

# **National Invasive Species Recreational Pathways Survey - Results and Report**

Researched and prepared by

**Beyond Attitude Consulting**

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## **ACKNOWLEDGEMENTS**

This report was prepared by Ken Donnelly from Beyond Attitude Consulting for the Canadian Council on Invasive Species as part of a project agreement with Environment Canada and Climate Change.

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## Background

In 2018, the Canadian Council on Invasive Species (CCIS) conducted a survey of Canadians on three elements of invasive species as they relate to outdoor activities. The survey topics included three pathways for the spreading of invasive species by human behaviour. They were:

- the movement of firewood;
- hiking, camping and related activities; and,
- use of watercraft.

CCIS believes that communication strategies must focus directly on nurturing best behaviours and not rely solely on raising awareness about the issue in the hope that behaviours will follow naturally. The survey was conducted to inform a Behaviour Change communication strategy that will include approaches and techniques of applied behavioural psychology.

To help inform the development of the Behaviour Change communications strategy, CCIS commissioned a baseline survey of Canadians to determine current behaviours, knowledge of invasive species, attitude towards risk, and likelihood of the adoption of behaviours that would reduce the risk of spreading invasive species

CCIS offered provinces an opportunity to have a stand-alone report on the findings of the survey. For those provinces that took up the offer, the number of survey respondents was increased such that the sample for that province would provide statistical accuracy of plus or minus 5%, 19 times out of 20.

## Research Method

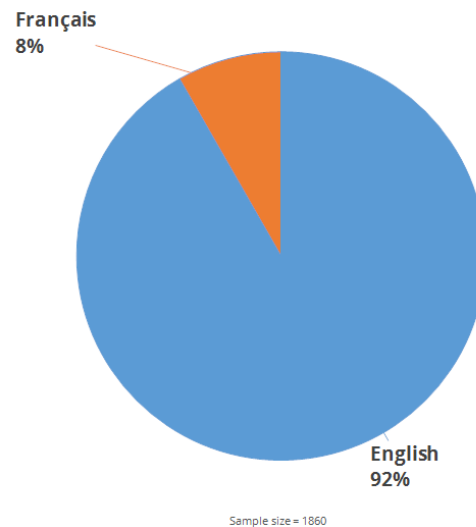
The survey was conducted in February through May of 2018. The survey was offered online with an opportunity to win one of three prizes of \$250 each by random draw of all respondents choosing to enter the lottery.

There were 1860 respondents from across Canada. The survey was open to anyone over the age of 17 living in the country. Had this been a random sample survey conducted by random-digit telephone number dialing, it would be accurate to plus or minus 2.27%, 19 times out of 20. However, as it was an online survey, the level of error cannot be calculated, so the telephone survey metrics are offered for guidance only.

The availability of the survey was promoted through networks of associations, many of which would have included people who are active outdoors. It is likely that the sample of respondents is skewed slightly towards people who are active outdoors, and to a lesser extent, possibly to people who have some knowledge of invasive species. However, efforts were made to reach out beyond the community of invasive species researchers, workers and volunteers. As well, 2 questions were included in the survey to identify the level of understanding of each respondent. This allows the interpretation of the data to account for level of current knowledge.

The survey was available in both French and English. The first question of the survey allowed the respondent to choose the language of the survey.

No weighting has been applied to the data.



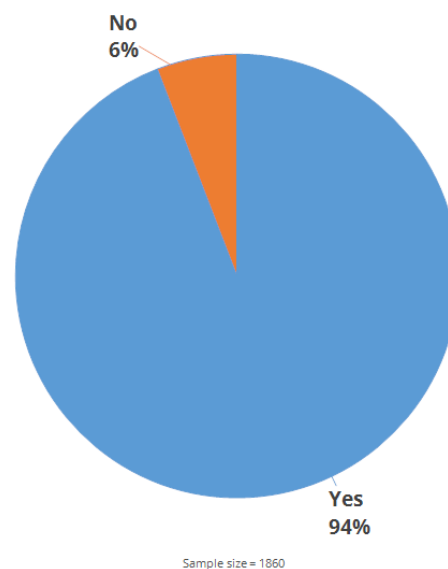
## Current Use and Source of Firewood

The survey sought to understand the current uses of firewood, and where people acquired it.

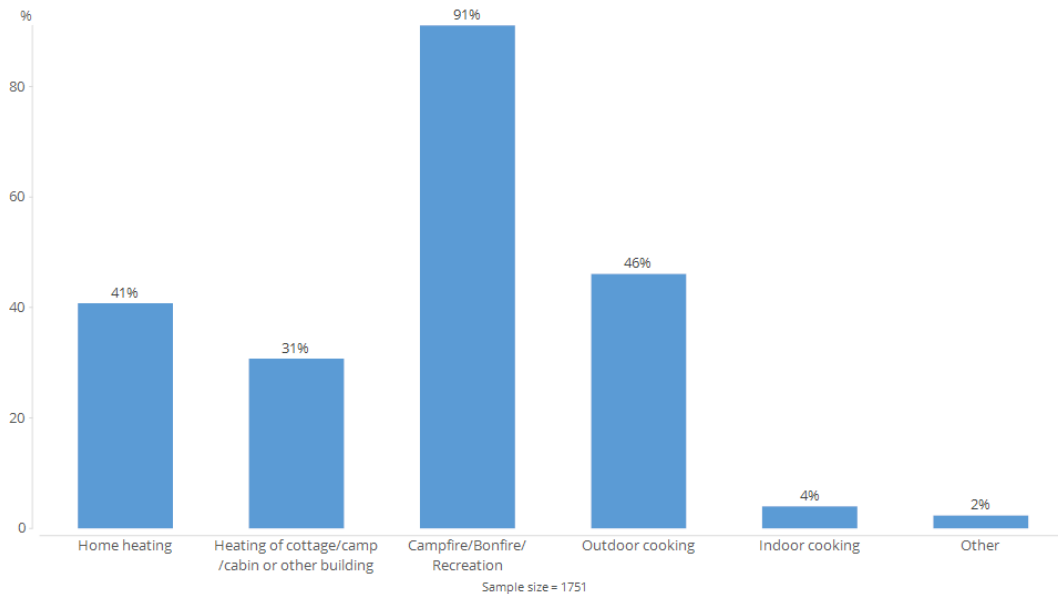
### Use of firewood

Use of firewood was common among respondents, with 94% reporting they used it for one or more purposes. Those respondents were then asked about their specific uses of firewood.

93% of firewood users indicated that they use firewood for campfires, bonfires and recreation. 51% reported that they use firewood for outdoor cooking. 39% indicated that they used firewood for home heating and 19% said that they heat cottages, camps, or cabins or other buildings with firewood. A further 3% use firewood for indoor cooking.



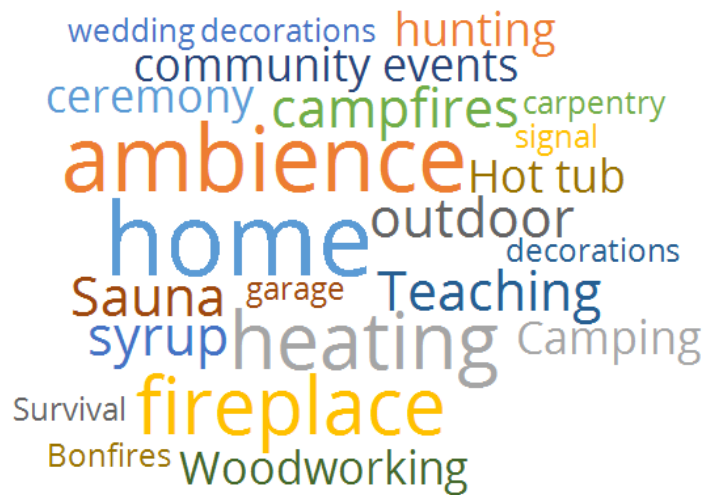
*What do you use firewood for? (Choose all that apply)*



Other uses mentioned included for saunas, teaching skills, creating ambience in the home, and making maple syrup, but these were from a relatively small number of respondents (2% of total).

Respondents were asked how far they traveled to get their firewood. About 2 in 3 (64%) indicated that they gathered or cut their wood within 15 km of where they burn it. Almost 1/2 (48%) indicated they buy wood within 15 km of where they burn it.

19% said they gathered or cut the wood themselves in one area and transported it more than 15 km to where they burn it and 13% indicated they buy it in one area and transport it to another to burn it.





*Where do you buy your firewood? (Select all that apply)*

	%
Buy from park/campsite I am visiting	48%
Delivered by local woodlot owner	33%
Picked up from local woodlot owner	21%
Buy from gas station/corner store	19%
Other	13%
Delivered but I don't know where it comes from	8%
Buy from grocery store	5%
Buy from a big box store like Walmart	5%

Sample size = 535

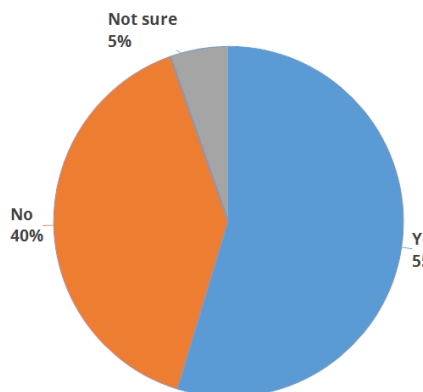
Where they buy it is influenced by what they use it for. For example, 77% of people who heat their homes have it delivered, either from a local woodlot owner (62%) or from a source from which they don't know the location (15%). On the other hand, 57% of people buy firewood from a party/campsite they are visiting, and only 40% get it delivered (the latter likely have firewood delivered for home heating but also use it for recreation like backyard fires).

