

Manitoba Purple Loosestrife Project: Partnerships and Initiatives in the Control of an Invasive Alien Species

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As the trend towards globalized economies continues, the introduction rate of alien species into Canada, which includes alien plant species, is not likely to decline. "In the last 200 years as intercontinental travel has increased we have effectively broken down barriers to plant dispersal that have driven evolution since the breakup of Pangaea, the original supercontinent." (Reichard and Hamilton 1997). The landscaping trade has been, and continues to be, instrumental in the proliferation of alien plant species, including purple loosestrife (*Lythrum salicaria* L.). For example, of the 235 woody plants that have been introduced to North America and naturalized, 85% have been introduced through the landscape trade and the remainder through agriculture and forestry activities (Reichard 1994). The majority of these alien plant introductions have been environmentally benign. However, several, including purple loosestrife, have resulted in the loss of our native flora and fauna, changing the integrity of our ecosystems. The ultimate result of alien invaders of natural habitats is the loss of native biodiversity (Catling 1997).

Introductions of alien species can have significant environmental and economic consequences. Wilcove et al. (1996) reported that 46% of threatened and endangered species in the United States are at risk because of alien species. Similarly Stein and Flack (1996) estimated that alien species have contributed to the decline of 42% of threatened or endangered species in the United States and have caused an estimated \$97 billion in direct economic loss. Purple loosestrife is an economic and environmental concern to wildlife managers, conservation biologists, weed supervisors, weed inspectors, horticulturalists, anglers, hunters, farmers, naturalists, and so on. It has impacted riparian and wetland habitats, agricultural areas, roadside ditches and rights-of-way, farm dugouts, railway lines, and pipelines.

Partnerships and cooperation among agencies to achieve shared objectives is not a novel approach towards the management of natural areas. With the current trend being to manage natural areas from a larger ecosystem vision, the formation of partnerships between agencies and across political boundaries is becoming more common. The Manitoba Purple Loose-

strife Project (MPLP) is one example of how partnerships have been used to address an alien species issue. In this paper, I discuss these collaborative partnerships and highlight some of the initiatives taken in the management of purple loosestrife in Manitoba.

Formation of the Manitoba Purple Loosestrife Project

Purple loosestrife is a Eurasian perennial plant that was accidentally introduced into North America in the early 1800s (Thompson et al. 1987). It was first reported in Manitoba in 1896 (Scoggan 1957, p. 619) and has since been described as an invasive alien, a noxious weed, a wetland invader, a beautiful killer, as well as a popular garden perennial. However, there is little doubt that purple loosestrife is an invasive species that has disrupted the ecology of natural habitats across North America by displacing native vegetation (Figure 1),



Figure 1. Seeds from garden plantings of purple loosestrife in Winnipeg, MB, flowed downstream along the Red River to the Netley-Libau Marsh (shown here in 1999), located on the Lake Winnipeg shoreline. The extensive loosestrife infestation changed the native plant community. No biological control agents have been released on this population of loosestrife.

and in many cases, forming dense monocultures. Wildlife that depended upon the displaced native vegetation for food, shelter, and breeding areas is forced to leave habitats invaded by purple loosestrife. Mal et al. (1992) concluded that where purple loosestrife populations are on the increase, wildlife species are in decline. In the absence of its natural predators, purple loosestrife has spread into every major river system and watershed in southern Manitoba and has been found as far north as The Pas.

Purple loosestrife has presented a unique challenge to those individuals and groups concerned with its invasion into Manitoba. Initial efforts to control this plant began not in the field, but in the backyard, where educational campaigns and public outreach programs were focused. These initiatives would not have been successful without the forging of partnerships. Groups with diverse agendas were drawn together by a common objective—to address the significant habitat losses resulting from the invasion of purple loosestrife in Manitoba.

