



**Canadian Council  
on Invasive Species**

**Conseil Canadien sur les  
Espèces Envahissantes**

# **National Survey On Invasive Species Awareness, Behaviours, and Pathways**

**Final Report**

**Conducted for the Canadian Food Inspection Agency  
March 2023**



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## Executive Summary

Nine in ten Canadians say nature is important to them, and 67% feel it is very important. Two in three Canadians are concerned about the damage to nature from invasive species. Canadians understand they have a role in protecting nature from invasive species and are willing to take action.

Awareness of invasive species, though, needs to be improved, with only one in four Canadians reporting they are either very aware or extremely aware. Increasing knowledge and awareness is essential to assist Canadians in taking action to protect nature from invasive species. Many survey respondents said they do not report invasive species because they don't know how. Reporting has to be made more accessible.

Across many outdoor activities, from gardening to hiking to boating, Canadians are willing to take action to stop the spread of invasive species. However, in some cases, such as with gardeners, a lack of knowledge about what is invasive and what to do prevents people from acting. In other cases, such as with hikers and boaters, they need more available equipment (like boot brushes and pressure washers) to take action to prevent the spread of invasive species.

In some cases, people will take preventive actions for reasons unrelated to the protection of nature. For example, many boaters Clean Drain Dry their watercraft because it is good maintenance practice, and they like to have a clean boat. Similarly, most pet owners are unlikely to release animals into the environment if they believe they may suffer or not survive. While not moving

forest pests is top of mind for many, some campers and others who burn firewood tend to source it where they burn it to save money on delivery costs and gas to transport it.

Across different outdoor activities, Canadians have motivations to take actions that prevent the spread and impact of invasive species and barriers that prevent them from taking those same actions.

These self-reported motivators and barriers are listed in this report, along with the frequency they were mentioned. Leveraging the motivators and removing the obstacles is critical to increasing preventive actions and should be a top priority in designing outreach approaches.

Early detection and rapid response are crucial in identifying and stopping the spread of invasive species. Community science is promoted to get more eyes on the ground to increase identification. However, only two in 10 survey respondents know how to report an invasive species, and only one in 10 has ever done so. Reporting invasive species must be made more accessible and better understood.

## Introduction

A survey of 860 Canadians was conducted on March 16, 2023. The survey was distributed through a research panel. Research panels comprise people who have agreed to take surveys on an ongoing basis for an incentive. Survey panels are used by major polling companies in Canada because they provide reliable access in an age where only about 6% of people will agree to take a survey over the telephone. Survey panels are created and maintained to represent the overall population.

To qualify for the survey, respondents had to live in Canada and be at least 18 years old. The panel included an equal number of females and males.

If the survey had been conducted by a random sample, it would have had a confidence interval of 3.34% and a confidence level of 95%. In other words, if the survey were conducted 20 times, in 19 surveys, the answers to the questions would fall into a range of plus or minus 3.34% of the results found in this survey.

The survey measured Canadians' awareness and attitude about nature and invasive species. It measured respondents' recognition of communications efforts on several invasive species pathways and their likelihood of taking preferred actions to prevent the introduction and spread of invasive species. Respondents were also asked what might prevent them from taking select steps and what might motivate them to take the same actions.



The Survey results can be used to measure the performance of existing communications materials and inform future communications strategies. The survey was designed to establish a baseline and be conducted later to measure progress.

## Awareness and Attitude

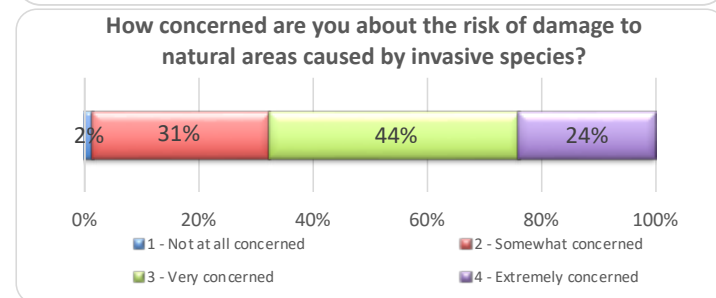
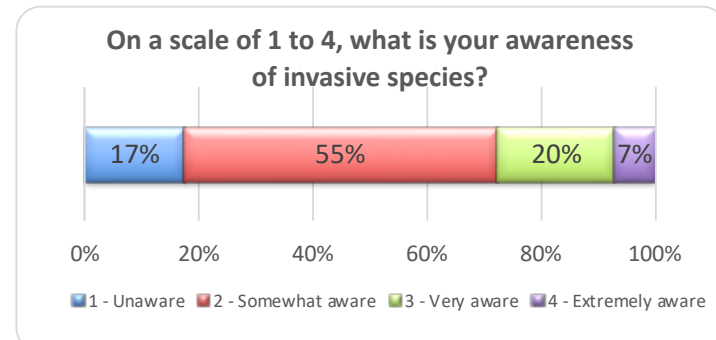
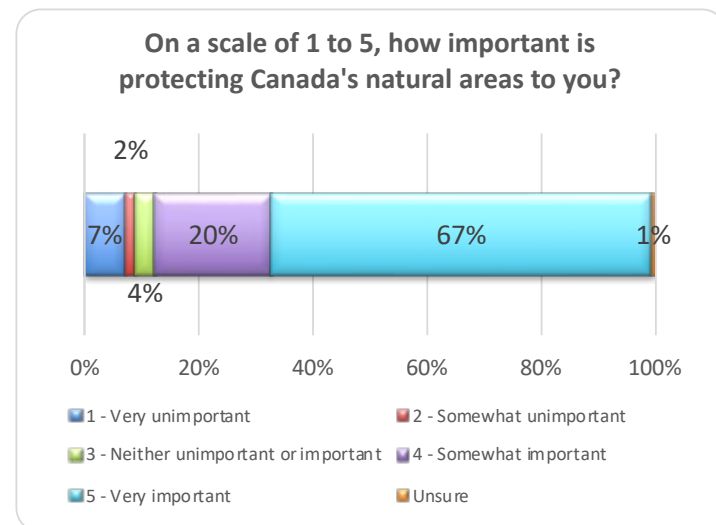
Eighty-seven percent of respondents report that Canada's natural areas are either somewhat important or very important to them. Promoting actions that protect those natural areas from damage by invasive species should be informed by this attitude and connected to that emotion.

