness of Management Strategies)
		in the 5-Year Operating Plans, Section 4.2.1			
White Pine	Protect existing white pine on the DFA from harvesting by CBPPL.	No harvesting of white pine is permitted except in road right-of-ways (ROW) or where they pose a safety hazard. Where possible, leave a 5m "no-machine" zone around white pine >50cm dbh (to protect roots), and leave hardwoods and unmerchantable softwoods within that radius. In addition, CBPPL has included in their Domestic Wood Cutting Regulations (distributed with each fire wood permit) that cutting of white pine is not permitted More detailed management strategies for white pine are found in the 5-Year Operating Plans, Section 4.2.1	Incident reports of Noncompliance with regulations	Through environmental compliance inspections and cutover assessment surveys, CBPPL Operations Superintendents will determine if contractors have harvested any white pine on CBPPL limits outside of ROWs/safety requirements, and if no-machine zones have been left around white pine >50cm dbh.	Persistence of white pine on the DFA as indicated by DNR through the provincial forest inventory or monitoring programs.
Black Ash	Protect existing black ash on the DFA from harvesting by CBPPL.	No permits are issued for the harvest of black ash. CBPPL has included in their Domestic Wood Cutting Regulations (distributed with each fire wood permit) that cutting of black ash is not permitted	Incident reports of harvesting black ash on the DFA by CBPPL.	Through environmental compliance inspections and cutover assessment surveys, CBPPL Operations Superintendents will determine if contractors have harvested any black ash on CBPPL limits	Persistence of black ash on the DFA as indicated by DNR through the provincial forest inventory or monitoring programs.
Yellow Birch	No harvesting of birch >50cm dbh when encountered on the DFA.	SOP H-06 **Leaving Wildlife Trees for Biological Diversity**, to instruct operators to leave yellow birch trees >50cm dbh (as seed trees) when encountered. CBPPL has included in their Domestic Wood Cutting Regulations (distributed with	Incident reports of harvesting yellow birch >50cm dbh on the DFA by CBPPL.	Through environmental compliance inspections and cutover assessment surveys, CBPPL Operations Superintendents will determined if contractors have harvested any	Persistence of yellow birch on the DFA as indicated by regeneration assessment surveys.

HCV	Management Objective	Management Strategy	Indicator and Threshold	Operational Monitoring	Strategic Monitoring (Effectiveness of Management Strategies)
		each fire wood permit) that cutting of yellow birch >50cm dbh is not permitted. PCT employees are instructed to favour yellow birch over other hardwoods when thinning.		yellow birch >50cm dbh on CBPPL limits. On areas of the DFA where hardwood management has been transferred to Crown, DNR staff will monitor for compliance.	
Ducks Unlimited Conservation Areas: Cook's Marsh, Upper Humber Wetland Complex (Birchy Basin)	Respect the boundaries of these properties and the buffer surrounding the area established by CBPPL.	CBPPL has a Stewardship Agreement with Ducks Unlimited Canada in which the area shall be preserved for the enhancement and protection of waterfowl and other wildlife, subject to the condition that CBPPL carry on normal harvesting and other related activities in specific designated areas. CBPPL will continue to adhere to this agreement.	Incident reports of noncompliance by CBPPL of the Stewardship Agreements with Ducks Unlimited.	Geospatial data from FPDat-equipped equipment will be reviewed to ensure that all harvesting and road construction activities are in compliance with the Stewardship Agreements.	CBPPL will consult with Ducks Unlimited Canada annually to ensure the Stewardship Agreements aimed at waterfowl protection are not being compromised by CBPPL activities.
Riparian Areas/Habitat for: Atlantic Salmon; Banded Killifish; American Eel; Freshwater Fishes; Song Sparrows	Maintain integrity of the boundary of riparian areas on the DFA that have been legislated and/or established by agreements and through the 5-year planning process.	CBPPL follows the **Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Operations Level)** (EPG) to protect the values of riparian areas, and therefore habitat for salmon and freshwater fishes. Management strategies include buffers along streams, no-grub zones at stream crossings, and guidelines for the installation of culverts during road building. Environmental Work Instructions and Standard Operating Procedures, and DFO "Letters of Advice" and "Operational Statements" guide employees in	Compliance with buffers that have been legislated or agreed to with organizations.	Through environmental compliance inspections, CBPPL Operations Superintendents will determine if contractors are leaving the required buffers on waterways. DNR Conservation Officers conduct similar but separate inspections of CBPPL contractors. Geospatial harvesting data from FPDat-equipped harvesters will be reviewed to ensure that no harvesting occurs within designated and/or	Consult with regulatory bodies (DFO, DEC) and agencies with whom CBPPL has agreements, to determine their satisfaction with the effectiveness of the established buffers in maintaining integrity of riparian areas, for the management of salmon and freshwater fish stocks in waterways on CBPPL limits.

HCV	Management Objective	Management Strategy	Indicator and Threshold	Operational Monitoring	Strategic Monitoring (Effectiveness of Management Strategies)
		the protection of riparian areas. CBPPL leaves a 100m buffer on the main stems of scheduled salmon rivers and specific spawning areas designated by the Department of Fisheries and Oceans (DFO). CBPPL has also left 30m buffers on smaller tributaries identified by salmon groups such as SPAWN. CBPPL has voluntary agreements with local conservation groups such as the Indian Bay and Freshwater Alexander Bay Ecosystem Corporations (developed through the 5 Year Planning process) concerning access, road building, and extended buffers (100-200m). Requests for buffers wider than required are assessed on an individual case basis. Buffers for salmon spawning areas, wildlife habitat, etc., wider than required in the EPG, are removed from the timber supply when calculating the Annual Allowable Cut. Sustainable Forest Management Plan Indicator 5.1.4 Access Management Plan details management strategies to ensure waterbodies are protected during road construction. Additional management strategies for freshwater fishes are found in the 5-Year Operating Plans, Section 4.2.1. Management strategies for riparian areas are found in the 5-		regulated buffers.	

HCV	Management Objective	Management Strategy	Indicator and Threshold	Operational Monitoring	Strategic Monitoring (Effectiveness of Management Strategies)
		Year Operating Plans, Sections 4.2.1 and 4.2.2.			
All Provincial and Federal Parks and Reserves listed as HCV in Question 6.	Respect the boundaries of all provincial and federal parks and reserves.	Management strategies for protected areas are found in the 5-Year Operating Plans, Section 4.2.2. CBPPL will not harvest inside parks and reserves. Also, a 500m "no roads" buffer is to be maintained around all proposed provincial protected areas to reduce access and resulting damage from motorized vehicles.	No harvesting inside the park/reserve and no road construction within the 500m no-road buffer adjacent to a proposed protected area.	CBPPL Planners will ensure that boundaries are clearly indicated and no roads are located within 500m of proposed protected areas through the 5-Year and Annual Operating Plans. Road construction inspections by CBPPL staff will determine if roads are being built within the 500-m buffer adjacent to the proposed protected area boundary. Geospatial harvesting data from FPDat-equipped harvesters will be reviewed to ensure that no harvesting occurred within the park/reserve.	A review of past annual operations will verify if park boundaries have been respected and if roads were built within 500 m of a proposed protected area, thus respecting the boundary.
Intact Forest Landscapes (IFL); includes old growth	Assist in the development of an intact forest landscape plan.	CBPPL and the Crown are working towards identifying intact forest landscapes in insular Newfoundland. CBPPL has identified 5 areas to contribute to an intact forest landscape; harvesting has been deferred in these areas for 5 years.	Absence of harvesting in the 5 deferral areas for potential contribution to the IFL.	CBPPL Planners ensure that no harvesting is scheduled in these areas.	CBPPL involvement with the Crown in developing an IFL for the island.
Grand Lake South - White Pine Area	Determine if this area is a unique forest landscape	CBPPL has defined the boundaries of this area; no harvesting is permitted within the boundaries; an ecological survey, in partnership with the Canadian Forest Service (CFS) and others, will be conducted to determine	Development of a methodology and completion of an ecological survey.	CBPPL Planners will ensure that no harvesting is scheduled in this area.	CBPPL, in partnership with CFS and others, will monitor progress on completing the survey.

HCV	Management Objective	Management Strategy	Indicator and Threshold	Operational Monitoring	Strategic Monitoring (Effectiveness of Management Strategies)
		the uniqueness of the area.			
Open Serpentine and Limestone Areas	Minimize potential impacts from forest road construction activities on rare species in serpentine and limestone areas on the DFA.	CBPPL consults with the Wildlife Division to identify and digitally map the limestone (i.e., steep cliffs and talus slopes) and serpentine areas of concern. CBPPL works with the Wildlife Division to prevent/minimize the potential impacts on rare species in these areas from road building.	Compliance with recommendations from the Wildlife Division on road construction in limestone and serpentine areas	CBPPL Planners will implement management strategies agreed upon with the Wildlife Division.	N/A because these areas will be avoided.
Public Water Supply Areas (PWSAs)	Prevent/minimize adverse effects from forest harvesting activities to public drinking water supplies on the DFA.	CBPPL will follow the **Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Operations Level)**, (EPG) and the PWSA permit. Management strategies include buffers along streams and no-grub zones at stream crossings. Sustainable Forest Management Plan Indicator 3.2.1 contains a management strategy to limit the proportion of watershed with recent stand-replacing disturbance within the DFA to 25%.	Compliance with the EPG and the PWSA permit.	CBPPL Operations Superintendents will monitor that all requirements in PWSAs are being followed by CBPPL contractors, through the #2 & #3 EMS inspections. Indicator 3.2.1 is monitored through the environmental auditing process. DNR Conservation Officers conduct similar but separate monitoring of CBPPL contractors.	CBPPL will consult with Water Resources; Dept. of Environment and Conservation annually to ensure the management strategy is effective for protecting public drinking water supplies. CBPPL's annual **Indicator Report** updates information on all indicators in the SFM Plan, including the regeneration of cutovers within 5 years.
Slopes Greater Than 25° (46%)	To maintain forests valuable to the prevention of erosion.	CBPPL will avoid harvesting on slopes greater than 46% that are prone to slope failure because of the underlying material. There are no recorded incidents of significant slope erosion due to harvesting, and following this restriction will prevent such occurrences.	Absence of harvesting on slopes greater than 46% that are prone to slope failure because of the underlying material	Through environmental compliance inspections, CBPPL Operations Superintendents will determine if contractors avoid harvesting on slopes greater than 46% that are prone to slope failure because of the underlying material.	The NL Geochemistry, Geophysics and Terrain Sciences Section has confirmed that avoiding harvesting on slopes greater than 46% that are prone to slope failure because of the underlying material will prevent soil erosion.
Recreation:	To allow access to	Make CBPPL resource roads	Amount of resource	Through environmental	The Public Advisory

HCV	Management Objective	Management Strategy	Indicator and Threshold	Operational Monitoring	Strategic Monitoring (Effectiveness of Management Strategies)
access to the wilderness for hunting, fishing berry picking; access to cabins for, e.g., pleasure, relaxation and hunting	the DFA for recreation.	100% accessible to the public, subject to natural reclamation, removal of temporary infrastructure such as bridges and culverts, safety and agreements with agencies. Recreation values are managed through the 5-Year Planning Process, and CBPPL's Sustainable Forest Management (SFM) Plan. Sustainable Forest Management Plan Indicator 5.1.2 ensures CBPPL resources roads are available to the public, subject to natural reclamation, removal of temporary bridges and culverts, safety, and agreements. Indicator 1.4.1 identifies Special Places on the DFA that are unique and important to the public. Indicator 6.3.1 tracks and updates agreements with forest-dependent businesses, forest users (recreational groups), and the local community. Management strategies for recreation are found in the 5-Year Operating Plans, Section 4.2.2	roads on the DFA under CBPPL control that are accessible to the public.	compliance inspections and regular on-site visits, CBPPL Operations Superintendents will determine adherence to the 5-Year Plan and the SFM Plan. Indicator 5.1.2 is monitored through the environmental auditing process.	Committee to Corner Brook Pulp and Paper assesses their satisfaction with CBPPL's management for recreational values through an annual survey. CBPPL's annual **Indicator Report** updates information on all indicators in the SFM Plan, including the amount of roods accessible to the public.
Income from working in the forest	Where economically feasible and beneficial to all parties, allow opportunities for income associated with the forest on the DFA.	This value is managed through the 5-Year Planning Process, and CBPPL's Sustainable Forest Management (SFM) Plan. Sustainable Forest Management Plan Indicator 5.1.1 helps maintain commercial opportunities of outfitters by	Individuals and businesses deriving income from working in the forest.	Through environmental compliance inspections and regular on-site visits, CBPPL Operations Superintendents will determine adherence to the 5-Year Plan and the SFM Plan.	CBPPL's annual **Indicator Report** updates information on all indicators in the SFM Plan, including outfitters with camps on the DFA, wages for CBPPL union workers compared to the provincial average, and agreements with forest-dependent

HCV	Management Objective	Management Strategy	Indicator and Threshold	Operational Monitoring	Strategic Monitoring (Effectiveness of Management Strategies)
		limiting the amount and location of harvesting around their camps. Indicator 5.2.3 maintains wages for CBPPL union workers in line with the provincial average. Indicator 6.3.1 tracks and updates agreements with forest-dependent businesses. Management strategies for ensuring the existence of timber for harvesting are found in the 5-Year Operating Plans, Section 4.2.2			businesses.
Sawlogs for local sawmills	Where economically feasible and beneficial to all parties, make sawlogs available to sawmills.	This value is managed through the 5-Year Planning Process, and CBPPL's Sustainable Forest Management (SFM) Plan. Management strategies for ensuring the existence of timber for harvesting are found in the 5-Year Operating Plans, Section 4.2.2. Sustainable Forest Management Plan Indicator 5.2.1: CBPPL makes 15% of the CBPPL annual harvest available as sawlogs, as stated in the SFM Plan.	Availability of sawlogs for sawmills	Through environmental compliance inspections and regular on-site visits, CBPPL Operations Superintendents will determine adherence to the 5-Year Plan and the SFM Plan.	CBPPL's annual **Indicator Report** updates information on all indicators in the SFM Plan, including the volume of sawlogs exchanged with sawmills.
Cutting timber for wharves, stages, and boats	Allow legitimate fisherperson license-holders access to timber for wharves, stages and boats on the DFA.	These values are managed through the 5-Year Planning Process, and CBPPL's Sustainable Forest Management (SFM) Plan. CBPPL issues permits for timber for these values. Management strategies for ensuring the existence of	Permits for legitimate fisherperson license-holders to access timber for wharves, stages and boats on the DFA.	CBPPL Operations Superintendents will monitor adherence to the 5-Year Plan and the SFM Plan. The number of permits issued for this purpose on CBPPL limits will be recorded.	Availability of permits for legitimate fisherperson license-holders to access timber for wharves, stages and boats on the DFA.

HCV	Management Objective	Management Strategy	Indicator and Threshold	Operational Monitoring	Strategic Monitoring (Effectiveness of Management Strategies)
		timber for harvesting are found in the 5-Year Operating Plans, Section 4.2.2			
Firewood to heat homes and businesses	Continue to allow domestic and commercial firewood cutting on the DFA.	This value is managed through the 5-Year Planning Process, and CBPPL's Sustainable Forest Management Plan (SFM Plan). Firewood permits are made available, and CBPPL enters into agreements for domestic cutting with the government. Management strategies for ensuring the existence of timber for harvesting are found in the 5-Year Operating Plans, Section 4.2.2	The existence of domestic and commercial firewood cutting permits issued by CBPPL.	CBPPL Operations Superintendents will monitor adherence to the 5-Year Plan and the SFM Plan. The number of firewood permits issued on CBPPL limits will be recorded, and agreements for domestic cutting will be stored.	Availability of domestic and commercial firewood cutting permits issued by CBPPL, and response to concerns about availability of firewood.
Aboriginal Burial Sites, Sacred and Spirit Areas, and Medicine Plants	Respect known Aboriginal Burial Sites, Sacred and Spirit Areas, and Medicine Plants	CBPPL is working with the Qualipu First Nations (QFN) and Miawpukek First Nations (MFN) to add their shapefiles of these areas to CBPPL database for inclusion in the 5-Year Plan and Annual Operating Plans. Management strategies for historic resources are found in the 5-Year Operating Plans, Section 4.2.2	No harvesting of timber or road building in known Aboriginal Burial Sites, Sacred and Spirit Areas, and Medicine Plants.	CBPPL Operations Superintendents will monitor adherence to the 5-Year and annual Operating Plans through the #2 & #3 environmental inspections.	The QNL and MFN will be consulted annually concerning their satisfaction with CBPPL's respect for their known Aboriginal Burial Sites, Sacred and Spirit Areas, and Medicine Plants

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7. GLOSSARY

Aboriginal rights: A practice, custom or tradition integral to the distinctive culture of the aboriginal group claiming the right. Aboriginal rights, including site specific rights may exist, even if specific title does not exist.

