



BEST MANAGEMENT PRACTICES

Tourism and Invasive Species

A Pocket Guide for Tourism Operators, Guides and Staff

2021 EDITION



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Acknowledgements

The Invasive Species Council of BC would like to recognize the wonderful program advisory team, who have contributed their incredibly valuable time, energy and expertise to all aspects of program development and who continue to provide their wisdom and guidance. This contribution is especially valued and extraordinary given the severe impacts of the COVID-19 pandemic on the tourism industry and their individual organizations. Many thanks to you all.

Alison McKay

Destination BC

Amy Thacker

*Cariboo Chilcotin Coast
Tourism Association*

Brad Harrison

*Backcountry Lodges of
BC Association & Chair of
Adventure Tourism Coalition*

Bruce Hayne

Boating BC Association

Edison Kim

Transport Canada

Emilie Cayer-Huard

Kootenay Rockies Association

Laurie Frankcom

*Central Kootenay Invasive
Species Society*

Mike Overend

*Thompson Okanagan
Tourism Association*

Martina Beck

*Invasive Fauna Unit Head
BC Ministry of Environment
& Climate Change Strategy*

Scott Benton

*Wilderness Tourism
Association*

Table of Contents

Introduction	1
What are Invasive Species?	3
Why are they a Problem?	4
Tourism and Invasive Species...What's the Connection? ..	5
How to Play Your Part.	13
Clean Drain Dry	13
PlayCleanGo	14
Buy Local Burn Local	14
Invasive-Wise Tourism: Best Management Practices ..	16
Operator Best Practices Checklist:	17
Industry-Specific Best Management Practices.	20
1. Marinas and Rental Operators.....	21
2. Fishing and Outfitting	23
3. Floatplane Operators.	26
4. Lodge-Based and Wilderness Tourism Operators ..	29
Reporting Invasive Species.....	33
Resources	35
References	38



Introduction

British Columbia's tourism industry is ranked as the most important sector to the economy—generating billions of dollars annually. Much of the industry's success relies on BC's amazing biodiversity and wide variety of healthy, natural landscapes. Invasive species can impact ecosystems, landscapes and native wildlife—the very things that attract visitors and make BC such a wonderful place to live.

This guide was developed to support tourism operators in adopting simple best management practices to prevent the introduction and



Tourism Vancouver Island/Ben Giesbrecht

spread of invasive species and protect BC's rich biodiversity and ecosystems. There is also an eLearning course, resources and a recognition program. For more information contact the Invasive Species Council of BC (ISCBC) or visit bcinvasives.ca.

DID YOU KNOW?

BC is the most biologically diverse province in Canada. 75% of Canada's mammal species are found here and there are over 1,800 species at risk!



Yellow flag iris. E. Sellentin

What are Invasive Species?

Invasive species are non-native plants, animals or other organisms whose introduction and spread harms BC's native species, ecosystems, economy and human health.

DID YOU KNOW?

Invasive species are second only to habitat loss in reducing global biodiversity.



Puncturevine, L. Scott



Hound's tongue, L. Scott



Zebra mussels, M. Herborg

Why are they a Problem?

Invasive species can rapidly establish and spread, reducing biodiversity and destroying habitats that support entire ecosystems. Invasive plants can displace native vegetation and reduce forage for wildlife, severely damage riparian areas, destabilize slopes and increase fire hazards. Invasive animals can outcompete native species for food, shelter and space, spread diseases, introduce parasites and disrupt food webs. Invasive species also impact the economy by damaging infrastructure, reducing crop yields, destroying forests and costing millions of dollars in management and control costs.

DID YOU KNOW?

Almost a thousand invasive plant and animal species are known to have established in BC.

Tourism and Invasive Species...What's the Connection?

Invasive species directly impact the tourism industry by damaging BC's ecosystems, wildlife and infrastructure. Tourism is also a major pathway for the introduction and spread of invasive species. People participating in activities such as fishing, boating, hiking, camping and moving between sites can spread invasive species. These activities also bring travellers to ecologically sensitive areas like parks, biodiversity hotspots and remote wilderness sites. Invasive species can cling to clothing, animal fur, camping gear, firewood, vehicles and watercraft and be transported to new locations.

