

British Columbia Guide to Recovery Planning for Species and Ecosystems

Appendix 4. Guidance for Drafting Recovery Plans and Management Plans

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Version 2.0



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GUIDANCE TO GETTING STARTED

This document provides guidance to help you fill in all required sections of a B.C. recovery plan or management plan. This document must be used in conjunction with Appendix 6 (Recovery Plan Template) or Appendix 7 (Management Plan Template).

Although this guidance primarily focuses on producing a single-species recovery plan 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 being used.

Before drafting a recovery plan or management plan:

1. Check in with the [Recovery Planning Coordinator](#).
2. Obtain the most recent version of the guidance documents from the [Recovery Planning in B.C. website](#) (see list below).
3. Ensure that any recovery/management team involved has a current terms of reference signed by all members of the team and the Executive Director, Ecosystems Branch (see Chapter 2 of *B.C. Guide to Recovery Planning for Species and Ecosystems*).

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
- Examples of recently completed recovery plans (see 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.

Using the templates

- Text highlighted in grey in the B.C. Recovery Plan/Management Template indicates where to insert text.
 - Text highlighted in yellow needs to be replaced with species-specific text or an appropriate value chosen for that field.
 - Changes should not be made to the template formatting or standard text unless approved by the Recovery Planning Coordinator.
 - Common and scientific names in provincial documents must follow those reported in the [B.C. Species and Ecosystem Explorer](#).
-

ACKNOWLEDGEMENTS

Acknowledge significant contributors to the document (e.g., drafters, recovery teams, advisors or advisory groups, reviewers) or recovery of the species, and funding sources.

Example text is provided. Use only that which is applicable and adapt text as required.

EXECUTIVE SUMMARY

Begin this section on a new page.

Provide a brief summary of the recovery plan/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; and
- goals and objectives of the document (and major recovery/conservation approaches – optional).

Note: Text is provided in the template to address the first and last items above.
Recommended length: 1 page.

RECOVERY FEASIBILITY (RECOVERY PLANS 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.

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

If the answer to all of these questions is yes or unknown, recovery should be determined “feasible.” Standard introductory text has been provided in the template.

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

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 plan may still be required.

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.

- “**Yes**” means there is a clear indication that individuals (of the same genetic stock)¹ are currently available or will be available² for reproduction within 5 years.
 - “**No**” means that there are clearly no individuals currently available anywhere (i.e., no individuals available inside or outside of Canada, including captive or *ex situ* individuals) for reproduction now or over the next 5 years.
 - If there is uncertainty over whether enough individuals may be available for reproduction (surveys required, low or declining source populations, genetics unclear, etc.), or if overall population numbers are so low that it is not clear whether the remaining individuals would be sufficient to provide a reasonable expectation that the recovery (population and distribution) objectives can be achieved, then the answer should be “**unknown.**”
2. Sufficient suitable habitat is available to support the species or could be made available through habitat management or restoration.
- “**Yes**” means that sufficient suitable³ habitat (for existing populations, as well as a reasonable expectation that the recovery [population and distribution] objectives can be met) is available⁴ for the species.⁵
 - “**No**” means either that there is no suitable habitat for the species; that there is no habitat for certain parts of its life cycle (such as hibernacula) including habitat outside of Canada for Canadian migratory species; or that some habitat is available but that it is insufficient⁶ to sustain even a minimum population.
 - If there is uncertainty over how much habitat is needed to sustain a minimum population, whether habitat can be restored, whether habitat for some limiting part of the life cycle is actually available, then the answer should be “**unknown.**”
3. The primary threats⁷ to the species or its habitat (including threats outside Canada) can be avoided or mitigated.
- “**Yes**” means that we have a sound basis for assuming that the threats can be avoided or it is technically feasible that they can be mitigated⁸ (we will never know this 100%).
 - “**No**” means that we know that the threats cannot be avoided or mitigated.
 - If the primary threats are unknown, or if significant studies are needed before we can tell whether threats can be mitigated (e.g., a disease) or if all mitigation measures are highly experimental,⁹ then the answer should be “**unknown.**”

¹ Source may be world-wide, not just in Canada. Source may be captive as well as in the wild.