Adaptive management: An approach to organizing management so that explicit hypotheses are tested as management activities proceed. A monitoring program tracks outcomes and, depending on how and why actual outcomes differ from expected outcomes, the management approach is reviewed and adjusted.

Affected community: A human community that is affected by the activities on the forest being considered for certification. This will likely include all local communities as well as communities with forest product processing facilities that obtain a high proportion of their furnish from the forest.

Afforestation: The action of converting non-forest land to forest land, which may occur by natural regeneration, seeding, or planting.

Age-class: A distinct group of trees or portion of the growing stock of a forest recognized on the basis of being of similar age.

Appropriate to the scale and intensity: The phrase "appropriate to the scale and intensity" is used in Indicators and Verifiers: to indicate to a certifying body that judgment is required in deciding the level of effort that can reasonably be expected from a manager in addressing a particular element of the FSC Standard. The intent is to relate expectations to the manager's resources, size of the management unit, and potential management impacts related to the specific element. Consideration should also be given to the significance of potential impacts of the management activities addressed, the sensitivity of values potentially affected, the reversibility of the potential effects, and the relative importance of the values.

Biological (bio)diversity: The variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are a part. This includes diversity within species, between species and of ecosystems (see Convention on Biological Diversity, 1992).

Buffer: A strip or area of vegetation that is left (often unharvested) or managed to reduce the impact of a treatment or action on neighbouring areas.

Canopy closure: The extent to which the upper layer of foliage in a stand or forested area prohibits the passage of sunlight to lower levels, or screens the view of the sky. Also used as an index of competition between adjacent dominant and co-dominant trees.

Clearcut: An area of forest in which all or most of the trees have been harvested; also the harvesting technique that removes all or most of the trees on a site. There is considerable debate within the ecological and forestry communities regarding; how to precisely define a clearcut based on size and configuration of the harvested forest area, proximity to other recently-harvested forest areas, the height or age of the regenerating vegetation both within the harvested area and proximal to the harvested area, etc.

Coarse woody debris: Logs, stumps, and tree limbs on the forest floor in various states of decomposition. Coarse woody debris provides habitat for many wildlife species.

Connectivity: The degree to which different habitat patches or environments are linked by single or multiple corridors of vegetation that provide habitat suitable for dispersal or seasonal movement of particular species, or the migration between ecosystems in response to long-term environmental change.

Conditions necessary for connectivity and its effectiveness will depend on the specific purpose of the connectivity and the requirements of species or ecosystems considered.

Conservation attributes: For the purpose of the National Boreal Standard a conservation attribute is an element, structure or process associated with a High Conservation Value, that can be monitored and managed to ensure its persistence over time. For example, if the HCV designation within a management unit is a consumptive watershed, the associated conservation attributes might include water quality and quantity, flow regimes, integrity of water courses and condition of seeps and springs. These conservation attributes would be identified during the HCV assessment and management strategies to maintain and/or enhance them would be developed, implemented, and monitored, as appropriate.

Conservation biology: Conservation biology is the applied science of maintaining the earth's biological diversity. It integrates and applies the principles of ecology, biogeography, population genetics, economics, sociology, anthropology, philosophy, and other theoretically based disciplines to the maintenance of biodiversity. In the context of protected reserve network planning, applicable concepts from conservation biology include: complete ecosystem representation; protection of core habitats to ensure the maintenance of viable populations of all native species in natural patterns of distribution and abundance; sustaining ecological and evolutionary processes; and ,the maintenance of a landscape that is resilient to environmental change. Many conservation biology practitioners translate these principles into the need for a network of well-distributed protected reserves, combined with adequate buffers and linkage areas to provide for dispersal, seasonal movement, and adaptation to environmental change. The required size and distribution of the reserve network depends on the ecosystems and species present, landscape complexity, and the extent and intensity of human disturbance in the surrounding landscape.

COSEWIC: Committee on the Status of Endangered Wildlife in Canada. The Committee determines the national status of wild Canadian species, subspecies and separate populations suspected of being at risk. COSEWIC bases its decisions on the best up-to-date scientific information and Aboriginal Traditional Knowledge available. All native mammals, birds, reptiles, amphibians, fish, molluscs, lepidopterans (butterflies and moths), vascular plants, mosses and lichens are included in its current mandate.

Critical habitat: An ecosystem or particular ecosystem element occupied or used by a species, or local population, that is necessary for their maintenance and/or long-term persistence, and where appropriate, recovery of a species or population.

Customary rights: Rights which result from a long series of habitual or customary actions, constantly repeated, which have, by such repetition and by uninterrupted acquiescence, acquired the force of a law within a geographical or sociological unit

Criterion (pl. Criteria): 1. A means of judging whether or not a Principle (of forest stewardship) has been fulfilled. 2. A distinguishing element or set of conditions by which a forest characteristic or management is judged. 3. A second-order principle that adds meaning and operationality to a principle without itself being a direct measure of performance.

Deforestation - The action of converting forest land to non-forest land. Deforestation implies a permanent conversion of land use; an area of mature forest that is harvested and will be renewed back to forest is not considered to be deforested.

Disturbance: A disruption in the growth and development of an individual, population or community due to natural or anthropogenic factors such as herbivory, forest fires, road building, disease infestation, or tree harvesting.

Disturbance mosaic: The landscape level, spatial pattern of disturbance. The mosaic includes not only areas that have actually been cut, but also inclusions of uncut forest (insular residual), peninsular residual patches, other cuts in close proximity, and forest separating cuts.

Disturbance regime: The characteristic manner in which forests are altered by disturbances. Disturbance regimes are characterized by the nature (e.g., pest, insect, windstorm, etc.), the periodicity, and severity of disturbance events.

Ecodistrict: A part of an ecoregion characterized by a distinctive pattern of relief, geology, geomorphology, vegetation, soils, water and fauna

Ecological integrity: The quality of a natural, unmanaged or managed ecosystem in which the natural ecological processes are sustained, with genetic, species, and ecosystem diversity assured for the future.

Ecoregion: A unit of ecological classification characterized by distinctive ecological responses to climate as expressed by vegetation, soils, water, and fauna.

Ecosite: A unit of ecological classification which is characterized primarily by soil and hydrological conditions.

Ecosystem: A community of all plants and animals and their physical environment, functioning together as an interdependent unit.

Ecosystem diversity: The variety of biomes or habitats occurring with a designated area.

Ecosystem integrity: The diversity of organisms at all levels, including genetic variation, species, populations, ecosystems, landscapes and their physical environments; the ecological patterns, structural attributes, functions and processes that are responsible for that biological diversity and also responsible for ecosystem resilience, allowing for recovery following disturbance.

Ecosystem representation: Inclusion within a reserve network of the full spectrum of biological and environmental variation, including genotypes, species, ecosystems, habitats, and landscapes.

Economic viability: The capability of an entity to be economically self-sustaining. In the long term, this means that the entity must at least break even and, more likely be profitable. In the short term, entities can run at a loss depending on their access to financial backing and the value of cash and assets held.

Enduring feature: A landscape element or unit within a natural region characterized by relatively uniform origin of surficial material, texture of surficial material, and topography.

Ephemeral stream: A stream that flows briefly only in direct response to precipitation in the immediate locality and whose channel is at all times above the water table.

Exotic species: An introduced species not native or endemic to the area in question.

Focal species: Focal species builds on the concept of umbrella species, whose habitat requirements are believed to encapsulate the needs of other species (Lambeck 1997). The focal species approach assumes that meeting the requirements of the most demanding species will result in a landscape design encompassing the needs of a wider range of species.

Forest: 1. A plant community dominated by trees and other woody vegetation, growing more or less closely together. 2. An area managed for the production of timber and other forest products or

maintained under woody vegetation for such indirect benefits as protection of site or recreation. 3. An aggregate of stands.

Forest conversion: The substantial or severe modifications to the structure and dynamics of a forest, as a result of management activities, resulting in a significant reduction in the complexity of the forest system; or the transformation of a forest into a permanently non-forested area.

Forest management activities: Any or all of the operations, processes or procedures associated with managing a forest, including, but not limited to: planning, consultation, harvesting, access construction and maintenance, silvicultural activities (i.e., planting, site preparation, tending), monitoring, assessment, and reporting.

Forest unit: An aggregation of forest stands for management purposes which have similar species composition, develop in a similar manner (both naturally and in response to silvicultural treatments), and are managed under the same silvicultural system.

Fragile ecosystems: Ecosystems (at any scale) which are prone to disruption from even modest management interventions or natural disturbance events.

Gap analysis: An assessment of the protection status of biodiversity in a specified region, which looks for gaps in the representation of species or ecosystems in protected areas.

Genetic diversity: Variety within individuals within a species or a population, or more specifically the variety of DNA or alleles within a species or population.

Habitat: 1. Those parts of the environment (aquatic, terrestrial, and atmospheric) often typified by a dominant plant form or physical characteristic, on which an organism depends, directly or indirectly, in order to carry out its life processes. 2. The specific environmental conditions in which organisms thrive in the wild.

High Conservation Value Forest (HCVF): High Conservation Value Forests are those that 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).

Home range: The area over which an animal roams during the course of its usual wanderings and spends most of its time. When home ranges are marked and defended they are referred to as territories. In vertebrates, the size of an animal's home range is roughly proportional to its body size.

Indicator: A specific requirement in the FSC National Boreal Standard, subordinate to the principles and criteria.

Indigenous: In this standard, the term "Indigenous" will be understood to be inclusive of those groups constitutionally-recognized as being Aboriginal People, including Indian, Métis and Inuit.

Intact: The maintenance of (i.e., no readily determinable changes to) ecological functions at a forest or landscape scale.

Landscape: A geographical mosaic composed of interacting ecosystems resulting from the influence of geological, topographical, soil, climactic, biotic and human interactions in a given area.

Landscape level: At a spatial scale above a single plant community or forest stand and below a region (See also definition of Landscape).

Late seral stage: A late stage in succession (the process of community development after disturbance) where the forest canopy starts to open up, and the amount of vertical and horizontal structural diversity increases. The time since disturbance at which a late seral stage could be said to exist varies from forest unit to forest unit.

Local community: Any (human) community that is on or adjacent to the forest that is being audited for certification. If no communities meet this criterion, then the scope of "local" should be expanded to cover communities within a reasonable daily commuting distance from the boundary of the forest being certified.

Local People: are considered local where they permanently reside within daily commuting distance by car or boat from the management unit, or where they are part of the Indigenous people whose lands and territories contain or are contained within the management unit.

Long term: The length of time consistent with sustainability. Ideally, this is the time-scale of the forest owner or manager as manifested by the objectives of the management plan, the rate of harvesting, and the commitment to maintain permanent forest cover. The length of time involved will vary according to the context and ecological conditions, and will be a function of how long it takes a given ecosystem to recover its natural structure and composition following harvesting or disturbance, or to produce mature or primary conditions.

Merchantable: A log or tree which meets or exceeds minimum size requirements and contains a proportion of sound wood in excess of minimum requirements, as determined according to applicable scaling (wood measurement) standards.

Native species: A species that occurs naturally in the region; endemic to the area.

Natural cycle: Nutrient and mineral cycling as a result of interactions between soils, water, plants, and animals in forest environments that affect the ecological productivity of a given site.

Natural forest: A forest area where many of the principal characteristics and key elements of native ecosystems such as complexity, structure and diversity are present, as defined by FSC approved national and regional standards of forest management.

Non-forested land: Land that is classed as being used for a purpose other than supporting forest growth, such as agriculture, roads, trails, landings, gravel pits, and camps. Deforestation is the process of converting forest land to non-forest land; afforestation is the reverse process.

Non-timber forest products: All forest products except timber, including other materials obtained from trees, such as resins and leaves, as well as any other plant and animal products produced by the forest. In the boreal forests of Canada, there are many commercial enterprises based on non-timber forest

products, such as hunting and fishing lodges, trapping operations, outfitting, remote tourist operations, and youth camps.

Old forest: Later stage(s) in forest development which may be distinctive in composition but are always distinctive in structure from earlier (young and mature) successional stages.

Optimal or highest and best value: In many cases, a log or tree can be used for a variety of purposes, with the sale price of the wood dependent on the use to which it will be put. Optimal (or highest and best) value is obtained when the highest price is obtained, or the wood is used for the purpose which best meets financial or socio-economic objectives.

Peer review: An independent or external review by experts on the subject being considered.

Precautionary approach: An approach that tends to refrain from actions where the outcome is not known. In a forest management context it refers to situations in which a forest manager will often be required to act with incomplete knowledge of cause and effect relationships, and therefore a precautionary approach includes the following:

- The manager avoids actions that may lead to irreversible changes to ecosystem function and resilience;
- Alternative management strategies are developed and evaluated, including the alternative of no management intervention, to identify alternatives that are least likely to impair the viability of the species or ecosystem;
- The onus is on the manager to demonstrate that proposed management activities are not likely to impair ecosystem function and resilience;
- When previously unanticipated threats to ecosystem integrity are identified or knowledge of ecosystem processes increases, the manager takes timely, efficient and effective corrective actions; and,
- The manager remains mindful of the needs of future generations.

Pre-industrial forest: 1. A native forest which has not been subjected to large scale harvesting or other forms of human management. 2. A forest area such as existed prior to human settlement in the region occupied by the forest.

Protected area: An area protected by legislation, regulation, or land-use policy to control human occupancy or activity. Protection can be of many different forms. The International Union for the Conservation of Nature (IUCN) identified six main categories of protected areas.

Protected area network: The total network of places and locations protected by various means within a forest or an area, including riparian reserves, habitat reserves, parks, and all other protected areas.

Principle: An essential rule or element; in FSC's case, of forest stewardship.

Public Advisory Group (PAG): A committee with a diversity of interests that represents the public's views during forest management planning and implementation.

Public participation process: A formal process of public involvement. A public participation process ordinarily involves a defined membership, established ground rules, opportunities for interaction among participants and the provision for ongoing involvement. It may involve establishing a new process, building on an existing process or reviving and adapting a previously existing process. A public participation process is recommended on all forest lands, and is required on Crown lands.

Remote: Areas without motorized access because roads to the area are either non-existent, seasonal, closed, abandoned or re-vegetated.

Riparian area: 1. The area related to the bank or shore of a water body. 2. The area of forest having qualities influenced by proximity to a water body.

Sensitive sites: Sites with soils prone to erosion and/or nutrient loss as a result of normal management activities or natural disturbances. Sensitivity may be linked to human activity, disruption of water flow, alteration of stand structure or composition, or some other factor. For conducting forest operations, sensitive sites often include areas with steep slopes, shallow soils, or easily rutted soils.

Silviculture: The technique of producing and tending a forest by manipulating its establishment, composition and growth to best fulfill the objectives of the owner. This may, or may not, include timber production.

Sites of special cultural, ecological, economic, or religious significance: Include, but are not limited to, sites relating to or associated with the following:

- Ceremonial/Spiritual/Religious (e.g., vision/spirit quest area, repository for the dead, gathering place, sacred places);
- Traditional Oral History (e.g., origin of a story, legend);
- Cultural Landforms (e.g., named places, marker sites, legendary landforms);
- Supernatural Beings (e.g., supernatural areas);
- Transportation (e.g., grease trail, trading route, water route, portage area);
- Habitation (e.g., permanent village, seasonal residence, storage area);
- Recreational (e.g., gathering place, games or competition place);
- Cross-Cultural Interaction (e.g., first contact, trade with Europeans, or other Indigenous People(s); and,
- Education and Training (e.g., where traditional skills, values or knowledge are conveyed).