Aquatic invasive species have the potential to severely impact BC's watersheds, affecting food webs, diminishing water quality and outcompeting native plants and animals for food and habitat. This can lead to fewer opportunities for recreation and reduced revenue from fishing, boating and other tourism-related businesses.



Destination BC/Michael Bednar

Direct costs arise from the intensive efforts required to manage the impacts of invasive species. The most cost-effective option is to prevent the introduction and spread of invasive species.

Tourism operators are key partners in invasive species prevention and early identification, as they are familiar with their work regions, routinely visit sites and can spot any changes.

DID YOU KNOW?

The estimated annual impact of invasive species in Canada is \$35 billion!



Eurasian watermilfoil, A. Fox, UGA

Some examples of invasive species that impact tourism activities:

INVASIVE SPECIES

Eurasian watermilfoil (*Myriophyllum spicatum*)

Eurasian watermilfoil is an invasive aquatic plant that prefers shallow fresh water. It grows in thick mats that block sunlight, slow water flow, shade out other plants and alter the chemistry of the water. Tiny plant pieces can develop into new plants, spreading it rapidly.



WHAT DOES IT HAVE TO DO WITH TOURISM?

Recreational movement of boats, trailers and fishing gear is the main way Eurasian watermilfoil has spread across North America. Once established in a watershed, Eurasian watermilfoil is incredibly difficult to remove.

Infested beaches and recreation sites are often closed and there are many accounts of people drowning in watermilfoil.

DID YOU KNOW?

Eurasian watermilfoil is one of the most widely distributed aquatic invasive plants on the planet!



Puncturevine, L. Scott

INVASIVE SPECIES

Puncturevine (*Tribulus terrestris*)

Puncturevine is a densely matted, trailing plant that invades dry roadsides, fields, trails and disturbed habitats in the Okanagan and Similkameen areas. Puncturevine has spiny seed pods that allow it to be easily transported.



Puncturevine, L. Scott

WHAT DOES IT HAVE TO DO WITH TOURISM?

Puncturevine seeds can injure people and animals and as the name suggests, can puncture running shoes and bicycle tires. Puncturevine is spread through activities like hiking, biking, horseback riding and ATVing. The sharp seeds attach to clothing, shoes, tires, animal fur and vehicles.

DID YOU KNOW?

A single puncturevine plant may produce up to one million seeds!



Zebra mussels, M. Eplett



Zebra & Quagga mussels, SLO County



Zebra mussels, M. Herborg

INVASIVE SPECIES

Zebra and Quagga mussels (*Dreissena polymorpha*, *Dreissena rostriformis bugensis*)

High Alert Species! EDRR (Early Detection & Rapid Response)

Zebra and Quagga mussels (ZQM) are small freshwater mussels that were introduced to eastern North America in the ballast water of ships and have spread rapidly, as far west as Manitoba and California. They are difficult to detect and spread easily. They can alter entire freshwater ecosystems and put immense pressure on native populations. They have not yet arrived in BC—they are a high alert species!

WHAT DOES IT HAVE TO DO WITH TOURISM?

ZQM attach to boat hulls, trailers, plane floats and other gear and equipment, and their tiny larvae can be transported in any standing water (e.g. boat bilges, buckets, etc). Infestations can clog pipes and water intake systems, damage boats, docks and waterfront infrastructure. Their sharp shells can cut bare feet and injure people and animals.

Once established in a waterbody they are almost impossible to get rid of. Boat inspection stations at BC's borders stop all watercraft during the boating season to look for ZQM and other invasive species. Let's make sure they stay out of BC waters—**CLEAN DRAIN DRY!**

DID YOU KNOW?

Zebra and Quagga mussels can survive for weeks out of water, so mussels that attach to boats or other equipment can be transferred from one body of water to another.



How to Play Your Part

Clean Drain Dry

Boats and other watercraft, including kayaks and canoes, easily and frequently



**CLEAN
DRAIN
DRY**

carry invasive species from one body of water to another. These aquatic invaders are entering BC's beautiful lakes, streams and wetlands. Boaters, anglers and paddlers can all take action now to help stop the spread by ensuring watercraft and any gear are cleaned, drained and dried before and after every use.

