

## **Bioinvasion and Global Environmental Governance: The Transnational Policy Network on Invasive Alien Species**

### Canada's Actions on IAS

#### **Description<sup>i</sup>**

Canada is a vast country (by landmass it is the world's second largest country) rich in natural resources and biodiversity. It has a population of about 33.2 million. It became self-governing in 1867, but it wasn't until the 1982 Canada Act that legislative dependence with the British parliament was severed. To this day Canada has maintained ties to the British Crown and it is a constitutional monarchy with Queen Elizabeth II as the head of state. Canada is a parliamentary democracy.

Canada is a federation of ten provinces (from west to east: British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Québec, New Brunswick, Prince Edward Island, Nova Scotia and Newfoundland and Labrador) and three northern territories (Yukon, Northwest territories and Nunavut); it is bordered by three different oceans: the Pacific Ocean on the western coast, the Arctic Ocean on the northern coast and the Atlantic Ocean on the eastern coast. To the south, Canada shares a long, largely unprotected border with the United States. Canada is technologically and economically similar to the US.<sup>ii</sup> It maintains a diversified economy, but trade is heavily reliant on the U.S. It is a member of G8, NATO, Commonwealth of Nations, and La Francophonie.

#### **Overview of Biodiversity**

- [CBD Country Profile](#)
- [Earth Trends Country Profile on Biodiversity and Protected Areas](#)
- [Canadian Biodiversity Web Site](#) (Presented by McGill's Redpath Museum)
- [Environment Canada's Biodiversity Portal](#)

#### **Legislation relating to IAS**

- [The Plant Protection Act](#)
- [Health of Animals Act](#)
- [Canadian Environmental Protection Act](#)
- [Environmental Assessment Act](#)
- [Seeds Act](#)
- [Pest Control Products Act](#)
- [Forestry Act](#)
- [Natural Resources Act](#)
- [Transportation of Dangerous Goods Act](#)
- [Oceans Act](#)
- [Fisheries Act](#)
- [Canada Wildlife Act](#)

- [Wild Animal and Plant Protection and Regulations of International and Interprovincial Trade Act](#)
- [Canada National Parks Act](#)

### **The Canadian IAS Strategy**

In September 2004, the Canadian Government, more specifically the federal, provincial, and territorial Ministers for Wildlife, Forests, and Fisheries and Aquaculture, introduced [An Invasive Alien Species Strategy for Canada](#), as a coordinated effort of reducing the risk of IAS and to conserve ecosystems. The strategy has a four prong hierarchical approach:

- 1) *prevention* of new invasions;
- 2) *early detection* of new invaders;
- 3) *rapid response* to new invaders; and
- 4) *management* of established and spreading invaders (containment, eradication, and control).<sup>iii</sup>

### **Government Departments/Agencies/Ministries Implementing the Strategy:**

- the [Canadian Food Inspection Agency](#) (CFIA)
- [Environment Canada](#) (EC)
- [Natural Resources Canada](#)
  - [Canadian Forest Service](#) (NRCAN-CFS)
- [Fisheries and Oceans Canada](#) (DFO)
- [Agriculture and Agri-Food Canada](#) (AAFC)
- [Canada Border Services Agency](#) (CBSA)
- [Parks Canada](#) and all provincial ministries responsible for forestry, agriculture or natural resources, including: [Alberta Environment](#), British Columbia [Ministry of Environment](#), [Manitoba Conservation](#), Newfoundland and Labrador [Department of Environment and Conservation](#), [Nova Scotia Environment](#), Ontario [Ministry of the Environment](#), Prince Edward Island [Environment, Energy and Forestry](#), Quebec [Développement durable](#), [Environment et Parcs](#), Saskatchewan [Ministry of Environment](#).

### **Major Invasive Alien Species**

In Canada, invasive species include about “27% of all vascular plants, 181 insects, 24 birds, 26 mammals, 2 reptiles, 4 amphibians, several fungi and molluscs, and 55 freshwater fish.”<sup>iv</sup> For example, the Great Lakes now contain over 160 exotic species.<sup>v</sup>

Asian long-horned beetle	Goby	Rainbow trout
Brown spruce longhorn beetle	Green Crab	Spiny water flea
Cheatgrass	Gypsy moth	Starlings
Common carp	Japanese knotweed	Sea lamprey
Dutch elm disease	Jelly-like tunicate	Tunicates
Emerald Ash Borer	Leafy spurge	Violet tunicate
Eurasian water milfoil	Meadow knapweed	Viral hemorrhagic septicemia
European boar	Mountain pine beetle	Zebra mussel
	Purple Loosestrife	

### Native Species Exported/Introduced to Non-Native Environments

[Memorandum D19-13-1](#) “Exportation of Wild Animals and Plants Subject to Provincial Export Controls, and Species Designated as Harmful To Canadian Ecosystems” (15 June 2001) from the *Wild animal and Plant Protection and Regulation of International and Interprovincial Trade Act* (WAPPIITA). This Memorandum outlines the import permits requirement for species designated as harmful to Canadian ecosystems and the exportation requirements concerning the wild animals and plants subject to provincial or territorial controls. It is implemented by the Canada Customs and Revenue Agency in assistance with the Canadian Wildlife Service of Environment Canada.