Species at Risk: Although this term is also used by COSEWIC, in this standard it is used in a more generic sense to refer to all species about which concern exists regarding their viability at regional, provincial, or a national scale and/or which were formerly referred to as rare, threatened or endangered.

Species diversity: The variety of different organisms at the species taxonomic level.

Stakeholder: An individual or organization with an interest in the state and/or management of a forest as a result of economic, social, spiritual or conservation-oriented ties to the forest.

Stand: A community of trees possessing sufficient uniformity in composition, constitution, age, arrangement or condition to be distinguishable from adjacent communities.

Steep slopes: Slopes with an incline such that normal forest operations would result, or would have the potential to result in moderate or severe erosion.

Structural diversity: The diversity of forest structure, both vertical and horizontal, that provides for a variety of forest habitats for plants and animals. The variety results from layering or tiering of the canopy and die-back, death, and ultimate decay of trees. In aquatic habitats, structural diversity results from the presence of a variety of structural features such as logs and boulders, that create a variety of habitats.

Structure: 1.The various horizontal and vertical physical elements of the forest. 2. In landscape ecology, the spatial inter-relationships between ecosystems including energy fluxes, distribution of materials and species relative to the sizes, shapes, numbers, kinds and configurations of the ecosystems. 3. The distribution of trees in a stand or group by age, size or crown classes (e.g., all even-aged, uneven-aged, regular, and irregular structures).

Subspecies: A taxonomic designation below the level of species. For some species there is considerable uncertainty between the distinctions between species, subspecies, genus and populations.

Succession: Progressive changes in the species composition and structure of a forest community caused by non-catastrophic natural processes (nonhuman) over time.

Surrounding lands: Lands which abut the management unit.

Tenure: Socially defined agreements held by individuals or groups, recognized by legal statutes or customary practice, regarding the "bundle of rights and duties" of ownership, holding, access and/or usage of a particular land unit or the associated resources there within (such as individual trees, plant species, water, minerals, etc).

Traditional Ecological Knowledge (TEK): An accumulated body of knowledge that is rooted in the spiritual health, culture, and experiences of those who are close to the lands. It is based on an intimate knowledge of the land, its physiographic and natural features, climate, and wildlife, and the relationships between all aspects of the environment. Although in many uses it refers to knowledge of Indigenous peoples, others with intimate knowledge and experience of the land also have developed traditional ecological knowledge.

Traditional use: The use of land or the pursuit of activities on a forest.

Tree: A tree is considered to be a woody perennial plant that grows to a height of at least 4.5m.

Unique ecosystems: Rare or uncommon ecosystems of any scale within the management unit or forest being considered for certification. For example, these may include disjunct ecological communities, breeding grounds of uncommon species, etc.

Use rights: Rights for the use of forest resources that can be defined by local custom, mutual agreements, or prescribed by other entities holding access rights. These rights may restrict the use of particular resources to specific levels of consumption or particular harvesting techniques.

Utilization: The amount of potentially merchantable timber on a site that is actually used.

Verifier: Data or information which provides specific details or measures which enhance the ease, specificity or precision of assessment of an indicator. In this Standard the Verifiers: noted are not mandatory means by which to assess indicators, but suggested or useful means.

Vertical structure: The amount and orientation of above-ground biomass in a stand or forest area.

Watershed: An area of land through which water drains into other streams or waterways via underground or surface streams and rivers.

Wetland: Lands transitional between terrestrial and aquatic systems where the water table is at or near the surface, or the land is covered by shallow water at some time during the growing season. Wetlands are characterized by poorly drained soils and predominantly hydrophilic or water tolerant vegetation.

Wildlife: Any species of amphibian, bird, fish, mammal and reptile found in the wild, living unrestrained or free roaming and not domesticated.

APPENDIX 1 CANDIDATE HCVS ON CBPPL'S DFA

Candidate HCV	Habitat	DFA Occurrence	Status Info	Risk From Forest Operations	Current Management	Comments	Decision
3. Does the forest include critical habitat containing globally, nationally or regionally <u>significant seasonal concentration of species</u> (one or several species, e.g., concentrations of wildlife in breeding sites, wintering sites, migration sites, migration routes or corridors – latitudinal as well as altitudinal)?							
Middle Ridge Wildlife Reserve	Upland plateau of extensive barrens, kalmia heaths, bogs, and fens which provides calving and wintering grounds for Woodland Caribou, and breeding grounds for a number of waterfowl species.	Adjacent; shares ~7km boundary	Protected Important Bird Area (IBA)	Negligible		Reserve is very large and only 6% of it borders on the DFA	**HCV**
Codroy Valley	Balsam fir forest mixed with yellow birch and mountain maple thickets; contains red crossbill and ovenbird	Separates Codroy Valley Estuary IBA from DFA	Important Bird Area (IBA)	No impact from forest operations on the DFA		At 8km from the DFA it is not close enough to be impacted.	**Not HCV**
Gros Morne National Park	Mountainous barrens, forest, and diverse coastal lowlands; provides calving and wintering grounds for Woodland Caribou.	Borders DFA	Protected Important Bird Area (IBA)	Remaining ecologically connected to its broader landscape	Protected		**HCV**
Codroy Valley Estuary	Important breeding and staging site for numerous waterfowl species	~ 7 km west of DFA	Important Bird Area (IBA)	No impact from forest operations on the DFA	Closed to hunting	At 7km from the DFA it is not close enough to be impacted.	**Not HCV**
Terra Nova National Park	Forested with black spruce, balsam fir, white birch, and tamarack; also features numerous lakes and upland plateau fens and bogs.	~ 27 km southeast of DFA	Protected	No impact from forest operations on the DFA	Protected	At 27km from the DFA it is not close enough to be impacted.	**Not HCV**
Cook's Marsh	Marsh valuable for	Part of DFA	N/A	Disturbance of	Conservation		**HCV**

Candidate HCV	Habitat	DFA Occurrence	Status Info	Risk From Forest Operations	Current Management	Comments	Decision
	waterfowl	just west of Corner Brook		habitat and nesting birds	agreements between DUC and CBPPL include wetland and associated upland areas.		
Upper Humber Wetlands Complex (Birchy Basin)	Reportedly has the highest known inland waterfowl breeding densities on the island of Newfoundland; important staging area for black duck	Inside the DFA in District 16	N/A	Disturbance of habitat and nesting birds	Conservation agreements between DUC and CBPPL include wetland and associated upland areas.		**HCV**
Long Island and The Narrows Properties	Important breeding habitat for dabbling ducks and Canada Geese	Adjacent to CBPPL managed lands in the Northwest Gander River area	N/A	Disturbance of habitat and nesting birds		No evidence of significant seasonal concentrations of species; can be dealt with through 5-Yr. Planning process	**Not HCV**
Barney's Brook Steadies	American black duck and Canada goose staging area	Appears to lie in forest management district 9	N/A			Insufficient information to assess	**Possible HCV**
Woodland Caribou *Rangifer tarandus*	Caribou prefer mostly barren land during the summer months, moving to areas of mixed forests during the colder months.	Eight herds on DFA: Gros Morne, Aides Pond, Hampden Downs, Gaff Topsails, Buchans, Mount Peyton, Pot Hill, and Middle Ridge	Populations in decline although not yet classified as at risk.	Can disturb calving areas, wintering areas, and travel corridors	Restrictions on harvesting in "core" areas and buffer areas, and during calving[38]	Provincial government is revising guidelines and the Canadian Boreal Forest Agreement is working on guidelines across Canada	**Habitat for Woodland Caribou HCV**
Atlantic Salmon	Spawn in freshwater	Throughout the	Not at risk	Spawning	Minimum 20m		**Habitat for**

[38] Forest Management Guidelines for Woodland Caribou (*Rangifer tarandus carbou*) for the Island of Newfoundland, 2007

Candidate HCV	Habitat	DFA Occurrence	Status Info	Risk From Forest Operations	Current Management	Comments	Decision
Salmo salar	streams, in gravel-bottom rapid areas above or below a pool	DFA		areas could be impacted by harvesting	buffers on streams, wider on spawning areas[39,40]		**Atlantic Salmon HCV**
4. Does the forest contain <u>critical habitat for regionally significant species</u> (e.g., species representative of habitat types naturally occurring in the management unit, focal species, or species declining regionally)?							
See Table 4 in Assessment Report							
5. Does the forest support concentrations of species at the edge of their natural ranges or outlier populations?							
Red Pine *Pinus resinosa*	Deep sands or gravel soils	Sandy Lake, Howley, Birchy Narrows, Birchy Lake, West Brook	Rare	Harvesting not permitted in red pine stands	No permits issued for red pine		**HCV**
White Pine *Pinus strobus*	Moist sandy soil	Particularly in Grand Lake South and Southwest Gander areas	Rare	Risk from scarring during road construction and harvesting operations	White pine protected		**HCV**
Yellow Birch *Betula alleghaniensis*	Variety of sites, often in association with balsam fir and other hardwoods	Bottom Brook	Rare	Access to yellow birch for firewood is increased when roads are built to harvest operations	None		**HCV**
Black Ash *Fraxinus nigra*	Wet sites along rivers or the margins of swamps	South of Bonne Bay; Bottom Brook	Rare	Negligible	None		**HCV**
Balsam Poplar *Populus balsamifera*	Found in association with white birch, balsam fir, and various willows and alders	Crabbes River (TCH) Lomond	Rare	Could possibly be cut for hog fuel	None	Insufficient information to assess	**Possible HCV**
Arctic Hare *Lepus arcticus*	Primarily in upland alpine forests, at elevations >1500m and in rugged topography	Possibly on DFA but not in commercial forest	Rare	None as do not occur in commercial forest	Protected only in Gros Morne National Park	Determined not HCV as there is no threat from	**Not HCV**

[39] Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Level Operations), 1998

[40] Policy for the Management of Fish Habitat, 1986

Candidate HCV	Habitat	DFA Occurrence	Status Info	Risk From Forest Operations	Current Management	Comments	Decision
						harvesting	
6. Does the forest lie within, or adjacent to, or contain a conservation area: a) designated by an international authority, b) legally designated or proposed by relevant federal/provincial/ territorial legislative body, or, c) identified in regional land use plans or conservation plans?							
Gros Morne National Park	Variety of habitats	Borders DFA	UNESCO World Heritage Site	Connectivity to broader landscape, Main River in particular			**HCVF**
Grand Codroy Estuary (Codroy Valley Estuary IBA)	Wetlands; important breeding and staging site for numerous waterfowl species	~7 km from the DFA	RAMSAR site	Forestry not listed as a threat	Closed to hunting	Well outside of the DFA	**Not HCVF**
Serpentine Lakes	Forest types of the region, subarctic and serpentine barrens habitats	Shares a 12 km boundary with DFA on the southeast corner	IBP Site				**HCVF**
Crooked Bog	Ombrotrophic bogs, oceanic raised bogs, fens and black spruce forest	Completely surrounded by DFA	IBP Site				**HCVF**
Brownmore Bog	Western blanket bogs	Completely surrounded by DFA	IBP Site				**HCVF**
Sandy Lake	Red pine forests	Completely surrounded by DFA and is bounded by the lake	IBP Site	Harvesting not permitted in red pine stands			**HCVF**
Grand Lake Brook	Rich fen indicator species	Completely surrounded by DFA	IBP Site				**HCVF**
Main River (Waterway Provincial Park and Special Management Area)	Watershed	Lies ~1km northeast of a small outlier parcel of DFA, and the southeastern	Canadian Heritage River Provincial Park/Special Management Area	None	Protected	DFA not adjacent to watershed and there is already a 49-km^2 special	**Not HCV**

Candidate HCV	Habitat	DFA Occurrence	Status Info	Risk From Forest Operations	Current Management	Comments	Decision
		tip is within ~2 km DFA				management area buffering the park	
Sandy Point (NCC)	Important beach system for providing nesting sites for Piping Plover, Common Tern and Arctic Tern It is the only breeding site in the Province for the Willet and is a roosting site for the Caspian Tern. Largest spartina salt marsh and one of the largest eel-grass beds in the province	Lies ~12 km north of the DFA	1,000 ha covering nearly all of Sandy Point is zoned as "Conservation" under the St. George's Municipal Plan.	None from CBPPL operations	No development is permitted that will exploit the natural resources of the area.		**Not HCVF**
The Grassy Place (NCC)	Wide grassy fluvial wetland, forested slopes, and sparsely vegetated mountaintops.	Lies ~10 km east of the DFA	Owned fee simple by NCC	None from CBPPL operations	NCC permits only low-impact historical uses such as hiking, hunting, and berry picking. Cutting and ATV use are prohibited.		**Not HCVF**
Lloyd's River (NCC)	Mature forest, fen, marsh and stream habitats	Lies ~48 km east of the DFA	Owned fee simple by NCC	None from CBPPL operations	NCC permits only low-impact historical uses such as hiking, hunting, and berry picking. Cutting and ATV use are prohibited.		**Not HCVF**
West Brook Ecological Reserve	Natural stands of red pine	Completely surrounded by DFA	Protected	None	Protected		**HCV**
Little Grand Lake Provisional Ecological Reserve	Protects extensive bogs and barrens, as well as mature boreal forest	Borders the DFA in two areas, total of ~ 70km	Protected	None	Protected		**HCV**
Little Grand Lake		Shares ~ 7km	Protected	None	Protected		**HCV**

Candidate HCV	Habitat	DFA Occurrence	Status Info	Risk From Forest Operations	Current Management	Comments	Decision
Wildlife Reserve		of boundary with DFA					
Middle Ridge Wildlife Reserve	Upland plateau of extensive barrens, kalmia heaths, bogs, and fens	Shares ~ 7 km of boundary with DFA	Protected	None	Protected		**HCV**
Flatwater Pond Provincial Park Reserve	Similar to surrounding forest	Completely surrounded by DFA	Protected	None	Protected		**HCV**
Jonathan's Pond Provincial Park Reserve	Preserves a majestic stand of white birch	Almost completely surrounded by DFA	Protected	None	Protected		**HCV**
Barachois Pond Provincial Park	Balsam fir forest with an understory of ferns and moss; some white pine	Shares ~3 km of boundary with the DFA	Protected	None	Protected		**HCV**
Sir Richard Squires Memorial Provincial Park	Larch, birch, fir and spruce	Completely surrounded by DFA	Protected	None	Protected		**HCV**
Trailway Provincial Park	Many of the Island's representative natural and scenic landscapes	Runs through the DFA	Protected	None	Protected		**HCV**
7. Does the forest constitute or form part of a globally-, nationally-, or regionally-significant forest landscape that includes populations of most native species and sufficient habitat such that there is a high likelihood of long-term species persistence?							
No large landscape-level forests.							**No HCV**
8. Does the forest contain naturally rare ecosystem types?							
Nothing identified by international agencies: Conservation International, WWF Ecoregion Conservation Assessments, or NatureServe. Atlantic Canada Conservation Data Centre doesn't yet have info on an ecosystem or community basis.							**No HCV**
9. Are there ecosystem types within the forest or ecoregion that have significantly declined?							
Sandy Lake Red Pine	Red pine	Within DFA	Rare	No permits are issued for red pine	No permits are issued for red pine		**HCV**
Grand Lake South White Pine	White pine, balsam fir, spruce	Within DFA	Rare	White pine protected	None	Area will never be harvested due to terrain and soil moisture	**HCV**
10. Are large landscape level forests (i.e., large, unfragmented forests) rare or absent in the forest or ecoregion?							
Bay D'Espoire 1							**HCVF**

