



Conservation Framework

Conservation Priorities for Species and Ecosystems Primer

Ecosystems Branch
Environmental Stewardship Division
Ministry of Environment

November 2009





For more information, visit:

www.env.gov.bc.ca/conservationframework

or email: conservationframework@gov.bc.ca

Cover photo credits: Pallid Bat, Jared Hobbs; Wetland/riparian ecosystem in the Okanagan, Susan Latimer; Mountain Goat, Fred Lang; Northern Saw-whet Owl, Jared Hobbs; Lemmon's holly fern, Jim Riley; Columbia Spotted Frog, William Leonard; Douglas-fir/dull Oregon grape community, Ministry of Environment

The **Conservation** Framework

TURNING INFORMATION INTO ACTION

Collaborate and

SEE YOUR ACTIONS MAKE A DIFFERENCE

What is the Conservation Framework?

Faced with the increasing number of species and ecosystems at risk and escalating threats such as climate change, resource managers and practitioners need a way to prioritize conservation challenges in order to allocate limited resources. The Conservation Framework provides a set of decision support tools to enable collaboration between government and non-government resource managers and practitioners using clearly defined criteria to:

- 1) prioritize species¹ and ecosystems² for conservation; and
- 2) determine the most appropriate and effective management actions.

The Conservation Framework is designed to optimize allocation of resources, including staff time and dollars. In the past, priorities were assigned using lists designed for categorizing the status of species and ecosystems based on extinction risk. To better manage for species and ecosystems of conservation concern, British Columbia developed the Conservation Framework to optimize allocation of resources, including staff time and dollars. This is an approach that:

- is based on specific goals to guide conservation efforts for species and ecosystems of conservation concern;
- addresses the issue of jurisdictional rarity (where a species' range "drifts" across a jurisdictional boundary);
- is proactive for species and ecosystems that are not yet at risk but are experiencing serious downward population trends;
- adequately addresses British Columbia's stewardship responsibility for globally important species and ecosystems;
- is based on the best available scientific information to quickly and transparently prioritize species and ecosystems and assign them to appropriate management actions.

¹ Bunnell, F., D.F. Fraser and A. Harcombe. 2009. Increasing effectiveness of conservation decisions with existing data: a simple system and its application. *Natural Areas Journal*. Volume 29 (1) 79-90.

² Everett, K., C. Cadrin and T. Lea. 2009. Ecosystem prioritization technical methods paper. Ministry of Environment Technical Paper.

Who is this Primer for?

The Conservation Framework Primer has been written to provide resource managers and practitioners with an overview of the broad context for conservation, an overview of the key tools associated with the framework, and examples that illustrate applications for the tools. The Conservation Framework is a decision support tool. It is meant to inform, not replace, direct dialogue between managers, across agencies, and between various levels of government, First Nations, industry and other stakeholders. The Conservation Framework has been rigorously peer reviewed and designed in collaboration with representatives from government, non-government and conservation organizations, industry and the scientific community.

A record of outputs for species and ecosystems, priorities and recommended actions has been developed for thousands of species and over 600 ecosystems. These outputs will be updated regularly by Ministry of Environment staff.

After identifying a conservation challenge, this record of outputs (available at www.env.gov.bc.ca/conservationframework) provides the starting point for managers and practitioners intending to apply the Conservation Framework.

Goals of the Conservation Framework

1. To contribute to global efforts for species and ecosystems conservation;
2. To prevent species and ecosystems from becoming at risk; and
3. To maintain the full diversity of native species and ecosystems.

Conservation Prioritization and Action Sorting Tools

The Ministry of Environment has been applying the prioritization and action sorting tools to species and ecosystems since the development of the Conservation Framework in 2007. Progress and outputs are posted to the Conservation Framework website (www.env.gov.bc.ca/conservationframework). Outputs are frequently updated as new information becomes available and as resource managers and practitioners report their implementation activities back to the Ministry of Environment. This section of the Primer provides an overview of the prioritization and action sorting tools.

Prioritization Tool

This tool prioritizes species and ecosystems for conservation based on a number of criteria. Priority ranking starts with global and provincial risk status (G and S ranks), which are determined by NatureServe and the B.C. Conservation Data Centre, respectively.³ Global and provincial status ranks are initially weighted differently according to the nature and scope of each of the Conservation Framework goals.

Four other criteria are subsequently assessed (trend, threat, feasibility and stewardship responsibility) and a priority rank is assigned to a species or ecosystem (1 is the highest priority and 6 is the lowest priority for conservation). The criteria are applied differently for each goal, resulting in separate priority ranks for each of the three goals. In general, a species or ecosystem will receive attention and resources under the goal in which it ranks the highest.

What is an Ecosystem?

Ecosystems can be assessed at many scales. In the Conservation Framework, ecological communities are used as the basic unit of assessment for ecosystems. Ecological communities are primarily based on the plant associations of the Biogeoclimatic Ecosystem Classification (BEC), which is based on decades of field sampling. Ecological communities are the ecosystem unit assessed and reported by the Conservation Data Centre (CDC) and are the units for which ecosystems are assigned conservation status-ranks (G-ranks and S-ranks).

