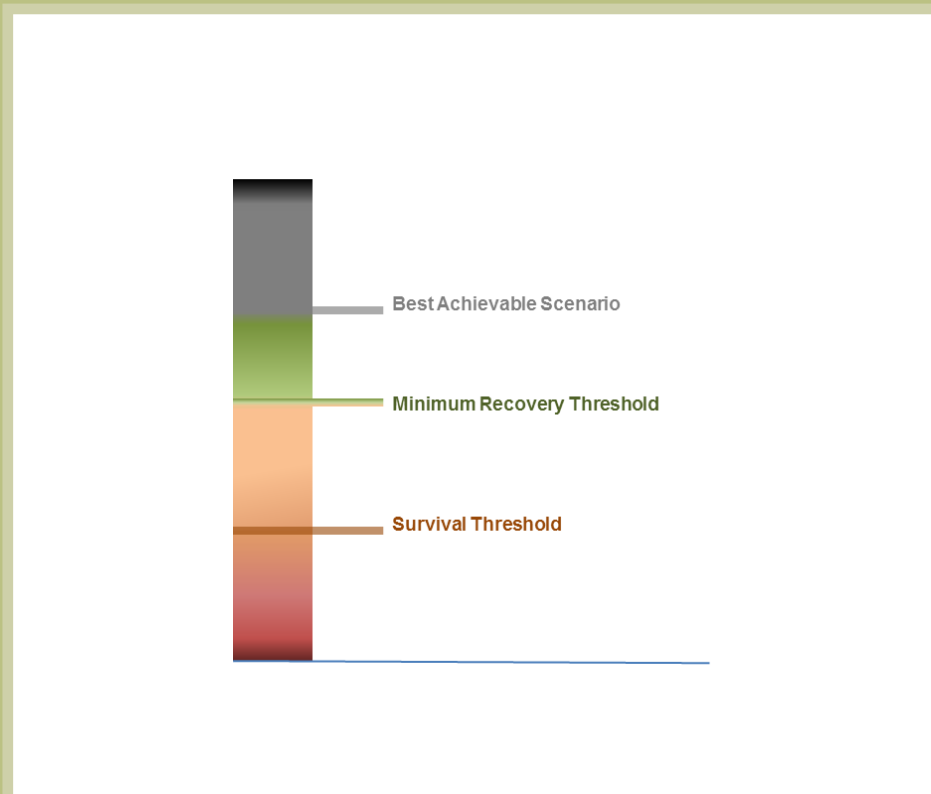


PROPOSED

*Species at Risk Act*  
Policies and Guidelines Series

# *Species at Risk Act* Policies

## Policy on Survival and Recovery



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## 1.0 Preface

The terms “recovery” and “survival” are used frequently throughout the *Species at Risk Act* (‘SARA’, the Act) and have implications for determining recovery feasibility, setting population and distribution objectives, emergency listing decisions, identification of threats and of critical habitat, permitting, jeopardy determinations, emergency orders, and understanding the purposes of the Act. Recovery and survival are not defined in the Act. This policy explains these terms, informed by scientific principles within the SARA context (see section 6 below), and establishes criteria for applying them. It provides direction for their interpretation in the context of developing recovery strategies as required by subsection 37(1) of SARA including the requirement to determine whether the recovery of the listed threatened, endangered or extirpated species at risk is technically and biologically feasible (section 40 of SARA) and that the recovery strategy must include “a statement of the population and distribution objectives that will assist the recovery and survival of the species (paragraph 41(1)(d) of SARA)”. It does so by setting upper and lower bounds to what recovery means and setting out the biological concepts to be considered, including historical information. The policy also addresses setting objectives for species of special concern in a management plan (section 65 of SARA). This policy replaces related guidance in the Draft SARA Policies (2009).