Eighty-two percent of respondents are aware of invasive species. However, only 27% consider themselves very aware or extremely aware. More than half of respondents (55%) consider themselves somewhat aware.

Only 2% of respondents indicate they are unconcerned about damage to natural areas caused by invasive species.

## Opportunity

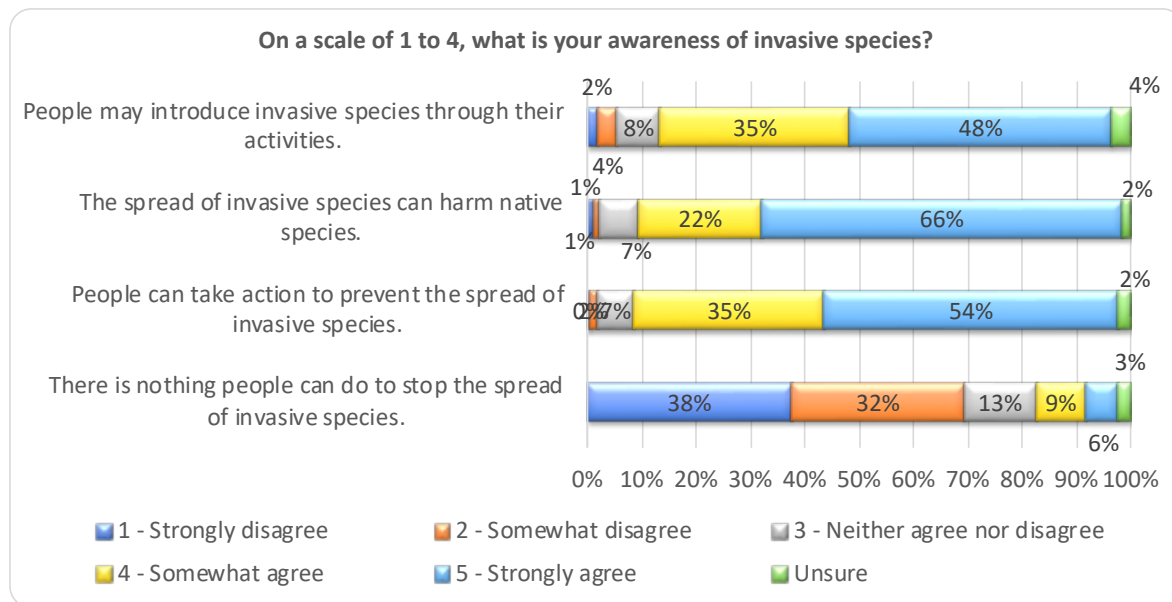
By linking invasive species to the protection of natural areas and biodiversity, there may be an increase in awareness of the connection between invasive species and the loss or damage to natural areas and biodiversity.



## Human Dimensions

Human activity is a significant pathway to the establishment and spread of invasive species. Changing human behaviour to reduce the risk of invasive species introductions is much easier if people understand they have a role to play.

Fortunately, there is an understanding of the human dimension of the spread of invasive species among 80 to 90% of respondents. Only three in 100 people feel that there is no role for people in preventing the spread of invasive species.



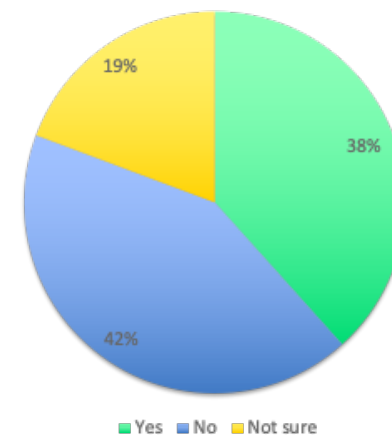
## Opportunity

Communications and outreach programs can nurture preventive actions by building on Canadian's strong appreciation of the human dimensions of invasive species.

## Gardening

More than half (53%) of respondents indicated they were gardeners, the most frequent activity chosen from the list of outdoor activities presented. Four in 10 (38%) respondents active in gardening are aware of information that asks people not to plant invasive species. Slightly more (42%) were sure they had not seen such information.

