Resort Municipality Of Whistler

INVASIVE SPECIES MANAGEMENT PLAN

April 2014

Environmental Stewardship Functional Area

Contents

EXECUTIVE SUMMARY

This Invasive Species Management Plan (ISMP) presents the Resort Municipality of Whistler's (RMOW) regionally integrated plan for the management of invasive species.

This plan outlines a goal, key objectives, management strategies and actions toward achievement of this goal. The plan reflects input by key stakeholders and fits within the broader context of invasive species management throughout the Sea to Sky region. An integrated approach will allow for streamlined goals and implementation across regional partners. The Invasive Species Management Plan (ISMP) directs activities toward preventing and managing the spread of invasive species and their potential impacts in Whistler.

The goal of this Invasive Species Management Plan (ISMP) is to provide a municipal management framework to maintain the biodiversity of Whistler's ecosystems and minimize other potential risks to our community through developing and implementing effective management strategies for invasive species, including education, collaboration, legislation and on-the-ground best practices in prevention, eradication, containment and control.

1.0 INTRODUCTION

Whistler, situated in the Coast Mountains of British Columbia, is host to a diverse and spectacular natural environment. In addition to providing ecosystem services that are essential for life, such as clean air and water, Whistler's natural environment offers a variety of ecosystems and abundant natural resources, along with scenic viewscapes and diverse recreational opportunities that are critical components to the success of the resort community. Valued resource uses include but are not limited to tourism, conservation, parks and recreation, community watersheds and forestry. These values are well defined in Whistler's highest level sustainability and land use management documents, namely Whistler2020 and the RMOW Official Community Plan.

The potential impacts posed by invasive species – including invasive species already found in Whistler, as well as those not yet found but with potential to spread here – are of increasing concern to the RMOW. This management plan, founded on the vision and priorities established by the community's highest level policies, seeks to address these threats by presenting an integrated approach to preventing and managing the spread of invasive species in Whistler.

Whistler's Environmental Protection Bylaw No. 2000, 2012 defines an invasive species as "a species not indigenous to the area whose introduction or spread does or is likely to cause economic or environmental harm or harm to human health." For a list of commonly used synonyms for "invasive species", see Appendix A.

Invasive species have three defining characteristics:

1) they are introduced by human activities to an area they didn't naturally inhabit;
2) they establish successfully at that location; and
3) they are aggressive colonizers of adjacent habitat.

In other words, invasive species arrive, survive, and thrive. (Whistler Biodiversity Project, 2007).

The introduction of invasive species to an area can occur through a variety of conduits. First, there are geographic routings along which invasive species can travel, such as wind, water currents, and natural or man-made corridors. Invasive species are introduced via these routings or pathways by vectors, which can be defined as organisms, objects or vehicles (E.g. cars, boats, boots, and humans) that carry invasive species from one location to another, thereby facilitating their incursion to other locations. Invasive species may be introduced to gardens or landscaped areas inadvertently by gardeners or horticulturalists who are unaware of the potential impacts of these species. Likewise, accidental introduction may occur when invasives become "stowaways" in tires, boots, transported soils, fill or gravel, vehicle undercarriages or boat hulls.

Once introduced, invasive species can disrupt natural habitats, reduce biodiversity and cause considerable environmental and economic damage. They have the capacity to establish quickly and prey on or out-compete indigenous species for food and other resources and, in the case of plants, they can form dense monocultures, out-shading less aggressive native plants. Invasive species can cause or carry diseases that do not naturally occur in that area. Invasives can prevent native species from reproducing. Invasive species can become established quickly and can spread rapidly if left unchecked. The spread of invasive species can be difficult to stop – because the species did not naturally evolve in this location, the controls that would normally keep a species in check (e.g. insects, viruses, fungi, predators) are not always present or effective.

The key threats presented by invasive plant and animal species include:

- decreased biodiversity;
- decreased habitat for wildlife;
- changes in food webs by destroying/replacing native food sources;
- altered water regime which can lead to soil erosion and/or less available water;
- changes to soil chemistry;
- increase in wildfire hazard due to different plant conditions;
- damage to roads, building foundations, and other developments;
- reduction in crop yields;
- outdoor tourism and recreation areas inundated by invasive monocultures;
- decrease in property values; and
- decrease in indigenous medicinal plants and related cultural practices.

The RMOW will implement this ISMP to minimize these risks posed by invasive species to Whistler.

1.1 Invasive Species in Context – Canada and BC

It is widely recognized that invasive species pose a variety of threats at global, national and regional levels and this issue has been addressed by federal and provincial governments. In

2004, the threat of invasive species in Canada was addressed in a federal government report entitled *Invasive Alien Species Strategy for Canada*. This strategy continues to play a critical role in the management of invasives across the country, focusing on the prevention of new invasions, early detection and response to new invasives, and managing established invasives through eradication, containment and control.

