

FOREST PASSERINE MANAGEMENT SYSTEM

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INTRODUCTION

This document describes the process used by the Department of Inland Fisheries and Wildlife (MDIFW) to implement research and management programs for obligate forest songbirds. The species composition of this group of birds was defined by Hodgman (1998) in an assessment of research and management needs. From this assessment, a public working group, convened during summer of 2000, established goals and objectives for management of Maine's forest Passerines. In addition, an evaluation of the desirability, feasibility, capability of the habitat, and possible consequences have been identified, and a series of problems and strategies for overcoming limitations of the goals and objectives has been drafted.

Among the 120, or so, Passerines that occur in Maine at various times of the year, nearly 50 percent can be considered forest obligates. These forest-dependant species include 54 species covering nine families (see Appendix 1); nineteen species reside in Maine throughout the year and 35 occur in Maine only during the breeding season. Two species have been omitted from this system: Gray-cheeked Thrush (*Catharus minimus*) and Orange-crowned Warbler (*Vermivora celata*) as they neither breed nor overwinter in Maine. Instead, they stopover during spring and fall migrations. Despite these omissions, habitat management and outreach that will result from this system will assuredly benefit both of these species.

MANAGEMENT GOALS AND OBJECTIVES

The strategic planning process employed by MDIFW solicits public input in the development of goals and objectives for species management. The following were developed for forest Passerines:

Goal: Maintain the diversity and abundance of forest Passerines, and increase the understanding and appreciation of forest Passerines and their habitat requirements in Maine.

Population Objective 1: Identify forest passerines whose populations in Maine are declining, and stabilize and begin to reverse the decline by 2015. Priority should be given to those species that have greater than 5% of their global populations breeding in Maine.

Population Objective 2: Through 2015, maintain and monitor forest passerines whose populations have been stable or increasing since 1980.

Population Objective 3: For forest passerines whose populations are assumed to be cyclical, work in conjunction with partners throughout the planning period (2002-2015) to try to determine long-term, cyclical patterns.

Assumptions

- Objectives set at the state scale can effect population change given the complex life history of long-distance migrants.
- When using BBS data to indicate population trend, assume that trend estimates based primarily on counts of singing males are representative of trends for the entire population.
- Sufficient BBS data exist for all species, but especially “priority species” (e.g., those with >5% of their global breeding population in Maine).
- The threshold of 5% of global breeding population is indeed appropriate.

- For species with declining trend or evidence of a declining trend, assume that management activities in Maine can contribute to reversing trend even though the most limiting factor may not be known.
- 1980 is an appropriate date from which to base population change. Use of 1980 reflects the beginning of the latter half of the BBS survey period. Prior to 1980, few routes were conducted in northern Maine therefore trend estimates based on data collected before 1980 may be subject to limited sample size.
- For species in decline for which evidence of cause is closely linked to forces outside Maine, assume detailed monitoring of the population is Maine's greatest contribution to conservation of the species.
- Species with cyclical populations fluctuate naturally.
- The 15-year planning cycle is an appropriate time frame for effecting population change/monitoring for cyclic species.

Habitat Objective: Maintain and enhance a sufficient amount of high quality habitat to prevent and reverse population declines of forest birds in Maine.

Assumptions

- "Sufficient amount" of habitat is known or can be determined for all priority species.
- Determinants of habitat quality for all priority species are known or can be determined.
- Limitations in either quantity or quality of habitat in Maine are influencing population trend.

- A mechanism for inventorying and monitoring quantity and quality of forest habitat exists or can be developed in Maine.
- The amount of conservation land (all lands currently under conservation ownership or easement) in Maine is inadequate to ensure long-term protection of all species in this group at desired levels.
- Private forest landowners will play an important role in conservation of priority species and incentives for cooperation should be developed.

Outreach Objective: By 2005, develop and begin implementing an outreach program that increases the understanding and appreciation of forest passerines and their habitat requirements in Maine.

Assumptions

- “Understanding” refers to an individual’s knowledge of a species life history, niche, and conservation status in Maine.
- “Appreciation” refers to an individual’s awareness of the difficulties involved in managing a species population or habitat, given the current social, political, and financial constraints.
- An appropriate (and receptive) audience can be identified and targeted by above plan.
- A formal outreach plan, however brief, is actually needed.

MANAGEMENT DECISION-MAKING PROCESS

The following three-part management system provides the framework for managing populations and habitats of forest Passerines in Maine. Further, it

identifies a system for improving public understanding and appreciation of this group of birds.

POPULATION MANAGEMENT SYSTEM

Decision Criteria

The following criteria determine the sequence of procedures used to conserve forest Passerine populations in Maine (Fig. 1). Although this system applies to all species described above, it operates on an individual species basis (i.e., each species is to be run through each population criterion separately). Furthermore, this approach is to be carried out in the form of an annual review because of the dynamic nature of species priority/special concern lists, population trend estimates, etc.

