

**British Columbia Guide to Recovery Planning
for Species and Ecosystems**

**Appendix 4. Guidance for Drafting
Recovery Strategies and Management Plans**

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**Ministry of
Environment**

British Columbia Guide to Recovery Planning for Species and Ecosystems

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GETTING STARTED

Before drafting a recovery strategy or management plan:

1. Check-in with the [Recovery Planning Coordinator](#).
2. Ensure that your recovery/management team has current terms of reference signed by all members of the team and the Director, Ecosystems Branch (see Chapter 2 of *B.C. Guide to Recovery Planning for Species and Ecosystems*).
3. Obtain the most recent version of the guidance documents from the [Recovery Planning in B.C. website](#) (see list below).
4. If writing a recovery strategy, determine if recovery is, or is not, technically and biologically feasible for the target species (see 2 of this appendix). If recovery of the species has been found to not be feasible, an abbreviated recovery strategy may still be required. Contact the Recovery Planning Coordinator for additional direction.

Other documents you will need to draft your recovery document:

- *B.C. Guide to Recovery Planning for Species and Ecosystems*: this document provides general guidance and information for all aspects of recovery planning in B.C.
- Appendix 2: Formatting Specifications for Recovery Documents
- Appendix 5: Guidance for Threat Assessments
- Appendix 6: Recovery Strategy Template OR Appendix 7: Management Plan Template: these are the templates that you are to use to complete your recovery strategy or management plan and are pre-formatted so that you can simply fill in the text.
- Examples of recently completed recovery strategies. These are found on the [Recovery Planning in B.C. website](#). Please ask the Recovery Planning Coordinator which documents would be the best examples for you to look at.

Although this guidance primarily focuses on producing a single-species recovery strategy or management plan, it may be modified to accommodate a multi-species approach. Contact the Recovery Planning Coordinator for additional guidance if an approach other than single-species is required.

GUIDANCE

This document must be used in conjunction with Appendix 6. Recovery Strategy Template or Appendix 7. Management Plan Template. When using the templates note that:

- All text highlighted in yellow in the B.C. Recovery Strategy/Management Template is to be replaced with text specific to your species.
- All text highlighted in grey in the B.C. Recovery Strategy/Management Template is to indicate where you are to insert text.
- Common and scientific names in provincial documents must follow those reported in the [B.C. Species and Ecosystem Explorer](#).

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- Use the B.C. Recovery Strategy/Management Plan Template *exactly* as it is presented for the title page up to and including the acknowledgment section. The only alterations to this portion of the document should be replacing the yellow-highlighted text.
 - Use the guidance in this document to help you fill in the sections of the B.C. Recovery Strategy/Management Template, starting with the executive summary and continuing to the end of the template.
-

1 EXECUTIVE SUMMARY

Begin this section on a new page.

Provide a brief summary of the recovery strategy/management plan that includes:

- legal status of the species and conservation framework priority/goal
- description of the species and its populations and distribution
- the major threats to the species
- goals and objectives of the document and major recovery/conservation approaches.

Note: The text in the template for this section is an example of wording that may be helpful in addressing the first and last items above. This text may be altered or deleted as needed.

Recommended length: 1 page.

2 RECOVERY FEASIBILITY (RECOVERY STRATEGIES ONLY)

Provide a clear statement indicating whether recovery is or is not biologically and technically feasible. This statement is based on the answers to the four criteria outlined by the Government of Canada (2009). These criteria are included in the template and are also listed in this section.

Each criterion needs to be addressed in the affirmative, negative, or as unknown, followed by a brief rationale.

Where there is insufficient information to assess feasibility, a precautionary approach will be taken and the response should be “unknown.”

If the answer to all of these questions is yes or unknown, recovery should be determined “feasible.” A positive statement is already provided in the template.

If the answer to any one of the criteria is no, recovery should be determined “not feasible.” If recovery is determined not to be biologically and technically feasible for the species, contact the recovery planning coordinator for guidance. It is possible an abbreviated recovery strategy may still be required.

