

Progress Towards the Implementation of Recovery
Strategy and Action Plan for:

Westslope Cutthroat Trout, Alberta population



2025

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For copies of the recovery document, or for additional information on species at risk, including Committee on the Status of Endangered Wildlife in Canada (COSEWIC) status report, and other related documents, please visit the [Species at Risk Public Registry](#).

Cover photo: Shane Petry

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Preface

The *Species at Risk Act* (S.C. 2002, c.29) (SARA) requires the competent minister(s) to monitor and report on the implementation of recovery documents (that is, recovery strategies, action plans, and management plans) for species at risk. These reports must describe the progress made towards the species' recovery or conservation¹.

The Minister of Fisheries is the competent minister for aquatic species at risk. The minister responsible for the Parks Canada Agency is also the competent minister for aquatic species at risk that are found in their jurisdiction. Fisheries and Oceans Canada (DFO) and Parks Canada (PC) have jointly prepared the progress report in this document.

Reporting on the progress toward implementing recovery documents includes reporting on the collective efforts of the competent minister(s), provincial and territorial governments, and all other parties involved in carrying out actions that contribute to the species' recovery or conservation.

As stated in the preamble to SARA, success in the recovery and conservation of species at risk depends on the commitment and cooperation of many contributors, and will not be achieved by DFO and PC, or any other jurisdiction, alone. All Canadians are invited to join in supporting and implementing the recovery documents, for the benefit of the species and Canadian society as a whole.

Acknowledgements

This progress report was prepared by DFO. The progress toward species recovery described in this report would not have been achieved without the partnerships and contributions of many individuals and organizations.

¹ 'Recovery' applies to species listed under SARA as threatened, endangered, or extirpated, which require a recovery strategy and one or more action plan(s). 'Conservation' applies to species listed under SARA as special concern, which require a management plan.

Executive summary

This progress report outlines the progress made by Fisheries and Oceans Canada (DFO), Parks Canada (PC) and their partners towards implementing the recovery strategy and action plans for the Westslope Cutthroat Trout, Alberta population. The Westslope Cutthroat Trout, Alberta population was listed as threatened under the *Species at Risk Act* in 2013. An amended “Recovery Strategy and Action Plan for the Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*) Alberta population (also known as Saskatchewan-Nelson River populations) in Canada” was finalized and published on the Species At Risk Public Registry in 2019. The reporting period for the present report (December 2019 to February 2025) covers the 5 years since the last progress report (Fisheries and Oceans Canada 2021) and includes reporting on the implementation of the recovery strategy as well as the action plan.

The population and distribution objectives for the Westslope Cutthroat Trout, Alberta population are to:

“Protect and maintain the existing distribution of ≥ 0.99 genetically pure populations of Westslope Cutthroat Trout, and re-establish genetically pure populations to self-sustaining levels, within the species’ original distribution in the Saskatchewan – Nelson rivers watershed in Alberta.”

Four broad strategies were identified to meet the population and distribution objectives for the Westslope Cutthroat Trout, Alberta population: research, monitoring, management and regulation, and education and outreach. To implement these strategies, 9 recovery measures were developed. Progress has been made across all 4 strategies and for each recovery measure. Numerous studies have also been undertaken to identify and refine our understanding of critical habitat for the species. However, further work is needed to determine the thresholds of tolerance to human-induced disturbances. This information is essential to guide decision-making related to works, undertakings, and activities that may impact the species. While some subpopulations are showing signs of recovery and implementation of recovery measures is ongoing, the overall population and distribution objectives for the Westslope Cutthroat Trout, Alberta population have not yet been achieved. Key threats, such as the presence of non-native fish species, habitat degradation, and climate warming, continue to influence recovery of the species. Given the complexity of addressing these threats across the landscape, achieving recovery will require a sustained, long-term commitment.

For more information on the species included in this document, please contact the Species at Risk Program (dfo.ncrsara-leprcn@dfo-mpo.gc.ca).

