Management Plan

Gray-cheeked Thrush (Catharus minimus)

Prepared by the Endangered Species and Biodiversity Section

Department of Environment & Conservation
Wildlife Division

Newfoundland Labrador
What is the Endangered Species Act?

The Endangered Species Act was enacted in 2001 to ensure that species at risk of extinction in Newfoundland and Labrador, as well as their residence and habitat critical to their survival and recovery, receive protection. Furthermore, the Endangered Species Act ensures that efforts to recover these species are initiated. This legislation applies to species, sub-species and populations that are native to the province, but does not include marine fish, bacteria, or viruses. It also does not apply to introduced species, except in extraordinary circumstances. The Endangered Species Act fulfills the province’s commitments to the Accord for the Protection of Species at Risk. The Species at Risk Act, was enacted in June 2003 as the federal government’s contributing piece of legislation to the Accord.

What is recovery?

For species at risk of continued population decline or extinction, such as those listed in the Endangered Species Act as endangered, threatened, or vulnerable, recovery is the process by which its population decline is stopped, stabilized, and reversed. This occurs when a threat to the whole population or individuals is removed or reduced. A species is not considered to be recovered, and thereby removed from the Endangered Species Act, until its long-term persistence in the wild is secured. It is possible that a species will always be considered rare. This typically occurs when the species is restricted to an extremely unique or uncommon habitat or habitat loss has been extensive. For each species listed as endangered or threatened a recovery team is put in place to oversee the recovery process and write a recovery plan. For each species listed as vulnerable a management plan is written to guide the recovery process.

What is a management plan?

A management plan is developed by staff of the Endangered Species and Biodiversity section, Wildlife Division in conjunction with species experts. It sets the goals and actions deemed necessary to prevent a species from further decline and identifies threats to the species recovery. Section 24 of the Endangered Species Act states that a management plan will identify measures for the conservation of a species and include information that may be prescribed in regulations made by the minister under subsection 44(2). A management plan has to be developed within three years after the species is designated under the Endangered Species Act. These management plans are reviewed regularly and updated approximately every five years.

What’s the next step?

Implementing the plan! Many people work towards implementing the recovery actions outlined in a management plan, including people from municipal, provincial, and federal governments, aboriginal groups, industry, universities, interest groups, and local communities. Each play a significant role in the implementation of the management plan. Success in species recovery depends on the commitment and cooperation of many different people and requires all responsible jurisdictions, as well as all Newfoundlanders and Labradorians, to work together to support and implement management plans.

Disclaimer

A species listed as vulnerable under the Newfoundland and Labrador Endangered Species Act requires the development of a management plan. These management plans are prepared in cooperation with jurisdictions responsible for the species. Implementation of the goals and actions identified in this document ultimately depends on the ongoing program priorities and budgetary constraints of the participating jurisdictions and organizations. The goals and actions identified in a management plan are based on the best existing knowledge and are subject to modifications resulting from new findings and revised objectives. They do not necessarily represent the official positions of the governmental or non-governmental organizations, or individuals, involved.

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COVER PHOTOGRAPH
Gray-cheeked Thrush in Witless Bay, Newfoundland, by Dave Fifield.

RECOMMENDED CITATION

AUTHORS
The initial draft of this plan was prepared by Joe Brazil (Wildlife Division, Government of Newfoundland and Labrador (NLWD)). Revisions were completed by Emily Herdman (NLWD).

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RESPONSIBLE JURISDICTIONS
Government of Newfoundland and Labrador
Environment Canada (Canadian Wildlife Service)
Parks Canada
The Gray-cheeked Thrush breeds in boreal forests across North America, as well as in northeastern Siberia and overwinters in South America, east of the Andes. In Newfoundland and Labrador, the Gray-cheeked Thrush is found in most areas of suitable habitat, though it is thought to be more common on the Northern Peninsula, northern Avalon, northeast coast of the island and throughout much of Labrador. On the breeding grounds, Gray-cheeked Thrush 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. In Labrador, north of the tree line, it is known to nest in willow and alder thickets. A recent study found that Gray-cheeked Thrush in the Main River watershed were closely associated with conifer scrub but selected for heterogeneous land cover, where non-scrub areas were covered by both forested and open habitats with dense growth. This study also showed that, though tolerant of local clearcutting, loss of large proportions of forested habitat on a larger scale is likely to negatively impact Gray-cheeked Thrush. At this time, current Department of Natural Resources policies are considered sufficient to maintain adequate Gray-cheeked Thrush habitat for long-term population persistence.