PlayCleanGo

Give invasive species the brush off! When recreating outdoors invasives species can easily hitch a ride on boots, clothes, gear and in pet fur. Seeds and plant parts are easily transported in mud stuck in tires of ATVs, bikes or other vehicles. Outdoor recreationists can take action by ensuring vehicles, boots and any gear are free of mud, dirt and any plant parts before and after leaving recreation sites. Check for invasive hitchhikers and stay on designated trails and roads.



Buy Local Burn Local

Don't move firewood. Instead only buy or burn local firewood. Moving firewood to or from a campground or cabin can spread invasive species such as Gypsy moths or Emerald ash borers, and diseases like White pine blister rust or Willow scab, that can damage forests and destroy entire ecosystems. Protect our forests and wildlife by keeping firewood local.





Destination BC/Blake Jorgenson

Invasive-Wise Tourism: Best Management Practices

To help prevent the spread of invasive species, tourism operators and staff should incorporate best management practices (BMPs) into many of their activities. This section includes:

- » a basic checklist for all tourism activities that is easy to remember and follow, and
- » specific BMPs developed for key audiences including marinas, fishing guides and outfitters, floatplane operators, and lodge-based and wilderness tourism operators

These simple actions will help limit the negative effects of invasive species on native plants, wildlife and the environment.

Do Your Part—Protect BC's Nature!

Operator Best Practices Checklist:

Follow these simple steps when you are out with clients to prevent the spread of invasive species!

BEFORE ANY ACTIVITY:

- ✓ Encourage guests to arrive with clean gear
- ✓ **CHECK** that all watercraft and vehicles are **CLEAN** and **DRY** prior to use
- ✓ Plan to **BURN LOCAL** firewood only—insects and diseases in firewood can destroy our forests

DURING YOUR OUTING:

- ✓ **STAY** on designated trails and roads
- ✓ **CHECK** for invasive species hitching a ride on clothing, watercraft, vehicles, equipment and gear
- ✓ **REPORT** any invasive species using the **Report Invasives BC** app or visit bcinvasives.ca/report

AFTER YOUR EXPERIENCE:

- ✓ **CLEAN** all plant parts and mud from boots, gear, watercraft and vehicles
- ✓ **DRAIN** all water from your watercraft and gear onto land, including all internal compartments, ballast tanks, live wells, bilges, bait buckets, motors, etc.
- ✓ **DRY** all parts of your boat and gear completely and pull the plug when storing or transporting your watercraft
- ✓ **CHECK** your clothing, gear and equipment and remind your guests to always check themselves and their gear for any hitchhikers



**CLEAN
DRAIN
DRY**

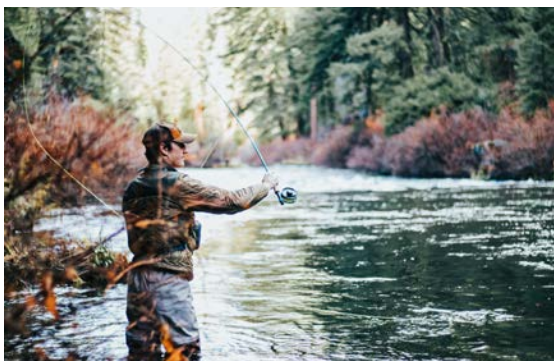


**BUY
LOCAL
BURN
LOCAL**





Destination BC/Reuben Krabbe



Industry-Specific Best Management Practices

This section outlines some specific best practices that were developed to support key tourism industry audiences in helping prevent the spread of invasive species. Please review the checklists that are applicable to your business.

1. Marinas and Rental Operators
2. Fishing and Outfitting
3. Floatplane Operators
4. Lodge-Based and Wilderness Tourism Operators



1. MARINAS AND RENTAL OPERATORS

What's the Connection?

BC has Canada's largest recreational boating community. Recreational fishing and pleasure boats are a major vector of spread for aquatic invasive species (AIS), as watercraft enter BC from all parts of North America. AIS can attach to boat hulls, propellers, trailers and gear and can be transported in standing water in ballast tanks or live-wells. Tourism activities often include moving watercraft between waterbodies, and many operators transport watercraft to pristine natural areas where AIS can easily establish.

