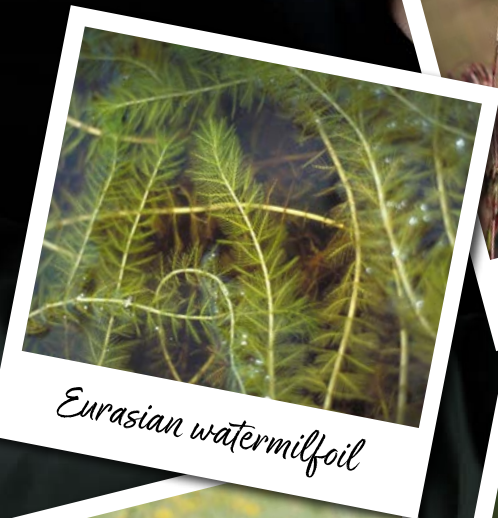




Cheatgrass



Eurasian watermilfoil



Spotted knapweed



Feral pig



European rabbit



Spongy moth



Scotch broom



Parrot's feather

Invasive Species Strategy for British Columbia 2024-2028

ACKNOWLEDGMENTS

The Invasive Species Strategy for British Columbia 2024–2028 is the fourth provincial strategy developed through a collaborative process led by the Invasive Species Council of BC (ISCBC). It incorporates input from a wide range of people, including those from all levels of governments, Indigenous organizations, businesses, community groups and people living across the province. Input was received through surveys, virtual and in-person workshops, online reviews, and special meetings with Indigenous Peoples.

The Invasive Species Strategy for BC was developed as a strategic framework for improved invasive species management in British Columbia and provides a foundation to guide our collective programs and efforts over the next five years.

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COVER: Eurasian watermilfoil, A. Fox, UGS; Cheatgrass and spotted knapweed, M. Blackmore; Feral pig; R. Brook; European rabbit, J. Bode; Spongy moth, USDA, Bugwood.org; Scotch broom, M. Syvenky; Parrot's feather, R. Wersel, University of Mississippi

BACK COVER: Buse Lake Provincial Park, common tansy, Russian olive and tree of heaven, M. Blackmore; Yellow perch, M. Herborg; Giant hogweed, ISCMV; Orange hawkweed, M. Syvenky; European fire ant, R. Higgins



Edith Lake site assessment



Flowering rush



Jericho Beach weed pull

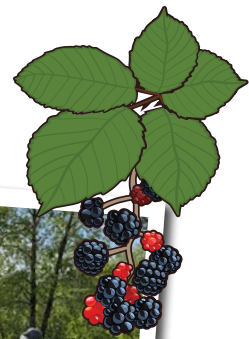


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Setting the Stage

Why You Should Care

Invasive species are a significant threat to lands, waters, biodiversity, and people worldwide. Global economic costs of invasive species have quadrupled every decade since 1970 and were estimated at \$423 billion annually in 2019¹. In British Columbia, invasive species are causing a multitude of harmful environmental, economic, cultural, and social impacts. Typically introduced by human activity, and often intentionally, invasive species can reproduce and spread rapidly, displace native species and disrupt the natural balance of ecosystems they invade. Often introduced without their natural predators to keep them in check, invasive species can alter habitats and outcompete native species for resources they depend on for moisture, food and/or shelter. For people in BC, invasive species threaten our food security, economic growth, cultural values, health and quality of life.

Increased trade and travel combined with changing climate and increased disturbances such as fires and floods, mean BC is at greater risk for new invasive species to establish and existing invasive species to spread. Whether it's forests, grasslands, urban green spaces, freshwater or marine environments — there are invasive species threatening habitats and communities throughout the province. From Scotch broom (*Cytisus scoparius*) to goldfish (*Carassius auratus*), knotweeds (*Reynoutria* spp. & *Persicaria wallichii*) to brown marmorated stink bugs (*Halyomorpha halys*) — invasive species will vary across BC, but the solutions are the same. Preventing the introduction is the first step, followed by active reporting and response to avoid establishment. For existing invasive species, containment is key to preventing further



Japanese knotweed

D. Sigg



Goldfish at Pinecrest Lake

Sea to Sky Invasive Species Council

spread, as is consistent action to control and remove invasive species and restore the health and resilience of impacted ecosystems.

Each person has a role to play in preventing and reducing the negative impacts of invasive species. Whether you are a gardener, pet owner, developer, homeowner, or you just enjoy spending time in nature, we all need to work together to make a real difference in protecting BC from invasive species — at work, at play, and at home.

Vision: To protect BC's lands and waters from the harmful impacts of invasive species.



Together we can create positive change by taking key actions to protect BC from invasive species. In doing so we can support sustainability in these areas:

- » **Environmental** — restore ecosystem resilience and biodiversity, prevent and reverse habitat loss, reduce competition with, predation of, and disease vectors for native species
- » **Cultural** — restore the historic and cultural significance of the landscape, reverse loss of culturally significant species for food, medicine, and spiritual purposes
- » **Economic** — reduce losses and management costs for agriculture, forestry, fisheries, tourism, recreation, horticulture, infrastructure, real estate, and urban spaces
- » **Social** — increase access to lands and waters for recreation and nature activities, and decrease negative impacts to human health, aesthetics, and communities

Dedicated efforts are needed to address the 2030 targets for the Kunming-Montreal Global Biodiversity Framework (2022), including Target 6 to

“Eliminate, minimize, reduce and or mitigate the impacts of invasive alien species on biodiversity and ecosystem services by identifying and managing pathways of the introduction of alien species, preventing the introduction and establishment of priority invasive alien species, reducing the rates of introduction and establishment of other known or potential invasive alien species by at least 50% by 2030, and eradicating or controlling invasive alien species, especially in priority sites, such as islands”.¹

As invasive species ‘do not respect boundaries’, we must work together across jurisdictions to protect our ecosystems and communities from the impacts of invasive species. To achieve our collective vision, it is imperative to foster a culture of understanding and respect — for the land, for the water, for all living things including one another.

Why a Strategy?

The Invasive Species Strategy for British Columbia represents a collective vision for strengthening invasive species management and awareness in BC. The Strategy serves as an overarching, guiding document for governments, businesses, organizations and individuals to move forward together to protect our environment, economy, and social well-being from the widespread negative impacts of invasive species. This is the fourth provincial strategy. Each has been developed with broad and inclusive input, guided by a diverse advisory group. Just as with the first Strategy in 2004, the 2024-2028 Strategy identifies shared priorities and provides key goals confirmed through input from across British Columbia to guide our collective work over the next five years.