### Table 1 Action to prevent, detect and manage IAS categorized into three themes: biodiversity, human health, and economic

*Note: Actions (such as projects, publications and programs) are classified according to the most obvious theme but may also fit into the dimensions of another.*

Theme	Action
Biodiversity	<ul style="list-style-type: none"> <li>• Development of <i>An Invasive Alien Species Strategy for Canada</i> (see above)</li> </ul> <p><b>INVASIVE ALIEN SPECIES PARTNERSHIP PROGRAM: PROJECT TITLES<sup>vi</sup></b></p> <p><b>Canada-wide</b></p> <ul style="list-style-type: none"> <li>• The tree killers - An invasive species interactive website by <a href="#">Tree Canada Foundation</a> (\$35,000 in 2005/2006)</li> <li>• The Canadian Food Inspection Agency published the <a href="#">Exotic Forest Insect Guidebook 2006</a></li> <li>• Recreational boater information/education package to prevent the spread of aquatic invasive species (AIS) throughout Canada by the <a href="#">RNT Consulting Inc.</a> (\$45,000 in 2005/2006)</li> <li>• <a href="#">Habitattitude: Protect our Environment, Do not Release Fish and Aquatic Plants</a> web site of the <a href="#">Pet Industry Joint Advisory Council</a> (PIJAC) (\$18,000 in 2005/2006)</li> <li>• Activating spaces for public awareness; invasive species exhibits and educational programs by the <a href="#">Great Lakes Institute for Environmental Research</a> (GLIER) at the University of Windsor</li> <li>• CanTrack, a web-based invasive species reporting, assessment and mapping application <a href="#">NatureServe Canada</a> (\$45,000 in 2005/2006)</li> <li>• Invasive plants: inventories, strategies and action. CWSS-SCM 2006 Symposium, Victoria, B.C by the <a href="#">Canadian Weed Science Society</a> (CWSS) (\$39,500 in 2005/2006)</li> <li>• ISPOT - Invasive Species Presence Observation Teams (\$45,000 in 2005/2006) <ul style="list-style-type: none"> <li>○ Example: <a href="#">Southeast Environmental Association</a> in Prince Edward Island</li> </ul> </li> <li>• The Aquatic Invasive Species Task Group becomes a permanent sub-committee of the Canadian Council of Fisheries and Aquaculture</li> </ul>

