Invasive Species Centre

Healthy Forests Training
Final Report

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Sault Ste. Marie, Ontario
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1. Background

Invasive species are considered one of Canada's greatest threats to the survival of wild animal and plant life. These species arrive, often accidentally, and establish in the absence of natural predators or other controls. As a result, these species kill, crowd out, and devastate native species and their ecosystems. Several invasive species, such as insects and pathogens, can have detrimental effects on tree health. These pests can damage, weaken, or even kill trees, negatively impacting the health of the overall forest and reducing habitat or food sources for native animals.

One example of a destructive forest insect is oak wilt, which was detected in Canada for the first time in June of 2023. This disease can kill red oak trees in a single season, posing a significant threat to oak tree populations. Oaks are important habitat for a variety of animals and birds, and the acorns they produce are a vital food source for wildlife. Educating community members and forestry professionals is a vital step in preventing the spread of oak wilt in Canada.

Hemlock woolly adelgid has been spreading in Ontario and causing significant damage to hemlock tree populations. Many birds rely on hemlock trees as a food source and for nesting and roosting sites. Hemlock trees are also commonly found in riparian areas, where they play an important role in regulating and maintaining water temperatures for important species like brook trout.

Other priority pests include brown spruce longhorn beetle (BSLB) and southern pine beetle. BSLB poses a significant threat to spruce trees, especially trees which are weakened by drought or wind damage, both of which are likely to increase under climate change. A decline in spruce tree populations could impact native animals such as gray jays which use the trees to store food for the winter. Climate change has also affected the southern pine beetle, creating conditions which allow it to move North into Canada where it can infest and kill pine trees and decrease habitat and resources for animal life such as the pine warbler.

There has been an increase in invasive species detections in recent years. The arrival of oak wilt and the continued spread of hemlock woolly adelgid suggests a need for more training and resources that can increase public awareness and reporting. This type of engagement can help prevent the spread of these invasive species and protect vital wildlife habitats across the province.

2. Deliverables Summary

A. Resource Creation

The ISC created and published two new factsheets: one on brown spruce longhorn beetle and one on southern pine beetle. Both these species have been identified as important 'species to watch' by government partners.

Figure 1. Front and back of brown spruce longhorn beetle factsheet

Figure 2. Front and back of southern pine beetle factsheet

B. Oak Wilt Identification and Management Training Workshop

The Invasive Species Centre hosted an Oak Wilt Identification and Management Training Workshop in Toronto on September 26 and 27, 2024 with support from the Royal Botanical Gardens, Ontario Woodlot Association and the Ontario Chapter of the International Society of Arboriculture (ISAO). The City of Toronto was chosen based on its central location and vulnerability to invasive species introductions. Dense populations with lots of human movement makes the city at higher risk for oak wilt. The ISC has also received many requests in the past for oak wilt training in this area specifically.

The entire workshop lasted approximately 7 hours, with time for breaks and lunch included (Figure 3).

Time	Topic	Speaker
9:00 – 9:05 AM	**Welcome** Introductions, overall objectives	Madison Sturba, Invasive Species Centre
9:05 – 9:45 AM	**Oak wilt 101** What is OW, what trees are affected, common look-a-likes, biology, current distribution, how it spreads, prevention in Canada	Madison Sturba, Invasive Species Centre
9:45 – 10:45 AM	**Ontario Management** What is OW like in Ontario? How did Canada respond and manage the first detections?	Nicole Mielewczyk, Canadian Food Inspection Agency
10:45 – 11:00 AM	**BREAK**	
11:00 – 12:00 AM	**New York Management** What is OW like in New York and how is it commonly managed?	Robert Cole, New York State Department of Environmental Conservation
12:00AM – 1:00 PM	**Michigan Management** What is OW like in Michigan and how is it commonly managed? (e.g., root plate excavation, root graft disruption, location/placement of trench lines, applying Bruhn model to urban vs. Suburban spaces)	Heidi Frei, Michigan Department of Natural Resources (Virtual presentation)
1:00 – 2:00 PM	**LUNCH** Lunch provided	
2:00 – 3:30 PM	**Field Exercises** Drive over to High Park How would we manage a (fictitious) case of OW in High Park?	Led by Nicole and Robert
3:30 – 4:00 PM	**Final Exam** Put your knowledge to the test and become Oak Wilt Trained!	