³ For more information on these ranking systems, visit: www.env.gov.bc.ca/cdc/methods.html

Goal 1. To contribute to global efforts for species and ecosystems conservation

This goal has a strong emphasis on global status, assigning higher priority to species and ecosystems that are globally at risk. Initial ranks may be adjusted based on B.C.'s stewardship responsibility. Species and ecosystems that are globally at risk and for which B.C. has high stewardship responsibility are ranked the highest under Goal 1. Species that have disjunct populations in B.C. or are collapsing toward B.C. also get higher priority.

Goal 2. To prevent species and ecosystems from becoming at risk

This goal emphasizes species and ecosystems of moderate conservation concern, i.e. those that are considered neither secure nor at risk. By adjusting scores based on threats and trends, Goal 2 brings into focus those species and ecosystems which are currently not at risk but are exhibiting downward trends and are likely to become at risk in the future if preventative measures are not taken.

Goal 3. To maintain the full diversity of native species and ecosystems

This goal bases priority on provincial status alone. Scores are then adjusted based on trends and threats to ensure that provincially at-risk species and ecosystems facing significant threats or declines are given the highest priority.

The major objective of the Conservation Framework is to more effectively align resources and conservation efforts with actions that have the highest chance of success. To ensure this is addressed, an assessment of the biological and technical feasibility of recovering or maintaining a species or ecosystem is applied to all three goals. This means that the priority is increased for species and ecosystems that have a high likelihood of recovering if appropriate conservation actions are taken.

The Conservation Framework aligns with our understanding of B.C.'s global responsibility for species and ecosystems and offers a way to focus and prioritize scarce resources.

Pierre Iachetti, Nature Conservancy Canada

Action Sorting Tool

This tool is designed to determine what conservation actions are required for a species or ecosystem. The criteria include current level of knowledge, conservation status, nature of existing threats, and the complexity of implementing recovery actions. This tool utilizes a decision key for consistent assessment and rapid assignment of species and ecosystems to the most appropriate management action(s). These actions range from the re-assessment of status ranks based on new information, to starting a full recovery planning process, initiating a provincial and/or federal legal listing process, or initiating on-the-ground protection measures. Species and ecosystems are assigned to one or more action groups. These action groups can be categorized into three types of actions:

- **Assessing status:** includes reviewing global or provincial status ranks, compiling status reports, doing inventory and monitoring, and reviewing taxonomy for species or classification for ecosystems.
- **Planning and listing:** initiating legal listing processes, including sending species to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as a first step to listing under the federal *Species at Risk Act (SARA)*, or listing species under the provincial *Wildlife Act*; and formal planning processes for species and ecosystems (e.g. recovery plans, land-use plans).
- **Acting:** implementing on-the-ground protection measures, including ecosystem and habitat protection and restoration, stewardship, species and population management (such as captive breeding, supplemental feeding, alien predator control), and reviewing resource use.

Many species and ecosystems are assigned to more than one action group and in many cases the order of implementation may be important. For example, before initiating listing processes or starting a formal planning process, a status report will be required. In some cases, conservation actions (e.g. habitat protection) could effectively mitigate the threat and should be initiated as soon as possible. However, there will be instances where the potential impacts of conservation actions on stakeholders will require planning and consultation to be done before any on-the-ground actions can be implemented.

Further, high priority species under Goal 2 often lack information, making inventory or taxonomic studies essential before other costly conservation activities are initiated. Conversely, high priority species under Goals 1 and 3 are known to be at risk, so acting (e.g. implementing habitat and non-habitat protection measures) should happen as early as possible in the process.

Action Groups

Assessing

- Review Status Rank
- Compile Status Report
- Inventory
- Monitor Trends
- Review Taxonomy and Classification

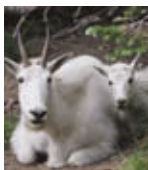
Planning and Listing

- Planning
- Send to COSEWIC *
- List Under *Wildlife Act* *

Acting

- Ecosystem and Habitat Protection
- Ecosystem and Habitat Restoration
- Private Land Stewardship
- Species and Population Management *
- Review Resource Use
- No New Action

* indicates the action is only applicable to species.



Conservation Framework (e.g. Mountain Goat)

Ministry of Environment

Collaborative Implementation

Prioritization Tool

Action Sorting Tool

Implement Actions

Goal	Priority	Assessing	Planning	Acting	Implement Actions
Goal 1: Global response	4	• Monitor Trends	• Prepare a Management Plan	<ul style="list-style-type: none"> • Habitat Protection • Species and Population Management (e.g. reintroductions) • Review Resource Use 	1 Identify challenge
Goal 2: Preventative conservation	1				2 Get outputs
Goal 3: Maintain B.C. diversity	3				3 Incorporate other considerations
					4 Act
					5 Track, evaluate and report