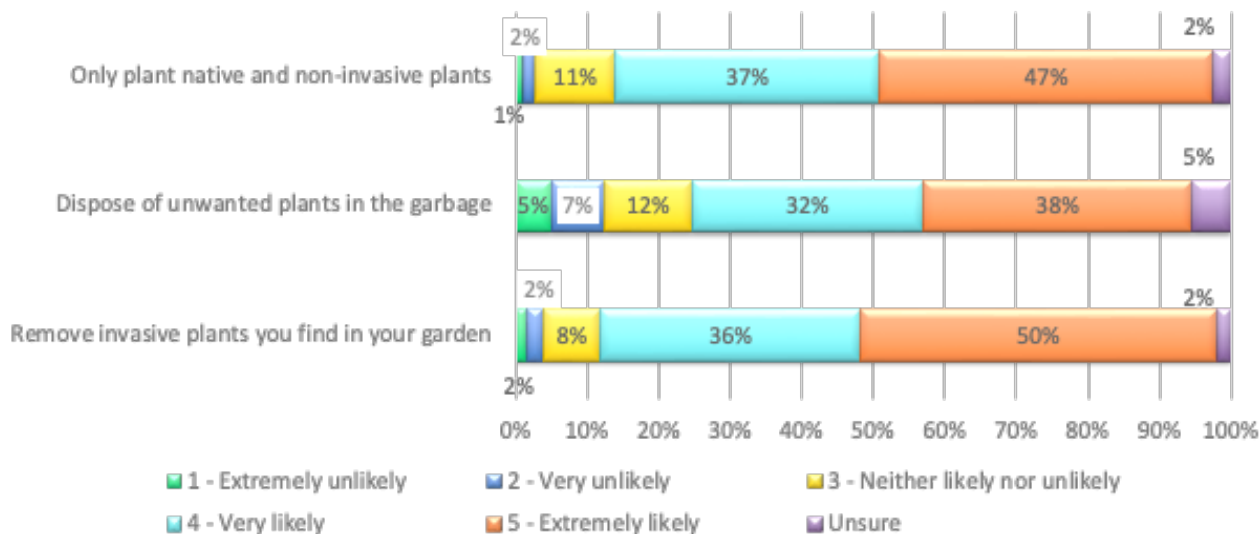
Are you aware of any information that asks people not to plant invasive species in their gardens?



Gardeners strongly indicated a willingness to take action to prevent the spread of invasive species. About 85% said they would only plant native and non-invasive species and remove invasive plants they find.

Fewer are willing to put unwanted plants in the garbage. However, many municipalities ban plants from the

On a scale of 1 to 5, how likely are you to take the following actions?



trash and collect them in the compost stream.

## **Barriers**

The predominant barrier to the preferred gardening actions is a need for more knowledge, followed by a lack of access to information. Another barrier mentioned was their physical inability to remove plants.

A few respondents said they could not dispose of unwanted plants in the garbage because of municipal bylaws.

## **Motivators**

Generally, respondents said they would take action against invasive plants because:

- It is the right thing to do for the environment or planet, and,
- To protect native plants.

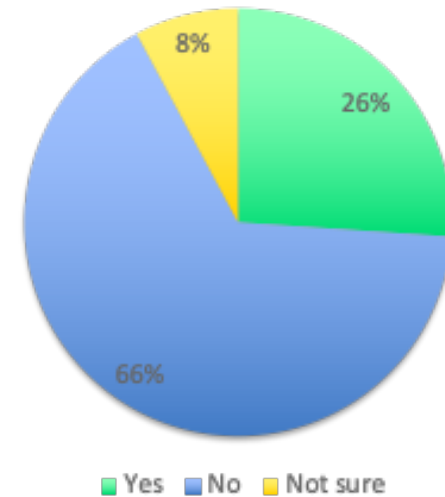
More specifically, many respondents said they would take action against invasive plants if they had more easily accessible information on what is invasive and what to do.

## Firewood

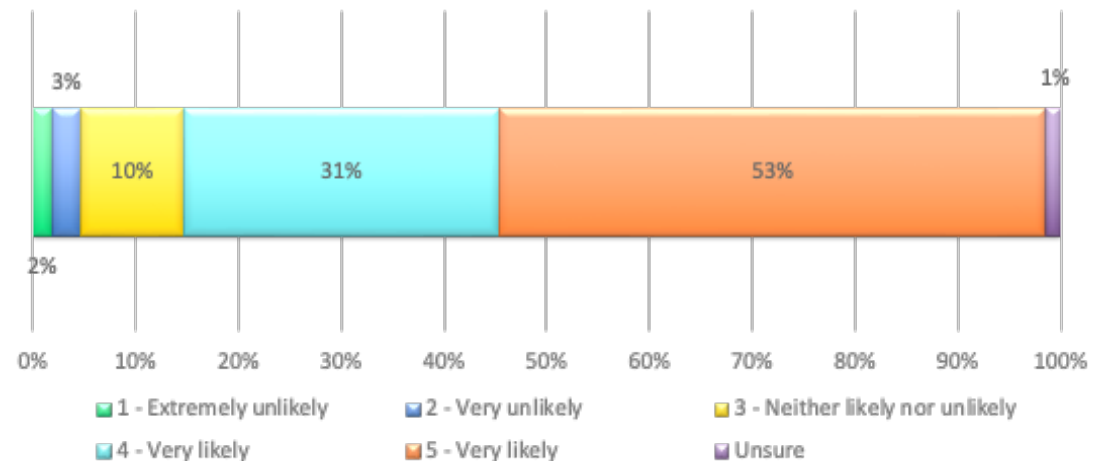
Approximately one in four (26%) respondents have seen information asking people to buy or collect firewood near where they burn it. Sixty-six percent say they have not seen such information.

