

River Darter (Great Lakes – Upper St. Lawrence populations)

Ontario Government Response Statement



Photo: Doug Watkinson

Protecting and Recovering Species at Risk in Ontario

Species at risk recovery is a key part of protecting Ontario's biodiversity. *The Endangered Species Act, 2007* (ESA) is the Government of Ontario's legislative commitment to protecting and recovering species at risk and their habitats.

Under the ESA, the Government of Ontario must ensure that a recovery strategy is prepared for each species that is listed as endangered or threatened. A recovery strategy provides science-based advice to government on what is required to achieve recovery of a species.

Within nine months after a recovery strategy is prepared, the ESA requires the government to publish a statement summarizing the government's intended actions and priorities in response to the recovery strategy. The response statement is the government's policy response to the scientific advice provided in the recovery strategy. In addition to the strategy, the government response statement considered (where available) input from Indigenous communities and organizations, stakeholders, other jurisdictions, and members of the public. It reflects the best available local and scientific knowledge, including Traditional Ecological Knowledge where it has been shared by communities and Knowledge Holders, as appropriate and may be adapted if new information becomes available. In implementing the actions in the response statement, the ESA allows the government to determine what is feasible, taking into account social, cultural and economic factors.

River Darter is a small, bottom-dwelling fish from the Percidae family which grows up to 9.4 cm long. It has two spots on its spiny dorsal fin, 8-15 dark blotches on its sides, and 7-8 blotches that resemble saddles on its back.

The Recovery Strategy for the River Darter (*Percina shumardi*) (Great Lakes – Upper St. Lawrence populations) in Ontario was completed on May 30, 2018.

Protecting and Recovering River Darter (Great Lakes – Upper St. Lawrence populations)

River Darter (Great Lakes – Upper St. Lawrence populations) is listed as an endangered species under the ESA, which protects both the fish and its habitat. The ESA prohibits harm or harassment of the species and damage or destruction of its habitat without authorization. Such authorization would require that conditions established by the Ontario government be met.

Similar to other darter species in Canada, the River Darter is widely distributed across eastern North America. Its range extends from the coast of the Gulf of Mexico in Texas northward to the Nelson River in Manitoba and from the Saskatchewan River in Saskatchewan eastward to Lake St. Clair tributaries in southern Ontario. There are three River Darter populations in Ontario: the Saskatchewan – Nelson River population in northwestern Ontario, Southern Hudson Bay – James Bay population in northern Ontario, and Great Lakes – Upper St. Lawrence populations in southern Ontario. The Great Lakes – Upper St. Lawrence population is listed on the Species at Risk in Ontario List as endangered, while both Saskatchewan – Nelson River and Southern Hudson Bay – James Bay populations are classified as not at risk. The species was first recorded in Lake St. Clair in 1973 and subsequent survey efforts in the Great Lakes – Upper St. Lawrence area has resulted in the collection of only 29 individuals in Lake St. Clair and its tributaries. The majority of these collections were made in Lake St. Clair (14), Sydenham River (9), and Thames River (4), and one individual was collected in Bear Creek, a tributary of the Sydenham River. Despite limitations of sampling small fish in deeper areas of lakes and rivers, progress has been made toward improving sampling methodologies and more targeted surveys have recently been conducted for the River Darter (Great Lakes – Upper St. Lawrence populations). This small number of collections likely reflects the current rarity of this species in southern Ontario.

In Ontario, River Darter (Great Lakes – Upper St. Lawrence populations) have been collected in clear waters of Lake St. Clair over sand substrate, and in small turbid waters of the Sydenham and Thames rivers. It is often associated with moderate currents and deeper water over a variety of substrates. In other areas of the Lake St. Clair watershed this species has mainly been collected from nearshore areas of lakes and medium-sized rivers but has been found in small rivers such as Bear Creek. In Manitoba and northwestern

Ontario, this species has been collected from rivers with gravel and cobble substrates which are thought to be important for spawning. Reproductive information specific to the River Darter (Great Lakes – Upper St. Lawrence populations) is unknown.