² Although individuals may exist, they may not be available (e.g., source populations are declining or stock not available through breeding program).

³ Restoring habitat should be considered where there is a reasonable chance of success of restoring it to suitable habitat and that it will then be available. Not all changes in habitat quality may be reversible (e.g., complete urbanization).

⁴ Land ownership or land use does not affect whether habitat is considered available.

⁵ Consider inherent species characteristics: wide-ranging species will require more habitat and this may need more involved analysis; rare, localized species may need very little habitat.

⁶ To date, all cases where “sufficient” habitat has not been available have involved extirpated species. In these cases, if habitat is the limiting factor, the analysis will need to focus on whether sufficient habitat is available to support reintroduction.

⁷ Primary 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).

⁸ This includes considering whether it is possible to work with partners if threats are external to Canada.

⁹ Although precise mitigation techniques may not have been tested, consider if similar techniques exist, or can be expected to be developed within the reasonably foreseeable future.

4. Recovery techniques exist to achieve the population and distribution objectives or can be expected to be developed within a reasonable timeframe.¹⁰
 - “**Yes**” means that we have a sound basis for assuming that we will have recovery techniques¹¹ to achieve recovery (population and distribution) objectives for species recovery once the threats have been avoided or mitigated (we will never know this 100%).
 - “**No**” means that we know that we will not have the recovery techniques to achieve minimal recovery (population and distribution) objectives for species recovery.
 - If extensive research is needed to support the needed recovery techniques, or if all techniques are highly experimental,¹² then the answer should be “**unknown.**”

1 COSEWIC SPECIES ASSESSMENT INFORMATION

This section begins on a new page. 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.”

2 SPECIES STATUS INFORMATION

Fill in the “Species status assessment” summary box provided in the template. This information is accessible through the [B.C. Species and Ecosystems Explorer](#). 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 “[The Action Sorting Tool](#)” 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 this species has not been assigned to action groups or if you have questions. Most often if a species has not been assessed using the Conservation Framework tools, this portion of the summary box will be removed.

¹⁰ Timeframes will depend on the context of the species (species lifecycle, lifespan, etc.).

¹¹ For example, captive breeding or plant propagation, or reintroduction techniques may be needed to expand the distribution of a species once the primary threat(s) has been addressed.

¹² With species at risk, the precise techniques will often not have been tested (proven effectiveness in the past or demonstrated evidence), but consider if similar techniques exist, or can reasonably be expected to be developed within the foreseeable future. (i.e., without “heroic” or extensive research or management).

No additional text is required for this section. Additional text should only be included if the author feels an explanation or clarification of the information provided is needed.

3 SPECIES INFORMATION

This section includes information relevant to helping the reader understand the general status of the species and the reasons why it is at risk. In most cases, a detailed status report on the target species or ecosystem will have been completed before development of the recovery/management plan. Use information and maps from existing status reports (e.g., COSEWIC) to fill out this section to minimize duplication of effort, but update the status report information as needed. Write in a concise manner that is understandable by the lay person but still biologically accurate.

This information helps to build a rationale to explain why the recovery/management section outlines the most appropriate course of action. Include (only) what is necessary to provide the context to inform the other sections of the recovery document. This section is not meant to be in depth like a status report.

3.1 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 (referring to cover photo acceptable). The reader may also be referred to another body of work for full taxonomic description.

Recommended length: 1–2 paragraphs.

3.2 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.

The following should be covered in this section:

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.