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1 Westslope Cutthroat Trout (*Onchorhynchus clarkia lewisi*), Alberta population

THREATENED

Fisheries and Oceans Canada (DFO), Parks Canada (PC) and their partners have made progress towards the implementation of the recovery measures identified in the [“Recovery Strategy and Action Plan for the Westslope Cutthroat Trout \(*Oncorhynchus clarkii lewisi*\) Alberta population \(also known as Saskatchewan-Nelson River populations\) in Canada”](#) (Fisheries and Oceans Canada 2019), through the actions undertaken between December 2019 and February 2025, to support the recovery of Westslope Cutthroat Trout, Alberta population. The recovery strategy and action plan provides detailed information on the recovery measures to be taken to address the threats to the species and achieve its population and distribution objectives, information on the species’ critical habitat including protection measures, and an evaluation of the socio-economic cost and benefits of implementing the action plan.



Credit: Photograph of Westslope Cutthroat Trout (Shane Petry).

This progress report is part of a series of documents for this species that should be taken into consideration together, including the recovery strategy and action plan. Refer to the [Westslope Cutthroat Trout, Alberta population](#) profile on the [Species at Risk Public Registry](#) for more information and related documents.

1.1 Progress towards meeting the population and distribution objectives and implementing recovery measures for the Westslope Cutthroat Trout, Alberta population

Population and distribution objectives establish, to the extent possible, the number of individuals and populations, and their geographic area of distribution, that are necessary for the recovery of the species. The population and distribution objectives for the Westslope Cutthroat Trout, Alberta population are to:

“Protect and maintain the existing distribution of ≥ 0.99 genetically pure populations of Westslope Cutthroat Trout, and re-establish genetically pure populations to self-sustaining levels, within the species’ original distribution in the Saskatchewan – Nelson rivers watershed in Alberta.”

Four broad strategies were identified to meet the population and distribution objectives for the Westslope Cutthroat Trout, Alberta population: research, monitoring, management and regulation, and education and outreach. Additionally, 9 recovery measures were identified to

support these broad strategies. The results from Table 1 were used to summarize the progress detailed below.

Broad strategy: research

- Extensive genetic analyses have helped map Westslope Cutthroat Trout distribution, assess hybridization and genetic diversity, confirm historic presence and non-native species eradication.

Broad strategy: monitoring

- Surveys and monitoring from 2019 to 2022 confirmed widespread presence of Westslope Cutthroat Trout in the Oldman and Livingstone watersheds. Key tributaries showed high relative abundance, with stable or slightly declining trends in some creeks. Additional evidence from high mountain lakes, including eDNA and thermal habitat assessments, supports planning for potential range expansion.

Broad strategy: management and regulation

- Riparian stabilization, non-native species control, fish passage improvements, habitat modeling, genetically pure Westslope Cutthroat Trout reintroduction, broodstock facility development, monitoring, and collaborative planning, were implemented across multiple watersheds to enhance aquatic ecosystem health and support Westslope Cutthroat Trout recovery.

Broad strategy: education and outreach

- Signage, guided hikes, digital media, school programs, and stakeholder workshops have been implemented to raise awareness of Westslope Cutthroat Trout conservation, promote riparian health, and support regulatory compliance and invasive species prevention.

Table 1: Status of recovery measures under each broad strategy for the Westslope Cutthroat Trout, Alberta population for the period 2019 to 2025.

Broad strategy (BS) / Recovery measure (RM) # ²	Recovery measure	Status ³	Description of progress
BS1 / RM1	Using standardized sampling techniques and genetic analysis, conduct surveys to characterize the genetic structure and status of priority Westslope Cutthroat Trout populations in the species' original distribution. Consideration should be applied to areas with no or incomplete information to determine whether additional populations of Westslope Cutthroat Trout exist within their original distribution.	Ongoing	Extensive genetic sampling and analysis of Westslope Cutthroat Trout have been conducted, providing valuable insights into the species' current distribution, genetic linkages, population structure, levels of hybridization, overall genetic diversity, and identification of critical habitat. These findings informed translocation strategies, helped identify priority watersheds and source populations, and genetic recovery initiatives (Parks Canada Agency 2022; Parks Canada Agency 2023; Keeley et al. 2021).