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The Government of Canada (2009) has four criteria for recovery feasibility of a species:

1. Individuals of the wildlife species that are capable of reproduction are available now or in the foreseeable future to sustain the population or improve its abundance.
2. Sufficient suitable habitat is available to support the species or could be made available through habitat management or restoration.
3. The primary threats to the species or its habitat (including threats outside Canada) can be avoided or mitigated.
4. Recovery techniques exist to achieve the population and distribution objectives or can be expected to be developed within a reasonable timeframe.

3 COSEWIC SPECIES ASSESSMENT INFORMATION

Fill in the “COSEWIC species assessment information” summary box provided in the template *exactly* as reported from the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The COSEWIC assessment summaries and links to the COSEWIC status reports where this information is found can be accessed from the [Species at Risk Public Registry](#).

If the species has not been assessed by COSEWIC, then you may delete this section from your document. Instead, in the “Species Status Information” box, under the section titled “Conservation Status” add “COSEWIC: Not assessed.”

4 SPECIES STATUS INFORMATION

Summarize the legal designation, conservation status, and the priorities under the Conservation Framework for the species in the summary box provided. This information is accessible through the [B.C. Species and Ecosystems Explorer](#) (search for your species, then export the data). Yellow-highlighted text indicates where data need to be filled in or where a choice needs to be made as to the value for that field.

Note that only action groups that the species has been assigned under the B.C. [Conservation Framework](#) are to be included in the summary box. For general descriptions of each action group, see the “[How Does It Work?](#)” section of the Conservation Framework website. For a detailed description of the action groups, see [Appendix IV](#) of the document *Setting Goals, Assigning Priorities and Identifying Preliminary Conservation Actions for Species in British Columbia*. Please contact the Recovery Planning Coordinator if you have questions regarding the action groups to which this species has been assigned. If the recovery/management team believes that the species should be added or removed from an action group, the Recovery Planning Coordinator will contact the appropriate Conservation Framework staff so that adjustments can be considered.

Although additional text is not required for this section, it is permitted if the author feels an explanation or clarification of the information provided is needed.

5 SPECIES INFORMATION

The purpose of this section is to provide an understanding of the recovery/conservation needs of the species. The information contained in this section helps to build a rationale to explain why the recovery/management section outlines the most appropriate course of action. It includes information relevant to helping the reader understand the general status of the species and the reasons why it is at risk.

This section is a key tool in communication with other agencies as well as the general public on recovery/conservation needs. As such it should be written in a concise manner that is understandable by the lay person but still biologically accurate. In most cases, a detailed status report on the target species or ecosystem will have been completed before development of the recovery/management strategy. Use existing status reports to fill out this section to minimize duplication of effort, but update the status report information as needed.

Note: Where common or scientific names differ from those used by COSEWIC, note it in this section for clarification.

5.1 Species Description

How will the general public recognize the species? Provide a *brief* physical description of the species in plain language. Where appropriate, describe the physical appearance of different life stages. A photo may be included to complement the description.

Recommended length: 1–2 paragraphs.

5.2 Populations and Distribution

Briefly summarize the best available knowledge on global and provincial distribution and abundance of the species, and report on the level of confidence in this information. Use the information from the COSEWIC status report to populate this section but update the information as needed.

The following should be covered in this section:

5.2.1 Global distribution and abundance

- A clear and concise description of the global distribution and abundance of the species.
- An estimate of the percent of the global distribution and abundance currently found in B.C.
- A map of the current and historical (if possible) global distribution of the species. Use maps from the COSEWIC status report unless updated information is available.

5.2.2 BC distribution and abundance

- A detailed description of the known and historical (to the extent possible) distribution and abundance of the species in B.C. Where possible include a table outlining attributes of all

known populations (e.g., highly restricted or sessile species). Include information on populations and habitats known to be permanently lost. An example table is provided in the template as a starting point for you to use if helpful.

- A list of land tenures throughout the distribution in the highest level of detail possible given specific circumstances. For highly restricted species, whenever possible, link land tenure directly to specific populations and include this information in the table mentioned in the previous bullet. For wide-ranging species, include text or a table indicating the percent of distribution in different tenures.
- Comments on the level of confidence in the known distribution and abundance (e.g., based on search effort and/or habitat suitability models) to inform the probability of finding additional populations in B.C.; be sure to include negative search results.
- An estimate of the rate of change in geographic distribution and population abundance in B.C. over a biologically appropriate period where possible (e.g., percent of historical range lost in the last 50 years; percent difference between historical and current abundance in the last 10 years or three generations; proportion of populations that have been extirpated within the historical record).
- A map of the current and historical (if possible) B.C. distribution at the appropriate resolution to prevent sensitive or site-specific locations from being identified. Use maps provided in the COSEWIC status report unless updated information is available.