Several other knowledge gaps exist for River Darter (Great Lakes – Upper St. Lawrence populations) since records only date back to 1973 and only a few dozen individuals of this population have been collected to date. This presents challenges in determining long-term population trends; distribution, dispersal, and abundance information; and biological and life history characteristics (e.g. spawning habitat and locations, survival rates at different life stages) specific to this population. Opportunities to fill knowledge gaps through the involvement of Indigenous communities and organizations and Traditional Ecological Knowledge may exist as there are several locations where River Darter (Great Lakes – Upper St. Lawrence populations) habitat intersects with Indigenous lands, including Bkejwanong (Walpole Island First Nation).

Urbanization and agriculture have significantly altered the landscape in southern Ontario. The impact of these alterations on the River Darter (Great Lakes – Upper St. Lawrence populations) is unclear since collections only date back to 1973. It is possible that this species has always been rare in the area but that remains unknown given the lack of historical data. Ongoing pollution (e.g., agricultural run-off, toxic spill events, and household effluents) from existing and continued developments may threaten the River Darter (Great Lakes – Upper St. Lawrence populations) and its habitat through the eutrophication (oxygen deprivation) of water bodies, toxicity to this species and its prey, and sedimentation and siltation. Given that the species has been found in turbid waters, it appears to be more tolerant to high levels of suspended solids; however, the impacts of high sedimentation and siltation are unknown and may impact River Darters by smothering their eggs and impeding their respiration and their ability to locate prey. Habitat modifications, such as shoreline hardening and dredging can also damage or destroy River Darter habitat and eggs.

Invasive species, such as dreissenid mussels (e.g., Zebra Mussels (*Dreissena polymorpha*) and Quagga Mussels (*Dreissena bugensis*)) and invasive gobies (i.e., Round Goby (*Neogobius melanostomus*) and Tubenose Goby (*Proterorhinus semilunaris*)), may threaten this species by affecting habitat and prey availability, although the effects of these invasive species on River Darter are not well understood. The diet of River Darter consists of a variety of invertebrates, crustaceans, fish eggs, and snails and subsequent competition for food and habitat resources with invasive gobies may occur as

these species occupy similar habitats. The impact of dams and other barriers to dispersal are unknown; however, are expected to have a minimal impact on Great Lakes – Upper St. Lawrence populations' as they are distributed downstream of major dams and their dispersal upstream is limited by their small size.

The River Darter (Great Lakes – Upper St. Lawrence populations) is rare in southern Ontario and faces several general threats at different life stages. However, the impact of these threats is not well known due to a lack of historical information and a small number of collections. Gathering information and incorporating Traditional Ecological Knowledge, as available and shared by communities, may help fill knowledge gaps and support effective threat mitigation and habitat management. Conducting inventories where the species is known to occur and has occurred historically will improve knowledge about the species' status within different water bodies (i.e., historical or extant). Monitoring efforts should focus on where the species is currently found, including the Sydenham River, lower Thames River and Lake St. Clair. While these efforts may detect new individuals, the species is still expected to be rare and may not currently be self-sustaining in the absence of additional recovery actions. Accordingly, the government supports investigating the feasibility and necessity of population augmentation where the species is known to occur.

Government's Recovery Goal

The government's goal for the recovery of River Darter (Great Lakes – Upper St. Lawrence populations) is to support the persistence of self-sustaining populations across the species' distribution. The government supports investigating the feasibility of augmenting existing populations.

Actions

Protecting and recovering species at risk is a shared responsibility. No single agency or organization has the knowledge, authority or financial resources to protect and recover all of Ontario's species at risk. Successful recovery requires inter-governmental co-operation and the involvement of many individuals, organizations and communities. In developing the government response statement, the government considered what actions are feasible for the government to lead directly and what actions are feasible for the government to support its conservation partners to undertake.