Candidate HCV	Habitat	DFA Occurrence	Status Info	Risk From Forest Operations	Current Management	Comments	Decision
Bay D'Espoire 2							**HCVF**
Hampden Downs							**HCVF**
Cat Arm 1							**HCVF**
Cat Arm 2							**HCVF**
Little Codroy							**HCVF**
11. Are there nationally/regionally significant diverse or unique forest ecosystems?							
Serpentine areas: rare plant species located in openings where serpentine soil is exposed	Lightly forested, dominated by larch and white pine or by black spruce	North Arm Hills, Northwest Gander River near bridge on Bay D'Espoir Hwy	Rare plant species	Risk from construction of forest access roads	None		**HCV**
Limestone Areas: rare plant species not found on limestone barrens	Steep cliffs and the talus slopes underneath – not forested	South shore of Serpentine Lake; Goose Arm Area	Rare	Risk from construction of forest access roads	None		**HCV**
Red pine areas	Already covered in questions 1, 5, 6 & 9						
Riparian ecosystems	Significant areas would not be forested and would be within the buffers on the scheduled salmon rivers	Most significant areas: Upper Humber, Bottom Brook near the Burgeo turnoff, Harry's River, and Hughes Brook estuary		Riparian ecosystems could be compromised by forest operations with no restrictions	Minimum 20m buffers are required on all streams identified on 1:50,000 topographic maps and those greater than 1m wide[41]		**HCV**
12. Does the forest provide a significant source of drinking water?							
Thirty-eight Public Drinking Water Supplies servicing 32 communities		Within DFA	All legally protected except small portions of three	Negligible with management guidelines	Guidelines for Forestry Operations Within Protected Water Supply Areas[33]; Municipal Watershed Monitoring		**HCV**

[41] Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Level Operations), 1998

Candidate HCV	Habitat	DFA Occurrence	Status Info	Risk From Forest Operations	Current Management	Comments	Decision
					Committees		
13. Are there forests that provide a significant ecological service in mediating flooding and/or drought, controlling stream flow regulation, and water quality?							
Black Duck and Appleton are flood risk zones within DFA						No information to indicate that the harvested areas in these watersheds at any one time are large enough to have an effect on these flood zones	**Not HCV**
Stephenville, Steady Brook and Deer Lake are flood risk zones downstream of DFA						As above	**Not HCV**
14. Are there forests critical to erosion control?							
Slopes greater than 25 degrees (46%)		Throughout the DFA		Depending on the underlying material, mass movement of earth could occur	Generally slopes greater than 40% are not harvested. Infrequently, very small areas of slopes up to 45% are harvested.		**HCV**
15. Are there forests that provide a critical barrier to destructive fire (in areas where fire is not a common natural agent of disturbance)? The High Conservation Value Forest National Framework indicates that this question is not relevant in Canada.							**N/A**
16. Are there forest landscapes (or regional landscapes) that have a critical impact on agriculture or fisheries?							
Freshwater Fishes	Freshwater streams	Throughout the DFA	Banded Killifish are vulnerable		Minimum 20m buffers on streams, wider on spawning areas. A 30m no-grub zone is maintained around any		**HCV**

Candidate HCV	Habitat	DFA Occurrence	Status Info	Risk From Forest Operations	Current Management	Comments	Decision
					waterbody[42,43]		
Atlantic Salmon *Salmo salar*	Spawn in freshwater streams, in gravel-bottom rapid areas above or below a pool	Throughout the DFA	Not at risk	Spawning areas could be impacted by harvesting	Minimum 20m buffers on streams, wider on spawning areas. A 30m no-grub zone is maintained around any waterbod[34,35]		**HCV**
17. Are there local communities? Is anyone within the community making use of the forest for basic needs/ livelihoods?							
Recreation	Various habitats	Throughout the DFA		Harvesting could impact some aspects of recreation, i.e. viewscapes		Forest operations roads create access	**HCV**
Income from working in the forest		Throughout the DFA		None		Dependent on forest operations	**HCV**
Cutting timber for houses, wharves, stages, and boats		Throughout the DFA		None		Forest operations roads create access	**All HCV except timber for houses**
Firewood to heat homes and businesses		Throughout the DFA		None	Where markets exist, non-commercial tree species that are harvested should be brought to roadside[44]	Forest operations roads create access	**HCV**
Company roads to gain access to the wilderness for hunting, fishing, berry picking or tree species that		Throughout the DFA		None		Forest operations roads create access	**HCV**

[42] Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Level Operations), 1998
[43] Policy for the Management of Fish Habitat, 1986
[44] Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Level Operations), 1998

Candidate HCV	Habitat	DFA Occurrence	Status Info	Risk From Forest Operations	Current Management	Comments	Decision
are of no value for the paper mills.							
Cabins for pleasure, relaxation, and hunting		Throughout the DFA		Harvesting could impact viewscape	A minimum 50-metre, no-cut buffer is to be left between operations within approved cabin development areas.[45]	Forest operations roads create access	**HCV**
Sawlogs for local sawmills		Throughout the DFA		If not separated for sawmills, sawlogs could be used for pulpwood	CBPPL has Saw log exchange agreements to supply integrated sawmills with sawlogs		**HCV**
18. Is the traditional cultural identity of the local community particularly tied to a specific forest area?							
Burial Sites, Sacred Areas, Spirit Areas and Medicine Plants	Mostly along rivers and near ponds	In FMDs 6, 14, & 15	Generally not Protected	Unsure	The Historic Resources Division reviews Five-year Operating Plans to determine the location of historic resources; appropriate mitigation measures are then designed.[37]	Specific areas can be dealt with through the 5 Year Planning process	**HCV**
19) Is there a significant overlap of values (ecological and/or cultural) that individually did not meet HCV thresholds, but collectively constitute HCVs?							
There was no apparent overlap of values that would lead to new HCVS, and as most of the submitted values in this question were identified as HCVs, further analysis was unnecessary.							**No HCV**

[45] Environmental Protection Guidelines for Ecologically Based Forest Resource Management (Stand Level Operations), 1998

APPENDIX 2 INITIAL MEETINGS WITH STAKEHOLDERS/INTERESTED PARTIES

Stakeholder	Meeting Date	
	Introduction to FSC/HCVF	Submission of HCVFs
Western Environment Centre Simon Jansen	December 15, 2010	N/A
Grenfell Campus, MUN, Environmental Policy Unit Dr. Erin Kelly	December 15, 2010	N/A
Salmon Preservation Association for the Waters of Newfoundland (SPAWN) John McCarthy	January 11, 2011	N/A
Atlantic Salmon Federation Don Ivany	January 11, 2011	April 26, 2011
Humber Natural History Society Lois Bateman	January 14, 2011	N/A
International Appalachian Trails NL Paul Wylezol, Kevin Noseworthy	January 14, 2011	N/A
Model Forest of Newfoundland and Labrador Sean Dolter	January 14, 2011	N/A
Humber Valley Regional Planning Advisory Authority **Don Downer**	January 14, 2011	N/A
CBPPL Public Advisory Committee (See attendance list, meeting # 38)	January 19, 2011	N/A
Ducks Unlimited Canada Danielle Fequet	January 19, 2011	March 22, 201
NL Environment Network Chris Hogan	January 25, 2011	April 12, 2011
Canadian Parks and Wilderness Society/Coalition for Sustainable Forestry Dr. Ian Goudie	January 25, 2011	April 12, 2011
Sierra Club of Canada, Atlantic Canada Chapter Nicole Renaud	January 25, 2011	N/A
Protected Areas Association Ruth French, Doyle Wells, Valerie Simmons, Fanta Yao	January 25, 2011	N/A
Department of Natural Resources, St. John's Bill Clark, Rod Hillyard	January 25, 2011	N/A
Wildland Associates Bruce Roberts	January 25, 2011	N/A
Nature Conservancy of Canada Doug Ballam, Randal Greene, Daniel Myers	January 26, 2011	April 11, 2011
Salmonid Council of Newfoundland and Labrador Trevor Davis	January 27, 2011	N/A
Salmon Association of Eastern NL Dr. Larry Felt	January 27, 2011	N/A
Natural History Society of Newfoundland and Labrador Dr. Rita Anderson, Dr. Allan Stein, Dr. John Jacobs	January 27, 2011	April 11, 2011
Department of Natural Resources, St. Georges Jamie Kennedy, Dick Brake, Craig Stoyles, Mike Bennett, Paul Grenier	February 15, 2011	N/A
CBPPL Woodlands Staff	February 21, 2011	N/A
College of the North Atlantic First Year Forest Resource Technician Students	February 22, 2011	N/A

Newfoundland and Labrador Snowmobile Federation Donnie O'Keefe, Bruce Nichols	March 3, 2011	
Western Sno-Riders John Alteen, Joe Callaghan	March 3, 2011	
Newfoundland & Labrador Outfitters Association Keith Payne	March 11, 2011	
Department of Natural Resources Keith Deering, Ivan Downton, Dave Cheeks, Eric Young, Dave Poole, Basil English	March 22, 2011	
Hospitality Newfoundland and Labrador Todd Wight	March 29, 2011	
Federation of Newfoundland Indians Brendan Sheppard, Kevin ?, Roger Gallant	March 31, 2011	Sent their values - no second meeting
Town of Deer Lake Maxine Hayden (Mgr.), Councilors	May 9, 2011	
Gros Morne National Park Peter Deering, Tom Knight	May 24, 2011	

APPENDIX 3 CANDIDATE HIGH CONSERVATION VALUES SUBMITTED BY STAKEHOLDERS

Stakeholder	Value(s)	Corresponds to Framework Question	Decision
Ducks Unlimited Canada	Cook's Marsh	**3**. Significant seasonal concentration of species	HCV
	Birchy Basin		HCV
	Long Island Property		Not HCV
	The Narrows Property		Not HCV
	Barney's Brook Steadies		Possible HCV
Nature Newfoundland and Labrador (Formerly Natural History Society of Newfoundland and Labrador)	Landscape connectivity	**7.** Significant large landscape level forest, such that there is a high likelihood of long-term species persistence	HCV through large landscape level forest (being identified)
	Forest self-regeneration	**7.** Significant large landscape level forest, such that there is a high likelihood of long-term species persistence	HCV through large landscape level forest (being identified)
	Biodiversity	**3.** Significant seasonal concentration of species **6.** Conservation Areas	HCV through GMNP and all Provincial Parks and Reserves on DFA
	Ecological representation	**6.** Conservation Areas	HCV As above
	Ecological persistence	**7.** Significant large landscape level forest, such that there is a high likelihood of long-term species persistence	HCV through large landscape level forest (being identified)
	Arboreal lichens	**1.** Species at Risk or potential habitat of Species at Risk	HCV
	Newfoundland marten	**1.** Species at Risk or potential habitat of Species at Risk	HCV
	Caribou	**1.** Species at Risk or potential habitat of Species at Risk **3.** Significant seasonal concentration of species	HCV
	Salmonids	**16.** Critical impact on agriculture or fisheries	HCV
	Drinking Water	**12.** Significant source of drinking water	HCV
	Recreation	**17.** Fundamental to meeting basic needs of local communities	HCV
	Carbon	Does not fit into any of the questions, rather it is dealt with through Criteria 6.1, 6.3, 6.5, and 8.3 of the Boreal Standard; also	N/A

		through Appendix 3 of the Standard: International Agreements Ratified by Canada, Framework Convention on Climate Change.	
Nature Conservancy of Canada	Representative Forests	**6.** Conservation Areas	Specific conservation areas are designated HCV
	NCC Focal Areas: Sandy Point Lloyd's River Grassy Place Grand Codroy River Estuary	**6.** Conservation Areas	 Not HCV Not HCV Not HCV Not HCV
	Newfoundland Marten	**1.** Species at Risk or potential habitat of Species at Risk	HCV
	Riparian and Wetland Areas	**11.** Significant diverse or unique forest ecosystems	Riparian Ecosystems HCV
	Limestone and Serpentine Barrens	**7.** Significant large landscape level forest, such that there is a high likelihood of long-term species persistence	HCV through large landscape level forest (being identified)
	Piping Plover	**1.** Species at Risk or potential habitat of Species at Risk	Not on DFA so Not HCV
	Old Growth	**7.** Significant large landscape level forest, such that there is a high likelihood of long-term species persistence	HCV through large landscape level forest (being identified)
	Caribou	**1.** Species at Risk or potential habitat of Species at Risk **3.** Significant seasonal concentration of species	HCV
	Arboreal Lichens	**1.** Species at Risk or potential habitat of Species at Risk	Boreal Felt Lichen HCV Other arboreal lichens Possible HCV
Canadian Parks and Wilderness Society/ Coalition for Sustainable Forestry/ NL Environment Network	Old growth forest	**7.** Significant large landscape level forest, such that there is a high likelihood of long-term species persistence	HCV through large landscape level forest (being identified)
	Increased buffers Around parks/protected areas Riparian areas	**6.** Conservation Areas **11.** Significant diverse or unique forest ecosystems	Specific conservation areas are designated HCV HCV
	Caribou habitat	**3.** Significant seasonal	HCV

		concentration of species	
Atlantic Salmon Federation	Protection of critical salmon spawning habitat	**3.** Significant seasonal concentration of species **16.** Critical impact on agriculture or fisheries	HCV
Federation of Newfoundland Indians	Burial areas Sacred areas Spirit areas Medicine Plants	**18.** Traditional cultural identity of local community	HCV
Lew Hounsell	Corner Brook Watershed (drinking water supply)	**12.** Significant source of drinking water	HCV
Wilf Bartlett	Income from working in the forest	**17.** Fundamental to meeting basic needs of local communities	HCV
	Cutting timber for houses, wharves, stages, and boats		All HCV except timber for houses
	Firewood to heat homes and businesses		HCV
	Company roads to gain access to the wilderness for hunting, fishing, berry picking or tree species that are of no value for the paper mill.		HCV

APPENDIX 4 HIGH CONSERVATION VALUE FOREST ASSESSMENT COMMITTEE

Dr. Andre Arsenault	Forest Ecologist, Canadian Forest Service, Natural Resources Canada
Dr. Brian Hearn	Wildlife Ecologist, Canadian Forest Service, Natural Resources Canada
Dr. Erin Kelly*	Post-doctoral Fellow in Social Values in Forestry, Grenfell Campus, MUN
Dr. Blair Adams	Regional Ecologist, Newfoundland Department of Natural Resources
Dr. Ivan Emke**	Associate Professor, Social/Cultural Studies, Grenfell Campus, MUN
Tim Moulton	Planning and Development Superintendent, Corner Brook Pulp and Paper Ltd.
Faron Knott	Environmental Management Representative, Corner Brook Pulp and Paper Ltd.

Sean Dolter, Model Forest of Newfoundland and Labrador, facilitated the meetings.

Debbie Hearn, Hearn Consulting Inc., provided resources and recorded decisions for the HCVF Assessment Report.

*Dr. Kelly served on the Committee for the initial assessment of potential HCVFs. Dr. Kelly resigned from the Committee in July 2012.

**Dr. Emke joined the Committee in November 2012.

APPENDIX 5 POSSIBLE HIGH CONSERVATION VALUES

There are a number of “species at risk as listed by international, national or provincial authorities” that occur in insular Newfoundland. However, for some of these species, their occurrence on CBPPL limits is not clear so they have been identified as Possible HCV. Because there is a knowledge gap in their occurrence, habitat preference, food availability, etc., it is impossible to develop management strategies for their maintenance. These species and other candidate values have been included in the table below until enough information becomes available that they can be assessed.