DEFINITION: Invasive species are plants, animals or microorganisms that are not native to the province or are outside of their natural distribution and negatively impact British Columbia's environment, people and/or economy.²

Helpful links at a glance:

- » [Invasive Species Strategy for BC 2004; 2012-2016; 2018-2022](#)
- » [B.C. Inter-Ministry Invasive Species Working Group](#)
- » [Invasive Species Council of BC](#)
- » [Local Government and Regional Invasive Species Organizations in BC](#)

“Ethical Space is formed when two societies with disparate worldviews are poised to engage each other.”

- Dr. Willie Ermine, Sturgeon Lake First Nation

It is a space in which all knowledge systems (e.g., Indigenous, Western) are validated and respected (also called two-eyed seeing) and where it is possible to arrive at joint decisions arising out of mutually agreed protocols.³



Dungeness crab; Shawna Kiesman

Advancing Reconciliation

The lands and waters currently known as British Columbia are rich with cultural and biological diversity. The biodiversity that people take such pride in is integral to the practices of Indigenous Peoples and has been since time immemorial. Pre-contact, Indigenous Peoples managed the lands and waters within BC through systems of natural law, oral history, and deeply entrenched responsibilities, caring for their resources through reciprocal relationships. These relationships were disrupted by colonization, and consequently so was the health of the lands and waters they managed for millennia.

Invasive species have further altered ecosystems vital to Indigenous Peoples. By reducing the availability of native plants and animals, invasive species have led to the loss of cultural practices tied to the use of native species. For Indigenous Peoples to fully exercise their inherent rights, the impact of invasive species on the health and integrity of the ecosystems they steward must be reversed.

Indigenous partnership and leadership in environmental initiatives is recognized for advancing conservation efforts and sustaining biodiversity. The concept of reconciliation is fundamentally linked to healing the land. A deeper understanding of the connections with the land, and the relationship of Indigenous Peoples to the land, is necessary to achieve success in restoring natural functions, free of invasive species.

First Nations and Métis participants in the strategy development identified four key goals for invasive species management:

1. **Ensure Indigenous partnership and leadership** — Empower Indigenous Peoples to lead and engage in the process of healing the land. The relationship we have with each other is reflected in the relationship we have with the land.

2. **Respect and reflect Indigenous Knowledge** — Work directly with local knowledge keepers and communities. Solutions to invasive species issues require Indigenous Knowledge and Western knowledge to respectfully intersect. Reflecting the principles of Ethical Space throughout planning and coordination is critical.
3. **Expand knowledge sharing and research** — Strengthen education and awareness within and beyond Indigenous communities. Acquired over generations, Indigenous Knowledge deepens the shared understanding of the impacts and interactions of invasive species with ecosystems and helps guide management decisions.
4. **Support and increase capacity** — Expand management of invasive species through shared knowledge and resources to enhance stewardship.

“*The land is us [...] The land feeds you, but we feed the land as well [...] we live on the land and we can impact the land, we can destroy the land, or we can love the land and it can love us back.*”⁴

- Jeannette Armstrong, PhD,
Sylx Nation member
from the Penticton Indian Band

British Columbia unanimously passed the *Declaration on the Rights of Indigenous Peoples Act* (DRIPA)⁵ in November of 2019, followed by the release of the *Declaration on the Rights of Indigenous Peoples Act Action Plan 2022-2027* (DRIPA Action Plan)⁶ outlining tangible actions and steps BC committed to as a path towards full implementation of the Act. The principles outlined in the DRIPA Action Plan have been woven into this Strategy to support commitment and action towards reconciliation.



Cheatgrass, M. Blackmore; Gustafsen Fire and Highway 8 photos, G. Gielens

Adapting to a Changing Climate

Climate fundamentally impacts ecosystem structure and dynamics, and across the province, our lands, waters, biodiversity, and communities now face ever-growing changes. Healthy and diverse ecosystems are more resilient to both changing climate and climatic events. Looking forward, stewardship of lands and waters must be carried out considering climate adaptation and nature-based solutions to ensure future ecosystem resilience, and incorporate effective management of invasive species.

Warming temperatures and changes in precipitation can threaten existing species, increase the risk of new invasive species establishments, and support the expansion of existing populations. Changing climate disrupts native species by compromising their competitive ability, creating favourable conditions for invasive species to establish, reproduce and spread. Still, the intersection

between invasive species and climate is relatively understudied, and more extension and awareness of the linkages is needed. Prevention and management efforts must aim to protect and nurture resilient ecosystems to help buffer against the impacts of climate change.

Recently, BC has seen record-breaking temperatures with little precipitation, leading to drought and to a rise in destructive wildfires. Highly flammable invasive plants, such as cheatgrass (*Bromus tectorum*), form dense stands of dry material early in the year, increasing fuel load, and the risk and intensity of wildfires.⁷ Highly flammable invasive plants, such as cheatgrass, can thrive in drought conditions. On the other hand, BC has also seen more frequent heavy rainfall events that are expected to continue, testing the capacity of storm sewers and resulting in local flooding, erosion, and bank destabilization.

In some areas, atmospheric river weather systems have caused severe flooding spanning multiple jurisdictions. Invasive species, such as knotweeds, can spread during floods and increase the impacts of these events by destabilizing riverbanks and increasing erosion. Response to climatic events must incorporate invasive species management into recovery efforts, as invasive species are often the first to colonize following large disturbances. Furthermore, the rapid movement of people and equipment during and after large disturbance events can create opportunities to transport and introduce invasive species to new areas. Pre- and post-disturbance management requires training, knowledge sharing, and

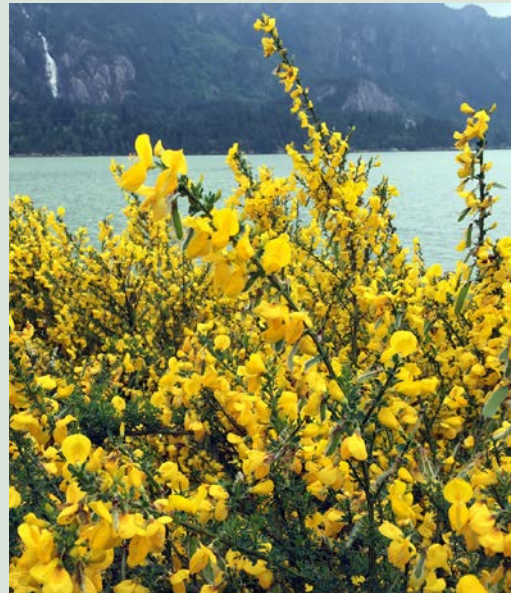
extension of tools and information to all those involved, including members of affected and neighbouring communities.

It is also increasingly important to protect vulnerable at-risk habitats and species — which may be more susceptible to climate impacts — and proactively monitor these areas for invasive species rather than using a reactive approach. As prevention is the most cost-effective tool for invasive species management, taking measures to protect ecosystems from new introductions is key to minimizing climate impacts and ensuring resilient ecosystems for future generations.