Government-led Actions

To help protect and recover River Darter (Great Lakes – Upper St. Lawrence populations), the government will directly undertake the following actions:

- Collaborate with federal partners, such as Fisheries and Oceans Canada, to implement protection and recovery actions, such as working to explore the removal of River Darter (Great Lakes – St. Lawrence population) from the list of eligible bait species under the Ontario Fishery Regulations. As appropriate and necessary, undertake targeted communication with anglers and bait harvesters to increase awareness of eligible and ineligible baitfish species.
- Continue to implement the *Ontario Invasive Species Strategic Plan* to address the invasive species (e.g., Round Goby, Zebra Mussel, Quagga Mussel) that threaten River Darter (Great Lakes – Upper St. Lawrence populations).
- Continue to protect the River Darter (Great Lakes – Upper St. Lawrence populations) and its habitat under the ESA.
- Educate other agencies and authorities involved in planning and environmental assessment processes on the protection requirements under the ESA.
- Encourage the submission of River Darter (Great Lakes – Upper St. Lawrence populations) data to Ontario's central repository through the citizen science projects that they receive data from (e.g., iNaturalist) and directly through the Natural Heritage Information Centre.
- Undertake communications and outreach to increase public awareness of species at risk in Ontario.
- Support conservation, agency, municipal and industry partners, and Indigenous communities and organizations to undertake activities to protect and recover River Darter (Great Lakes – Upper St. Lawrence populations). Support will be provided where appropriate through funding, agreements, permits (including conditions) and/or advisory services.
- Encourage collaboration, and establish and communicate annual priority actions for government support in order to reduce duplication of efforts.

Government-supported Actions

The government endorses the following actions as being necessary for the protection and recovery of River Darter (Great Lakes – Upper St. Lawrence populations). Actions identified as "high" may be given priority consideration for funding under the Species at Risk Stewardship Program. Where reasonable, the government will also consider the priority assigned to these actions when reviewing and issuing authorizations under the ESA. Other organizations are encouraged to consider these priorities when developing projects or mitigation plans related to species at risk.

Focus Area: Research and Monitoring

Objective: Increase the level of understanding of River Darter (Great Lakes – Upper St. Lawrence populations) distribution, habitat requirements, life history characteristics, population and habitat trends, and the feasibility and necessity of population management actions (i.e., augmentation).

River Darters are difficult to collect since they are a small, bottom-dwelling species, and individuals in the Great Lakes – Upper St. Lawrence populations are particularly difficult to collect due to their rarity in southern Ontario. However, improved sampling methodologies and more targeted surveys have resulted in several recent collections in this region. By standardizing these, comparisons of the status of populations can be made across the species' range and consistent monitoring can be implemented where this species is known to occur. Involvement of local Indigenous communities and organizations throughout this process should be encouraged. As available and appropriate, Traditional Ecological Knowledge on the River Darter (Great Lakes – Upper St. Lawrence populations) may be helpful in informing inventory efforts and better understanding the species, its threats and any trends identified during monitoring efforts. In addition to filling these knowledge gaps, investigating the necessity and feasibility of augmenting existing populations through additional population management techniques such as captive rearing and release programs, will support evaluation and implementation of future recovery efforts.

Actions:

1. **(High)** Develop and implement a standardized protocol to inventory and monitor River Darter (Great Lakes – Upper St. Lawrence populations), and where possible, coordinate efforts for other species at risk fish which occur in the same ecosystem. Actions include:
 - surveying for the species' presence/absence in current and historical habitat; and,
 - monitoring changes in distribution and habitat conditions where the species is known to occur.
2. Research habitat needs of all life-stages and important life history characteristics (e.g., spawning period), to inform recovery efforts.
3. Investigate the severity and extent of known threats, such as siltation and sedimentation, nutrient loading, runoff of pollutants, dredging, and potential threats such as invasive species, in current and historical habitat.