	<p>Ministers (2007). The task group established a new task group on eco-labelling to ensure governments are ready to better support industry.<sup>vii</sup></p> <p><b>Alberta</b></p> <ul style="list-style-type: none"> <li>• Integrated invasive alien species management program SW Alberta provincial parks by the <a href="#">Alberta Community Development</a> (\$30,000 in 2005/2006)</li> <li>• Restoring the balance in Fish Creek Provincial Park, Canada's largest urban provincial park by the <a href="#">Friends of Fish Creek Provincial Park Society</a> (\$45,000 in 2005/2006)</li> <li>• Alberta Invasive Plant Council strategic initiative by the <a href="#">Alberta Invasive Plant Council</a> (AIPC) (\$135,000 in 2005/2006)<sup>viii</sup></li> <li>• Native fescue grassland and invasive plant species by the <a href="#">Southern Alberta land Trust Society</a> (\$45,000)<sup>xiv</sup></li> </ul> <p><b>British Columbia</b></p> <ul style="list-style-type: none"> <li>• Program development for the Greater Vancouver Invasive Plant Committee by the <a href="#">Invasive Plant Council of British Columbia</a> (\$6,700 in 2005/2006)<sup>xiv</sup></li> <li>• Assessment and Control of Invasive Smallmouth Bass in Beaver Ck &amp; Quesnel R Watersheds by the Ministry of Environment – <a href="#">Environmental Stewardship Division</a></li> <li>• Alien species fact sheets for targeted public audiences to reduce introductions of aquatic alien plants and animals by the <a href="#">Ecosystems Branch</a>, Ministry of Environment, British Columbia (\$5,000 in 2005/2006)</li> <li>• Mitigating impacts of introduced bullfrogs on native amphibians on Vancouver Island by the <a href="#">School of Environmental Studies</a>, University of Victoria (\$45,000 in 2005/2006)</li> <li>• Field guide and video to address invasive alien plant pest and disease threats to British Columbia by the British Columbia <a href="#">Ministry of Agriculture and Lands</a> (\$45,000 in 2005/2006)</li> <li>• Central Kootenay Invasive Plant Committee - regional initiative by the <a href="#">Central Kootenay Invasive Plant Committee</a> (CKIPC) (\$45,000 in 2005/2006)</li> <li>• Sharing best invasive plant practices with plant managers, governments, community groups and people participating in recreational activities by the <a href="#">Invasive Plant Council of British Columbia</a> (\$45,000 in 2005/2006)</li> <li>• Cooperative project to produce tools for regional invasive plant committees to educate people participating in recreational activities about invasive plants in BC by the Boundary Weed Management Committee (\$45,000 in 2005/2006)</li> <li>• Horsefly Cattlemen's Association invasive weeds on range by the <a href="#">Horsefly Cattlemen's Association</a> (\$8,800 in 2005/2006)</li> <li>• Survey of alien plants from ports of entry on southern Vancouver Island by the <a href="#">Royal British Columbia Museum Corporation</a></li> </ul>
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	<ul style="list-style-type: none"> <li>• South Okanagan Native Seed Mix Development by the <a href="#">Osoyoos Desert Society</a></li> <li>• Preventing the invasion and spread of invasive alien plants via key pathways by the <a href="#">Invasive Plant Council of British Columbia</a></li> <li>• Preparing the BC shellfish culture industry for monitoring marine invasive species by the <a href="#">BC Shellfish Growers Association</a> (BCSGA) (\$43,900 in 2005/2006)</li> <li>• British Columbia: Spartina management project in coastal southwestern British Columbia by the <a href="#">Vancouver Aquarium Marine Science Center</a> and Organizations in Washington State (\$45,000 in 2005/2006)</li> <li>• British Columbia: Weeds Cross Borders Project - cooperation with neighbours to keep new invaders out by the Boundary Weed Management Committee (\$28,130 in 2005/2006)</li> </ul> <p><b>First Nations</b></p> <ul style="list-style-type: none"> <li>• Columbia River walleye outreach and containment/ control feasibility assessment, British Columbia by the Ktunaxa Nation Council as an agent for Canadian Columbia River Inter-Tribal Fisheries Commission (\$19,828 in 2005/2006)</li> <li>• Lower Nicola Indian Band - invasive plant management strategy, British Columbia by the Lower Nicola Indian Band (LNIB) (\$25,000 in 2005/2006)</li> <li>• Building awareness about aquatic invaders, especially tunicates in Cape Breton, Nova Scotia by the <a href="#">Eskasoni Fish &amp; Wildlife Commission Inc.</a> (\$45,000 in 2005/2006)</li> </ul> <p><b>Manitoba</b></p> <ul style="list-style-type: none"> <li>• Public education and awareness campaign of aquatic invasive species in Manitoba by the <a href="#">Manitoba Water Stewardship</a> (\$14,878 in 2005/2006)</li> <li>• Invasive plant pocket guide - supporting early detection and prevention activities by the <a href="#">Manitoba Purple Loosestrife Project</a> (\$11,300 in 2005/2006)</li> <li>• Establishment of the prairie region invasive noxious weed survey and mapping system by <a href="#">Brandon University Rural Development Institute</a> (\$90,000 in 2005/2006)</li> <li>• Invasive Species Council of Manitoba by the Invasive Species Council of Manitoba: web portal <a href="#">Invasive Plants Aquatic and Wetland Plants of Manitoba</a></li> <li>• On the ground: leafy spurge surveillance and management and towards the establishment of an invasive plant council for the province of Manitoba by the <a href="#">Brandon University Rural Development Institute</a> (\$45,000 in 2005/2006)<sup>xiv</sup> Prevention of the introduction of invasive pests of woody plants into Manitoba by the <a href="#">Manitoba Conservation Forestry Branch Forest Health and Renewal</a></li> <li>• Manitoba early detection and prevention strategy for invasive aquatic and wetland plants by the <a href="#">Manitoba Purple Loosestrife Project</a> (\$5,200 in 2005/2006)</li> </ul>
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	<p><b>New Brunswick</b></p> <ul style="list-style-type: none"> <li>• Development of outreach, extension and hazard rating tools for the balsam woolly adelgid - <i>Adelges piceae</i> (Ratz.) by <a href="#">Fundy Model Forest</a> (\$32,000 in 2005/2006)</li> <li>• Plan stratégique d'initiatives concertées sur les espèces aquatiques envahissantes du Déroit de Northumberland by Groupe du bassin versant de la région de Cap-Pelé Inc. et <a href="#">l'Union des pêcheurs des Maritimes Inc.</a> (\$45,000 in 2005/2006)</li> </ul> <p><b>Newfoundland and Labrador</b></p> <ul style="list-style-type: none"> <li>• Strengthening our nation - addressing pathways and communication initiatives for aquatic invasive species in Newfoundland and Labrador by the <a href="#">Newfoundland Aquaculture Industry Association</a> (NAIA) (\$45,000 in 2005/2006)</li> <li>• Newfoundland and Labrador's invasive plants - creating awareness, implementing change by the <a href="#">Memorial University of Newfoundland Botanical Garden Inc</a> (\$44,997 in 2005/2006)</li> <li>• Exotic species education coordination and policy development project by the Newfoundland and Labrador <a href="#">Department of Environment and Conservation</a> (\$40,000 in 2005/2006)</li> <li>• Invasive Alien Species: Profiles and Procedures by the <a href="#">Memorial University of Newfoundland Botanical Garden Inc</a></li> <li>• Fisheries and Oceans Canada conducted an experiment to control and reduce violet tunicate<sup>ix</sup></li> </ul> <p><b>Northwest Territories</b></p> <ul style="list-style-type: none"> <li>• Risk Analysis and Management Options for Invasive Alien Species in the Northwest Territories by the Government of the Northwest Territories' <a href="#">Wildlife Division</a> (\$80,000 in 2005/2006)</li> </ul> <p><b>Nova Scotia</b></p> <ul style="list-style-type: none"> <li>• Prevention of invasive alien fish in the Southwest Nova Biosphere Reserve by the <a href="#">Mersey Tobeatic Research Institute</a> (MTRI) and <a href="#">Clean Annapolis River Project</a> (CARP) (\$45,000 in 2005/2006)</li> <li>• <a href="#">Project U.F.O.