Recommended length: ~0.5–2 pages excluding tables and figures.

5.3 Needs of the Species

Include what is necessary to provide the context to inform the other sections of the recovery document. Note: Headings below are optional and can be used if deemed helpful.

Recommended length: ~0.5–2 pages; this section will vary with the complexity of the situation.

5.3.1 Habitat and biological needs

Describe the general environmental setting where the species occurs. This should include applicable information such as biogeoclimatic zone or ecoregion classifications, general suitable climate conditions, common species associations, geological formations, and soil types.

Summarize the features (biotic and abiotic) of high quality habitat that provide for the basic needs of the species (e.g., space, food, reproduction, and refuge) throughout the target's life cycle and annual cycle as appropriate. Link key habitat requirements to the ecological and biological attributes of the species as appropriate. Reference peer-reviewed literature whenever possible.

5.3.2 Ecological role (if applicable)

Outline known ecological roles or important symbiotic relationships with other species if applicable.

5.3.3 Limiting factors

List and describe biologically limiting factors (i.e., intrinsic/evolved characteristics of the species' life history or ecology) that may influence recovery/conservation potential. Provide a rationale outlining why the limiting factor might limit recovery/conservation potential. It is important to distinguish between limiting factors and threats. Limiting factors are generally not human induced and include characteristics that make the species less likely to respond to recovery/conservation efforts. For example, late age of maturity, low reproductive rate, pollinator dependency, intermittent recruitment, natural rarity, rigid behaviour patterns, reliance on specific disturbance regimes, limited dispersal ability, specific habitat requirements with limited availability, strong fidelity to traditional gestation, birthing, or over-wintering sites, extremely isolated small population(s), and dormancy requirements.

6 THREATS

Threat classification for provincial recovery strategies and management plans is based on the IUCN-CMP (World Conservation Union- Conservation Measures Partnership) unified threats classification system. The B.C. Conservation Framework and the Conservation Data Centre use this system. It is therefore important to contact the Recovery Planning Coordinator to determine if threats have been assessed for the species before filling out the Threats section. When threats have been assessed, use this information as the basis for the Threats section and update the information as needed.

An introduction paragraph has been provided for you. Please fill in the yellow-highlighted text.

Guidance for filling in the Threats section is in Appendix 4. Guidance for Threat Assessments.

6.1 Threat Assessment

Populate the threat classification table following the methods outlined in Appendix 4. Guidance for Threat Assessments.

Delete rows for threats that do not apply to the species.

6.2 Description of Threats

Provide narrative, as necessary, to better describe the threats listed in the threat classification table. Narrative is listed under the IUCN level 1 headings. Include IUCN level 2 sub-headings as appropriate (if needed for ease of reading). If there are many threats identified for a species, focus narrative on the threats with a higher impact.

An example introduction paragraph has been provided for you. Please adapt and fill in the yellow-highlighted text. Note that “major threats” refers to those threats with the greatest impact (e.g.,

very high or high impact threats as well as medium impact threats if there are few or no high impact threats).

Guidance for filling in the Threats section is in Appendix 4. Guidance for Threat Assessments.

7 CURRENT MANAGEMENT FRAMEWORK (MANAGEMENT PLANS ONLY)

This section is optional and applies to management plans only.

For species that are currently managed by the Province, especially harvested species, it may be beneficial to provide an outline and evaluation of the current management framework to give context for the management section. Details on the current management framework should include a summary of protection (legal, policy, or stewardship) and management provisions already in place. This section should also be used to provide concise information on how to manage for the species and/or its habitat (i.e., a brief overview of known best management practices) where this information is known.

8 RECOVERY/MANAGEMENT GOAL AND OBJECTIVES

8.1 Population and Distribution Goal

Setting the goal is the most important exercise in the recovery strategy or management plan. The goal is a qualitative or quantitative statement of the desired long-term outcome for recovery/conservation of the species. The goal addresses both population and distribution outcomes and defines what recovery/management means for the species. It is a statement of intent describing a desired future condition or achievement that one strives to attain. Progress toward achieving recovery/management for a given species will be measured against the stated population and distribution goal.