Criterion A: *Have all species been reviewed for priority status?*

This criterion addresses whether each of the 54 species in this group has been reviewed by this agency to determine the relative urgency of conservation action. The Passerine Working Group recommended using a threshold of 5% of global population breeding in Maine as a criterion for prioritization. However, various organizations and agencies since the 1980s have developed, sometimes elaborate, ranking systems to focus attention on certain species (NESWDTC 1999, Carter et al. 2000). These lists of priority

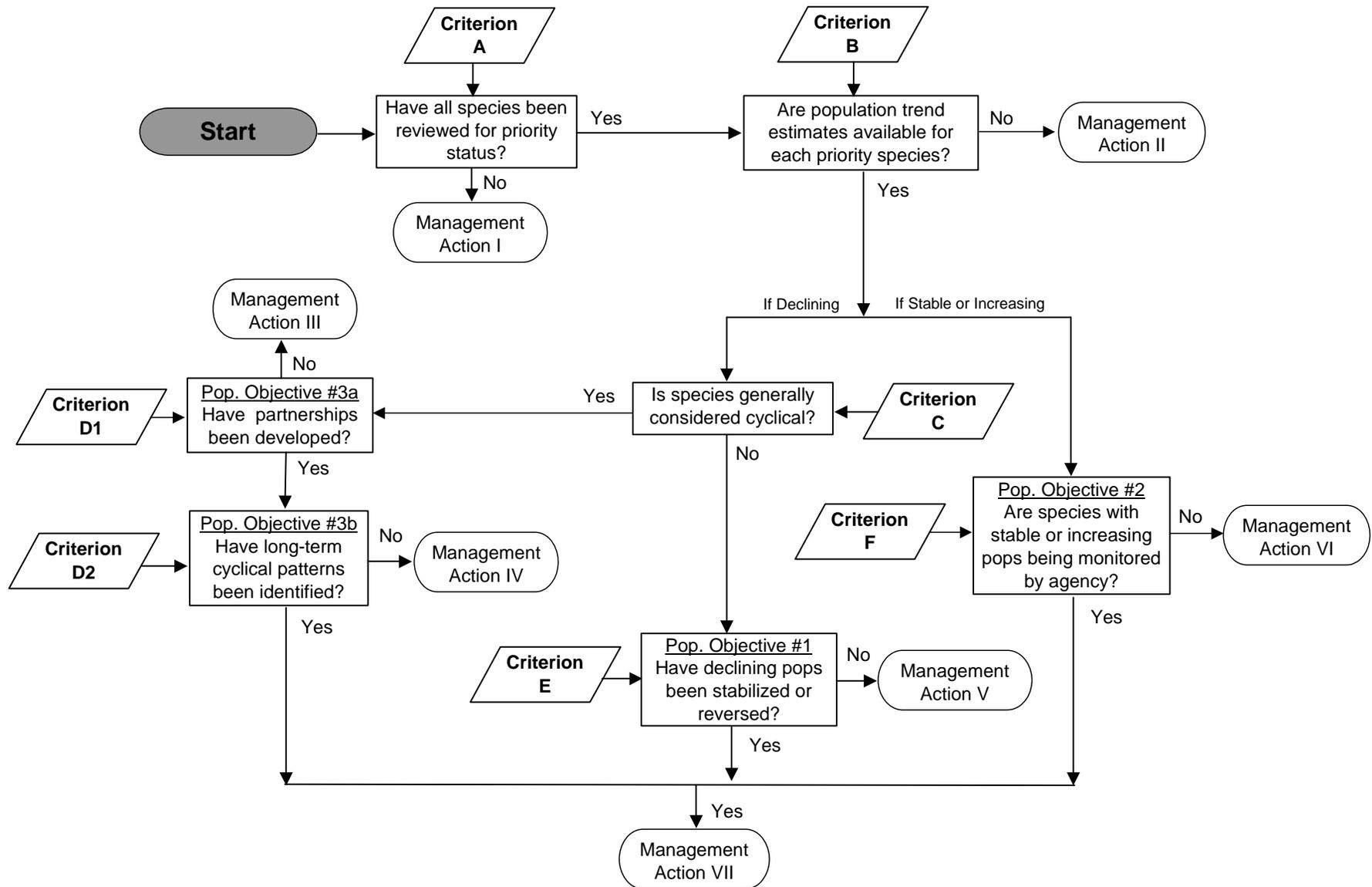


Figure 1. Flow diagram depicting decision criteria for Population Management System for forest Passerines in Maine.

birds in addition to the 5% threshold are the source of “data” to respond to this criterion.