In the early 1990s, no one agency was capable of addressing the invasion of purple loosestrife into Manitoba and, furthermore, no one agency was in any position to fund an invasive species control program. Collaboration was necessary. As a result, a number of agencies formed a multipartnered working group comprising local community groups, provincial and federal agencies, and nonprofit groups to address the loss of habitat attributed to the invasion of purple loosestrife in Manitoba. The group was initiated in 1992 after several individuals from Manitoba attended meetings held in Ottawa addressing concerns over purple loosestrife in Canada (the March 1992 National Workshop on Purple Loosestrife Management). The multipartnered Manitoba Purple Loosestrife Project became a reality as a nonprofit coalition between Agriculture and Agri-Food Canada; the City of Winnipeg; the Canadian Wildlife Service, Environment Canada; Ducks Unlimited Canada; Manitoba Conservation; the Manitoba Naturalists Society; the Manitoba Weed Supervisors Association; and the Delta Waterfowl Foundation.¹ Partnerships provided opportunities to pool agency resources; this has been critically important because the project has never had long-term sustained funding. The list of stakeholder groups, or partners, within the MPLP reflects the

¹ Agriculture and Agri-Food Canada was formerly known as Agriculture Canada and Manitoba Conservation as the Manitoba Department of Natural Resources and Manitoba Environment.

many environmental disciplines with interest in the management of an alien species.

The project partners formulated a mission statement with the following objectives to direct project activities:

- increase community awareness through education;
- lead habitat restoration and purple loosestrife removal campaigns;
- develop a purple loosestrife distributional database through mapping and monitoring the spread of purple loosestrife in Manitoba; and
- deliver a sustainable classical biological control program.

These objectives have guided the MPLP since 1992.

Since the formation of the MPLP, partnerships have been forged and initiatives taken. These are discussed in the following sections and a summary can be found in Table 1. Some initiatives are discussed following the section on partnerships.

MPLP Partnerships

Nongovernmental Organizations

The diverse nature of the project collaborators has provided the MPLP with opportunities to deliver an invasive species program across numerous levels. Partnerships with grassroots community groups or nongovernmental organizations have been most productive. Groups such as the Manitoba Weed Supervisors Association (MWSA) and the Manitoba Naturalists Society (MNS) have been instrumental in delivering the program into local communities and to local landowners. The MWSA has served as the eyes and ears of the initiative—35 municipalities in Manitoba support weed supervisors who annually identify purple loosestrife populations in their district and report the data to the MPLP. Partnerships with the various weed districts of the MWSA have been important in communicating project objectives and in delivering educational materials into the individual communities within each weed district. The MWSA has also been active in rearing and releasing biological control agents as well as monitoring their performance post-release.

Ducks Unlimited Canada has also been instrumental in the delivery of project objectives. It has provided office space, support, and significant in-kind and financial contributions to the project. The organization has led efforts to produce varied educational material and

Table 1. Chronology of major Manitoba Purple Loosestrife Project (MPLP) initiatives and partnerships.

Year	Initiatives	Partners
1992	Formation of MPLP	Agriculture and Agri-Food Canada; City of Winnipeg; Canadian Wildlife Service; Delta Waterfowl Foundation; Ducks Unlimited Canada; Manitoba Conservation (Wildlife, Environment); Manitoba Naturalists Society; Manitoba Weed Supervisors Association; Manitoba Agriculture
	Funding for importation of biocontrol agents into Canada	Province of Ontario; Ducks Unlimited Canada
	Release of <i>Hylobius transversovittatus</i>	Agriculture and Agri-Food Canada (Lethbridge)
1994	Support from garden/seed center received	T&T Seeds Catalogue
	<i>Purple Loosestrife in Western Canada</i> brochure produced	Canadian Nursery Trades Association—8 partners
	Winnipeg Purple Loosestrife Swap Program	City of Winnipeg; Urban Green Team Program; Ducks Unlimited Canada
1995	Set-up of the Saskatchewan Purple Loosestrife Project assisted	Saskatchewan Purple Loosestrife Group; Ducks Unlimited Canada
	MPLP becomes Canadian contact for biological control of purple loosestrife	Expert Committee on Weeds
	Biocontrol mass rearing in Manitoba	City of Winnipeg; Manitoba Weed Supervisors Association
	Manitoba survey finds no retail sales of <i>Lythrum</i>	MPLP
	Public service announcements and educational video	Red River College
1996	Purple loosestrife Web site	Ducks Unlimited Canada
	Provincial purple loosestrife swap program	Manitoba Weed Supervisors Association
	Manitoba's <i>Noxious Weeds Act</i> revised to include all <i>Lythrum</i> spp.	Manitoba Agriculture
	European collection of <i>Nanophyes</i> spp.	Cornell University; Minnesota Department of Natural Resources
	Research into integrated vegetation management	University of Manitoba; Institute for Waterfowl and Wetlands Research
1997	<i>What You Should Know...</i> brochure	US agencies; Ontario Federation of Anglers and Hunters
1999	Aquatic nuisance species surveys in Manitoba initiated	Fish Futures Inc.; Manitoba Conservation
2000	Summary chapter for a publication on the Canadian biological control effort, 1992–99	University of Guelph; Agriculture and Agri-Food Canada; Natural Resources Canada

assisted with the construction, and is the host of, the MPLP purple loosestrife information center (www.ducks.ca/purple/).