Candidate Values	
Maritime Ambersnail	Oxyloma verrilli
Terre-nueve Vallonia	Vallonia terraenovae
Mountain Fern	Thelypteris quelpaertensis
Vole Ears	Erioderma mollissimum
Cutleaf Fleabane	Erigeron composites
Feathery False Solomon’s Seal	Maianthemum racemosum subsp.racemosum
Mountain Holly Fern	Polystichum scopulinum
Sharpleaf Aster	Ocelmena acuminate
Shaved Sedge	Carex tonsa var. tonsa
Other arboreal lichen	
Mosses except Bryum	
Montane Trematodon Moss	Trematodon montanus
Philonotis Moss	Philonotis yezoana
Shortleaf Small Limestone Moss	Seligeria brevifolia
Porpidia	
Barney’s Brook Steadies	Ducks Unlimited Canada candidate site
Balsam Poplar	Populus balsamifera

APPENDIX 6 VASCULAR PLANTS OCCURRING ON THE DFA THAT HAVE BEEN RANKED S1-S3 AT THE SUBNATIONAL (S) LEVEL IN THE GENERAL STATUS OF WILD SPECIES

Habitat Group **Common Name**	**Scientific Name**	**Srank 2010**	**General Status**	**Habitat Group(s)**
1. Shoreline/Aquatic (not usually in forest)				
tall scouring rush	Equisetum hyemale subsp. affine	S1	May be at risk	1
prostrate knotweed, doorweed	Polygonum aviculare	S1	May be at risk	1, 6, 7
thimbleweed, riverbank anemone	Anemone virginiana var. alba	S1	May be at risk	1
lake sedge	Carex lacustris	S1	May be at risk	1
stellate sedge	Carex radiata	S1	May be at risk	1
bald spike-rush, bald spikerush, spikesedge	Eleocharis erythropoda	S1	May be at risk	1
slender spikerush, quill spikerush	Eleocharis nitida	S1	May be at risk	1
Englemann's rush	Juncus subcaudatus	S1	May be at risk	1
southern mudwort	Limosella australis	S1	May be at risk	1
tufted loosestrife, swamp loosestrife	Lysimachia thyrsiflora	S1	May be at risk	1
leafy pondweed	Potamogeton foliosus subsp. foliosus	S1	May be at risk	1
bluntleaf pondweed	Potamogeton obtusifolius	S1	May be at risk	1
Robbins' pondweed	Potamogeton robbinsii	S1	May be at risk	1
Proserpinaca pectinata	Proserpinaca pectinata	S1	May be at risk	1
hooked crowfoot	Ranunculus recurvatus	S1	May be at risk	1
Broadleaf Arrowhead, wapato, duck potato	Sagittaria latifolia	S1	May be at risk	1
stalked bulrush	Scirpus pedicellatus	S1	May be at risk	1
slender wedgescale, early bunchgrass	Sphenopholis intermedia	S1	May be at risk	1
Tradescant's or shore aster	Symphyotrichum tradescantii	S1	At risk	1
twigrush	Cladium mariscoides	S1	May be at risk	1, 2
Labrador milkvetch	Astragalus alpinus var. brunetianus	S1	May be at risk	1, 3
fox sedge	Carex vulpinoidea	S1	May be at risk	1, 6, 7
capillary beakrush	Rhynchospora capillacea	SH	May be at risk	1
Farwell's watermilfoil	Myriophyllum farwellii	S1S2	May be at risk	1
Fries pondweed, flatstalk pondweed	Potamogeton friesii	S1S2	May be at risk	1
upland bent	Agrostis perennans	S2	May be at risk	1
northern waterstarwort	Callitriche hermaphroditica	S2	May be at risk	1
cyperus sedge	Carex pseudocyperus	S2	May be at risk	1
fireberry hawthorn, roundleaf hawthorn	Crataegus chrysocarpa var. chrysocarpa	S2	May be at risk	1
small waterwort	Elatine minima	S2	May be at risk	1
pale St. Johnswort	Hypericum ellipticum	S2	May be at risk	1
knotted rush	Juncus nodosus	S2	Sensitive	1
creeping rush	Juncus subtilis	S2	May be at risk	1
auricled twayblade	Listera auriculata	S2	May be at risk	1
spiked watermilfoil	Myriophyllum sibiricum	S2	Sensitive	1
whorled watermilfoil	Myriophyllum verticillatum	S2	Sensitive	1
nodding waternymph, slender naiad	Najas flexilis	S2	Sensitive	1
Kotezbue's grass-of-Parnassus	Parnassia kotzebuei	S2	Sensitive	1

Habitat Group **Common Name**	**Scientific Name**	**Srank 2010**	**General Status**	**Habitat Group(s)**
water smartweed	Persicaria amphibia	S2	May be at risk	1
large purple fringed orchid, large butterfly orchid	Platanthera grandiflora	S2	May be at risk	1
broadleaf pondweed	Potamogeton amplifolius	S2	Sensitive	1
northern snailseed pondweed	Potamogeton spirillus	S2	May be at risk	1
Ball's willow	Salix ballii	S2	Sensitive	1
threesquare, canemaker's rush	Schoenoplectus pungens	S2	Sensitive	1
great bulrush, softstem bulrush	Schoenoplectus tabernaemontani	S2	Sensitive	1
giant burreed	Sparganium eurycarpum	S2	May be at risk	1
floating burreed	Sparganium fluctuans	S2	May be at risk	1
sago pondweed	Stuckenia pectinata	S2	May be at risk	1
lanceleaf aster, panicled aster	Symphyotrichum lanceolatum var. lanceolatum	S2	May be at risk	1
purple bladderwort	Utricularia purpurea	S2	Sensitive	1
woolly blue violet	Viola sororia	S2	May be at risk	1
tall mannagrass	Glyceria grandis	S2	Sensitive	1, 2
Dudley's rush	Juncus dudleyi	S2	Sensitive	1, 2
purple false oats	Trisetum melicoides	S2	May be at risk	1, 2
tawny sedge	Carex hostiana	S2	Sensitive	1, 2, 5
New England sedge	Carex novae-angliae	S2	Sensitive	1, 7
bristly crowfoot	Ranunculus pensylvanicus	S2	May be at risk	1, 7
Indian Hemp, clasping leaf dogbane	Apocynum cannabinum	S2S3	Sensitive	1
black grass, saltmarsh rush	Juncus gerardii	S2S3	Sensitive	1
whitestem pondweed	Potamogeton praelongus	S2S3	Sensitive	1
woolgrass	Scirpus cyperinus	S2S3	Sensitive	1
American burreed	Sparganium americanum	S2S3	Sensitive	1
lesser brown sedge	Carex adusta	S2S3	Sensitive	1, 6
hay sedge	Carex foenea	S2S3	Sensitive	1, 6
leathery grapefern	Botrychium multifidum	S2S3	Sensitive	1, 7
blue skullcap, maddog skullcap	Scutellaria lateriflora	S2S3	Sensitive	1, 7
bayberry willow	Salix myricoides var. myricoides	S2S4	Undetermined	1, 3
necklace sedge	Carex projecta	S3	Sensitive	1
bulbous waterhemlock	Cicuta bulbifera	S3	Sensitive	1
marsh horsetail	Equisetum palustre	S3	Sensitive	1
winterberry	Ilex verticillata	S3	Sensitive	1
bayonet rush, jointed bog rush	Juncus militaris	S3	Secure	1
cutleaf bugleweed, waterhorehound	Lycopus americanus	S3	Sensitive	1
slender watermilfoil	Myriophyllum tenellum	S3	Sensitive	1
fragrant waterlily, water nymph	Nymphaea odorata subsp. odorata	S3	Sensitive	1
grass-leaf arrowhead; grassy arrowhead	Sagittaira graminea	S3	Secure	1
cottony willow, stiff willow	Salix eriocephala	S3	Sensitive	1
hardstem bulrush	Schoenoplectus acutus var. acutus	S3	Sensitive	1
water Parsnip	Sium suave	S3	Sensitive	1
freshwater cordgrass, sloughgrass	Spartina pectinata	S3	Sensitive	1
hiddenfruit bladderwort	Utricularia geminiscapa	S3	Sensitive	1
marsh speedwell	Veronica scutellata	S3	Sensitive	1
northern yelloweyed grass	Xyris montana	S3	Sensitive	1
fewflowered spikerush	Eleocharis quinqueflora	S3	Sensitive	1, 2

Habitat Group **Common Name**	**Scientific Name**	**Srank 2010**	**General Status**	**Habitat Group(s)**
marsh fern	Thelypteris palustris var. pubescens	S3	Sensitive	1, 2
northern bog violet	Viola nephrophylla	S3	Sensitive	1, 2, 3, 6
dogmint, wild basil	Clinopodium vulgare	S3	Sensitive	1, 3
variegated sedge	Carex stylosa	S3	Sensitive	1, 5
milky willowherb	Epilobium lactiflorum	S3	Sensitive	1, 5
northern speedwell	Veronica serpyllifolia subsp. humifusa	S3	Sensitive	1, 5, 6
goldenfruit sedge	Carex aurea	S3	Sensitive	1, 6, 7
white dock, seabeach dock	Rumex pallidus	SNR	Undetermined	1
2. Wetlands				
slenderleaf sundew	Drosera linearis	S1S2	May be at risk	2
close-sheathed cottongrass	Eriophorum brachyantherum	S2	May be at risk	2
fen grass-of-Parnassus	Parnassia glauca	S2	May be at risk	2
bog willow	Salix pedicellaris	S2	May be at risk	2
autumn willow	Salix serissima	S2	May be at risk	2
newfoundland dwarf birch	Betula michauxii	S3	Secure	2
green addersmouth	Malaxis unifolia	S3	Sensitive	2
pod grass, marsh scheuchzeria, rannoch rush	Scheuchzeria palustris	S3	Sensitive	2
curly-grass fern	Schizaea pusilla	S3	Sensitive	2
northern eyebright	Euphrasia disjuncta	SNR	Undetermined	2
3. Cliffs and Talus Slopes				
maidenhair spleenwort	Asplenium trichomanes subsp. trichomanes	S1	May be at risk	3
rock dwelling sedge	Carex petricosa var. misandroides	S1	May be at risk	3
pendantpod oxytrope	Oxytropis deflexa var. foliolosa	S1	May be at risk	3
Laurentian dandelion	Taraxacum laurentianum	S1	May be at risk	3
alpine cliffbrake, northern woodsia	Woodsia alpina	S1S2	May be at risk	3
prolific fescue, proliferous red fescue	Festuca prolifera	S1S3	Sensitive	3
cutleaf anemone, cliff anemone	Anemone multifida var. multifida	S2	Sensitive	3
bulblet bladder fern	Cystopteris bulbifera	S2	May be at risk	3
yellow mountain avens, Drummond's dryad	Dryas drummondii	S2	May be at risk	3
Rocky Mountain fescue	Festuca saximontana subsp. saximontana	S2	Sensitive	3
serpentine sandwort, dryleaf sandwort	Minuartia marcescens	S2	Sensitive	3
coastal cinquefoil	Potentilla pensylvanica var. litoralis	S2	Sensitive	3
spreading Dogbane	Apocynum androsaemifolium	S2S3	Sensitive	3
Steller's rockbrake	Cryptogramma stelleri	S2S3	Sensitive	3
limestone oak fern	Gymnocarpium robertianum	S2S3	Sensitive	3
arctic bladderpod	Lesquerella arctica	S2S3	Sensitive	3
white addersmouth, Northern white addersmouth	Malaxis monophyllos var. brachypoda	S2S3	Sensitive	3
alpine ragwort; alpine groundsel	Packera pauciflora	S2S3	Sensitive	3, 5
Lapland rosebay	Rhododendron lapponicum	S2S3	Sensitive	3
smooth cliffbrake	Woodsia glabella	S2S3	Sensitive	3
Aleutian madienhair fern	Adiantum aleuticum	S3	Sensitive	3
alpine Pussytoes	Antennaria alpina	S3	Sensitive	3

Habitat Group **Common Name**	**Scientific Name**	**Srank 2010**	**General Status**	**Habitat Group(s)**
pulvinate pussytoes	Antennaria rosea subsp. pulvinata	S3	Sensitive	3
bristleleaf sedge	Carex eburnea	S3	Sensitive	3
rock sedge	Carex rupestris	S3	Sensitive	3
Newfoundland chickweed	Cerastium beeringianum	S3	Sensitive	3
Sitka clubmoss, tufted groundceder	Diphasiastrum sitchense	S3	Sensitive	3
rockcress whitlowgrass	Draba arabisans	S3	Sensitive	3
viviparous fescue	Festuca frederikseniae	S3	Sensitive	3
alpine sweetvetch	Hedysarum alpinum	S3	Sensitive	3
4. Forest (at least occasionally, including openings and cutovers)				
Menzies' rattlesnake plantain	Goodyera oblongifolia	S1	May be at risk	4
tapering sweetcicely	Osmorhiza berteroi	S1	May be at risk	4
small roundleaf orchid, one leaf orchid	Amerorchis rotundifolia	S2	May be at risk	2, 4
pipsissewa, prince's pine	Chimaphila umbellata	S2	May be at risk	4
Carolina spring beauty	Claytonia caroliniana	S2	Sensitive	1, 4
blunt sweetcicely	Osmorhiza depauperata	S2	May be at risk	4
red pine	Pinus resinosa	S2	May be at risk	4
hollyfern	Polystichum lonchitis	S2	May be at risk	3, 4
Macoun's buttercup	Ranunculus macounii	S2	May be at risk	1, 4, 6, 7
Fernald's false mannagrass	Torreyochloa pallida var. fernaldii	S2	May be at risk	1, 2, 4, 7
northern valerian, marsh valerian	Valeriana dioica subsp. sylvatica	S2	May be at risk	2, 4
Selkirk's violet, great spurred violet	Viola selkirkii	S2	Sensitive	1, 3, 4, 5
woodland agrimony, roadside agrimony	Agrimonia striata	S2S3	Sensitive	1, 4, 6
forest bluegrass, weak meadowgrass	Poa saltuensis	S2S3	Sensitive	1, 4, 6
thinstemmed lady's mantle	Alchemilla filicaulis subsp. filicaulis	S3	Undetermined	1, 3, 4, 5, 7
dwarf mistletoe	Arceuthobium pusillum	S3	Secure	4
Yellow Birch	Betula alleghaniensis	S3	Secure	4
northern shorthusk	Brachyelytrum septentrionale	S3	Sensitive	1, 4
graceful sedge	Carex gracillima	S3	Sensitive	1, 4
pale sedge	Carex pallescens	S3	Sensitive	1, 4, 5, 7
longstalked sedge	Carex pedunculata	S3	Sensitive	1, 4
alternateleaf dogwood, green osier	Cornus alternifolia	S3	Sensitive	1, 4
showy ladyslipper, queen lady's-slipper	Cypripedium reginae	S3	Sensitive	2, 4
bog willowherb	Epilobium leptophyllum	S3	Sensitive	2, 4
meadow horsetail	Equisetum pratense	S3	Sensitive	
black ash	Fraxinus nigra	S3	Sensitive	3, 4
northern wild licorice	Galium kamtschaticum	S3	Sensitive	4, 5
checkered rattlesnake plantain	Goodyera tesselata	S3	Sensitive	4
pinesap, false beechdrops	Monotropa hypopitys	S3	Sensitive	4
whitegrain mountainrice	Oryzopsis asperifolia	S3	Sensitive	4
interrupted fern	Osmunda claytoniana	S3	Sensitive	1, 4, 6
Arctic sweet coltsfoot	Petasites frigidus var. palmatus	S3	Sensitive	2, 4
eastern white pine	Pinus strobus	S3	Sensitive	4
plumboy, arctic bramble	Rubus arcticus subsp. acaulis	S3	Sensitive	3, 4
lapland dandelion	Taraxacum lapponicum	S3	Sensitive	1, 4, 5, 7
Canada yew, American yew, ground-hemlock	Taxus canadensis	S3	Sensitive	4
nodding trillium, nodding wake-robin	Trillium cernuum	S3	Secure	1, 4

Habitat Group **Common Name**	**Scientific Name**	**Srank 2010**	**General Status**	**Habitat Group(s)**
kidneyleaf violet	Viola renifolia	S3	Sensitive	3, 4
5. Alpine /Subalpine				
Lapland buttercup	Ranunculus lapponicus	SH	May be at risk	5
arctic willow	Salix arctica	S2	Sensitive	5
alpine fescue, shortleaf fescue	Festuca brachyphylla subsp. brachyphylla	S2S3	Sensitive	5
blue mountainheath	Phyllodoce caerulea	S2S3	Sensitive	5
6. Roadsides and Ditches				
haysented fern	Dennstaedtia punctilobula	S1	May be at risk	6
mosquito bulrush	Scirpus hattorianus	S3	Sensitive	6