Implementing the Conservation Framework

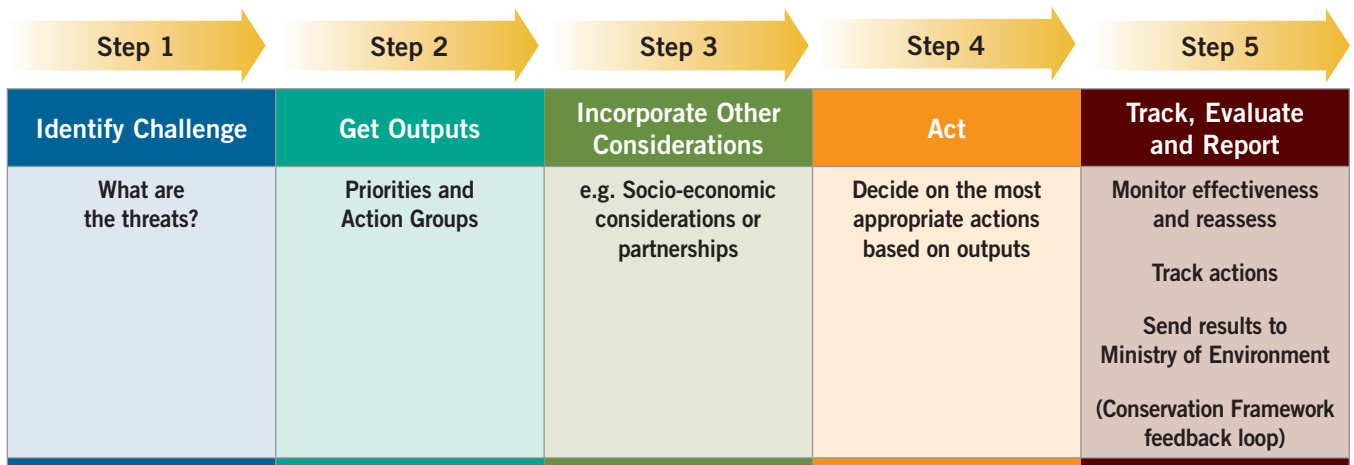
This section outlines the tools that have been developed to support implementation of the Conservation Framework as well as a series of examples of implementation.

Once a resource manager or practitioner has identified a conservation challenge, they get the Conservation Framework outputs and search for the species and ecosystems they are interested in for their project. The next step is to decide on which actions to implement based on the Conservation Framework outputs (priorities and actions). This may also include an assessment of other considerations, including partnerships, capacity, and socio-economic analyses among others. The final step is to monitor effectiveness and report back to the Ministry of Environment results of any activities that were implemented, and to submit collected data to the appropriate site (e.g. the CDC or the Wildlife Species Inventory website). This final step ensures that the most up-to-date information is used to determine conservation priorities and management actions.



Vasey's big sagebrush / pinegrass. Photo: Ministry of Environment Image Bank

Conservation Framework Decisions Flowchart



Grouping Conservation Framework Outputs

There are a number of ways of grouping priority species. One example is to group like species either by guilds or by ecotypes. For example, Bunnell et al.* selected a group of species associated with dead or dying wood as a focus for applying the framework in a Timber Supply Area. Researchers applied the Conservation Framework prioritization tool to filter the species that were high priorities. For species that were high priority, the action sorting tool indicated that many fell into the inventory action group. Researchers were able to highlight species assigned to other actions and make recommendations to managers for managing dead and dying wood within the timber supply area.

* For more information see FIA-FSP project report: Bunnell, Fred L., Laurie L. Kremsater, Arnold Moy and Pierre Vernier, 2009. *Biodiversity sustainability analysis for high priority species requiring dead and dying wood in the Fort Nelson TSA*. Centre for Applied Conservation Research University of British Columbia.

Including Other Values – Working with Conservation Framework Outputs

The Conservation Framework tools are designed to determine priorities for conservation action based on the best available scientific information (status, biological and ecological knowledge, stewardship responsibility and feasibility of recovery). Sometimes, other factors need to be considered when developing strategic plans or implementing conservation actions. These may include the consideration of other values such as harvesting and use, recreation and wildlife viewing, and traditional cultural values.

The Conservation Framework provides the scientific rationale for conservation priorities; other mandates your organization may want to meet can easily be incorporated when developing strategic plans or setting goals. Other factors also need to be considered, including meeting legal requirements for conservation, fulfilling existing

commitments, or conducting socio-economic analyses for activities. This “second layer” of evaluation can be applied to the science-based outputs when developing a plan for conservation action that is appropriate for your organization.