Provincial and Federal Governments

The roles of the provincially based agencies have allowed for overall program coordination and delivery across Manitoba. Since purple loosestrife can be found through most of southern Manitoba, project partners felt it was important that an individual from Manitoba Conservation function as the chair of the MPLP. Manitoba Conservation has also contributed financial support.

The Canadian Wildlife Service (CWS) provided the initial seed money that allowed for the formation of the MPLP in 1992. Individuals from the CWS (see paper by Lee, p. 253 in this publication) developed the initial partnerships with US cooperators that allowed for the introduction of biological control agents into Canada. The CWS enabled the delivery of an invasive species program on a larger regional basis, which has fostered greater awareness of invasive plants across Canada. For example, funds were made available by the CWS to reprint and distribute the educational brochure *Purple Loosestrife in Western Canada*.

North American Neighbors

Efforts to manage purple loosestrife in Manitoba have benefitted from partnerships forged internationally. Managing invasive species cannot be achieved by maintaining only a local or even a provincial perspective. Invasive species cross boundaries. Manitoba must be kept aware of what programs are being delivered by its neighbors: Saskatchewan, Ontario, North Dakota, and Minnesota. The MPLP has partnered with these Manitoba neighbors in various initiatives. Biological control initiatives involving the Minnesota Department of Natural Resources are discussed in another section in this paper.

Local Media

The media has unknowingly been an invisible partner in the MPLP. Media stories reach a large number of people in a short time and are usually cost effective. Tangley (1997) pointed out that to be successful in science and conservation, communication is critical. All efforts to control invasive alien species should involve a partnership with the media. Initially it was not difficult to enlist the media as invasive purple loosestrife was considered newsworthy. The challenge has been maintaining and cultivating media interest. This has

been achieved by providing new opportunities in which the media can participate.

One such opportunity involves dig-out campaigns. Most efforts to control purple loosestrife through these campaigns provide little, if any, sustained control. A single mature purple loosestrife plant can generate as many as 2.7 million seeds annually (Thompson et al. 1987); hence, the resulting seed bank is immense. However, a dig-out or removal campaign can attract grassroots involvement, foster awareness, and capture media attention. In Manitoba, there are numerous youth groups that want to be partners in environmental projects and can provide a day or half-day of volunteer labor. Inviting the media to cover a community-based purple loosestrife removal campaign presents opportunities to cultivate awareness of the loosestrife issue. In almost all cases, the MPLP has been successful in attracting the local media to cover local purple loosestrife dig-outs, which have received front page coverage on numerous occasions.

The Community

Community education is the foundation upon which any environmental or conservation program striving for success should be built. In addressing concerns and management of invasive species, one must strive to foster broad public and private awareness. The model program to control any invasive species cannot be delivered effectively without community buy-in, and even more importantly, a sense of community ownership. The importance of communicating the environmental consequences of an invasive species, as well as what can be done and how the public can become a partner, cannot be over stressed.

The task of the MPLP was to present community groups with accurate scientific data showing that all varieties of *Lythrum* were contributing to habitat loss. This demanding task was made even more so in the early 1990s when a local nursery worker announced in the popular media that garden cultivars were indeed safe for use. It was also difficult, and in some cases has been impossible, to convince gardeners who had cultivated purple loosestrife for over 20 years that they should destroy it. It became evident that to manage purple loosestrife in Manitoba, bridges needed to be built with horticulturists and gardeners. As a result, they were invited to become a partner in the production of the 1994 brochure *Purple Loosestrife in Western Canada*, which targeted gardeners. The intention of the brochure was to increase awareness and provide gardeners with

environmentally safe alternatives to the *Lythrum* cultivars. This educational product, coupled with the purple loosestrife exchange program (discussed in a subsequent section), has resulted in the elimination of *Lythrum* from numerous gardens across Manitoba.

A number of educational initiatives have been delivered by the MPLP to increase awareness of the negative environmental impacts associated with the spread of purple loosestrife in Manitoba. With each educational product have come new partnerships. Products include brochures, posters, public service announcements, educational videos, interpretative signage, and a Web site dedicated to purple loosestrife. Project partners such as the MWSA, MNS, Manitoba Agriculture, Ducks Unlimited Canada, and the City of Winnipeg have provided opportunities to foster community awareness through annual meetings, magazines, and newsletters.