AT RISK ON THE ISLAND OF NEWFOUNDLAND

NAME		CONSERVATION STATUS			PRESENCE	
	Scientific Name	Global	National SARA *COSEWIC Recommended*	Provincial ESA *SSAC Recommended*	Habitat on DFA?[1]	Species Found on DFA?[1]
	Martes americana atrata	Endangered	Threatened	Threatened	Yes	**Yes**
	Myotis lucifugus		*Endangered*		Yes	**Yes**
	Myotis septentrionalis		*Endangered*		Yes	**Yes**
	Hirundo rustica		*Threatened*		Possible	Unlikely
	Bucephala islandica		Special Concern	Vulnerable	Yes	**Yes**
	Dolichonyx oryzivorus			*Vulnerable*	Possible	Unlikely
	Chaetura pelagica		Threatened	Threatened	Yes	No
	Chordeiles minor		Threatened	Threatened	Yes	No
	Numenius borealis		Endangered	Endangered	No	No
	Catharus minimus			Vulnerable	Yes	No
	Falco rusticolus	Endangered			Yes	No
	Histrionicus histrionicus		Special Concern	Vulnerable	Yes	**Yes**
	Pagophila eburnea		Endangered	Endangered	Yes	**Yes**
Thrush[2]	*Catharus minimus minimus*			*Threatened*	Yes	**Yes**
	Accipiter gentilis		Threatened	*S3B*	Yes	**Yes**
	Lanius excubitor			*S3N*	Yes	**Yes**
	Contopus cooperi		Threatened	Threatened	Yes	**Likely**
	Falco peregrinus subsp. *tundrius*		Special Concern	Vulnerable	No	No
	Falco peregrinus subsp.*anatum*	Endangered	Threatened	Vulnerable	Yes	**Yes**
	Charadrius melodus melodus		Endangered	Endangered	Yes	**Yes**

Rusty Blackbird[2,4]	*Euphagus carolinus*		Special Concern	Vulnerable	Yes	**Yes**
Sharp-shinned Hawk	*Accipiter striatus*			S3B	Yes	**Yes**
Short-eared Owl[2,4]	*Asio flammeus*		Special Concern	Vulnerable	Yes	**Yes**
Song Sparrow	*Melospiza melodia*			S3B	Yes	**Yes**
Winter Wren	*Troglodytes troglodytes*			S3S4B	Yes	**Yes**
Fishes						
American Eel[2,4]	*Anguilla rostrata*		*Threatened*	Vulnerable	Yes	Yes
Atlantic Salmon[4] (South Nfld Pop'n)	*Salmo salar*		*Threatened*		No	Unlikely
Banded Killifish[2,4]	*Fundulus diaphanus*		Special Concern	Vulnerable	Yes	Yes
Molluscks						
Maritime Ambersnail[5]	*Oxyloma verrilli*	G1G2		Not Ranked	Unknown	Unknown
Terre-nueve Vallonia[5]	*Vallonia terraenovae*	G1		Not Ranked	Unknown	Unknown
Vascular Plants						
Alaska Rein Orchid[2]	*Plantanthera foetida*	G5		*Endangered*/S1	Unknown	No
Baltic Saltbrush[5]	*Atriplex nudicaulis*	G1	N1	S1S2	No	No
Barrens Willow[2,5]	*Salix jejuna*	G1G2	Endangered	Endangered	No	No
Bodin's Milkvetch[2]	*Astragalus bodinii*	G4		*Threatened* / S1	No	No
Crowded Wormseed Mustard[2]	*Erysimum inconspicuum* var. *coarctatum*	G5T2	Not rated / N2	Endangered	Possible	No
Cutleaf Fleabane[2]	*Erigeron compositus*	G5	Not assesed/N5	*Endangered*/S1	Yes	Possible
Dense Whitlow-grass[5]	*Draba pycnosperma*	G2	N1[5]	SH	Unknown	No
Feathery False Solomon's Seal[2]	*Maianthemum racemosum* subsp.*racemosum*	G5T5		*Endangered*	?	Possible?
Fernald's Braya[2,5]	*Draba pycnosperma*	G2	Threatened	Threatened	No	No
Fernald's Milk-vetch[4]	*Astragalus robbinsii* var. *fernaldii*		Special Concern	Vulnerable	No	No
Gmelin's Watercrowfoot[2]	*Ranunculus gmelinii*	G5T5		*Endangered*/S1	Probably	No
Griscom's Arnica[4]	*Arnica griscomii* subsp. *griscomii*			*Endangered*	Unlikely	No
Laurentian Dandelion[6]	*Taraxacum laurentianum*				Unknown	Possible?
Lindley's Aster[2]	*Symphyotrichum ciliolatum*			*Endangered*	Possible	Unknown
Long's Braya[2,5]	*Braya longii*	G1	Endangered	Endangered	No	No
Low Northern Rockcress[2]	*Neotorularia humilis*		N?	Endangered	No	No
MacKenzie's Sweet Vetch[2]	*Hedysarum boreale* subsp. *Mackenzii*	G5T5	Not listed / N5?	*Endangered*/S1	No	No
Mountain Fern[2]	*Thelypteris quelpaertensis*	G4	Not rated / N3	Vulnerable / S1	Possible	No

Mountain Holly Fern[4]	*Polystichum scopulinum*		Threatened		Yes	Possible
Northern Bog Aster[2]	*Symphyotrichum boreale*	G5	Not listed / N5	Endangered/S1	Unknown	No
Oval-leaf Creeping Spearwort[2]	*Ranunculus flammula* var*. ovalis*			Endangered	No	No
Rattlesnakeroot[2]	*Prenanthes racemosa*	G5	Not listed / N5	Endangered/S1	Unknown	No
Robinson's Hawkweed[5]	*Hieracium robinsonii*	G2G3		SH	Possible	No
Rock Dwelling Sedge[2]	*Carex petricosa* var*. misandroides*			*Endangered*/S1	Yes	**Yes**
Serpentine Stitchwort[5]	*Minuartia marcescens*	G2G3	Not At Risk	S2S3	Yes	**Yes**
Sharpleaf Aster[2]	*Ocelmena acuminata*	G5		*Threatened* / S1	Unknown	Possible?
Shaved Sedge[2]	*Carex tonsa* var. *tonsa*	G5T4T5	As above	*Threatened* / S1	Yes	Possible?
Tradescant's Aster[2]	*Symphyotrichum tradescantii*	G4Q		*Threatened* / S1	Yes	**Yes**
Upward-lobed Moonwort	*Botrychium ascendens*	G2G3	May be at risk	S1	Possible	Possible?
Vreeland's Striped Coralroot[2]	*Corallorhiza striata* var. *vreelandii*	G5TNR		*Endangered/S1*	Yes	Possible
Wooly Arnica[2]	*Arnica augustifolia* subsp. *tomentosa*			*Endangered*	Unlikely	No
Water Pygmyweed[2]	*Tillaea aquatica*	G5		*Vulnerable*	No	No
Mosses						
Porsild's Bryum[2,5]	*Mielichhoferia macrocarpa*	G2G3	Threatened	Threatened	No	No
	Tayloria splachnoides[5]	G2G3			Possibly	No
	Tetrodontium repandum[5]	G2G3			Possibly	No
	Seligeria brevifolia[5]	G2G3			Likely	Possible
	Philonotis yezoana[5]	G2G3	NNR	S1	Likely	Likely
	Trematodon montanus[5]	G1	N1	S1	Possibly	No
	Pohlia Sphagnicola[5]	G2G3	NNR	S2	Unknown	Unknown
Lichens						
Blue Felt Lichen[4]	*Degelia plumbea*		*Special Concern*		Yes	Possible
Boreal Felt Lichen[2,4,5,7]	*Erioderma pedicellatum*	G1G2Q	Special Concern	Vulnerable	Unlikely	No
Vole Ears	*Erioderma mollissimum*	G4G5		*Endangered*	Unlikely	No
	Pordidia herteliana[5]	G2G3			Unknown	No

[1] Confirmed by NL Wildlife Division Personnel: Shelley Moores, Emily Herdman, Susan Squires, Claudia Hanel

[2] SSAC Species Status Reports

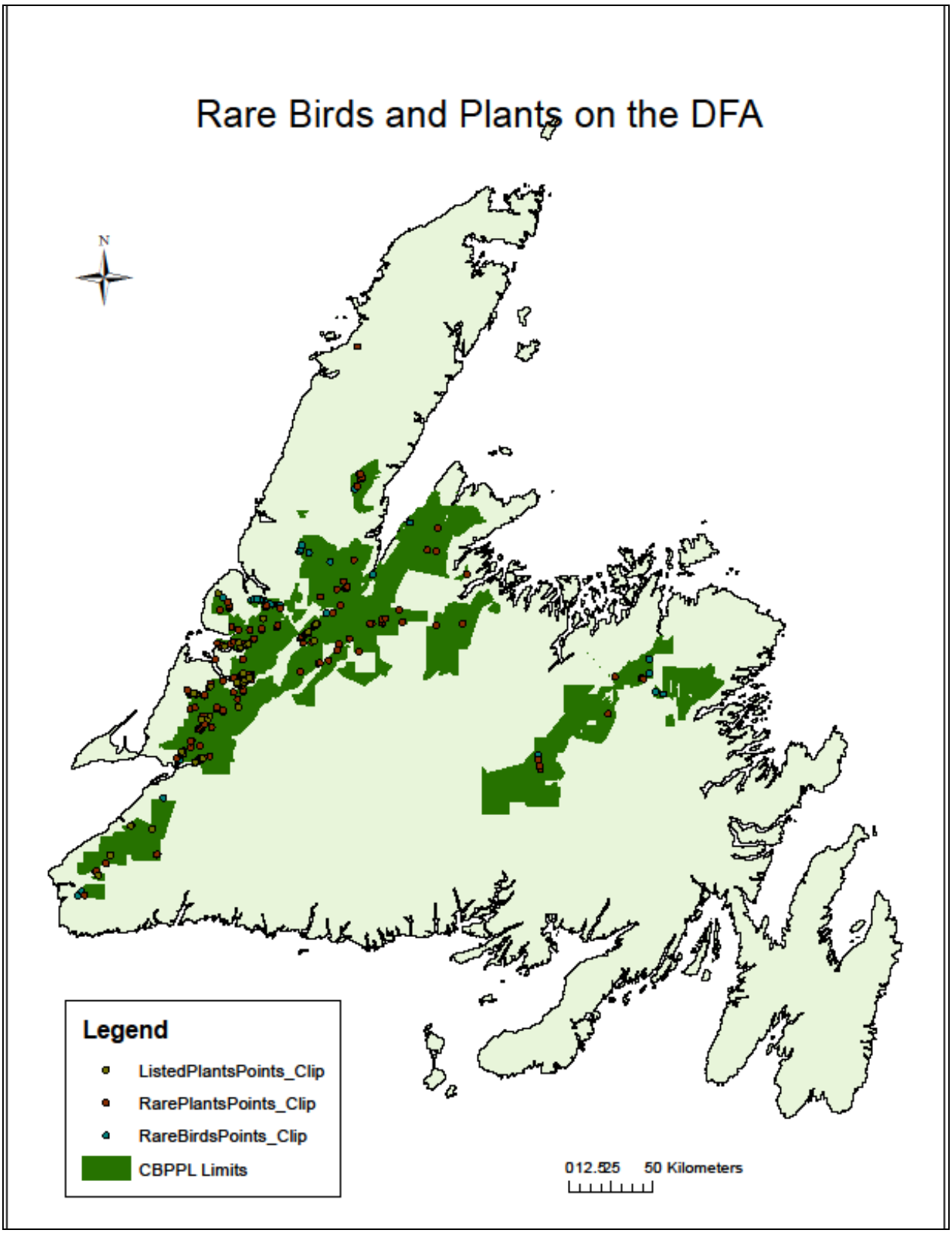
[3] CITES (http://www.cites.org/eng/app/appendices.shtml) Valid from June 24, 2010. Accessed September 16, 2010.

[4] COSEWIC

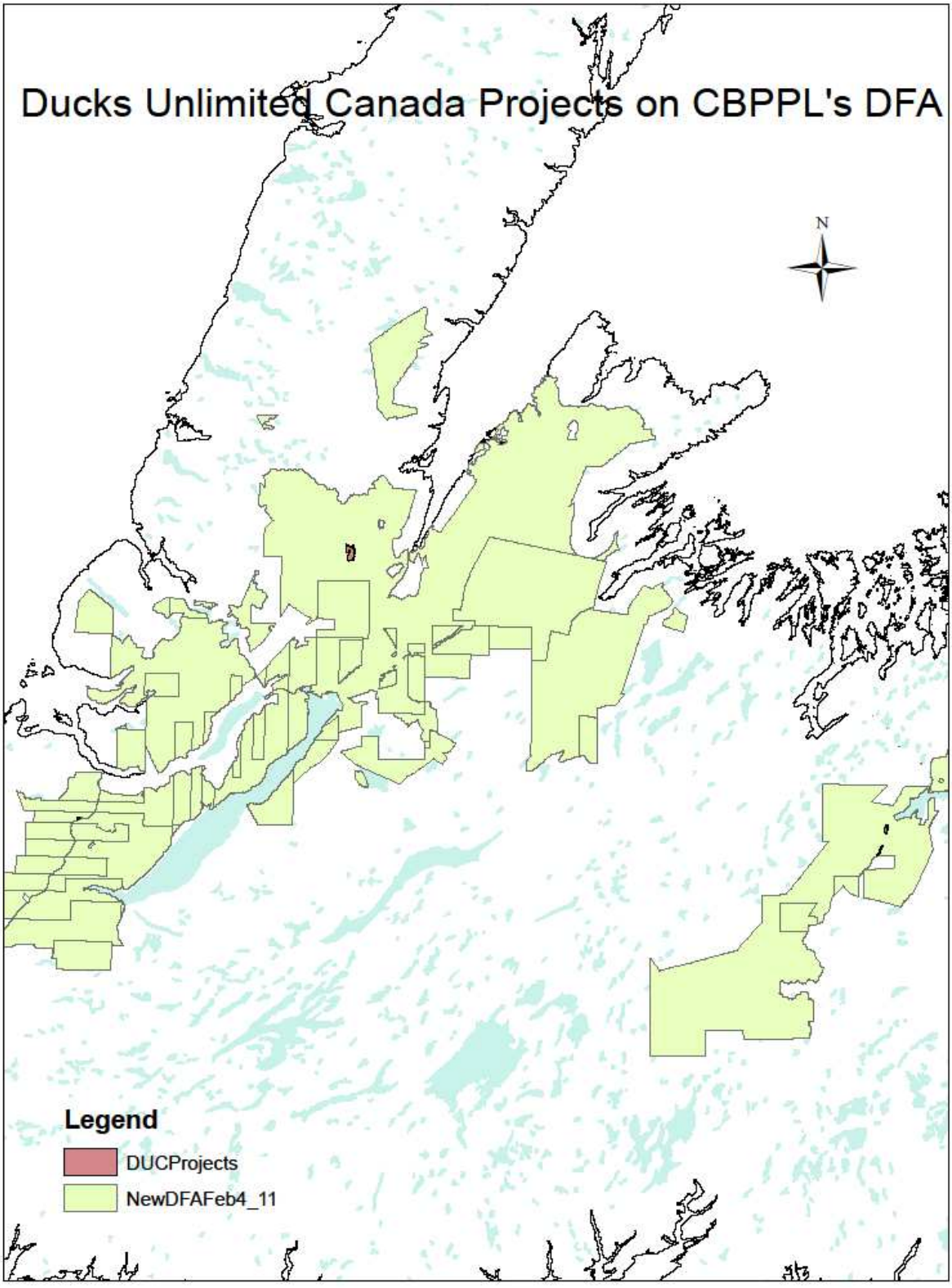
[5] NatureServe Explorer
[6] Atlantic Canada Conservation Data Centre
[7] IUCN Red List

Note: All species and ecological community data presented in NatureServe Explorer at http://www.natureserve.org/explorer were updated to be current with NatureServe's central databases as of ***January 2013****.*