Examples

The next section focuses on a series of examples illustrating how resource managers can apply the Conservation Framework in different scenarios, including:

1. Single Species - Badger
2. Single Ecosystem - Western Redcedar - Sitka Spruce/ Devil's Club
3. Planning for a Single Action - Ecological Restoration
4. Ecosystem-Based Conservation - Sagebrush Steppe Case Study
5. Biodiversity Conservation Planning - Ktunaxa Nation

How to Access Information and Outputs

For more information on the Conservation Framework, including outputs for over 3000 species and 600 ecosystems and detailed methodology used to assign conservation priorities and management actions, visit the website (www.env.gov.bc.ca/conservationframework). You can access Conservation Framework output information for species and ecosystems in three ways:

1. **Spreadsheet of Conservation Framework outputs** (available on the Conservation Framework website, www.env.gov.bc.ca/conservationframework/results.html): Here you will find a complete list of information and outputs for species and ecosystems already assessed by the Conservation Framework tools. Species and ecosystems are assessed continually and this information will be updated periodically.
2. **BC Species and Ecosystem Explorer** (www.env.gov.bc.ca/atrisk/toolintro.html) now contains Conservation Framework outputs in addition to information provided by the Conservation Data Centre. Conservation Framework outputs for species and ecosystems can be obtained from a basic search on BC Species and Ecosystem Explorer. Search criteria includes: distribution, conservation status, legal designation, and ecosystem type (wetland, grassland, etc.). Visit the Conservation Framework website for more information on how to use BC Species and Ecosystem Explorer to obtain Conservation Framework outputs.
3. **Hectares BC** (www.hectaresbc.org/app/habc/HaBC.html) can be used to obtain Conservation Framework outputs for a specific geographic point or a broad geographic

area. The tool can also be used to map areas where one or more species or ecosystems could potentially occur. Visit the Conservation Framework website for more information on how to use Hectares BC to obtain Conservation Framework outputs. Please note that Hectares BC contains information for all ecosystems, and most species that are ranked priority 1-3. Some lower priority species are also included.

The Conservation Framework outputs contain detailed information on:

- Conservation Framework priorities and actions, together with the information used to generate these outputs;
- Provincial and global status ranks, COSEWIC and *Species at Risk Act* designations;
- Potential geographical locations, e.g. forest district, BEC zone, region; and
- Known threats, using the standardized IUCN threat classification system

This information allows users to search for the species and ecosystems they are interested in by sorting the data according to a variety of these criteria. For example, it is possible to search for priority ecosystems in the Lower Mainland Ministry of Environment region that are affected by invasive species, where ecosystem restoration and monitoring are recommended actions.



Douglas-fir - ponderosa pine talus ecosystem.
Photo: Susan Latimer

Example 1: Single Species – Badger

The Badger is threatened by habitat loss and modification, and road mortality. It is globally secure but considered to be at risk in British Columbia, and is listed as Endangered under the *Species at Risk Act*.

Applying the Conservation Framework

In the case of species listed under the *Species at Risk Act* such as the Badger, the Badger Recovery Team is taking the lead in coordinating the implementation of recovery activities and collaborating with other partners such as ranchers, farmers and Ministry of Transportation.

The Badger is a priority 1 under goal 3 (maintaining a diversity of species and ecosystems). The key recommended actions include: compile a status report (complete); list under the *Wildlife Act*; prepare a recovery plan (complete); habitat protection and restoration (underway: fencing to protect from overgrazing, habitat designation under the *Forest and Range Protection Act*) and species and population management (underway: applied research into reducing road mortality).

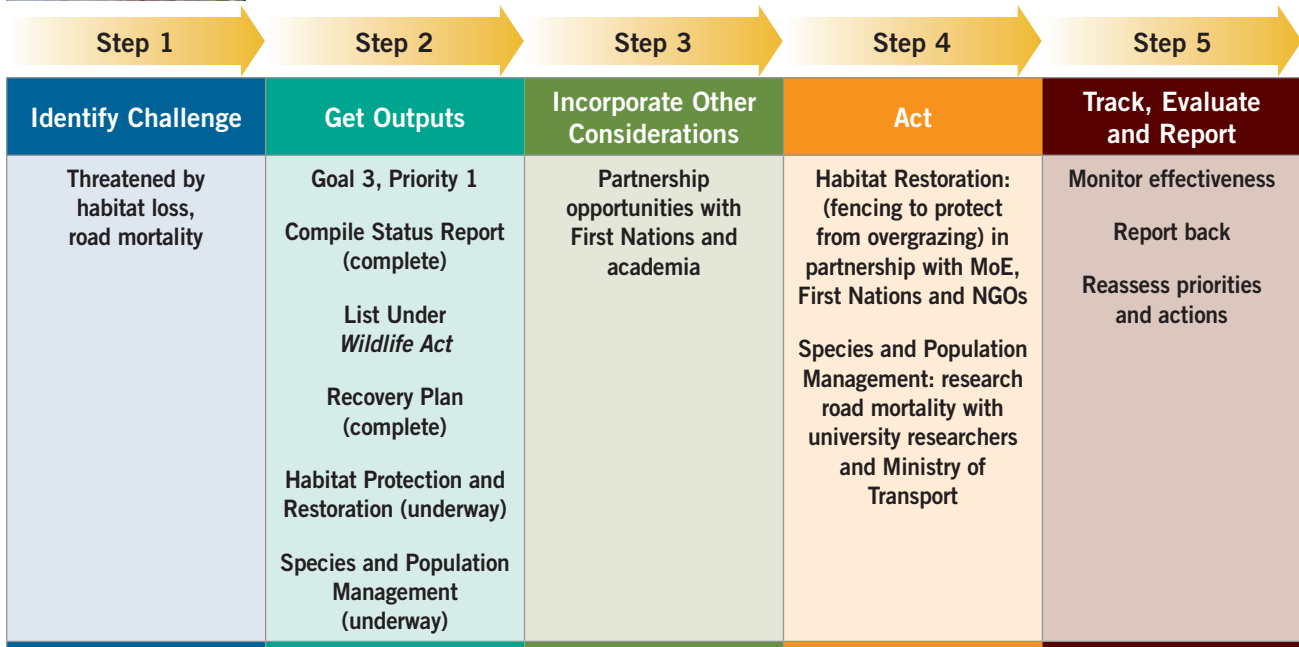


Photo: Richard Klafki

Information on the actions that have been enacted is reported back to the Ministry of Environment so that prioritization of the species and recommended actions can be adjusted accordingly.