Because Gray-cheeked Thrush breed north of most survey routes, and exhibit secretive behaviour during the breeding season, little information has been collected on their demographic parameters or behaviour. Anecdotal reports from breeding grounds in Newfoundland and Labrador suggest local declines. The Breeding Bird Survey shows a decline in Gray-cheeked Thrush numbers of 11.5% per year from 1968-2008 in Newfoundland and Labrador; with a precipitous drop in detection rate around 1990. Unfortunately, most routes were not surveyed consistently, making reliable analysis of trend data difficult.

The purpose of management efforts for the Gray-cheeked Thrush is to ensure its long-term persistence as self-sustaining viable populations throughout its current range in Newfoundland and Labrador. The following three goals have been identified as important to the long-term persistence of Gray-cheeked Thrush in Newfoundland and Labrador:

Goal 1 focuses on increasing knowledge about the species in Newfoundland and Labrador, including population size and trends, demographics, distribution, habitat requirements and threats.

Goal 2 deals with the identification and implementation of threat mitigation strategies to protect both individuals and habitat.

Goal 3 focuses on increasing education and engagement of the general public, land managers and stakeholders in the conservation of the Gray-cheeked Thrush.
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# ASSESSMENT AND LEGAL STATUS

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<th>Common name: Gray-cheeked Thrush</th>
<th>Scientific name: <em>Catharus minimus</em></th>
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<td>Provincial Listing (ESA): Vulnerable</td>
<td>Federal listing (SARA): Not assessed</td>
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**Reason for designation:** Breeding Bird Surveys suggest that there has been a significant decline in Gray-cheeked Thrush since 1969. Potential historical and ongoing factors contributing to the decline include habitat loss and predation. The insular Newfoundland Gray-cheeked Thrush may be part of a distinct sub-species.

**Newfoundland and Labrador occurrence:** Gray-cheeked Thrush are found in suitable habitat throughout most of the Province. In insular Newfoundland, the Gray-cheeked Thrush has been reported as being most common on the Northern Peninsula, northeast coast, and northern Avalon and less common on the west coast and in the interior. Other sources report observations from Glovertown, Glenwood, several sites in western and southwestern Newfoundland, Placentia Bay, and islands along the northeast and south coasts including St. Pierre, Miquelon, and Ramea. Gray-cheeked Thrush have been observed throughout most of Labrador. There is some disagreement whether or not the species occurs at the northern tip of Labrador at Cape Chidley, and whether or not it is absent from coastal Labrador.

**Canadian occurrence:** The breeding range of Gray-cheeked Thrush extends north to the tree line in the Yukon, Northwest, and Nunavut Territories, and across the Labrador Peninsula north to Ungava Bay and possibly Cape Chidley (Ouellet 1996, Lowther *et al.* 2001). The southern limit of the species’ breeding range includes northwestern British Columbia, southern Yukon Territory, northern Alberta, northeastern Saskatchewan, northern Manitoba, northwestern Ontario, and central Quebec to the north shore of the Gulf of St. Lawrence, as well as the islands of Newfoundland, St. Pierre, and Miquelon (Ouellet 1996, Lowther *et al.* 2001).

**Current legal protection:** *Endangered Species Act (NL), Migratory Birds Convention Act*
DESCRIPTION

There are five Nearctic species of *Catharus* thrushes; the Veery (*Catharus fuscescens*), Bicknell’s Thrush (*C. bicknelli*), Swainson’s Thrush (*C. ustulatus*), Hermit Thrush (*C. guttatus*), and Gray-cheeked Thrush (*C. minimus*). It is very difficult to distinguish between Gray-cheeked Thrush and Bicknell’s Thrush in the field, making research on aspects of their ecology difficult. Gray-cheeked Thrush are slightly larger than other *Catharus* thrushes (16-17 cm, 26-30 g) and have grayish upperparts and face, indistinct mottling on ear coverts, grayish lores, and a grayish-white supercilium (Lowther *et al.* 2001). The Northern race (*C. m. alicae*), which breeds in Labrador, has grayish-olive upperparts and flanks, a lightly washed cream breast, and a lower mandible having a reduced pale base and a dull yellow tinge. The Newfoundland race (*C. m. minimus*), which breeds on the Island of Newfoundland, has brownish-olive upperparts, grayish-brown to brownish olive flanks, a cream washed breast, and a lower mandible having an extensive pale base and a bright yellow tinge (Pyle 1997). The Newfoundland race may show some chestnut edging on wings and tail (Lowther *et al.* 2001).

