

NORTHERN APPALACHIAN–ACADIAN SPECIES TARGETS

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Definitions and Planning Methods

Species targets in ecoregional planning

Species targets consist of a heterogeneous set of species warranting priority conservation concern in the ecoregion. Typically they cross many taxonomic lines (mammals, birds, fish, mussels, insects and plants) but each species exhibits one or more of the following distribution and abundance patterns:

- globally rare, with fewer than 100 known populations (G1-G3)¹
- endemic to the ecoregion
- currently in demonstrable decline
- extremely wide ranging individuals, thus requiring conservation of habitat at larger scales
- designated as threatened or endangered by federal or state authorities

Primary species targets

A subset of the above species was defined as primary species targets. The implication of a species being identified as a *Primary target* was that its conservation needs need to be addressed **explicitly** in the ecoregional plan because its habitat needs are unlikely to be adequately addressed via the coarse filter approach of comprehensive conservation of representative ecosystems. This means that for each primary target the science team: 1) set a quantitative goal for the estimated number and distribution of local populations necessary to conserve the species, 2) compiled information on the location and characteristics of known populations/habitats in the ecoregion, and 3) assessed the viability of each local population with respect to its size, condition, landscape context and ultimately its probability of persistence over the next century all in order to select specific sites for conservation for that species.

Viable examples of local populations (“occurrences”) were spatially mapped and their locations given informal “survey site” names. The number and distribution of viable occurrences were evaluated relative to the conservation goals to identify portfolio candidates, inventory needs and information gaps for remediation. Ultimately each viable population occurrence and its survey site will require a local and more extensive conservation plan to develop a strategy for long term protection of that population at that location.

Secondary species targets

A second set of species, termed *secondary targets*, was also identified from the above pool and in some cases additional species viewed as vulnerable based on the life history, distribution and demographics of the species. Secondary targets are species of conservation concern in the ecoregion due to many of the same reasons as the Primary

¹ G1 refers to a global rarity rank where there are only between 1-5 viable occurrences of an element rangewide. G2 references a global rarity rank based on 6-20 viable occurrences rangewide, and G3 on 21-100 occurrences rangewide. Transitional ranks like G3G4 reflect uncertainty about whether the occurrence is G3 or G4 and T-ranks reflect a rarity rank based on rarity of a subspecies or other taxonomically unique unit (Maybury 1999).

targets except that either no clear locations can be identified where their habitat can or must be conserved, or the threat to them does not arise so much from habitat loss within this ecoregion as other issues, such as poaching of wood turtles for instance, or we have reasonable confidence that they can be conserved through the “coarse-filter” conservation of ecosystems (see the section on Ecosystems Targets).

The compiled list of secondary targets was used in three ways to inform the ecoregional plan/conservation blueprint. First, habitat needs of secondary target species were used in developing viability criteria and number and distribution goals for the ecosystem targets. For instance, the breeding needs of the conifer forest dwelling Blackburnian warbler were used (along with other information from other species) to develop the minimum size and condition factors for conifer forest matrix ecosystems. This ensures that the conservation of these forest ecosystems would be designed in such a way as to ensure the protection of the characteristic species that breed in this habitat. Second, known occurrences of secondary targets were used to guide selection of examples of ecosystems that were chosen for the portfolio and prioritized for conservation action. Third, the secondary target species were used to highlight information gaps and conservation concerns that go beyond land conservation.

Developing the target list

Development of the Primary and Secondary species target lists began with a compilation of all species occurring in the ecoregion that exhibited the characteristics mentioned above (see also Table SPP1 for definitions of selection criteria). The initial list was compiled from state and provincial conservation databases, Partners-in-Flight and American Bird Conservation lists for corresponding ecoregions, literature sources and solicited expert opinion. The database searches began with all species occurring in the ecoregion for which there are fewer than 100 known populations anywhere (G1-G3G4 and T1-T3). Commoner species (G4, G5) were nominated for discussion by each of the state or provincial programs and by other experts based on considerations of their vulnerable status within the ecoregion with particular attention paid to vulnerable disjunct populations and to wide-ranging species such as Canada lynx.

The exhaustive initial list was whittled down to a smaller final set through input from technical teams of scientists familiar with the species in the ecoregion. In the Northern Appalachian/Acadian region we developed separate international teams for mammals, birds, herptiles, fish, invertebrates and plants. The results were then compiled to create the final species target list. The justifications for including each target species is archived in ecoregional databases.

Primary vs. Secondary Targets

No single defining factor guaranteed that a species would be confirmed as a Primary target. Thoughtful consideration was given to each species’ range-wide distribution, the reasons for its rarity, the severity of its decline both locally and globally, its relationships to identifiable habitats and the importance of the ecoregion to its conservation. As the list was refined, species were eliminated for different reasons. Some were removed because of questions about the taxonomic status of the species, others because they were considered to be more common throughout their range than reflected in the current global rank; the global ranks for the latter species need to be updated. Some were moved from

primary to secondary because it was felt they would be adequately addressed through a careful coarse filter approach. Among species for which distribution information was considered to be inadequate, several were retained on a potential target list for future consideration. However, at a minimum, any species considered globally endangered at either the species or subspecies level (G1-2 or T1-2) or legally protected as endangered at the national level were kept as Primary target species.

Setting Minimum Conservation Goals for Species Targets

The minimum conservation goal for a primary target species in an ecoregional plan is defined conceptually as the minimum number and spatial distribution of viable local populations required for the persistence of the species in the ecoregion over one century. Ideally, conservation goals should be determined based on the ecology and life history characteristics of each species using a population viability analysis.

Because it was not possible to conduct such assessments for each species during the time allotted for the planning process, generic minimum goals were established for groups of species based on their distribution and life history characteristics. These minimum goals were intended to provide guidance for conservation activity over the next few decades. They should serve as benchmarks of conservation progress until more accurate goals can be developed for each target. The generic goals were not intended to replace more comprehensive species recovery plans. On the contrary, species that do not meet the ecoregional minimum goals should be prioritized for receiving a full recovery plan including an exhaustive inventory if such does not already exist.

Quantitative goals

Our conservation goals had two components: numeric and distributional. The *numeric* goal assumed that a global *minimum* number of at least 20 local populations or metapopulations over all ecoregions was necessary to insure the persistence of at least one of those populations over a century (see Cox et al 1994, Anderson 1999, Quinn and Hastings 1987 and reliability theory for details). This number is intended to serve as an initial minimum, *not* a true estimate of the number of local populations need for multi-century survival of the species. Subsequently, the number 20 was adjusted for the ecoregion of focus based on the relative percentage of the total population occurring in the ecoregion, the pattern of the species distribution within the ecoregion and the global rarity of each species (Table SPP 1). When the range of a rare species extended across more than one ecoregion, the assumption was made that the species would be included in the protection plans of multiple ecoregions. Such species may require fewer protected examples within the ecoregion of focus relative to a species whose ranges is contained entirely within the ecoregion.

Table SPP 1. Conservation goals based on distribution categories and global rarity rank (G rank). Numbers refer to the minimum number of viable populations targeted for protection.