Public Outreach: The Swap Program

In a proactive effort to educate and encourage gardeners to destroy their purple loosestrife, a purple loosestrife exchange (or swap) program was developed in Manitoba in 1994. At the time, purple loosestrife was a popular plant in gardens across Manitoba; homes on every city block within Winnipeg displayed it. The MPLP's strategy was to enlist the support of gardeners through a program that would provide an environmentally safe perennial replacement (*Liatris* spp.) for loosestrife, at no cost to the gardener.

The MPLP created the Project Purple Green Team to provide a free removal service for senior citizens and residents otherwise unable to dig out their purple loosestrife. It was staffed through the province's Urban Green Team Program. The City of Winnipeg made available greenhouse space as an in-kind project contribution from which to run the swap program.

The success of the exchange program depended upon a high level of media coverage. Each first of June news releases were sent to Manitoba newspapers and television stations. In 1997, after an article on the swap program was published in the *Winnipeg Free Press*, about 50 people per day for the next few days dropped off their purple loosestrife and another 75 phone calls were received within 24 hours of the article's publication.

In 1994, a surprise partner came forth. T&T Seeds, a large horticultural operation based in Winnipeg, placed a full-page color advertisement in their catalog describing the dangers of purple loosestrife and provided gar-

deners with suggested environmentally safe replacement plants (see page 41, 1994 T&T Seeds catalog). T&T Seeds also provided the MPLP with environmentally safe perennials for the swap program at below cost. It is through the proactive initiatives of T&T Seeds and the City of Winnipeg that purple loosestrife in residential gardens is being destroyed.

Cultivar Confusion: When Is an Invasive Species a Garden Flower?

Considerable confusion existed within the gardening community and the commercial horticultural industry surrounding the sterility of *Lythrum* cultivars. The greatest challenge to the control of purple loosestrife was, and still is in many parts of Canada, its horticultural sale. Numerous cultivars of purple loosestrife have been developed for use in residential landscaping and gardens (Harp and Collicutt 1983; Anderson and Ascher 1993; Ottenbreit and Staniforth 1994). Agriculture and Agri-Food Canada introduced Morden Pink as a garden cultivar in 1937, followed by Morden Gleam in 1953 and Morden Rose in 1954 (Harp and Collicutt 1983). These garden cultivars were advertised by Agriculture and Agri-Food Canada as ideal perennials for the home garden, excellent choices for perennial or mixed borders, and winter hardy. In the late 1980s and early 1990s, garden centers in Manitoba estimated that in some years their annual revenues from the sale of *Lythrum* cultivars alone approached \$10 000. These cultivars were sold as sterile plants and therefore could not produce seed or contribute to the naturalization of purple loosestrife. At the time, it was believed that these cultivars could not contribute to the spread of purple loosestrife.

Purple loosestrife has been listed in Manitoba's *Noxious Weeds Act* since the early 1980s. However, the act did not give any associated scientific name. The questions arose: Are the garden varieties of purple loosestrife, *L. virgatum*, considered noxious weeds? Is the designation restricted to the naturalized *L. salicaria*? Is the entire *Lythrum* family considered a noxious weed? Subsequent research showed that all *Lythrum* garden cultivars produce viable pollen and seed and can spread (Anderson and Ascher 1993; Lindgren and Clay 1993; Ottenbreit and Staniforth 1994). Armed with these scientific data, the MPLP approached Manitoba Agriculture to suggest the listing for purple loosestrife be revised to eliminate any cultivar confusion. The Government of Manitoba revised the *Noxious Weeds Act* in March 1996

to include purple loosestrife (*Lythrum* spp.) and all its cultivars. In Manitoba, individuals can be fined for selling or planting loosestrife. Legally defining all varieties of purple loosestrife as noxious weeds was the biggest step towards implementing an effective purple loosestrife control program, second only to community education. No invasive species can effectively be controlled or managed unless it is recognized as deleterious by the public and legally identified as such.