Of the few who responded "other" there was some indication of getting it off of crown land, municipal land, or their own properties, and then some very specific examples like getting it from donations for charitable purposes/events.

## Awareness of Risks

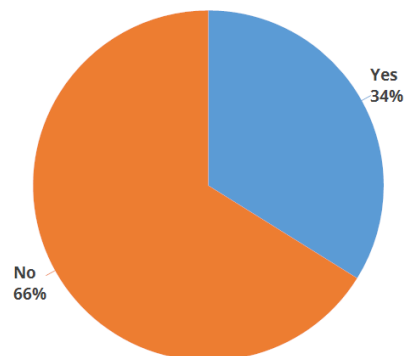
Respondents were asked if they had seen any information campaigns that asked people not to move firewood. More than half had (55%) and 40% indicated they had not. Five per cent were unsure.

*Have you seen any information campaigns that ask people to not move firewood?*



Sample size = 1860

*Are you aware of any regulations in your province/territory that ban the movement of firewood outside of local areas?*



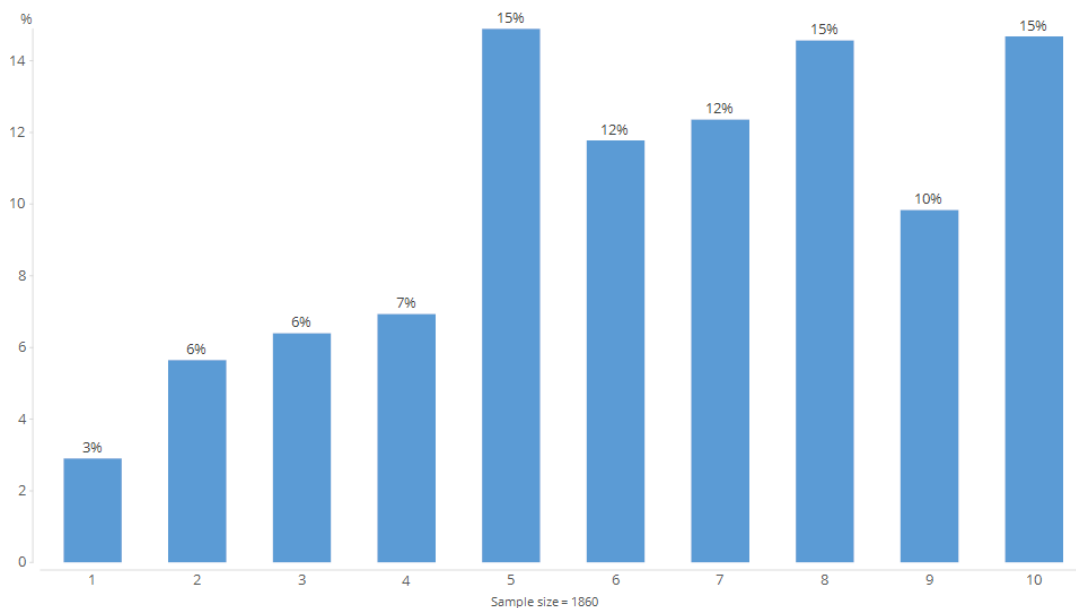


Only about one in three (34%) residents were aware of regulations that prevented the movement of firewood in their province. This indicates the need for increased awareness of the existence of regulations in the province, but it is important to realize that there are no regulations in the Prairies or Northern regions.

## Attitude

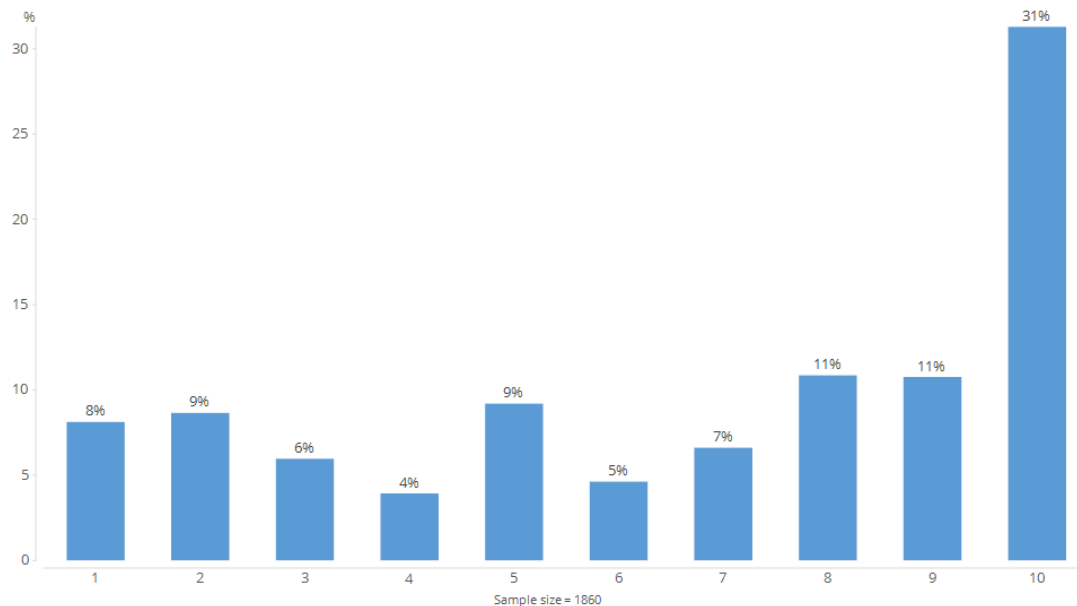
Forty percent of respondents indicated they thought moving firewood was quite risky for our forests (8-10 on a 10-point scale), while 15% felt there was little risk (answering 1-3). Half (46%) were in the middle of the scale, answering between 4 to 7. The results indicate a need for fostering greater concern of risk to our forests, as 61% of respondents feel that there is little risk or the risk is not great. People who are concerned about the issue are more likely to take the appropriate action to reduce the risk.

*On a scale of 1 to 10 where 1 is "Not Risky" and 10 is "Very Risky," how risky do you think the movement of firewood is for our forests?*



This is reflected in the results of the next question, 53% of respondents were quite likely to make sure they did not move firewood more than 15 km (answering 8-10 on a 10-point scale).

*On a scale of 1 to 10, where 1 is "Very Unlikely" and 10 is "Very Likely," how likely are you to make sure you do not move firewood more than 15 km?*



People were asked why they wouldn't make sure they didn't move firewood 15 km, and what would motivate them to make sure firewood was sourced locally. The results are presented in the next section under Sourcing Local Firewood, but the biggest issue is availability within that area.

## **Behaviours, Barriers and Motivators**

Respondents were asked questions designed to understand their current behaviours with firewood, and what might prevent or encourage them to adopt preferred behaviours.

### **Sourcing local Firewood**

The survey contained questions about acquiring firewood from local sources.

#### **Barriers to sourcing firewood locally**

Respondents were asked the open-ended question "What factors might prevent you from getting your firewood close (within 15 km) to where you burn it?" The most frequent responses were related to availability:

- Lack of availability of firewood in the area where it is to be burned, whether it is for home use or for camping
- Lack of availability of local woodlots or sellers
- Lack of sellers in remote areas
- Restrictions on cutting or gathering wood in parks or other areas

Others were concerned about costs and the quality of wood at the campground they were visiting:

- Local wood quality (too wet)
- Cost, including more expensive wood at a campground, which sometimes leads to people bringing their own wood to campgrounds to use

The word cloud below shows commonly used words in the responses to the open-ended question about barriers. The size of the text is representative of the frequency of the word appearing in the answers. It gives a coarse view of the answers from respondents.

*What factors might prevent you from getting your firewood close (within 15 km) to where you burn it?*



Sample size = 1860

It is clear from the comments that the biggest barrier to sourcing firewood locally is availability. Many people indicated that they collect wood on their property and nearby areas but sources are being depleted due to demand or regulations preventing the practice.

### **Motivators to source wood locally**

While it is important to determine the barriers that may prevent people from sourcing their firewood locally, it is also important to determine what may motivate them to ensure that their firewood is acquired close to where they are going to burn it.

Respondents were asked, “What might motivate you to get your firewood close to where you burn it?”

Respondents most frequently answered:

- Availability nearby, including deadfall wood that can be gathered on site and usable wood from logging that can be collected
- Reasonable cost or free for good quality, dry wood at campgrounds
- Convenience of finding and transporting
- Knowledge of why it is important to buy it where you burn it
- Knowledge that there could be consequences if caught moving it

*What might motivate you to get your firewood close to where you burn it?*



Sample size = 1860

While some respondents said that they were motivated to do the right thing to stop the spread of invasive species or for other ecological reasons, they were very much in the minority. Availability, cost and convenience were by far the most frequently cited motivators for sourcing firewood locally.