CATEGORY	DEFINITION	G1	G2	G3-G5
Restricted (endemic)	Occurs in only one ecoregion	20	20	20
Limited	Occurs in the ecoregion and in one other or only a few adjacent ecoregions	10	10	10
Widespread	Widely distributed in more than three ecoregions	5	5	5
Peripheral or Disjunct	More commonly found in other ecoregions	5	5	5

To highlight the importance of the ecoregion to the species, each primary target species was assigned to one of four range-wide distribution categories – Restricted, Limited, Widespread, Peripheral – all measured relative to the ecoregion (Table SPP 1). Assignments were made by the species technical teams using distribution information available from NatureServe, the Heritage Programs, and from other sources available at the Eastern Conservation Science (ECS) center. In general, for species with a “restricted” distribution, the ecoregional goal was equal to the global minimum and set at 20; for species with a “limited” distribution, the ecoregional goal was set at 10. For species with “widespread” or “peripheral/disjunct” distributions, the goal was set at 5 for the entire ecoregion. This default algorithm was followed most closely for plants somewhat less so for animals. In practice, for most of the primary targets there were many fewer known occurrences than the minimum goal.

Distribution and Stratification goals

The distribution component of the conservation goal, referred to as the *stratification* goal, was intended to insure that independent populations will be conserved across ecoregional gradients reflecting variation in climate, soils, bedrock geology, vegetation zones and landform settings under which the species occurs. In most cases the distribution criteria required that there be at least one viable population conserved in each subregion² of the ecoregion where the species occurred historically, i.e. where there is or has been habitat for the species. The conservation goal is met for a species when both the numerical and stratification standards are met.

In addition to the scientific assumptions used in setting conservation goals, the goals contain institutional assumptions that will require future assessment as well. For example, the goals assume that targeted species in one ecoregion are targeted species in all ecoregions in which they occur. That is likely the case for rare (G1-G3) species, but not a certainty for commoner (G4, G5) species. After the completion of the full set of first

² Subregions are geographic sub-units defined for the Northern Appalachian-Acadian ecoregion. See report chapter on “Ecoregion and Subregion Boundary Development” and the following references: Bailey et al (1994), Keys et al (1995).

iteration ecoregional plans, species target goals should be assessed, reevaluated and adjusted. Range-wide planning should eventually be undertaken for all primary targets.

Assessing the Viability of Local Populations

The conservation goals discussed above incorporate assumptions about the viability of the species across the ecoregion. The goals assume that local populations unlikely to persist over time have been screened out by an analysis of local viability factors. This section describes how the planning teams evaluated the viability of each local population or “occurrence” at a given location.

Merely defining an occurrence of a local population can be challenging. The factors that constitute an occurrence of a species population may be quite different between species of differing biology and life histories. Some are stationary and long lived (e.g. woody plants), others are mobile and short lived (e.g. migrating insects), and innumerable permutations appear in between. Irrevocable life history differences between species partially account for the critical importance of the coarse-filter strategy of ecosystem and habitat conservation. Nevertheless, for most rare species the factors that define a population or an occurrence of a population have been thought through and are well documented in the state Natural Heritage and Canadian Conservation Data Center databases. The criteria take into account metapopulation structure for some species, while for others they are based more on the number of reproducing individuals. Whenever it was available we adopted the Heritage specifications, termed “element occurrence specifications” or EO specs for short (where *element* refers to any element of biodiversity)³.

Whenever possible, the local populations of each species selected for a conservation portfolio should exhibit the ability to persist over time under present conditions. In general, this means that the observed population is in good condition and has sufficient size and resilience to survive occasional natural and human stresses. Prior to examining each occurrence, we developed an estimate of potential viability through a succinct assessment of a population’s **size**, **condition**, and **landscape context**. These three characteristics have been recorded for most occurrences by Natural Heritage programs that have also developed separate criteria for evaluating each attribute relative to the species of concern. This information is termed “element occurrence ranking specifications” and these “EO rank specs” served as our primary source of information on these issues.

As the name implies, element occurrence ranking specifications were not originally conceived to be an estimate of the absolute viability of a local population, but rather a prioritization tool that ranked one occurrence relative to another. Recently, however, the specifications have been revised in concept to be a reasonable estimate of occurrence viability. Unfortunately, revising the information for each species is a slow process and must be followed by a reevaluation of each occurrence relative to the new scale. Fortunately, the catalog records for each population occurrence tracked in the Heritage/CDC database usually contain sufficient information on its size, condition and

³ An Element Occurrence, or EO, is a geo-referenced occurrence of a plant or animal population or a natural community recorded in a Natural Heritage database.

landscape context that a generic estimate of occurrence viability may be ascertained from the database records.

The synthesized priority ranks (EO rank) currently assigned by the state Heritage Program reflected evaluations conducted using standard field forms and ranking criteria that were in use at the time that the occurrence was first documented by a field biologist. These ranks, while informative, were somewhat variable for similar occurrences across state lines. In fact, very few EO ranks were available except for plant and natural community EOs in the US part of the ecoregion as well as for plants and animals in the Quebec part of the ecoregion. Thus, for viability estimation the EO rank was supplemented by the raw tabular information on size, condition and landscape context and as often as possible by the knowledge of biologists familiar with the taxon and the locations. Additionally, information on each EO was further augmented with a spatial GIS assessment of the land cover classes and road densities located in a 1,000 acre proximity of the occurrence's central point. The latter served as an objective indicator of landscape context.

All known occurrences for each primary target species were assembled at ECS from the state Heritage Programs and provincial CDCs through data sharing agreements. The occurrences were sorted by species, and spreadsheets for the species targets were prepared for group discussion, using the information described above. Further data included: a unique occurrence identification number, the species name, global rank, site name, and date of last observation. Tables of all occurrences were provided to each technical team member along with ecoregional distribution maps of the occurrences. Final decisions on the estimated viability of each local population was provided by the technical team and reviewed by the appropriate state, provincial and divisional scientists.

Species Results

Each taxonomic group has been reviewed by external reviewers coordinated by the technical team (Maillet, Vickery, Gratton, Gorman, Anderson & see below).

MAMMALS, REPTILES, AMPHIBIANS, FISH (NON AVIAN VERTEBRATES)

Team leader: Josette Maillet

Reviewers:

Maritimes: Tom Herman, Mark Elderkin, Dwayne Sabine

Québec: Jacques Jutras, Claude Daigle, Nathalie Desrosiers, Walter Bertacchi, Norman Courtemanche, Alain Demers

US: Merry Gallagher, Fred Kircheis, Ken Sprankle, Phillip deMaynadier, Michale Glennon, Mark Ferguson, Rose Paul, John Roe

The selection of mammalian primary conservation targets (Table SPP 2) did not stray significantly from the criteria used for primary target selection in that they were either globally ranked as rare (G1-G3), were disjunct, endemic or wide-ranging. An exception to this is the Rock Vole which was selected because of its scattered, small, localized populations. However, it has been suggested that this species may be more common than previously thought and may eventually be placed on the secondary target list. Also, Long-tailed Shrew and Gaspé Shrew are thought to be a single species and molecular genetics research is underway to resolve this question.

Table SPP 2. Summary of primary target mammals in the ecoregion.