Parrot's feather; V. Marshall

Flood risk is increased by invasive species like knotweeds, that reduce riparian resiliency, destabilize streambanks and increase siltation that impacts aquatic life, or by invasive parrot's feather (*Myriophyllum aquaticum*), an aquatic plant that can reduce water flow by clogging drainage culverts and ditches. Flood events also create opportunities for invasive species movement.



Scotch broom; J. Leekie

Scotch broom plants contain flammable oils and form large infestations with many dry and dead branches. Their presence can greatly increase fuel loads and result in more intense wildfires.



Spread of shiny geranium along forest floor and close-up; B. Brown

Shiny geranium

Strategic Directions

The Invasive Species Strategy for BC is based on a foundation of four key strategic directions, all equally important and interconnected. Each Direction includes an overview followed by key goals. Just as collective action is required, so is collective reporting. Targets and indicators (see the appendix) will be used to collectively measure progress and success toward the goals listed in this Strategy. Note that numbering of goals is not reflective of priority.

Enhance Stewardship of Lands and Waters



Bat caught in burdock; M. Anions

British Columbia is the most biodiverse province in Canada and is home to many rich and unique ecosystems, as well as many Species at Risk and culturally significant species. Invasive species are recognized as one of the five direct drivers of biodiversity loss, along with land-use change, pollution, climate change and natural resource use and exploitation.⁸ Reducing invasive species impacts, protecting biodiversity and restoring ecosystem health and resilience are top priorities across BC. Protecting our natural and cultural diversity, and enjoyment of nature requires proactive stewardship of lands and waters. Stewardship includes prevention, control, and monitoring of invasive species, as well as restoration of degraded ecosystems and green spaces.

Invasive species directly impact native species and Species at Risk. Globally, invasive species have played a key role in 60% of plant and animal extinctions.⁹ For example, the introduction of brown bullhead (*Ameiurus nebulosus*), an invasive fish species, to Hadley Lake, BC, in the 1990s led to the local extinction of the native fish: the stickleback species pair (*Gasterosteus aculeatus*). Stickleback species pairs are among the rarest and most threatened species in the world. Unlike many species that are rare in Canada but found elsewhere, the stickleback species pairs exist only in this corner of our province.¹⁰ On the coast, salmon habitats are threatened by



European green crab; K. Bimrose, NOAA

European green crab (*Carcinus maenas*), a voracious predator that out-competes native species and disrupts ecosystems by destroying critical eelgrass habitat.

In freshwater ecosystems, red-

eared slider turtles (*Trachemys scripta elegans*) can out-compete native species for resources and spread diseases to native species, such as the regionally endangered Western painted turtle (*Chrysemys picta bellii*). On land, invasive plants such as knapweeds (*Centaurea* spp.) and sulphur cinquefoil (*Potentilla recta*) threaten sensitive grasslands by forming large monocultures that reduce native biodiversity, impact forage production and quality, and alter soil nutrient composition. Uninvaded grasslands are also impacted less by wildfires and droughts, making them incredibly resilient as 'carbon sinks', further emphasizing the need to protect them from degradation by invasive species. In forested areas, invasive forest insects like spongy moth (*Lymantria dispar dispar*) threaten healthy tree cover which is vital to cooling communities, providing



Female spongy moth; J. Ghent, Bugwood.org

shade for fish-bearing streams, and storing carbon. BC's range of terrestrial and aquatic ecosystems provide critical ecosystem services for local communities as well as regional and global processes. The benefits include water capture and filtration by watersheds, air pollution absorption by plants, and climate regulation resulting from carbon storage in trees, plants, and soils.¹¹ For BC's diverse wildlife, healthy habitats are crucial, as they provide food, water, shelter and the necessary conditions for reproduction, migration, and overall well-being.

Stewarding ecosystems to support resiliency against the impacts of invasive species requires detection, collaboration, increased resources and immediate action. Informed decision-making on invasive species management must encompass a holistic approach, and incorporate appropriate integrated pest management techniques, including Indigenous and local knowledge, at both site-specific and landscape levels. Across all of BC, fostering stewardship efforts in Indigenous and local communities and among stewardship organizations and outdoor groups, will enhance detection and management efforts, and create a strong network of stewards working toward common goals.



KEY ACTION:
 Close and restrict key pathways, vectors and transport of invasive species. For example, ensuring you clean, drain, and dry your watercraft before moving it to another waterbody, or brushing off your boots before and after hiking can help prevent the introduction and spread of invasive species.



Conservation Officer Service's detection dog Kilo searching for invasive mussels

GOAL
1

Increase Investment in Prevention

Preventing the introduction of invasive species is a cornerstone of invasive species management and is the most cost-effective way to stop invasive species impacts. Identifying, closing and/or restricting the key pathways, vectors and mechanisms by which invasive species are introduced and/or transported is a top priority. Effective prevention requires a strategic approach that prioritizes invasive species based on risk to BC. Risk assessments for invasive species and pathways support this preventative approach and should continue to be a key priority. Investing in prevention will lessen ongoing costs for management and restoration, estimated in millions across BC, annually.



DON'T LET IT LOOSE




Spotted lanternfly; L. Barringer, Bugwood.org

Preventing the introduction of species such as spotted lanternfly (*Lycorma delicatula*) is a priority for BC and Canada. Spotted lanternfly can feed on over 100 species of trees and plants, and is a serious threat to the tree fruit, wine grape, and ornamental tree industries.

If zebra and quagga mussels (*Dreissena polymorpha* & *Dreissena rostriformis bugensis*) eventually occupy all water systems where they could physically survive and thrive in BC, damages to recreational boaters, water supplies, power generation infrastructure, tourism and property values are estimated to cost 2023 CAD \$64–\$129 million annually.¹²



Mussel monitoring; ISCBC



Reporting invasive species can be done by anyone living in or visiting BC, and greatly helps the scientific and management community identify, study, and manage invasive species. Effective reports contain accurate location details and clear photographs of the species. Community science reports can be submitted via several methods:

- » [Report Invasives BC App](#) (*report suspected invasive mussel detections to RAPP line*)
- » [iNaturalist App](#) or web platform
- » Online form submissions to [ISCBC](#)
- » Contacting [regional invasive species organizations](#) or [local governments](#)

GOAL
2

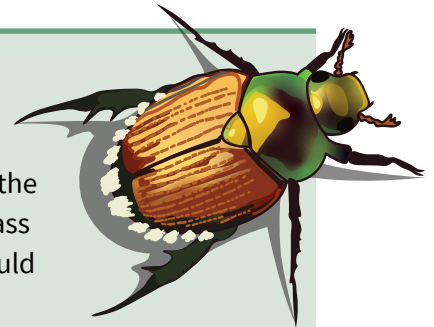
Strengthen the 'Rapid' in Rapid Response