The City of Winnipeg² and the rural municipalities of Morris and Montcalm undertook their own proactive measures to control purple loosestrife. In 1993, the City of Winnipeg adopted a policy to remove all purple loosestrife and domestic cultivars planted in parks maintained by the city. In 1996, the Morris–Montcalm Weed District designated purple loosestrife (*Lythrum* spp.) as a local noxious weed. These actions have further allowed weed supervisors and weed inspectors to approach residents with purple loosestrife in their gardens and request removal.

Biological Weed Control Program

Biological control programs against weeds have historically been targeted at agricultural weeds. Because purple loosestrife is a weed of aquatic habitats, new audiences are being introduced to biological weed control (Blossey et al. 1996). In 1992, the MPLP launched an aggressive media campaign. The primary message was that purple loosestrife was an alien invasive species responsible for habitat losses. This was followed by a notice that the MPLP intended to release another alien species to control purple loosestrife. Members of the general public expressed concern that to control one alien plant species (purple loosestrife) yet more alien species (biological control insects) were being released—in somewhat the same way as the old woman in the famous American folk poem sent a spider after a fly she swallowed, then a bird after the spider, and so on. The public realized that the introduction of an alien species was not without consequences.

Why use an alien species to control another alien species? Past attempts to control purple loosestrife by cutting, burning, mowing, or water manipulation (cultural and mechanical control methods) had not pro-

vided any sustained control. In addition, no herbicides are registered for the control of purple loosestrife near or over open water in Canada. Even if that had not been the case, the MPLP was not comfortable with the use of herbicides near sensitive aquatic habitats. As well, no native insects were capable of limiting purple loosestrife populations (Diehl et al. 1997). Since no effective management strategies existed for purple loosestrife, Agriculture and Agri-Food Canada recommended that biological weed control agents be released against purple loosestrife in Canada (De Clerck-Floate 1992). The classical biological control of alien weeds is the deliberate use of herbivorous insects to reduce the population density of an alien target weed below its economic injury level (Gassmann and Schroeder 1995; see also Harris and Shamoun in this publication, p. 291). Biological control currently represents a potential long-term management strategy for purple loosestrife (Malecki et al. 1993; Blossey et al. 1994; Hight et al. 1995).

The release of biological control agents in Manitoba involved collaboration between the MPLP and the associated government and public bodies. In the summer of 1992, approval was received from the Canadian government for the release of biological control agents against purple loosestrife (Hight et al. 1995). The MPLP also requested and received a letter of support for a biological weed control program against purple loosestrife from the Manitoba Minister of Agriculture. Because no formal provincial processes were identified for releasing biological control agents in Manitoba, the MPLP initiated two proactive steps. First, an application for a pesticide use permit was adapted for use in the biological weed control program. Through this permit process, agent releases were approved through Manitoba Conservation. Second, through notices in local newspapers before actual agent releases, the general public was provided with opportunities to comment on the releases of these agents. The Manitoba biological control program proceeded in October 1992, with releases of the root-boring weevil *Hylobius transversovittatus* (Goeze) near Spruce Woods Provincial Park, followed by initial releases of the leaf-eating beetle *Galerucella californiensis* (L.) in June of 1993. The MPLP currently mass-rears biological control agents for release into Manitoba habitats.

Establishing a biological weed control program within the capital region of Winnipeg has presented challenges that have required forming further partnerships between the MPLP and the City of Winnipeg's Insect Control Branch and Weed Control Branch.

² The City of Winnipeg has been a lead partner of the MPLP since its inception. Its involvement is discussed throughout this paper in lieu of a separate section identifying its role. The City of Winnipeg has provided both in-kind and financial support.

Winnipeg has its fair share of mosquitoes and the City of Winnipeg has an aggressive mosquito control program. The Insect Control Branch uses granules of the insecticide Dursban³ to control mosquito larvae and fogs with malathion to control adult mosquitoes. In areas where the MPLP has released biological control agents, the Insect Control Branch agreed not to fog with malathion. It does use Dursban in these areas as the biological control agents do not have an aquatic life stage and therefore will not be affected by the insecticide. The Weed Control Branch has also been cooperative concerning the biological control agents and refrains from herbicide applications where these insects have been released. The cooperation and partnerships with the City of Winnipeg have been vital to establishing and sustaining a biological control program in the capital region of Winnipeg.

Partnerships between Canadian provinces have allowed for continued monitoring of the performance of the biological control program and sharing of beetles across Canada. When biological control agents are released, individual agencies across Canada forward release records to the MPLP so that a central Canadian database is available. Between 1992 and 1999, close to one million agents have been released across Canada, with provinces reporting various levels of success (Lindgren et al. 2001). Initial results indicate that the biological control effort is providing measurable levels of control. Data from an ongoing long-term monitoring project in Manitoba have indicated that close to 100% control (Figure 2) has been achieved in many areas (Lindgren 2000).