² Recovery measures are numbered based on the numbering system used in the action plan. As a result, recovery measures may appear out of order in tables due to the separation by broad strategy.

³ **Completed:** the recovery measure has been completed and no further action is required

In progress: the recovery measure has a specified end date and progress has been made but it has not been completed

Ongoing: the recovery measure has no specified end date or metric for completion; efforts will continue until such time the population is considered to be recovered (for example, population monitoring) or it is no longer feasible to continue

Not started: no progress has been made on the recovery measure

Cancelled: The recovery measure is no longer moving forward as it is no longer necessary for the species' recovery, or due to other limitations

Broad strategy (BS) / Recovery measure (RM) # ²	Recovery measure	Status ³	Description of progress
BS1 / RM2	<p>Classify and prioritize existing stream and lake populations according to status of threats and determine where populations can be restored, improved or re-established. Determine how threat elimination and mitigation might contribute to an increase in genetically pure populations that are sustainable and resilient.</p> <p>Where appropriate, examine the feasibility of enhancing existing populations by stocking. Decisions to stock will be strongly informed by up to date genetic information.</p> <p>The delivery and success of potential restocking efforts, considering genetic diversity, should take into account: classification and prioritization of populations; identification of habitat/populations conducive to restocking; prioritization of target populations for enhancement through restocking; identification of source populations for stocking (considering integrity of genetic diversity within the distribution range).</p>	Ongoing	<p>Classifying and prioritizing stream and lake populations for recovery is a complex process that, despite progress, will require sustained long-term planning, implementation, and monitoring to ensure success. Progress made in the current reporting period are:</p> <p>A recovery feasibility assessment was completed to identify areas within Banff National Park. Environmental DNA (eDNA) monitoring confirmed the eradication of non-native fish, invertebrate surveys and pathogen testing of donor populations ensured habitat suitability and health standards for reintroduction (Parks Canada Agency 2023).</p> <p>To identify suitable habitats and prioritize recovery actions, the following have been implemented: watershed feasibility assessments; temperature and dissolved oxygen monitoring; predictive modelling; barrier surveys and fish passage assessments; habitat surveys; and development of tactical plans for the Bow and Oldman river watersheds (Alberta Conservation Authority 2021; Alberta Conservation Authority 2022; Alberta Conservation Association 2023; Redman and Blackburn 2023).</p>

Broad strategy (BS) / Recovery measure (RM) # ²	Recovery measure	Status ³	Description of progress
BS2 / RM3	Conduct ongoing spatial and temporal population monitoring on priority populations. Monitoring should include population estimates, relative abundance, distribution, population structure (for example, size-frequency distribution, life history stage), genetic status, as well as abundance and distribution of non-native species. Frequency will depend on the priority of the population and whether monitoring is related to a restoration or mitigation project.	Ongoing	<p>Extensive surveys across watersheds including Livingstone, Oldman, Racehorse, Daisy, Vicary, and Silvester Creeks, have consistently found high proportions of Westslope Cutthroat Trout, though some sites showed signs of declining catch-per-unit-effort (Alberta Conservation Authority 2021).</p> <p>This measure should remain in place until recovery objectives are achieved and continue thereafter to monitor for potential population declines.</p>
BS3 / RM4	Prepare a priority list of waterbodies where suppression or removal of non-native species or a genetic recovery may be feasible. Based on this list, conduct pilot projects on candidate waterbodies and evaluate effectiveness before proceeding with additional projects. A review of existing literature and consultations with other jurisdictions (that is, Parks Canada) on similar projects should be completed when designing methods.	Ongoing	<p>A priority list of waterbodies for non-native species removal in Banff National Park was developed, alongside a systematic review of physical, biological, and chemical removal methods, of which physical and chemical approaches have been implemented (Parks Canada Agency 2022).</p> <p>In-stream flow and habitat was restored in Cascade Creek, rehabilitating 9 km of habitat and initiating a 3-year Westslope Cutthroat Trout reintroduction process in 2024.</p> <p>A priority list of waterbodies for non-native species suppression or genetic recovery is being developed, supported by range expansion frameworks and science-based decision tools that guide reintroduction planning, assess habitat suitability, and</p>