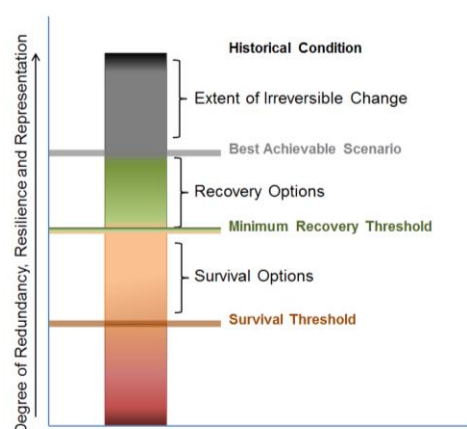
## 2.0 Policy Objective

The purpose of this policy is to provide for consistent interpretation of the concepts of survival and recovery as applied to SARA across the federal government and in particular as they are applied to the determination of the feasibility of recovery (section 40 of SARA) and the “...statement of the population and distribution objectives that will assist the recovery and survival of the species” (paragraph 41(1)(d) of SARA) within a recovery strategy and insuring they are consistent with the purposes of SARA.

## 3.0 Policy Statement

The purposes of SARA are to 1) prevent wildlife species from being extirpated or becoming extinct, 2) provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity, and 3) manage species of special concern to prevent them from becoming endangered or threatened (section 6 of SARA). The first of these purposes can be characterized as providing for survival of the species. The second purpose of recovery can be a

Figure 1: Conceptual model of recovery and survival



higher and more difficult standard to meet. The third purpose is preventative.

As illustrated in Figure 1, survival and recovery lie on a continuum of probability of persistence that ranges from the historical condition when human activity caused no significant effect to the lowest level where species survival is no longer possible. Although the survival threshold concept is consistent across species, the concept of recovery varies among species, as does the range of recovery options, because the probability of persistence varies naturally among species. Equally, the survival threshold is normally difficult to quantify.

### 3.1 Survival

The competent minister(s) will consider that a species at risk has an acceptable chance for **survival** in Canada when it has surpassed the following criteria, also known as the *survival threshold* (see Figure 1).

The listed species is more likely to be above the survival threshold when it is:

- **Stable** or increasing over a biologically relevant time frame; and,
- **Resilient:** sufficiently large to recover from periodic disturbance and avoid demographic and genetic collapse; and,
- **Widespread or has population redundancy:** there are multiple (sub) populations or locations available to withstand catastrophic events and to facilitate rescue if necessary; and,
- **Connected:** the distribution of the species in Canada is not severely and unnaturally fragmented; and,
- **Protected from anthropogenic threats:** non-natural significant threats are mitigated; and / or,

As appropriate to its specific life history and ecology in Canada:

- **Persistence is facilitated** by connectivity with populations outside Canada, and/or habitat intervention for species that are naturally below a survival threshold in Canada.

### 3.2 Recovery

This policy recognizes that recovery for a species at risk cannot be defined by a single value but rather a range of options along a continuum of probability of persistence, constrained by upper and lower bounds (see Figure 1). The upper bound in all cases is full recovery (see section 5.0); however, because in many circumstances species or their habitats have undergone irreversible change as a result of human activities, recovery to this level is not always biologically and technically feasible. Therefore in practice the competent minister(s) will interpret the upper bound of recovery as the best achievable scenario (see section 5.0) that

does not exceed full recovery.

In general, the competent minister(s) will consider the lower bound for recovery of a species at risk in Canada as the *minimum recovery threshold* (see Figure 1). The *minimum recovery threshold* is characterized by the following criteria:

- The criteria for **survival** are met and/or exceeded; and,
- There is **representation** addressing the historical Canadian distribution of the species, endeavouring to capture the full range of its ecological and genetic diversity; and,
- The condition of the species is **improved** over when it was first assessed as at risk (see Section 6.0); and,
- Once achieved, **perpetuation** of the recovered state is not reliant on significant, direct and ongoing intervention to maintain populations.