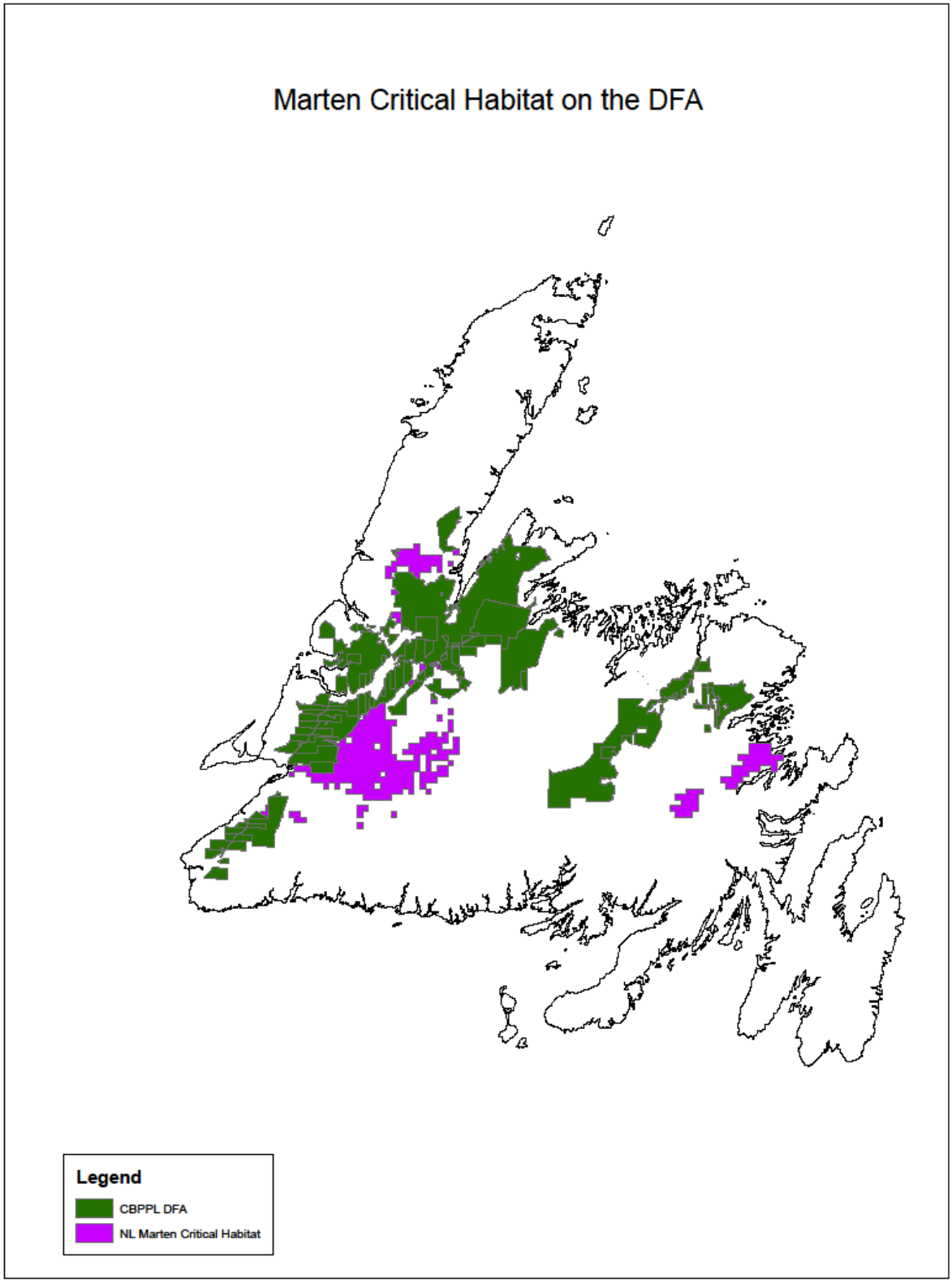
APPENDIX 8 MAPS OF HIGH CONSERVATION VALUES



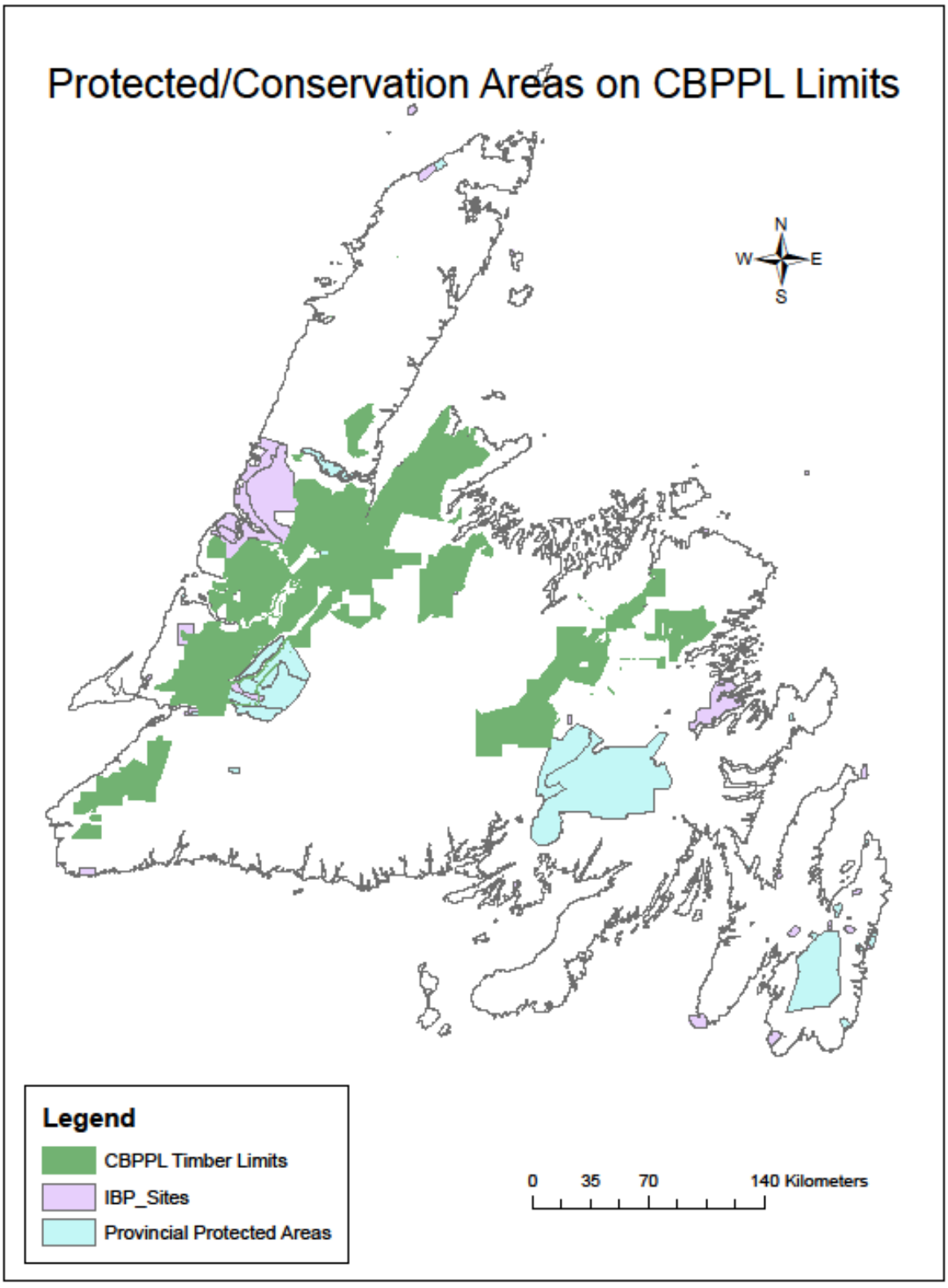
Map1 Rare birds and rare and listed plants on the DFA as determined on February 21, 2010.



Map 2 Duck Unlimited Canada projects on the DFA.

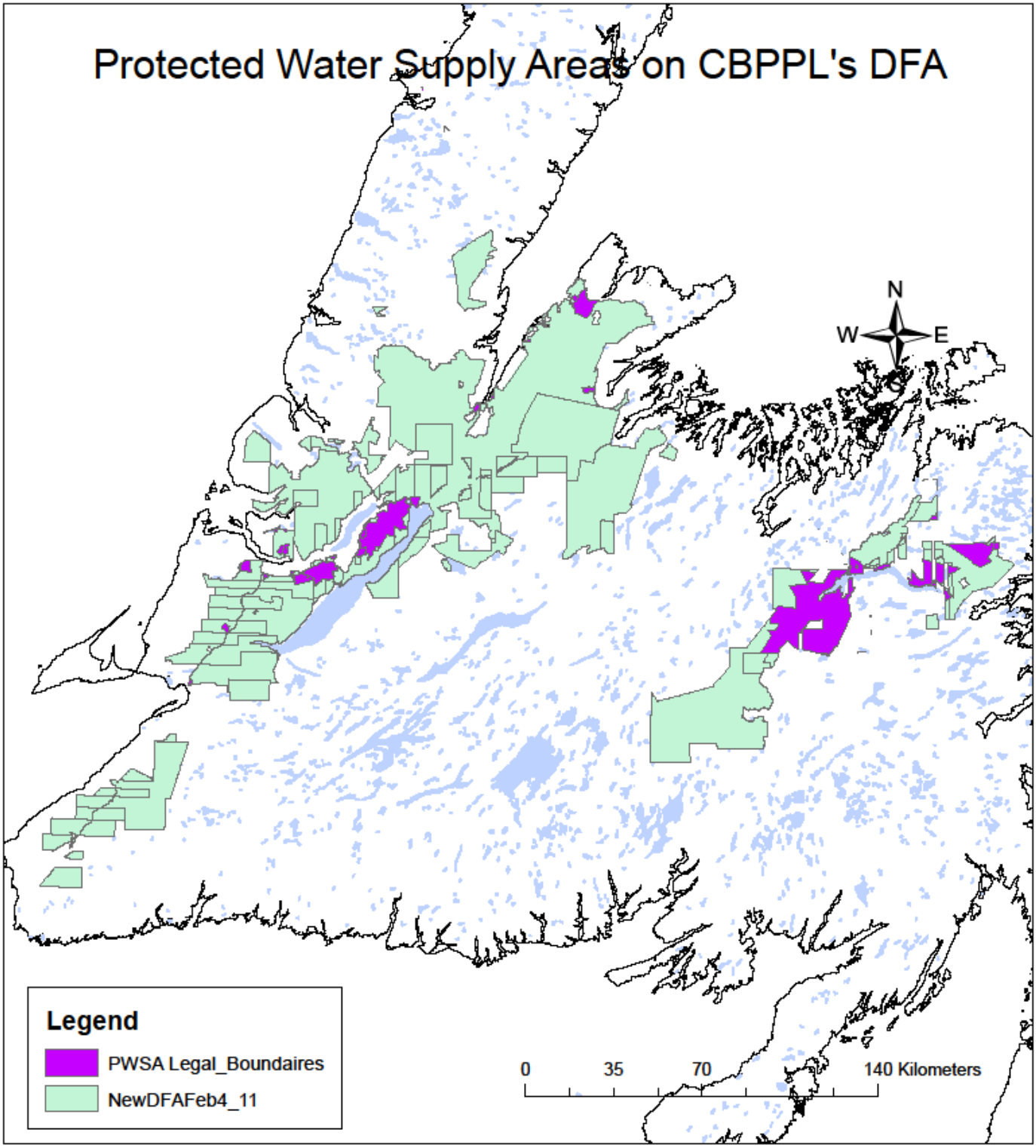


Map 3 Newfoundland Marten critical habitat on the DFA.

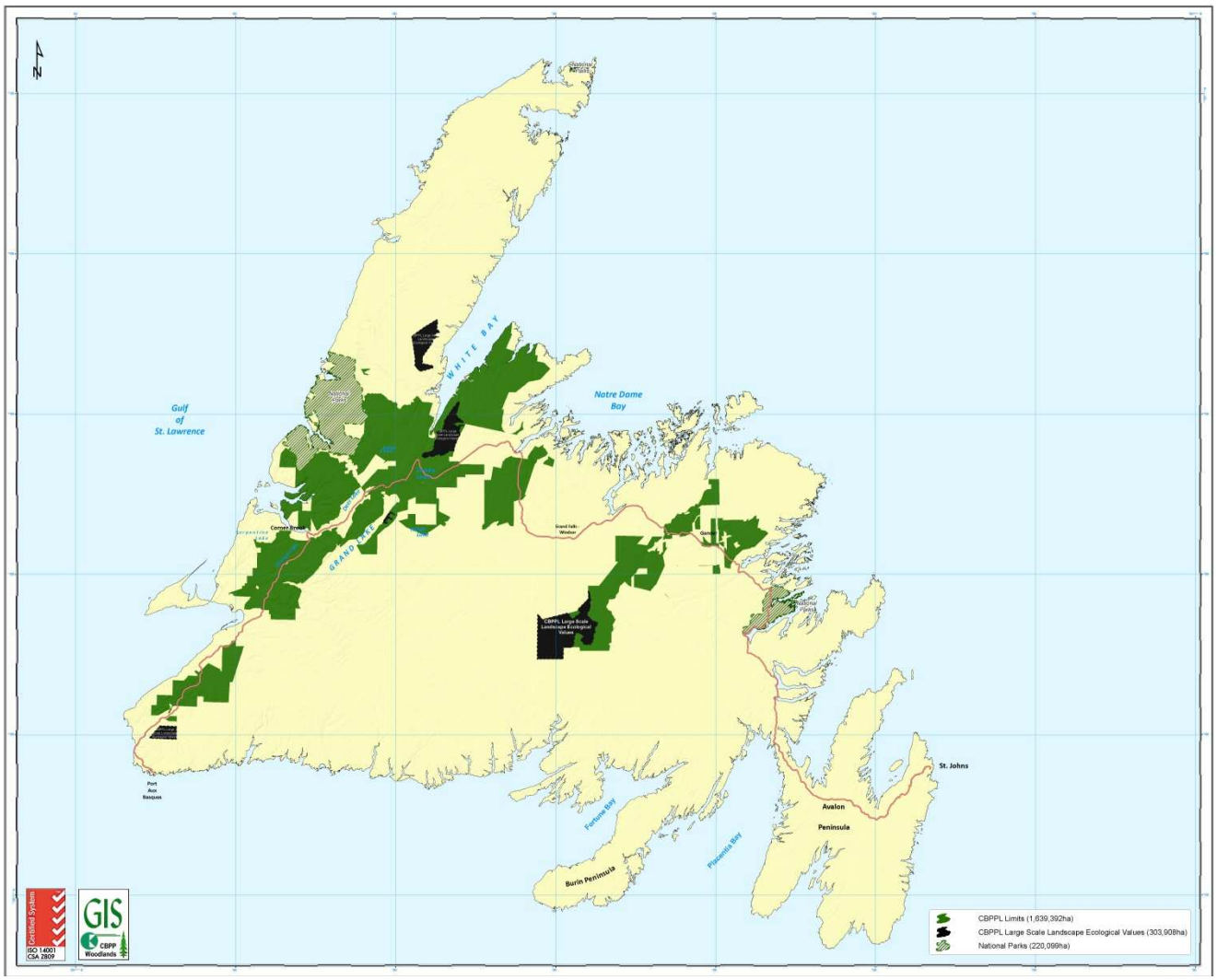


Map 4 Protected and conservation areas on the DFA.