Rule of Thumb: Species will be considered a priority, and thus addressed by this management system, if upon annual review:

1. They are recognized by Partners in Flight (PIF) as priority birds in categories (see Appendix II for further explanation):
IA (High Continental Priority – High Regional Responsibility),
IB (High Continental Priority – Low Regional Responsibility),
IIA (High Regional Concern),
IIB (High Regional Responsibility), and
IIC (High Regional Threats)
for either the Northern Spruce- Hardwood Forest (Rosenberg and Hodgman 2000), Northern New England (Hodgman and Rosenberg 2000), or Southern New England (Dettmers and Rosenberg 2000) Physiographic Regions, or,
2. They are listed as a Highest, High, or Moderate Priority within Bird Conservation Regions 14 (see Appendix III) or 30 by the North American Bird Conservation Initiative, or,
3. They are listed by the U.S. Fish & Wildlife Service (USFWS) as a species of management concern, or,

4. They are listed by the Northeast Endangered Species and Wildlife Diversity Technical Committee as a species of conservation concern (NESWDTC 1999), or,
5. They are considered by MDIFW to be a species of special concern, or if,
6. >5% of their global population occurs in Maine.

An affirmative response will require that all appropriate prioritization lists (see “Rule of Thumb” above) and population data have been reviewed (annually) to determine if any of the species in this group qualify. A list of these species will be prepared annually.

Criterion B: *Are reliable population trend data available for all priority species?*

This criterion addresses the adequacy of current monitoring programs in Maine. Currently, the North American Breeding Bird Survey (BBS) provides the primary source of data and trend estimates for Passerines breeding in Maine. Also, National Audubon’s Christmas Bird Count (CBC) provides data and trend estimates for winter residents. Furthermore, within ten years, Mountain Birdwatch, a program for monitoring high elevation forest Passerines will provide trend estimates for several species not currently monitored adequately by the BBS or CBC.

An affirmative response will require statistically reliable trend estimates based on BBS and/or CBC data.

Rules of Thumb: If species trend estimates are only available from the BBS:

Trend will be based on at least 14 routes in Maine with $P \leq 0.10$ from the most recent half of the BBS period (i.e., currently 1980-2001). If <14 routes are available for Maine in that time period, use trend estimates (same P -value and time frame) for Northern New England or Eastern Spruce/Hardwood regions (switch this to BCR 14 when available) if based on ≥ 30 routes for either region.

If species trend estimates are only available from the CBC:

Trend will be based on ≥ 10 circles for Maine.

If species trend estimates are available from both BBS and the CBC:

Use estimate with greatest power according to geographic rule described above.

Trends not conforming to these rules of thumb are not reliable.

Rule of Thumb: A declining trend is a statistically significant ($P < 0.10$) estimate of negative (-) population growth.

Criterion C: *Is species generally considered cyclical?*

This criterion addresses whether any of the species covered by this management system exhibit cyclical patterns in their population dynamics as a result of response to fluctuations.

An affirmative response will require that a species occur on both a list of priority species (see Criterion A above) and a list of cyclical species.

Criterion D1: *Have partnerships been developed?*

This criterion focuses on whether partner agencies, organizations, or corporations have been assembled to ensure that although cyclical species may naturally decline, they do not reach population levels so low that they cannot recover.

Affirmative response will occur when a panel representing stakeholders has met and discussed this issue, thus providing MDIFW with meaningful direction.

Criterion D2: *Have long-term cyclical patterns been identified?*

This criterion focuses on whether patterns of population increase and decline are well-understood for priority cyclical species.

An affirmative response will occur when a summary report for each of the priority cyclical species has been prepared and reviewed by supervisors and partner panel described in Criterion D1.

Criterion E: *Have declining populations been stabilized or reversed?*

This criterion addresses whether species with documented declines are no longer in decline. Trend estimates from the BBS and CBC will be the primary sources of data for this criterion.

An affirmative response will require statistically reliable trend estimates.

Rule of Thumb: Populations have stabilized when a species' declining trend ceases to be significant (i.e., $P > 0.10$) for three consecutive yearly updates to either the BBS or CBC. However, estimates must have been on at least 14 routes or 10 CBC circles (0.5 mi radius) (or 30 routes for Northern New England or Eastern Spruce Hardwood regions when Maine data is unreliable) for 3 consecutive years. Population declines have reversed (i.e., increasing)

when a species' declining trend (or nonsig. trend) becomes positive (+) and significant at $P \leq 0.10$ for three consecutive yearly updates to either the BBS or CBC. Estimates must be based on at least 14 routes (10 CBC circles) for Maine, or if Maine data are insufficient, 30 routes for Northern New England or Eastern Spruce Hardwood regions.

Criterion F: *Are species with stable or increasing populations being monitored by agency?*

This criterion addresses whether populations of any of the priority species covered by this management system are stable or increasing and are considered priority under Criterion A. Further, it asks if these populations are being monitored by MDIFW Staff or its volunteers or partner organizations or agencies. Sources of data for this Criterion arise from the North American Breeding Bird Survey (BBS), the Christmas Bird Count (CBC) or other (i.e. regional) monitoring programs. Trend estimates from these programs provide the data to evaluate this criterion.

An affirmative response will require statistically reliable trend estimates (see "Rule of Thumb" under Criterion B) based on BBS, CBC, or other data.