Molecular comparison of a small sample of *C.m.minimus* and *C.m.alicae* showed little genetic divergence between these races (Lowther *et al.* 2001). However, analysis of the genus *Catharus* shows an overall low rate of divergence in restriction fragment analysis (Lowther *et al.* 2001).

ECOLOGY

Gray-cheeked Thrush are long-distance migrants, on average 300 km (Cochran *et al.* 1967, Lowther *et al.* 2001) and are present on breeding grounds in the Province from May to August. Six active nests have been reported for Newfoundland and Labrador, all of which were found between June 18th and July 9th (Todd 1963; W.A. Montevecchi, Memorial University, unpublished data). Most migratory movement occurs at night, and in small groups. The Gray-cheeked Thrush is thought to migrate through the eastern part of the continent between the Mississippi Valley and the Atlantic Coast (Ouellet 1996). Southward migration occurs from mid-August to October.

Gray-cheeked Thrush are secretive during the breeding season and nesting pairs are rarely found in high densities. Territories are well-spaced (Ouellet 1996) and nests are built on the ground or in low shrubs, typically <2 m high. Only one brood is raised per breeding season (Lowther *et al.* 2001) and clutches average four eggs (range 3-5 eggs). Eggs are incubated for 13-14 days by the female (Bent 1964, Ouellet 1996, Lowther *et al.* 2001) and nestlings fledge 11-13 days after hatching. Young are altricial and are cared for by both parents. Individuals breed at one year of age and are presumed monogamous.

Due to their northerly breeding range and secretive habits, little is known about Gray-cheeked Thrush demographic parameters (e.g. survival and productivity) or behaviour. The current longevity record for the species is seven years, four months (Ouellet 1996,
Gray-cheeked Thrush consume mainly insects, arachnids, and grubs (75%), as well as fruits and berries (25%; Bent 1964).

There is little data available about predation on this species, however, Northern Shrike (Lanius excubitor) and Peregrine Falcons (Falco peregrinus) are known to take Gray-cheeked Thrush in other parts of North America (Lowther et al. 2001). Additionally, Sharp-shinned Hawks (Accipiter striatus) may be important predators during migration (Lowther et al. 2001).

**HABITAT**

On the breeding grounds, Gray-cheeked Thrush 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 (tuckamore or Krummholz) (Godfrey 1986, Lowther et al. 2001, Figure 1). The species is found primarily in coniferous stands of boreal forest, tall shrubby enclaves in taiga (north of the tree line), and in Labrador in mature coniferous stands, sparsely forested valleys north of Hamilton Inlet (Todd 1963, Lowther et al. 2001) and in willow and alder thickets north of the tree line in the Torngat mountains, Labrador (D. Whitaker, Parks Canada, pers. comm.). Dominant tree species in Gray-cheeked Thrush habitat include black (Picea mariana) and white spruce (P. glauca), balsam fir (Abies balsamea), and tamarack (Larix laricina).

Throughout western Newfoundland from Main River south to Little Grand Lake, Gray-cheeked Thrush regularly occur in low abundance in old-growth uncut balsam fir forests having numerous canopy gaps, but they have not been found in second growth closed-canopy forests (Thompson et al. 1999; D. Whitaker, Parks Canada, pers. comm.). A recent study in the Main River area found that Gray-cheeked Thrush were closely associated with conifer scrub but selected for heterogeneous land cover, where non-scrub areas were covered by both forested and open habitats with dense growth (Whitaker, in prep.). This study also showed that, though tolerant of or even favoring local clearcutting within territories, loss of large proportions of forested habitat on a larger scale (home-range scale) is likely to negatively impact Gray-cheeked Thrush (Whitaker, in prep.).