After prevention, Early Detection and Rapid Response (EDRR) is necessary to effectively respond to new invasive species introductions and prevent their establishment. Eradicating a species before it successfully reproduces and becomes firmly established requires early detection followed by rapid control actions. The Province of BC has an Invasive Species [EDRR Plan](#) that provides detailed direction on the decisions and actions required to address new incursions anywhere in BC.¹³

Preventing new invasive species from establishing and expanding in BC requires the right tools and joint decision-making response plans and approaches be in place before new incursions occur. Increased community science reports by individuals across the province are key to complementing

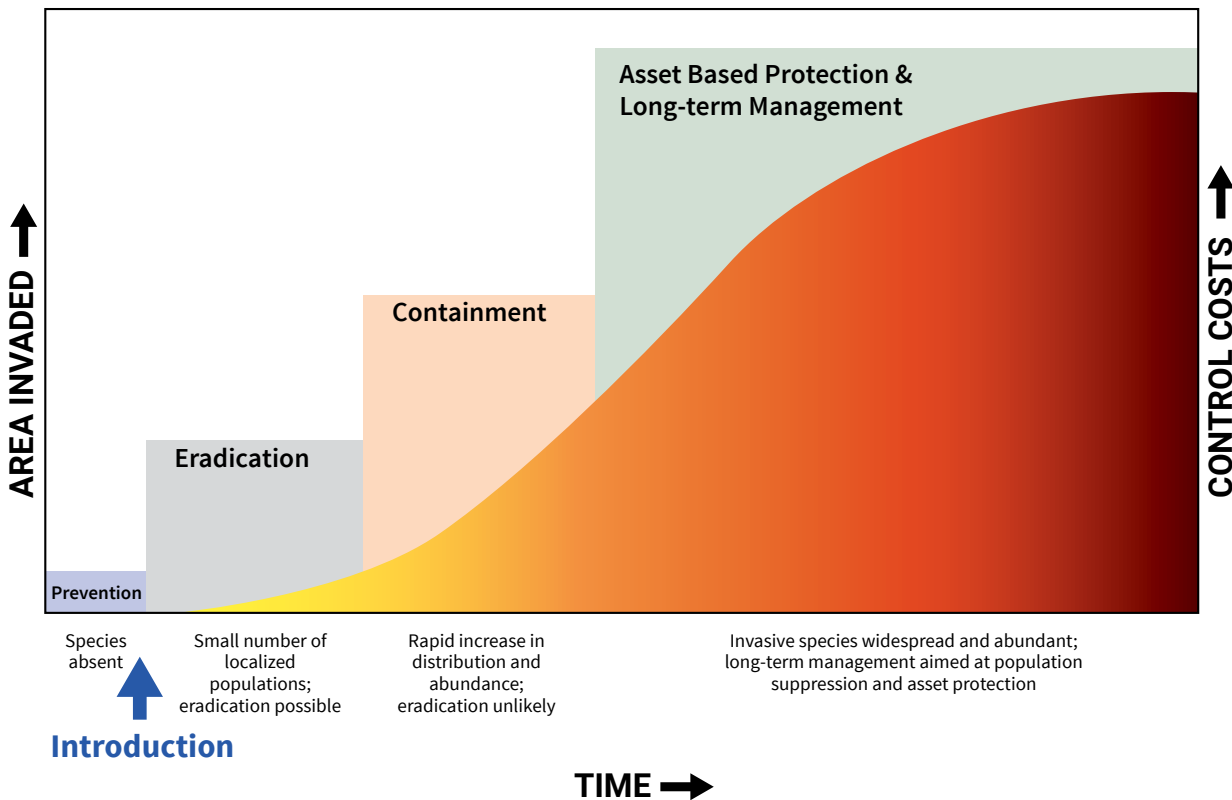
formal monitoring programs. As with any emergency response situation, rapid response requires professionals, Indigenous and local communities, individuals and organizations to work together to detect, report and take action to ensure responses are effective. Ready-to-go response plans, collaborative teams, tools and resources must be in place to effectively respond to new incursions.

If Japanese beetle (*Popillia japonica*) were to establish, the cost to BC's turfgrass industry alone would be an estimated \$73.85 million annually.¹⁴



Stop the Spread: The Invasion Curve¹⁵

Prevention is the most cost-effective tool! Adapted from USDA Forest Service 2005



GOAL
3

Improve Control, Monitoring, and Restoration

Reducing impacts from existing populations of invasive species is an urgent priority across BC requiring an integrated and collaborative approach. Increased consistency across jurisdictions (public and private) must be achieved and supported by more collaborative regional and local planning, increased capacity and funding, and adequate access to tools and resources. A holistic approach must combine scientific, Indigenous and local knowledge, effective treatment approaches, ecological restoration, long-term monitoring, and adaptive strategies. Lessons learned and successes in control need to be recognized, shared and leveraged. We must report on the progress of invasive species management leading to protected and restored natural diversity.

Maintaining a comprehensive database for tracking invasive species, with standardized protocols for surveying and monitoring, is a critical tool for maintaining accurate data. Up-to-date provincial and regional invasive species priorities and watchlists must be accessible and extended across agencies. Establishing regional priorities requires strong local involvement. Providing tailored, invasive species training opportunities for everyone will support improved prevention and management actions. Additionally, building Indigenous and local community capacity to aid with on-the-ground efforts both enhances ongoing work and supports long-term sustainability of healthy ecosystems.

Maintaining current provincial and regional lists of priority invasive species through collaboration is critical to determine priorities for control and monitoring across all parties.



BC Wildlife Park Seeding Event; ISCBC

Management should not end after the treatment or removal of invasive plants. A site-specific restoration plan, which might include promptly re-seeding or planting native species, combined with continued monitoring will increase the success of restoration and lead to improved ecosystem resilience.

The Province of B.C. launched InvasivesBC in 2023, replacing the previous Invasive Alien Plant Program (IAPP)



application. InvasivesBC houses detailed invasive plant occurrence, treatment, and monitoring records and will soon be expanded to include invasive animal occurrences. InvasivesBC is available for use by land managers, contractors, government agencies and non-profit organizations completing surveys and/or management actions, and houses confirmed public reports submitted to the Province through the Report Invasives BC mobile application. A public facing map of invasive plant occurrences is available at InvasivesBC.gov.bc.ca



CFIA training for Japanese beetle traps; D. Watson



Setting live traps for northern giant hornet; K. Salp

Improve Regulations and Enforcement

Current regulations, whether established at the federal, Indigenous, provincial, or local government level, are not synchronized, enabling many invasive species to ‘fall between the cracks’. As a result, many invasive species can be legally transported, traded, and sold. While many responsible businesses and individuals will implement best practices to avoid the introduction and spread of invasive species, additional rules and education of the issues are required for others. Enforcement of current regulations is haphazard or lacking. Work is needed to improve and provide consistent and clear regulatory tools, which include but are not limited to legislation, regulations, policy, bylaws, and standards of practice.