Rule of Thumb: A stable trend is an estimate of population growth that is either positive (+) or negative (-), but not statistically significant (i.e., $P >$

0.10). An increasing trend is one where population growth is positive (+) and statistically significant (i.e., $P \leq 0.10$). Note: adequate data (number of routes or circles) are critical to making these judgments, so the “Rule of Thumb” under Criterion B must be followed closely.

Management Actions

The following management actions are the recommended procedures for accomplishing the 3 population objectives. Specific management actions result from responses to decision criteria identified in Figure 1.

Management Action I

- 1) Annually, determine if any species covered by this management system meet priority criteria listed in “Rule of Thumb” under Criterion A.
- 2) Prepare list of species that will be considered a priority for this management system.

Management Action II

- 1) If possible, improve BBS coverage by:
 - a. Encouraging long-term commitments by current participants (i.e., to decrease route “down time”; when routes are assigned to new observers, the first 3 years data are not used. This is considered a *de facto* training period).

b. Increasing actual participation among currently assigned routes.

Increase participation rate to $\geq 90\%$ or at least 51 of 56 routes run each year. Participation has waned over the past several years: 1995 (90% of routes were run), 1996 (100%), 1997 (80%), 1998 (82%), 1999 (70%), and 2000 (63%). Accomplish this via:

i. Send letter to all observers thanking them for their volunteer participation and explaining the importance of BBS data to monitoring species populations.

ii. Make follow up phone call to volunteers who have not run their assigned route two or more times since 1997.

Encourage these individuals to resume survey or relinquish route to another interested individual.

iii. Provide other IFW-sponsored incentives (e.g., volunteer art print, Partners in Flight poster) to volunteers

c. If possible, increase total number of routes available in Maine. This is not likely for the foreseeable future as the number of routes was recently increased for the 2002 survey.

2) If priority species is only a winter resident, encourage increased participation in CBC by:

a. Determine levels of participation in each Maine circle.

b. Work to increase participation in circles with few volunteers especially those in remote locations.

- c. Ensure that data from all circles is submitted for analysis by contacting delinquent compilers (if any).
 - d. Identifying areas that can support additional circles.
 - e. Identify individuals that can serve as “new” compilers.
 - f. Work with local NGO’s to generate volunteers to count in “new” circles.
- 3) Develop separate monitoring programs for species not adequately monitored by the BBS or CBC if they are recognized as a priority under Criterion A. This will require additional volunteer support and may be coordinated with Maine Audubon.
- 4) If unsuccessful or deemed to have too little power to detect trend using BBS at state scale, build partnerships in northeast region to:
- a. Expand BBS coverage using above-mentioned steps, and/or
 - b. Develop regional monitoring program specifically targeting poorly monitored species (e.g. Project Mountain Birdwatch).

Management Action III

- 1) Identify potential interest groups that affect habitat or populations of cyclical species.
- 2) Convene meeting of this group to:
 - a. Review what is known and not known about cyclical species.
 - b. Identify appropriate lines of research if needed.

- c. Identify potential management actions (if any) that could be initiated immediately.

Management Action IV

- 1) Investigate cyclical population dynamics of priority species to:
 - a. Identify proximate causes of cycling.
 - b. Better understand role of habitat management in dampening population lows.
 - c. Determine point during decline where population becomes so small that trend estimates have inadequate power.
 - d. Prepare summary report on causes of population cycles among Maine's priority forest Passerines.

Management Action V

- 1) Determine factors contributing to population decline
- 2) Differentiate between factors that can be affected in Maine and those that cannot.
- 3) For habitat-related factors, establish partnerships to improve habitat for declining species by:
 - a. Identifying stakeholders.
 - b. Seeking consensus among experts regarding highest priority approaches to recovery.
 - c. See Habitat Management System.

Management Action VI

- 1) Review BBS and CBC trend estimates for all priority species.
- 2) List each priority species with either reliable nonsignificant trends or significant positive trends.
- 3) Monitor trend estimates annually.
- 4) Develop monitoring program for species inadequately monitored by existing programs but assumed to be stable or increasing.

Management Action VII

- 1) Convene public working group to revise population objectives for forest Passerines.

HABITAT MANAGEMENT SYSTEM

Decision Criteria

The following criteria determine sequence of procedures used to conserve habitat for forest Passerines in Maine (Fig. 2).

Criterion G1: *Are the habitat requirements (and limiting factors) of all priority species generally understood?*