During migration, Gray-cheeked Thrush use a variety of woodland and shrub habitats (Godfrey 1986) often favoring well-wooded areas having a thick understory (Lowther et al. 2001).
DISTRIBUTION

Global
Gray-cheeked Thrush breed in boreal forests across North America, as well as in northeastern Siberia (Lowther et al. 2001; Figure 2). The species’ range extends north to the tree line in Alaska, and across Canada to Labrador and south to the islands of Newfoundland, St. Pierre, and Miquelon (Lowther et al. 2001). Sightings of vagrants are reported throughout much of continental Europe, Greenland, and the British Isles (Lowther et al. 2001). Gray-cheeked Thrush winter in South America east of the Andes including Colombia, Venezuela, Guyana, Trinidad, and northwest Brazil, and are rare winter residents of Panama and Costa Rica (Lowther et al. 2001).

National
The breeding range of Gray-cheeked Thrush extends north to the tree line in the Yukon, Northwest, and Nunavut Territories, and across the Labrador Peninsula north to Ungava Bay and possibly Cape Chidley (Ouellet 1996, Lowther et al. 2001). The southern limit of the species’ breeding range includes northwestern British Columbia, southern Yukon Territory, northern Alberta, northeastern Saskatchewan, northern Manitoba,
Provincial

Gray-cheeked Thrush are found in suitable habitat throughout most of the Province of Newfoundland and Labrador (Todd 1963, Godfrey 1986, Lowther et al. 2001, Figure 3); however this species may be more abundant in northern forest types, which most often occur along the coast, at higher elevations and in northern parts of the island (D. Whitaker, Parks Canada, pers. comm.). It has been recorded on 27 of the 30 reported Breeding Bird Survey routes in Newfoundland and Labrador (Figures 4, 5). The limited number and distribution of Breeding Bird Survey routes in Labrador prevents strong conclusions about distribution and abundance of Gray-cheeked Thrush in Labrador (Figure 5).

In insular Newfoundland, the Gray-cheeked Thrush has been reported as being most common on the Northern Peninsula, the Avalon Peninsula, and the northeast coast and less common on the west coast and in the interior (Peters and Burleigh 1951). However, other sources report observations from Glovertown, Glenwood, several sites in western and southwestern Newfoundland, Placentia Bay, and islands along the northeast and south coasts including St. Pierre, Miquelon, and Ramea (Thompson et al. 1999; Marshall 2001; W. A. Montevézchi, Memorial University, unpublished data).

Gray-cheeked Thrush have been observed throughout most of Labrador (Todd 1963; W.A. Montevézchi, Memorial University, unpublished data). There is some disagreement over its occurrence at the northern tip of Labrador at Cape Chidley and in coastal Labrador (Godfrey 1986, Lowther et al. 2001).

ABUNDANCE AND POPULATION TRENDS

Programs such as the North American Breeding Bird Survey have identified declines over time, however overall numbers in Newfoundland and Labrador may still be relatively high despite a decline, and parts of the breeding habitat in Newfoundland and Labrador are relatively secure.

The global Gray-cheeked Thrush population is estimated at 12,000,000 individuals (Rich et al. 2004), with 4.5% or 540,000 individuals breeding in Newfoundland and Labrador (Blancher et al. 2007). However, this estimate is based on poor quality data and reliant on heavy extrapolation. Recent densities of this species in the Main River watershed have been reported as 0.13-0.18 territorial males per hectare (K. Powell, unpublished data).

There is insufficient data available to provide a comprehensive description of population trends for this species (Lowther et al. 2001). Anecdotal reports from breeding grounds in Newfoundland and Labrador suggest local declines (P. Linegar, St. John’s, pers. comm.), though localized trends may occur simply as a result of forest succession.
rather than population level declines. Trends from the Breeding Bird Survey in Newfoundland and Labrador (1968-2008) show a decline of 11.5% per year (n = 21, p<0.05, Collins and Downes 2009). However, several of these routes were only surveyed sporadically during the relevant time period and resulting trend estimates should be viewed with caution. Decline and population estimates have been calculated using different data sets, both with relatively high possibility of error. It is inappropriate to combine estimates of decline and current population estimates to derive former population sizes.

TRADITIONAL AND LOCAL ECOLOGICAL KNOWLEDGE
Feedback from the Labrador Inuit Association and the Innu Nation during the development of the Gray-cheeked Thrush status report did not reveal any traditional knowledge for this specific species.