B.C. distribution and abundance

- A description of the known extant and historical¹³ (to the extent possible) distribution and abundance of the species in B.C.
- Where possible (e.g., for highly restricted or sessile species) include a table outlining the status (e.g., extant, extirpated, historical, unknown) of all known populations. Ensure population/location names or numbers (if used) listed are as consistent as possible with other available information (e.g., CDC EO#s or COSEWIC reports). Cross-referencing multiple information sources (via additional columns or footnotes) is encouraged *if* it will aid the reader's understanding.¹⁴ An example table is provided in the template as a starting point for you to use/adapt if appropriate. Note that it is also acceptable to provide "status" in parentheses in the population/location name/#.
- A list of land tenures throughout the distribution in the highest level of detail possible given specific circumstances. Preface with "provincial" or "federal" Crown land tenure, where applicable. 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 (i.e., trend) 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 (i.e., respecting any sensitive data that are not to be made publicly available). Where feasible and appropriate, label population/location names or numbers (as designated in Table 1) on distribution maps.

The following terms are often used in this section and so are defined here.¹⁵ Include definitions as footnotes when the term is first introduced.

- **Populations/locations:** follows element occurrence specifications used by NatureServe (2002),¹⁶ which defines populations as being separated by a specified distance from one another depending on the taxa.
- **Subpopulations:** represent records of individuals or patches of individuals within a population that are within a specified distance of each other.
- **Element Occurrence:**¹⁷ An area of land and/or water in which a species or ecological community is, or was, present (NatureServe 2002).

¹³ Historical: used when there is a lack of recent field information verifying the continued existence of the occurrence (e.g., when it is based only on historical collection data; or when there hasn't been any field survey work and the occurrence is possibly extirpated due to general habitat loss or degradation of the environment). In general, if there is no known survey for an animal occurrence for 20 years or 20 to 40 years for a plant occurrence, it should be considered historical. These timeframes represent suggested maximum limits; see NatureServe (2002) for details.

¹⁴ Information presented must be clear and understandable to the public.

¹⁵ These definitions are not the same as those used by COSEWIC. (COSEWIC terms are specifically defined for use in their assessment process.)

¹⁶ NatureServe. 2002. Element occurrence data standard. NatureServe, Arlington, VA.

<http://downloads.natureserve.org/conservation_tools/element_occurrence_data_standard.pdf>

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

3.3 Habitat and Biological Needs of the Species

Recommended length: about 0.5–2 pages plus table; this section will vary with the complexity of the situation. Include references to peer-reviewed literature whenever possible.

This section describes the habitat that the species depends on directly or indirectly to carry out its life-cycle processes (i.e., a biological need or requirement of the species necessary for its survival). These life-cycle processes of the species or **functions** (e.g., spawning, breeding, denning, nursery, rearing, feeding/foraging and migration; flowering, fruiting, seed dispersing, germinating, seedling development) describe how a species uses the habitat.

Often this section begins with a general description of the 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 soils.

For the various life stages of the species (e.g., adult, juvenile, seedlings, eggs, seeds) describe the habitat required to support each function of its life cycle. Some habitat may only be used at certain times for specific functions. For example, habitat use can be temporal (e.g., only used during breeding) and/or are only available at certain periods of time (e.g., ephemeral ponds, pools, or seeps occurring only in spring). Describe the biophysical features and attributes (biotic and abiotic) of the habitat, which are necessary to allow the species to carry out these functions. Additional guidance is provided below.

Along with the narrative, summarize the essential functions, features, and attributes of the species habitat in British Columbia using the table provided.¹⁸

Features

Features are the essential structural components of the habitat required by the species (e.g., eelgrass beds, macrophytes, riffles, pools, shorelines, rocky outcrops or benches, marshes, grasslands, mixed-conifer forests). **Features** are the aspects of the habitat that have the functional capacity to support a life process. Thus functions are associated with and supported by one or more feature(s). Features describe *how* the habitat is important.