Figure 3. Agenda for the Oak Wilt Training Workshops in Toronto.

Two separate but identical workshops were held. The City of Toronto was extremely interested in this event and offered the High Park Training Centre as an in-kind venue in exchange for staff training. The first workshop on September 26th was held exclusively for these staff members, but the second workshop the following day was open to everyone. This second workshop was held at the Swansea Town Hall to accommodate a larger group of people. In total, the workshops drew 50 attendees representing 7 different municipalities, 15 private tree service companies, and 2 conservation authorities (e.g., City of Toronto, City of Richmond Hill, City of Brantford, Diamond Tree Care, Maple Hill Tree Services, Grand River Conservation Authority, Toronto Regional Conservation Authority, etc.).

Each workshop consisted of an indoor morning session and outdoor afternoon session. The indoor session ran for approximately 5 hours and featured four different guest speakers from the Invasive Species Centre, Canadian Food Inspection Agency (CFIA), New York State Department of Environmental Conservation, and Michigan Department of Natural Resources (Figure 4). After learning about the biology, spread, and impacts of oak wilt from the ISC, attendees heard from Canadian and U.S. federal experts: Nicole from the CFIA talked about how the Canadian government has been preparing and monitoring for oak wilt; Robert spoke about management in New York State, and Heidi provided an update on oak wilt in Michigan. The status of oak wilt is very different in all 3 locations, which gave participants some good insight into how it is managed at the eradication, containment, vs long-term control stage.

Figure 4. Indoor session of the Oak Wilt Training Workshop

In the afternoon, attendees were guided around High Park for a practical field scenario led by Nicole and Robert. To gain a better understanding of how oak wilt is managed, attendees were brought to two different “infected” field sites in High Park where they were then asked to assess the area, take measurements, determine tree removals, and plan trench lines. Everyone was given a handout of the Bruhn Model, which is a system used to determine the likelihood of underground root grafting and oak with spread. Each site had different management outcomes: site #1 had many large red oak trees – one infected tree here would mean the loss of at least 10 surrounding trees (Figure 5). Site #2 was based around human-made ponds, steps, and landscaping. An infected tree in this low-lying area likely wouldn’t impact nearby trees because of dense, compact soil from infrastructure (Figure 6).

Figure 5. High Park site #1 for the outdoor session. Attendees measured the distance between red oak trees to determine the likelihood of underground oak wilt spread and tree removal.

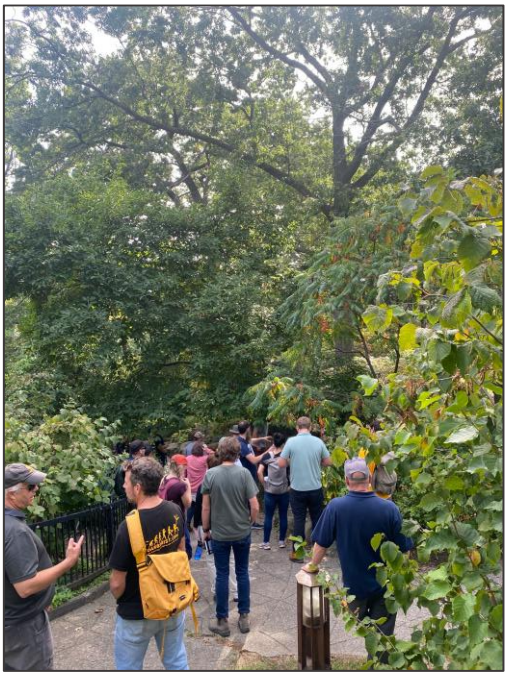

Figure 6. High Park site #2 for the outdoor scenario. Attendees discussed how the compact soil and human-made structures would impact the spread of oak wilt.