EXISTING PROTECTION
The Gray-cheeked Thrush has been protected since 1916 under the Migratory Birds Convention Act (Department of Justice of Canada 1994). Its habitat is protected to varying degrees in National and Provincial Parks as well as in Ecological, Wilderness, and Wildlife Reserves. These areas cover about 1,927,804 hectares but only a portion of those areas would be considered suitable habitat. Additionally, succession and disturbance in forested areas may result in loss of Gray-cheeked Thrush habitat in these protected areas. Part of the range of the species also occurs on lands owned or managed by the Nunatsiavut Government and therefore areas subject to their land management practices.
Figure 2. Global distribution of Gray-cheeked Thrush. (Ridgely et al. 2003)
Figure 3. Range map for the Gray-cheeked Thrush in Newfoundland and Labrador. Sightings as well as nest records are included. Sighting locations are strongly influenced by accessibility and may not accurately represent the distribution of this species.
Figure 4. Breeding Bird Survey routes in insular Newfoundland from 1973-2008. Red circles indicate areas where Gray-cheeked Thrush were found during surveys, Gray circles indicate areas where no Gray-cheeked Thrush were detected. The size of the circles indicates the number of surveys conducted in any area.
Figure 5. Breeding Bird Survey routes in Labrador from 1973-2008. The distribution of BBS routes is very limited within Labrador. Red circles indicate areas where Gray-cheeked Thrush were found during surveys and gray circles indicate areas where no Gray-cheeked Thrush were detected. The size of the circles indicates the number of surveys conducted in that location.
It is always the purpose of management efforts to ensure the long-term persistence of a species at risk as self-sustaining viable populations throughout its current, and when possible, historical ranges. The following details the goals, objectives, and actions needed to fulfill this purpose, all of which are summarized in Table 1. The following three goals have been identified as important to the long-term persistence of the Gray-cheeked Thrush in Newfoundland and Labrador:

Goal 1. Complete research to close gaps in our understanding of Gray-cheeked Thrush ecology.

Goal 2. Develop mitigation strategies for threats to individuals and habitat.

Goal 3. Increase engagement of the public, stakeholders, and land managers in the conservation of the Gray-cheeked Thrush.

GOAL 1. COMPLETE RESEARCH TO CLOSE GAPS IN OUR UNDERSTANDING OF GRAY-CHEEKED THRUSH ECOLOGY.

Our ability to identify and implement management actions, if necessary, in support of Gray-cheeked Thrush conservation within the Province is limited due to our lack of knowledge of the size of the population, overall species habitat requirements, specific distribution within the Province, and the relative impact or importance of the threats identified to date.

Objective 1. Determine population numbers and on-going trends.
In the 2006 status report (Dalley et al.), trends from the North American Breeding Bird Surveys (BBS) were important for the assessment of the species, thus continued monitoring using current BBS routes and re-activating former BBS routes is a priority. Expansion of the BBS route network should also be considered, which would require further input of human and financial resources as current routes are surveyed by a very limited pool of volunteers. Because the BBS yields useful data on a large number of species, including many species falling under the jurisdiction of other agencies such as the Canadian Wildlife Service, partnerships opportunities should be considered.

There are a number of monitoring efforts already underway within the Province aimed at counting or identifying birds. These include surveys such as the BBS, Baillie Birdathon (conducted in May of each year), a Monitoring Avian Productivity and Survivorship (MAPS) station in Rocky Harbour (2001-2006, 2008), breeding bird monitoring in Barachois Provincial Park (2008), and Parks and Natural Areas Division bird surveys in parks across Newfoundland (2008-2009). Incidental observations by citizen scientists
Monitoring programs outside the Province, such as the North American Breeding Bird Survey and Christmas Bird Counts can also provide information regarding how this species is faring on national and international levels. Factors affecting populations elsewhere, such as habitat loss on the wintering grounds can have a significant influence on breeding populations in this Province.

Determination of current population size and population goals required for a self-sustaining population will help us develop management strategies and an understanding of what will be required to recover this species.

Action 1: Complete monitoring surveys within Newfoundland and Labrador (in addition to or in concert with current surveys as required).
Action 2: Use monitoring survey results to determine trends in Gray-cheeked Thrush populations across Newfoundland and Labrador.
Action 3: Compile data from monitoring surveys across Canada.
Action 4: Determine population goals for long term management and conservation.

Objective 2. Define habitat requirements and availability of suitable habitat.

It is recognized that our knowledge of the habitat requirements of the Gray-cheeked Thrush within the Province is incomplete. There are a number of potentially important habitat types which have yet to be systematically investigated but are known to be used elsewhere in North America. The relative importance of each potential habitat type is therefore unclear. Some information exists regarding breeding habitat selection by Gray-cheeked Thrush at both the local and national scales. Existing information may have to be augmented through the development of an assessment of habitat quality, quantity, and site fidelity relative to the different forest/habitat types.