A feature may support more than one function (e.g., a riffle may be used as a spawning and rearing habitat; rocky slopes provide both denning and sunning sites for reptiles). In addition to

¹⁷ References for animal and habitat-based plant element occurrence delimitation/specifications are provided in the recovery plan template.

¹⁸ There are possibly a few instances where including the table may not add value to the reader (e.g., plant that uses the same habitat for all life stages/functions; habitat generalist). Contact the Recovery Planning Coordinator if you have determined that this may be the case for your species.

supporting a particular function, some features may also support or reinforce other features. Riparian zones, for example, are features of the aquatic ecosystem that support the establishment and maintenance of deep and shallow pool features, supply food for migrating and juvenile fish of many species, and influence water temperature (e.g., tree shade). Other features may in fact be another species within the ecosystem (e.g., a food or host fish; host plants for larval or adult insect feeding) or a component of the ecosystem (e.g., ambient acoustic environment).

A feature should be described at least qualitatively but preferably in terms of size, length, decibels, percent coverage, and so on. Features may change over time and are usually comprised of more than one part, or attribute. A change or disruption to the feature or any of its attributes may affect the function and its ability to meet the biological needs of the species.

Attributes

Attributes are the building blocks or parts of a feature. **Attributes** are the *measurable* characteristics of a feature and provide an indication of why one feature is essential whereas another similar feature is not. Every feature is comprised of many attributes, such as temperature, water depth, velocity, gravel size, oxygen level, light level, and percent humidity, which the species require within optimal ranges to function. Together, the attributes allow the feature to support the function. In essence, attributes provide the greatest level of information about a feature, the quality of the feature, and the way the feature is able to support the life-cycle requirements of the species (i.e., the identified functions necessary for the species' life processes).

Only those attributes deemed essential to a feature and the function it supports should be described. Some attributes, such as a certain temperature range, may support more than one feature. This level of biophysical description will often be the most difficult to understand and may not be applicable for every species.

Describing features and attributes

Most biophysical features and their attributes can be quantified or qualified in terms of their typical form and/or optimal functional range. For example, riffles with cool, well-oxygenated water are required for successful spawning and egg incubation of a salmonid species. In this case, the riffle is the feature and can be qualitatively described as being at general location X in watercourse A, Y in length and Z in width, and characterized by cobble/gravel. The temperature attribute could be expressed as a range (e.g., for adult salmon spawning activity) with a target or optimal condition (e.g., 5 to 8°C), a threshold (e.g., 9°C, which can also be expressed as a lower threshold of 4°C) and the limit or unacceptable condition (e.g., 10 to 12°C, which can also be expressed as a lower threshold).

Another example is an ephemeral pool (the feature) that is inundated with water for a specific length of time. For some annual plant species, this feature is required for successful germination (function) and to ensure that the plants mature and reproduce (function) before the drought season sets in. The water attribute could be expressed as a threshold for water depth, and a range for timing and length of inundation. The soil attribute could be expressed as soil depth and parent material.

Note: If there are substantial knowledge gaps in this habitat information, ensure that the recovery/management actions include studies required to provide or improve the description of the habitat. Actions suggested should provide a clear and reasonable path forward for obtaining or improving the necessary information.