A goal usually cannot be attained by one objective or one program, but instead by a number of objectives and a sustained effort over a longer period of time. The goal focuses on an ultimate outcome and should *not* include mechanisms or methods on how to achieve that ultimate outcome.

An introduction to the Population and Distribution Goal may be included, which states the broad context for recovery/management. This should outline how recovery/management is to be defined for the species (i.e., achieve a down-listing of the species to Special Concern, de-list the species, stabilize the species population), followed by the specific goal for population abundance and distribution.

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The Population and Distribution Goal will:

- a) If applicable, be linked to the [COSEWIC assessment criteria](#) used for the species' status determination (i.e., A1-4, B1-2, C1-2, D1-2 or E), thereby specifying how “recovery” is to be interpreted for a given species;
- b) Be well thought out, scientifically sound, and biologically and technically realistic and will direct the development of recovery and management approaches that are appropriate for a given species and context;
- c) Incorporate quantifiable metrics where possible, supported by credible evidence and explain any uncertainty. To the extent possible, they will also establish the number of individuals, populations, and/or geographic distribution of the species required to successfully recover/manage the species. Where baseline information is not available to develop realistic, quantifiable objectives, approaches to obtain this information are needed in the recovery planning/management table.

8.1.1 Recovery strategy guidance

The ultimate purpose of the recovery strategy should be to secure the status of the species (i.e., reduce the risk of extinction or extirpation), and the recovery goal should reflect this focus. COSEWIC designates a species as Endangered or Threatened on the basis of [quantitative criteria](#). When setting the recovery goal, the criteria that led to the status assessment and any new information presented in the recovery strategy should be considered to facilitate securing the status of the species at a lower risk level.

Some species are naturally rare and in such cases, research and management approaches to achieve population and distribution goals may never result in delisting or down-listing. In such cases it is appropriate to provide a statement to this effect to demonstrate the reality of recovery constraints. It may also be appropriate to acknowledge recovery constraints for species with a very long lifespan, for which recovery may not be seen for a long time.

8.1.2 Management plan guidance

The ultimate purpose of the management plan is to prevent further decline, range loss, or worsened status, and the goal should reflect this focus. COSEWIC's decision to designate the species as special concern (if applicable) is based on various reasons. The determination of the management goal should be based on these reasons and incorporate any new information presented in the management plan to facilitate down-listing the species to not at risk.

Recommended length: 1 or more sentences.

8.2 Rationale for the Population and Distribution Goal

Clearly outline the criteria used to determine the population and distribution goal so that readers can understand why it has been set. Explain the key facts and assumptions that were used to set the goal. Clearly explain why the specified level of persistence (outcome) is appropriate for the target

species' recovery/conservation (which may range from precarious with limited occurrence to highly viable and self-sustaining) based on information about the species provided in the recovery document (e.g., confidence in population and distribution parameters, specific limiting factors or habitat and biological needs, and key knowledge gaps). Include a rationale of how specific quantitative targets were reached (e.g., to meet [COSEWIC criteria](#) for down-listing, or the level of persistence that is thought to be possible with all remaining habitat) OR an explanation of qualitative targets if measurable targets could not be set (e.g., if the goal is to maintain a “viable population,” the authors must define viable to the extent possible).

Recommended length: 1–2 paragraphs.

8.3 Recovery/Management Objectives

Taken together the objectives will achieve the goal if successfully implemented. Objectives describe a set of specific activities that need to be accomplished to achieve the goal. Objectives focus on outcomes, but do *not* prescribe mechanisms or methods for achieving those outcomes.

The following **SMART** acronym is used to describe important characteristics of objectives:

- **Specific:** clearly and concisely state what needs to be achieved in terms of population size/number, species distribution, or threat reduction to reach the recovery goal.
- **Measurable:** present objectives either quantitatively or qualitatively in a way that makes it possible to know when the outcome has been reached; quantify the amount of change to be achieved.
- **Achievable:** be realistic given known limitations and threats.
- **Relevant, results-focused, realistic:** relate objectives to recovery goals and the needs of the species. Objectives should be biologically and technically realistic.
- **Time-bound:** specify a time target by which the objective is to be reached (five years is a common short-term timeframe). Note that time targets may be omitted from objectives as long as they are specified in the section “Measuring Progress.”