</a> (Unidentified Foreign Organisms): Establishing a monitoring and public education program about Invasive Alien Aquatic Species by the <a href="#">Cape Breton University</a> and <a href="#">Atlantic Coastal Action Program Cape Breton</a></li> <li>• Community action on invasive alien plants in Nova Scotia's Annapolis valley by the <a href="#">Clean Annapolis River Project</a> (\$45,000 in 2005/2006)</li> <li>• Weedy Whereabouts – Tracking Invasive Alien Plants in Nova Scotia by the <a href="#">Clean Annapolis River Project</a></li> </ul> <p><b>Ontario</b></p> <ul style="list-style-type: none"> <li>• Invasive species public outreach program – a series of educational and interactive modules focusing on alien forest species and other invasive species by the <a href="#">science enterprise Algoma</a> (seA)</li> <li>• Rouge River watershed aquatic alien species program by <a href="#">Ontario Streams</a> (\$8,000 in 2005/2006)</li> </ul>
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	<ul style="list-style-type: none"> <li>• Stopping the spread by spreading the word - partnerships to address invasive species pathways within the aquarium and water garden industries by the <a href="#">Ontario Federation of Anglers and Hunters</a> (\$81,000 in 2005/2006)</li> <li>• Control of the <i>phragmites australis</i> threat to Lake Huron coastal dune ecosystems by the <a href="#">Lake Huron Center for Coastal Conservation</a> (\$29,150 in 2005/2006)</li> <li>• Keeping our lakes great! Partnerships within the boating and angling community to prevent alien invasive species <a href="#">Ontario Federation of Anglers and Hunters</a> (\$134,967 in 2005/2006)</li> <li>• Motivating action by recreational property owners to prevent the spread of alien invasive species Federation of Ontario Cottagers' Association, Inc. (FOCA) (\$32,000 in 2005/2006)</li> <li>• Development of monitoring and certification programs for invasive alien species by the <a href="#">Landscape Ontario Horticultural Trades Association</a> (\$45,000 in 2005/2006)</li> <li>• Course-in-a-box - managing forests under the threat of invasive alien species by the <a href="#">Eastern Ontario Model Forest</a> (\$45,000 in 2005/2006)</li> <li>• Forest and Aquatic Invasives – Building Stakeholder Capacity for Early Detection by the <a href="#">Science Enterprise Algoma</a> via the City of Sault Ste Marie and the <a href="#">Sault Ste Marie Economic Development Corporation</a></li> <li>• Invasive Alien Species Monitoring and Awareness Program for Severn Sound by the <a href="#">Severn Sound Environmental Association</a></li> <li>• Making Waves!: Educational Curricula highlighting the impacts and preventing the spread of Invasive Species by the <a href="#">Ontario Federation of Anglers and Hunters</a> (OFAH)</li> <li>• Invasive alien species management and education project at Wye Marsh Provincial Wildlife Area by the <a href="#">Friends of Wye Marsh Inc.</a> (\$18,200 in 2005/2006)</li> <li>• Development of capacity for early detection and rapid response to invasions of aquatic plants <a href="#">Ontario Ministry of Natural Resources</a> (\$45,000 in 2005/2006)</li> </ul> <p><b>Prairies</b></p> <ul style="list-style-type: none"> <li>• An Integrated Prairie Plan to Detect, Manage and Prevent Invasive Vascular Plant Species on Nature Conservancy of Canada Properties by the <a href="#">The Nature Conservancy of Canada</a> - Manitoba, Saskatchewan and Alberta regions</li> </ul> <p><b>Prince Edward Island</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Assessment and Eradication of Garlic Mustard</a> from PEI by the Island Nature Trust (\$9,000 in 2005/2006)</li> <li>• Communication Program: Educating Resource Users to Invasive Aquatic Alien Species in PEI Estuarine Waters by the <a href="#">Prince Edward Island Aquaculture Alliance</a> (PEIAA) (\$45,000 in 2005/2006)</li> <li>• Communication Program: Educating Resource Users to Invasive Aquatic Alien Species in PEI Estuarine Waters</li> </ul>
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	<p><b>Québec</b></p> <ul style="list-style-type: none"> <li>• Sensibilisation des villégiateurs envers l'utilisation de poissons-appâts pour la pêche sportive by the Association régionale des gestionnaires de ZECs (zones d'exploitation contrôlées) de la Mauricie (ARGZM) (\$45,000 in 2005/2006)</li> <li>• Campagne d'éducation régionale sur les plantes exotiques envahissantes utilisées en horticulture <a href="#">Nature-Action Québec</a> (\$45,000 in 2005/2006)</li> <li>• Les horticulteurs en action! by <a href="#">Nature-Action Québec</a></li> <li>• Aboriginal perspective on alien invasive species action; Eastern Ontario and Québec by <a href="#">Plenty Canada</a></li> <li>• Réseau de détection précoce des espèces aquatiques exotiques envahissantes by the <a href="#">Ministère des Ressources naturelles et de la Faune</a> (\$45,000 in 2005/2006)</li> <li>• Gestion intégrée de la châtaigne d'eau by the <a href="#">Centre d'interprétation du milieu écologique du Haut-Richelieu</a> (\$52,135 in 2005/2006)</li> </ul> <p><b>Saskatchewan</b></p> <ul style="list-style-type: none"> <li>• Invasive alien plant detection, surveillance and control - capacity building in Saskatchewan by the <a href="#">Native Plant Society of Saskatchewan, Inc.</a> (\$45,000 in 2005/2006)</li> <li>• 8th Prairie Conservation and Endangered Species Conference and Workshop – 2007 <a href="#">Native Plant Society of Saskatchewan, Inc.</a> (\$8,454 in 2005/2006)</li> <li>• Establishment of the Frenchman River and Wood River Invasive Weed Management Area by the Wood River District #3 Agriculture Development and Diversification Board (\$103,000 in 2005/2006)</li> <li>• The Prairie Persists - high school workshop on invasive alien plants and restoration of natural grassland by the <a href="#">Prairie Learning Centre</a> (\$4,500 in 2005/2006)</li> <li>• Saskatchewan Invasive Alien Plant Program by the <a href="#">Native Plant Society of Saskatchewan, Inc</a></li> </ul> <p><b>Yukon Territories</b></p> <ul style="list-style-type: none"> <li>• Inventory of invasive plant species along Yukon highways by <a href="#">Environment Yukon</a> (\$19,500 in 2005/2006)</li> <li>• Building maps of Yukon Invasive plant distributions and increasing public awareness</li> </ul>
Human Health	<p>Phytosanitary Measures</p> <ul style="list-style-type: none"> <li>• <a href="#">Plant Protection Policy Directives</a> by the <a href="#">Canadian Food Inspection Agency</a> (1994-2008) <ul style="list-style-type: none"> <li>○ <a href="#">D-03-04</a> (6 April 2006) The importation of plants and plant products is regulated by the Plant Health Division of the Canadian Food Inspection Agency (CFIA) to prevent the introduction and spread of quarantine pests and regulated non-quarantine pests; this includes invasive species. Appendix 1 describes the approval process for the importation of plants and</li> </ul> </li> </ul>