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Broad strategy (BS) / Recovery measure (RM) # ²	Recovery measure	Status ³	Description of progress
			evaluate the ecological risks and benefits of conservation translocations.
BS3 / RM5	Restore and recover priority populations, where feasible, to expand genetically pure populations and re-establish populations in candidate areas within the recovery areas, by protecting and/or restoring habitat, managing harvest, reducing hybridization and eliminating or suppressing populations of non-native fish that are having negative impacts on Westslope Cutthroat Trout.	Ongoing	<p>Riparian and in-stream habitat improvements, construction of barriers to prevent reinvasion of non-native trout after removal, and mobile incubation infrastructure to support reintroductions using remote streamside incubation have been implemented. Non-native fish have been removed from 9 headwater lakes/streams in Banff National Park, followed by the re-establishment of 3 populations of genetically pure Westslope Cutthroat Trout in secure habitat. As a result, 2 waterbodies have been added to critical habitat, with more anticipated. Broodstock development, specialized culture facilities, and population monitoring support long-term recovery. Monitoring of angling pressure and habitat conditions has been used to inform adaptive management and conservation planning.</p> <p>While progress has been made, additional time and resources are needed to fully address the threats limiting population recovery.</p>
BS3 / RM6	Develop recovery implementation group(s) made up of Government of Canada and Government of Alberta staff, stakeholders, and Indigenous communities to assist in the	Completed	The Alberta Native Trout Collaborative (NTC) and partners advanced native trout recovery through cumulative effects analysis, habitat restoration, stocking, land use planning,

Broad strategy (BS) / Recovery measure (RM) # ²	Recovery measure	Status ³	Description of progress
	<p>development and implementation of watershed restoration projects. Considerations for participation in the implementation group would include the degree that a group is directly affected by the issues being addressed, has resources and/or capacity to assist in implementation, or has a regulatory mandate. To the extent possible, implementation should be integrated with other native trout recovery activities and be coordinated with other watershed conservation activities.</p>		<p>watershed assessments, and public education.</p> <p>Complementary efforts included science workshops on trout recovery and threats, and engagement with Indigenous groups and stakeholders to identify fish habitat restoration priorities, which inform a decision-support mapping tool for conservation and recovery planning.</p>
BS3 / RM7	<p>Increase prominence of native fish conservation in recreation planning and land-use management. Apply cumulative effects considerations to manage effects of resource extraction, land and water use. Complete an assessment of current rule applications, implementation, and compliance, and if there are gaps or areas for improvement, development and implementation of options to address them.</p>	Ongoing	<p>Cumulative effect considerations were integrated into fish habitat decision-making through new guidance documents, risk assessments, and mapping tools (Hodgson et al. 2022; DFO 2022).</p> <p>High-resolution LiDAR mapping and digital hydrography are being developed to support habitat modeling and conservation planning.</p> <p>Research on culvert passability and fish behavior is underway to improve fish passage assessments, and standardized tools like Fish Passage Screening Tool (FAST) are being used to evaluate barriers.</p> <p>Assessment of current rule application, implementation, and compliance is still needed for this measure.</p>
BS4 / RM8	<p>Identify target audiences (for example, land owners, anglers, industry, contractors,</p>	Completed	<p>Outreach efforts targeted a wide range of audiences, including the general public,</p>

