



CANADIAN SPECIES INITIATIVE

The Canadian Species Initiative: Bringing Global Tools to Species Recovery in Canada, Starting with Snakes!

Stephanie Winton

Species Conservation Planning Assistant, Wildlife
Preservation Canada, Penticton, BC
stephanie.winton@wildlifepreservation.ca

Jessica Steiner

Conservation Programs Director, Wildlife Preservation
Canada, Guelph, ON jessica@wildlifepreservation.ca

Amy Chabot

Research and Conservation Programs Coordinator,
African Lion Safari, Cambridge, ON
achabot@lionsafari.com

Canada recently committed to reversing biodiversity loss by 2030 at this year's United Nations Summit on Biodiversity. The current biodiversity crisis requires immediate innovative, integrated, and coordinated recovery actions to meet Canada's targets for biodiversity. Now is the time for all hands on deck.

Given the pervasive impact of humans on wild populations as well as new and emerging challenges, such as diseases and climate change, the view that species can be effectively conserved by solely by creating large areas of protected habitat is unrealistic, and there is an increasing need for species conservation to include active management and human intervention (Redford et al. 2011, 2012). It is important that all available management techniques are considered and applied strategically to prevent further loss of species. This includes both *in situ* conservation efforts that occur "on-site" with wild populations in their natural habitats, and *ex situ* actions that take place "off-site" outside of a species natural habitat, for example within a zoo, aquarium, botanical garden, or gene bank. In Canada, conservation efforts focus primarily on recovery activities with wild populations *in situ*, while *ex situ* management techniques are largely not recognized within the conservation community. However, as is becoming increasingly evident (Traylor-Holzer et al. 2013, Lees et al. submitted), *ex situ* management can be a viable option that can

contribute to the conservation of species at risk (SAR). When used strategically and integrated with other efforts, *ex situ* methods can be a key tool that complement field-based *in situ* conservation actions (McGowan et al. 2017). Wildlife managers and biologists are beginning to embrace the many possible roles *ex situ* management can play in conservation efforts to prevent severe declines or extinction, especially when wild populations are small and isolated.

While the importance of *ex situ* management for species conservation is becoming more apparent, some authors have questioned whether zoos are meeting this increasing need (e.g. Conde et al. 2013, Martin et al. 2014). Research to date suggests that zoo collections are not prioritizing species at risk (SAR) in their collection planning activities (Conde et al. 2013, Martin et al. 2014). For example, globally, only 23% of the species that fall within the three International Union for the Conservation of Nature's (IUCN) Red List threatened categories (Vulnerable, Endangered, and Critically Endangered) are currently held in Species360 zoos and aquariums (Conde et al. 2013). Preliminary assessments show the same trend for Canadian SAR held in Canadian zoos (K. Kerr, Toronto Zoo, personal communication). These findings suggest that zoos and aquariums are not fully meeting their potential regarding conservation needs for SAR. To fully realize the potential contribution of zoo-based conservation actions, an integrated approach to species conservation planning is required.

To address the need for integrated conservation planning, the Conservation Planning Specialist Group (CPSG), one of the IUCN's Species Survival Commissions, promotes the One Plan Approach. Traditionally, wildlife managers and field biologists work independently of zoo and aquarium managers to develop conservation plans for their respective populations (Figure 1a). Zoos are focused on developing plans for their collections, while wildlife managers and conservation organizations, such as government agencies and non-governmental organizations (NGOs) are often focused on field-based recovery activities with wild populations. The One Plan Approach bridges this gap between wild and captive population management and facilitates consideration of all available and effective conservation methods, including *ex situ* methods where appropriate (Figure 1b). Key to the success of this process is ensuring full participation by all stakeholders from the planning stages, including field biologists, wildlife managers, First Nations, academics, and the zoo and aquarium community. As a result, the full complement of expertise and available resources are brought together using proven planning tools and workshop processes to identify the most effective conservation actions.

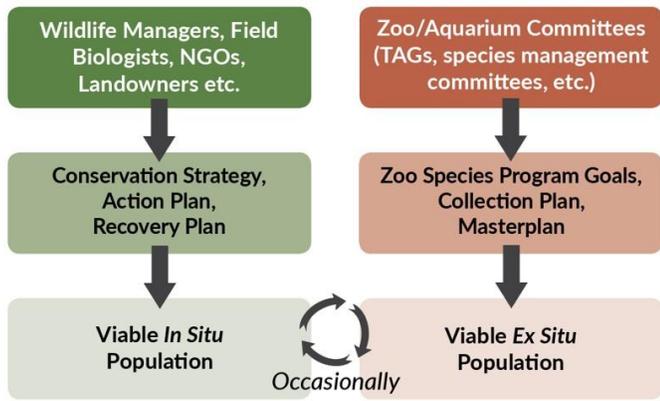


Figure 1a. Traditional approach to species conservation planning through independent plans for *in situ* and *ex situ* populations (Conservation Planning Specialist Group). NGO refers to non-governmental organization and TAG refers to taxon advisory group.