Another parameter worth monitoring and tracking over time is the amount of Gray-cheeked Thrush habitat available. At the moment this could be done in part at a coarse scale using information from the forest inventory maintained by the Department of Natural Resources, Government of Newfoundland and Labrador. It is not anticipated that there will be significant changes in the near term to the availability of the non-
Objective 3. Identify threats to habitat and individuals within the Province.

There is insufficient information available for a rigorous assessment of factors that threaten or limit populations of Gray-cheeked Thrush (Lowther et al. 2001). Human-caused habitat loss and nest predation, primarily by red squirrels, have been identified as potential threats which may or may not be significant. Habitat loss may also be driven by climate change, which could increase the amount of forest lost to insect damage and/or severe storms (Department of Environment and Conservation 2005). However, the significance of climate change to Gray-cheeked Thrush habitat has not yet been evaluated.

Action 1: Determine which factors reduce the available suitable habitat.
Action 2: Determine which factors impact survival of individuals.

GOAL 2. DEVELOP MITIGATION STRATEGIES FOR THREATS TO INDIVIDUALS AND HABITAT.

Objective 1. Develop mitigation strategies for threats to habitat.
Gray-cheeked Thrush is more likely to be affected by habitat alteration during the non-breeding season than during the breeding season (Lowther et al. 2001). Management of Gray-cheeked Thrush non-breeding habitat lies outside the jurisdiction of the Province, as Gray-cheeked Thrush occurs in Newfoundland and Labrador during the breeding season and on fall migration.

In northern Labrador, this species is likely unaffected by human activity, as they nest primarily in habitat that is not considered commercial forest. In Newfoundland, Gray-cheeked Thrush use both commercial and non-commercial forest. Currently, forests on the Island are dominated by <20 year old and >80 year old age classes (Department of Natural Resources 2006); both of which are preferred Gray-cheeked Thrush habitat. There is some concern that harvesting could significantly reduce the amount of old-growth forest available (Thompson et al. 1999, Setterington et al. 2000). There are two factors that may prevent loss of old-growth forest: a) the closure of two mills on the Island has and will continue to reduce timber harvest in the short-term and b) the current policy of the Department of Natural Resources is to maintain 15-20% of forests in ages 80 years and older (Department of Forest Resources and Agrifoods 2003). The impact of a decline in the availability of older forest types is not well understood nor is it clear how important older forests are to long-term conservation of Gray-cheeked Thrush.
The Province of Newfoundland and Labrador can manage Gray-cheeked Thrush effectively by ensuring there is sufficient habitat to support viable populations. Until more detailed information regarding habitat use and availability is collected, resource management and land conservation practices which have a neutral to positive impact on Gray-cheeked Thrush breeding habitat are to be encouraged. The following habitat types are of highest importance and adequate amounts of each should be maintained:

- scrub forests, 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.

Under current DNR policies, sufficient amounts of each of these habitat types should be maintained.

Action 1: Maintain areas of habitat types known to be used by Gray-cheeked Thrush.
Action 2: Develop mitigation strategies for threats to habitat identified through ongoing research efforts.

Objective 2. Develop mitigation strategies for threats to individuals.

The threats to individual Gray-cheeked Thrush in Newfoundland and Labrador are not well understood. Ongoing research is required to identify threats which may be negatively impacting populations of this species. Currently, nest predators, including red squirrels (*Tamiasciurus hudsonicus*) and collisions with man-made structures during migration have been identified as potentially important threats to Gray-cheeked Thrush. During migration, collisions with man-made structures such as radio towers cause many mortalities (Lowther *et al.* 2001), however the impact of man-made structures in Newfoundland and Labrador is not known.

Although their impact on Gray-cheeked Thrush is unknown, red squirrels can be a major nest predator in western Newfoundland (Lewis and Montevecchi 1999) and have become widespread throughout much of the island since their introductions in 1963 and 1964 (Dodd 1983). Studies in other regions of North America have demonstrated a significant impact of red squirrel predation on populations and communities of boreal forest birds (Sieving and Willson 1998, Bayne and Hobson 2000, Martin and Joron 2003, Willson *et al.* 2003, Siepielski 2006). A review of existing studies would need to occur and a study design developed and implemented to properly assess demographic impacts of nest predation.