4. Investigate the necessity and feasibility of augmenting the species where River Darter (Great Lakes – St. Lawrence populations) is presently found. Actions may include:
 - assessing whether current threats can be sufficiently mitigated or reversed in order to enable successful augmentation;
 - undertaking population viability analysis for extant populations; and,
 - evaluating the feasibility of captive rearing and release, including identifying potential source populations.

Focus Area: Habitat and Threat Management

Objective: Maintain or improve the quality of River Darter (Great Lakes – Upper St. Lawrence populations) habitat in Ontario through the mitigation of threats.

The River Darter (Great Lakes – Upper St. Lawrence populations) occurs in highly developed landscape in southern Ontario and faces several threats from continued development, shoreline alterations (including hardening and dredging), and ongoing pollution which can damage or destroy this species' habitat. As specific habitat and life history requirements (and associated threats) are investigated for this population, the collaborative implementation of actions to effectively mitigate threats and manage habitat will support the protection and recovery of the species.

Actions:

5. **(High)** Minimize threats in and around the species' habitat by undertaking activities and completing effectiveness monitoring for these activities, including:
 - implementing natural shoreline stabilization techniques to prevent sedimentation caused by erosion;
 - developing and implementing Environmental Farm Plans and Nutrient Management Plans; and
 - developing, implementing and updating best management practices to inform dredging operations and techniques to reduce siltation, turbidity, nutrient loading, and runoff of pollutants.

Focus Area: Awareness

Objective: Increase level of public awareness and engagement in protecting and recovering River Darter (Great Lakes – Upper St. Lawrence populations).

River Darter (Great Lakes – Upper St. Lawrence populations) habitat in Southern Ontario is used by residents, tourists, and businesses for navigation and recreation. This area is also bordered by Indigenous lands, agricultural fields, livestock farms, and residential and commercial developments. Promoting awareness of this species, including potential threats such as invasive species, and encouraging collaborative and coordinated efforts among Indigenous communities and organizations, organizations, stakeholders, and members of the public will help to ensure that protection and recovery efforts will be effective and efficient.

Actions:

6. Collaborate with Indigenous communities and organizations, landowners, land managers, and conservation partners to promote awareness of River Darter (Great Lakes – Upper St. Lawrence populations) among people engaged in agricultural, stewardship, fishing, and shoreline modification activities within the species' range by sharing information on:
 - how to identify the species;
 - the species' habitat requirements;
 - protection afforded to the species and its habitat under the ESA; and,
 - actions that can be taken to avoid or minimize impacts to the species and its habitat.
7. Undertake work consistent with existing provincial programs to promote awareness of invasive species (e.g., Ontario's Invading Species Awareness Program) in Ontario and implement actions to prevent, respond to, and manage the spread of invasive species.

Implementing Actions

Financial support for the implementation of actions may be available through the Species at Risk Stewardship Program. Conservation partners are encouraged to discuss project proposals related to the actions in this response statement with program staff. The Ontario government can also advise if any authorizations under the ESA or other legislation may be required to undertake the project.

Implementation of the actions may be subject to changing priorities across the multitude of species at risk, available resources and the capacity of partners to undertake recovery activities. Where appropriate, the implementation of actions for multiple species will be co-ordinated across government response statements.

Reviewing Progress

The ESA requires the Ontario government to conduct a review of progress towards protecting and recovering a species not later than five years from the publication of this response statement. The review will help identify if adjustments are needed to achieve the protection and recovery of River Darter (Great Lakes – Upper St. Lawrence populations).

Acknowledgement

We would like to thank all those who participated in the development of the Recovery Strategy for the River Darter (*Percina shumardi*) (Great Lakes – Upper St. Lawrence populations) in Ontario for their dedication to protecting and recovering species at risk.

For additional information:

Visit the species at risk website at ontario.ca/speciesatrisk

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