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Invasive Species Centre Comments on Environmental Registry of Ontario #019-1162, *Seeking information on invasive species and carriers under the Ontario Invasive Species Act, 2015*

The Invasive Species Centre (ISC) is a not-for-profit organization established by the Ontario and Canadian Governments to coordinate projects and connect stakeholders, knowledge and technology to prevent and reduce the spread of invasive species that harm Canada's environment, economy and society. We are pleased to have the opportunity to provide feedback on ERO #019-1162, a proposal of 13 species and one carrier for possible regulation under Ontario's *Invasive Species Act, 2015*. With just under 10 years of experience working with the Province of Ontario on key invasive species issues, the ISC is pleased to provide feedback on this Proposal, with the hope of improving our collective ability to prevent future species invasions.

The ISC strongly supports the proposed direction to add 13 species and a carrier under Ontario's Invasive Species Act. These actions are necessary to help protect Ontario's land and waters, the communities and business sectors that they support, to ensure greater consistency among neighbouring jurisdictions, and to help minimize the future economic costs of managing these species.

Section 1: Discussion Questions

Discussion Q1. Do you agree/disagree that we should review the identified species and carrier for regulation under the Invasive Species Act, 2015.

The ISC agrees that the Ontario Ministry of Natural Resources and Forestry should review the species and carrier identified for regulation under the *Invasive Species Act, 2015*. The ISC supports the addition of new species and carriers to the *Invasive Species Act*, as this sets a stable foundation for effective prevention of invasive species establishment and spread in the province of Ontario. A thorough review process will ensure that effective regulations are in place for the highest risk species. For many of the species proposed for review, we are at a critical point of the invasion curve, allowing the opportunity to curb the economic costs of management and invest in preventing the establishment of these species. Regulation of species under provincial legislation is an excellent first step. Regulation of a carrier for the first time is also to be applauded, as prevention through a pathway can

target not one, but many invasive species, and provide notable return on investment. The addition of additional aquatic invasive plants to the regulations should also help to prevent the future public sale of invasive aquatic plants at local nurseries. Given that their popularity is extremely limited, and associated prohibitions would have correspondingly minimal economic harm, their prohibition is a clear step in the right direction for Ontario.

The addition of new regulations, however, creates the need for sustained invasive species funding at the provincial level. This sustained funding will be required to enable regulation enforcement, species response and management and public communications. Public support and understanding of the risks of invasive species are key for compliance to these regulations and to elicit behavioural change. Enforcement actions are particularly critical to the success of these regulations.

Discussion Q2/3. Do you have information, including personal experiences, that would help us as this review proceeds? Would the regulation of one or more of the proposed species or carrier have a positive or negative economic impact on you or your business?

The ISC conducted a socio-economic risk assessment on yellow floating heart, depicting the risk of arrival, establishment, and widespread invasion of this invasive aquatic plant in Ontario. Yellow floating heart is an attractive pond/aquarium plant that is often used in aquatic ornamental gardens. With significant increases in aquaculture production in the last decade, aquatic invasive species, including yellow floating heart, fanwort, and European frog-bit, are a great concern to this industry due to their impacts on water quality, competition for space, and/or their ability to cover or hinder aquaculture gear. The overall risk associated with yellow floating heart to the aquaculture industry is moderate, with high uncertainty. There is also high economic risk, with low uncertainty, to government and non-government agencies. Aquatic invasive species such as yellow floating heart may also impact tourism and waterfront property values.

The ISC has also been involved in the management of European frog-bit in Michigan. The Three Shores Cisma (Chippewa/Luce/Mackinac Conservation District) in Michigan has been working on mapping and removing EFB from the area since 2013. According to Nick Cassel, the Invasive Species Program Coordinator, Cisma has roughly spent \$125,000 USD on staff, travel and equipment since 2013 (Cassel, personal communication). They are still mapping and manually removing EFB from areas of heavy use. Mr. Cassel also noted that other entities such as Loyola University and DEQ (Department of Environmental Quality) have received \$500,000 USD and \$200,000 USD consecutively in funding for work and research on EFB in Michigan. Common methods of control and eradication, including harvesting and shading, chemicals, and biological control are costly to the government and non-government organizations involved, posing a moderate economic risk to these agencies. The availability of herbicide tools available for use in Canada is limited compared to the United States, which can pose additional challenges for management in Ontario.