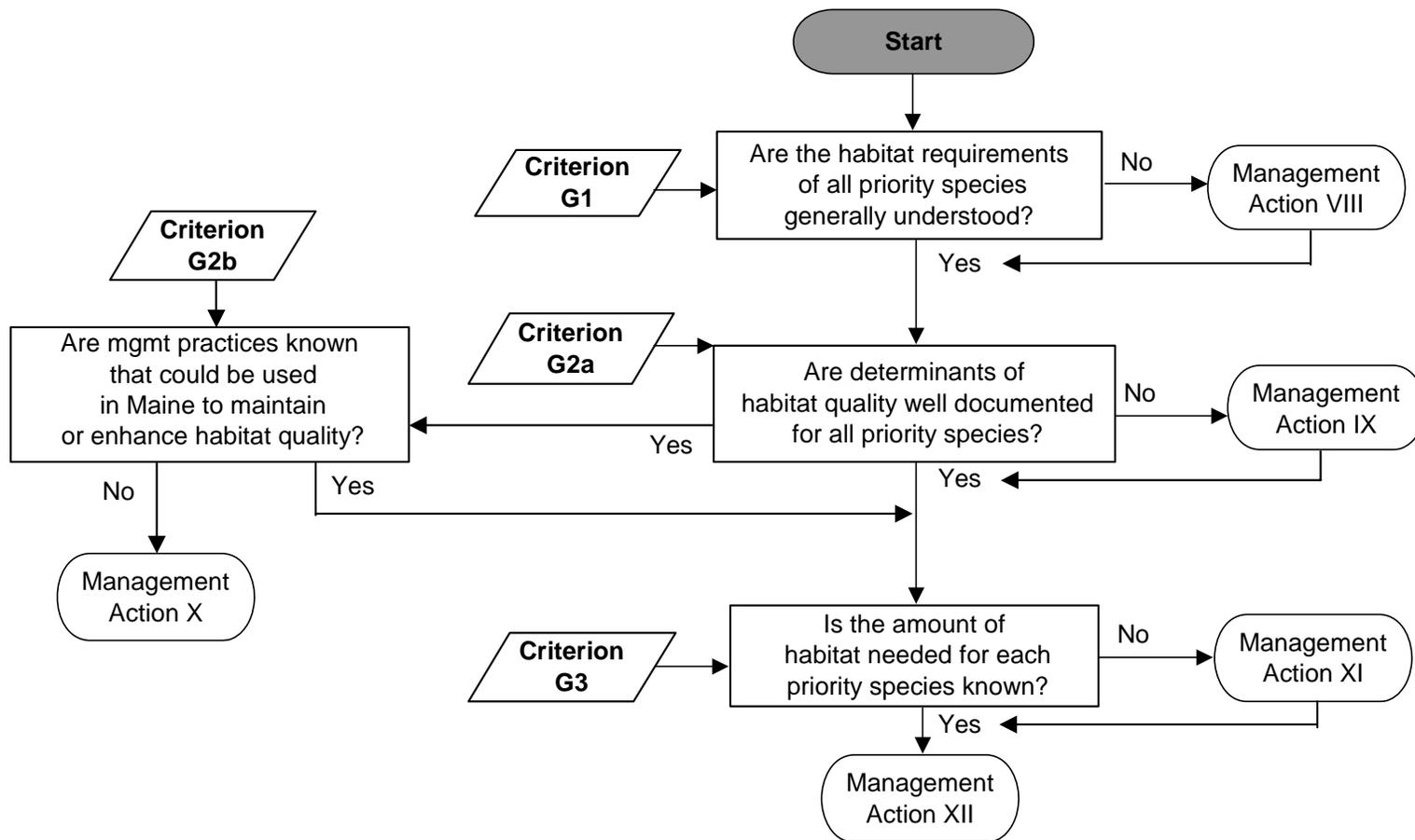


Figure 2. Flow diagram depicting decision criteria for Habitat Management System for forest Passerines in Maine.

This criterion evaluates what is currently known about the habitat requirements of each of the priority forest Passerines in Maine. A review of literature for each of the priority species will be the source of data to answer this criterion.

An affirmative response will require that this database be completed for all priority forest Passerines.

Criterion G2a: *Are determinants of habitat quality well documented for all priority species?*

This criterion evaluates whether the factors effecting habitat quality are well documented in the literature. A review of literature for each of the priority species will be the source of data to answer this criterion.

An affirmative response will occur when a summary document reviewing the ornithological literature on the subject of habitat quality for each priority forest Passerine has been prepared and reviewed by appropriate supervisors.

Criterion G2b: *Are management practices known that could be used in Maine to maintain or enhance habitat quality?*

This criterion addresses whether the relationships between forest management practices and habitat quality are well known. Specifically, do some silvicultural systems, stand treatments, or landscape attributes (e.g., block size) enhance the quality of habitat (i.e., confer improved survival and productivity) for priority forest Passerines? A review of the ornithological literature will serve as the source of data to address this Criterion.

An affirmative response will be achieved when a summary document reviewing the ornithological literature and describing specific silvicultural treatments that can be used to enhance habitat quality for priority forest Passerines has been prepared and reviewed by appropriate supervisors.

Criterion G3: *Is the amount of habitat needed for each priority species known?*

This criterion addresses whether, given the knowledge and assumptions inherent within the three previous criteria, can the amount of forest habitat needed for all priority forest Passerines be quantified.

An affirmative response will require a spreadsheet and summary report describing calculations of habitat needs for all priority forest Passerines and these be reviewed by appropriate supervisors.

Management Actions

The following management actions are the recommended procedures for accomplishing habitat objectives. Specific management actions result from responses to decision criteria identified in Figure 2.