In BC, the threat of invasive species was also recognized and addressed in 2004 through the *Invasive Alien Species Framework for BC: Identifying and Addressing Threats to Biodiversity*. This framework identified the need for collaboration and action across levels of government in order to facilitate coordinated science and policy efforts to minimize the threat of invasive species to BC. In 2012, the Invasive Species Council of BC released the *Invasive Species Strategy for British Columbia*, a five-year plan detailing a comprehensive framework for effectively managing invasive species through enhanced and coordinated management and legislative approaches. These plans continue to serve as important pieces in guiding provincial and regional action on invasive species management.

1.2 Invasive Species in Whistler – Current Reality

Invasive species pose global threats to indigenous biodiversity and ecosystems, human health and the economy. In the past, Whistler has been somewhat insulated from their impacts due to geographic isolation, lower levels of human activity and a less temperate climate than, for instance, Squamish and Vancouver. However, there is growing cause for concern as the rate of invasive species introduction seems to have accelerated over the past decade, evidenced by the introduction and spread of invasive plants throughout the region.

Over the past several decades, the resort community of Whistler has undergone significant development. This has resulted in habitat fragmentation and an increase in the frequency and volume of humans and materials (both of which can be vectors of invasive species) moving through the Sea to Sky corridor. These factors contribute to the potential incursion of invasive species into Whistler, primarily from Vancouver, Squamish and Pemberton along Highway 99 and railway lines. As such, invasive species pose a threat to Whistler's biodiversity and valued natural resources and could have significant negative economic, social and environmental impacts.

The Whistler Biodiversity Project (WBP) is an ongoing project aimed at cataloguing and conserving Whistler's native species. The WBP conservatively confirms that there are over 3000 species of plants, animals and other species in Whistler, at least 150 of which are invasive plants. In fact, approximately 20% of plants documented so far by the Whistler Biodiversity Project are invasive. Invasives are present in virtually all ecological niches, for example snails and slugs, lichens, fungi, mammals, and birds. Invasvie species already established in the Lower Mainland and elsewhere may easily move to Whistler, for example bullfrogs and giant hogweed (Brett, 2007).

According to Brett of the Whistler Biodiversity Project, “eight of the world’s 100 worst invasive species as listed by the World Conservation Union (International Union for Conservation of Nature (IUCN); Figure 9.2) are already in Whistler”. Of particular concern are:

- Purple loosestrife;
- Black rat *(Rattus rattus*);
- Japanese knotweed (*Fallopia japonica*); and
- Leafy spurge (*Euphorbia esula*).

A brief review of the IUCN “100 worst” list performed by the Whistler Biodiversity Project (Brett, 2007), shows at least another seven species that may invade Whistler in the near future, as they are already known to be established nearby, including:

- Bullfrog (*Rana catesbeiana)*;
- Grey squirrel (*Sciurius carolinensis*);
- Carp (*Cyprinus carpio*);
- Frog chytrid fungus (*Batrachochytrium dendrobatidis*);
- Asian tiger mosquito (*Aedes albopicta*; and
- Gypsy moth (*Lymantria dispar*).

With the risks of invasives increasing in Whistler, the RMOW has been working closely with the Sea to Sky Invasive Species Council (SSISC) since 2009 to understand and manage the risk of invasives in Whistler. SSISC is a charitable organization that works cooperatively with other organizations, governments and industry on the south coast of British Columbia and Sea to Sky region to minimize the negative impacts caused by invasive species. SSISC was formed in 2009, initiated by the Whistler Biodiversity Project and Stewardship Pemberton. Its geographical area of focus coincides with the Squamish-Lillooet Regional District (SLRD) electoral areas C & D, which includes Squamish, Whistler and Pemberton, as well as the Village of Lions Bay located just south of the SLRD.

SSISC is currently recognized as the leader in invasive species management in the Sea to Sky region. SSISC not only provides technical direction and support for multiple stakeholders but also plays a leadership role in driving collaboration and coordinated efforts in the management of invasives throughout the corridor. There are a number of key active stakeholders in the corridor currently including but not limited to the Province of BC, District of Squamish, Squamish-Lillooet Regional District, the Squamish Nation, Village of Pemberton, Village of Lions Bay, Whistler Biodiversity Project, Whistler Naturalists, and the Squamish River Watershed Society.

SSISC maintains a current, comprehensive and prioritized list of invasive species present and encroaching within the region. This list is a critical resource for the management of invasives by the RMOW, as it is directly relevant to the invasive species threatening the Whistler area. The RMOW will use this SSISC species list as the primary guide to prioritizing and managing invasive species.

Currently, SSISC confirms the Yellow-flag iris (*Iris pseudacorus)* as the highest priority invasive species in Whistler. This is due to the fact that Yellow-flag iris is present in Whistler in limited areas but not yet widespread, it has high potential to spread far through sensitive riparian areas

very quickly, and eradication of this species is feasible if an effective removal program is implemented. SSISC also identifies the following as other high priority invasive species to manage within Whistler:

- Knotweeds – Japanese knotweed in particular (*Fallopia sp*.);
- Scotch broom (*Cytisus scoparius*);
- Spanish Broom *(Cytisus multiflorus);*
- Flowering Rush *(Butomus umbellatus);*
- Purple Loosestrife *(Lythrum salicaria);* and
- Himalayan Blackberry (*Rubus armeniacus.*

For the current and complete SSISC list of priority invasive species for the Sea to Sky region, visit http://www.ssisc.info/home/invasive_species. Note that SSISC is currently reviewing this regional list, with the view to create prioritized lists for the three sub-regions (Whistler, Squamish & Pemberton), as priorities between these sub-regions differ markedly.