Operators Best Practices Checklist:

- ✓ Have all staff take the free eLearning training course: Tourism and Invasive Species
- ✓ Ensure you **CLEAN DRAIN** and **DRY** all watercraft that arrive at your operation
- ✓ Ask if arriving boats have been inspected by a BC Provincial Mussel Inspection Team
- ✓ If a boat has not gone through provincial inspection, determine if it has come from an area where Zebra and Quagga mussels are present
- ✓ If a boat is coming from a high-risk region, call the BC provincial government RAPP hotline: 1-877-952-7277
- ✓ If staff or guests are bringing a boat to BC from an infested region ensure they follow the proper procedure by visiting <https://www2.gov.bc.ca/gov/content/invasive-mussels/bringing-your-boat-to-bc>
- ✓ **REPORT** any invasive species using the **Report Invasives BC** app or visit bcinvasives.ca/report

A man in a grey waders and a dark jacket is fly fishing in a river. He is holding a long fishing rod and is in the middle of a cast. The river is flowing over rocks, creating white water. In the background, there are steep, rocky mountains with patches of green vegetation and evergreen trees. Another person is visible in the distance, also fishing. The sky is overcast.

2. FISHING AND OUTFITTING

What's the Connection?

BC offers a tremendous diversity of recreational fishing opportunities with over 20,000 lakes and 750,000 km of streams. These opportunities and the native ecosystems that support them are threatened by the introduction of aquatic invasive

species (AIS). Anglers and boaters often use their vessels or equipment in more than one watershed and if not cleaned and dried after each use, they can potentially introduce and spread AIS.

AIS can hitch a ride on boats, trailers, fishing gear and clothing. Plants get hooked on props and trailers, and animals such as invasive mussels have tiny larvae that can live in water for up to 30 days and as adults attach to virtually any hard surface. AIS have the potential to severely impact BC's watersheds, impacting food webs, diminishing water quality and outcompeting native plants and animals for food and habitat. Some invasive fish such as Smallmouth bass, Largemouth bass, Northern pike and Yellow perch have been illegally introduced into BC lakes and rivers, primarily by anglers wishing to fish for them. These invasive fish compete with and prey upon native fish species including salmon and trout, carry parasites and diseases, and can greatly alter food webs and ecosystems.

Operators Best Practices Checklist:

- ✓ Have all staff take the free eLearning training course: [Tourism and Invasive Species](#)

- ✓ Ensure that all clients declare where their boat and equipment was last used
- ✓ Ensure that no clients have live bait—it is illegal in BC
- ✓ Contain and dispose of all unused bait in the trash—do not use frozen fish or fish parts as bait
- ✓ When cleaning fish, ensure that the innards are disposed of in the trash—diseases such as Whirling Disease (not yet found in BC) can be spread in dead fish
- ✓ Check all boats and gear prior to use and before moving between water bodies to ensure that they are clean and completely dry and free of invasive species
- ✓ Do not use felt-soled wading boots—they can transport invasive species and have already been banned in New Zealand and Alaska
- ✓ Ensure all guest and work vehicles are parked in areas free of invasive species
- ✓ **REPORT** any invasive species using the **Report Invasives BC** app or visit bcinvasives.ca/report



3. FLOATPLANE OPERATORS

What's the Connection?

Commercial and recreational floatplane activities are pathways for the spread of aquatic invasive species (AIS) throughout BC. Floatplanes often access remote and sensitive watersheds which are especially vulnerable to invasive species.

Floatplanes can easily transport AIS like Zebra and Quagga mussels and Eurasian watermilfoil. AIS can be transported on the cables, cross members, rudders, transom, step area, wheel wells and chine of the floats/pontoons, or in water inside the floats themselves. By taking a few simple actions, floatplane operators can play an important part in preventing invasive species spread!

Operators Best Practice Checklist:

- ✓ Have all staff take the free eLearning training course: [Tourism and Invasive Species](#)
- ✓ **REPORT** any invasive species using the **Report Invasives BC** app or visit bcinvasives.ca/report

BEFORE ENTERING THE AIRCRAFT:

- ✓ Inspect and remove any organic debris, mud and invasive species from floats, wires, cables and rudders

BEFORE TAKEOFF:

- ✓ Do not taxi through heavy aquatic plant growth
- ✓ Raise and lower water rudders to clear off plants that may be hooked on



AFTER TAKEOFF:

- ✓ Raise/lower water rudders several times to free aquatic plant fragments—do this while over the waters you are leaving or over land

STORAGE OR MOORING:

- ✓ Where possible, remove aircraft from the water and allow parts to dry
- ✓ Aircraft moored for extended periods may have invasive mussels, plants or other fouling organisms attached and should be cleaned



4. LODGE-BASED AND WILDERNESS TOURISM OPERATORS

What's the Connection?