A campaign to reduce the movement of firewood will be more effective if it targets cost and availability than if it focuses exclusively on preventing the spread of invasive species for ecological reasons. Of course, the campaign can, and should, target both as doing so will motivate more people to source their wood locally, for whichever reason motivates them more.

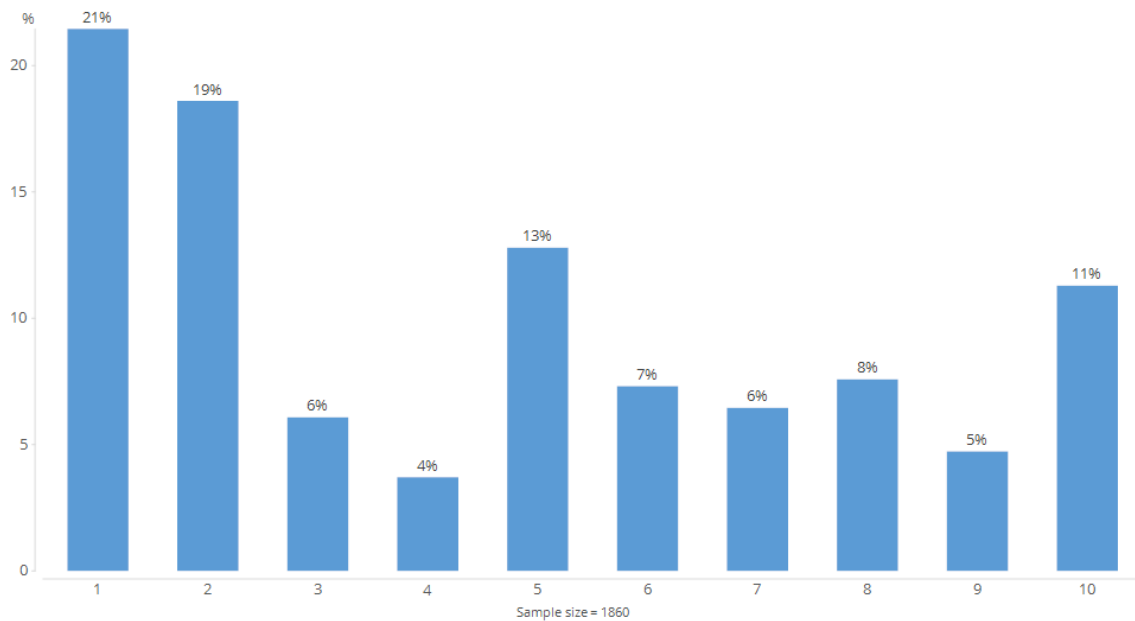
Availability is an issue that may be real or perceived. It is possible that wood is available locally but the person does not know about that source. Or the wood may be available locally but the person does not have a convenient means of accessing it (such as the skills or tools required to harvest the wood).

### **Pest-free firewood**

Respondents were told that there is firewood available that has been treated with heat to remove pests, and then asked if they would buy it.

Respondents generally stated that they would not use firewood heated to be pest-free, with 46% saying it was unlikely (choosing 1-3 on a 10-point scale) and 24% saying it was likely (choosing 8-10).

*Some commercially available firewood is treated with heat to be pest-free and safe for transport. If it were available in your area, what is the likelihood that you would purchase pest-free firewood from a local retailer?*



People were asked what might prevent them from using heat-treated firewood.

[illegible]

The most commonly identified barriers to using treated firewood were:

- It was clear in the comments that most people were not aware that firewood that had been treated to be pest-free existed.

Respondents were asked what might motivate them to buy firewood that was treated to be pest-free.

*What might motivate people in your area to purchase firewood treated to be pest-free?*



Sample size = 1860

The most common motivators were:

- Reasonable cost
- Knowledge about the product, its safety, and its benefits
- Availability (many people had not heard of it, so likely felt that it was not available in their area).

It appears that if people understand that the product is available and perceived it to be safe and reasonably priced, they may be motivated to purchase it. This would rely on them believing that the product helped eliminate a risk of them transporting invasive species and being compliant with regulations on moving firewood.

## Outdoor Behaviours

## Hiking, Camping and Gardening

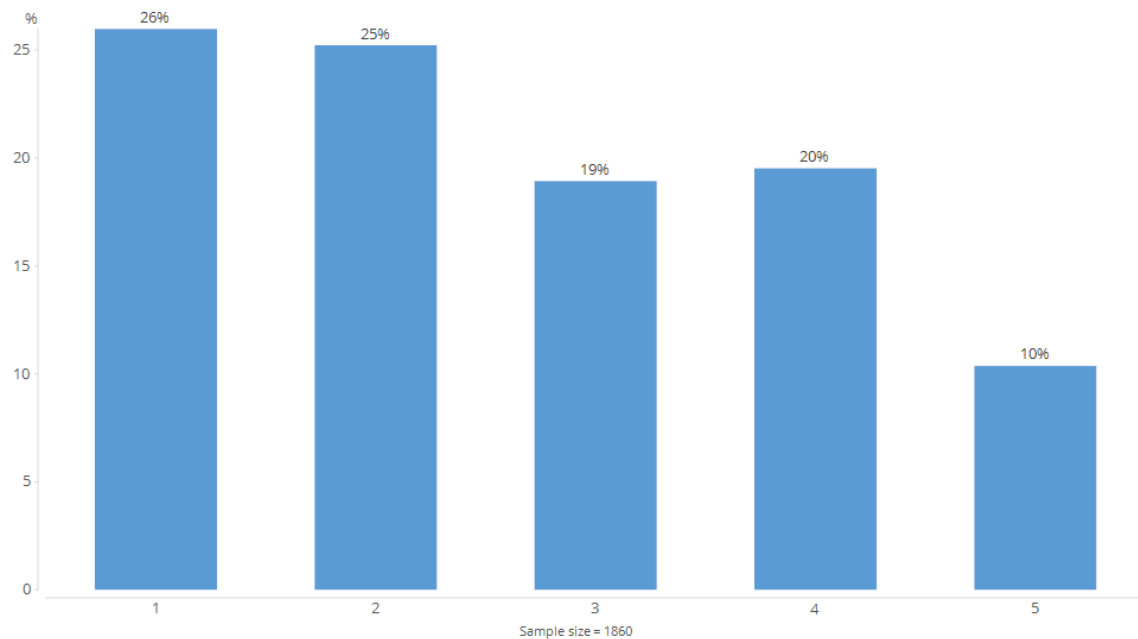
People were asked about how involved they were in outdoor land-based activities (water-based activities were examined later in the survey). The purpose of these questions was to get an idea of how active respondents were outdoors, particularly in activities that are pathways to the spread of invasive species. Hiking, camping and gardening were chosen as the activities to measure.

The results show that in each of the categories, more people reported they were moderately or very active (answering 6 or more on a scale of 1 to 10) than those reporting being moderately or very inactive (answering 5 or less). The following table shows the results.

	Hiking	Camping	Gardening
More Active	68%	65%	61%
Less Active	33%	35%	38%

Respondents were asked how likely they were to check for and remove potential sources of invasive species when at a trailhead. A large majority of people (55%) indicated they were unlikely to do so, and only 25% reported they would.

*On a scale of 1 to 5 where 1 is "Never" and 5 is Always", please indicate how often, before and after walking on a trail, you check your clothes, boots and equipment and remove any thistles, seeds, mud, etc. that you may find.*

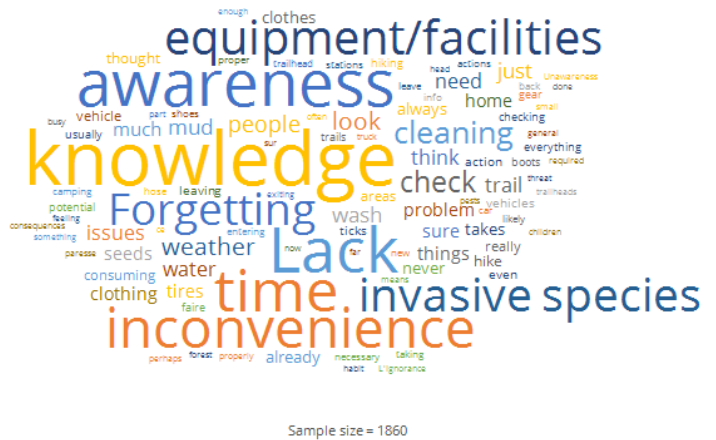




## **Barriers**

Respondents were asked what might prevent people like them from, when entering or exiting a trail or camping area, checking their clothes, equipment and tires and removing any plants, seeds and mud.

By far, respondents identified lack of awareness and knowledge about risks associated with invasive species as barriers to taking action, although availability of necessary equipment such as boot brushes and washing equipment was often cited as a determining factor. Convenience was also raised, with respondents indicating that people were lazy and it took too much time.