In British Columbia, authority over invasive species prevention and management involves four levels of government — federal, Indigenous, provincial and local. Current regulatory tools at the different levels are inconsistent, unclear or simply lacking. Invasive species priorities and watchlists, and requirements for management and monitoring

need to be strengthened and supported. Across all three past invasive species strategies for BC, there has been an urgent and strong call for a single piece of over-arching provincial legislation on invasive species to ensure a current and consistent foundation to prevent their introduction and spread, and that need remains strong.

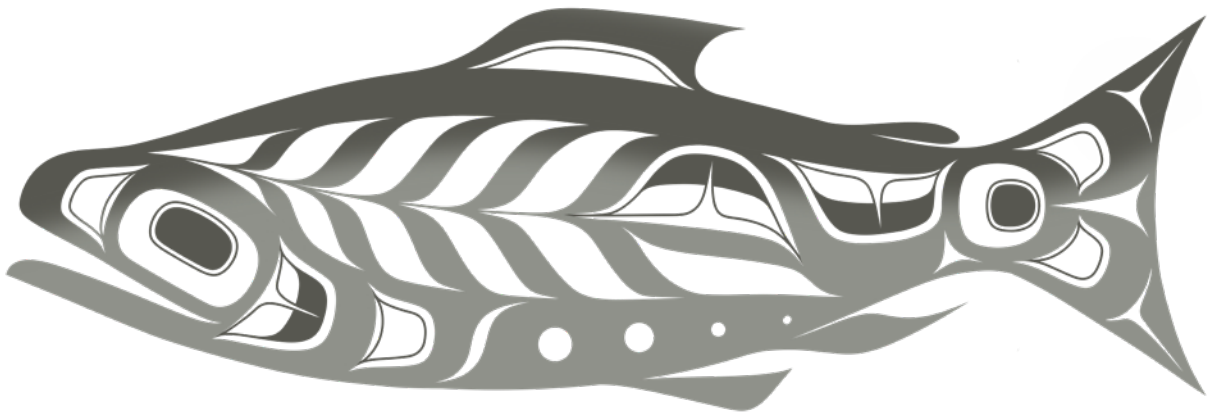
Beyond BC, strong leadership is needed from the federal government to prevent introduction of new invasive species by closing federally regulated entry pathways, such as through international trade and travel. Recent work on regulating ballast water, and responding to species like Japanese beetle and northern giant hornet (*Vespa mandarinia*), demonstrates the leadership needed to protect BC from new invasive species. Working closely with the Province of BC and Indigenous leaders, the federal government needs to pair regulations with increased monitoring and enforcement at key entry points. Preventing new introductions into BC and Canada is the first line of defense to avoid future environmental, economic, and cultural losses.

Across Indigenous Nations, while there is a growing concern about the impacts of invasive species on cultural activities and food security, there are inconsistent and few regulatory tools or programs. There are only a few Nations with Band Resolutions and programs, and those are generally limited to invasive plants. Moving forward, there is a need to unite Indigenous efforts to protect cultural medicines and food species like salmon, wild potatoes and berries from invasive species. Increasing capacity and leadership by Nations with policy and protocols, supported by resources, will help enable the implementation of local, culturally appropriate best practices.

Locally, there is great variation, with some local governments silent on invasive species and others focused on invasive plants. There is a growing awareness that local governments have major opportunities to reduce the spread of invasive species by regulating what can be sold (such as pets and plants) or used for

landscaping, and how soil can be moved or disposed of. There are examples, such as the City of Richmond and District of Squamish, where bylaws were created and implemented to prohibit aspects of selling of pets and invasive plants or requiring landowners to take action against invasives species. Across the province, regional districts and municipalities often lack resources and capacity to enforce legal tools, creating significant barriers to process, and gaps in invasive species management. Furthermore, inconsistencies and variation across jurisdictions on bylaws and enforcement can lead to confusion for residents.

Regulatory tools at all levels require enforcement when needed. Education and awareness are critical first steps to encourage compliance. Both incentives and deterrents should be considered to recognize responsible actions while ensuring penalties for those who violate regulations.



Chinook salmon; Shawna Kiesman

GOAL
4

Develop Over-Arching Invasive Species Legislation

Strong effective legislative tools are needed to address invasive species, protect biodiversity and reduce economic losses. A single piece of provincial legislation, such as an Invasive Species Act, has been, and continues to be, a recommended priority call for action since 2012. It is critical that future legislation, whether stand-alone or integrated into existing legislation, addresses the movement, sale, gifting and trade of invasive species, and provides a comprehensive list of regulated species that can be easily updated and enforced. Recognizing legal pluralism, co-developed legislation must recognize best available evidence from diverse knowledge systems to provide the strong foundation needed to address invasive species in British Columbia.



GOAL
5

Enhance Resources

Investing in prevention and immediate response is vital to reduce the impacts of invasive species on BC's lands and waters. Investment must cross fiscal years and provide a multi-year approach especially when the goal is to eradicate an invasive species. Both the federal and provincial governments have key roles in ensuring sufficient funding to prevent and respond to new incursions. First Nations, local governments and private sectors also have a role in augmenting funds to help steward and restore ecosystems. Ensuring new additional funding is vital. Investing in an Invasive Species Trust Fund could support timely and rapid response and increased community engagement. Innovative funding mechanisms related to key pathways such as vehicle and recreational licensing, tire levies, or development fees that invest in preventing the introduction and spread of invasive species should be considered.

DEFINITION: Legal pluralism denotes a situation where two or more legal systems coexist in the same social field.¹⁶

Ontario's *Invasive Species Act* (2015)¹⁷ — Amended in 2022, the *Invasive Species Act* provides a framework for identifying, classifying, and managing invasive species in Ontario. As of 2024, 28 species are now prohibited, meaning it is illegal to import, transport, possess, or release these species anywhere in Ontario. Additionally, there are 16 restricted species that are illegal to import or release.

KEY ACTIONS:

Co-develop effective legislation such as an Invasive Species Act to ensure a strong regulatory foundation for invasive species prevention and management.

Dedicate stable and sufficient resources from all parties to achieve the goals of this Strategy.