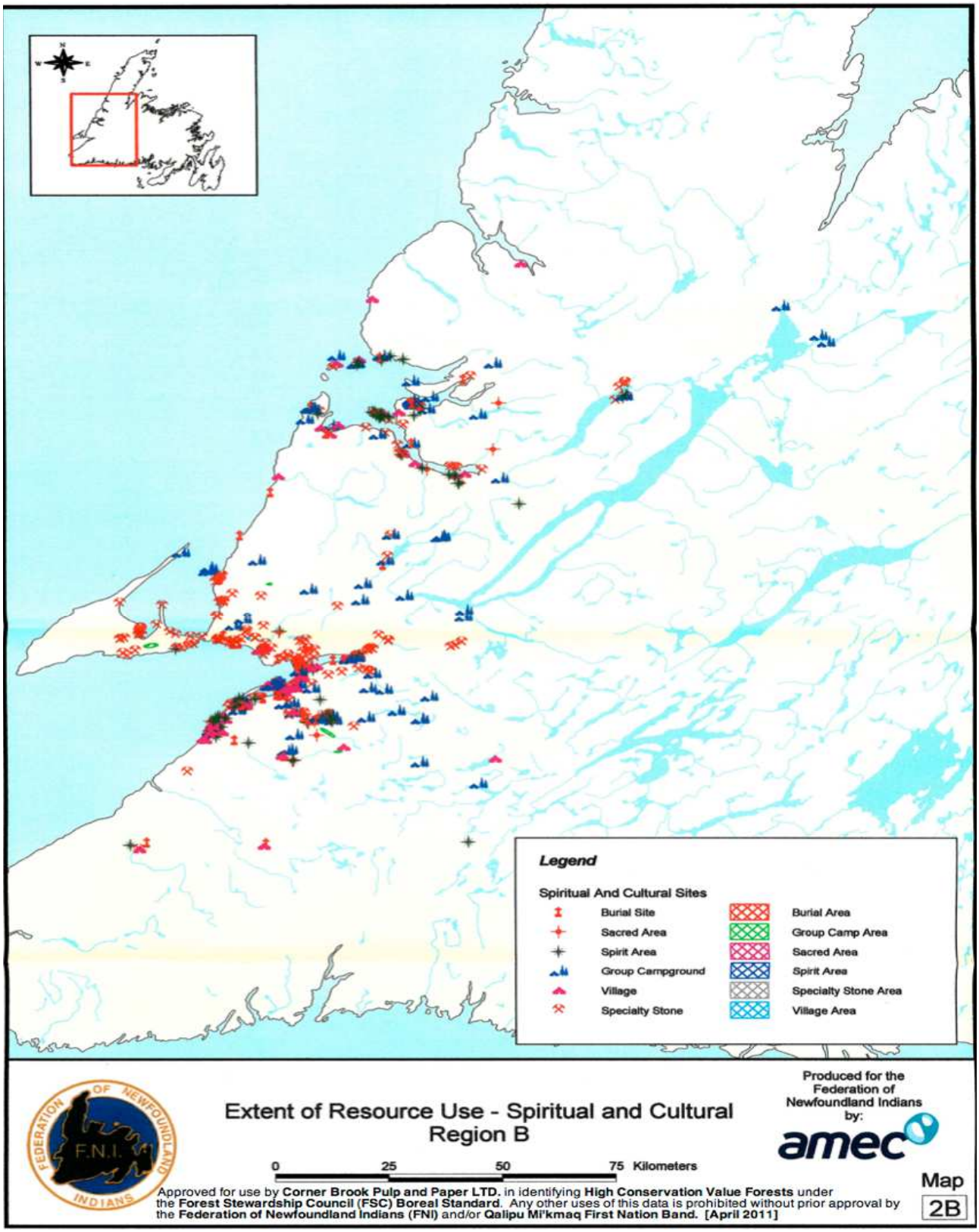
More specific locations of these areas can be seen in a presentation on biodiversity and protected areas in Newfoundland, on the Woodlands network.



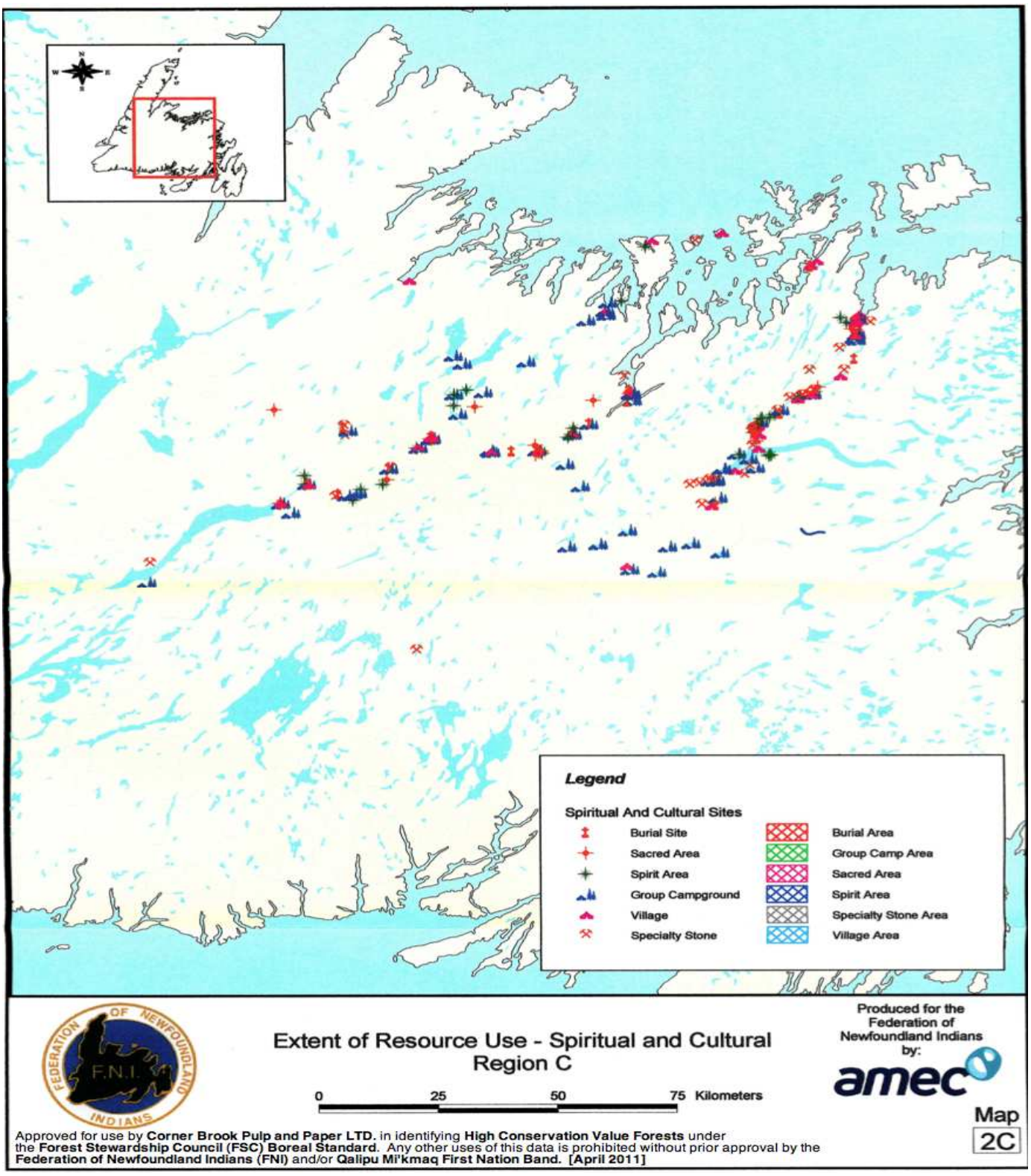
Map 5 Protected Water Supply Areas on the DFA.



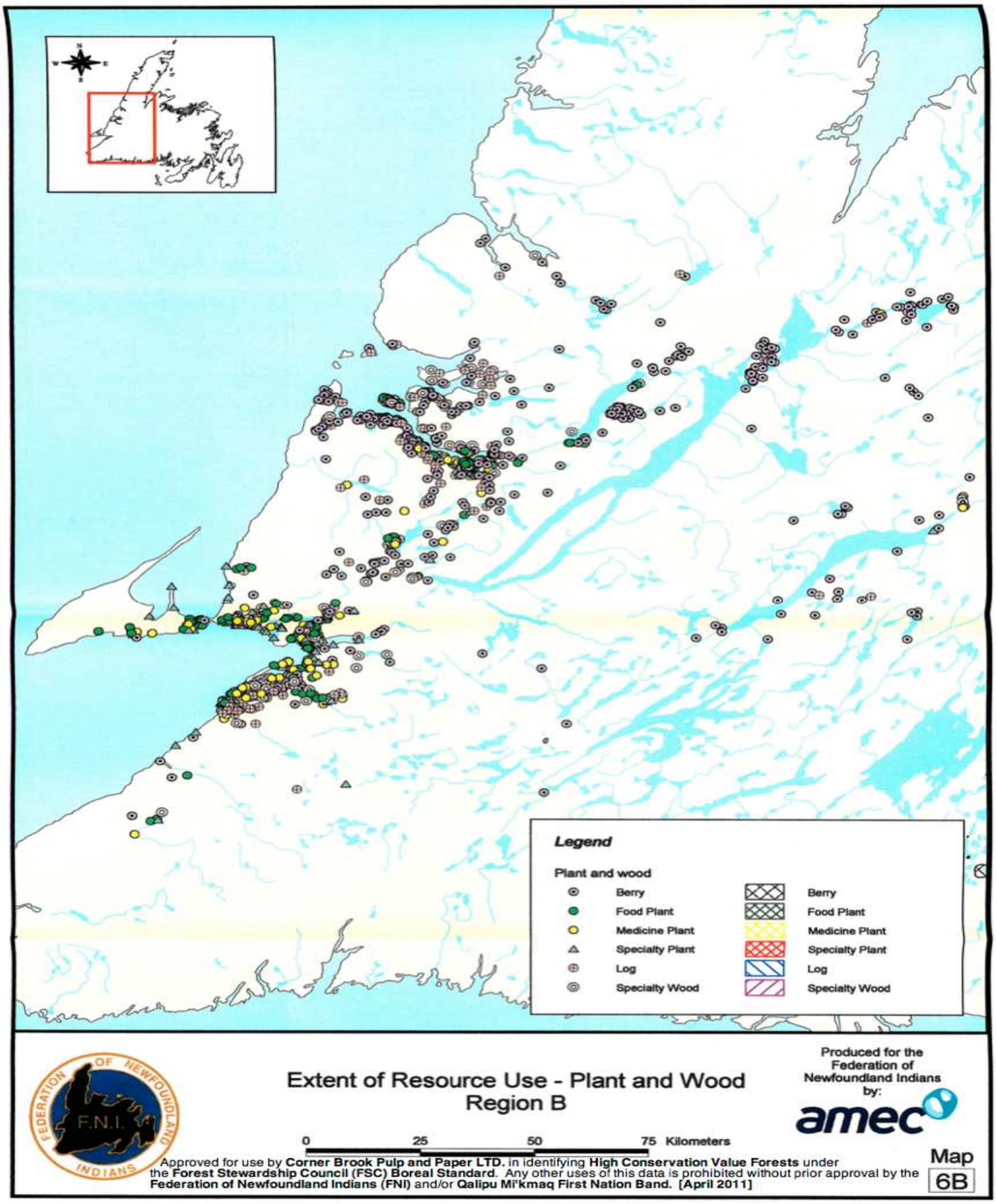
Map 6 Intact forest areas on the DFA.



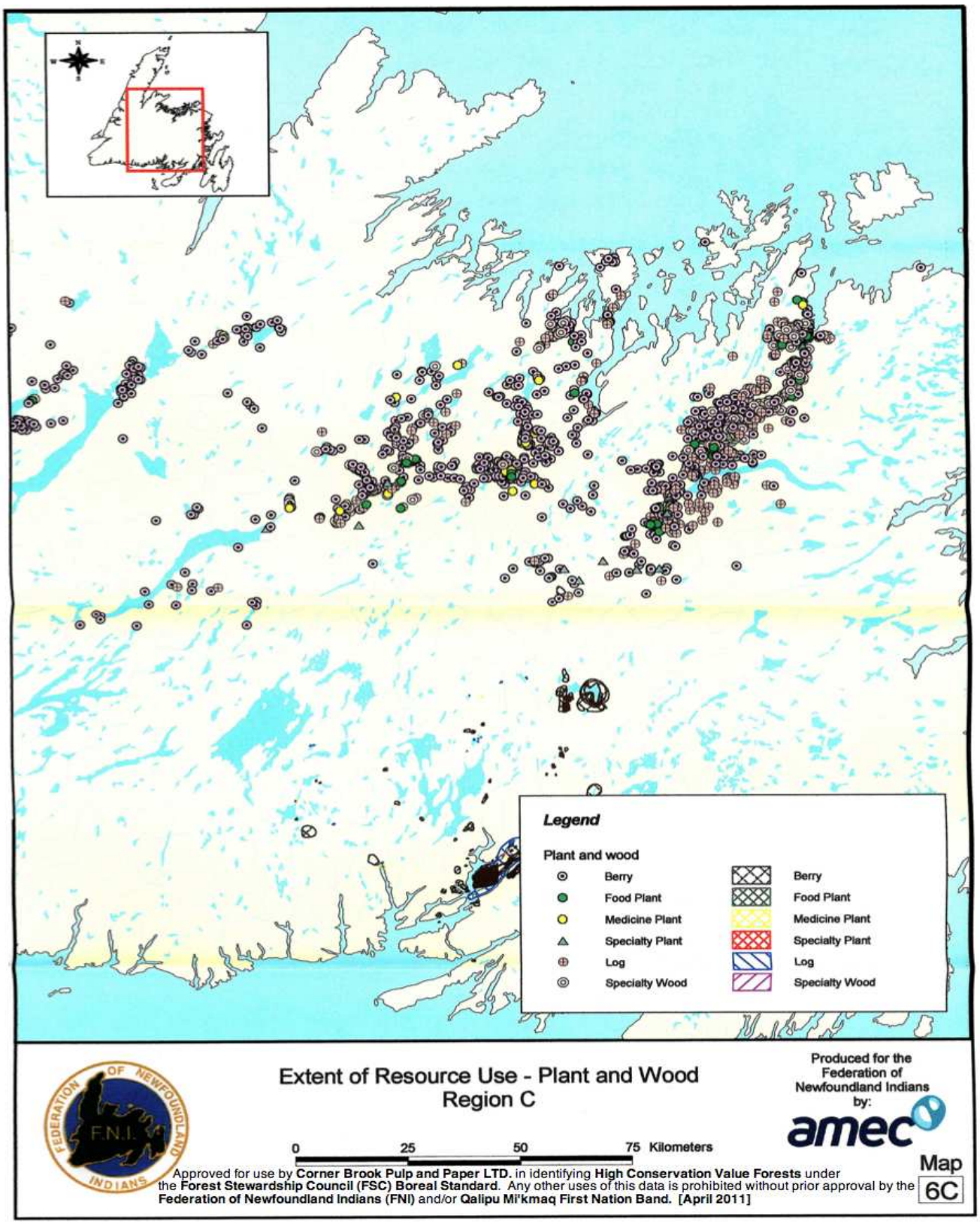
Map 7 Aboriginal spiritual and cultural values in Forest Management Districts 9, 14, 15, & 16.



Map 8 Aboriginal spiritual and cultural values in Forest Management Districts 5, 6, & 9.



Map 9 Aboriginal medicine plants in Forest Management Districts 9, 14, 15, & 16.



Map 10 Aboriginal medicine plants in Forest Management Districts 5, 6, & 9.

APPENDIX 9 INTACT FOREST AREAS ON THE DEFINED FOREST AREA OF CORNER BROOK PULP AND PAPER LIMITED, 2012 GIS EXERCISE METHODOLOGY

- The Soft-updates for all Forest management districts located in CBPP's GIS database were added to the project as base layers
- Merged the soft-updates for all districts to create a single shape-file which was clipped against CBPP's new DFA boundaries.
- Added the layers for roads, railways, power lines etc.
- Buffers were applied as follows:
  -TCH and paved public roads were buffered at 500 meters each side.
  -Resource roads and power lines were buffered at 250 meters each side.
  -The railway was buffered at 100 meters
- At this point all buffers were merged and used to erase the underlying features of the soft-updates layer.
- Next all areas cut within the last 40 years needed to be identified. Since there is no discrete field in the data denoting year cut by stand several queries had to be performed to extract the cuts.
- First, all areas with an age class of " " or "1" or "2" or an ACCODE > 1972 were queried.
- Then from this selection all cuts with Land Class values of "1", "2", or "3" were queried.
- Then another query based on Type Disturbance was done to separate out any areas which were naturally disturbed, such as fire, flood, blow down etc. Values eliminated from the selection were Y, Z, F, W, M and V.
- The above queries narrowed down the cuts significantly however there was still a possibility of some areas showing up that were never cut before. For example; age class 2 stands in remote areas away from old or existing roads.
- To address this problem maps were printed for all the DFA and were reviewed to identify such areas as noted above. These areas were subsequently removed from the data to clean it up. Planners were solicited to help with the questionable areas. Very few areas were removed. Any areas showing up as age class " ", "1", or "2" within the vicinity of an old or existing road system were maintained.
- These areas were given a 500 meter buffer and used to further erase records form the base data.
- The remaining base data was used to identify the "Intact Forest Areas" and to produce necessary maps.
- In mapping the "Intact Forest Areas" some ground rules were followed.
  -Any protrusions with a width of less than 2 kilometers were omitted.
  -A minimum internal width of ten kilometers for areas over 50, 000 hectares.