For species that were historically precarious in Canada (see section 6.0), the best achievable scenario that does not exceed full recovery is by definition below the *minimum recovery threshold* (See Figure 2b), and therefore the concept of upper and lower bounds does not apply to those species.

### 3.3 Feasibility of Recovery

In general, for species that were not historically precarious, recovery will be considered feasible if the *best achievable scenario* after considering *irreversible change* attains the *minimum recovery threshold*. Otherwise recovery is not feasible. (see Figure 2a).

For species that were historically precarious, recovery will be considered feasible if the extent of *irreversible change* is such that under the *best achievable scenario* it is technically and biologically feasible to improve the condition of the species to a point that it is approaching the *historical condition*.

For these species, recovery is deemed not feasible if the extent of *irreversible change* is so great that it is not technically and biologically feasible to improve the condition of the species to approach the lower end of the *historical condition* (see Figure 2b). In such a case, survival of the species may be achieved by ensuring connectivity between the species Canadian population and other populations of the same species in other countries or other populations that are not at risk; and/or by actively intervening with the

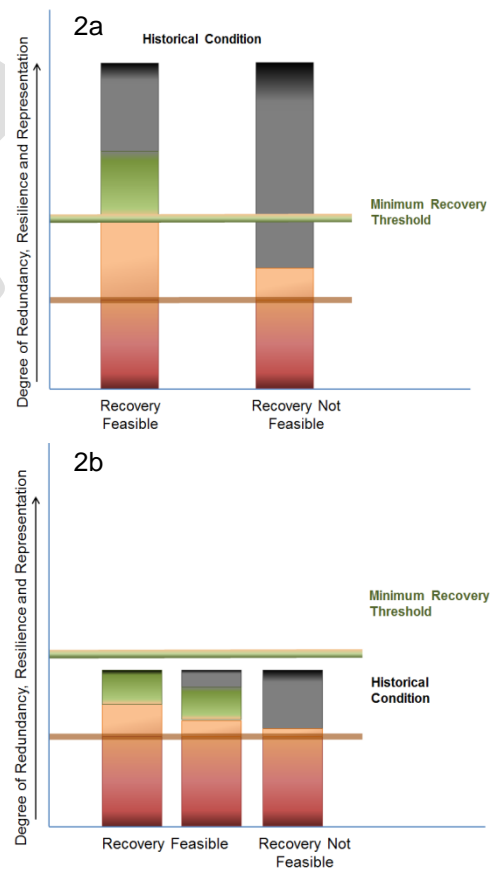


Figure 2: What feasibility means: a) Species historically not-precarious in Canada; b) species historically precarious in Canada.

species and/or its habitat.

If recovery is deemed not to be technically and biologically feasible, population and distribution objectives will be set to support survival of the species and the identification of critical habitat to the extent possible, in addition to the other requirements of subsection 41(2) of SARA.

When the determination of recovery as technically and biologically feasible is uncertain, the recovery strategy will be prepared in accordance with requirements for a species for which recovery is feasible including setting population and distribution objectives, and will aim among other things to reduce this uncertainty. The determination of feasibility will be revised if new information clarifies the feasibility of recovery.

The determination of feasibility has implications for the content requirements of a recovery strategy and whether or not an action plan is required.

### **3.4 Setting Population and Distribution Objectives**

In general population and distribution objectives will be set based on the best biologically and technically achievable scenario, provided it does not exceed historical norms.

For species that were not historically precarious and when recovery is feasible, population and distribution objectives will surpass the *minimum recovery threshold* and generally provide for a condition of the species that is improved over when it was first assessed as at risk.

Population and distribution objectives have implications for the identification of necessary research and management activities, critical habitat identification and jeopardy determinations.

In general, management objectives for a species of special concern will be based on the population and distribution of the species required to address the reasons the species was assessed as of special concern, and depending on the historical condition of the species and on what is biologically and technically feasible, will be set either to prevent the species from becoming threatened or endangered or to allow for the removal of the species from schedule 1 of SARA.