Example 1: Single Species – Badger



Example 2: Single Ecosystem – Western Redcedar - Sitka Spruce / Devil’s Club

The western redcedar - Sitka spruce / devil’s club ecosystem is under pressure from forest harvesting. The goal is to manage this ecosystem by maintaining a specified level of representation at the landscape level.

Applying the Conservation Framework

Land use planners can use the outputs from the Conservation Framework to identify the priority ecosystems in which to minimize impacts and inform the retention targets.

Planners can map the Conservation Framework priorities using ecosystem mapping (e.g. Terrestrial ecosystem mapping) and then use spatial representation as a basis for setting targets and objectives for ecosystem-based management. This spatial tool can be updated as activities such as protection, inventory or changes in resource use are implemented. Results of these activities are reported back to the Ministry of Environment in order to reassess priorities and activities.

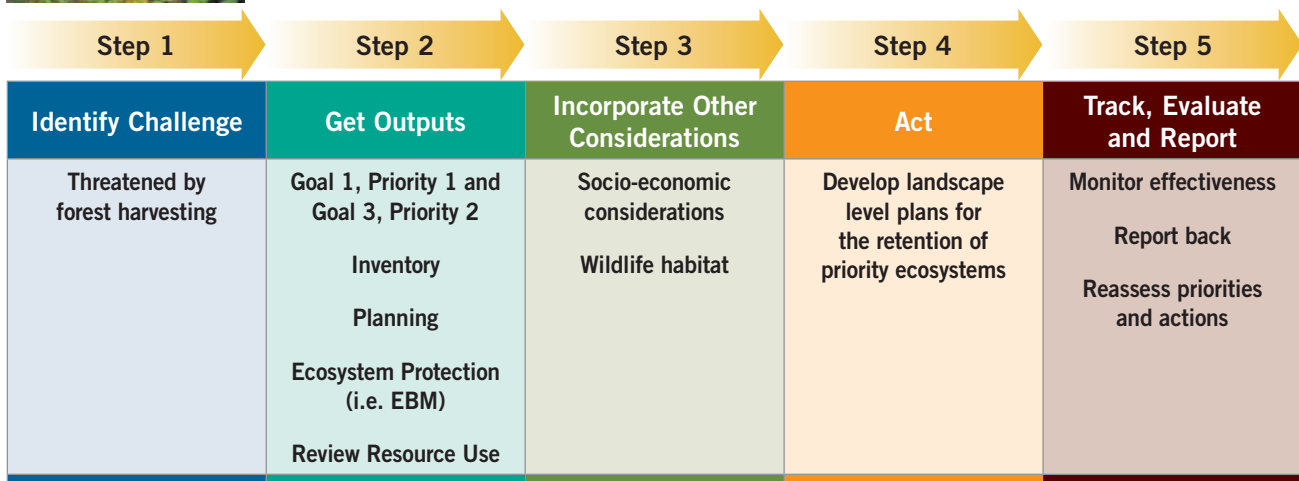


Photo: Scott Hawker

The western redcedar - Sitka spruce / devil’s club is priority 1 under goal 1 (contributing to global conservation efforts) and priority 2 under goal 3 (maintaining a diversity of species and ecosystems). The recommended actions from the Conservation Framework include: inventory, planning, ecosystem protection (i.e. Ecosystem Based Management [EBM]), and review resource use.



Example 2: Single Ecosystem – Western Redcedar - Sitka Spruce / Devil’s Club



Example 3: Strategic Planning for a Single Action – Ecological Restoration

BC Parks in the Ministry of Environment has a mandate and limited resources to restore areas within parks that have been degraded by either invasive species, facilities and tourism impacts, or impacts from outside park boundaries. In the Okanagan region, BC Parks established a South Okanagan multi-agency ecosystem restoration committee and worked with Ecosystems Branch staff to determine the priorities for ecosystem restoration in their region.

Applying the Conservation Framework

The Conservation Framework outputs include a list of ecosystems and their associated priorities for the Biogeoclimatic subzones (initially BGxh1 and PPxh1) that occur within the parks of the South Okanagan. Parks staff and partners can then filter the list of ecosystems using the action group (ecosystem restoration) to select those ecosystems that are identified as needing ecological restoration.

There are 36 ecosystems in the ecosystem restoration action group for the South Okanagan Parks BEC subzones (PPxh1 and BGxh1).