Example: Summer Annual Plants - Lakeshores

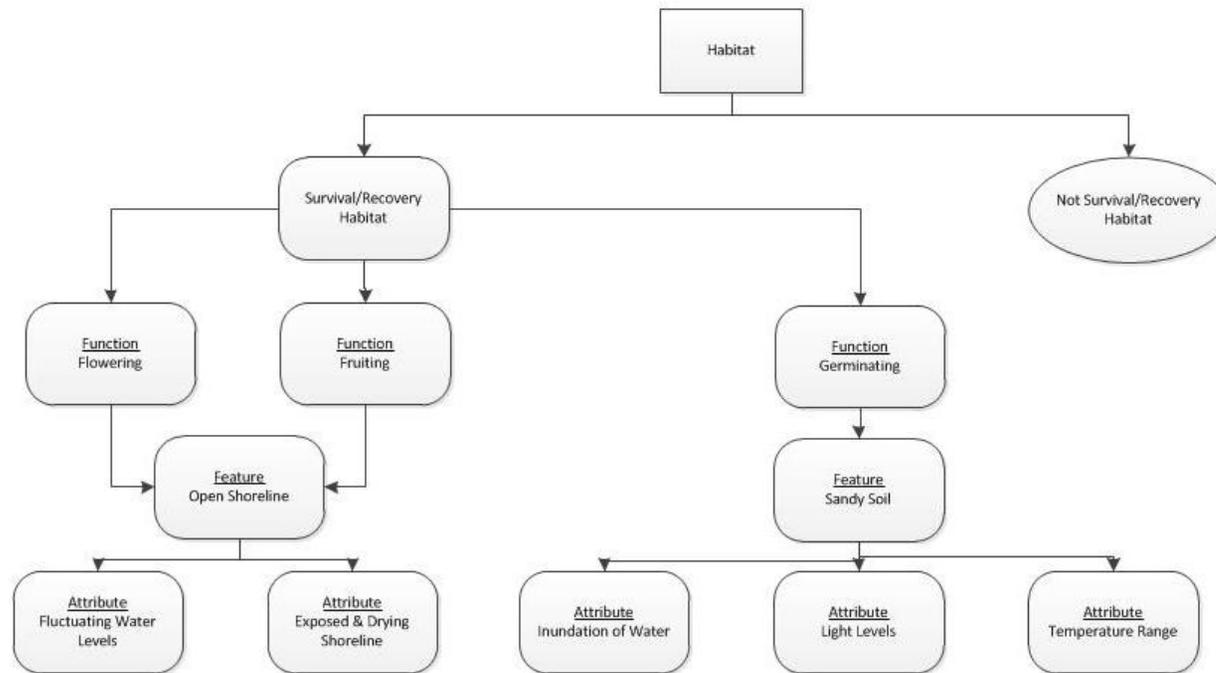


Figure 1. Lakeshore summer-flowering annual plants.

3.4 Ecological Role (if applicable)

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

3.5 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. Examples are 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 overwintering sites; extremely isolated small population(s); and dormancy requirements.

4 THREATS

Standard introductory text has been provided.

4.1 Threat Assessment

Standard introductory text has been provided.

Contact the Recovery Planning Coordinator to determine if there is an existing threats assessment for the species (e.g., held within the B.C. Conservation Data Centre) 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.

Guidance for populating the threat classification table using the Threats Calculator is outlined in Appendix 5. Guidance for Threat Assessments.

Note that rows in the table should be deleted for threats that do not apply to the species. If a threat impact is negligible or not calculated, a judgment call will need to be made as to whether to include these rows in the recovery planning document [Note that rows should never be deleted from the Threats Calculator to ensure a record of discussion is maintained.] Results should be included if it is a threat that the reader is likely to wonder whether the author considered it or it was not explored.

4.2 Description of Threats

Standard introductory text has been provided. Note the overall province-wide Threat Impact is calculated by using the Threats Calculator; and “primary 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).

If the 3-generation timeframe used in determining severity scores was based on a different generation time than stated in the COSEWIC status report, include a second introductory paragraph that provides the rationale.

Guidance for providing narrative to describe the threats to the species listed in the threat classification table is in Appendix 5. Guidance for Threat Assessments.

If a threat impact is negligible or not calculated and has been included in the threat classification table, a judgment call will need to be made as to whether supporting text is required or if it is self-explanatory. Consistency is important, so it is ideal if either all or none of the “negligible” or “not calculated” impacts have descriptions. Often some description is required; for example, an explanation will likely be needed if a threat was significant in the past but is now considered negligible.

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.

5 RECOVERY/MANAGEMENT GOAL AND OBJECTIVES

This section helps to provide an understanding of the recovery/conservation needs of the species.