## **Motivators**

When asked what would motivate people to check for and remove invasive species, there were several suggestions made, but the most frequent was awareness and knowledge of risk. Many respondents recommended there be education campaigns to make people more understanding of the risks associated with invasive species, particularly making use of vivid communications to get the point across in an impactful way.

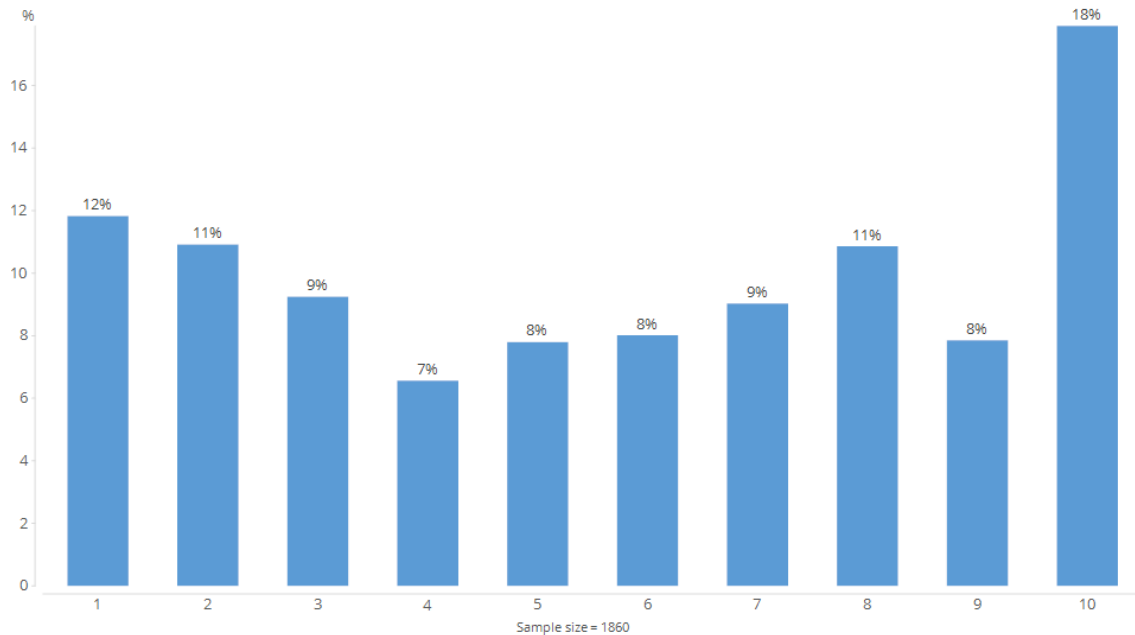


Reminders and equipment were also identified as important motivators. People recommended that signs (to remind people) and removal stations (to provide equipment) be placed at trailheads. The suggestions were clear that people thought the secret to getting people to remove invasive species was a combination of education, reminders, and availability of equipment necessary to perform the task.

## **Aquatic Invasive Species**

The survey tested how involved people were in water-based activities. About 1 in 3 (32%) of residents said they were not at all or not very active in water-based activities (answering 1 to 3 on a scale of 1 to 10). About the same number (37%) of people indicated that they were very active in water-based activities.

*On a scale of 1 to 10, where 1 is "Not at all" and 10 is "Very" how active are you in water-based activities such as fishing, boating, canoeing, kayaking and wakeboarding/waterskiing?*



We then asked people if they owned or rented different types of watercraft. Eighty-one per cent indicated that they owned or rented one or more watercraft. Canoes and kayaks were most popular, at 69% and 55% respectively, with motorboats being reported by 42%. Standup paddleboards and rowboats were also popular, reported at 17% and 13%, respectively. Of the few that replied other, they were most likely to report a Jet ski/Seado and inflatables. Pontoon boats were also specifically mentioned several times.

*Please indicate if you own or sometimes rent or borrow any of the following watercraft (check all that apply).*

	%
Canoe	69%
Kayak	55%
Motorboat	42%
Stand-up paddleboard	17%
Rowboat	13%
Other	7%
Sit-down paddleboat	7%
Sailboat	4%

Sample size = 1513

In order to form an understanding of the level of risk of spreading aquatic invasive species by people who move their boat from one body of water to another, we asked people where they usually use their boats.

Only 6% of the boaters reported that they sometimes launched their boats in different bodies of water on the same day. Over half of boaters (54%) move their watercraft around, but never on the same day and 41% say they always use their boat in the same body of water.

*Do you usually use your watercraft in the same body of water or do you move it/them around?  
If you move it/them around, please indicate how often.*

	%
I move it around, but not on the same day	54%
Always the same body of water	41%
I sometimes launch in different bodies of water on the same day	6%
NET	100%

Sample size = 1513

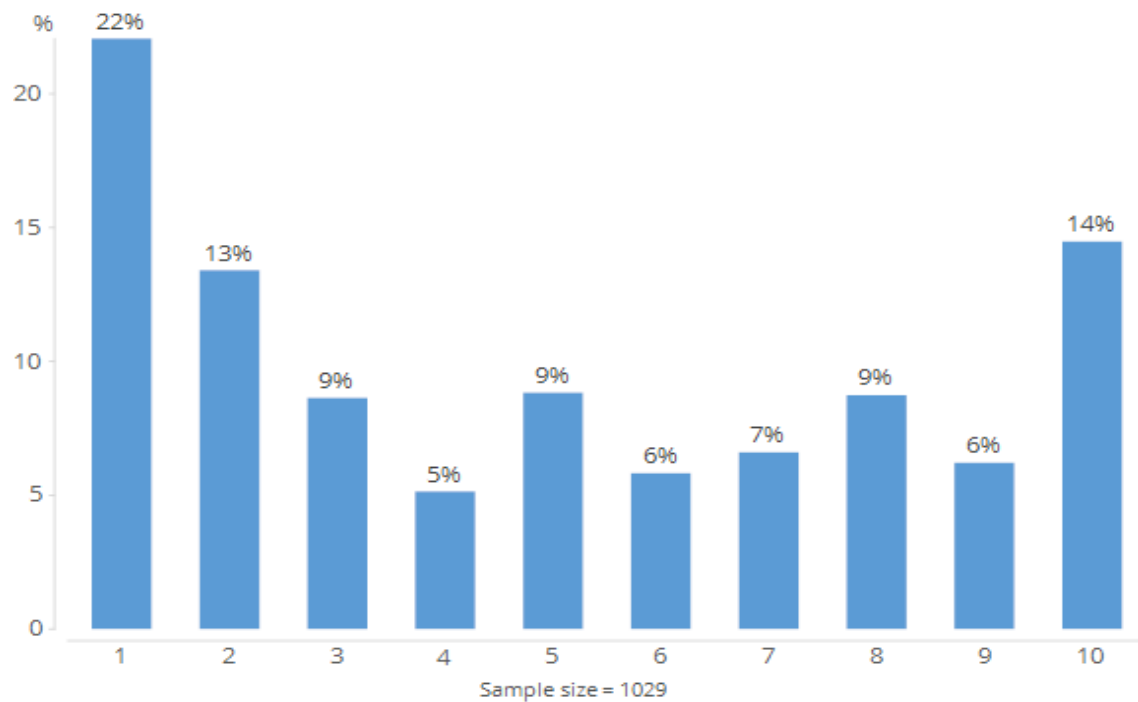
The fact that many more people are using canoes and kayaks than motorboats must be taken into account for education and monitoring purposes. Because of their size and reduced portability, motorboats are most likely to be launched at a boat landing, while kayaks and canoes can be launched from more informal access points and may also be portaging. This makes it more difficult to provide reminders and instructions to some watercraft users than others and must be taken into account when developing communications strategies. They should be considered as different target audiences.

## Current Reported Behaviour

Boat users who used their watercrafts in more than one body of water were asked how frequently they cleaned, drained and dried their watercrafts when moving from one body of water to another. They were then asked what might prevent them from doing each action, and what might motivate them to do so.