List the objectives in the order of priority or timeline.

If an objective makes reference to protection of habitat, include the following footnote (also provided in the template): “Protection can be achieved through various mechanisms including: voluntary stewardship agreements, conservation covenants, sale by willing vendors on private lands, land use designations, and protected areas.”

If needed for clarification, after listing the objectives, briefly explain the thinking and rationale behind setting the objectives (e.g., explain how each objective will support the goal), either individually or as an overall approach.

Recommended length: 0.5 page.

9 APPROACHES TO MEET OBJECTIVES/RECOMMENDED MANAGEMENT ACTIONS

9.1 Actions Already Completed or Underway

Summarize the recovery and management actions that have been conducted or initiated to date that provide context to understanding the approaches presented in the recovery document. List these actions by the action groups of the Conservation Framework (CF) that have been *assigned to the species* (see Section 4). Provide the status of the action group for this species in brackets after the CF action group. The template provides an outline for you to fill in the yellow-highlighted text, and indicates where to add text. Please delete CF action group headings that the species has not been assigned or for which no actions are already completed or underway. Additional guidance on what to include under the Habitat Protection action group is provided below.

9.1.1 Habitat Protection CF Action Group

Starting with information from the COSEWIC status report, and updating it as necessary, identify which portions of the species habitat are directly or indirectly protected under legal, stewardship, and policy approaches (e.g., Wildlife Habitat Areas or Features, provincial and federal parks, stewardship agreements) in as much detail as possible. Whenever possible list the threats (from the threats table, Section 4.1 in both the recovery strategy and management plan template) addressed by the protection measure. If helpful, use the table provided in the template.

9.2 Recovery Planning Table (Recovery Strategies) / Recommended Management Actions (Management Plans)

Recovery/management actions could include research to fill key knowledge gaps, inventory and monitoring, specific mitigation or management measures (e.g., cattle fencing to protect plants from trampling), existence in protected areas (e.g., B.C. Parks or Ecological Reserves, Wildlife Habitat Areas, National Wildlife Areas, Regional Parks), and indirect measures that benefit the species (e.g., Wildlife Habitat Areas established for other species that may overlap and provide protection) where possible.

For each objective, identify and assign one or more Conservation Framework (CF) action groups (broad strategies) that will achieve the associated objective.

For each CF action group identify one or more actions that will contribute to achieving the associated objective. The purpose of this section is to develop high level activities under each CF action group that will meet the specific needs of the recovery/management target (e.g., the habitat protection action group might include actions to manage invasive species, develop and distribute best management practices to private landowners and industry, and work with B.C. Parks to incorporate considerations for the species into park management plans). It is important to maintain a logic flow throughout this section by ensuring that the CF action groups and associated actions

listed will effectively mitigate key threats or concerns and, if fully implemented, achieve the objective they are linked to.

Note: Key knowledge gaps are those that if addressed would contribute to achieving one or more of the recovery objectives. These should be limited to knowledge gaps that are preventing effective management or protection of the species or its habitat. The description of the required activities to address them should be sufficiently detailed to provide a clear understanding of what information (e.g., distribution, life history, habitat requirements) and analyses are needed and how they should be carried out.

9.2.1 Recovery planning table/recommended management actions table

Use the recovery/management table to organize and present objectives, CF action groups, and recommended actions. The table should include a set of well thought out actions that together will achieve the associated objective rather than a list of all possible actions.

Select the preferred table format and populate the table following this guidance. Note that:

- Every column should be filled in for each row/record.
- Expand the table as needed to accommodate as many actions as needed to meet each objective.
- Include measures to address the most important knowledge gaps (e.g., those that are preventing effective recovery/conservation and management).
- List the threats (by IUCN-CMP classification number) or the concern (e.g., knowledge gaps) that the action addresses.
- Ensure that all high priority threats identified in the recovery document are addressed in the recovery/management planning table.
- If an action is specific to an area, indicate the location. Another column (e.g., sites/populations) may be added to the table to facilitate this as needed.
- At minimum, assign a priority to each CF action group relative to other CF action groups to provide some direction on importance and urgency for action. If several actions within a CF action group are of different importance, it may be more appropriate to assign priorities for each action instead. Use categories: Essential (urgent and important), Necessary (not urgent, but important), or Beneficial.
- Identify a recommended timeline for implementation of each action.