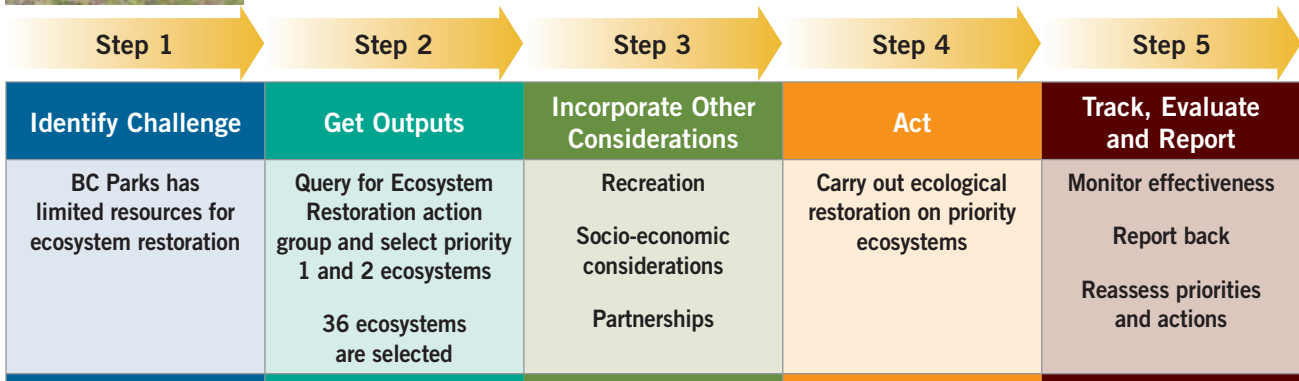


Grassland ecosystems in the Okanagan. Photo: Susan Latimer

Ministry staff will consider the high priority ecosystems with other factors including socio-economic considerations, adjacent land uses, and recreation and use opportunities. This will result in identification of the ecological restoration priorities that will be the most effective use of resources. Further, Ministry planners are using the information to strategize their priorities for future land acquisitions.



Example 3: Single Action – Ecological Restoration



Example 4: Ecosystem-based Conservation – Sagebrush Steppe Case Study

In the Okanagan Valley 33% of the sagebrush steppe ecosystem has been degraded or lost to agriculture, invasive species and development. This ecosystem provides habitat for 23 federally listed species and 52 priority 1 and 2 species. Implementing conservation measures on a species-by-species basis can be prohibitive. Ecosystem-based conservation provides a coarse filter approach to addressing the threats to multiple species. Many species in this case study share common threats and common conservation actions.



Photo: Ministry of Environment Image Bank

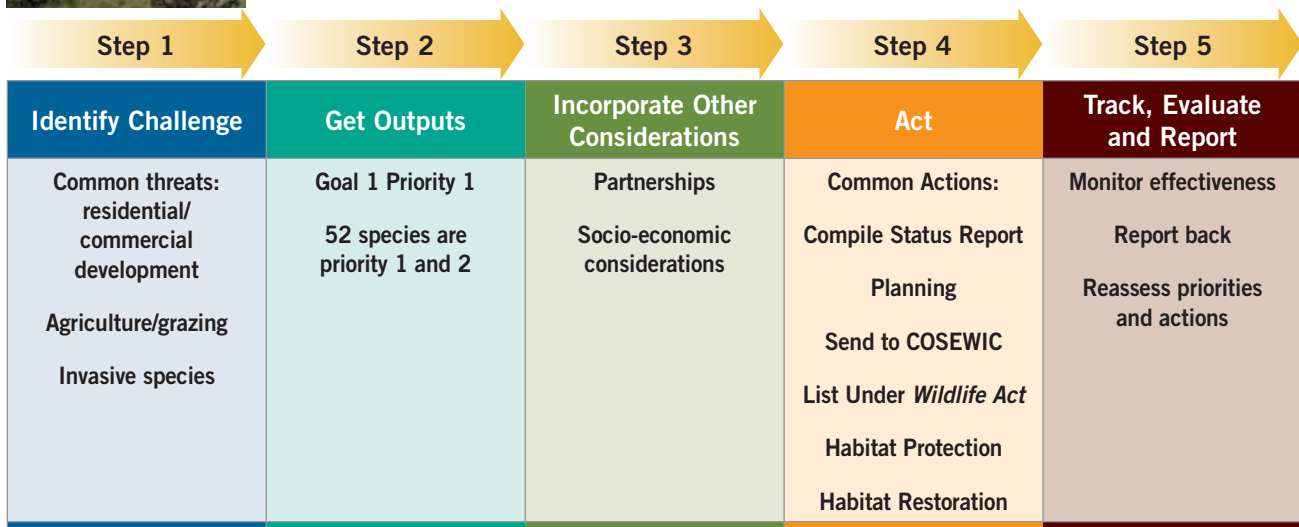
Applying the Conservation Framework

The Conservation Framework provides an opportunity to align species management at an ecosystem level. Species and their habitats often face similar threats to the ecosystems in which they occur. By addressing the high priority ecosystems that provide habitat for groups of species, many conservation actions can be carried out with greater efficiency. Ecosystem-based recovery teams can use the Conservation Framework outputs to identify where efficiencies for species management are possible. Conservation actions can then be taken at the ecosystem level and may provide opportunities to gain efficiencies in implementing conservation plans.