In the local management of invasive species, the RMOW and SSISC maintain a close, integrated working relationship, which will become evident as the management strategies are outlined in this ISMP.

2.0 POLICY DIRECTIVES

The ISMP is founded on various policy directives established by the RMOW. With a focus on invasive species, this plan is aimed at helping Whistler achieve its overall vision and relevant policy objectives.

2.1 Whistler2020

In 2005, the RMOW adopted Whistler2020, the community's comprehensive, long-term sustainability plan. This direction-setting policy was developed collaboratively by community members, organizations, and local government. Whistler2020 presents the community's vision and guides the decisions and actions of the RMOW. Whistler2020 outlines the following vision:

> *Whistler will be the premier mountain resort community – as we move toward sustainability.*

Whistler2020 defines the following five community priorities, which are the key areas around which the RMOW focuses its efforts in moving toward the vision:

- Enriching Community Life
- Enhancing the Resort Experience
- Ensuring Economic Viability
- Protecting the Environment
- Partnering for Success

In support of this vision and these priorities, 17 strategies with descriptions of success and action items were created by the community. Commitments to protect native species and their habitats are included among these strategies, in particular the Natural Areas Strategy, along

with a number of other priorities related to human health and the local economy that are directly or indirectly threatened by invasive species. The Natural Areas Strategy describes success as:

> *In 2020, Whistler protects and, where possible, restores ecosystem integrity and biodiversity in all critical natural areas, and also protects and restores natural features within Whistler's developed and recreational areas.*

The Natural Areas Strategy further defines this description of success through 11 statements, the following of which are potentially threatened by the incursion of invasive species in Whistler:

1. An ecologically functioning and viable network of critical natural areas is protected and, where possible restored.
3. Indigenous biodiversity is maintained.
4. The protected natural areas of the Corridor include a full spectrum of locally representative ecosystems.
9. Continual learning about natural areas and species informs appropriate restoration and protection efforts.
11. Natural systems guide management approaches.

A plan to manage the threats of invasive species is thus warranted by W2020.

2.2 RMOW Official Community Plan

The RMOW's Official Community Plan (OCP) is Whistler's primary land use management policy. It is used as one of the key tools to implement Whistler2020 and maintain the focus on Whistler's vision. The OCP recognizes the threat posed by invasive species to OCP values such as biodiversity and healthy ecosystems. The OCP provides policies for avoiding the introduction and spread of invasive species in efforts to protect those values.

The OCP outlines several key goals, objectives and policies related to invasive species, including:

> Goal 6.2: Maintain and prioritize healthy ecosystems, beautiful viewscapes and a close connection between developed and natural areas in the land use planning process.
>
> Objective 6.2.2: Maintain and enhance native species, habitat and biodiversity.
>
> Policy 6.2.2.1: Support the development of a Whistler biodiversity protection plan that builds upon the objectives, goals and actions of the Whistler Biodiversity Challenge.
>
> Policy 6.2.2.2: Encourage the use of native plant species for development and significant redevelopment as a means of protecting local biodiversity and minimizing watering requirements, subject to policy 6.2.3.1 and avoidance of wildlife attractants.
>
> Policy 6.2.2.3: Protect biodiversity by prohibiting the use of invasive plant species and support eradication of existing invasive plants.
>
> Policy 6.2.2.4: Protect and, where possible, restore the habitats, ecosystems and connectivity that sustain biodiversity including populations of species at risk.

> Policy 6.2.2.5: Apply an ecosystem-based management approach that focuses on maintaining the interconnected components, functions and processes of local ecosystems.

This ISMP addresses these objectives and aims to minimize the risk of invasive species to Whistler.

3.0 ISMP CONTEXTUAL FRAMEWORK

This section outlines several best management approaches to the field of invasive species management, which comprise the contextual framework of the ISMP.

3.1 The Ecosystem Approach

The objectives and management strategies outlined in this plan reflect the ecosystem approach to managing invasive species. An ecosystem-based approach takes into consideration the effects of actions on every element of an ecosystem based on the recognition that all elements of an ecosystem are connected. The ecosystem approach is defined by the Convention on Biological Diversity (2002) as:

> *"A strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Application of the ecosystem approach will help to reach a balance of the three objectives of the Convention. [The ecosystem approach] is based on the application of appropriate scientific methodologies focused on levels of biological organization which encompass the essential processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems."*

3.2 Integrated Pest Management

No single tactic can resolve the sum of current invasive species issues or prevent future infestations. As such, it is often necessary to combine several management methods into an integrated program. Integrated Pest Management (IPM) is a prioritized decision making process for determining what actions will be taken when pest problems occur on a site by site basis. In IPM programs, all available information is considered in order to determine the best way to manage invasive populations in an effective and environmentally sound manner. Preventing introductions of invasive species, and by preventing organisms from becoming invasive by keeping them at some acceptable level (i.e. below a level that causes damage), are the first steps in any effective IPM program. When applied appropriately, an IPM approach will result in improved management, lower costs, ease of maintenance and lower environmental and health impacts from control activities.