Broad strategy (BS) / Recovery measure (RM) # ²	Recovery measure	Status ³	Description of progress
	<p>general public) and determine how each may contribute to action plan activities and why protecting/recovering genetically pure populations of Westslope Cutthroat Trout is important (explain genetic tools, principles and why this matters). Based on this information, define key messages and outreach options (for example, targeted social media, community meetings, signage, fact sheets, popular articles, podcasts, digital stories, information specific items in sport fishing regulations, GPS features, Bow Habitat Station) to target each group.</p>		<p>students, anglers, stakeholders, regulators, and conservation professionals, using signage, interpretive programs, digital media, workshops, and educational campaigns to raise awareness about Westslope Cutthroat Trout, their threats, and the importance of habitat protection and recovery actions.</p> <p>Key messages emphasized that recovering Westslope Cutthroat Trout relies on public awareness, responsible recreation, and science-based actions to address threats such as habitat loss and non-native species.</p>
BS4 / RM9	<p>Evaluate awareness efforts to determine success of outreach programs and materials and use adaptive management to develop alternative outreach products if deemed necessary.</p>	Ongoing	<p>Workshop and webinar evaluations showed they significantly improved participants' understanding of riparian health, with strong engagement and positive feedback, though other outreach measures still require assessment.</p>

1.2 Actions supporting the identification of critical habitat

Critical habitat for the Westslope Cutthroat Trout, Alberta population was identified in the recovery strategy and action plan to the extent possible, using the best available information. Critical habitat provides the features and attributes necessary to support the species' life-cycle functions and achievement of the species' population and distribution objectives. Legal protection of critical habitat for the Westslope Cutthroat Trout, Alberta population, was achieved on November 20, 2015 through the making of a Critical Habitat Order. For those areas of critical habitat located within national parks, a description of the critical habitat was published in the Canada Gazette on June 28, 2014.

The recovery strategy and action plan includes a schedule of studies outlining studies required to refine existing critical habitat and identify new critical habitat. Table 2 provides an overview of the status of these studies.

Table 2: Status of the implementation of the schedule of studies for Westslope Cutthroat Trout, Alberta population, for the period December 2019 to February 2025.

Study	Timeline	Status ⁴	Description of progress
Studies to identify and describe life history, movement, and habitat use by life stage (including habitat quality).	2019 and ongoing	In progress	Spawning surveys conducted in 2022 and 2023 identified key Westslope Cutthroat Trout habitats and highlighted areas needing conservation. No trout or redds were observed in Honeymoon Creek due to high flows and turbidity. In Beaver Creek, 3 redds and 3 trout were found at a previously surveyed site, but none in a newly surveyed section. The Carbondale River showed stronger activity, with 12 redds observed over 2.5 km in suitable temperature conditions (6.0 to 7.7°C). These findings help pinpoint vulnerable spawning areas for future restoration planning.
Studies to identify suitable habitats and identify areas where genetic recovery of genetically pure Westslope Cutthroat Trout is feasible (outside current areas occupied by genetically pure populations)	2019 and ongoing	In progress	Significant progress has been made to identify the distribution of genetically pure Westslope Cutthroat Trout, as well as identifying streams that do not currently contain Westslope Cutthroat Trout, but potentially could.
Studies to determine the width of riparian critical habitat	2019 to 2023	Completed	Completed and described in Caskenette et al. 2020.

⁴**Completed:** the study has been carried out and concluded
In progress: the planned study is underway and has not concluded
Not started: the study has been planned but has yet to start
Cancelled: the planned study will not be started or completed

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Study	Timeline	Status ⁴	Description of progress
Studies to better understand the thresholds of tolerance to disturbance from human activities	2019 to 2023	In progress	DFO studied the metabolic rates and thermal tolerance of Westslope Cutthroat Trout and non-native Rainbow Trout. Their critical thermal maximum (CTmax) was around 27°C (Enders and Durhack 2022).

1.3 Socio-economic costs and benefits

The socio-economic costs and benefits of implementing the action plan for Westslope Cutthroat Trout, Alberta population, focus on recovery efforts, such as research and management activities. This evaluation does not address the socio-economic impacts of protecting critical habitat for the Westslope Cutthroat Trout. Recovery actions undertaken within National Parks have been included in this report to provide a comprehensive summary of all activities implemented for Westslope Cutthroat Trout, Alberta population. However, the evaluation of the socio-economic costs and benefits of actions carried out in National Parks is, or will be, reported separately by PC through the implementation reports for the Multi-species Action Plan for Banff National Park of Canada and the Multi-species Action Plan for Waterton Lakes National Park of Canada and Bar U Ranch National Historic Site of Canada. The costs of implementing measures were anticipated to be less than \$370K over a 5 year period. The actual costs of implementing measures for the Westslope Cutthroat Trout, Alberta population are considered high⁵.