The ISC provided take-home resources for attendees, including fact sheets and plant pest cards to further increase the reach of the information outside of the workshops. Attendees were also directed to the ISC website, which has additional recourses and information on oak wilt in both English and French (e.g., species profile). There were 37 eligible individuals that received Continuing Education Units (CEUs)

through the International Society of Arboriculture (ISA) for attending a Toronto workshop. All attendees that passed a final exam were included on the ISC's website under the oak wilt species profile and now appear as 'Oak Wilt Trained'.

Surveys were distributed virtually in the days following the event. The Oak Wilt Training Workshop received positive feedback, with all 14 respondents strongly agreeing (79%) or agreeing (21%) that the content was informative (Figure 7; see appendix). All respondents either strongly agreed (79%) or agreed (21%) that they feel better equipped to prevent, identify, and manage oak wilt, showing a potential increase in action and future eyes-on-the-ground monitoring (Figure 8; see appendix). One attendee, Paige, expressed some feedback via email, stating, "I just wanted to reach out and say thanks for the awesome seminar on oak wilt. It was a real pleasure to meet you, and I really appreciate how generous you and all the speakers were with your time and all the useful information you shared. The insights on oak wilt biology, how it spreads, and best practices were incredibly helpful and I'm so happy to take this knowledge back to work with me and share it! I'm definitely walking away with a much better understanding, and I know this will be useful in my work."

Continued training in these high-risk areas will be important in preventing the spread of oak wilt in Ontario and throughout Canada. Partners are recognizing the benefits of training, as all respondents said they feel more compelled to participate in future invasive species action (85% strongly agree, 15% agree; Figure 9; see appendix). The ISC now has a waitlist of organizations and municipalities that reached out after the workshop requesting additional training in their area (e.g., City of London, City of Ottawa).

C. Hemlock Woolly Adelgid Training Workshop

To increase engagement, the ISC decided to host a Forest Pest Workshop in Hamilton on February 26, 2025 as part of Invasive Species Awareness Week. This workshop focused on 3 invasive species, all of which have the potential to harm important habitat in Ontario: spotted lanternfly, beech leaf disease, and hemlock woolly adelgid.

The workshop lasted 3 hours and included both indoor and outdoor components. After learning about how to prevent, identify, and report each species (Figure 7), attendees drove to a nearby trail at the Royal Botanical Gardens (RBG). RBG staff led the group on a tour, talking about the impact hemlock woolly adelgid has had on the property (Figure 8). Attendees were able to see treated trees and untreated infested trees at this site.

Figure 7. Indoor classroom learning at the Forest Pest Workshop in Hamilton.

Figure 8. Outdoors on Royal Botanical Garden property for the Forest Pest Workshop. Attendees were able to see hemlock woolly adelgid in person and see the impact of this invasive insect firsthand.

All attendees followed proper bio sanitary procedures when leaving the site. To prevent the spread of hemlock woolly adelgid, all attendees scrubbed their boots with soapy water, then lint rolled their clothing, hair, and bags (Figure 9).

Figure 9. To prevent the spread of hemlock woolly adelgid, all attendees scrubbed their boots with soapy water and lint rolled everything on their person.

The ISC provided take-home resources for all attendees, including a variety of factsheets, posters, stickers, etc. Boot brushes were also provided for every individual to keep.

There were 38 people in attendance, with 8 receiving CEU's from the ISA. To promote Invasive Species Awareness Week and encourage attendance, the ISC also gave away a $250 gift card to the outdoor store Atmosphere, which one lucky individual won for joining the event.

The workshop was well received, with lots of positive feedback and great discussion. One individual from the City of Hamilton reached out afterwards to say, "I thought your presentation was excellent and informative. It was a great balance of the presentations and the field component." Many others expressed a desire for more training in future, including an arborist that joined from the Town of Coburg. Future training on hemlock woolly adelgid identification, monitoring, and management would be extremely beneficial in the area, which is near an isolated detection found in 2022.