	<p>plant products from new sources.</p> <ul style="list-style-type: none"> <li>• <a href="#">Regional standards</a> by the <a href="#">North American Plant Protection Organization</a></li> </ul>
Economic	<p><a href="#">Memorandum D19-7-1</a> (12 June 2001) of WAPPRIITA</p> <ul style="list-style-type: none"> <li>• Species illegal to export: Black bear gall bladder, paws and claws</li> <li>• The Canada Customs and Revenue Agency (CCRA) assists Environment Canada with the administration of the CITES Convention by enforcing its controls at customs points of importation and exportation. This Memorandum outlines the legislative authority for these controls and provides procedures for the detention and disposal of CITES controlled goods.</li> </ul> <p><b>Shipping: Ballast Water</b> (see case study below)</p> <ul style="list-style-type: none"> <li>• <a href="#">Code of Best Practices for Ballast Water Management and the Canadian Ballast Water Management Guidelines</a> (2000) by the Shipping Federation of Canada</li> <li>• <a href="#">Canadian Ballast Water Management Guidelines</a> (2000)</li> <li>• <a href="#">Canada Shipping Act 2001, Ballast Water Control and Management Regulations</a> (2006)</li> <li>• From 2007 to 2013, \$4.5 million will be used to enforce the <i>Canada Shipping Act, 2001</i> Ballast Water Control and Management Regulations, by increasing the number of marine inspectors enforcing ballast water regulations, supporting the development of technologies to better address ballast water issues, and equipping our marine inspectors with the proper tools to enforce the ballast water regulations. xiii</li> <li>• Strategic Plan developed by the St. Lawrence Management Corporation aims to ensure “a safe and reliable waterway system in a cost effective, efficient and environmentally responsible manner for the benefit of all stakeholders today and into the future.”<sup>x</sup> Specifically, environmental responsibility is promoted thru environmental monitoring, increased responsibility in human communities near marine environments, and adoption of environmentally friendly technologies.</li> <li>• <a href="#">Globe-Net</a>: a weekly guide to the business of the environment on-line, providing up to date information on business opportunities and market intelligence tailored to the needs of the environmental sector.</li> </ul>