SCIENTIFIC NAME	COMMON NAME	G RANK	COMMENTS
MAMMALS			
<i>Myotis leibii</i>	Eastern Small-Footed Myotis	G3	Widespread but spotty distribution, rarely in large numbers, hibernacula are key
<i>Sorex gaspensis</i>	Gaspé Shrew	G3	Restricted Local endemic.
<i>Myotis sodalis</i>	Indiana Or Social Myotis	G2	Peripheral. Critically imperiled throughout its range. Within NAP occurs only in NY and Vt. Vulnerable to human disturbance
<i>Sorex dispar</i>	Long-Tailed or Rock Shrew	G4	Widespread but limited to Appalachian Mountains
<i>Sorex maritimensis</i>	Maritime Shrew	GNR-unranked	Regional endemic, Restricted to NB (S3) and NS (S3)
<i>Synaptomys borealis</i>	Northern Bog Lemming	G4	Widespread, localized populations; not common anywhere
<i>Microtus p. shattucki</i>	Penobscot Meadow vole	G5T1T3Q	Newly recognized sub-species, endemic to ME
<i>Microtus chrotorrhinus</i>	Rock Vole	G4	Widespread Scattered in SE Canada, NE US, and Appalachian Mountains, relatively uncommon
<i>Rangifer tarandus</i> (Gaspé population)	Woodland Caribou	G5T1Q	Disjunct and Restricted population ~250 individuals in isolated population on high peaks of Chics Chocs and McGerrigle Mountains
<i>Lynx canadensis</i>	Lynx	G5	Widespread , a large-area requiring species; Gaspe population is important source for rest of ecoregion where it is either extirpated or S. Listed as Threatened under US Endangered Species Act. Wide ranging.

All fish species also met the standard criteria used in the selection of species targets. Only local endangered populations of Atlantic Salmon were considered to be primary targets.

Only two reptiles were selected as primary targets: the disjunct Blanding's Turtle in Nova Scotia and the disjunct Maritime populations of the Eastern Ribbon Snake. The Wood Turtle was also suggested as a primary target but their decline is associated with the pet trade rather than habitat loss so it was eventually placed on the secondary target list. No amphibians were selected as primary targets (Table SPP 3).

Table SPP 3. Summary of primary target herptiles and fish in the ecoregion.

SCIENTIFIC NAME	COMMON NAME	G RANK	COMMENTS
REPTILES & AMPHIBIANS			
<i>Emys blandingii</i>	Blanding's Turtle	G4	Disjunct in Kejimikujik National Park, does not occur in US part of ecoregion although it does occur as a rare species in the adjoining Lower NE ecoregion
<i>Thamnophis sauritus</i>	Eastern Ribbon Snake.	G5	Peripheral to ecoregion, occurs in

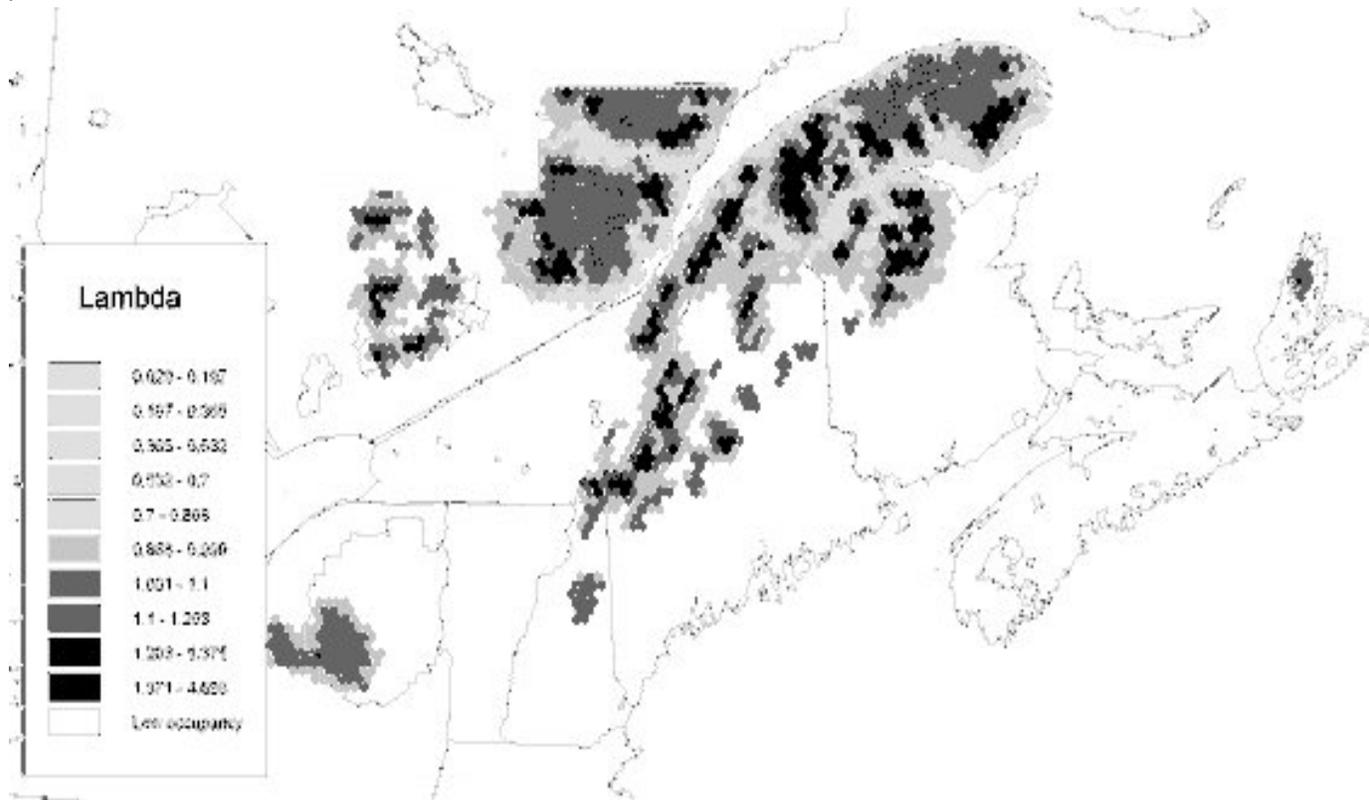
	Maritime populations		NY and NE where specific populations are not tracked. Populations in Maritimes are disjunct
FISH			
<i>Acipenser oxyrinchus</i>	Atlantic sturgeon	G3	Widespread. Atlantic and Gulf coasts, depleted populations
<i>Coregonus huntsmani</i>	Atlantic Whitefish	G1	Restricted. NS only, in a few areas, impacted by dams
<i>Osmerus</i> sp. 1	Lake Utopia Dwarf Smelt	G?	NB endemic
<i>Salvelinus alpinus oquassa</i>	Landlocked Arctic Charr (Blue Backed Trout)	G5T2Q	Subspecies, endemic to ecoregion. Extirpated from NH, VT; found in ME
<i>Acipenser brevirostrum</i>	Shortnose Sturgeon	G3	Peripheral. Special concern; viable populations found in NB, ME; vulnerable to pollution and habitat alteration
<i>Salmo salar</i> (anadromous)	Atlantic Salmon (local populations of Gulf of Maine, Bay of Fundy)	G5	Wide-ranging species but declining, at risk local subpopulations so viewed as Limited , listed as Endangered by US ESA. Wide ranging.