The Minnesota Department of Natural Resources Purple Loosestrife Program (Luke Skinner, Coordinator) and Cornell University's Department of Natural Resources (Bernd Blossey, Director) have also been instrumental in the development of a biological control program against purple loosestrife in Manitoba. The Minnesota Purple Loosestrife Program, established in 1987, was the first project of its kind in the United States (Skinner et al. 1994) and has served as a model for the MPLP. The objectives of the MPLP are similar to those of the Minnesota Purple Loosestrife Program. Both of the above agencies have provided the MPLP with biological control agents and shared their experience on rear-

³ Dursban is a trademark of Dow AgroSciences LLC. Dow AgroSciences Canada Inc. is a licensed user.

⁴ *Nanophyes brevis* was not released in Canada.



Figure 2. The biological control agent *Galerucella californiensis* was released on this population of purple loosestrife in the Netley-Libau Marsh, Manitoba, in 1994 (upper). By 1998, nearly 100% control of the loosestrife was achieved and has been maintained through 2000 (lower).

ing, releasing, and monitoring the performance of the insects. In 1996, the MPLP also partnered with these agencies to collect biological control agents, the weevils *Nanophyes marmoratus* Goeze and *N. brevis* Boheman⁴, from Europe.

Partnerships between agencies, between provinces, and between countries will ultimately allow for further support of the biological weed control program against purple loosestrife and provide a basis for actions to combat other invasive species in the future. According to Blossey et al. (1996), one of the major accomplishments of the biological weed control program against purple loosestrife in North America has been in keeping the numerous agencies actively involved and informed.

Is Purple Loosestrife Under Control?

At present, the MPLP cannot announce that purple loosestrife is under control in Manitoba. If the biological control agents continue to perform as effectively as they have since their release in 1992, measurable

levels of control across many naturalized areas in Canada are predicted. Unfortunately, a number of provincial programs for biological control have been discontinued due to a lack of long-term funding, and such funding sources are a requisite for combating invasive species. Since its formation the MPLP has funded project initiatives through short-term partnerships (Table 2). In most cases, three to five years of funding is not sufficient to establish a biological weed control program for an invasive plant species—planning must be done for 10–20-year programs.

The MPLP must also continue to partner with the horticultural industry towards the elimination of all *Lythrum* cultivars from residential gardens as they represent a seed and pollen source. While some provinces have been successful in eliminating the sale of *Lythrum*, it is still available in other provinces. The battle against invasive species cannot progress if one province institutes a management program while another province liberally retails the same invasive species. Nationwide, and preferably continent-wide, management programs are required to avoid such situations.

Table 2. Manitoba Purple Loosestrife Project funding sources, 1992–2000.

Category	Funding sources
Private	Murphy Foundation
	Canada Trust Friends of the Environment
	Shell Environmental Fund
	Manitoba Hydro
	Ducks Unlimited Canada
	City of Winnipeg
Provincial	North American Waterfowl Management Plan
	Fish Futures Inc.
	Sustainable Development Innovations Fund
	Special Conservation Fund
	Fisheries Enhancement Initiative
Federal	Urban Green Team Program
	Manitoba Conservation
	Manitoba Liquor Control Commission
	EcoAction 2000
	Action 21
	Canadian Wildlife Service, Environment Canada
	Canada-Manitoba Agreement on Agricultural Sustainability

Partnerships, task forces, working groups, and so on are usually forged when an invasive species has already reached a crisis level. The management of purple loosestrife across Canada has been no exception. Effective purple loosestrife control across Canada requires a national effort involving partnerships within and between provinces, and between the various levels of the federal and provincial governments. A Canadian strategy for the prevention of invasive plant species is also needed. Initial steps may include the development of federal legislation to be used to coordinate weed control programs among provinces. For example, although purple loosestrife and all its cultivated varieties have noxious weed status in Manitoba, Alberta, and Prince Edward Island, during the summer of 2000 purple loosestrife was included in the landscaping around the provincial government buildings in Québec City. Partnerships can provide the infrastructure from which alien invasive species can be managed and perhaps the introduction of new species can be prevented.

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Alien Invaders

*in Canada's Waters,
Wetlands, and Forests*

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