**Table 2 Actions on IAS in cooperation with other countries**

Agreement/ Organization	Countries/ members	Action
Boundary Waters Treaty (1909)	US	Created the International Joint Commission, which oversees water quality to this day. <sup>xi</sup>
<a href="#">International Joint Commission</a>	US	<p><a href="#">Great Lakes Water Quality Agreement</a></p> <ul style="list-style-type: none"> <li>• Binational Toxics Strategy of 1997 seeks to virtually eliminate the release of certain toxic substances into the Great Lakes<sup>xii</sup></li> </ul>

		<ul style="list-style-type: none"> <li>• Establishes Remedial Action Plans for Canada's <a href="#">Areas of Concern in the Great Lakes</a></li> <li>• Great Lakes Sustainability Fund 2000: aims to advance Remedial Action Plans</li> </ul>
<a href="#">The Great Lakes Water Commission</a>	Eight Great Lakes states (Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin) and the provinces of Ontario and Québec (associate members)	<p><b>The Great Lakes Panel on Aquatic Nuisance Species</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Great Lakes Regional Collaboration Strategy</a> (2005) Areas of priorities in include: “preventing the introductions of IAS by ships through ballast water and other means; stopping invasions of species through canals and waterways; restricting trade in live organisms; passage of comprehensive federal AIS legislation; establishing a program for rapid response and management; and education and outreach on AIS introduction and prevention.”</li> </ul>
<a href="#">North American Agreement on Environmental Cooperation</a> (NAAEC)	United States and Mexico	<p><b>Commission for Environmental Cooperation</b></p> <ul style="list-style-type: none"> <li>• Citizens Submission Process</li> <li>• <a href="#">CEC Strategic Plan on Trade and Environment</a></li> <li>• Projects will reduce the environmental and economic harm caused by invasive alien species (IAS) through greater coordination in the prevention, detection, analysis, and mitigation: <ul style="list-style-type: none"> <li>○ Share methodologies and develop guidelines for assessing and communicating risks associated with aquatic IAS pathways;</li> <li>○ Develop strategies for public engagement in identification and mitigation measures;</li> <li>○ Encourage greater collaboration between and among civil society groups and governments in North America to prevent and control IAS; and</li> <li>○ Develop methods to better analyze the environmental and economic costs of IAS including determining how these costs are borne by specific geographic regions, ecosystems, industry sectors and governments.</li> </ul> </li> <li>• Produced the report <a href="#">Closing the Pathways of Aquatic Invasive Species across North America: Overview and Resource Guide</a>.</li> <li>• Trinational Alien Invasive Species Project</li> </ul>