Impacts of mountain pine beetle on Ontario's forestry sector could be significant if it were to be introduced in the province. Studies conducted by the Canadian Forest Service found that by 2017, 58% of sellable pine volume (a cumulative total of 752 million cubic metres) was lost. The Ontario forestry sector contributes over \$12 billion to the province's economy and supports tens of thousands of jobs, often in areas with few other employment opportunities. A [risk assessment](#) conducted on the threat of mountain pine beetle to eastern Canadian forests indicated that socioeconomic impact of infestation is dependent on local reliance on the forest sector. As many Ontario communities are heavily dependent on this industry, risk of Ontario seeing economic impacts is high. This assessment also indicated that non-timber related industries would likely see a greater impact in the boreal than

what was seen in the forests of British Columbia. Non-timber related impacts could include tourism, recreation, trapping, hydrological impacts, and salvage costs.

Aquatic invasive species, such as tench, Prussian carp, marbled crayfish, and red swamp crayfish can all have significant impacts on tourism, recreation, and commercial fishing. Invasions of these species can result in poor water quality, loss of native species, and completely alter the landscape of the invaded ecosystem. These species could also negatively impact Ontario's aquaculture industry.

Discussion Q4. What rules do you recommend be applied to some or all the identified species or carrier? – see sections 6, 7, or 8 of the Invasive Species Act, 2015 for more information

The ISC supports applying all prohibitions and restrictions under sections 7 and 8 of the *Invasive Species Act, 2015* to the proposed new additions to the Act. As the regulation of a carrier is novel under the Invasive Species Act, specific rules may have to be developed to enhance its regulation. As this type of legislation will be new for residents of Ontario, actions should be taken that can ensure compliance by community members. For example, in terms of the regulation of movement of watercraft over land, the ISC suggests considering taking an “education first” approach for a pre-determined time period, rather than making fines and penalties effective immediately. This will put a strong focus on public awareness of not only the regulations themselves, but also of the risks involved in non-compliance. In Michigan, as of March 21, 2020 it will be the law for boaters to pull drain plugs, drain water, and remove plants and debris from all watercraft. This is in addition to already established boat inspections. Similar regulations have also been in place in the state of Wisconsin since the late 1990's. Manitoba, Saskatchewan and Alberta all have strict overland watercraft regulations to curb AIS spread including mandatory inspection stations. The ISC believes that it is critical to align Ontario's overland watercraft movement regulations with those of surrounding jurisdictions to protect the Great Lakes and the many other lakes and rivers of Ontario from aquatic invasive species.

Discussion Q5. Should we consider exceptions to the prohibitions during the development of the regulatory proposal (e.g. allowing the import of the species provided individuals are dead)?

Exceptions to prohibitions should be used carefully, with limited applications and a detailed process. Permits for research and educational purposes could be incredibly helpful to many organizations doing invasive species outreach work and scientific research. The work done by these organizations can be critical to public awareness, compliance to new regulations, and new research innovations. Exceptions may also be required for first responders and emergency response scenarios. Having exceptions can, however, make more work for enforcement officers and border agents, underscoring the value of regular training for these front-line workers.

Section 2: Species Specific Comments

Marmorkreb (Marbled Crayfish)

The marbled crayfish is a parthenogenetic species, meaning that fertilization is not required for an individual to produce offspring. This characteristic allows populations of this species to proliferate and establish quickly. Unauthorized release of marbled crayfish is illegal under federal regulation by Fisheries and Oceans Canada, however the import, sale, and possession of this species is still legal and has a seemingly thriving market. As

intentional release of aquarium species occurs regularly, relying on these federal prohibitions to prevent marmokreb introduction and establishment in Ontario is unwise. Regulation of this species under the Invasive Species Act can address the public sale of marbled crayfish, reducing the amount that can be found in household aquariums across the province, thus reducing the likelihood of either accidental or intentional release of this species.

Tench

Tench are not currently established in Ontario but could enter Ontario waters from Quebec through the St. Lawrence River. Tench is often mistaken for some baitfish species, so education on this species to the fishing community on key identification features of tench will be critical. While proposed baitfish policy changes include restricting the number of species that can be legally collected and sold for use as baitfish, the ISC acknowledges identification by baitfish collectors can be improved. Tench have been thought to be an added pressure causing the decline of the species at risk, the River Redhorse (special concern). Yellow perch is also thought to be suffering a reduction in population due to increased food competition from tench presence. As an example of interest and concern about Tench, ISC recently hosted a webinar on tench and had over 75 participants.

New Zealand mud snail

In North America, most spread of the New Zealand mud snail has been attributed to attachment to fishing and boating gear. Species specific regulation would bring additional benefit to spread prevention by reducing importation of the New Zealand mud snail through the aquaculture and aquarium industries. Similar to the marbled crayfish, this species is parthenogenetic, so fertilization is not required to produce new individuals. This means that it would only take a single snail to be transported to a new water body for establishment of a population. Additional regulation of the boating pathway could be a huge factor in preventing establishment of this species in Ontario.