## **4.0 Application**

This policy provides parameters that the competent minister(s) intend to apply when interpreting provisions of the Act relating to survival and recovery, the determination of recovery feasibility, and setting and applying population and distribution objectives. It is also relevant to advising on emergency listing decisions, identifying threats, identifying critical habitat, issuing permits, advising on emergency orders, and understanding the purposes of the Act. See additional policies and guidance addressing these applications. This policy was developed

based on experience gained to date in implementing the Act. It applies to recovery strategies and management plans developed after the date of publication of this policy.

## 5.0 Standards to be Followed

Prior to determining if recovery is feasible and setting population and distribution objectives collect the best available information on:

- The historical condition of the species;
- Its current condition;

Using this information, to the extent possible:

- Determine whether the species was historically precarious in Canada.
- For historically not-precarious species, determine the *minimum recovery threshold*:
  - in general, interpret the necessary resilience and redundancy of species to achieve the *minimum recovery threshold* based on International Union for Conservation of Nature (IUCN) / Committee on the Status of Endangered Wildlife in Canada criteria<sup>1</sup> for threatened status, unless species-specific information is available that justifies a different interpretation;
  - Interpret representation of the species to reflect our understanding of the historical range and diversity of the species.
- For historically precarious species, interpret the necessary species resilience and redundancy for both determining feasibility and setting population and distribution objectives in relation to approximate historical norms;
- Determine the extent of irreversible change including whether changes are fully or partially reversible,
  - in assessing irreversible change consideration will be given to changes that constrain the degree that the species can achieve recovery, that cannot ever be reversed as well as changes that cannot be reasonably reversed within an ecologically meaningful timeframe;
  - when assessing irreversible change, existing infrastructure will be taken into account, and consideration will be given to whether opportunities exist to modify, improve, or remove the structure that will improve the likelihood of survival or recovery of the species;
  - in assessing whether changes are fully or partially reversible consideration will be given to the biological and technical feasibility of reversing changes to the species, and its habitat and the ecosystems on which it depends;
- Determine the *best achievable scenario* taking into consideration the degree of irreversible change.

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<sup>1</sup> [http://www.cosewic.gc.ca/eng/sct0/assessment\\_process\\_e.cfm#tbl2](http://www.cosewic.gc.ca/eng/sct0/assessment_process_e.cfm#tbl2)

## 5.1 Feasibility of Recovery

When determining if recovery is feasible, the following steps will be taken:

- Examine existing scientific knowledge and techniques and determine whether there is a reasonable expectation that they can be used or adapted to the species and its situation at a scale sufficient to be effective in recovering the species.
- To the extent possible, consider the multi-species requirements for recovering other species at risk, and the technical issues associated with the role of existing infrastructure.
- In the case of a historically not-precarious species, compare the *best achievable scenario* to determine if it at least meets the *minimum recovery threshold*.
- In the case of historically precarious species:
  - compare the best achievable scenario to the historical condition; and
  - identify additional available information that would aid in the determination of whether recovery is technically and biologically feasible ( specifics of the species natural history or demography; degree of habitat degradation, etc.)

## 5.2 Developing Population and Distribution Objectives

When developing population and distribution objectives the following steps will be taken:

- When recovery is deemed to be technically and biologically feasible set population and distribution objectives that will assist the recovery and survival of the species, taking into account the *best achievable scenario*.
- When recovery is deemed not to be biologically and technically feasible, set the population and distribution objectives for survival of the species in consideration of the *best achievable scenario*.
- To the extent possible, based on the best available information, determine the degree of improvement in the condition of the species, over when it was first assessed, that is necessary to achieve the *best achievable scenario*. This is to be determined in consideration of the *minimum recovery threshold*, the historical condition, the ecological role of the species and any other conservation objectives that the competent minister(s) has for the species.
- For species of special concern, set objectives in consideration of the reasons the species was assessed as of special concern, the historical and current condition of the species and whether the species has been previously at a higher level of risk. In general, management objectives for a species of special concern will be based on the population and distribution of the species required to address the reasons the species was assessed as of special concern and depending on the historical condition of the species and on what is biologically and technically feasible and will be set either to prevent the species from



becoming threatened or endangered or to allow for the removal of the species from schedule 1 of SARA.