Eighty-four percent of people indicate they are likely to buy or collect firewood near where they burn it. Motivation is only sometimes about avoiding transporting invasive forest pests. There are practical reasons for not moving firewood, including avoiding higher delivery charges and paying for gas to carry it in their vehicle.

Have you seen any information asking people to buy or collect their firewood near where they burn it?



How likely are you to ensure you buy or collect firewood near where you burn it (within 100 km)?



## **Barriers**

The availability of local firewood was the only barrier mentioned.

## **Motivators**

Availability and convenience are important motivators for buying firewood local to where people burn it. For some people, not moving forest pests is a motivator. Also, reducing the weight of a vehicle and saving fuel are practical reasons cited for not transporting firewood.

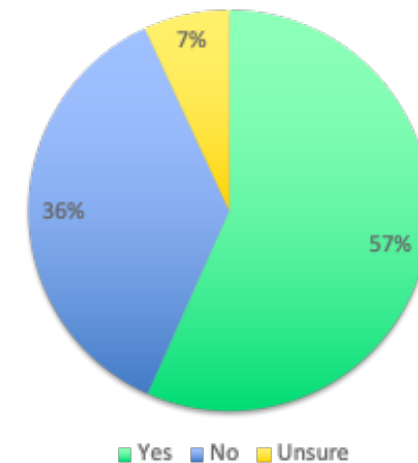
## Release of Pets, Plants and Animals

Almost 6 in 10 (57%) respondents have heard of information encouraging people not to release plants, pets and other animals into the wild. Only about one in three (36%) respondents had yet to hear of such information.

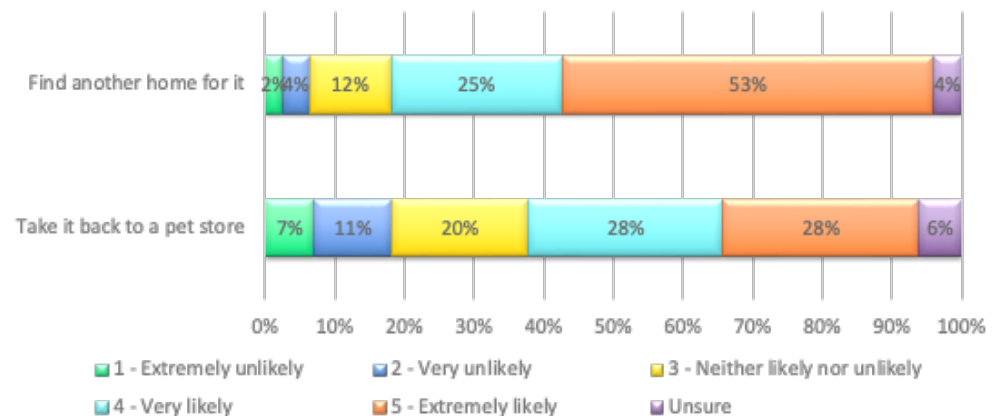
Asked what they would do with a pet they could no longer care for or wish to keep, 78% of respondents said they would try to find another home. Almost six in 10 (56%) would try to take it back to a pet store.

Few respondents would want to give up a pet, and only a very few would ever consider letting it loose in the wild, no matter their situation. Many respondents were upset about letting a pet loose in the wild. As one respondent said, “If no pet stores would accept it and if no one wanted it, it would prevent me to take action,” meaning they would keep the pet rather than letting it loose.

Have you heard of information encouraging people never to release plants, pets and other animals into the wild?



How likely are you to do the following with a pet you could no longer keep or no longer wished to keep? (n=809)





## Barriers

Although few respondents would let a pet loose in the environment, it only takes a few to create significant damage, such as the impact of goldfish released into waterways. Rehoming must be easy, with readily available information on local opportunities. Pet stores can play a vital role in accepting animals and providing information on other organizations, like Habitattitude, that can help.

Euthanization can be a solution, although most pet owners reject the notion or report it would be a last resort. Information should be available on humanely ending an animal's life if a person feels they have no choice.

## Motivators

Motivators for not letting a pet loose in the wild are about the love of pets. Some felt the need to make sure a pet had a good home—a few spoke of how the pet could be harmed in the wild. Few people mentioned the harm the pet could do.

## Opportunity

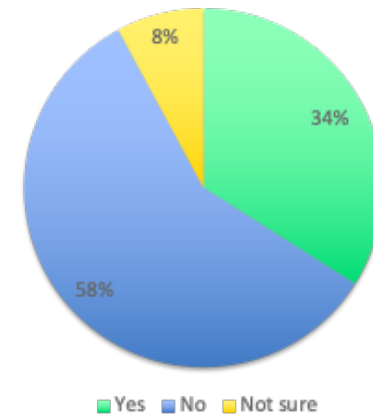
More is to be gained by promoting the risks to the pet that is let go in the wild rather than the damage the pet might do.

## Play Clean Go

One in three respondents reported they had seen information encouraging them to brush their clothes after hiking to remove invasive species. Almost six in 10, 58%, were sure they had not seen information about brushing boots and clothes.

Three in four respondents said they would check their clothes (76%) or equipment (69%) after walking or riding on a trail. Almost 8 in 10 (79%) said they would check for ticks.