European Frog-bit

European frog-bit is currently found in several Ontario waterways, including the Rideau and Ottawa rivers, the St. Lawrence River, Lake Erie, Lake Ontario, and the Kawartha Lakes, as well as waterbodies in surrounding states. The regulation of both this plant and the recreational boating pathway would be greatly important to prevent European frog-bit from spreading any further into more Ontario waters. European frog-bit was brought to Ontario as an ornamental pond plant and has since spread into natural waterways. Regulation will prevent Ontario homeowners from purchasing and planting this invasive species in their aquariums or water gardens. Further regulation of the recreational boating pathway will prevent further spread into new waterways.

Yellow Floating Heart

Yellow floating heart is also found in Ontario, including in the Rideau river, Halton Region and the Royal Botanical Gardens Nature Sanctuaries (near Burlington). Similar to European frog-bit, regulation of this species and the boating pathway can be a notable help in preventing this invasive plant from establishing in more of Ontario's waterways. Like European frog-bit, yellow floating heart is a popular pond plant, and as of 2013, 12% of nurseries had this plant available to the public for purchase. Regulating this species under the invasive species act can aid in the reduction of public sale of this plant and reduce the likelihood of this species being released into natural waterways.

Prussian Carp

Prussian carps are a species of wild goldfish, native to Siberia. In Canada, they were introduced to lakes and rivers of Alberta and Saskatchewan through the release or escape from ponds and/or aquariums. Prussian carps have the ability to become a dominant species in a waterway by causing shifts in food chains and altering chemical and physical properties of habitats. The main reason the Prussian carp is considered a significant invasive threat is their means of reproduction – this species can use the sperm of any species in the same family to activate (not fertilize) its eggs allowing populations to proliferate rapidly. Regulating this species under the Invasive Species Act will bring Ontario in line with its provincial counterparts and ensure more consistency between neighbouring jurisdictions.

Red Swamp Crayfish

This species is native to the Mississippi river drainage and the gulf coast. It has become established outside of its native range in 10 states including Ohio and Wisconsin. This species is considered the most widespread invasive species worldwide. Its feeding behaviour reduces available habitat for other aquatic life and creates competition for food and habitat with native crayfish. Other burrowing and foraging behaviours can also decrease water quality by causing algal blooms. This species is prohibited in the state of Michigan, so regulating red swamp crayfish would be a step towards harmonizing regulations with neighbouring jurisdictions. There is also a large market for this species in Canada. In 2018, Canadian Border Services seized more than 2,000 pounds of live red swamp crayfish coming from Michigan, resulting in the largest seizure of invasive species by the Michigan Department of Natural Resources. This species is farmed extensively throughout the southern United States for food purposes and is also sold throughout the world as pets. Regulation of the red swamp crayfish can prevent spread of this species into the province by reducing the importation and subsequent distribution of the species.

Fanwort

Fanwort is a popular aquarium plant which is presumed to be spread by aquarium dumping into waterways or by recreational boats that can move plant fragments from an infested area. Fanwort was discovered in Kaskabog Lake in 1991 and has since spread throughout the Crowe River watershed. This plant forms dense mats on the surface of the water, crowding native plants and blocking sunlight from reaching the depths. This can disrupt fish communities, clog drainage basins, and reduce recreational uses. Similar aquatic invasive plants are also known to decrease shoreline property value, which in turn can negatively impact revenues generated by municipalities through property value-linked taxes. Water bodies in the Canadian Shield are particularly vulnerable as fanwort thrives in acidic environments. Regulating this species under the Invasive Species Act is strongly recommended given its relatively restricted distribution in Ontario. Regulating the boating pathway will also contribute to containing the spread of this species.

Bohemian/Himalayan/Giant Knotweeds

Along with the already regulated Japanese knotweed, Bohemian, Himalayan, and Giant knotweeds are among the International Union for Conservation of Nature's (IUCN) 100 worst invasive species. All four species are similar in appearance and can tolerate a range of soil types and climates. Japanese knotweed is currently established and regulated in Ontario and all four species can be found in western Canada. Other species or cultivars of knotweeds are currently available through commercial trade in Ontario yet provide limited economic value relative to the potential ecological consequences they pose. We encourage their regulation under the ISA, which will also enable a clearer message around "invasive knotweeds".

Mountain Pine Beetle

Mountain pine beetle (MPB) is native to western forests and is well known for causing widespread pine mortality in the forests of British Columbia. Populations have been moving out of the native range and it is predicted that with climate change, these populations can spread farther north and east. The connectivity of pine forest across the country brings much concern of MPB spread to eastern provinces of Canada, including Ontario. Jack pine, the dominant pine species across the boreal, are considered preferred hosts of MPB outside of its native range could provide a pathway for MPB to move across the country. Governments of Alberta and Saskatchewan are acting to prevent further spread of MPB by placing orders on pine harvest and movement. While Ontario does not receive significant numbers of pine imports from British Columbia, Alberta, or Saskatchewan (likely due to regulatory measures in place by more western provinces) over 5 million cubic metres of pine was imported from Manitoba between 2008 and 2018. As detections of MPB move eastward, it is critical to Ontario's forest industry and economy to have regulations in place to prevent the introduction of this forest pest. Regulating this species under the Invasive Species Act will ensure Ontario is provided with the regulatory powers to support prevention of this pest from being introduced to the province and is strongly supported.

