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2021 Invasive Species Programs and Behaviour Survey Report

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Produced by Beyond Attitude Consulting for the Invasive Species Council of British Columbia.

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Survey Background

The Invasive Species Council of British Columbia (ISCBC) surveyed British Columbia (BC) residents about several programs and issues. The goal was to compare their current awareness of and attitude towards invasive species, and the actions that people are taking, with a benchmark survey conducted four years earlier by the ISCBC — assessing the effectiveness of messaging and outreach to British Columbians about invasive species.

Similar to the 2017 survey, the 2021 survey explores behaviours, motivators and barriers, and program recognition and communication preferences. The findings may help inform behaviour change programs that can help stop the spread of invasive species.

This report refers to the recent survey as the 2021 survey, and the previous one as the 2017 survey. If the year is not specified, the reference is to the 2021 survey.

Most of the questions in the 2021 survey are similar to those asked four years earlier. However, there are some significant differences. The 2017 survey was conducted by telephone, while the 2021 survey was online. The 2017 survey had a total sample size of 252, with 131 from the Cariboo Regional District and 121 from the rest of BC. The 2021 survey had a total sample size of 545 eligible respondents, not focusing on any specific region. Some of the questions from the 2017 survey were modified for 2021 to work better in an online environment; the 2021 survey includes questions that couldn't be asked over the phone in 2017 — one example is recognizing program logo images presented to respondents on their computer screens and mobile devices.

The survey analysis makes careful comparisons between the two surveys with the understanding that the surveys and their samples are different. Nonetheless, the surveys are similar enough that general conclusions can be drawn by comparing levels of awareness, program recognition and behaviours. Where applicable, the comparison discussion notes significant differences in the questions or sample sizes.

Survey Methodology

The 2021 survey was conducted online from March 9, 2021, until April 7, 2021. It was promoted on Facebook, LinkedIn and through community networks in British Columbia. There were 550 total respondents, five of whom were disqualified for being either too young or not a BC resident.

Survey Findings

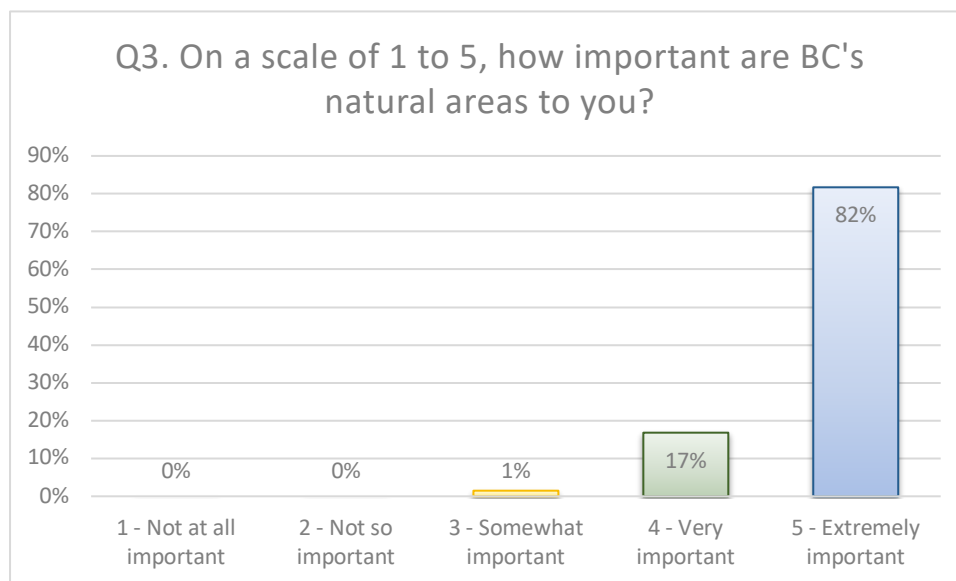
The survey findings are organized into several sections. The sections include

- Attitude and awareness;
- ISCBC programs;
- Awareness of ISCBC and local invasive species organizations; and,
- Demographics.