Canada Lynx

It is a recommended practice to include some wide ranging species as primary targets in ecoregional assessments. Of the wide-ranging species that once occupied this ecoregion, wolf and mountain lion were not selected because they are extirpated. Caribou was included as a primary a target but is now so restricted in range that it can no longer be considered wide ranging. We thought the habitat needs of pine marten could be adequately addressed through selection of matrix forests. The Canada lynx was chosen as a primary target because it is a wide-ranging and large area requiring species that was once reasonably common but is now either extirpated from or rare and vulnerable in most of the ecoregion. The USFWS has declared the contiguous US distinct population segment of the Canada lynx as Threatened. It has a similar status in NB and NS and has been extirpated from PEI. The USFWS has identified a large part of northern Maine as Critical Habitat for this species. The Gaspé peninsula population in Quebec is large enough currently to sustain harvest by trapping and is an important source population for the rest of the ecoregion. Recovery of the New England population is thus strongly dependent on retaining connectivity between Gaspé and northern New England habitat. (Carroll, 2003)

Lynx are dependent on boreal forest structure with significant areas of regenerating forest, robust populations of snowshoe hare and enough snow depth to retain their competitive advantage against coyotes, bobcat and fisher. As these conditions are not uncommon, we worked with partners to model the locations of potential source and sink areas in the ecoregion to focus conservation aimed at maintaining a thriving lynx population throughout their ecoregional range (Carroll 2005, Figure 1). The results illuminate some key locations and important connections between Quebec, New Brunswick and Maine.

Figure 1. Source – Sink model for Canada Lynx. Dark gray areas show probable source regions. Light gray areas show probable sink regions. Adapted from Carroll 2005⁴, used with permission.



⁴ Carroll, Carlos. 2005. Carnivore Restoration in the Northeastern U.S. and Southeastern Canada: A Regional-Scale Analysis of Habitat and Population Viability for Wolf, Lynx and Marten (Report 2: Lynx and Marten Viability Analysis). Wildlands Project Special Paper No. 6. Richmond, VT: Wildlands Project/ 46 pp.

Guided by this work, and because of the nature of their habitat needs, individual sites were not selected for lynx in this plan. Rather, the conservation goals for lynx are to:

- 1) Maintain large areas of suitable breeding habitat in Gaspé, New Brunswick, and Maine.
- 2) Ensure that Gaspé population levels remain high enough that it can continue to serve as source population for adjacent areas.
- 3) Maintain habitat connectivity sufficient to allow dispersion and population interchange between core habitat areas in Gaspé, and those of nearby NB, Maine and points west. More research will be needed to determine what are the key obstacles to lynx travel and where are the key geographic links. However, for now we assume that the more forest cover and the fewer roads and houses the more likely they will disperse and sustain local populations successfully.

The lynx research adds perspective to site-based conservation planning suggesting that we consider the habitat needs of lynx when managing forests in areas that overlap with source regions. Additionally, the models highlight important landscape connections providing guidance on where to focus policies aimed at maintaining forest cover and preventing conversion to development. Models for other species (marten and wolf) illustrate with clarity how species of contrasting sizes and life histories use the landscape in different ways (Carroll 2005).

BIRDS

Team leader: Barbara Vickery

Reviewers:

Experts who provided input to this list include Kate Bredin, ACCDC, Dan Busby, CWS, Richard Elliot, CWS, Tony Erskine, CWS, Mark Elderkin, NSDNR, Dwayne Sabine, NBDNR, Tom Hodgman, MDIFW, Peter Vickery, ME, Nancy Sferra, METNC, Paul Novak, NY, Pam Hunt of NH Audubon Society, John Roe, Rose Paul and Mark Ferguson of TNC VT and from Quebec, Josée Tardif of CWS.

Additional information regarding specific locations for primary target birds was provided by Diane Amirault, Andrew Boyne, Yves Aubry, François Shaffer all of CWS, François Morneau of QC, Robert Houston of USFWS, Lindsay Tutor and Brad Allen of MDIFW, Barbara Louks NY, Margaret Fowle of VT, Michael Amaral of USFWS and Dan Lambert of VINS

The bird target list (Table SPP 4) differs from the other species targets in some important ways. First, since most of our bird species are migratory there are potential concerns at several parts of their life cycles; some are included on the list because of the importance of habitats in NAP/Acadia ecoregion for breeding, some for wintering habitat, and some for migrant stopover concentration areas. Some are listed not because there are few individuals but because the places they breed or stop over in migration are so few. (In Table SPP 4, note modifier after the species common name regarding wintering or migrant concentrations.)

Table SPP 4: Summary of primary target birds in the ecoregion

SCIENTIFIC NAME	COMMON NAME	G RANK	COMMENTS
<i>Aquila chrysaetos</i>	Golden Eagle	G5	Disjunct , Although common to the west, very rare

			in ecoregion	
<i>Bucephala islandica</i>	Barrow's Goldeneye, Eastern pop. (Wintering)	G5	Does not breed within ecoregion, but ecoregion is important for concentrated wintering populations	
<i>Catharus bicknelli</i>	Bicknell's Thrush	G4	Endemic to ecoregion, restricted to high elevation spruce forests	
<i>Histrionicus histrionicus</i> pop 1	Harlequin Duck, Eastern population (Wintering)	G4	At risk throughout. This ecoregion has large proportion of population in winter at relatively few locales	
<i>Passerculus sandwichensis princeps</i>	Ipswich Sparrow	G5T2	Endemic to ecoregion. Only one breeding location of the subspecies known, Cape Sable, NS	
<i>Falco peregrinus anatum</i>	Peregrine Falcon	G4T3	Widespread , Recovering but still rare throughout ecoregion.	
<i>Charadrius melodus</i>	Piping Plover	G3	Globally rare; Widespread but population small	Occurs in Quebec, NB and NS, but no occurrences in US part of ecoregion
<i>Alca torda</i>	Razorbill, breeding and wintering	G5	Breeds in small numbers on very few islands of ME, NB and NS; also major wintering concentration in Bay of Fundy	
<i>Sterna dougallii</i>	Roseate Tern	G4	Widespread but Breeds in very few locations on Maine coast islands and NS	
<i>Cistothorus platensis</i>	Sedge Wren	G5	Peripheral . Was once common in parts of this ecoregion, now very rare	
<i>Calidris pusilla</i>	Semi-palmated Sandpiper, fall migrants	G5	A very high proportion (75%) of the global population passes through this ecoregion in migration, concentrating at relatively few sites	
<i>Bartramia longicauda</i>	Upland Sandpiper	G5	Peripheral . Breeds in very few locales throughout ecoregion, listed as S1 to S3 in all but Quebec where it occurs only outside this ecoregion	

Second, it includes marine/pelagic species, while these were not included in the mammal list. For some species listed there may be no known locations that could appropriately be targeted for portfolio site status, e.g. Red-necked Phalarope. This ecoregional assessment acknowledges the concern for the species, but there are no terrestrially linked sites for their conservation or management. In the end, such species will be much better addressed through a marine ecoregional assessment that we hope will occur in the near future.