		<p>mandated the CEC to formulate the Trinational Aquatic Invasive Species Risk Assessment Guidelines and test them. Thus the CEC produced a report entitled the <a href="#">Trinational Aquatic Invasive Species Risk Assessment Guidelines for Aquatic Invasive Speices: Test Cases for the Snakeheads (<i>Channidae</i>) and Armored Catfish (<i>Loricariidae</i>) in North American Inland Waters</a>. These Guidelines will serve as a tool to North American resource managers who are evaluating whether or not to introduce a non-native species into a new ecosystem. Guidelines provide a framework where scientific, technical, and other relevant information can be organized into a format that is understandable and useful to managers and decision makers.</p>
<a href="#">Great Lakes St. Lawrence Seaway System</a>	<p>The Saint Lawrence Seaway Development Corp. in the U.S., a federal agency within the U.S. Department of Transportation, and The St. Lawrence Seaway Management Corporation in Canada, a not-for-profit corporation</p>	<p><a href="#">Ballast Water Management on the Great Lakes Seaway System</a></p> <ul style="list-style-type: none"> <li>Regulatory bodies test the salinity in ballast tanks in order to confirm that the salinity meets the minimum required salinity of 30 ppt (parts per thousand). In addition, non-pumpable or NOBOB tanks are tested to determine salinity or condition of the tank ensuring proper saltwater flushing has been completed. Ships will be issued a letter of retention from the appropriate agency(s) if a ballast tank does not comply with the minimum salinity of 30 ppt and/or the condition of the tank indicates improper saltwater flushing. Ships can alternately choose to return to sea and conduct an appropriate exchange, treat or pump ashore as approved by Transport Canada and the U.S. Coast Guard.</li> </ul>
<a href="#">Council of Great Lake Governors</a>	<p>Governors of the eight Great Lakes States and the Premiers of Ontario and Québec</p>	<p><a href="#">The Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement</a> (2005)</p> <ul style="list-style-type: none"> <li>Acknowledges that IAS is an important issue for the Council in protecting fresh water but only mentions the permissibility of removing water if it is to prevent IAS</li> </ul>
<a href="#">Convention on Great Lakes Fisheries Between the United</a>	<p>Canada</p>	<p style="text-align: center;"><b>ARTICLE I</b></p> <p>This Convention shall apply to Lake Ontario</p>

<a href="#">States and Canada (1955)</a>		(including the St. Lawrence River from Lake Ontario to the forty-fifth parallel of latitude), Lake Erie, Lake Huron (including Lake St. Clair), Lake Michigan, Lake Superior and their connecting waters, hereinafter referred to as "the Convention Area." This Convention shall also apply to the tributaries of each of the above waters to the extent necessary to investigate any stock of fish of common concern, the taking or habitat of which is confined predominantly to the Convention Area, and to eradicate or minimise the populations of the sea lamprey ( <i>Petromyzon marinus</i> ) in the Convention Area.
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## Case Study

### Aquatic Invasive Species and Ballast Water Practices

The link between shipping and invasive aquatic species in the Great Lakes and Saint Lawrence Seaway system is well established. Specifically, ship's releasing ballast water are the greatest source of aquatic invasive species. [Environment Canada's Saint Lawrence Center](#) states that exotic species represent 13% of the wetland flora of the St. Lawrence. The [Great Lakes St. Lawrence Seaway Study](#) states there are more than 160 exotic species existing in the Great Lakes as a result of transportation thru the St Lawrence Seaway. According to the [Great Lakes Regional Collaboration Strategy](#), it is important to note that shipping facilitates this region as to be the "industrial backbone" of America. In fact, since 1959, it is estimated that the St. Lawrence Seaway has handled more than 2.3 billion metric tons of cargo with a value of about \$350 billion.<sup>xiii</sup>

With the development and implementation of the [Code of Best Practices for Ballast Water Management and the Canadian Ballast Water Management Guidelines](#) (2000) by the Shipping Federation of Canada, the [Canadian Ballast Water Management Guidelines](#) (2000) by the Transport Canada and Fisheries and Oceans Canada, under the Canadian Marine Advisory Council, and the [Canada Shipping Act 2001, Ballast Water Control and Management Regulations](#) (2006) by the Federal Government, Canadian prevention practices are among the best in the world. The Great Lakes St. Lawrence Seaway System host a video titled [Ballast Water Inspection Demonstration Video](#), which explains the process the Canadian government has undertaken, including funding relevant research, creating corresponding laws and enforcing their implementation, to change shipping practices and reduce the threat of invasive species entering the Saint Lawrence Seaway thru a ship's ballast water.