The sagebrush steppe ecosystem is a priority 1 under goal 1 (contributing to global conservation efforts) with 52 species that are priority 1 and 2. In this case, the Conservation Framework outputs were sorted by ecosystem type, then the recommended actions were sorted across the priority species for the ecosystem. Through this analysis, a pattern of common actions emerged, including: compile a status report, planning, send to COSEWIC, list under the *Wildlife Act*, habitat protection and restoration. In the case of ecosystem-based conservation, the implementation of recovery activities is undertaken by recovery teams in collaboration with other partners such as ranchers, farmers, planners and government agencies. Results of implementation activities are then reported back to the Conservation Framework in order to track activities and reassess priorities and actions.



Example 4: Ecosystem-based Conservation – Sagebrush Steppe Case Study



Example 5: Biodiversity Conservation Planning – Ktunaxa Nation

The traditional territory of the Ktunaxa Nation covers approximately 70,000 square kilometres within the Kootenay region of south-eastern British Columbia. Within this traditional territory over 300 species and 30 ecosystems are considered to be at risk. When faced with many conservation issues, the challenge is to develop a comprehensive biodiversity conservation strategy and implement conservation actions in a way that maximizes the limited resources available.

Applying the Conservation Framework

The Conservation Framework is assisting the Ktunaxa to develop a biodiversity strategy that will shift from a single species approach to a more proactive multi-species and ecosystem-based approach. It is assisting in identifying priorities for planning, and to implement in a coordinated way with different agencies and partners involved in the traditional territory. In the Ktunaxa traditional territory, cultural values and traditional ecological knowledge will also be considered in addition to the Conservation Framework outputs, to ensure that all value systems are incorporated into the Ktunaxa biodiversity conservation strategy.

Complex information can first be broken down into smaller units, such as grouping by taxa (e.g. vertebrates, invertebrates, and plants). Resource managers can

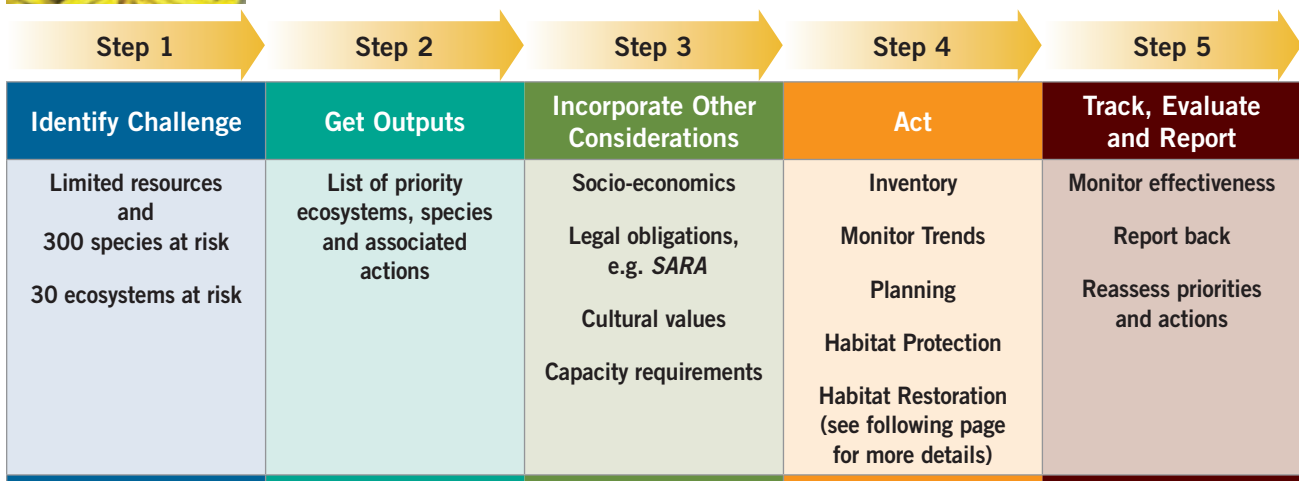


Immaculate Green Hairstreak. Photo: Vicky Young

then identify common themes for action which can be implemented with greater efficiency; for example, planning, habitat restoration and habitat protection have been identified as key actions for many vertebrate species, whereas inventory is first required for many plants and invertebrates (see next page for more details). Identifying common themes also allows managers to identify key areas for building capacity for conservation work within the community, by identifying opportunities for training and skills development. Feedback and reporting allow for sharing information so that future prioritization for those species and ecosystems will reflect activities taken or underway and any new knowledge.