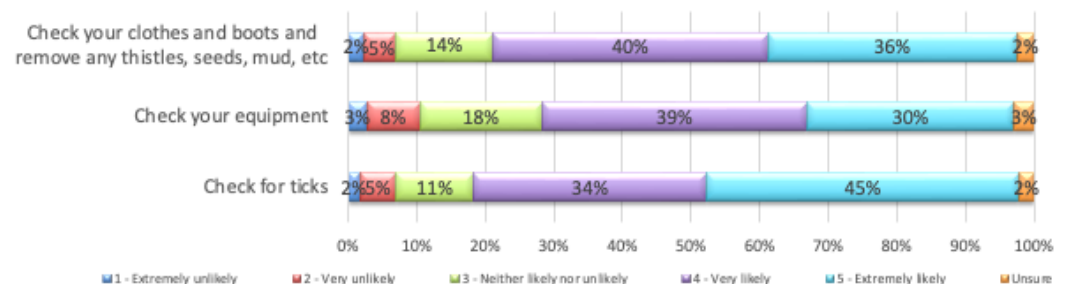
Are you aware of information promoting the action of brushing boots and clothes after hiking to remove invasive species?



## Barriers

The most frequently mentioned barrier for not cleaning or brushing clothes and equipment was not knowing how to do so. Many respondents said they might forget. Some said the weather and available time might be factors. A few respondents thought it was unnecessary because there are not many invasive species in their area, or they are unconcerned about them.

How likely would you be to take the following actions before or after walking or riding on a trail? (n=816)



## Motivators

Avoiding Lyme or other diseases is a frequently mentioned motivator for removing ticks. So was doing the right thing for the environment or the planet? And many people said they did not want to spread invasive species.

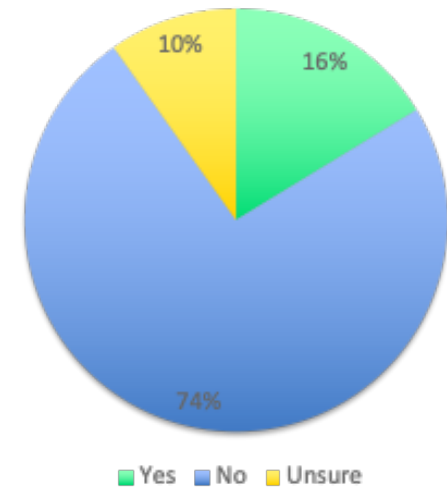
## Spotted Lanternfly

Only 16% of respondents had heard of the invasive insect called the spotted lanternfly. Three of four people, 74%, we're sure they had not heard of the spotted lanternfly.

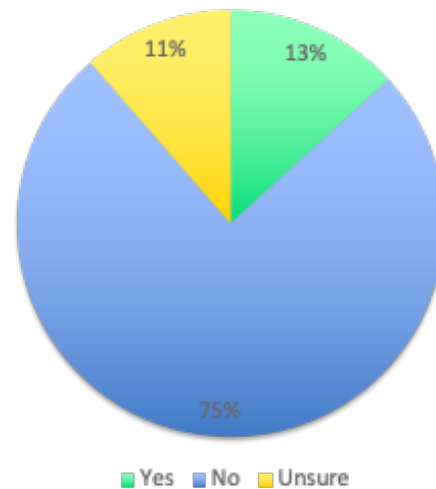
Only 15% of respondents said they knew what the spotted lanternfly looked like.

With this pest expected to spread into Canada, not knowing about the spotted lanternfly or being able to recognize it is a significant barrier to people identifying and reporting it to initiate a rapid response. Another concern is that only 13% of respondents indicated they knew how to report the pest.

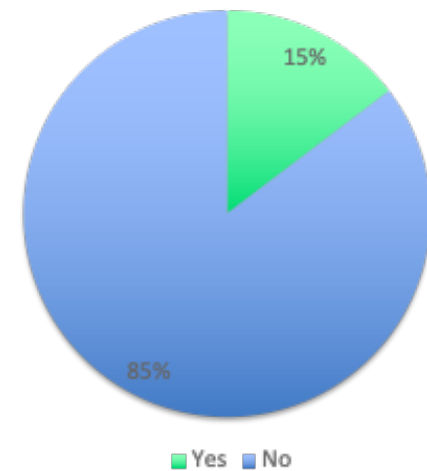
Have you heard of an invasive insect known as the spotted lanternfly?



Do you know how to report spotted lanternfly?



Canadians have been asked to report spotted lanternfly if they see them. Do you know what it looks like?



## Barriers

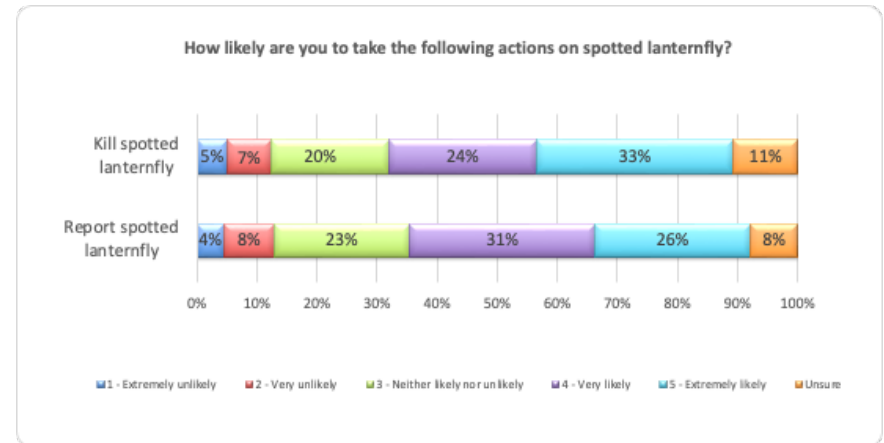
The most significant barriers to taking action against spotted lanternfly are related to a lack of knowledge about the insect, including the inability to recognize it. Some people want to know more about it, like if it can sting or spray someone, before committing to action.