Management Action VIII

- 1) Conduct literature review on habitat requirements for all priority forest Passerines.
- 2) Conduct additional research as needed to fill gaps in knowledge.

Management Action IX

- 1) Conduct literature review on factors affecting habitat quality for all priority forest Passerines.
- 2) Create database that includes the following fields:
 - a. Priority species.
 - b. Preferred habitat (e.g. mature hardwood forest).
 - c. Important microhabitat(s) (e.g., nests under hanging bark on dead trees, nests on forest floor, feeds in canopy).
 - d. Important structural components of the landscape or forest (e.g. uses tree-fall or harvest gaps, forest interior species, etc.).
 - e. Important understory features (e.g., highest abundance in stands with dense understory).
- 3) Identify significant gaps in knowledge and potential consequences.

- 4) Conduct additional research as needed to fill gaps in knowledge.

Management Action X

- 1) Conduct literature review on silvicultural practices and habitat quality for all priority forest Passerines.
- 2) Identify significant gaps in knowledge and potential consequences.
- 3) Conduct additional research as needed to fill gaps in knowledge.
- 4) Seek partnerships with forest landowners to employ beneficial strategies wherever and whenever possible.

Management Action XI

- 1) Calculate amount of habitat needed for each priority forest Passerine based on:
 - a. Desired population level.
 - b. NE PIF estimates adjusted for Maine.

Management Action XII

- 1) Compare amounts needed with an assessment of existing conservation lands (see Wetland Passerine Management System).
- 2) Seek partnerships with landowners to conserve/monitor additional forest habitat.
- 3) Convene public working group to redraft habitat objective.

OUTREACH MANAGEMENT SYSTEM

Decision Criteria

The following criteria determine the sequence of procedures to be used to improve the understanding and appreciation of forest Passerines in Maine.

Criterion H1: *Has an outreach plan been developed?*

This criterion simply addresses whether a plan for increasing the understanding and appreciation of forest Passerines and their habitat requirements in Maine has been assembled.

An affirmative response will be met when a brief document describing outreach materials and a schedule for their distribution have been drafted.

Criterion H2: *Has an outreach plan been implemented?*

This criterion addresses whether a plan for increasing the understanding and appreciation of forest Passerines and their habitat requirements in Maine has been put in place.

An affirmative response will have been achieved when outreach materials have been developed and distributed.

Management Actions

The following management actions are the recommended procedures for accomplishing outreach objective. Specific management actions result from responses to decision criteria identified in Figure 3.

Management Action XIII

- 1) Identify target audience.
- 2) Identify components of plan.
- 3) Identify and contact potential cooperators (e.g., Maine Audubon, National Wildlife Refuges, etc.).
- 4) Determine method of delivery (e.g. radio, poster, pamphlet, articles).
- 5) Identify sites for implementation (e.g., specific refuges and nature centers, radio programs, magazines/newspapers/journalists).

Management Action XIV

- 1) Prepare outreach materials as planned and scheduled in Management Action XIII.
- 2) Deliver outreach materials as planned and scheduled in Management Action XIII.

Management Action XV

- 1) Reconvene public working group and redraft outreach objective

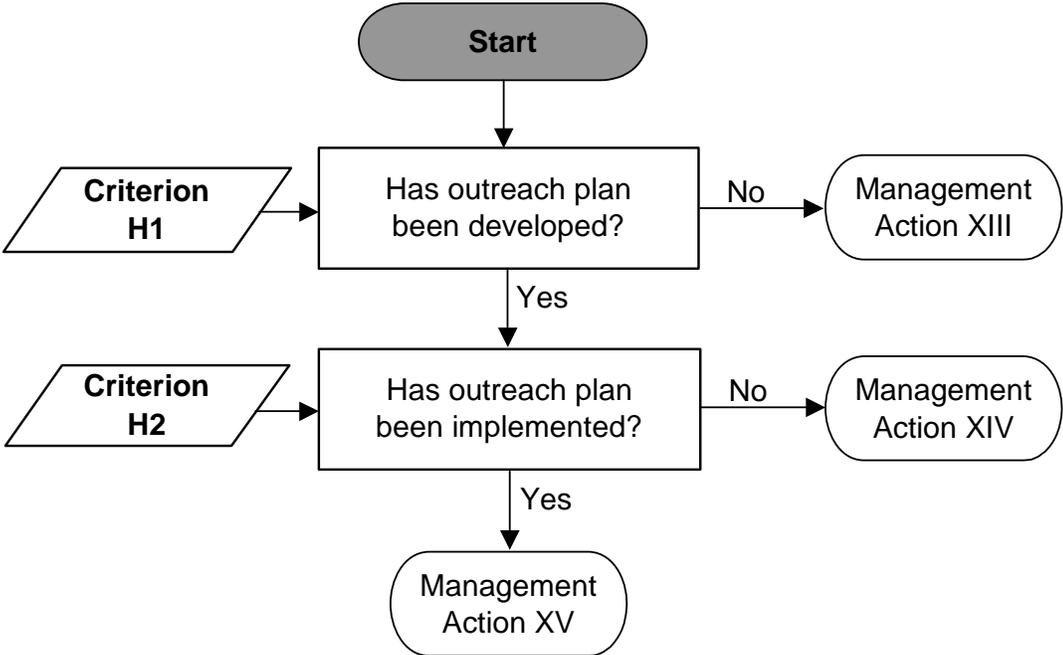


Figure 3. Flow diagram depicting decision criteria for Outreach Management System for forest Passerines in Maine.