4.0 ISMP SCOPE, VISION AND GOAL

This section outlines the scope, vision and goal of the RMOW ISMP.

4.1 ISMP Scope

The scope of this ISMP is to address the prevention and spread of invasive species within the Resort Municipality of Whistler, with a current emphasis on terrestrial plant species. It may also consider other terrestrial species, aquatic species, fungus, microbes and bacteria as such, depending on the specific nature of their impacts and risks to Whistler. This plan does not specifically address invasive agents that cause diseases directly related to human health.

This plan outlines the primary goal, key objectives, management strategies and actions needed to maintain biodiversity and minimize the threats of invasive species in Whistler. The ISMP will be regionally integrated and will apply best management practices in accordance with ecosystem-based management and integrated pest management approaches. The ISMP aims to optimize municipal resources and realize efficiencies by coordinating and collaborating with other stakeholders concerned with invasive species management.

The ISMP will be reviewed periodically and updated as needed to reflect current trends, partnerships and best management practices.

4.2 ISMP Vision

The ISMP vision represents the overall picture of the desired state of the community into the future in relation to the topic of invasive species. This vision is, by nature, expansive and meant to portray the holistic desire for an ecologically diverse and healthy Whistler.

As described in Whistler's comprehensive sustainability plan, Whistler2020, a sustainable future for Whistler includes healthy ecosystems, healthy people and wildlife, and a healthy economy. In this plan's vision for the future, these values are protected from new invasive species and already-established invasive populations are controlled or eradicated through a strategic integrated pest management approach and continued community stewardship of the natural environment involving collaboration between the RMOW and its partners.

4.3 ISMP Goal

The goal of this ISMP is to provide a municipal management framework to maintain the biodiversity of Whistler's ecosystems and minimize other potential risks to our community through developing and implementing effective management strategies for invasive species, including education, collaboration, legislation and on-the-ground best practices in prevention, eradication, containment and control.

5.0 ISMP OBJECTIVES, MANAGEMENT STRATEGIES AND ACTIONS

This section outlines the key objectives of the RMOW ISMP. Each objective is supported by a series of management strategies, which are then to be implemented through specific action items. Combined, the fulfillment of these actions will work towards achieving the objectives,

goals and vision of the ISMP. Responsible players and timelines are provided as possible for each action.

ISMP Key Objectives:

1. Education and Outreach – Raise awareness and educate RMOW staff, the general public, industry and landowners about invasive species and their potential impacts.
2. Regional Collaboration – Collaborate effectively with Sea to Sky stakeholders to implement a regional approach to managing invasive species.
3. Policy and Legislation – Develop and implement a range of effective policy and legislative tools focused on minimizing the potential impacts of invasive species.
4. Practical Management – Take action to control and manage the spread of invasive species through the implementation of prioritized on-the-ground best management practices.

5.1 Objective 1: Education and Outreach

Raise awareness and educate RMOW staff, the general public, industry and landowners about invasive species and their potential impacts.

In order to maintain the biodiversity of Whistler's ecosystems and minimize other potential risks to our community, it is critical that key players understand the basics about invasive species – E.g. what invasives are, what risks they pose, how they are introduced, what to do if you detect an invasive species, and how we can control incursion. Because of the variety of ways in which invasives can be introduced or spread, it is important that this basic information be targeted to as many people as possible in order to maximize awareness, which can support prevention and early detection of invasives. Invasive species represent a relatively new topic area in terms of general public awareness. As such, there is much opportunity to introduce this topic and engage the attention of the public and key stakeholders.

Objective 1: Education and outreach

STRATEGIES	ACTIONS	RESPONSIBLE	TIMELINE
A) Increase general public awareness about invasive species, including: - what are they? - how are they introduced? - what invasive species are of particular concern in Whistler? - potential negative impacts of invasives	Collaborate with partners to develop and implement a comprehensive communications plan addressing invasive species in the Sea to Sky corridor - target key stakeholders - key messages - multiple mediums - signs (roads, trails, disposal yards)	RMOW Environmental Stewardship (ES) in collaboration with SSISC	2015
	Support the development and delivery of educational material to the public	RMOW ES in collaboration with SSISC	Ongoing
	Maintain updated information	RMOW ES	Ongoing