GOAL
6

Improve Capacity and Compliance

Improve enforcement capacity by broadening and clearly defining authority for and by provincial and Indigenous enforcement officers, local government officers, and land guardians. Consideration of incentive-based tools such as tax credits or lower fees for various initiatives, such as for restoring habitat or supporting wildlife corridors, would encourage compliance. Additionally, supporting a range of industries with tailored training programs and further developing industry-specific standards will increase compliance.

GOAL
7

Strengthen Enforcement

Ensuring compliance with existing regulatory tools is critical to improving the prevention and management of invasive species. Enforcement must be equitable across all lands, requiring strong leadership and investment by the province, as public

land accounts for over 94% of BC's land area. However, increasing enforcement under the current framework requires an increase in funding within each level of government to ensure leadership and enforcement of regulatory tools. Investing monetary penalties (i.e. fines) into preventing and responding to invasive species is one avenue to offset costs.

The District of Squamish¹⁸ has enacted an Invasive Species Management Bylaw that prohibits the sale of invasive plants and animals. This bylaw provides authority to bylaw officers and requires landowners and occupiers to prevent growth and control the spread of invasive plant species on, to and from their land.



European rabbits in Richmond; J. Bode

Increase Responsible Action and Understanding

Invasive species can affect all of us, yet many do not realize or understand the impacts. Worldwide, they are costing billions annually and impacting our lands, waters, wildlife, and communities. A 2021 study estimated biological invasions have cost the North American economy at least CAD ~\$1.70 trillion between 1960 and 2017.¹⁹ Empowering people by increasing understanding of the small but hugely impactful actions they can each take to protect BC's rich biodiversity is imperative. Awareness, early reporting, and following simple best practices enable everyone across the province to help make a real difference for the places they know and love.

British Columbia is home to people from a wide range of backgrounds and cultures and is visited by millions of Canadian and international tourists every year. Diverse communication strategies are needed to successfully extend information to everyone living in and visiting the province. Moreover, the flow of communication must be reciprocal, and knowledge from all cultures must be heard and shared to strengthen education and awareness efforts by ensuring the information is both meaningful and applicable.

It is crucial to remember key invasive species messaging and information is easily lost when it does not speak to its audience. This has been a significant barrier for many people across BC, who have lacked translated resources, non-technical information, and relevant knowledge that can be applied to their interests, roles, and connections with the natural world. Further exacerbating this issue is a tendency to provide too much information,



PlantWise outreach at Union of BC Municipalities Convention; L. Barnett

that can quickly become overwhelming to its intended audience. Less is often more, and communication strategies would benefit from identifying and focusing on a small number of key, consistent messages.

Increasing public understanding of the negative impacts of invasive species and best practices is integral to the success of all invasive species management phases, particularly prevention. All government agencies, industries, and organizations should strive to ensure education and outreach is a key component of management objectives.



GOAL 8

Ensure Accessible Communication

Public-facing resources on invasive species must be easily accessible, consistent, and linked appropriately between sources. Sharing and adapting resources across the province will increase access to relevant information. It is crucial that messaging and resources be tailored for diverse ethnic and Indigenous communities and contain strong linkages to key pathways and regionally specific information such as priority invasive species lists, disposal methods and local regulations. Information should also be provided in various levels of detail, from plain, simple language, to more complex and nuanced where appropriate.

GOAL 9

Empower Youth

Targeting communication and education to younger audiences has a huge impact both immediately, and for the future of invasive species management. The lessons and values learned during childhood are often instilled throughout one’s lifetime, and by teaching youth about invasive species and the importance of stewardship, they are empowered to act responsibly throughout their lifetime. Providing an inclusive, safe space with opportunities for youth to be involved in invasive species management is a top priority.



Play and Protect Mobile



YOUTH volunteer
McArthur Island weed pull
K. Bissat



YOUTH volunteers
Microplastics survey at Jericho Beach
ISCBC

GOAL
10

Increase Community Science

Increasing community science results in more ‘eyes on the ground’ across the province to support early detection and awareness of invasive species. Engaging individuals in volunteer activities related to invasive species results in greater overall capacity, enhanced stewardship, and increased adoption of responsible practices. Ensuring community science opportunities are promoted and extended to everyone in BC should be a key focus, as well as supporting and recognizing community members that are already taking action.



Zebra mussel in moss ball; WA Dept of Fish & Wildlife

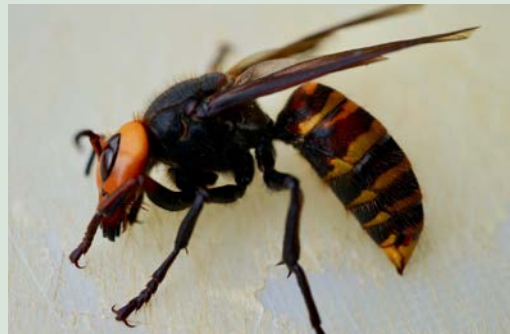
In 2022, a keen pet store employee observed and reported invasive mussels on marimo moss balls at a store in Seattle, WA. The report created an international response including the Province of BC, along with Fisheries and Oceans Canada, who identified and visited all pet stores in the supply chain that could have received zebra-mussel infested moss balls. Together, the aquarium and pet industry with the support of government agencies removed all of the potentially infested supply of marimo moss balls — all thanks to one informed and alert individual.



Reporting

KEY ACTION:

Engage and support people across BC in reporting and taking responsible actions.



Northern giant hornet; PV Westenburg

Northern giant hornet (NGH) was first detected in BC in Nanaimo in August 2019. In addition to a multi-agency response by governments in BC and Washington, a collaborative approach with the public has enhanced monitoring efforts. Local beekeepers in NGH target areas have been voluntarily setting traps to monitor for NGH, while a campaign to the general public to monitor their hummingbird feeders, report and photograph suspected NGH has increased awareness and monitoring. Since 2021, no other specimens have been found in BC.



European green crab monitoring; F. McDonald

Strengthen Knowledge and Practices

Controlling and reducing the impact of invasive species on the lands and waters must embrace leading-edge knowledge and integrate diverse knowledge systems. Restoring impacted habitats to more resilient ecosystems requires streamlined approaches, new technology, knowledge transfer to on-the-ground managers and stewards, and monitoring results. Whether it is protecting fragile grasslands from knapweeds or precious freshwaters from invasive mussels or Eurasian watermilfoil (*Myriophyllum spicatum*), more tools, innovation and resources are needed now and into the future. Researchers, practitioners, Indigenous Knowledge keepers and others must come together to build shared solutions.

The collective understanding of invasive species in BC is limited by knowledge gaps that must be addressed to maintain healthy, resilient ecosystems. Identifying and prioritizing the necessary research must consider practical approaches to detecting, responding and reclaiming lands and waters

from invasive species — all through the lens of climate adaptation. Increased research on priority species must be accompanied by extension to enable application in the ‘field’. Access to current research and information must be readily available to land managers to utilize and support local management planning and activities. Furthermore, providing public access to information, such as risk assessments and prioritization models for species threatening BC, will improve transparency between government, non-government agencies, and all those concerned about and/or working with invasive species.