3. Budget Breakdown

Event	Item	Cost
Oak Wilt Training	Workshop venue (day 2)	$324.77
Oak Wilt Training	Food and refreshments for workshop attendees (e.g., coffee, juice, pastries, pizza + cutlery)	$543.70

Oak Wilt Training	Printing and other materials for workshop (e.g., exam booklets, trenching guidelines, shipping, folders for take-home resources)	$251.50
Oak Wilt Training	Travel for staff to attend/deliver workshops	$677.10
Hemlock Woolly Adelgid Training	Workshop venue	$595
Hemlock Woolly Adelgid Training	Food and refreshments for workshop attendees (e.g., coffee, juice, pastries + cutlery)	$348.69
Hemlock Woolly Adelgid Training	Printing and other materials for workshop (e.g., factsheets, folders, boot brushes, dish soap, garbage bags)	$344.45
Hemlock Woolly Adelgid Training	Travel for staff to attend/deliver workshops	$310.35
Printing, Resource Kits, and Shipping	Resources sent to municipalities for continued outreach	$1,144.44
	Total (CAD)	**$4,540**

Several attendees expressed interest in receiving additional resources and outreach materials following the event. The ISC printed and shipped a variety of factsheets, signage, pest cards etc., for several priority pests impacting the areas of those in attendance. These materials will also be used as sources of information for staff and members of the public that were unable to attend the in-person workshop.

4. Appendix

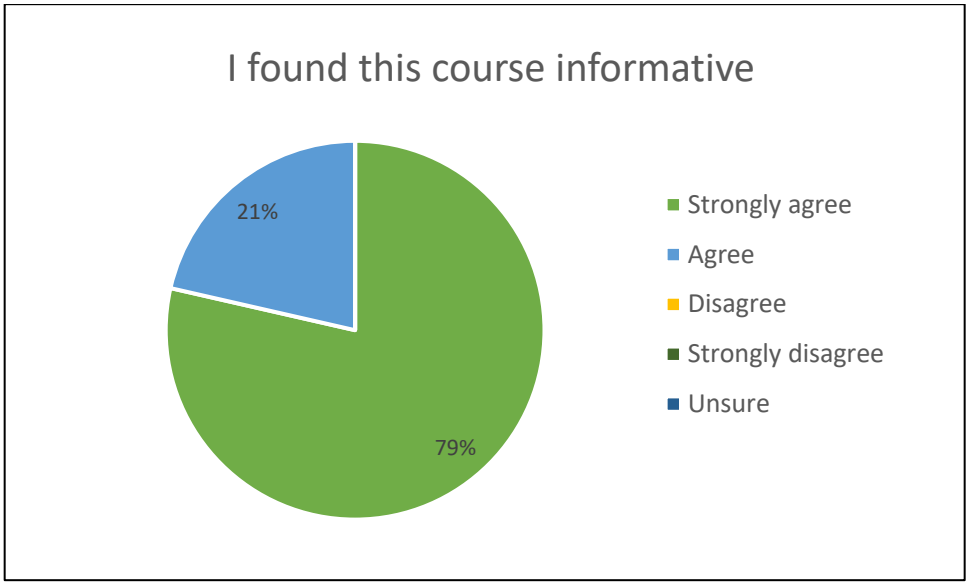

Figure 7. The survey results showed that 11 respondents (79%) strongly agreed and 3 (21%) agreed that the workshop was informative.