Note: If performance measures are being provided for each action, then it is acceptable to include these performance measures in the table (see template for format) and combine the Measuring Progress section with this section.

9.3 Narrative to Support the Recovery Planning/Management Table

Provide narrative, as necessary, to expand upon the recommended actions. This section offers an opportunity to explain how several actions together will influence recovery/conservation. Discuss which, if any, of the identified threats are not being addressed in the table and provide an

explanation. Where knowledge gaps are noted, explain how the increased knowledge will aid in the recovery/conservation of the species. Use this section only to provide synthesis and new information; do not repeat information already found in the table.

Discuss actions grouped by the objective that they help achieve or by the CF action group that it falls within (the template provides an outline for the latter).

9.3.1 Recommended approach for implementation

Include statements either before, after, or within the narrative, on advice regarding the implementation of this recovery strategy/management plan as needed.

Include advice on existing and/or potential opportunities for integrating implementation into other recovery or conservation efforts (e.g., multi-species action plans, local conservation groups or organizations, or land use planning processes). This section may also be used to provide advice on the need for recovery implementation groups (RIGs), and other opportunities for efficient implementation such as cooperation with other recovery teams, RIGs, or conservation groups.

Identify existing recovery or management plans that could influence species recovery/conservation and recommend opportunities to coordinate actions with existing activities and policies.

Management Plans: Include suggestions on responsibility for implementation of specific actions; resourcing recommendations, requirements for implementation, and reporting requirements (typically every five years).

Recommended length: 1–2 paragraphs.

10 INFORMATION ON HABITAT NEEDED TO MEET RECOVERY GOAL (RECOVERY STRATEGIES ONLY)

The purpose of this section is to provide the best available information about the habitat necessary for the survival and recovery of the species,¹ including information needed to mitigate threats to that habitat. The species that would benefit from this information should have already been assigned to one or both of the Conservation Framework action groups: Habitat Protection or Habitat Restoration.

¹ Note that B.C. recovery strategies represent science advice to the provincial government. The legal identification of critical habitat (CH) as defined under the federal *Species at Risk Act* is the responsibility of the federal minister(s) responsible for species at risk and may be based on the advice provided in this recovery strategy and any subsequent government decisions or actions related to habitat protection.

10.1 Introduction

Include a statement indicating whether the identification of specific habitat is needed for this species to meet the recovery goal. Include a statement indicating which scenario is representative of the species (see below).

Scenario #1. Threats to the species' habitat have not been identified and the species does not appear to be habitat-limited.

- Use the introduction below and modify as needed.
*Threats to the **Species Common Name's** habitat have not been identified, nor does this species appear to be habitat-limited. As such, it is not necessary, at this time, to describe specific habitat required to meet the recovery goal for this species. General habitat needs of this species are described in Section **XX**.*
- Do not complete Sections 10.1, 10.2, and 10.3 as no other information is required for this section.

Scenario #2. The species is habitat-limited, but existing habitat protection or management is deemed to be adequate to mitigate habitat threats.

- Include one or more statements indicating what habitat protection or management is currently in place and how it is deemed to be adequately mitigating the habitat threats that have been identified.
- Do not complete Sections 10.1, 10.2, and 10.3 as no other information is required for this section.

Scenario #3. It is unknown at this time if there are threats to the species' habitat and/or if the species is limited by the amount of habitat.

- Include one or more statements indicating that it is not known whether the species' habitat is threatened and/or if the species is limited by the amount of habitat. Indicate that this has been acknowledged as a knowledge gap and actions to address this knowledge gap are included in the recovery planning table.
- Include actions in the recovery planning table to address these knowledge gaps.
- Do not complete Sections 10.1, 10.2, and 10.3 as no other information is required for this section.
- Note: If after addressing these knowledge gaps it is determined that there are threats to the species' habitat or that the species is limited by the amount of habitat than this information and associated additional actions may be captured in an update to the recovery strategy or an action plan.