5.1 Recovery (Population and Distribution) / Management Goal

Setting the goal is the most important exercise in the recovery plan 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.

The Recovery (Population and Distribution) / Management Goal will:

- a) be linked to the [COSEWIC assessment criteria](#) and reason for designation 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 actions that are appropriate for a given species and context; and
- 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.

Recommended length: 1 or more sentences.

Recovery goal guidance

The ultimate purpose of the recovery plan 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 plan 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 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.

Management goal 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 criteria. 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.

5.2 Rationale for the Goal

Clearly outline the rationale 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. 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.

5.3 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 (5 years is a common short-term timeframe). Note that time targets are omitted from objectives and are instead specified in the section “Measuring Progress.”

List the objectives in the order of priority.

Recommended length: 0.5 page.

6 APPROACHES TO MEET OBJECTIVES

6.1 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 actions presented in the recovery/management document. List these actions by the action groups of the Conservation Framework (CF) that have been *assigned to the species* (see Section 2). Provide the status of the action group for this species in brackets after the CF action group. 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.

Note that for some species it may be valuable to include indirect measures that benefit the species (e.g., a Wildlife Habitat Area that has been established for another species, which may overlap and provide protection for the subject species; or invasive species removal that benefits many species).

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. Specify the protection tool in place and whenever possible list the threats (from the threats section) addressed by the protection measure. If helpful, use the table provided in the template.

Example phrasing:¹⁹

- “The species is found in XX Provincial Park, which is afforded some protection through the legal provisions of the B.C. *Parks Act*.”
- “These areas are protected from industrial resource extraction through provisions such as the *Parks Act* and the *Ecological Reserve Act*.”

6.2 Recovery Action Table (Recovery Plans) / Recommended Management Actions (Management Plans)

This section is a key tool in communicating with other agencies as well as the general public on recovery/conservation needs.

The purpose of this section is to provide details on actions that will result in implementation of the direction set out in the recovery plan. Thus, all information provided here must be linked to what has already been provided in the recovery plan (e.g., threats, goals, and objectives; approaches to

¹⁹ This phrasing provides examples that avoid the term “legally protected,” which has a specific meaning under SARA and thus could cause confusion as to the meaning applied in B.C. published documents.

recovery). This section consists of an action planning table and supporting text to describe and provide rationale for specific actions as needed.

Recovery/management actions could include research to fill key knowledge gaps, inventory and monitoring, or specific mitigation or management measures (e.g., cattle fencing to protect plants from trampling). Actions may be for species that occur in a protected area (e.g., B.C. Parks or Protected Areas, Ecological Reserves, Wildlife Habitat Areas, National Wildlife Areas, Regional Parks) and which are known to the land manager and actively managed for. Where there is currently no management for the species, actions could include land manager contact and engaging cooperation to establish habitat protection through tools such as developing stewardship agreements or conservation covenants.

For each objective, identify one or more actions that will contribute to achieving that objective. It is important to maintain a logical flow throughout this section. Associated actions listed should effectively mitigate key threats or concerns and, if fully implemented, achieve the objective they are linked to. Activities can be lumped by CF action groups (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).

Note: Key knowledge gaps are those that if addressed would contribute to achieving one or more of the recovery/management objectives. Include only those knowledge gaps that are preventing effective management or protection of the species or its habitat. The description of the activities required 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.

Filling in the recovery action table or 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 threats identified in the document are addressed in the 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.

- Assign priorities for each action to provide direction on relative importance and urgency. Use categories: Essential (urgent and important), Necessary (not urgent, but important), or Beneficial.

Note: If performance measures are being provided for each action, then it is acceptable to include performance measures in this table (see template for format).

6.3 Narrative to Support the Recovery Planning/Management Table

This section is optional.

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.

7 SPECIES SURVIVAL AND RECOVERY HABITAT (RECOVERY PLANS ONLY)

This section applies to recovery plans only.