Similarly, the need for more information on how to report and to whom is a significant barrier.

Some people simply do not wish to kill any living thing.

## Motivators

Respondents said that more knowledge about the spotted lanternfly would help. Many said they knew nothing about the insect and its risks. Some of them said they would take action if there were a risk to plants, but they needed to learn more.



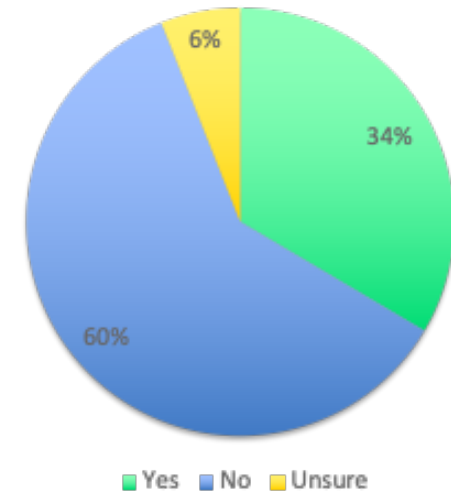
## Wild Pigs

One in three (34%) respondents said they had seen information about wild pigs or boars.

One in five respondents indicated that they had seen a wild pig or boar, defined as any pig or boar not in an enclosure like a fenced area.

However, only 16% of respondents know how to report a wild pig or boar.

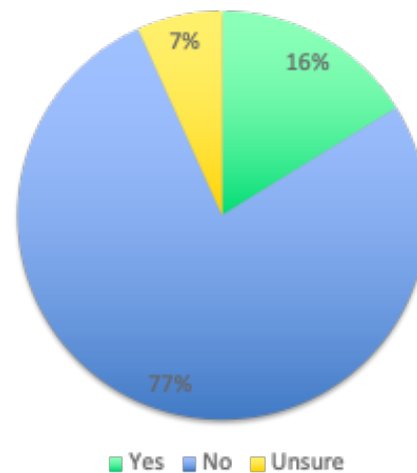
Have you ever seen information about wild pigs or boars?



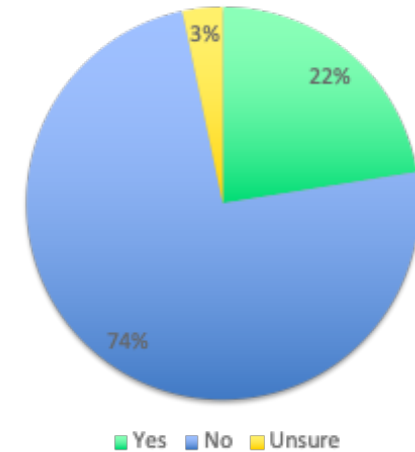
## Barriers

Many respondents said they did not know how to report wild pigs and boars. Some respondents needed help understanding why they should be reported. Some said they were unlikely to

Do you know how to report a wild pig or boar? (n=815)



Have you ever seen a wild pig or boar? (n=815)



see one because they lived in the city or did not live in the prairies.

## **Motivators**

Respondents frequently said they would report wild pigs because they are concerned about safety and know the damage they can do. They also know that feral pigs are invasive and multiply quickly. Respondents said they required information on reporting, and one person even suggested an app. Others thought a bounty would be a good motivator, but they did not clarify if it was for reporting or killing them.

## **Opportunity**

People who know about wild pigs are motivated to report them, while those who know little about them are less likely to do so. More education should increase reporting in areas where a wild pig problem exists.

## Boating

Almost four in 10 boaters have seen information about cleaning, draining and drying their boats.

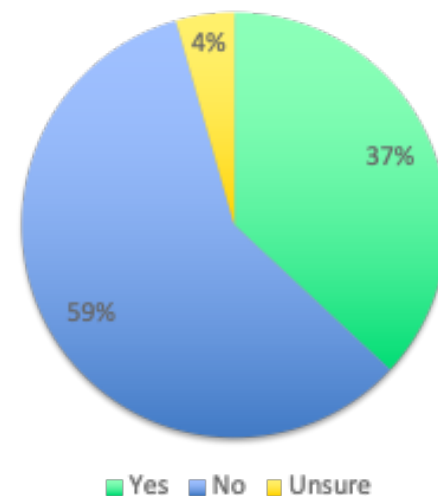
Approximately 80% of boaters will clean their watercraft or drain the watercraft. Slightly less, at 73%, will dry their watercraft.

Many boaters, such as shoreline property owners, use their boats only in one body of water all year, putting them in the water at the beginning of the season and taking them out of the water at the end. Boaters familiar with the Clean Drain Dry program understand they are not a pathway if they are not using their boat in multiple bodies of water.