- how to minimize the spread - relevant legislation	on invasive species on external website (whistler.ca)		
	Consider invasive species awareness signs at key border / vector entry points	RMOW ES and RMOW LO with SSISC	2015
	Participate in existing community nature-based events as opportunities to raise awareness about invasive species	RMOW ES in collaboration with SSISC	Ongoing
	Communicate clear reporting protocol to public (E.g. report all detected occurrences of invasive species to SSISC)	RMOW ES	Ongoing
	Clearly communicate relevant local bylaws to the public via websites, open houses, etc.	RMOW ES	Ongoing
B) Encourage and facilitate community learning and involvement in invasive species initiatives	Support the coordination and delivery of community weed-pull events (E.g. “Pulling Together” theme); could involve local schools or clubs	RMOW ES and/or RMOW Landscape Operations (LO) in collaboration with SSISC	Ongoing
	Support local groups in invasive species management efforts and provide staff support as relevant and possible (E.g. SSISC, WFSG, HIT, AWARE, Naturalists)	RMOW ES	Ongoing
C) Provide training opportunities for RMOW staff and encourage continual learning about invasive species	Develop and implement an ongoing staff training program on invasive species identification, detection and reporting protocol, current priority species and best management practices in early detection, rapid response, and containment and control methods. - Seasonal detailed training sessions for landscaping, trails maintenance and horticulture crews - Seasonal communication of key invasives information to all outdoor staff	RMOW ES with RMOW LO and support from SSISC	2014 – ongoing
	Integrate invasive species best management practices	RMOW ES and RMOW LO	2014 – ongoing

	into regular operations for relevant Functional Areas		
	Create training materials and prompts for staff and key personnel related to invasive species management	RMOW ES and RMOW LO	2014 – ongoing
	Communicate clear reporting protocol to public (E.g. report all detected occurrences of invasive species to SSISC)	RMOW ES and RMOW LO	2014 – ongoing
	Include key information on invasive species trends and initiatives in the annual RMOW State of the Environment report	RMOW ES	2014 - ongoing
D) Educate and collaborate with key industry stakeholders (E.g. landscapers, horticulture, land managers, plant material suppliers) to proactively minimize the risks of invasive species to Whistler	Promote and support the SSISC Invasive-Free Certification Program for the horticulture industry	RMOW ES and RMOW LO in collaboration with SSISC	2014 - ongoing
	Support outreach to retailers to help minimize the sale of invasive species in Whistler	RMOW ES in collaboration with SSISC	2014 – ongoing
E) Stay current on emerging issues, challenges and best practices around invasive species management	Support student or other research efforts on invasive species, with a focus on priority species of regional concern	RMOW ES	Ongoing
	Follow and support the work of other regions around invasive species management toward staying abreast of current issues, challenges and best practices	RMOW ES	Ongoing

5.2 Objective 2: Regional Collaboration

Collaborate effectively with Sea to Sky stakeholders to implement a regional approach to managing invasive species.

It is the nature of invasive species to spread far and fast. Invasives push limits and do not stop at municipal or other such boundaries. As such, effective management of invasive species requires a strong regional approach with stakeholder coordination and collaboration. It is in the RMOW's interest to support regional neighbours in their efforts to manage and control incursion

in their jurisdictions, just as it is in our neighbours' best interests to support Whistler's efforts to do the same.

Successful management of invasive species is a shared responsibility among stakeholders and requires the mutual cooperation of a variety of agencies, organizations, user groups and individuals. There are many efficiencies, synergies and enhanced success available through collaborative management. The ISMP recommends management strategies and actions to facilitate effective collaboration throughout the region towards minimizing the risks of invasive species in Whistler.

Objective 2: Regional Collaboration

STRATEGIES	ACTIONS	RESPONSIBLE	TIMELINE
A) Participate in and contribute to a multi-stakeholder, collaborative and regional approach to the management of invasive species in the Sea to Sky corridor	Maintain RMOW staff representative(s) as SSISC advisors. - participate regularly in SSISC meetings - implement relevant action items	RMOW ES and RMOW LO	Ongoing
	Collaborate with SSISC members and other partners on initiatives and share knowledge regarding current best management practices	RMOW ES and RMOW LO	Ongoing
	Continue to provide funding support to SSISC	RMOW ES	Ongoing
B) Provide input to key regional management initiatives on invasive species	Participate in the development and implementation of the Sea to Sky regional invasive species strategy (coordinated through SSISC)	RMOW ES and RMOW LO	2014 – ongoing
C) Support coordinated research efforts	Support invasive species research and the transfer of results/information to a central, publicly accessible forum (E.g. SSISC, IAPP)	RMOW ES and RMOW LO	Ongoing

5.3 Objective 3: Policy and Legislation

Develop and implement a range of effective policy and legislative tools focused on minimizing the potential impacts of invasive species.

Policy and legislation can be critical tools for managing invasive species. Fundamentally, they can serve as education, raising awareness about issues that people may not have much information about. Beyond that, they provide the means to establish rules and implement enforcement for infractions. Policy and regulation are proving to be critical components of invasive species management initiatives across BC, Canada and beyond.

As per Section 2.0 above, it is clear that the RMOW already has in place several core policy pieces which provide the foundation for more directed legislation toward minimizing the threat of invasive species. The ISMP recommends further development and implementation of a range of policy tools toward the effective management of invasive species in Whistler.