Third, Primary and Secondary Bird targets were chosen based on North American Bird Conservation Initiative (NABCI) Atlantic Northern Forest Bird Conservation Region (BCR) 14 listing. This approach is based on recommendations of The Nature Conservancy (TNC) Wings of America Program Geography of Hope document regarding incorporating Birds as Ecoregional Planning Conservation Targets. This list places greater emphasis on the relative importance of the ecoregion to the species overall than with other taxonomic groups. This is the key difference between the Atlantic Northern Forest Bird Conservation Region priority list and a list derived from General Status as used in the Canadian provinces. All Atlantic Northern Forest Conservation Region priority species are included on at least the secondary species list. Thus, there are a number of species listed as secondary targets that are still common and for which there is no evidence of decline within our ecoregion, but because such a high proportion of the

species' breeding area lies within the ecoregion it was felt it should be acknowledged as a conservation target at some level.

A final difference for birds vs. other species groups is that the passerines at least, especially those associated with our matrix forming forests, rarely occur as discrete "occurrences" or "local populations." Thus, they need a different approach in portfolio design.

This list includes some species as Primary that are not globally rare but are listed as S1 or S2 in all of the states or provinces in the ecoregion in which they occur (e.g. Golden Eagle, Black Tern). These are often disjunct or peripheral to our ecoregion, that is, although they may be secure in other parts of their range, they reach the limit of their range within our ecoregion. Many reviewers felt it was important to ensure conservation of populations of these species within this ecoregion. On the other hand, this list does not include species so peripheral that they are really only accidental or incidental within this ecoregion (e.g. Cerulean Warbler).

There are a number of species listed as secondary included primarily because there is so little information about their current status or trends in the region; examples would include long-eared owl, purple sandpiper and greater shearwater.

The list of Primary targets includes species of nearly all major habitat types. However, it is notably lacking in freshwater wading birds or waterfowl. It would be appropriate to add an ecoregional "target" not specifically aimed at one species, but at areas significant for the diversity and abundance of breeding waterfowl and/or wading birds they support. These wetlands should be picked up by the coarse filter approach but for some managed wetlands frequency with which they are actively managed (for water level for instance) may have prevented them from being selected as good examples of the natural community or system type in natural condition. This condition should be examined in the next iteration.

INVERTEBRATES (Mussels, Odonates, Lepidoptera and Tiger beetles)

Team leaders: Barbara Vickery (2003), Josette Maillet (2004)

Reviewers: Input from the following reviewers was included in this compilation: Paul Brunelle, Mark Elderkin, Dwayne Sabine, Reg Webster, NB, Phillip DeMaynadier, ME, Paul Novak, NY, John Roe, Rose Paul and Mark Ferguson of Vt. To date little input has been received from Quebec or NH.

We perceive this list as particularly provisional because relatively few invertebrate taxa have received inventory attention across the ecoregion. We chose to include only mussels, odonates, lepidoptera and tiger beetles because these had had relatively more field inventory. However, knowledge of even these taxa is spotty at best. Thus, this remains a provisional list subject to additional inventory and expert input (Table SPP 5).

We received the most comprehensive review information from two neighboring areas, Maine and Maritime Canada. Yet often their perspective on the species was divergent. Additional input from Quebec and other US states is needed. However, when the taxon was not globally imperiled we usually opted to list the species as a secondary target to be captured via the coarse filter if its *habitat* was widespread, reasonably abundant and not particularly vulnerable, even if viewed as rare in one jurisdiction or another. Similarly, we listed high mountain species that occur in multiple locations as secondary, thinking that with those habitats the coarse filter would be effective.

Note that since the ecoregional assessment does not yet extend to aquatic environments in Canada, as it does in the US parts of the ecoregion, it may be unrealistic to think aquatic species will be captured by the coarse filter approach in the near term. However, we are hopeful that a comprehensive ecoregional aquatic system analysis will follow eventually so we left many aquatic invertebrates as secondary targets.

Table SPP 5. Summary of primary target invertebrates in the ecoregion.

SCIENTIFIC NAME	COMMON NAME	G RANK	COMMENTS
	Insects		
<i>Cicindela ancocisconensis</i>	A Tiger Beetle	G3	Limited. Globally rare. Within ecoregion occurs only in NH, VT, NY and Quebec
<i>Cicindela marginipennis</i>	Cobblestone Tiger Beetle	G2G3	Peripheral. Globally rare. Within ecoregion occurs only in NH, VT, NY and NB.
<i>Siphonisca aerodromia</i>	Tomah Mayfly	G2	Ecoregional endemic , only in NY, Maine and Quebec
<i>Lycaena dorcas claytoni</i>	Clayton's Copper	G5T1	Subspecies is endemic , restricted to relatively few cinquefoil fens
<i>Oeneis polixenes Katahdin</i>	Katahdin Arctic	G5T1	Ecoregional endemic . Only global location for subspecies is Mt. Katahdin in Maine
<i>Coenonympha nipisiquit</i>	Maritime Ringlet	G1	Ecoregional endemic , only occurs at few locations on the Baie de Chaleur, Quebec and New Brunswick
<i>Boloria frigga</i>	Frigga Fritillary	G5	Peripheral/Disjunct , newly

			discovered in ME, not previously known from ecoregion or northeastern NA.
<i>Somatochlora brevicincta</i>	Quebec Emerald	G3	Limited to few ecoregions of northeastern NA, fewer than 20 known occurrences in NA
<i>Ophiogomphus howei</i>	Pygmy Snaketail	G3	Peripheral. one record for NB, rare in the Maritimes and in northern New England - acidic, slow, lotic
<i>Neurocordulia obsoleta</i>	Umber shadowdragon	G4	Poorly known in ecoregion, only one documented record in NB-large, slow lotic waters
	Mussels		
<i>Alasmidonta varicosa</i>	Brook Floater	G3	Limited. Globally rare and declining, S1 in NS, NH, VT, and NY, S3 in Maine
<i>Alasmidonta heterodon</i>	Dwarf Wedgemussel	G1G2	Peripheral. Globally rare and declining, S1 in NH, VT and NY and SH in NB, unknown in Maine
<i>Lampsilis cariosa</i>	Yellow Lampmussel	G3G4	Limited. Declining in much of range, healthiest populations appear to be within this ecoregion, S1 in NS, S2 in ME, SX or SH in NH and VT and S3 in NY

Summary of Portfolio Results for Animals

The working group addressed terrestrial and freshwater avian, mammal, fish, herptiles and macro-invertebrate targets. Some targets (particularly bird species or suites of species) were allocated to secondary target status if a review of habitat relationships and ecosystem targets suggested they would be conserved by ecosystem protection of critical breeding habitat.

The group selected 44 primary targets, including

- 16 G1-G3 species (G3-G4 included),
- 3 taxa for which global ranks have not been assigned ,
- 6 globally rare subspecies or subpopulations and
- G4 and G5 species of selected taxonomic groups either endemic to the ecoregion or restricted portion of it, with disjunct populations in this ecoregion, or wide-ranging and large area requiring, such as the Canada lynx.