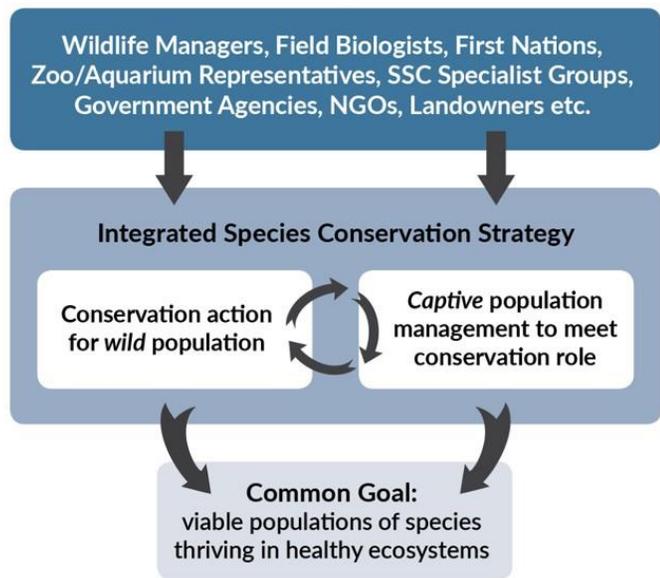


Figure 1b. IUCN Conservation Planning Specialist Group One Plan Approach to integrated species conservation planning (Conservation Planning Specialist Group).

The Canadian Species Initiative (CSI), founded in partnership by Wildlife Preservation Canada and African Lion Safari in 2019, aims to strengthen species at risk recovery in Canada by applying the CPSG’s One Plan Approach, thereby ensuring that all possible management options are given due consideration during recovery planning. Wildlife Preservation Canada and African Lion Safari are involved in several projects that serve as excellent models for this integrated approach, including those for Loggerhead Shrike (*Lanius ludovicianus*) and several reptile and amphibian species. Hands-on techniques, such as conservation breeding and release, and headstarting, are an essential part of recovery efforts for many Canadian species. Wildlife Preservation

Canada has seen early success in restoring wild populations of reptiles and amphibians using the One Plan Approach with species such as Western Painted Turtle (*Chrysemys picta bellii*) and Oregon Spotted Frog (*Rana pretiosa*) in British Columbia and the endangered Eastern Massasauga (*Sistrurus catenatus*) populations in Ontario. The Canadian Species Initiative serves as the CPSG’s Regional Resource Center in Canada and uses their science-based tools and workshop processes to evaluate potential *ex situ* conservation roles and their potential contribution to recovery efforts, while engaging a broad range of stakeholders in species conservation and collection planning.

While *ex situ* programs have provided conservation benefit for many SAR, the One Plan Approach recognizes that not all species will benefit from these methods. A critical first step in the One Plan Approach is to determine what specific conservation roles an *ex situ* program could play for a particular species, if any. The IUCN’s Species Survival Commission has produced guidelines to assist in identifying when and how *ex situ* management can contribute to species recovery through a five-step structured, informed, and transparent decision-making process (McGowan et al. 2017). The potential role of zoos goes beyond management of captive “assurance” populations (Figure 2). Zoos can provide facility space and husbandry expertise for headstarting activities or temporary rescues, as well as targeted education programs that directly address threats faced by species such as human persecution or road mortality. Zoos also offer opportunities for empirical research that can make meaningful contributions to addressing knowledge gaps for SAR (Rose et al. 2019). One program may serve several conservation roles, simultaneously or consecutively, as in the case of the managed Species Survival Plan population for Eastern Massasauga, which spans several North American zoos (Figure 3).

A key process used by the Canadian Species Initiative is the CPSG’s Integrated Collection Assessment and Planning (ICAP) workshop, which is a globally recognized multi-stakeholder assessment and planning effort that brings together the full complement of knowledge, skills, and strengths to identify effective conservation actions (Traylor-Holzer et al. 2019). During these workshops, individuals and organizations working with *in situ* and *ex situ* populations are brought together to identify which species would benefit most from *ex situ* actions, describe the *ex situ* program(s) required to most effectively serve the conservation needs of those target species, prioritize these actions and make recommendations for integrated species conservation plans. The process ensures that any *ex situ* activities that are recommended consider the conservation needs of the