Objective 3: Policy and Legislation

STRATEGIES	ACTIONS	RESPONSIBLE	TIMELINE
A) Develop and implement legislation to support the effective management of invasive species in Whistler	Support and implement RMOW Pesticides Bylaw No. 1822, 2007 and Pesticide Use Regulation Bylaw Amendment, No. 2001, 2012 (I.e. exemption for treatment of invasive species)	RMOW ES and RMOW Bylaw	Ongoing
	Support and implement RMOW Environmental Protection Bylaw No. 2000, 2012	RMOW ES and RMOW Bylaw	May 2014 – implementation ongoing
	Communicate relevant legislation and policies to the general public to increase awareness and encourage compliance	RMOW ES	Ongoing
	Implement relevant OCP policies related to invasive species through municipal administration (E.g. development permit process)	RMOW ES and RMOW Planning	Ongoing
B) Develop and implement legislation regarding best management practices for invasive species biomass disposal	Support and implement the Garbage Disposal and Wildlife Attractants Bylaw No. 1861, 2008 (I.e. proper disposal of invasive plant material). Disposal of invasive plant species must be done with the utmost care, being careful to avoid spreading seeds or leaving roots or stems behind.	RMOW ES, RMOW Bylaw and RMOW Infrastructure Services	Ongoing
	Maintain the existing reduction in tipping fees as an incentive for those certified	RMOW Infrastructure Services and	Ongoing

	through the SSISC Invasive-Free certification program. Consider amending the Garbage Disposal and Wildlife Attractants Bylaw No. 1861, 2008 to reflect this.	Carney's Waste Systems	
C) Support long-term funding, staffing and resources for invasive species management in Whistler	Provide a consistent budget, including staff time and other resources, to support key objectives and management strategies to minimize the risks of invasive species to Whistler. - Education and outreach - Regional collaboration - Policy and legislation - Practical management (prevention, early detection, rapid response, containment and control initiatives)	RMOW ES and RMOW LO	Ongoing
D) Support and comply with provincial legislation related to invasive species management	Include the BC Weed Control Act in the Environmental Protection Bylaw No. 2001, 2012	RMOW ES	May 2014 – implementation ongoing
	Support the integration of provincial EDRR list and BC Prohibited Noxious Weeds List into SSISC species prioritization lists for the Sea to Sky corridor	RMOW ES in collaboration with SSISC	Ongoing
E) Stay current on key provincial/regional policy initiatives related to invasive species	Maintain collaboration with SSISC	RMOW ES and RMOW LO	Ongoing
F) Contribute to the development of regional policy initiatives on invasive species	Participate in the development and implementation of the Sea to Sky regional invasive species strategy (coordinated through SSISC)	RMOW ES and RMOW LO	2014 – 2015

5.4 Objective 4: Practical Management

Take action to control and manage the spread of invasive species through the implementation of prioritized on-the-ground best management practices.

A strategic, prioritized and practical approach on the ground is critical to the effective management of invasive species. Prevention of new incursions, eradication of species that

occur at a small number of sites, containment of species that have not spread to all sub-regions and strategic control of more widespread incursions are all critical in terms of minimizing the spread of invasive species and protecting ecosystem and community health.

5.4.1 BC Legislation Regarding Management of Invasive Plant Species

The province of BC recently introduced a list of Prohibited Noxious Weeds list, which includes invasive plant species that are not present in BC or extremely limited in extent yet pose a significant threat to BC's environment, economy and/or human health. This Prohibited Noxious Weeds in BC list can be found here: http://www.for.gov.bc.ca/hra/invasive-species/Proposed_Prohibited_Noxious_weeds_Feb2012.pdf. All of these prohibited species are candidates for a provincially-mandated Early Detection and Rapid Response (EDRR) program. This BC EDRR program is aimed at preventing the establishment of invasive species in the first place. If detected, landowners and citizens must report prohibited noxious weeds in BC (E.g. online through Report-A-Weed (http://webmaps.gov.bc.ca/imf5/imf.jsp?site=mofr_iapp&startup=raw), using the Report-A-Weed smart phone app, or by calling 1-888-WEEDSBC).

In addition, the BC Weed Control Act maintains a list of Noxious Weeds, which includes some species that are not on the Prohibited list. This list of BC Noxious Weeds can be found here: http://www.agf.gov.bc.ca/cropprot/noxious.htm. The RMOW Environmental Protection Bylaw No. 2000, 2012 restricts the planting of invasive species in Whistler and applies to plant species listed in the BC Weed Control Act Schedule A, as well as other alien invasive plant species identified as priorities in the Sea to Sky corridor.

5.4.2 SSISC Categories for the Strategic Management of Invasive Species

SSISC, currently the regional lead organization in invasive species issues, has established the following categories for strategically managing specific invasive species in the Sea to Sky region:

1. Prevent
2. Eradicate
3. Contain
4. Strategic Control

SSISC maintains an up-to-date list of all invasive species of concern to the region, prioritized according to the above categories. It should be noted that this list is not static. Due to the nature of invasive species, their distribution and occurrence in a region can change over time, resulting in species changing priority level or new species being added to the list. This list is currently under review and will be soon revised to include a sub-regional priority list that will apply directly to Whistler. For the current SSISC list of priority invasive species for the Sea to Sky region, visit http://www.ssisc.info/home/invasive_species.