Activities related to front- and backcountry lodges, wilderness resorts and recreational tourism can be pathways for the introduction and spread of invasive species. Invasive species can damage natural habitats, impact water quality, compete with and harm wildlife, and limit recreational activities.

Tourists arriving and recreating at these locations can introduce invasive species that have hitched a ride from other areas on their vehicles, clothing, boots and gear. Tourists can also spread invasive species through boating, fishing, hiking and travelling to and from sites. Increased tourism to remote and pristine wild areas is particularly concerning as these areas are often sensitive and highly susceptible to invasive species.

Operators Best Practice Checklist:

- ✓ Have all staff take the free eLearning training course: Tourism and Invasive Species
- ✓ Encourage all guests to arrive with clean gear
- ✓ Follow Clean Drain Dry; PlayCleanGo; and Buy Local, Burn Local best management practices, visit bcinvasives.ca/play-your-part to learn more
- ✓ Ensure that vehicles, mountain bikes and ATVs are cleaned of mud and debris before moving to new locations
- ✓ Ensure that watercraft, including canoes, kayaks, SUPs, rafts and boats, are cleaned, drained and dried after every use

- ✓ Have boot brushes available for guests and staff to use onsite and when out hiking or doing other activities—remember to brush off boots and clothing *before* leaving a site and moving to another location
- ✓ Create a list of activities that run the risk of introducing invasive species and share it with staff
- ✓ If possible, connect with local specialists (bcinvasives.ca/contacts) to complete an audit of any existing invasive species in or around the property and obtain advice from specialists on how to remove/replace them
- ✓ Commit to not planting any invasive plants for landscaping purposes. Work with local nurseries and landscaping contractors to use only non-invasive species and check out ISCBC's [PlantWise/Grow Me Instead](#) program for suggested species
- ✓ Contact ISCBC to access signage for key locations where invasive species introductions may occur (e.g. trail heads, boat launches, fish cleaning stations, etc.)



- ✓ Share information with guests on invasive species and their impacts and identify key actions guests can take to prevent the spread of invasive species on the premises and surrounding areas
- ✓ **REPORT** any invasive species using the **Report Invasives BC** app or visit bcinvasives.ca/report



R. Schell

Reporting Invasive Species

It is critical to report invasive species. Early identification and rapid treatment of new infestations is key to stopping the spread of invasive species! Any suspected plant or animal species you encounter should be reported in one of the following ways:

1. **Download the Report Invasives BC app**—free for Apple or Android. This mobile app lets you report invasive species sightings anywhere in BC and even works when you are offline. It has great photographs and can serve as a handy field guide too. Visit bcinvasives.ca/report to download the app and to check out a short video for tips on how to use the app.
2. **Directly to ISCBC** at bcinvasives.ca/report or toll free: 1-888-933-3722
3. **Directly to the provincial government** at gov.bc.ca/invasive-species
4. If you have operated your watercraft outside of BC or if you have a Zebra or Quagga mussel sighting, you must contact the RAPP Hotline: 1-877-952-7277



DID YOU KNOW?

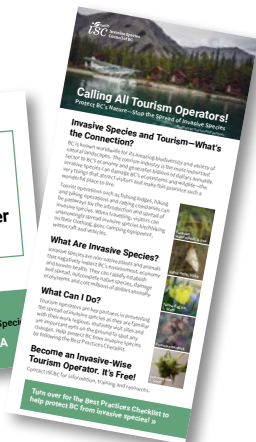
You can use the Report Invasives BC app even when you are offline!

Resources

Invasive Species Council of BC

bcinvasives.ca / 1-888-933-3722

ISCBC is an action-oriented, provincial, non-profit organization that works with many partners and stakeholders across the province to raise awareness, provide training and outreach and offer tools and resources to support invasive species management. The ISCBC website is a great place to find identification guides, fact sheets, publications and videos.