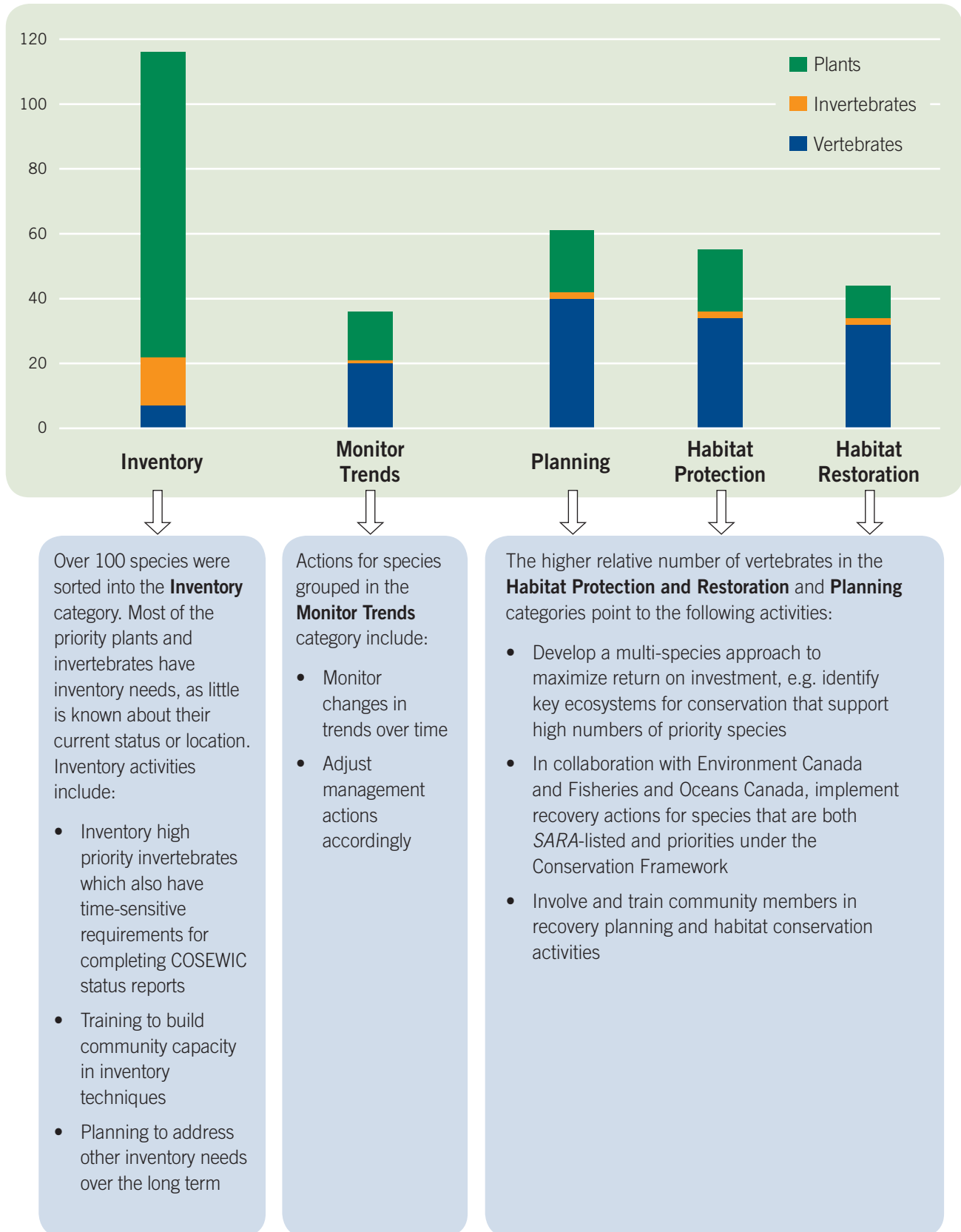


Example 5: Biodiversity Conservation Planning - Ktunaxa Nation



Example 5 (continued): Species of Conservation Concern Priorities and Common Actions

In Ktunaxa Nation, the 300 species at risk were categorized and are grouped into taxa (i.e. vertebrate, invertebrate, plant). They are grouped to identify the highest priorities (priority 1 and 2) and common actions.



Conclusion

The Conservation Framework was developed to provide a consistent, science-based method for identifying species and ecosystem conservation priorities and aligning resources with actions that have the highest chance of success. The Conservation Framework tools provide a simple, repeatable and transparent approach for determining priorities and conservation actions that can be used by all resource managers and practitioners across government and non-government sectors. The tools are dynamic and will be updated regularly as progress on actions are tracked and reported back to the Ministry of Environment, resulting in periodic re-assessment of priorities and actions.

The Conservation Framework enables practitioners across communities and agencies to focus on clear and consistent conservation goals, promote collaborative conservation actions, and build business cases for the most effective allocation of capacity and resources. The examples shown here illustrate the range of different applications for the Framework, from single species or ecosystems to the conservation and sustainable use of entire landscapes.

The Conservation Framework helps industry biologists to identify the species that are truly rare or of high priority. We have used the Framework when we are applying the Identified Wildlife Management Strategy and reviewing proposals. Using this approach we can become more proactive and our time is better spent.

John Deal, Strategic Planning Biologist,
Western Forest Products



Photo: Brenda Costanzo

Camassia quamash in Garry oak meadow