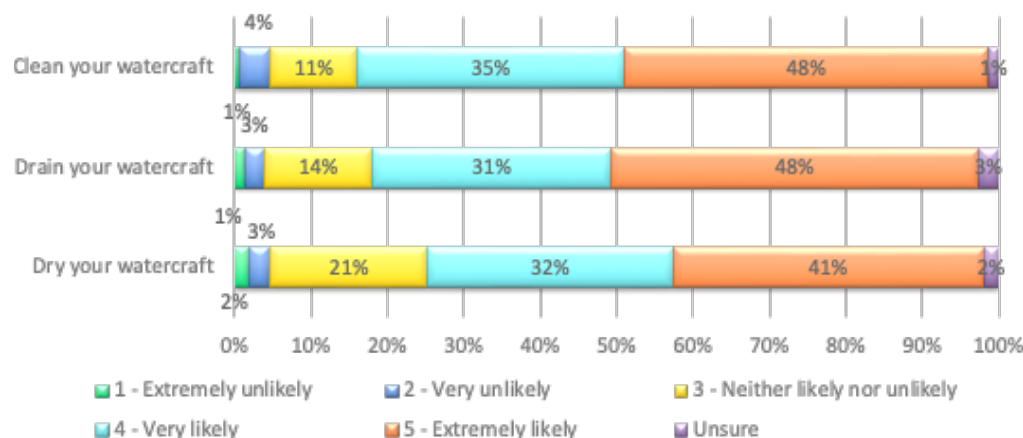
## Barriers

Few respondents identified barriers to cleaning, draining and drying their boats. A few people identified poor weather, lack of

Have you ever seen information about cleaning, draining, and drying boats and other watercraft?



When moving from one body of water to another, how likely are you to do the following: (n=150)





time, or lack of proper equipment. But otherwise, many boaters said nothing would stop them.

## **Motivators**

More responders identified motivators than barriers. Knowing the risks associated with spreading invasive species and the need to protect the environment, particularly lakes and rivers, were often mentioned. Similarly, people indicated that cleaning, draining and drying are part of good boat maintenance.

## Reporting

Early detection and rapid response are much more effective if community members report invasive species. Only one in five respondents said they knew how to report invasive species, and only one in 10 had ever done so.

## Barriers

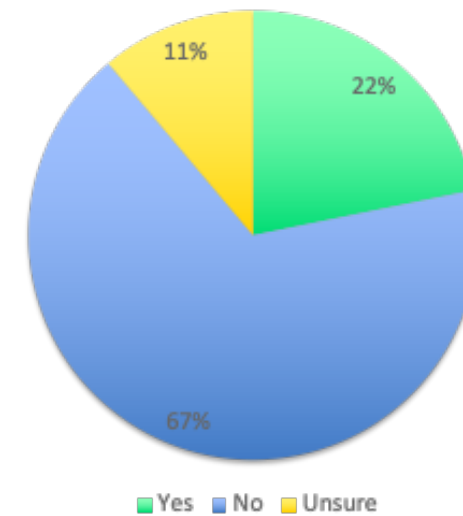
The barriers around reporting are mostly related to a need for more knowledge and a lack of available information. Many people say that they do not know what is invasive, so they do not recognize plants or other species that may be invasive. Others say that, even if they did know that a plant was invasive, they don't know how to report it.

Respondents do not indicate that they are aware of invasive species and are not reporting them.

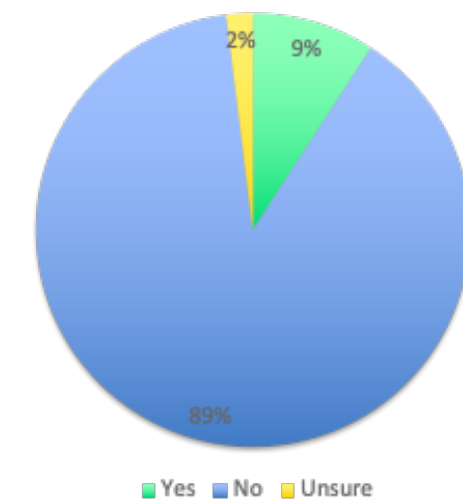
## Motivators

Respondents clearly state they are motivated to protect the environment and native species. They say they are

Do you know how to report an invasive species?



Have you ever reported an invasive species?



responsible people who do the right thing. Provided with the knowledge of how to report and what should be reported, they are willing to do their part.

This is information that can inform improved communications around community science programs.

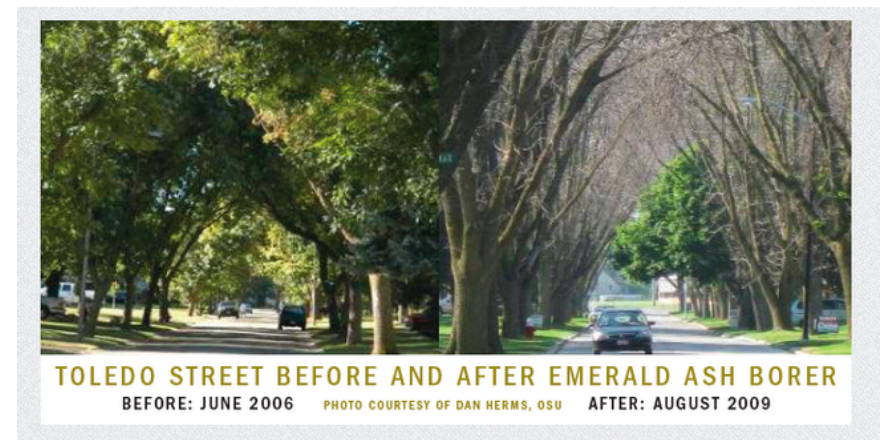
## Recommendations

The following are recommendations to improve communications and outreach to nurture increased action to prevent the introduction and spread of invasive species.