Based on clear shared research priorities, supported by increased resources and innovation, increased action will address critical knowledge gaps including impacts to BC’s economy, green infrastructure, and cultural practices. It is important that new tools are developed before high-risk invasive species arrive, including both pre-determined coordinated response plans and registered and approved response tools. Working with

resource managers, knowledge-sharing and research is needed to provide practical tools to remove invasive species and restore ecosystem resilience.

Protection and revitalization of our lands, waters, and biodiversity hinges on the implementation of effective management strategies, legal tools, and inclusion of diverse knowledge systems.

GOAL 11

Increase Knowledge Transfer

Understanding the principles of diverse knowledge systems (Indigenous, Western, local) is vital for effective communication. Guided by the principles of Ethical Space, increasing opportunities to share, learn from, and document diverse knowledge and perspectives can support evolving management objectives. Knowledge transfer between diverse groups is essential at all levels, from local stewardship activities to management and policymaking.

GOAL 12

Improve Extension

Increasing access to risk assessments, data, multi-level prioritization models, and knowledge is critical for stewards and resource managers to strategize management efforts to enhance protection of vulnerable species and habitats along with addressing economic, social, and cultural impacts. Diversifying tools and methods to extend resources (workshops, webinars, in-person training, and forums) will support knowledge transfer from researchers to non-technical audiences. Information without effective extension to relevant audiences creates significant barriers to applying leading-edge knowledge.

GOAL 13

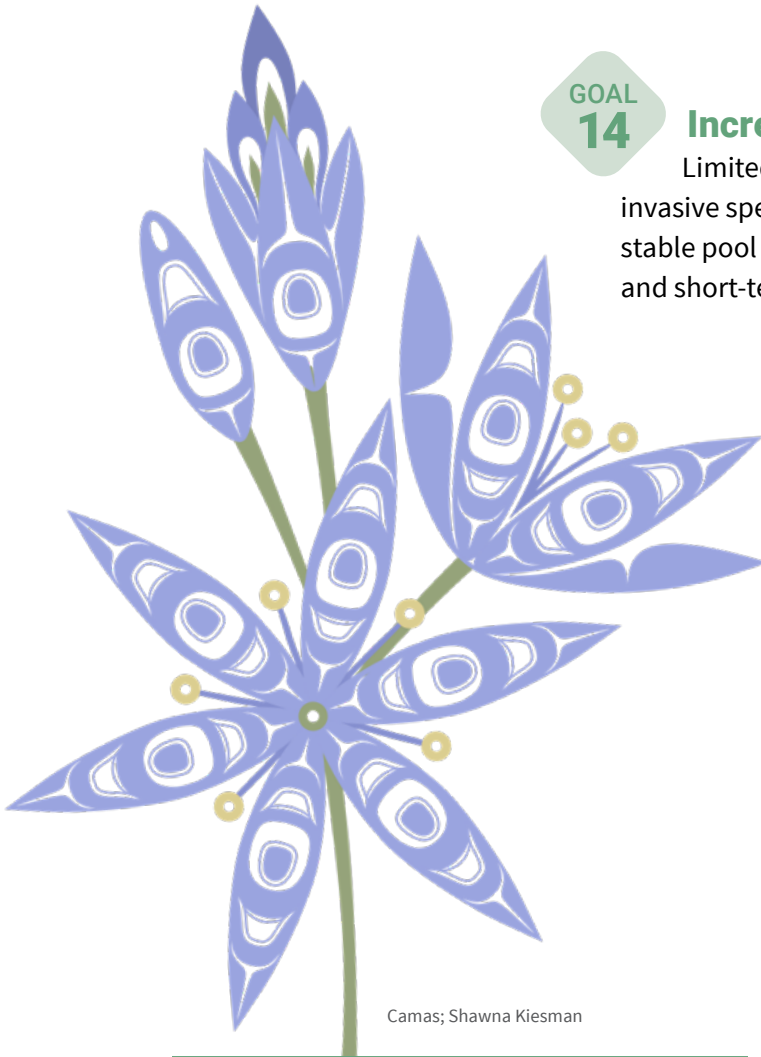
Address Critical Knowledge Gaps

Developing and maintaining a current list of shared research needs and priorities across academia, governments, and resource managers can help ensure knowledge gaps are not hindering invasive species management efforts. Some examples of research needs include:

- » Economic impacts of invasive species
- » Linkage and impacts to culturally significant species
- » Effective and innovative tools to control or eradicate invasive species
- » Intersection of climate adaptation with invasive species management
- » Impacts of invasive species to green infrastructure
- » Impacts of invasive species on Species at Risk
- » Psychology and sociology of shifting behaviours and attitudes toward invasive species
- » Successes and lessons learned across BC



Forestry workshop; ISCBC



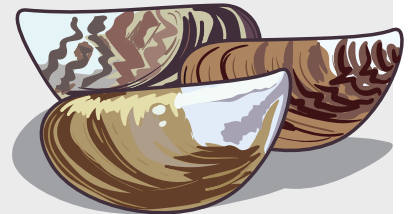
Camas; Shawna Kiesman

GOAL
14

Increase Research Investment

Limited funding has long been a major barrier to filling invasive species knowledge gaps in BC. Establishment of a stable pool of funding to support research needs, both long and short-term, is necessary going forward.

Emerging technologies have the potential to enhance invasive species management. These may include aerial and land-based drones for monitoring and treating invasive species, and environmental DNA technologies which can detect even rare invaders through the DNA fragments they leave behind. Effective and perpetual invasive species management will rely on the continued research on, and application of, the latest and most efficient detection and management technologies.



Indigenous Knowledge²⁰ reflects the unique cultures, languages, values, histories, governance and legal systems of Indigenous Peoples. It is place-based, cumulative and dynamic. Indigenous Knowledge systems involve living well with, and being in relationship with, the natural world. Indigenous Knowledge systems build upon the experiences of earlier generations, inform the practice of current generations, and evolve in the context of contemporary society.

KEY ACTION: Invest to increase knowledge and tools to improve and evolve invasive species management.