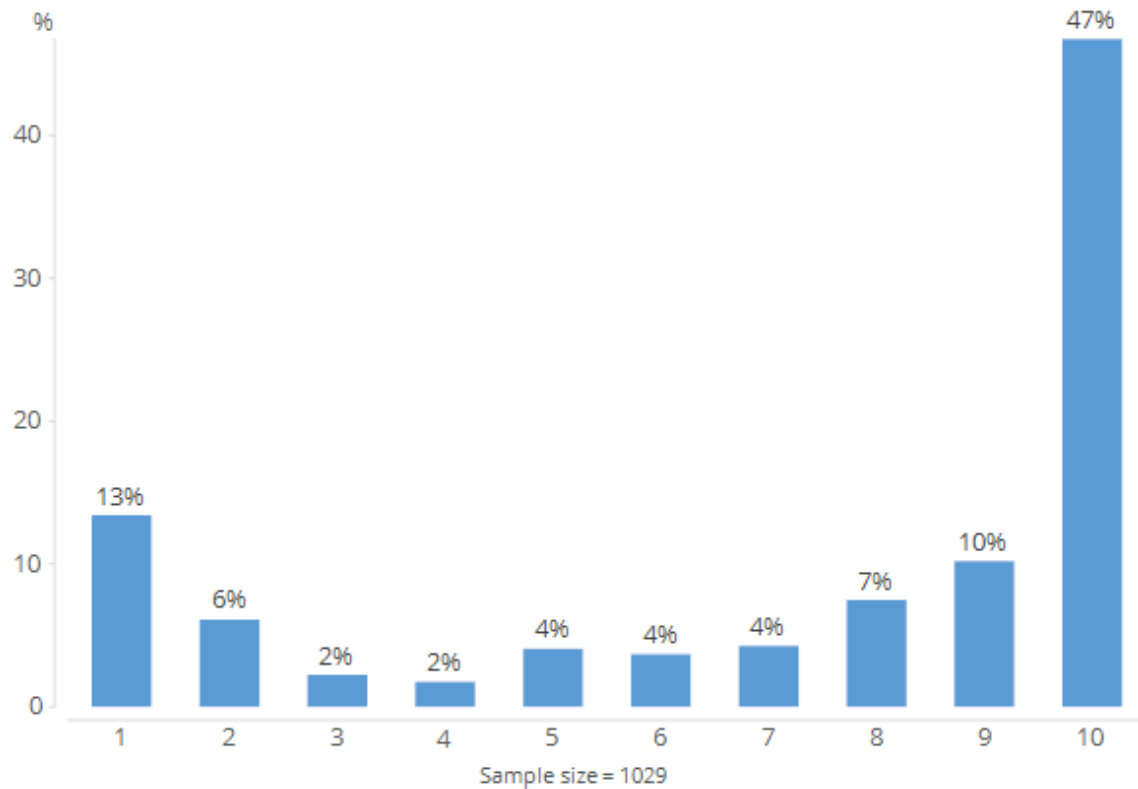
Forty-two percent indicated they cleaned their watercraft more than half the time and 58% said they cleaned their watercraft less than half the time. Forty-four percent reported they rarely did, if ever (choosing 1 to 3 on the 10-point scale).

*When moving from one body of water to another, on a scale of 1 to 10 where 1 is "Never" and 10 is "Always," how often do you do the following: Clean your watercraft*



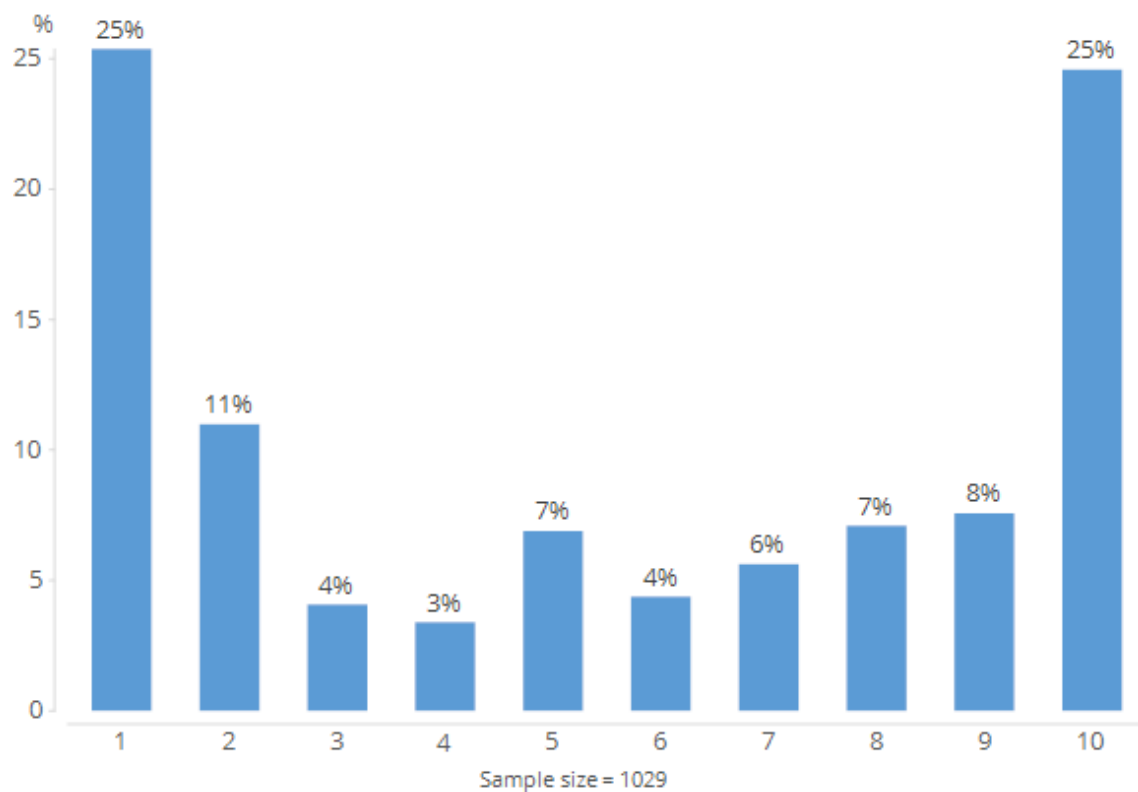
A large majority of boaters (72%) indicated that they drained their boat before moving from one body of water to another (answering 6-10 on a 10-point scale). Comments suggested that this was mainly to reduce the weight of the boat for towing and is good maintenance practice.

*When moving from one body of water to another, on a scale of 1 to 10 where 1 is "Never" and 10 is "Always," how often do you do the following: Drain your watercraft*



Half of respondents (50%) reported they dried their boat less than half the time, with 25% indicating never. Almost half (47%) said they always dried their boat. However, comments later in the survey revealed that most people feel their boat dried in the wind when it was being towed and when it was sitting in the sun and that was sufficient. In fact some scoffed at the idea of drying a boat.

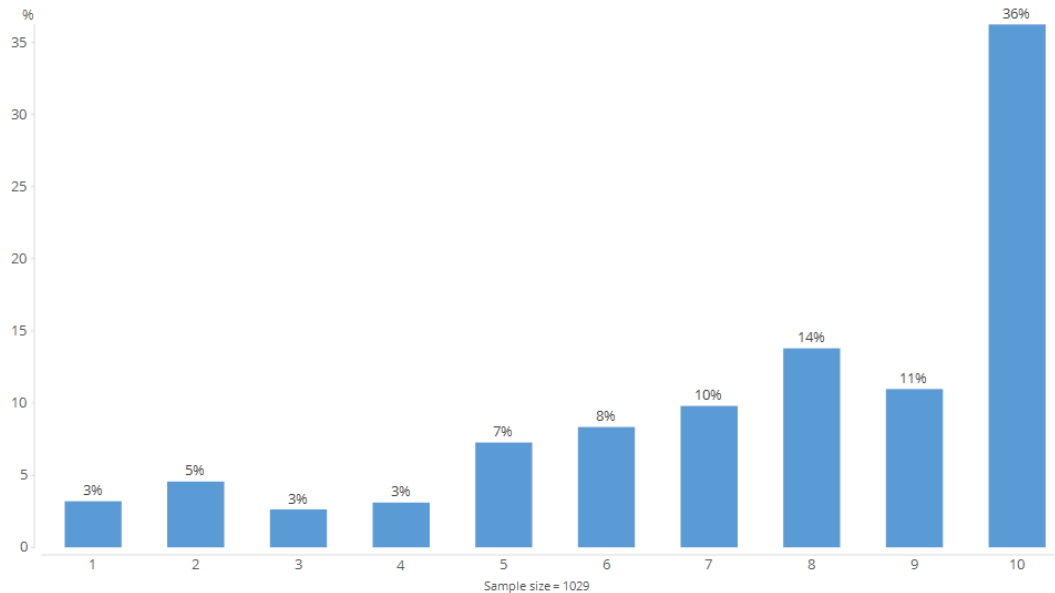
*When moving from one body of water to another, on a scale of 1 to 10 where 1 is "Never" and 10 is "Always," how often do you do the following:  
Dry your watercraft*



After determining the current Clean, Drain and Dry behaviours of boaters, all survey respondents were introduced to the notion of risk from aquatic invasive species. This was done to assess the likelihood of them taking preferred action if they were more knowledgeable about potential effects and the details about preferred Clean, Drain and Dry actions.

A strong majority (79%) of respondents indicated they were somewhat to very knowledgeable about aquatic invasive species (answering 6-10 on a 10-point scale).

*On a scale of 1 to 10, where 1 is "Never heard of it" and 10 is "Very aware", how aware are you of the threat to our lakes, rivers and streams from aquatic invasive species?*



Respondents were presented with the Clean Drain Dry graphic to the right (those who took the French language version of the survey were presented with the French text) and told that these are the actions boaters are requested to take to ensure that they do not stop the spread of aquatic invasive species when they move their watercraft from one body of water to another.

They were then asked about the likelihood of them performing each of these behaviours, on a scale of 1 to 10 where 1 is "Not at all likely" and 10 is "Very likely."



Interestingly, respondents reported they were more likely to perform these behaviours after being presented with the risk and information on what to do.