The ISMP recommends that the RMOW continue to follow both the SSISC prioritized list of species and the SSISC management categories in order to effectively manage invasive species in Whistler.

Should SSISC, for any reason, cease to provide leadership and key resources in a current and comprehensive manner, the RMOW will re-assess the ISMP and make amendments as needed to reflect this change.

Below is a detailed description of the SSISC categories for the strategic management of invasive species.

1. Prevent – *Focused on the prevention of new invasions, this category addresses invasive species not yet found in the region but potentially on their way. The goal of this category is to prevent new invasive species from entering the region.*

The most effective way to minimize the impacts of invasive species is to prevent them from establishing. As such, taking a preventative approach is critical to any sound invasive species management program. Prevention is the most cost-effective means of managing invasive species and especially important in a community like Whistler where relatively few invasive species have established but threaten to do so along several well-traveled corridors. Proactive monitoring programs will support early detection, as will raising awareness about specific species of concern. If and when detection of a new invasive species is confirmed, mobilizing a rapid response to apply treatment methods and monitor effectiveness is critical to preventing establishment.

Invasive species of concern that currently fall under the SSISC Prevent category for Whistler include:

- Giant Hogweed (Heracleum mantegazzianum);
- Gorse (Ulex europaeus);
- Parrotfeather (Myriophyllum aquaticum);
- Eurasian water-milfoil (Myriophyllum spicatum);
- Bullfrogs (*Rana catesbeiana*); and
- Grey squirrels.

2. Eradicate – *Focused on preventing the spread of invasive species already found to exist in the region but only in very limited amounts. The goal of this category is early detection and rapid response.*

In some instances where sites and/or numbers of invasive species are small, eradication may be achieved. Success depends on two main elements:

1) knowledge of invasive species upon detection. This requires accurate monitoring, mapping and data management; and

2) rapid response measures that effectively use established control and restoration measures to eradicate invasive species. Limitations of specific control methods and financial constraints can be limiting factors.

Locations with small and/or recent invasive species introductions have the best potential for successful eradication. In this way, Whistler is fortunate to have good potential for successful eradication of several invasive plant species. Success will be critical on early detection and as such, awareness and monitoring will play a significant role in this management strategy. Next rapid response measures using established control and restoration methods is required to eradicate small populations of invasive species. Evaluation of control methods for particular species under specific conditions will be critical, as will follow-up monitoring efforts. Success also depends on having adequate resources to respond to invasive plant populations before they expand.

Invasive species of concern that currently fall under the SSISC Eradicate category for Whistler include:

- Yellow-Flag Iris (*Iris pseudacorus*);
- Japanese Knotweed (*Fallopia japonica*);
- Himalayan Blackberry (*Rubus armeniacus*);
- Purple Loosestrife (*Lythrum salicaria*);
- Scotch Broom *(Cytisus scoparius);*
- Policemean's Helmet / Himalayan Balsam (*Impatiens glandulifera*); and
- Flat Pea (*Lathyrus sylvestris*).

3. Contain – *Focused on invasive species found in areas within the region but not widespread. The goal is to apply control measures to keep the species from spreading to uninfested areas.*

Where invasive species have established in specific areas, total eradication may not be feasible. As such, a management approach geared to contain the species and prevent its incursion to other areas is required.

Invasive species of concern to Whistler that currently fall under the SSISC Contain category include:

- Orange Hawkweed (Hieracium aurantiacum);
- Yellow lamium (Lamium galeobdolon);
- Spotted knapweed (Centaurea stoebe); and
- Diffuse Knapweed (Centaurea diffusa).

4. Strategic Control – *Focused on invasive species which are widespread within the region. The goal is to apply control measures in high priority areas only (E.g. environmentally sensitive areas).*

For those areas where invasive species have established in a widespread manner, total eradication is likely not feasible. As such, a management approach is required to strategically control the incursion and prevent the spread, in particular, to high priority areas (E.g. environmentally sensitive areas) and mitigate their most negative potential impacts.

Invasive species of concern to Whistler that currently fall under the SSISC Strategic Control category include:

- Canada Thistle (Cirsium arvense);
- Lamb's quarters (Chenopodium album);
- dalmation toadflax (Linaria dalmatica);
- oxeye daisy (Leucanthemum vulgare); and
- Common burdock (Arctium minus).

Treatment and Restoration

When invasive species are detected, they must be removed to prevent further incursion. Some methods of removal treatment include: cutting (manual or mechanical); soil and root removal; and application of biological controls or pesticides (permit and/or bylaw exemption may be required). Guidance should be sought from SSISC before initiating actions.

RMOW Pesticides Bylaw No. 1822, 2007 and Pesticide Use Regulation Bylaw Amendment, No. 2001, 2012 restrict the cosmetic use of specific pesticides within Whistler. However, the bylaw allows for exemptions for the treatment of invasive species, assessed on a case by case basis, as it is recognized that the eradication or containment of some species is not always possible without chemical control and in some cases, the risks of incursion are seen to be greater than the risks posed by limited and expertly applied pesticide treatment.