In addition, the group selected secondary target species which were factored into selection of matrix forest and other systems examples when specific locations were known and should be factored into site conservation planning. These species include those which are actively tracked by at least one jurisdiction in the ecoregion and are listed as endangered, threatened, or of special concern by at least one jurisdiction.

The portfolio identifies the following viable occurrences and their surrounding survey

sites for primary targets: 176 breeding bird locations; 25 wintering or migrant bird concentration areas; 13 hibernacula for bats; 25 locations for 6 small mammal species; 13 lakes for target fish species; 7 rivers for salmon, and 5 for Shortnose sturgeon (but note that this does not include US data); two metapopulations including 58 location records for Blandings Turtle and 3 for Ribbon Snake, all in the Maritimes; 50 sites for target terrestrial invertebrates; and 32 rare mussel populations or metapopulations. For one animal target, the Quebec Emerald Dragonfly, there were no known viable EOs but three that were identified as possibly viable were included in the portfolio as “maybes.”

Few mammals, insects or reptiles had enough viable occurrences to meet numeric goals. On the other hand, goals were met for the three target mussel species. There were enough occurrences that met viability criteria to meet numeric and distribution goals for 6 out of 12 bird targets. The default numeric goals might appear to have been substantially exceeded for some bird species, but when one remembers that the minimum goal for animals is intended for populations or even metapopulations rather than sites it is evident that the goal is almost certainly not met for species such as peregrine falcon or piping plover that nest singly or in very small populations.

Viability was difficult to assess because EO ranks had been assigned for very few animal occurrences in the ecoregion. In general, occurrences were discarded if the date last seen was more than 20 years ago and if the location information was too general. For some bird species with federal endangered or threatened species status we simply adopted the occurrences that had been selected by CWS or USFWS biologists through recovery plan or similar processes. All specifically known sites for non-avian animal targets that were considered viable were included in the portfolio. It should be noted that the standard protocol for animal EOs is that they represent a breeding population or migrant or wintering concentration. However, there were many records in the Heritage and CDC databases that were simply records of individual sightings. Where possible these were grouped post hoc into presumed populations, each counting as a single EO.

About one third of the viable locations for primary target birds occur on land that is managed for biodiversity (Gap 1 or 2). By far the majority of the key habitats for Caribou and Blandings Turtle are similarly protected. By contrast only 3 out of 54 viable sites for target insects are on protected land.

Still to be assessed is the degree to which connecting forest, selected matrix forest blocks and selected systems would conserve adequate habitat for secondary species.

PLANTS

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The group reviewed all G1 to G3 species as well as all others species (G4, G5, T1 to T5) either legally listed in a country, province or state, endemic, restricted and disjunct with

less than five (5) known occurrences in the ecoregion. All other vulnerable plant species in the region were considered to also capture all:

- significant disjunct species (populations that are isolated enough from the species' main range that genetic exchange is unlikely);
- populations with unique genetic variation or occurring in a unique ecological context;
- populations at the far edges of their species range; and
- ecoregional endemics known to be vulnerable and in decline.

This first listing of 254 species also involved checking on recent work on the taxonomy and nomenclature of each to ensure that the rare taxon is still recognized and that we are using the correct name.

The group then selected 113 target species that met either rarity or vulnerability criteria. Of these, 77 are **primary** targets (G1 through G3G4 species or subspecies, varieties or distinct populations of equivalent global rarity (22 taxa) with known EOs in the ecoregion). The exceptionally high number of primary plant targets in this ecoregion stems from the facts that more than half (43) are either:

species, subspecies or varieties endemic to this ecoregion or parts of this ecoregion (e.g. Gulf of St. Lawrence, Gaspé Peninsula) known to be important centers of endemism for the flora of Eastern North America (Morrisset 1971; Mosquin 1971; Argus and Mitchell 1974) including species associated with serpentine outcrops, freshwater intertidal marshes; or, species that have significantly disjunct populations from those of Northern Canada or the Rocky Mountains because of climatic and ecological conditions that have persisted after the glacial retreat, such as in the alpine habitats of the Chic-Chocs Mountain Range in the Gaspé Peninsula.

Primary plant targets are listed in Table SPP 6. All primary targets are listed in the Appendix "Primary Target Species Occurrences and their Attributes," and more detailed information is provided in the Supporting Documents.

Table SPP 6. Summary of primary target plants in the ecoregion

SCIENTIFIC NAME	COMMON NAME	G RANK	COMMENTS
<i>Adiantum viridimontanum</i>	Green Mountain Maidenhair-Fern	G2	Restricted; endemic to Northeastern America (Labrecque et Lavoie 2002); it is known only from serpentine outcrops in the southern portion of Quebec's Appalachian Range and could probably occur the in US portion of ecoregion
<i>Agalinis neoscotica</i>	Nova Scotia False-Foxglove	G4	Restricted; recently down listed from G2 because of evidence of increase in Maritime Canada, May be moved to secondary target with further documentation of occurrences throughout the ecoregion
<i>Agoseris aurantiaca</i>	Orange-flowered False-dandelion	G5	Disjunct from Northern Quebec; it is found only in the Gaspé peninsula
<i>Arabis boivinii</i>	Boivin's Rock-Cress	G4?	Disjunct from Northern Quebec; it is found only in the Temiscouata

			Hills and the Gaspé peninsula
<i>Arabis holboellii</i> var. <i>secunda</i>	Holboell's Rock-cress variety <i>secunda</i>	G5T5	Disjunct ; only found in the Temiscouata Hills
<i>Arnica griscomii</i> subsp. <i>griscomii</i>	Griscom's Arnica subspecies <i>griscomii</i>	G5T5	Restricted ; endemic to the Gulf of St. Lawrence (Labrecque et Lavoie 2002); it is legally designated in Quebec.
<i>Arnica lanceolata</i>	Hairy Arnica	G4	Limited ; More common in maritime provinces, may be moved to secondary
<i>Astragalus australis</i>	a Milkvetch	G5	Disjunct from Northern Quebec; it is found only in the Gaspé peninsula
<i>Astragalus robbinsii</i> var. <i>minor</i>	Robbin's Milkvetch	G5T5	Restricted ; endemic to Northeastern America (pers. comm. S. Blaney)
<i>Bidens eatonii</i>	Eaton's Beggar-Ticks	G2	Limited ; found in brackish marshes of estuaries in New Brunswick and in similar habitat in adjacent ecoregions
<i>Bidens heterodoxa</i>	Connecticut Beggar-ticks	G2	Restricted ; endemic to Northeastern America (Labrecque et Lavoie 2002); it is absent in US part of the ecoregion
<i>Botrychium lineare</i>	a Moonwort	G1	Disjunct ; found only in the Temiscouata Hills and the Gaspé peninsula
<i>Botrychium mormo</i>	a Moonwort	G3	Disjunct ; it is found only in the Temiscouata Hills
<i>Botrychium pallidum</i>	Pale Moonwort	G2G3	Limited ; found only in the Temiscouata Hills and the Gaspé peninsula
<i>Botrychium rugulosum</i>	Rugulose Grape-Fern	G3	Peripheral may be at risk in Quebec and New-Brunswick
<i>Botrychium spathulatum</i>	Spoon-leaf Moonwort	G3	Limited ; may be at risk in Quebec; this small fern is found only found only in the Temiscouata Hills
<i>Carex deweyana</i> var. <i>collectanea</i>	Dewey's Sedge variety <i>collectanea</i>	G5THQ	Restricted ; variety only known from historic locations in Quebec ,
<i>Carex petricosa</i> var. <i>misandroides</i>	Rock Sedge variety <i>misandroides</i>	G4T1T2	Restricted ; endemic of Northeastern America (Labrecque et Lavoie 2002); it is found only in the Gaspé peninsula
<i>Carex schweinitzii</i>	Schweinitz'S Sedge	G3G4	Limited ; an S1 to S3 in all jurisdictions where present; it is known only from Vermont and more common in adjoining ecoregions.
<i>Carex viridula</i> var. <i>saxillittoralis</i>	Little Green Sedge variety <i>saxillittoralis</i>	G5T1	Restricted ; endemic to the Bay of Fundy, New-Brunswick
<i>Cerastium cerastioides</i> - <i>Gaspé population</i>	Starwort Chickweed - Gaspé population	G4	Disjunct from Ungava, Quebec; only historical occurrences of this rare sedge are from the Gaspé peninsula.
<i>Cirsium muticum</i> var. <i>monticolum</i>	Swamp Thistle variety <i>monticolum</i>	G5T?	Restricted ; endemic only known from the Gaspé Peninsula
<i>Cochlearia tridactylites</i>	Limestone Scurvy-grass	G3G5	Limited ; from Newfoundland; only known occurrences in Nova Scotia