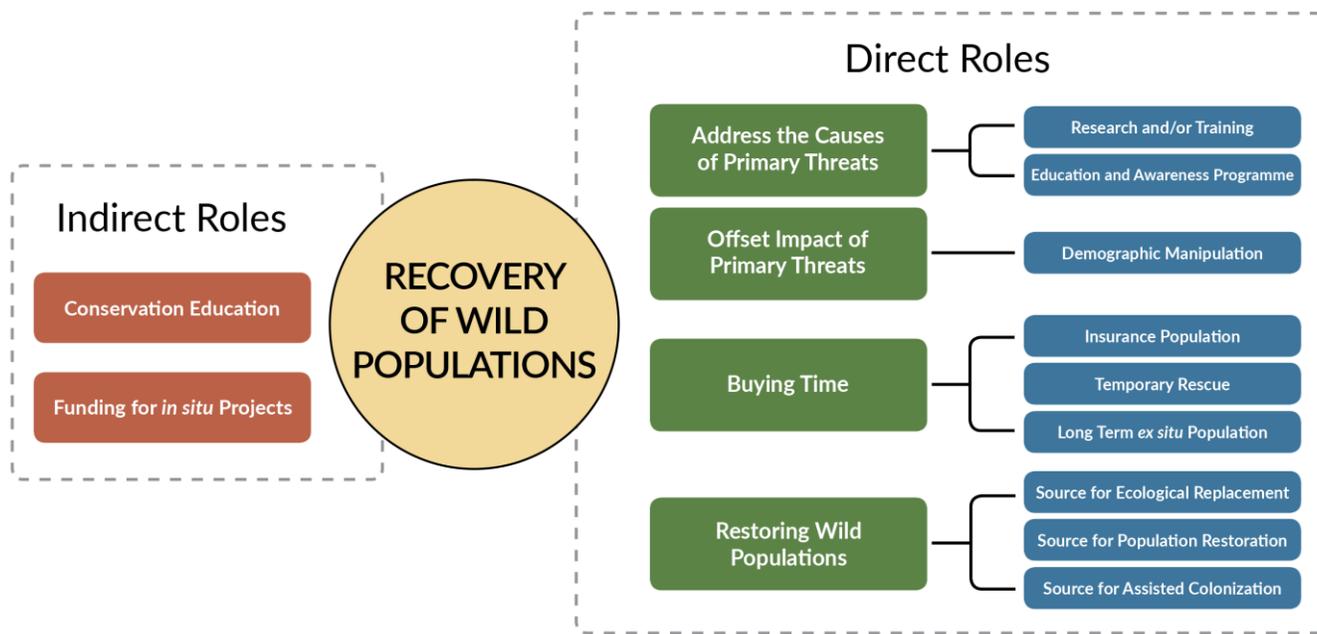


Figure 2. Direct and indirect ways that conservation activities carried out by zoos and aquariums can address the threats or challenges a species is facing. One program may serve several conservation roles, simultaneously or consecutively (Wildlife Preservation Canada; diagram based on IUCN/SSC Guidelines on the Use of *Ex Situ* Management for Species Conservation, 2014.)

species as well as practical constraints of zoo collection planning to ensure they will have a net positive impact on the conservation of a species.



Figure 3. The Eastern Massasauga Rattlesnake Species Survival Plan, which has animals spread across a number of institutions, contributes to the support of *in situ* conservation projects, public education, professional training, and scientific research and also acts as an assurance population that may serve to augment or re-establish wild populations in the future. Photo by Mike Kent.

The need for integrated conservation planning is particularly apparent for Canadian herpetofauna, a highly at-risk group of wildlife in Canada, with many populations experiencing declines and even facing local extinction (COSEWIC 2020, Lesbarrères et al. 2014).

According to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), more than 40 amphibian and reptile species are currently threatened or endangered (COSEWIC 2020). Some form of hands-on intervention has been identified in federal recovery strategies or by species experts as being necessary to ensure the survival of more than one third of these species. The Canadian Species Initiative’s inaugural ICAP workshop in early 2021 will assess all Canadian snake species and generate recommendations for achievable *ex situ* measures that will provide tangible conservation benefit for at-risk snakes. The workshop is intended to be the first of a suite of similar workshops covering diverse taxonomic groups.

The Canadian Species Initiative will ensure that due consideration is given to all potential recovery actions and will work together with diverse partners to meet the needs of those species that do require human intervention. By integrating the skills and resources of the zoo and aquarium community in conservation planning, we give these species a better chance at a future in the wild. Through the implementation of the Canadian Species Initiative, we look forward to working with the Canadian herpetological community to identify appropriate *ex situ* roles for target species at risk and we welcome participation of interested partners.

Visit www.canadianspeciesinitiative.ca for more information and please contact Stephanie Winton (stephanie.winton@wildlifepreservation.ca; 250-299-2774) to get involved!

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