Restoration is an important step for returning optimal ecosystem function to an area and often in preventing a further incursion of invasive species. Some methods include: natural colonization or succession; seeding of desirable grasses, forbs or trees; replanting of container grown trees and shrubs, and; planting of live-cuttings. Effective restoration plans are both site and species dependant.

Objective 4: Practical Management

STRATEGIES	**ACTIONS**	**RESPONSIBLE**	**TIMELINE**
A) Prevent – Focused on the prevention of new invasions, this category addresses invasive species not yet found in the region but potentially on their way. The goal of this category is prevention.	Work with SSISC to confirm new and/or current priority invasive species and target locations	RMOW ES and RMOW LO	Ongoing
	Collaborate with SSISC to identify key routes and incursion agents with highest potential for the establishment or spread of invasive plants to Whistler, in order to help guide early	RMOW ES and RMOW LO	Ongoing

	detection efforts		
	Integrate invasive species data into RMOW GIS mapping system – this can help identify critical areas to protect from impending threats invasive species and establish management priorities	RMOW ES and RMOW GIS with support from SSISC	2014/ 2015 – ongoing
	Integrate an invasive species component into RMOW Ecosystem Monitoring Program to identify trends and priorities – use information to help guide management decisions in collaboration with SSISC	RMOW ES with SSISC	2014 – ongoing
	Clearly communicate an identification, detection and reporting protocol (internally to RMOW and externally to public) – I.e. Report detected (suspected or confirmed) invasive species to SSISC in a timely manner	RMOW ES and RMOW LO	Ongoing
	For invasive species found on municipal land, collaborate as needed with SSISC regarding appropriate management approach / control method	RMOW LO	Ongoing
	For invasive species found on private land, collaborate with SSISC, when necessary, around bylaw implementation	RMOW ES, RMOW Bylaw and SSISC	Ongoing
	Where appropriate, direct staff resources to administer control or treatment methods, in accordance with SSISC recommended approaches	RMOW ES and RMOW LO	Ongoing
	Actively seek guidance from SSISC on technical invasive species management issues	RMOW ES and RMOW LO	Ongoing
B) Eradicate – Focused on preventing the spread of invasive species	Where appropriate, direct staff resources to administer control or treatment methods, in accordance with SSISC	RMOW ES and RMOW LO	Ongoing

already found to exist in the region but only in very limited amounts. The goal of this category is early detection and rapid response. C) Contain – Focused on invasive species found in areas within the region but not widespread. The goal is to apply control measures to keep the species from spreading to uninfested areas. D) Strategic Control – Focused on invasive species which are widespread within the region. The goal is to apply control measures in high priority areas only (E.g. environmentally sensitive areas).	recommended approaches		
	Actively seek guidance from SSISC on technical invasive species management issues	RMOW ES and RMOW LO	Ongoing
	For invasive species found on municipal land, collaborate as needed with SSISC regarding appropriate management approach / control method	RMOW LO	Ongoing
	For invasive species found on private land, collaborate with SSISC, when necessary, around bylaw implementation	RMOW ES, RMOW Bylaw and SSISC	Ongoing
	Support SSISC in their efforts to monitor and assess treatment methods	RMOW ES and RMOW LO	Ongoing

6.0 Invasive Species Reporting and Management Protocol

All detected occurrences (suspected and confirmed) of invasive species in Whistler by RMOW employees or by members of the public should be reported directly to SSISC.

Sea to Sky Invasive Species Council (SSISC)
Phone: 604-698-8334
Email: ssinvasives@gmail.com
Website: http://www.ssisc.info/blog

Once contacted, SSISC will confirm the occurrence and will then notify the Province of BC accordingly of any confirmed occurrences of relevant invasive species in Whistler.

The RMOW will work collaboratively with SSISC to confirm and manage detected occurrences of invasive species on municipal land.

7.0 CONCLUSION

The RMOW has long demonstrated its commitment to protecting the natural environment. This ISMP provides a solid management tool to help maintain biodiversity and minimize the risks posed by invasive species to the continued health and success of our resort community. Working collaboratively with key stakeholders enables a coordinated approach optimizing municipal resources and achieving efficiencies and shared success throughout the region.

REFERENCES

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APPENDICES

Appendix A – Names for Invasive Species

For clarity, this report shall only use the term “invasive species” or “invasives”. Outside of this report, however, invasive species are commonly referred to as any of the following:

- “introduced;”
- “aliens;”
- “exotics;”
- “non-natives;”
- “immigrants;”
- “adventives;”
- “neophytes;” or
- “non-indigenous.”
- “noxious weeds” (legal term in BC - plants only)

Appendix B – Additional Resources

Invasive Species Council of BC
http://www.bcinvasives.ca/

Province of BC – Invasive Species Early Detection and Rapid Response Plan
http://www.for.gov.bc.ca/hra/invasive-species/edrr.htm

Province of BC – Invasive Alien Plant Program
http://www.for.gov.bc.ca/hra/Plants/index.htm

Sea to Sky Invasive Species Council (SSISC)
http://www.ssisc.info/blog

Whistler Biodiversity Project
http://www.whistlerbiodiversity.ca/