Scenario #4. Threats to the species habitat have been identified and/or the species appears to be habitat-limited.

- Include in the introductory statement that it is necessary to describe specific habitat required to meet the recovery goal for this species.
- Complete Sections 10.1, 10.2, and 10.3.

10.2 Description of Survival/Recovery Habitat

Note: Include this section only if threats to the species habitat have been identified and/or the species appears to be habitat-limited (Scenario #4 in Section 10 above).

10.2.1 Introduction

Clearly state whether the habitat needed for survival/recovery of the species is being described in the recovery strategy. Include a statement indicating which scenario is representative of the species (see below).

Scenario A. Habitat is *not* being proposed

- If habitat is *not* being proposed, provide a rationale explaining clearly why information is inadequate to describe habitat needed for survival/recovery of the species.
- Complete Section 10.2.

Scenario B. Some (but not all) habitat is being described

- If habitat is being proposed in the document, follow the guidance below in this section.
- Complete Sections 10.2 and 10.3.

Scenario C. All habitat is being described

- If habitat is being proposed in the document, follow the guidance below in this section.
- Complete Section 10.3 (Section 10.2 is not-applicable).

10.2.2 Advice on habitat needed for survival/recovery

Habitat needed for survival and recovery must support the recovery goals and objectives put forward in the recovery strategy. A rationale for all proposed habitat must be linked directly back to the goals and objectives of the recovery strategy.

Biophysical attributes

Clearly describe the habitat needed for survival/recovery of the species including: a description of the biophysical attributes of that habitat, and an indication of the features or attributes of the habitat that must be maintained or managed for persistence of the target species. (A clear link to the threats to each identified habitat feature should be provided and may need to be linked to land tenure/use.)

Include a statement as to whether it is necessary to geospatially describe the locations of the habitat on the landscape to mitigate habitat threats.

Geospatial locations

If geospatial identification of the locations of the habitat on the landscape is required, the land tenure of spatially identified habitats should be included because it will influence the type of threats to the species and the protection measures that may be put in place. The methods used to

describe the habitat on the landscape, including reasoning behind the advice on specific areas of habitat needed for survival/recovery, should be clearly identified. Planning teams are strongly encouraged to document uncertainty based on current knowledge and where possible provide advice on alternate geospatial configurations with clear rationales.

Provide spatial files of the identified habitat polygons to the Recovery Planning Coordinator.

Note: Based on priorities and budgetary constraints the appointed statutory decision makers representing the provincial government will use this science advice on habitat needed for the survival/recovery of the target species to make decisions relating to habitat protection. These decisions often consider multiple conservation values in the landscape (e.g., other species at risk, carbon capture). All decisions are made in consultation with directly affected parties and are based on further advice from the planning team if required.

10.3 Studies Needed to Describe Survival/Recovery Habitat

Note: Include this section only if the habitat identified in the recovery strategy is *not* considered complete (Scenario A or B in Section 10.1).

The purpose of the schedule of studies is to outline the essential studies required to describe the habitat needed for the survival and recovery of the species. It is only needed if the information at the time of writing the recovery strategy is inadequate to describe the habitat needed for the survival/recovery of the species, it should provide a clear and reasonable path forward for obtaining or improving the necessary information.

Fill in the table provided in the template.

10.4 Specific Human Activities Likely to Damage Survival/Recovery Habitat

Note: Include this section only if advice on habitat required for survival/recovery of the species is put forward in the recovery strategy (Scenario B or C in Section 10.1).

Identify the types of human activities that would be expected to result in the damage or the destruction of the habitat for the target species in the area of the proposed habitat needed for survival/recovery. Include a list of activities with a statement of their likelihood and the magnitude of their impact. Descriptions of human activities that kill, harm, or harass the target species itself are not included in this section as these are described in the Threats section (e.g., hunting and collecting terrestrial animals [IUCN #5.1] would not be included).

Understanding what constitutes damage of survival/recovery habitat is necessary for the protection and management of habitat. The recovery strategy must provide a level of detail sufficient to inform the management of these activities to prevent degradation to the point where survival/recovery habitat is no longer able to serve its biological function for the species. Where

appropriate, thresholds beyond which damage would occur should be provided. In many cases it will be important to use adequate qualifiers that describe the timeframe and level of intensity of the activity.