Wild Pigs

Wild pigs are present in some parts of Ontario however with immediate regulatory action we may be able to contain their widespread establishment. The Fish and Wildlife Conservation Act already prohibits unauthorized release of imported wildlife, including wild boar. Regulating wild pigs under the Invasive Species Act will add an extra layer of protection for Ontario lands and forests in preventing this species from establishing in the province. Regulation under the Invasive Species Act will provide additional regulatory powers to the province to address emerging wild pig situations as they develop. Wild pigs are a risk to not only the environment, but to industry and human health as well. Given their establishment in Canadian Prairie provinces, and other parts of North America, the time to mitigate their establishment in Ontario is now and regulating the species under the Invasive Species Act is a valuable regulatory action.

Section 3: Carrier Comments

ISC strongly supports the proposed action to regulate boating pathways, as this is an important step to prevent the spread of invasive species in and outside Ontario. The 2020 Convention on Biodiversity target includes identifying and addressing pathways of invasive species, so progress on this regulatory item will enable us to meet these important international targets. Regulations and enforcement will also enable Ontario to harmonize legislation with our neighbouring jurisdictions including Canadian provinces Manitoba, Saskatchewan, and Alberta as well as neighbouring Great Lakes states.

Aquatic invasive species are often spread to waterbodies by boats and boating gear, so this is a very important pathway to target preventing invasive species spread. Invasive mussel veligers and small invasive plant fragments can attach to a watercraft and survive in standing water. Following a "Clean, Drain, Dry" protocol is recommended to prevent the spread of aquatic invasive species. In Alberta, for example, it is against provincial law to transport a watercraft with the drain plug still in place. Users must demonstrate upon inspection that their vessel has been drained of any standing water and will be subject to a fine with refusal to comply to this legislation. Under this legislation, the province of Alberta has the means to set up boat inspection stations, which has been effective in preventing the introduction of zebra/quagga mussels into Alberta waterways. Although investment in the inspection station program is considerable, the return on investment for preventing invasive mussel establishment has been encouraging and the program continues to be strongly supported. Deploying more than half a dozen

inspection stations, some operated around the clock, in strategic locations has enabled the province to curb spread of other aquatic invasive species beyond invasive mussels. Using novel tools at their inspection stations, including AIS detection dogs, has enabled Alberta to achieve considerable public buy-in. Implementing inspection stations may require a gradual rollout due to its scale, so the ISC stresses the importance of consistency in implementing the enforcement of this new regulatory direction. It is important to note that most compliance with this type of regulation occurs away from the inspection station framework, and considerable attention should also be made to driving behavioural change through sustained public engagement on the importance of public action to prevent the spread of AIS. Continued support of the ISC and other invasive species program delivery partners of the province is critical in delivering this message to Ontarians. The ISC also sees regulation of this pathway as a valuable step in preventing further spread and future introductions of invasive species.

The ISC suggests following the lead of our neighbours to determine what enforcement of this legislation will look like. Public awareness and potentially a transition period of easing recreational boaters into this new legislation will play a major role in community compliance to the regulations being put in place.

The ISC also recommends that Ontario considers other pathways of invasive species spread be regulated under the Act. A good example of pathway regulation to prevent species spread can be seen in Pennsylvania, where in areas that spotted lanternfly is present those travelling by car must obtain a permit and conduct mandatory vehicle checks ensuring that they aren't carrying any hitchhiking insects outside of the given jurisdiction. Regulating other pathways, like firewood, would provide a secondary level of protection in preventing the introduction of forest pests.

Section 4: Summary

In summary, the ISC welcomes MNR's interest in reviewing proposed additions to the 2015 Invasive Species Act. Sufficiently addressing the many new and dynamic threats posed by established and threatening invasive species is a major challenge facing Ontario's land and waters. Although there have been advances in invasive species prevention and management in Ontario in the past decade, there is a great deal of improvement that we need to collectively achieve with regards to invasive species prevention and this proposal is a great step in that direction. ISC would like to offer its continued assistance to help communicate the need to take measures on invasive species. We look forward to continued dialogue on this topic and to helping to deliver positive results to protect Ontario's environment and economy.

Sincerely,

Sarah Rang
Invasive Species Centre