It is recognized that species may naturally shift their range over time beyond historical norms in response to changing ecological conditions. Distribution objectives will be developed in a manner that allows for this possibility where appropriate.

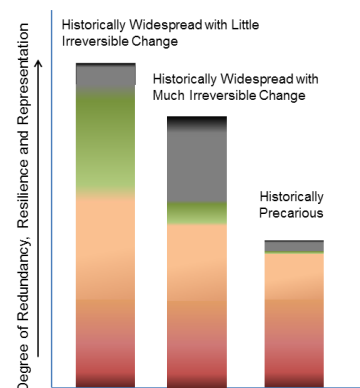
As well, where there is a lack of data or lack of confidence in the data on the species or the efficacy of recovery actions, objectives will be set that err on the side of precaution by not foreclosing opportunities for recovery and will be revisited when sufficient data are available.

## 6.0 Glossary

The terms defined below are used throughout this document and should be understood in that context.

- **Best Achievable Scenario:** Defined by this policy as the biologically and technically achievable scenario with the lowest possible risk of extinction to the species that can be achieved, taking into account irreversible change.
- **Condition:** The condition of the species refers to the combination of the level of redundancy, resilience, representation, population and distribution, trend, threats, ecological role and any other factors that together determine the risk of extinction or extirpation of the species in Canada.
- **Full Recovery:** A return to a state in which the population and distribution characteristics and the risk of extinction are all within the normal range of variability for the species. Our understanding of this is informed by the species' historical condition.
- **Historical Condition:** An estimate of the condition (as defined above) prior to significant effects of human activity, based on the best available information.
- **Historically Precarious:** Defined by this policy as a species that, prior to significant effects from human activity, was below the survival threshold or was dependent on demographic connectivity with outside populations for its long-term presence in Canada according to the best available information on the species population in Canada. Such a species may be recovered by achieving a condition that approximates its historical state.
- **Irreversible change:** Defined by this policy as a change that results in the establishment of a new set of ecological or biological conditions that constrain the ability of the species to return to its historical condition and that cannot

Figure 3: Examples showing the range of variation in current and historical condition for species at risk in Canada



reasonably be changed in a way that improves those conditions quickly enough to help the species .

Irreversible change could include changes to the species (e.g., all male/all female; genetic incompatibility; loss of genetic diversity) or ecological changes (e.g., loss of ecological niche or of food species/host species; toxic contamination; effects of permanent infrastructure).

- **Minimum Recovery Threshold:** As defined by this policy (see section 3.2), the lowest state that would be deemed recovery of a species that was not historically precarious, for the purposes of determining if recovery is feasible.
- **Redundancy:** The presence of multiple populations of the species to guard against catastrophic loss. A sufficiently widespread population may achieve the same result.
- **Representation:** The presence of a species across the diversity of ecosystems it inhabits and of the species' roles in ecosystem processes. Representation captures genetic diversity and permits adaptation over time to environmental change.
- **Resilience:** The ability of a species to recover from a disturbance and avoid demographic collapse. Resilience is influenced by population size, level of genetic diversity, as well as characteristics of the species and its habitat.
- **Survival:** The achievement of a stable (or increasing) state where a species exists in the wild in Canada and is not at significant risk of extirpation or extinction as a direct or indirect result of human activity.
- **Survival Threshold:** A biological threshold using the criteria laid out in this policy (see section 3.1) below which the risk of extirpation or extinction of a species is highly probable.