<i>Coreopsis rosea</i>	Rose Coreopsis	G3	Peripheral ; listed endangered in Canada (COSEWIC); legally designated in Nova Scotia; it is one of the classic coastal plain plants and found on a few lakes in the Tusket River system.
<i>Cypripedium arietinum</i>	Ram's-Head Lady'S-Slipper	G3	Limited ; sporadic distribution; legally designated in Quebec and may be at risk in Nova Scotia
<i>Draba peasei</i> (Syn. <i>Draba incerta</i> var. <i>Peasei</i>)	Pease's Draba	GXQ	Restricted ; extinct endemic; it was known only in the Gaspé peninsula
<i>Draba pycnosperma</i>	a Draba	G1	Restricted ; endemic to the Gulf of St. Lawrence (Labrecque et Lavoie 2002); it is known to more than a dozen locations in the Gaspé Peninsula but only one in Cape Breton, Nova Scotia
<i>Eriocaulon parkeri</i>	Parker's Pipewort	G3	Limited ; in New Brunswick this brackish marsh species is found only in the Miramichi estuary and is legally designated ; it is also known in Quebec and Maine but in adjacent ecoregions; it is also legally designated Quebec.
<i>Erysimum inconspicuum</i> var. <i>coarctatum</i>	Small-flower Prairie Wallflower variety coarctatum	G5?T2	Limited ; endemic of the Gulf of St. Lawrence Gulf (Labrecque et Lavoie 2002); it is only found in this ecoregion in the Gaspé Peninsula.
<i>Festuca altaica</i>	Rough Fescue	G4	Disjunct from Northern Quebec; it is found in the southern part of the Quebec Appalachian range and in the Gaspé peninsula
<i>Festuca baffinensis</i>	Baffin Fescue	G5	Disjunct from Northern Quebec; it is found in the Gaspé peninsula
<i>Gentianella propinqua</i> subsp. <i>propinqua</i>	Four-part Gentian subspecies propinqua	G5T4	Disjunct from Northern Quebec; it is found in the Gaspé peninsula
<i>Gentianopsis procera</i> subsp. <i>macounii</i> var. <i>macounii</i>	Four-part Gentian subspecies macounii	G5T5	Disjunct ; legally designated in QC; it is found in the Gaspé peninsula
<i>Geum peckii</i>	Mountain Avens	G2	Limited ; endemic listed endangered in Canada (COSEWIC); in Canada, it is only known to occur in Nova Scotia and legally designated in that province.
<i>Hieracium robinsonii</i>	Robinson's Hawkweed	G2	Limited ; it is only known to Quebec and Nova Scotia; in the latter case most locations are historical.
<i>Hieracium scabrum</i> var. <i>leucocaule</i>	Sable Island Rough Hawkweed	G5T1	Restricted ; endemic to this ecoregion and Sable Island, Nova Scotia (pers. comm. S. Blaney).
<i>Isoetes acadensis</i>	Acadian Quillwort	G2G3	Restricted ; this is relatively recently described taxon.
<i>Isoetes prototypus</i>	Prototype Quillwort	G1?	Restricted ; this pteridophyte was recently discovered and described; it is legally designated in New Brunswick

<i>Juncus caesariensis</i>	New Jersey Rush	G2	Disjunct from more southern populations; it is listed of special concern in Canada (COSEWIC) and legally designated in Nova Scotia.
<i>Lechea maritima</i> var. <i>subcylindrica</i>	Gulf of St.Lawrence Beach Pinweed	G5T1	Restricted ; endemic to this ecoregion
<i>Listera auriculata</i>	Auricled Twayblade	G3G4	Peripheral and at risk throughout
<i>Lophiola aurea</i>	Golden Crest	G4	Restricted ; listed threatened in Canada (COSEWIC); legally designated in Nova Scotia
<i>Minuartia marcescens</i>	Serpentine Stitchwort	G2	Restricted ; endemic to this ecoregion and Northeastern America (Labrecque et Lavoie 2002); legally designated in Quebec but only 2 occurrences known in the Gaspé Peninsula
<i>Moehringia macrophylla</i>	Large-leaved Sandwort	G4	Disjunct from Northern Quebec; associated with serpentine outcrops
<i>Oxytropis deflexa</i> var. <i>foliolosa</i>	Pendent-pod Crazyweed	G5T?	Disjunct ; it is found in New Brunswick and Quebec
<i>Oxytropis viscida</i>	Sticky Crazyweed	G5	Disjunct from Northern Quebec; it is found only in the Gaspé peninsula
<i>Packera cymbalaria</i>	Dwarf Arctic Groundsel	G5	Disjunct from the Northwestern America; legally designated in Quebec and found only in the Gaspé peninsula
<i>Panax quinquefolius</i>	American Ginseng	G3G4	Peripheral ; Globally infrequent; listed endangered in Canada (COSEWIC); legally designated in Quebec and found only in the southern part of the Appalachians in Quebec.
<i>Pedicularis furbishiae</i>	Furbish Lousewort	G2	Restricted ; endemic to this ecoregion and the St. John River; listed endangered in Canada (COSEWIC); legally designated in New Brunswick and Maine
<i>Platanthera leucophaea</i>	Eastern Prairie White-Fringed Orchid	G2	Disjunct in Maine; legally designated in US
<i>Poa laxa</i> subsp. <i>fernaldiana</i>	Wavy Bluegrass	G5?	Restricted ; endemic to Northeastern America (Labrecque et Lavoie 2002); it is found only in the Gaspé peninsula
<i>Poa secunda</i>	Curly Bluegrass	G5	Disjunct from Northern Quebec; it is known to the Lower St.Lawrence and the Gaspé peninsula
<i>Polemonium vanbruntiae</i>	Jacob's Ladder	G3	Limited ; listed as threatened in Canada (COSEWIC); legally designated in Quebec and found only in the southern part of the Appalachians in Quebec.
<i>Polystichum scopulinum</i>	Mountain Holy-fern	G5	Disjunct ; legally designated in Quebec and found only in the Gaspé peninsula
<i>Potamogeton hillii</i>	Hill's Pondweed	G3	Limited ; globally infrequent
<i>Potentilla robbinsiana</i>	Robbins' Cinquefoil	G1	Restricted ; endemic; legally designated in New Hampshire