Clockwise from left: Management of garlic mustard in Kalamalka Lake Provincial Park; INVASIVES 2023 Forum; Partner field tour, Cranbrook ISCBC



Next Steps

Protecting British Columbia from the escalating negative impacts of invasive species requires strengthening inclusive and collaborative approaches, supported by increased awareness, action and extension of resources. As emphasized throughout this Strategy and all previous invasive species strategies for BC, increased investment is mandatory to improve prevention, management, enforcement, and research. Furthermore, we must strive to ensure invasive species are included as key components of biodiversity and ecosystem health related initiatives in BC. As one of the five direct drivers of biodiversity loss, invasive species must be recognized as a priority now and in the future, with clear actions to address their existing and potential impacts. Integration of invasive species into ongoing and future initiatives will support the goals outlined in this Strategy, while helping to create a cohesive provincial vision for biodiversity and ecosystem health in BC.

By implementing this Strategy, we can advance our commitment and action toward important federal, provincial and local priorities. Taking necessary steps to support reconciliation will improve our relationships with each other and with the land and set a meaningful example for years to come. The strategic directions, goals,

actions and success measures outlined in this Strategy will also set us on a forward path to protecting biodiversity across the province, while also supporting large scale global targets and increasing ecosystem resilience. By working together, acknowledging and reflecting diverse knowledge systems, we can prevent establishment of new invasive species and restore the health of ecosystems that have already been negatively impacted.

Key biodiversity and ecosystem health initiatives in British Columbia:

- » [BC Climate Preparedness and Adaption Strategy](#)
- » [BC Watershed Security Strategy](#)
- » [BC Coastal Marine Partnership](#)
- » [BC Wild Salmon Strategy](#)
- » [Together for Wildlife Strategy](#)
- » [Biodiversity and Ecosystem Health Framework](#)
- » [B.C. Inter-Ministry Invasive Species Working Group Strategic Plan](#)
- » [Other initiatives and programs listed by the Province of B.C.](#)

From conservation managers to ranchers — we all must be good stewards of the land to protect it for future generations.



Who Needs to be Involved?

Everyone. Tackling invasive species challenges must be done through strong collaboration across all levels of government (federal, Indigenous, provincial and local), non-governmental organizations, industry, communities, and all those who touch and care about our lands and waters. Increased collaboration and action across the natural resource sector can lead to major strides forward in invasive species prevention and management efforts. Heightened awareness and urgent action must also extend to everyone associated with invasive species pathways, such as travel, trade, and outdoor recreation. Substantial action is needed to help close these pathways.

Whether you are an avid gardener, boater, mountain biker, rancher, public land manager, or all of the above — there is an opportunity for each one of us to be a part of the solution. Everyone can play a role in protecting the lands and waters from new and existing invasive species. From being alert and reporting, or taking responsible action at work, home, and play — everyone can make a difference.

The time to act is now, to heal impacted ecosystems and communities, and protect our lands and waters for future generations.

Appendix

Measuring Success

For each of the following indicators, data will be collected and analysed from multiple sources, including the provincial and federal governments, and various surveys developed for all levels of government, Indigenous groups, organizations, businesses and all people living in British Columbia. Note that the numbering of goals listed in the left column relates to the numbering of goals throughout the Strategy.

Goal	Target	Indicator
1	100% of key entry pathways have formal restrictions in place and are monitored	Percentage of key entry pathways that have formal restrictions in place that are monitored
2	No new high-risk invasive species become established in BC	Number of new high-risk invasive species that become established in BC
2	100% response rate to all reported provincial EDRR species identified by the provincial or federal government	Percentage of provincial EDRR species identified by the provincial or federal government that are responded to
3	All invasive species management programs or projects are monitored for effectiveness*	Percentage of invasive species management programs or projects that are monitored for effectiveness
3	Reduced extent of high priority invasive plants AND baseline of distribution in place for other non-plant invasive species (Species TBD)	Change in extent of high priority invasive plants AND baseline of distribution established for other non-plant invasive species (Species TBD)
3	Increasing number of organizations** conducting treatments against invasive plants*	Number of organizations conducting treatments against invasive species
3	100% of treated sites restored (refers to natural areas treated only)*	Percentage of treated sites restored (refers to natural area treatments only; not vector management, agricultural, human health treatments, etc.)
3	All organizations working on invasive species collaborate with neighbouring land managers and organizations*	Percentage of groups collaborating with neighbours (to include networking, alliances, collaboration, partnerships)
4	A single piece of co-developed invasive species legislation for British Columbia	A single piece of co-developed legislation for BC on invasive species is enacted

Goal	Target	Indicator
5,6,7	100% of regulating bodies that have the resources and tools necessary for adequate enforcement*	Percentage of regulating bodies that have the resources and tools necessary for adequate enforcement
8	Increasing number of unique annual visits to invasive species websites, followers on social media platforms, respondents to open consultations and attendants to invasive species conferences*	Number of unique annual visits to invasive species websites, number of followers on social media platforms, number of respondents to open consultations, and number of attendees to invasive species conferences
9,10	Increased awareness and responsible actions by people across BC to prevent the introduction and spread of invasive species*	Level of awareness and responsible actions to prevent the introduction and spread of invasive species
9,10	Increased number of volunteers engaged in reporting, removing and/or restoring from invasive species*	Number of volunteers engaged in invasive species activities, including reporting, removing and/or restoring
3,11	Increased collaboration with Indigenous governments on invasive species initiatives*	Number of local governments, regional invasive species organizations, and other non-governmental organizations working collaboratively with Indigenous governments on invasive species planning to implementation
12,13	Increased number of new publicly available research reports produced on invasive species in BC	Number of new publicly available research reports produced on invasive species in BC
6,14	Increased investment for invasive species prevention, management, enforcement, and research*	Investment over time for invasive species prevention, management, enforcement, and research

*Refers to data previously collected in the provincial survey. The provincial ‘Monitoring for Success’ survey is used to measure trends towards achieving the goals described in the Strategy.

**Organizations may include government and non-government agencies.

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ARTISTIC CONTRIBUTIONS BY

Shawna Kiesman, Northwest Coast Artist

Shawna Kiesman was born in Prince Rupert, BC and raised in Victoria, BC. Her mother is Tsimshian/Nisga'a and her father is Haida/German. Shawna graduated from Freda Diesing School of Northwest Coast Arts then continued on at Emily Carr University of Art + Design to gain her Bachelor of Fine Arts. Since graduating, Shawna has received a grant from First Peoples' Cultural Council and she was chosen to attend RBC Audain Museum Emerging Artist Program, Banff Centre for Arts and Creativity, and Bonnie McComb Kreye Studio residencies. Kiesman's work is included in the permanent collections of the Nisga'a museum, Wii Gyemsiiga Siwilaawksat and Coast Mountain College. Her work has been featured in Creative Review and Canadian Architect magazines.



Russian olive



Orange hawkweed



European fire ant



Common tansy



Tree of heaven



Yellow perch



Giant hogweed

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We invite you to consider joining our community of supporters or providing a charitable donation to help make invasive species education and stewardship programs, accessible across BC. Visit our website to learn more.