There is likely some social bias in these results. Social bias occurs when people report a greater likelihood of them taking a certain action (or position on an issue) because they feel social pressures to do or say the right thing. Having just introduced the risks and preferred behaviours, there is probably over-reporting of actual behaviours. So the actual numbers are likely not accurate, however the trend of the numbers can be considered as a general indication of results.

Almost 7 in 10 (69%) of respondents indicated that they were likely to take the clean actions above (answering 6-10 on a 10-point scale).

Number of Children	Percentage
1	7%
2	8%
3	5%
4	5%
5	7%
6	6%
7	9%
8	14%
9	12%
10	28%

Sample size = 1640

*What might prevent you from taking the "Clean" actions above?*



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of facilities and equipment was mentioned most often. Also, frequently mentioned was a desire to protect the water from invasive species and that reminders through signage at landings would help.

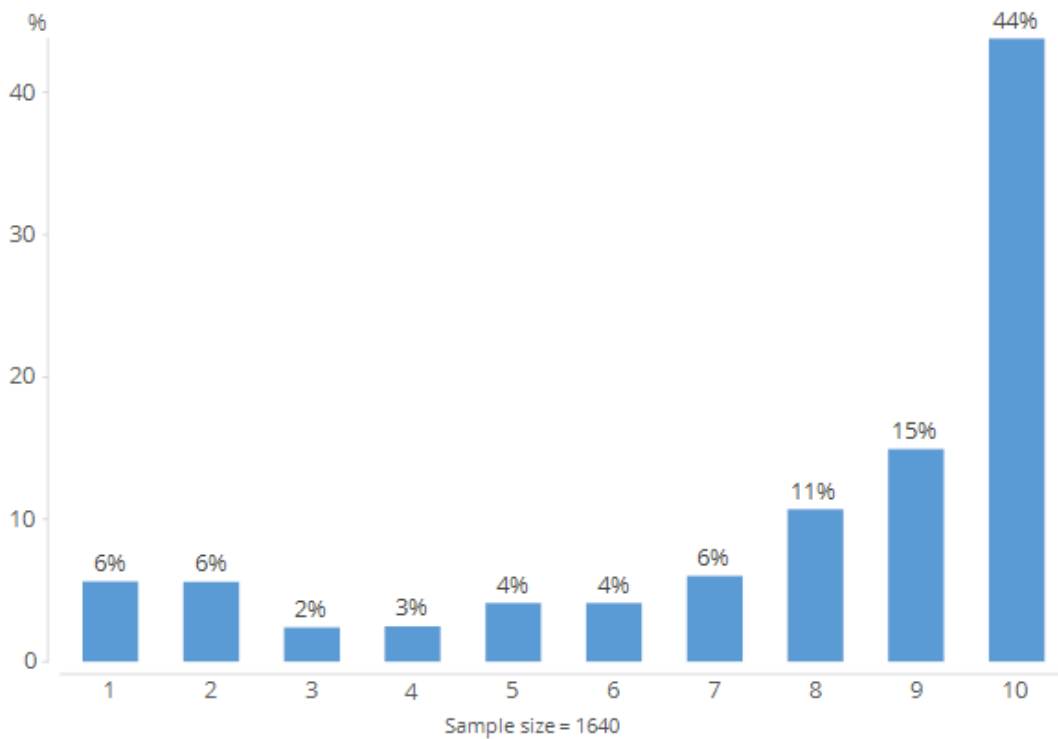
*What might motivate you to take the "Clean" actions above?*



## Drain

Respondents were more likely to take the “drain” actions as described, with 80% choosing 6-10 on a 10-point scale. Further, the likelihood was strong, with 70% choosing 8-10 on the 10-point scale.

*Drain your watercraft as described*



Many respondents stated that there was nothing that would stop them from draining their boat. The barriers that were most frequently mentioned were not having the time, forgetting to do so, lacking equipment and not knowing about the risks. Some pointed out that bad weather might be an issue. Others mentioned the difficulty of draining all of the water out.

*What might prevent you from taking the "Drain" actions above?*



Sample size = 1860

The most prevalent motivators were knowledge and awareness, and in the comments, respondents called for education campaigns. They also said that there had to be equipment, supplies and space to drain their boats. An often-cited reason for draining the boat was maintenance. People said that they wanted a clean, well-maintained boat, and to ensure that they drained the boat of standing water. People suggested that there be education campaigns about the importance of stopping invasives and protecting the environment, which were both indicated as motivators.

Many boat owners pointed out that it was common sense to drain a boat before transporting it as it reduced the weight of it.

*What might motivate you to take the "Drain" actions above?*



Sample size = 1860

Respondents were slightly less likely to dry their boats, with 64% choosing 6-10 on a 10-point scale. Twenty-five percent indicated they were very unlikely to dry (choosing 1-3).

Number of Children	Percentage
1	10%
2	10%
3	5%
4	4%
5	7%
6	6%
7	6%
8	10%
9	12%
10	30%

Sample size = 1640

The prevalence of “nothing” as an answer was due to two main factors. First, many people said that drying their boat was done by the wind when towing it or the sun when it was sitting, and it did not need any action from them. Secondly, they felt rain and poor weather conditions negated drying their boat.

[illegible]

When asked what might motivate them to dry their boats, the main issue was knowledge, information and education. People said information campaigns were needed and that reminders and signage should be placed at boat landings. The next most popular response was having a place and equipment available to do so, followed by it being a good maintenance practice. Concern for the environment and reducing invasive species were also cited as motivators. Some said they needed to be convinced it was necessary.

*What might motivate you to take the "Dry" actions above?*



Sample size = 1860

## Sources of Information

Respondents were given a choice of several different sources of information from which they might have received information on invasive species.

*Where have you heard about the risks associated with invasive species? (Select all that apply)*

	%
Signs at parks and campsites	69%
News	64%
Word of mouth	47%
Magazine article	42%
Brochure	37%
Road signs	34%
Social media like Facebook, Twitter and Instagram or other	34%
Website	34%
Other	16%
School	15%

Sample size = 1832

The most frequently identified source was signs at parks and campsites (69%). Other frequent sources were the news (64%) and magazine articles (42%). Road signs, which have been used in Ontario and Quebec, were at 34%.



Sample size = 1860

Word of mouth was identified by 47% of respondents, showing that social diffusion and sharing are effective means of communications. In fact, people who chose “Other” largely identified face-to-face networking communications, such as clubs and associations, talking to friends, and hearing about it at work. Other popular responses were invasive species councils and government. The responses indicate that a broad list of communications vehicles have reached people with messaging on invasive species.

Respondents were then asked which way is best for reaching them with information on invasive species.

*What would you suggest would be the best way to reach people like you to inform them about how they can stop the spread of invasive species? (Select all that apply)*

	%
Signs at parks and campsites	86%
Social media like Facebook, Twitter and Instagram or other	71%
News	65%
Road signs	59%
School	43%
Website	42%
Brochure	41%
Word of mouth	34%
Magazine article	33%
Other	12%

Sample size = 1860

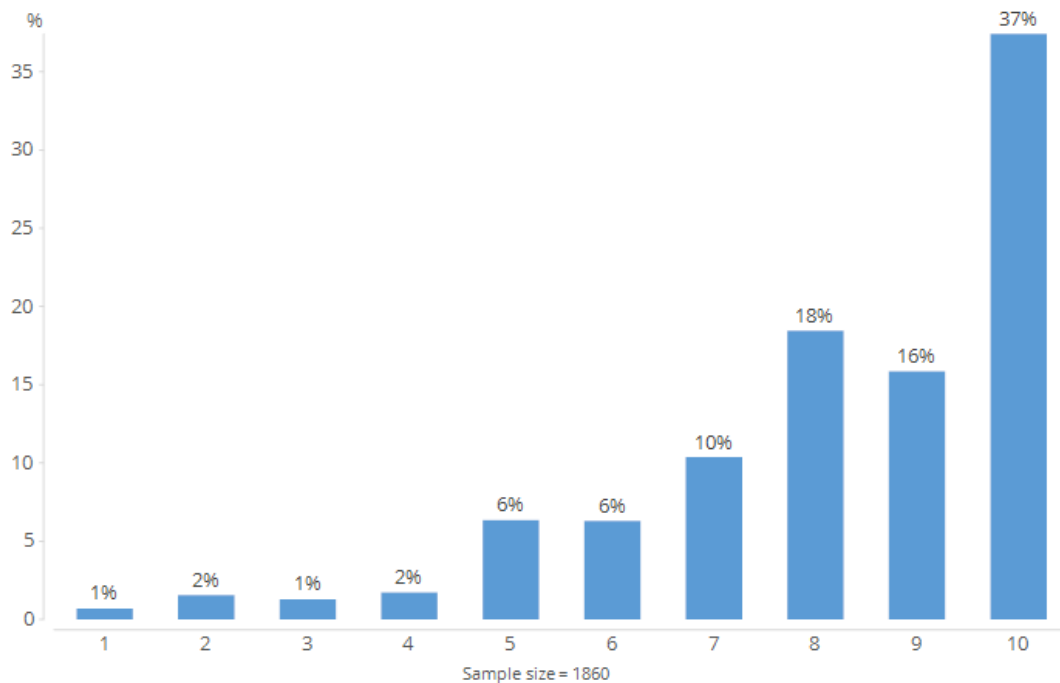
When asked how best to deliver information, the overwhelming choice of respondents was through signage at parks (86%). This was followed by social media (71%), news (65%) and road signs (59%).