### Awareness and attitude

Communications and outreach programs should include Behaviour Change principles and be designed with a behavioural psychology lens. Desired preventive actions should be made easy by removing barriers. Motivators should be leveraged to encourage greater compliance. Commitments to action should be gathered and supported through reminders at the places where action should be taken. The establishment of social norms should be part of every communication strategy.

Consideration should be given to leveraging the psychological phenomenon of loss aversion. People are more concerned about loss than they are about gain. People who are active outdoors have a strong awareness of invasive species impacts, and they value nature. Images showing damaged areas will likely influence them more than pristine ones. The approach of highlighting loss in outreach should be pilot-tested on a small scale before being adopted on a large scale. The Canadian Council on Invasive Species has pilot-tested using loss



aversion in social media posts, and it was found to be more effective than similar approaches highlighting protection.

## Gardening

Gardening is the most popular outdoor activity tested in the survey. Gardeners are concerned about invasive species and are willing to take the steps necessary to protect nature from invasive plants.

Gardeners want more support in the form of information about plants they should avoid and which they should plant as alternatives. The Grow Me Instead (GMI) program delivers this information on a regional basis and can be adapted for areas where it is not currently present. Doing so takes advantage of the development work already invested in the program, allowing GMI to be expanded quickly and efficiently.

An issue that arises is the safe disposal of invasive plants. Gardeners want to ensure that invasive plants they remove are destroyed. In some municipalities, plants are not accepted in the garbage collection stream and should be placed in green bins for composting. Composting does not necessarily kill all plants and destroy all seeds. This issue deserves attention, as compost streams can be a pathway for invasive plants.

## Firewood

Availability is the only concern people have identified as a barrier to sourcing their firewood locally. It is essential to remember that local availability can differ across Canada, so perspectives may vary. Someone in the Golden Horseshoe in Ontario will have a much more significant challenge finding local firewood for their home than someone in northern British Columbia.

People are motivated to avoid the delivery costs when firewood comes from a distant place, and they don't want to spend money on gas to carry firewood around when travelling. Ensuring firewood is available and affordable at campgrounds and parks helps people avoid moving firewood around unnecessarily.

Other research has found that most people need to be made aware of the existence and availability of certified pest-free firewood. Better promotion of the product could result in less risky movement of firewood.

## **Release of Pets, Plants and Animals**

Pet owners do not want to let their pets loose in the environment. However, it only takes a release of a goldfish, an invasive sportfish, a bunny or a turtle to cause significant damage.

Pet owners want to know what they should not be putting in their ponds and aquariums, but they need help accessing information on what is invasive and what is safe. Similarly, pet stores and suppliers want to know what is invasive locally. The government knows what is invasive and what is banned and regulated. An accessible, friendly online information clearinghouse should be

developed by governments to be readily accessed, like on a smartphone, when the information is required. Some might see this as a resource similar to Grow Me Instead for pet owners.

Communications about the damage that invasive plants and animals have brought should be tested at a pilot level and incorporated into communications and outreach programs if they are effective.

## **Play Clean Go**

Hikers, dog walkers, outside workers and others outside in nature are encouraged to brush mud, seeds and plant parts from their boots and clothes. However, people say they don't always remember to do so when they come off a trail or may be missing the equipment, like boot brushes.

Signage and availability of brushes can address and remove those barriers and encourage the correct actions right where the action should be taken.

Additionally, there is much concern across Canada about ticks. Actions to protect against tick-borne diseases like Lyme are similar to reducing invasive species spread. People should be encouraged to protect themselves and nature by brushing their boots, clothes and pets.

## **Spotted Lanternfly**

There needs to be more knowledge about spotted lanternfly (SLF) in Canada. The pest is yet to be in Canada, but it is expected, and communication approaches are being developed. It is not surprising

that, at present, many people have never heard of SLF and do not know what it looks like, what risks it presents, and how it can be reported. There is much work to be done.

## **Wild Pigs and Boars**

The wild pigs and boars issue is better known and understood in the western portion of the country where there are wild pigs. Few people have seen them, but those in the West appreciate the damage they can do and are likely to report them. However, better promotion of how to report is needed.

## **Boating**

Most respondents report they will Clean Drain Dry their boats when moving from one body of water to another and do not identify significant barriers. Lack of equipment and knowing what to look for are typically identified as barriers by boaters. Signage and equipment at high-traffic boat launches can make a significant difference for trailered boats. Kayaks, canoes and stand-up paddleboards, though, can be launched without the infrastructure necessary for large watercraft and can easily be portaged between bodies of water. They are more challenging.

It is vital to understand that many boaters are motivated to Clean Drain Dry their boats as part of the maintenance and protection of their investment. The goal doesn't matter; as long as someone Cleans, Drains and Dries, it is a good thing. New York State Department of Environmental Conservation promotes free boat cleaning at their watercraft decontamination stations.



## Reporting

Respondents say they need to learn how to report invasive species; only one person in 10 has reported them. There must be clarity on how to report and consolidation of the many options available. There are different phone numbers, apps, databases and mapping tools in use all over the country, and in some places, there may be as many as five options to choose from. Simplifying this system will reduce confusion and make it easier to report invasive species.