Action 1: Evaluate the impact of collisions of migrating birds with man-made structures within the Province.
Action 2: Evaluate the impact of red squirrels and other nest predators on nest survival.
Action 3: Develop mitigation strategies for threats to individuals identified through ongoing research efforts.
GOAL 3. INCREASE ENGAGEMENT OF THE PUBLIC, STAKEHOLDERS, AND
LAND MANAGERS IN THE CONSERVATION OF THE GRAY-CHEEKED THRUSH.

There are two main audiences for education and stewardship initiatives related directly or in-directly to this species. These include: 1) the public at large, and 2) stakeholders/land managers.

Objective 1. Educate the public about Gray-cheeked Thrush biology and conservation.
Because of its shy habits and low profile, the public will mostly be unaware of this species, its status and its conservation needs. An informed and educated public will be in a better position to be supportive of conservation actions. Such actions could include reporting sightings, taking an active part in bird monitoring programs, and supporting broader bird monitoring initiatives. Methods to directly inform and engage the public include various forms of media (posters, brochures, websites, etc) and taking advantage of opportunities to speak or write about the species. The public can also be encouraged to participate in monitoring programs and reporting schemes.

   Action 1: Produce educational materials about the Gray-cheeked Thrush.
   Action 2: Encourage participation in bird monitoring initiatives.
   Action 3: Encourage the public to report sightings to the Wildlife Division.

Objective 2. Highlight the needs of the Gray-cheeked Thrush for land managers and stakeholders.
Engagement processes similar to those used to inform the general public can be applied to stakeholders and land managers with additional opportunities through assessments, management planning processes, and stewardship initiatives. Land managers and land owners and developers who are aware of the species’ conservation needs would be able to make more informed land use decisions which may benefit the species.

   Action 1: Develop appropriate material for managers and stakeholders making decisions that might impact Gray-cheeked Thrush.
   Action 2: Educate managers and stakeholders during assessments, management planning and stewardship initiatives.
Table 1. Implementation schedule of the recovery actions required to meet recovery objectives for the Gray-cheeked Thrush in Newfoundland and Labrador during the next five years (2010-2014).

<table>
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<th>Management Actions</th>
<th>Implementation schedule</th>
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<td><strong>Population monitoring and trends</strong></td>
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<td>Monitoring surveys in Newfoundland and Labrador</td>
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<tr>
<td>Determine trends in populations in Newfoundland and Labrador</td>
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<tr>
<td>Compile data from monitoring surveys across Canada</td>
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<tr>
<td>Develop population goals for long-term management and conservation</td>
<td>X X</td>
</tr>
<tr>
<td><strong>Habitat requirements and availability</strong></td>
<td></td>
</tr>
<tr>
<td>Measure site fidelity, habitat type and habitat quantity within breeding pair home ranges</td>
<td>X X X X X</td>
</tr>
<tr>
<td>Map suitable habitat within the province</td>
<td>X</td>
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<tr>
<td><strong>Mitigation of threats</strong></td>
<td></td>
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<tr>
<td>Determine what factors may impact the availability of suitable habitat</td>
<td>X</td>
</tr>
<tr>
<td>Determine which factors impact individual survival</td>
<td>X X X X X</td>
</tr>
<tr>
<td>Maintain areas suitable for breeding</td>
<td>X X X X X</td>
</tr>
<tr>
<td>Develop mitigation strategies for threats to individuals and habitat identified through ongoing research</td>
<td>X X X X X</td>
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<tr>
<td>Evaluate the population impact of collisions of migrating birds with man-made structures within the Province</td>
<td>X X</td>
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<tr>
<td>Evaluate the impact of red squirrel predation on nest success</td>
<td>X X X</td>
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<tr>
<td><strong>Education of public</strong></td>
<td></td>
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<tr>
<td>Produce educational materials</td>
<td>X X</td>
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<tr>
<td>Encourage participation in bird monitoring initiatives</td>
<td>X X X X X</td>
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<tr>
<td>Encourage the public to report sightings to the Wildlife Division</td>
<td>X X X X X</td>
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<tr>
<td>Develop materials that can be provided to individuals making management decisions about habitat</td>
<td>X X X</td>
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<tr>
<td>Educate managers and stakeholders during assessments, management planning and stewardship initiatives</td>
<td>X X X X X</td>
</tr>
</tbody>
</table>