Invasive-Wise Tourism Operators have free access to several resources developed by invasive species experts and tourism industry leaders, including an engaging online training course. Participating businesses can receive rack cards, stickers, decals, certificates and direct support from ISCBC. Please contact ISCBC to learn more.

The Tourism and Invasive Species eLearning course is an interactive online training course designed for tourism business owners, operators and staff to promote best management practices and raise awareness of invasive species in your region. It is free and takes only 20 minutes to complete. Check out the other free eLearning courses available, including Invasive Species 101, at the ISCBC's Learning Centre (bcinvasives.ca/resources/learning-centre).

TAKE ACTION

For more information, contact the
ISCBC Tourism Coordinator:
tourism@bcinvasives.ca



Hound's tongue, L. Scott

Regional Invasive Species Organizations

There are a range of regional invasive species organizations, municipalities and regional districts that work with invasive species at a local level. Their activities vary from on-the-ground management of invasive species to community outreach and partnerships. Check out your local contacts at bcinvasives.ca/contacts.

References

Alaska National Park Service (2018) Species to Watch: Elodea <https://www.nps.gov/subjects/aknatureandscience/speciestowatch.htm>. accessed March 13, 2020.

Anderson, L. G., Roccliffe, S., Haddaway, N. R., & Dunn, A. M. (2015). The role of tourism and recreation in the spread of non-native species: a systematic review and meta-analysis. *PloS one*, 10(10).

Canadian Food Inspection Agency. (December 12, 2014). *Quarterly Financial Report for the Quarter ended September 30, 2014 – Revised*. Government of Canada. <https://inspection.canada.ca/about-cfia/transparency/corporate-management-reporting/reports-to-parliament/financial-reporting/quarter-ended-september-30-2014/eng/1416950483201/1417020823002>.

Clarke Murray, C., Pakhomov, E.A., and Therriault, T.W. (2011). Recreational boating: a large unregulated vector transporting marine invasive species. *Diversity and Distributions*. 17.6: 1161-1172.

Cranston, R., D. Ralph and B. Wikeem. 2005. Field guide to noxious and other selected weeds of British Columbia. Gov. of BC. 94 p.



Darbyson, E., Locke, A., Hanson, J. M., & Willison, J. M. (2009). Marine boating habits and the potential for spread of invasive species in the Gulf of St. Lawrence. *Aquatic Invasions*, 4(1), 87-94.

Department of Fisheries and Oceans. (n.d.). *Eurasian Water Milfoil*. Government of Canada. <https://www.dfo-mpo.gc.ca/species-especes/profiles-profils/eurasianwatermilfoil-myriophylleenepi-eng.html>.

Gallardo, B., & Aldridge, D. C. (2013). The ‘dirty dozen’: socio-economic factors amplify the invasion potential of 12 high-risk aquatic invasive species in Great Britain and Ireland. *Journal of Applied Ecology*, 50(3), 757-766.

Government of BC. (n.d.). *Protecting BC’s Biodiversity*. Government of BC. <https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/biodiversity>.



B. Coombes

Government of BC. (n.d.). *Zebra and Quagga Mussel Facts*. Government of BC. <https://www2.gov.bc.ca/gov/content/invasive-mussels/zebra-and-quagga-mussel-facts>.

Invasive Species Council of BC. May 2012. *Invasive Species Strategy for British Columbia*. Retrieved from <https://bcinvasives.ca/about/what-we-do/#key-docs>.

Morton, J.M., Blackburn, B.N., Bella, E., Steffy, M., Anderson, C., Massengill, R., Blackwell, J., Ka’aihue, L., Zulueta, R., Chumley, J. and Aranquiz, M., (2014). Integrated pest management plan for eradicating *Elodea* from the Kenai Peninsula. Kenai, Alaska.

World Tourism Organization. UNWTO Tourism Highlights [Internet]. (2014). Available: <https://www.e-unwto.org/doi/pdf/10.18111/9789284416226>. accessed March 17, 2020.



Invasive Species
Council of BC

**For more information on Invasive-Wise
Tourism, please contact:**

Invasive Species Council of BC

tourism@bcinvasives.ca / 1-888-933-3722

BCINVASIVES.CA