Note: It is recommended that you consult with Recovery Planning Coordinator before completing this section to obtain the latest guidance.

The purpose of this section is to provide the *best available information* about the habitat necessary for the survival and recovery of the species.²⁰ Any additional work required to fulfill habitat knowledge gaps should be included in the recovery planning table.²¹ This section also includes the effects that threats can have on the function, feature, or attribute of the species' habitat.

Although not prescriptive, some sample introductory text for each subsection is provided in the template.

²⁰ Note that B.C. recovery plans 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 plan and any subsequent government decisions or actions related to habitat protection. The term “survival/recovery habitat” is used in B.C. documents to ensure the reader understands that information provided in this section represents science advice (only) and not the legal identification of critical habitat (CH).

²¹ Advice needs to be timely and efficient; therefore publication of the recovery plan is not to be delayed simply because we do not have all of the information for this section.

In most cases, some description of survival/recovery habitat will be included. The exception to this is when there are no known threats to the species habitat and habitat does not appear to be limiting.

The description of survival/recovery habitat consists of 2 parts:

- biophysical features and their attributes; and
- a spatial description (e.g., amount, area and distribution).

7.1 Description of the Species' Survival/Recovery Habitat

Standard text is provided in the template. This section simply refers the reader back to Section 3.3 where the biophysical features and attributes of the species habitat are provided.

7.2 Spatial Description of the Species' Survival/Recovery Habitat

Including maps showing survival/recovery habitat is not required to complete this section: only a written description of the habitat along with a rationale is needed. However, if maps have been developed, check with Recovery Planning Coordinator about the most appropriate way to make them available (e.g., through the regional office or possibly in an appendix).

If a written description of the spatial aspects of the habitat cannot be described or only partially described due to knowledge gaps or other reasons, state those reasons. Additionally, refer to the recovery planning table, which includes the steps that need to be taken to describe the habitat needed for survival and recovery.

The quantity (and quality) of survival/recovery habitat required for a species is to be guided by the amount of habitat needed to meet the chosen recovery goal.²² The habitat described must be consistent and support the recovery goals and objectives put forward in the recovery plan.

To complete the spatial description of survival/recovery habitat:

- Chose an approach to spatially describe habitat appropriate to the scale required (e.g., landscape vs. site level). Provide the reader with a general outline of the approach taken and rationale for using this.
- Include recommendations for which areas of habitat is required (e.g., specific areas or a general geographical area within which habitat is found). Explain if alternative configurations of habitat may be used. State, if necessary, what habitat is not included as survival/recovery habitat within an area (e.g., existing buildings).
- Include recommendations for how much is required (e.g., all habitat within 50-m radius around a nest tree because XYZ rationale [reference]; as well as an additional 500-m radius of foraging habitat with a minimum of 70% retention of basal stem area [reference]).

²² It is possible that for some species there will be more than sufficient habitat currently available than is needed to meet the recovery goal. In these cases, this section should provide advice regarding how to select habitat for threat mitigation, as not all suitable habitat is needed to be included as survival/recovery habitat.

- Provide the rationale (with references whenever possible) for all proposed habitat (e.g., why specific areas chosen, amount of habitat, its configurations).
- Include the total amount of survival/recovery habitat described in the recovery plan.
- Clearly state the extent to which the amount, quality, and locations of described habitat are thought to meet the recovery goal (i.e., indicate whether the described habitat is thought to be sufficient to meet/support the recovery goal). If survival/recovery habitat was not fully described, indicate the amount of survival/recovery habitat still required for the species (if known).
- Document any uncertainty and associated risk with recommendations made based on current knowledge.

8 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 actions 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 plan 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.

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).

9 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 federal and/or provincial list status, where appropriate. 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.

10 REFERENCES

Begin this section on a new page.

List all references cited in the recovery document.

10.1 Personal Communications

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