## Concern About Invasive Species

### Concern

Near the end of the survey, respondents were informed that people who were active outdoors could spread invasive species that could cause significant damage to natural areas. This statement was made to ask follow up questions that tested their attitudes after being informed of the risk.

*On a scale from 1 to 10, where 1 is "Not at all" and 10 is "Very," how concerned are you about the risk of damage to natural areas caused by invasive species?*



Respondents were then asked about their level of concern about invasive species damaging natural areas. 87% indicated a high level of concern (6-10 on a 10-point scale). Only 12% chose the lower half of the scale (1-5 on the 10-point scale).

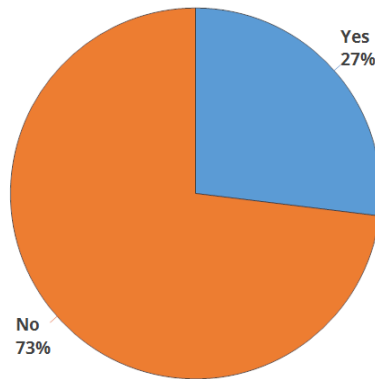
The results indicate that there is certainly some social bias (tendency to answer in the socially acceptable manner) in answering the question just after the information was given to them. However, the results indicate that people who are informed of the risks associated with invasive species know that they should be concerned about the damage caused by transporting them. This is valuable to know in the design of communications approaches that focus on behaviour change.

### Current Knowledge

In order to gain an understanding of the overall familiarity respondents had with invasive species before they began the survey, we asked if people had studied invasive species at

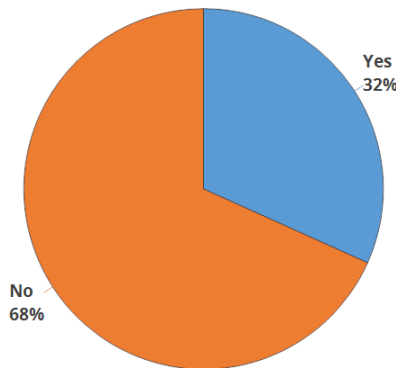
school, and if they had ever worked for, or volunteered with, any organization that worked on invasive species programs.

*Have you ever studied invasive species at school?*



Sample size = 1860

*Do you or have you ever worked or volunteered with any organization that has had an involvement with invasive species?*



Sample size = 1860

With 27% of respondents having studied invasive species in school and 32% having worked with an invasive species organization, it is possible that people with advanced knowledge of invasive species are over-represented in the data. However, it is a simple matter to filter the data to find out the differences between the well-informed and less-informed respondents. This can be done in developing a Behaviour Change communications strategy.

Evaluation of the data indicates that there is not a lot of skewing of responses.

## Findings for Behaviour Change

The data gathered from the survey was analyzed to inform the development of Behaviour Change strategies.

### **Need to increase awareness and improve attitude**

It is clear from the results of the research that a significant barrier to getting people to reduce the spread of invasive species is that many people are unaware of the risks, and most do not perceive the risks as substantial. However, once people were told about the risks, their reported level of concern and willingness to take action increased.

Respondents indicated that the best way to reach them was through signage at parks, road signs, and social media. They also indicated news as a good tool. However, they also suggested community-based approaches, such as seminars held through clubs and associations.

Communications campaigns to raise invasive species awareness and attitude should emphasize, but not be limited to, the channels preferred by the respondents.

### **Attitude and Awareness Alone is not enough**

The barriers and motivators research determined that decisions about taking action that will stop the spread of invasive species are not going to be made with the goal of mitigating risk of invasive species alone.

For example, the biggest factors affecting decision-making on firewood are cost, convenience, availability and quality. If people feel that they have to pay a high price for what they believe is poor quality (wet) wood at a park or campground, they are much more likely to solve the problem by bringing in drier and less expensive wood from other places. If, on the other hand, the park offers quality (dry) wood at competitive prices, people will likely be quite happy to enjoy the convenience of being able to pick up wood at the park, rather than have to carry it in from elsewhere.

Parks and campgrounds should adjust their entry fees and wood prices to ensure that wood is not considered to be prohibitively expensive to buy locally. They should also provide information on availability of wood in the vicinity of the park. This information could be added to the facility's website to make sourcing local wood more convenient.

Relative to aquatic invasive species, the survey results find that boaters are more likely to clean and drain their boat for maintenance and to make it lighter for transport than to reduce the risk of invasives. Promoting good care of watercraft to protect an investment will help to get people to reduce the spread of aquatic invasive species as well. However, they are more likely to do so if there is equipment available, and if there are reminders at landings.

Communications should promote the motivators that will change behaviour, while at the same time barriers should be removed to make the preferred actions convenient.



## **Commitments and Reminders**

Two fundamental steps in nurturing Behaviour Change are:

- Securing commitments to adopt a new behaviour; and,
- Reminding people to perform the behaviour.

A Behaviour Change strategy must include a plan to collect commitment strategies. There are many ways to do this. However, designing a commitment collection strategy is outside the scope of this report.

Once commitments are secured, it is important to remind them what to do, when and where they should be doing it. For instance, it makes sense to include information at all campsites and campgrounds where people are likely to be burning firewood, and that is a good place to also ask for commitments. It would also be advisable to remind people about not moving firewood when they are booking a reservation on the facility's website.

Similarly, reminders to check clothes, boots and equipment should be at trailheads, and reminders to clean, drain and dry watercraft should be at landings.

## **Target audiences**

When developing behaviour change programs, target audiences must be kept in mind. For example, people who buy firewood to heat their homes are a different target audience than those who source firewood for a fire when camping. However, there may also be overlap between target audiences (in fact in this example there is because 93% of people who use firewood have campfires, and 39% use it to heat their homes).

A further target audience for firewood is managers of parks and campgrounds. It appears that one of the reasons people move firewood when they are camping is that they perceive wood available in the park to be expensive and of poor quality (wet). If campground managers truly wish to encourage people to buy wood where they burn it, then they should encourage it through competitive prices and good quality.

Similarly, on trails there are hikers and there are people who may be working with equipment or driving vehicles. The behaviours to be promoted are slightly different for each of those audience segments, and so should the communications approach.

Also, while people who use motorized boats may be reached at boat landings and encouraged to Clean, Drain and Dry, people with kayaks and canoes have less dependence on formal launching spots and it would be impossible to have signage to remind them everywhere. They will require a different outreach strategy.

## **Conclusion**

The 2018 Outdoor Activities Survey serves two purposes. Firstly, it provides a baseline of awareness, attitudes and behaviours with respect to human activities and their risks to our

natural areas presented by the potential of spreading invasive species. At some time in the future, the survey can be conducted again in order to evaluate the effectiveness of communications efforts.

Secondly, the survey provides important information that can inform the development of Behaviour Change communications strategies for outdoor activities. The data captured represents a rich database of information that can be used for years to come.

## Appendix A - Survey Questions

### 2018 Canadian Council on Invasive Species Outdoor Activities Survey

**Lang1:** This survey can be taken in either French or English. Please choose your preferred language. /Ce sondage peut être complété en français ou en anglais. Veuillez choisir votre langue préférée.

- 1) English
- 2) Français

**I1:** Thank you for taking this survey. It involves 2 subjects: the use of firewood, and involvement in outdoor activities. This survey is open to residents of Canada who are 18 years of age or older. The information collected will be used to help develop communications programs. All of your responses will be kept separate from any personal contact information you may provide. At the end of this survey, you will have an opportunity to have your name entered into a draw for 1 of 3 prizes of CAN\$250. If you have any questions about this survey please call Beyond Attitude Consulting at xxx-xxx-xxxx.

**Q1:** Are you over 18 years of age and living in Canada?

- 1) Yes
- 2) No

**M1:** Please indicate in which province/territory you live.

- 1) Yukon
- 2) Northwest Territories
- 3) Nunavut
- 4) British Columbia
- 5) Alberta
- 6) Saskatchewan
- 7) Manitoba
- 8) Ontario
- 9) Quebec
- 10) Newfoundland and Labrador
- 11) Prince Edward Island
- 12) New Brunswick
- 13) Nova Scotia

**Q1A:** Do you use firewood for either heating, cooking or for recreational purposes like campfires?

- 1) Yes
- 2) No

**M2:** What do you use firewood for? (Choose all that apply).

- 1) Home heating
- 2) Heating of cottage/camp/cabin or other building

- 3) Campfire/Bonfire/Recreation
- 4) Outdoor cooking
- 5) Indoor cooking
- 6) Other

**F1:** Where do you usually get your firewood compared to where you burn it? (Choose all that apply).

- 1) I gather/cut it in the area where I burn it (within 15 km).
- 2) I gather/cut it and transport it to the area where I burn it (more than 15 km).
- 3) I buy it locally where I burn it (within 15 km).
- 4) I buy it in one area and transport it to another where I burn it (more than 15 km).
- 5) Other

**F2:** Where do you buy your firewood? (Select all that apply)

- 1) Picked up from local woodlot owner
- 2) Delivered by local woodlot owner
- 3) Buy from gas station/corner store
- 4) Buy from "big box store" like Walmart
- 5) Buy from grocery store
- 6) Buy from park/campsite I am visiting
- 7) Delivered but I don't know where it comes from
- 8) Other

**A2:** Have you seen any information campaigns that ask people to not move firewood?

- 1) Yes
- 2) No
- 3) Not sure

**A3:** On a scale of 1 to 10 where 1 is "Not Risky" and 10 is "Very Risky," how risky do you think the movement of firewood is for our forests?