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Appendix I. Forest Passerines found in Maine.

Species	Associated Forest Type	Residency
Flycatcher, Olive-sided	Conifer-dominated	Breeder
Wood-pewee, Eastern	Deciduous-dominated	Breeder
Flycatcher, Yellow-bellied	Conifer-dominated	Breeder
Flycatcher, Least	Deciduous-dominated	Breeder
Phoebe, Eastern	Deciduous-dominated	Breeder
Flycatcher, Great-crested	Deciduous-dominated	Breeder
Jay, Gray	Conifer-dominated	All Year
Jay, Blue	Deciduous-dominated	All Year
Crow, American	Deciduous-dominated	All Year
Raven, Common	Conifer-dominated	All Year
Chickadee, Black-capped	Deciduous-dominated	All Year
Chickadee, Boreal	Conifer-dominated	All Year
Titmouse, Tufted	Deciduous-dominated	All Year
Nuthatch, Red-breasted	Conifer-dominated	All Year
Nuthatch, White-breasted	Deciduous-dominated	All Year
Creeper, Brown	Deciduous-dominated	All Year
Wren, Winter	Conifer-dominated	Breeder
Kinglet, Golden-crowned	Conifer-dominated	All Year

Appendix I. - Continued.

Species	Associated Forest Type	Residency
Kinglet, Ruby-crowned	Conifer-dominated	All Year
Veery	Deciduous-dominated	Breeder
Thrush, Bicknell's	Conifer-dominated	Breeder
Thrush, Swainson's	Conifer-dominated	Breeder
Thrush, Hermit	Conifer-dominated	Breeder
Thrush, Wood	Deciduous-dominated	Breeder
Vireo, Blue-headed	Conifer-dominated	Breeder
Vireo, Yellow-throated	Deciduous-dominated	Breeder
Vireo, Warbling	Deciduous-dominated	Breeder
Vireo, Philadelphia	Deciduous-dominated	Breeder
Vireo, Red-eyed	Deciduous-dominated	Breeder
Warbler, Tennessee	Conifer-dominated	Breeder
Parula, Northern	Conifer-dominated	Breeder
Warbler, Magnolia	Conifer-dominated	Breeder
Warbler, Cape May	Conifer-dominated	Breeder
Warbler, Black-throated Blue	Deciduous-dominated	Breeder
Warbler, Yellow-rumped	Conifer-dominated	Breeder
Warbler, Black-throated Green	Conifer-dominated	Breeder
Warbler, Blackburnian	Conifer-dominated	Breeder

Appendix I. - Continued.

Species	Associated Forest Type	Residency
Warbler, Pine	Conifer-dominated	Breeder
Warbler, Bay-breasted	Conifer-dominated	Breeder
Warbler, Blackpoll	Conifer-dominated	Breeder
Warbler, Black and White	Deciduous-dominated	Breeder
Redstart, American	Deciduous-dominated	Breeder
Ovenbird	Deciduous-dominated	Breeder
Warbler, Canada	Deciduous-dominated	Breeder
Tanager, Scarlet	Deciduous-dominated	Breeder
Grosbeak, Rose-breasted	Deciduous-dominated	Breeder
Junco, Dark-eyed	Conifer-dominated	All Year
Oriole, Baltimore	Deciduous-dominated	Breeder
Grosbeak, Pine	Conifer-dominated	All Year
Finch, Purple	Conifer-dominated	All Year
Crossbill, Red	Conifer-dominated	All Year
Crossbill, White-winged	Conifer-dominated	All Year
Siskin, Pine	Conifer-dominated	All Year
Grosbeak, Evening	Conifer-dominated	All Year

Appendix II. Partners in Flight Priority Species Pool

From among the breeding avifauna, a pool of species may be derived that represents priorities for conservation action within the physiographic area. Note that a species may be considered a priority for several reasons, including global threats to the species, high concern for regional or local populations, or responsibility for conserving large or important populations of the species. Justification for priority status is represented by various tiers. The primary tool for creation of this pool is the PIF prioritization process (Carter et al. 2000). This system ranks species according to seven measures of conservation vulnerability. These seven measures include four at the global scale (i.e., they do not change from area to area), as well as threats to breeding populations (TB), area importance (AI), and population trend (PT), which are specific to each physiographic area. Categories of priority status are determined by examining combinations of parameter scores, as well as the total rank score (each parameter is given a rating of 1-5 for a potential total score of 35), which is a measure of overall conservation priority. This process of identifying priority species has been standardized across all physiographic areas of North America.