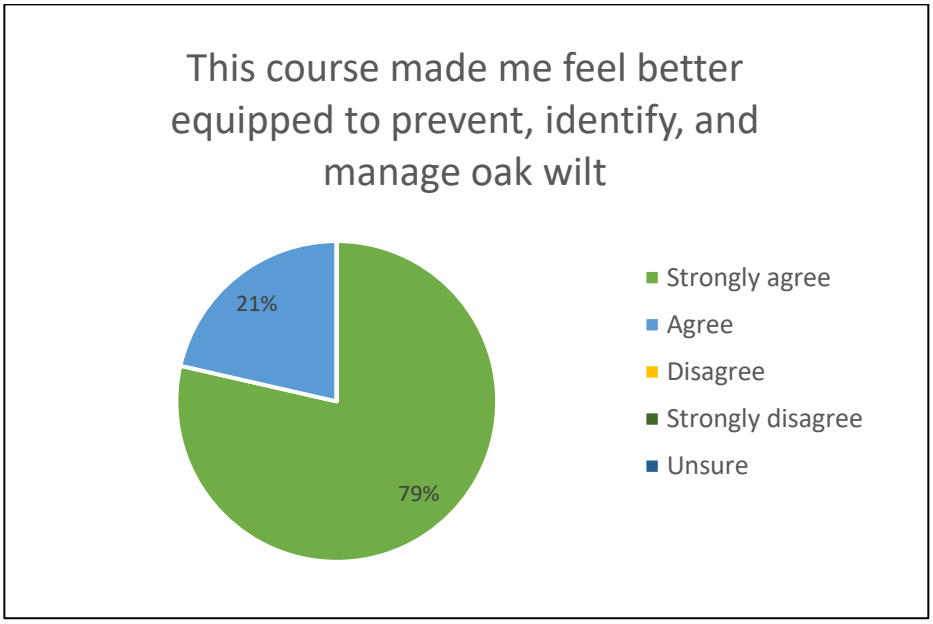

Figure 8. The survey results showed that 11 respondents (79%) strongly agreed and 3 (21%) agreed that the workshop made them feel better equipped to prevent, identify, and manage oak wilt.

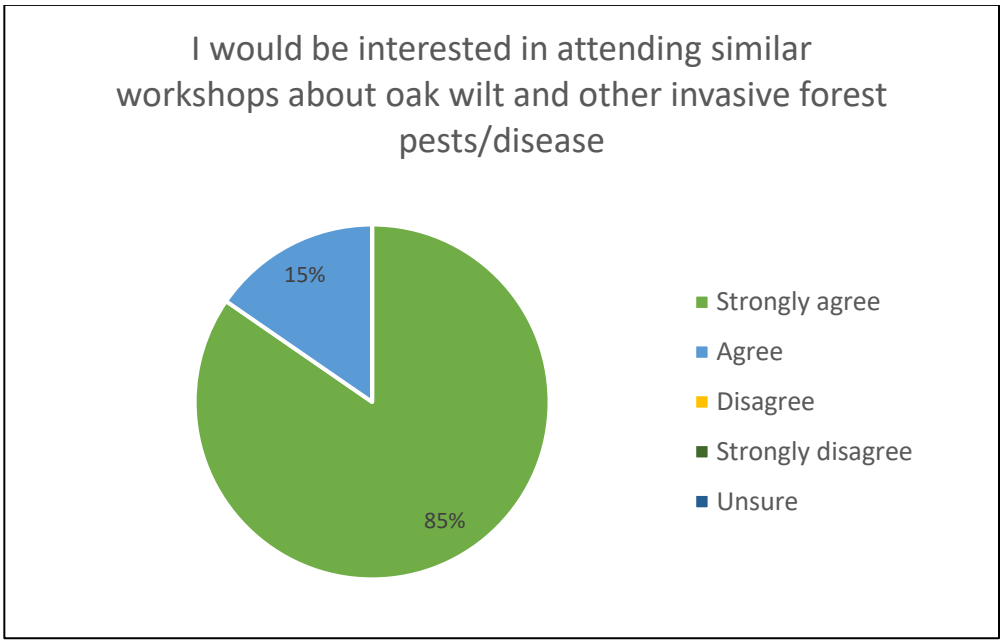

Figure 9. The survey results showed that 11 respondents (85%) strongly agreed and 2 (15%) agreed that they felt more compelled to participate in invasive species action after attending the workshop. One participant did not complete this question.

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