<i>Prenanthes boottii</i>	Boott's Rattlesnake-Root	G2	Limited ; globally rare
<i>Pterospora andromedea</i>		G5	Restricted ; legally designated in New Brunswick and Quebec
<i>Ranunculus allenii</i>	Allen's Buttercup population	G3G4	Disjunct ; globally infrequent; found only in the Gaspé peninsula
<i>Rudbeckia laciniata</i> var. <i>gaspereauensis</i>	Gaspereau Cut-leaved Coneflower	G5TNR	Restricted ; endemic to this ecoregion
<i>Sabatia kennedyana</i>	Plymouth Gentian	G3	Peripheral ; listed as threatened in Canada (COSEWIC); legally designated in Nova Scotia
<i>Sagittaria montevidensis</i> subsp. <i>spongiosa</i>	Long-lobed Arrow-head subspecies <i>spongiosa</i>	G5T4	Disjunct ; legally designated in Quebec; only one occurrence known in the Gaspé peninsula
<i>Salix chlorolepis</i>	Green-scaled Willow	G1	Restricted ; endemic to the Gulf of St. Lawrence (Labrecque et Lavoie 2002); it is found only in the Gaspé peninsula; legally designated in Quebec.
<i>Saxifraga gaspensis</i>	Gaspé Saxifrage	G2	Restricted ; endemic to Northeastern America (Labrecque et Lavoie 2002); it is found only in the Gaspé peninsula
<i>Schoenoplectus x steinmetzii</i>	Steinmetz's Bulrush	G1Q	Restricted ; globally rare hybrid
<i>Scirpus longii</i>	Long's Bulrush	G2	Limited ; listed of special concern in Canada (COSEWIC); legally designated in Nova Scotia
<i>Solidago simplex</i> subsp. <i>simplex</i> var. <i>chlorolepis</i>	a Goldenrod	G5T1	Restricted ; endemic of this ecoregion and the Gulf of St. Lawrence (Labrecque et Lavoie 2002); legally designated in Quebec and only found on serpentine in the Gaspé peninsula
<i>Solidago simplex</i> subsp. <i>simplex</i> var. <i>simplex</i>	a Goldenrod	G5T5	Disjunct ; it is only found in the Gaspé peninsula
<i>Spiranthes casei</i> var. <i>novaescotiae</i>	Nova Scotia Case's Ladies-Tresses	G4T?	Restricted ; endemic to Nova Scotia (S. Blaney)
<i>Suaeda rolandii</i>	Roland's Sea-Blite	G1G2Q	Restricted ; taxonomy questionable, poorly known saltmarsh taxon of Nova Scotia
<i>Symphyotrichum anticostense</i>	Anticosti Aster	G2Q	Restricted ; taxonomy questionable; endemic to the Gulf of St. Lawrence (Labrecque et Lavoie 2002); listed as threatened in Canada (COSEWIC); legally designated in Quebec and New Brunswick
<i>Symphyotrichum laurentianum</i>	St. Lawrence Aster	G2	Restricted ; endemic of this ecoregion and the Gulf of St. Lawrence (Labrecque et Lavoie 2002); listed of special concern in Canada (COSEWIC) status; legally designated in New Brunswick and Quebec; only a few large population of this species are found in the Magdalen Islands and Prince Edward Island
<i>Symphyotrichum subulatum</i> (Bathurst)	Bathurst Aster	G5T1	Restricted ; endemic to this ecoregion; listed as threatened in Canada

population)			(COSEWIC); legally designated in New Brunswick
<i>Symphyotrichum subulatum</i> (non-Bathurst population)	Annual Saltmarsh Aster	G5T5	Restricted ; endemic to this ecoregion; listed as threatened in Canada (COSEWIC); legally designated in New Brunswick
<i>Taraxacum latilobum</i>	a Dandelion	G2Q	Restricted ; taxonomy questionable; endemic to Northeastern America (Labrecque et Lavoie 2002); only historical occurrences are known from the Gaspé peninsula
<i>Woodsia oregana</i> var. <i>cathcartiana</i>	Oregon Woodsia (Tetraploid)	G5T5	Disjunct from the Laurentians (Cody and Britton, 1989); it is found only in the Temiscouata Hills
<i>Woodsia scopulina</i> subsp. <i>laurentiana</i>	Rocky Mountain Woodsia variety <i>laurentiana</i>	G5T?	Disjunct ; it is known only in the Temiscouata Hills and the Gaspé peninsula

Setting conservation goals for plant targets

Each primary plant target was assigned to one of four range-wide distribution categories relative to the ecoregion based on available sources and expert advice from each jurisdiction. The group used the same numerical conservation goals for the primary plant targets as for the primary animal targets based on their global rarity rank (G rank) and range-wide distribution categories as described in the table 1. These numbers are initial minima recognizing that conservation biology literature suggests that even 20 occurrences of a rare species may not ensure its long term survival. Actually, few plant targets attained the numerical goal assigned to its distribution category. Nevertheless, conserving even a small number of viable populations of a species until the real number is determined, was thought to be making progress in the right direction. In future iterations of this conservation blueprint, goals will need to be reassessed and perhaps, restoration considered as the only option for some of these species. In others cases, scarcity of the habitat combined with high vulnerability, specific measures of protection may be the only means of insuring the species' survival.

Summary of portfolio results for plants

Occurrences of the primary target species that met the viability criteria were selected for inclusion in the portfolio. However, after applying the viability screening criteria to the occurrences, only 12 of the 77 primary plant targets had the minimum number of occurrences needed to meet its numerical conservation goal. Likewise only 38 of the primary target species met the distributional goal of having a viable occurrence in each subregion in which the species naturally occurs. For 26 plant targets no occurrences met the viability screen.

For plant target occurrences of the Maritime Provinces no EO ranks had been attributed and available data could not permit an equivalent assessment from specifications applied to occurrences in the US or Quebec. For many of these targets viability was ranked as “Maybe” based on last date of observation, precision, redundancy of observation, and understanding of population quality from expert's advice. Best available occurrences

were included in the portfolio (with appropriate caveats) as we saw no other realistic option.

Approximately 100 out of 500 of the qualifying plant occurrences are on land managed for biodiversity (Gap 1 or 2). An additional 60 occur on land secured from conversion to development (Gap 3). More than 200 plant occurrences fall within Tier 1 matrix blocks. While not tabulated it is certain that many more were nested within systems that were selected for the portfolio. An uncalculated number (hundreds) of secondary plant target occurrences are included in selected ecosystems occurrences or selected matrix blocks.