Provide the following information (use the table in the template):

- a) Specific examples of human activities likely to result in the damage of survival/recovery habitat. This will, in most cases, be linked to the threats and the IUCN threat should be included (level 2). These examples must be relevant to the habitat identified in terms of likelihood of occurring and the likelihood that these activities would result in the damage of the recovery/survival habitat attributes.
- b) The effect of the activity that is likely to result in the damage of identified habitat must be clearly articulated to provide a clear understanding as to why it is likely to destroy the habitat and to identify which elements of the habitat that it could damage or destroy and how.
- c) Details of timing if it plays a role in the threat that these activities pose (e.g., time of day or year).
- d) Differences in the likelihood, or threat, of the activities between sites, if any. If specific sites are known and listed in the strategy, site information must be included.

11 MEASURING PROGRESS

Performance indicators are used to evaluate progress toward meeting the stated goal and objectives. The ultimate purpose of setting performance indicators is to determine whether the approaches are having a positive or beneficial effect on the species. They provide a means to evaluate the degree to which objectives are being met, and to report on progress. They are also a tool to gauge the effectiveness of the objectives and guide their improvement.

Performance indicators should be time-bound and should take into account the species' or ecosystem's response time to restoration or active management initiatives. It may take decades to observe a demonstrable effect in relation to the population and distribution objectives for some species. Therefore, it is important to consider performance indicators that will aid in reporting on intermediate steps toward achieving the objectives, such as changes in habitat relating to restoration initiatives.

Performance indicators consist of a **target** and a **measure** (the value we are measuring). A performance indicator for implementing a species at risk recovery strategy with a population and distribution goal focused on increasing the population size might be: "Increase the number of individuals from 20 to 80–100 by 2015." This is a clear performance indicator that everyone will be able to understand and take specific action to accomplish. It consists of a target (increase from 20 to 80–100 individuals by 2015) and makes explicit the value to be measured (number of individuals). Although there is a need to develop a way to measure performance indicators (i.e., via a survey), this is not addressed in the performance indicator itself. Rather, the "how," or the approach, is addressed in the recovery planning table.

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At minimum, performance indicators must be identified for the goal and each objective (see template for formatting options). Performance indicators may also be identified for specific actions provided it is clear how they also link to the objectives. To do this, it is recommended that all information be presented in the tables found in the Recommended Management Actions section (for management plans) or in the Approaches to Meet Objectives section (for recovery strategies).

There should be performance indicators for both process (i.e., to evaluate how well the actions were carried out) and measuring achievement (i.e., to evaluate how effective the actions were in meeting the objectives). Examples of performance measures to evaluate process include amount of protection implemented under legislation; number of landowners contacted; number of stewardship agreements established; and number of research projects completed. Examples of performance measures to measure achievement include changes in population size, trend, or productivity; success in mitigating threats; indicators of success from outreach, awareness, or education programs; and the level of public support for the recovery/management program.

Performance indicators must be **SMART**: specific, measurable, achievable, relevant, and time-bound (see Section 8.3). Note that all performance indicators must be time-bound.

12 EFFECTS ON OTHER SPECIES

Identify any anticipated effects (positive or negative) of the proposed recovery/management activities on non-target species, natural communities, or ecological processes. Indicate the probability of each effect being realized and significance of such effects. Identify other recovery teams, recovery implementation groups, or recovery plans that could be affected.

The following questions may help guide your thinking:

- Would there be any effects on non-target species; land, air, or water; natural communities; or ecological processes?
- Would any of these effects be compounded by existing or likely future sources of stress, or concerns such as population declines?
- If any adverse effects are identified, can they be mitigated, and to what extent? What effects would remain after mitigation?
- Does this analysis raise any uncertainties about effects on non-target species, communities, or processes? (If so, these should be addressed in the section on knowledge gaps for design of appropriate follow-up studies in keeping with the adaptive management principle.)

Recommended length: 1 paragraph

13 REFERENCES

Begin this section on a new page.

List all references cited in the recovery document.

13.1 Personal Communications

Include the full name, affiliation, and location of all personal communications and observations cited in the text.