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5
- 6) 6
- 7) 7
- 8) 8
- 9) 9
- 10) 10

**A5:** Are you aware of any regulations in your province/territory that ban the movement of firewood outside of local areas?

- 1) Yes
- 2) No

**A6:** On a scale of 1 to 10, where 1 is "Very Unlikely" and 10 is "Very Likely," how likely are you to make sure you do not move firewood more than 15 km?

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5
- 6) 6
- 7) 7
- 8) 8
- 9) 9
- 10) 10

**B1:** What factors might prevent you from getting your firewood close (within 15 km) to where you burn it?

- 1)

**B1A:** What might motivate you to get your firewood close to where you burn it?

- 1)

**B2:** Some commercially available firewood is treated with heat to be pest-free and safe for transport. If it were available in your area, what is the likelihood that you would purchase pest-free firewood from a local retailer? Please indicate on a scale of 1 to 10, where 1 is "Very Unlikely" and 10 is "Very Likely."

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5
- 6) 6
- 7) 7
- 8) 8
- 9) 9
- 10) 10

**B3:** What might prevent people in your area from buying firewood that is treated to be pest-free?

- 1)

**B4:** What might motivate people in your area to purchase firewood treated to be pest-free?

- 1)

**I4:** We are now going to ask you some questions about some different types of outdoor behaviours.

**PCG1:** On a scale of 1 to 10 where 1 is "Not at all" and 10 is "Very," how active are you in the following outdoor activities:

### Rows

- 1) Hiking
- 2) Camping
- 3) Gardening

### Columns

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5
- 6) 6
- 7) 7
- 8) 8
- 9) 9
- 10) 10

**PCGB1:** People who use trails and camping areas can help stop the spread of invasive species like harmful insects by checking their clothes, equipment and tires and removing any plant, seeds and mud before entering or exiting a trail. What might prevent people like you from taking such action?

1)

**PCGB1A:** What might motivate people like you to take such action?

1)

**PCGBE1:** On a scale of 1 to 5 where 1 is "Never" and 5 is "Always", please indicate how often, before and after walking on a trail, you check your clothes, boots and equipment and remove any thistles, seeds, mud, etc that you may find.

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5

**CDD1:** On a scale of 1 to 10, where 1 is "Not at all" and 10 is "Very," how active are you in water-based activities such as fishing, boating, canoeing, kayaking and wakeboarding/waterskiing?

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5
- 6) 6
- 7) 7
- 8) 8
- 9) 9

10) 10

**CDD2:** Please indicate if you own or sometimes rent or borrow any of the following watercraft (check all that apply).

- 1) Motorboat
- 2) Sailboat
- 3) Canoe
- 4) Kayak
- 5) Stand-up paddleboard
- 6) Rowboat
- 7) Sit-down paddleboat
- 8) Other

**CDD3:** Do you usually use your watercraft in the same body of water or do you move it/them around? If you move it/them around, please indicate how often.

- 1) Always the same body of water
- 2) I move it around, but not on the same day
- 3) I sometimes launch in different bodies of water on the same day

**CDD4A:** When moving from one body of water to another, on a scale of 1 to 10 where 1 is "Never" and 10 is "Always," how often do you do the following:

**Rows**

- 1) Clean your watercraft
- 2) Drain your watercraft
- 3) Dry your watercraft

**Columns**

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5
- 6) 6
- 7) 7
- 8) 8
- 9) 9
- 10) 10

**CDDA1:** On a scale of 1 to 10, where 1 is "Never heard of it" and 10 is "Very aware", how aware are you of the threat to our lakes, rivers and streams from aquatic invasive species?

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5
- 6) 6
- 7) 7

- 8) 8
- 9) 9
- 10) 10

**CDDI1:** Clean, Drain, Dry is a program that encourages boaters to ensure that they do not spread aquatic invasive species when they move their watercraft from one body of water to another. These are the actions that boaters are requested to take:



**CDDB1:** Considering the behaviours listed in the graphic above, on a scale of 1 to 10 where 1 is "Not at all likely" and 10 is "Very likely," please indicate how likely you are to:

**Rows**

- 1) Clean your watercraft as described
- 2) Drain your watercraft as described
- 3) Dry your watercraft as described

**Columns**

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5
- 6) 6
- 7) 7
- 8) 8
- 9) 9
- 10) 10

**CDDB2:** What might prevent you from taking the "Clean" actions above?

- 1)

**CDDB2A:** What might motivate you to take the "Clean" actions above?

- 1)

**CDDB3:** What might prevent you from taking the "Drain" actions above?

- 1)



**CDDDB3A:** What might motivate you to take the "Drain" actions above?

1)

**CDDDB4:** What might prevent you from taking the "Dry" actions above?

1)

**CDDDB4A:** What might motivate you to take the "Dry" actions above?

1)

**C1:** Where have you heard about the risks associated with invasive species? (Select all that apply)

- 1) News
- 2) Magazine article
- 3) Word of mouth
- 4) Website
- 5) Social media like Facebook, Twitter and Instagram or other
- 6) School
- 7) Brochure
- 8) Signs at parks and campsites
- 9) Road signs
- 10) Other

**C2:** What would you suggest would be the best way to reach people like you to inform them about how they can stop the spread of invasive species? (Select all that apply)

- 1) News
- 2) Magazine article
- 3) Word of mouth
- 4) Website
- 5) Social media like Facebook, Twitter and Instagram or other
- 6) School
- 7) Brochure
- 8) Signs at parks and campsites
- 9) Road signs
- 10) Other

**D0:** We are now going to ask you some questions which will assist us in evaluating our communications needs. All answers will be kept confidential. Answers are optional.

**D2:** Please indicate to which age group you belong.

- 1) 19 or younger
- 2) 20 to 24
- 3) 25 to 29
- 4) 30 to 34
- 5) 35 to 39
- 6) 40 to 44
- 7) 45 to 49
- 8) 50 to 54

- 9) 55 to 59
- 10) 60 to 64
- 11) 65 to 69
- 12) 70 to 74
- 13) 75 to 79
- 14) 80 to 84
- 15) 85 to 89
- 16) 90 or older

**D1:** What is your gender?

- 1) Female
- 2) Male
- 3) Prefer not to answer
- 4) Prefer to self identify

**Postal:** Please provide the first 3 characters of your postal code.

- 1)

**KNOWLEDGE1:** People who are active outdoors can unknowingly spread invasive plants, animals, insects and microorganisms which can cause significant damage to our natural areas. The good news is that people can take steps to reduce the spread of damage-causing invasive species.

**KNOWLEDGE2:** On a scale from 1 to 10, where 1 is "Not at all" and 10 is "Very," how concerned are you about the risk of damage to natural areas caused by invasive species?

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5
- 6) 6
- 7) 7
- 8) 8
- 9) 9
- 10) 10

**KNOWLEDGE3:** On a scale from 1 to 10, where 1 is "Haven't heard about it before" and 10 is "Expert," please indicate your understanding of invasive species and the risks they present.

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5
- 6) 6
- 7) 7
- 8) 8

- 9) 9
- 10) 10

**KNOWLEDGE4:** On a scale from 1 to 10, where 1 is "Not at all" and 10 is "Very", please indicate your interest in learning more about how people like you can prevent the spread of invasive species and damage to our natural areas.

- 1) 1
- 2) 2
- 3) 3
- 4) 4
- 5) 5
- 6) 6
- 7) 7
- 8) 8
- 9) 9
- 10) 10

**D3:** We would like to ask a few questions to help us understand your knowledge of invasive species before taking this survey. Do you or have you ever worked or volunteered with any organization that has had an involvement with invasive species?

- 1) Yes
- 2) No

**D4:** Have you ever studied invasive species at school?

- 1) Yes
- 2) No

**Z1:** You can enter your name into a draw for a chance to win a CAN\$250 prize. To enter, you must provide contact information. Your information will be kept separate from the survey data and only used for the draw.

**Z2:** Do you want to enter your name into the draw?

- 1) Yes
- 2) No

**Z3:** Please provide your name.

- 1)

**Z4:** Please provide an email address.

- 1)

**N1:** If you would like to receive the national invasive species newsletter, provide your email address below. The information will only be used for that purpose.

- 1)

**I3:** Thank you for completing the survey. We will follow up with the winners of the draw in April 2018. For more information on invasive species, visit the Canadian Council on Invasive

Species at [canadainvasives.ca](http://canadainvasives.ca).

**Complete1:** You will now be taken to the Canadian Council on Invasive Species website.  
1)