Furthermore, a study conducted by the National Academy of Sciences concluded that closure of the seaway to protect it against further invasive species is not necessary and couldn't guarantee prevention; in fact, the 13 member committee of US and Canadian Scientist pointed out "that the idea of closing the Seaway is legally unfeasible, politically unrealistic, and economically disastrous for the U.S. and Canada."<sup>xiv</sup> The group produced a report, titled [The](#)

[NAS Study, Great Lakes Shipping, Trade, and Aquatic Invasive Species](#), with nine recommended actions “to enhance global trade in the region and end ship-borne introductions of AIS into the Great Lakes.”<sup>xv</sup>

<sup>i</sup> Country descriptions are compiled from the Central Intelligence Agency’s World FactBook, available at <https://www.cia.gov/library/publications/the-world-factbook/>, and Wikipedia: The Free Encyclopaedia, available at [http://en.wikipedia.org/wiki/Main\\_Page](http://en.wikipedia.org/wiki/Main_Page).

<sup>ii</sup> CIA World Factbook. (4 September 2008) *Canada*. Retrieved 23 September 2008, from <https://www.cia.gov/library/publications/the-world-factbook/geos/ca.html>

<sup>iii</sup> Government of Canada. (September 2004) *An Invasive Alien Species Strategy for Canada*. Retrieved 23 September 2008, from <http://www.ec.gc.ca/eee-ias/default.asp?lang=En&n=98DB3ACF-1>

<sup>iv</sup> Environment Canada. (18 January 2008) *Frequently Asked Question—Invasive Species*. Retrieved 23 September 2008, from <http://www.ec.gc.ca/eee-ias/default.asp?lang=En&n=02101A38-1#ws02A8C8D1>

<sup>v</sup> *An Invasive Alien Species Strategy for Canada*. (2004)

<sup>vi</sup> Environment Canada. (9 May 2008) *Project Success Stories*. Retrieved 23 September 2008, from <http://www.ec.gc.ca/eee-ias/default.asp?lang=En&n=C04B4437-1> and Environment Canada. (14 January 2008) *More Information on the Invasive Alien Species Partnership Program*. Retrieved 23 September 2008, from <http://www.ec.gc.ca/eee-ias/default.asp?lang=En&n=36CBC4E3-1>

<b>Funded Projects by Jurisdiction and Type of Habitat</b> (for the Invasive Species Alien Partnership Program)				
<b>Jurisdiction</b>	<b>Aquatic IAS Projects</b>	<b>Terrestrial IAS Projects</b>	<b>Terrestrial and Aquatic IAS Projects</b>	<b>Total</b>
British Columbia	4	12	2	18
Alberta	0	5	0	5
Saskatchewan	0	5	0	5
Manitoba	1	3	2	6
Ontario	6	3	5	14
Québec	3	1	1	5
New Brunswick	1	1	0	2
Nova Scotia	3	2	0	5
Prince Edward Island	2	1	0	3
Newfoundland and Labrador	1	2	1	4
Northwest Territories	0	1	0	1
Yukon Territory	0	2	0	2
Canada-wide/Regional	3	3	0	6
<b>Totals</b>	24	41	11	76

<sup>vii</sup> Fisheries and Oceans Canada. (2 November 2007) *Minister endorse integrated watershed managing and eco-labelling*. Retrieved 28 September 2008, from <http://www.dfo-mpo.gc.ca/media/npress-communique/2007/ccfam-eng.htm>.

<sup>viii</sup> Ibid

<sup>ix</sup> Fisheries and Oceans Canada. (April 2008) *Government of Canada invests in the Prevention, Eradication and Control of Aquatic Invasive Species*. Retrieved 28 September 2008, from <http://www.dfo-mpo.gc.ca/media/back-fiche/2008/20080409-eng.htm>.

<sup>x</sup> Saint Lawrence Seaway Management Corporation (2007) “Strategic Plan 2007/08-2009/10” Retrieved 19 November 2008, from [http://www.greatlakes-seaway.com/en/pdf/slsmc\\_stratplan\\_en.pdf](http://www.greatlakes-seaway.com/en/pdf/slsmc_stratplan_en.pdf)

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<sup>xi</sup> Foreign Affairs and International Trade Canada. (18 August 2008) *Canada-United States: Our Shared Environment*. Retrieved 28 September 2008, from [http://geo.international.gc.ca/can-am/main/shared\\_env/default-en.asp](http://geo.international.gc.ca/can-am/main/shared_env/default-en.asp).

<sup>xii</sup> Ibid.

<sup>xiii</sup> Transport Canada, *et al.* (2007) *Great Lakes St. Lawrence Seaway Study*. Retrieved 19 November 2008, from <http://www.gls-study.com/Supporting%20documents/GLSLS%20finalreport%20Fall%202007.pdf>

<sup>xiv</sup> US department of transportation: Office of Public Affairs. (29 July 2008) *Closure of the St. Lawrence Seaway Not Needed to Fight Invasive Species, New Study Says*. Retrieved 28 September 2008, from <http://www.dot.gov/affairs/slsdc0208.htm>.

<sup>xv</sup> Ibid.