A large part of the economic costs borne by the federal government for the Westslope Cutthroat Trout, Alberta population, recovery are/were anticipated to be provided via funding programs, including the Habitat Stewardship Program (HSP) for Aquatic Species at Risk, Indigenous Partnerships for Species At Risk (IPSAR) (formerly Aboriginal Fund for Species at Risk), and the Canada Nature Fund for Aquatic Species at Risk (CNFASAR). During the reporting period, 12 projects targeting the Westslope Cutthroat Trout, Alberta population, (and/or multi-species projects that included Westslope Cutthroat Trout) received funding through these programs. During the reporting period \$1,422,521 was spent by the federal government on projects that included Westslope Cutthroat Trout under the HSP for Species at Risk, \$406,984 under the IPSAR, and \$3,517,040 under the CNFASAR. Projects funded by these programs would have had dollar and in-kind costs fully or partially matched by recipients, where applicable. Additional costs of implementing recovery measures were incurred from SARA program funds for contracts with partners for activities such as genetic analysis or support with field programs.

The socio-economic benefits that are believed to be possible from the implementation of the action plan include: progress towards the population and distribution objectives for the Westslope Cutthroat Trout, Alberta population; positive impacts on biodiversity; improved livelihoods of Canadians via the maintenance of healthy ecosystems; and increased value individuals place on preserving biodiversity. Implementation of the action plan may have also resulted in positive impacts on species at risk with overlapping distribution, such as the Bull Trout, Saskatchewan - Nelson River population. The conservation of species at risk is vital to the Government of Canada's commitment to conserving biodiversity and is important to Canada's economic and natural wealth.

⁵ As per the [Treasury Board Secretariat Policy on Cost Benefit Analysis](#), 'low cost' is considered less than \$1 million nationally in average annual costs, while 'high cost' is considered \$1 million or more nationally in average annual costs.

1.4 Key gaps and future priorities for the Westslope Cutthroat Trout, Alberta population

Through the development of this report, key areas were identified where continued efforts will support the recovery of Westslope Cutthroat Trout, Alberta population, including:

- continue surveys to determine or confirm genetic status
- identify and reduce key threats by watershed
- identify and assess areas suitable for restoration, restocking and identify additional source populations
- reduce hybridization and control non-native fish populations
- strengthen public, stakeholder and Indigenous engagement for stewardship and awareness
- study riparian habitat and tolerance thresholds to human disturbance

2 Concluding statement

During the reporting period, meaningful progress was made in implementing research, monitoring, management, regulatory, and outreach activities outlined in the recovery strategy and action plan for the Westslope Cutthroat Trout, Alberta population. Despite these efforts, population and distribution objectives have not yet been fully achieved. Modelling indicates that recovery for low-density populations may take 27 to 33 years, underscoring the long-term nature of recovery goals (DFO 2020). Activities during this period resulted in an enhanced understanding of population genetics, led to the eradication of several non-native trout populations, and supported the translocation of non-hybridized Westslope Cutthroat Trout in select areas. Habitat restoration occurred across the species' range, though further improvements to riparian and in-stream conditions remain necessary. Collaborative efforts have produced plans and decision-support tools, while outreach with Indigenous groups and stakeholders continues to guide restoration.

DFO remains committed to the recovery of all aquatic species at risk. The work that has been initiated and completed to date has built a strong foundation for the continued management of the Westslope Cutthroat Trout, Alberta population. DFO and its partners will continue to work towards the achievement of the population and distribution objectives for the Westslope Cutthroat Trout, Alberta population, and welcome the participation of additional partners.

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