There are five entry levels into the priority species pool, as follows:

Tier I. *High Continental Priority.* Species that are typically of conservation concern throughout their range. These are species showing high vulnerability in a number of factors, expressed as any combination of high parameter scores leading to an average score > 3 (the midpoint); total of 7 parameter scores will be = 22, with AI = 2 (so that species without manageable populations in the region are omitted).

Tier IA. *High Continental Priority - High Regional Responsibility.* Species for which this region shares major conservation responsibility; i.e., conservation in this region is critical to the overall health of this species. Species with AI of 4 or 5 or a high percent population (above threshold in IIC).

Tier IB. *High Continental Priority - Low Regional Responsibility.* Species for which this region can contribute to range-wide conservation objectives where the species occurs. Species with AI of 2 or 3.

Tier II. *High Regional Priority.* Species that are of moderate continental priority, but are important to consider for conservation within a region because of various combinations of high parameter scores, as defined below; total of 7 parameter scores = 19-21.

Tier IIA. *High Regional Concern.* Species that are experiencing declines in the core of their range and that require short-term conservation action to

reverse or stabilize trends. These are species with a combination of high area importance and declining (or unknown) population trend; total of 7 parameters = 19-21, with AI + PT = 8.

Tier IIB. *High Regional Responsibility.* Species, for which, this region shares in the responsibility for long-term conservation, even if they are not currently declining or threatened. These species are of moderate continental priority with a disproportionately high percentage of their total population in the region; total of 7 parameters = 19-21, with % population > threshold.

Tier IIC. *High Regional Threats.* Species of moderate continental priority that are uncommon in a region and whose remaining populations are threatened, usually because of extreme threats to sensitive habitats. These are species with high breeding threats scores within the region (or in combination with high nonbreeding threats outside the region); total of 7 parameters = 19-21 with TB + TN > 6, or local TB or TN = 5.

Tier III. *Additional Watch List.* These species are on the US national Watch List not included in the above tiers. These species score highly enough based on global criteria to warrant conservation attention wherever they occur with an AI of 2 or more.

Tier IV. *Additional Federally Listed.* Species listed under the U.S. Endangered Species Act receive conservation attention wherever they occur.

Tier V. *Additional State Listed.* Species on state endangered, threatened, or special concern lists that did not meet any of above criteria. These are often rare or peripheral populations.

Appendix III. Atlantic Northern Forest - Bird Conservation Region 14 – Priority Species

Definitions

High Continental Concern = a continental level Watch List species

High BCR Concern = local PT ≥ 3 and (local TB ≥ 3 or local TN ≥ 3)

BCR Declines = local PT ≥ 4

High BCR Threats = local TB ≥ 4 or local TN ≥ 4

Moderate BCR Threat = local TB ≥ 3 or local TN ≥ 3

High BCR Responsibility = % pop $\geq 8\%$ or AI = 5

Moderate-High BCR Responsibility = % pop $\geq 4\%$ or AI ≥ 4

Moderate BCR Responsibility = % pop $\geq 1\%$ or AI ≥ 3

Highest Priority Landbirds

Rule 1: High BCR Concern AND High BCR Responsibility AND High Continental Concern

- Bicknell's Thrush
- Wood Thrush
- Canada Warbler
- Bay-breasted Warbler

High Priority Landbirds

Rule 1: High Continental Concern AND Moderate BCR Responsibility

- Olive-sided Flycatcher

Rule 2: Moderate-High BCR Responsibility (%pop ≥ 4 or AI ≥ 4) AND BCR Declines AND Moderate BCR Threat

- Cape May Warbler
- Veery
- Eastern Wood-Pewee

Rule 3: High BCR Responsibility (%pop $\geq 8\%$) AND BCR Declines

- Purple Finch
- Yellow-bellied Sapsucker

- American Redstart

Added For Other Reasons

- Boreal Chickadee (permanent resident with highest overall score)
- Black-throated Blue Warbler (high BCR responsibility and high overall score)

Moderate Priority Landbirds

Rule 1: Moderate-High BCR Priority AND BCR Decline AND Total Score ≥ 19

- Rose-breasted Grosbeak

(*Note – the following species meet the first two criteria of this rule, but have Total Score < 19: Least Flycatcher, Ruby-crowned Kinglet, Swainson’s Thrush, Dark-eyed Junco.)

Rule 2: Moderate BCR Responsibility AND BCR Decline AND Moderate BCR Threat

- Blackpoll Warbler

Rule 3: High BCR Responsibility AND Moderate BCR Threat AND Total Score ≥ 18

- Northern Parula
- Blackburnian Warbler
- Black-throated Green Warbler
- Ovenbird

Rule 4: Moderate BCR Responsibility AND Uncertain BCR Trend (local PT = 3) AND Moderate BCR Threat

- Yellow-bellied Flycatcher
- Brown Creeper

Rule 5: High BCR Threat (local TB ≥ 4 or local TN ≥ 4) AND poorly surveyed by BBS

- No forest Passerines met this definition.