Attitude and Awareness

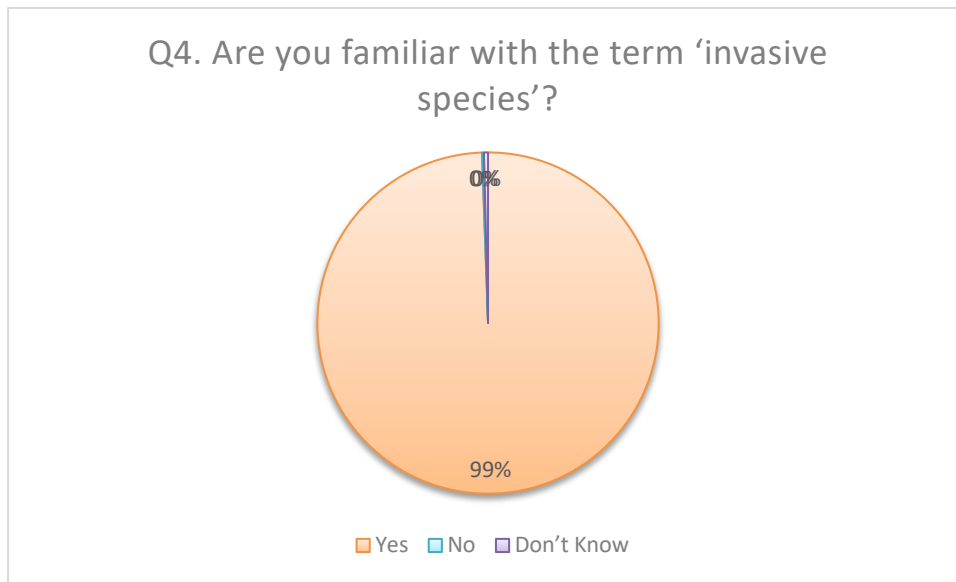
Survey respondents were asked to describe how important BC's natural areas were to them. There was strong support for BC's natural areas, with 99% of respondents answering they are either very important or extremely important to them. Strong support is a sound basis for developing strategies to nurture behaviours that will protect those natural areas. Lack of support is a barrier to behaviour change; support must be built if it does not already exist.

Figure 1 - Importance of natural areas (n=541)



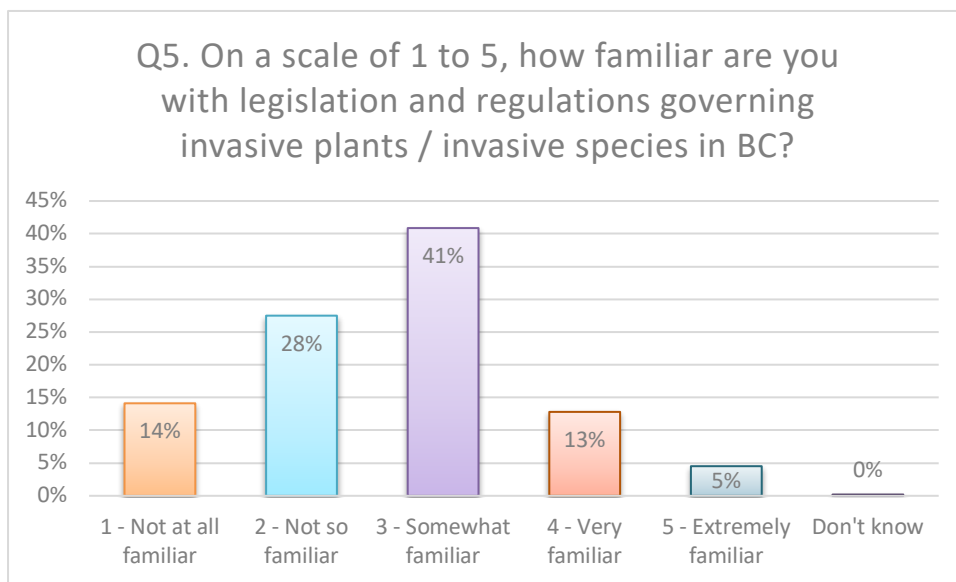
Similarly, 99% of respondents said they were familiar with the term "invasive species." Only one of the 531 respondents who answered the question replied no. The awareness about invasive species is higher in 2021 than it was in 2017, when it registered at 82%. This current level of awareness represents a solid basis for developing and continuing with behaviour change to reduce the spread of invasive species.

Figure 2 - Familiarity with the term "invasive species" (n=531)



Respondents were also asked how familiar they were with the legislation and regulations governing invasive plants and species in British Columbia. Six in ten (59%) reported that they were at least somewhat familiar, which compares favourably to 2017, when only 18.6% reported that they were at least somewhat familiar with regulations.

Figure 3 - Familiarity with legislation and regulation (n=531)

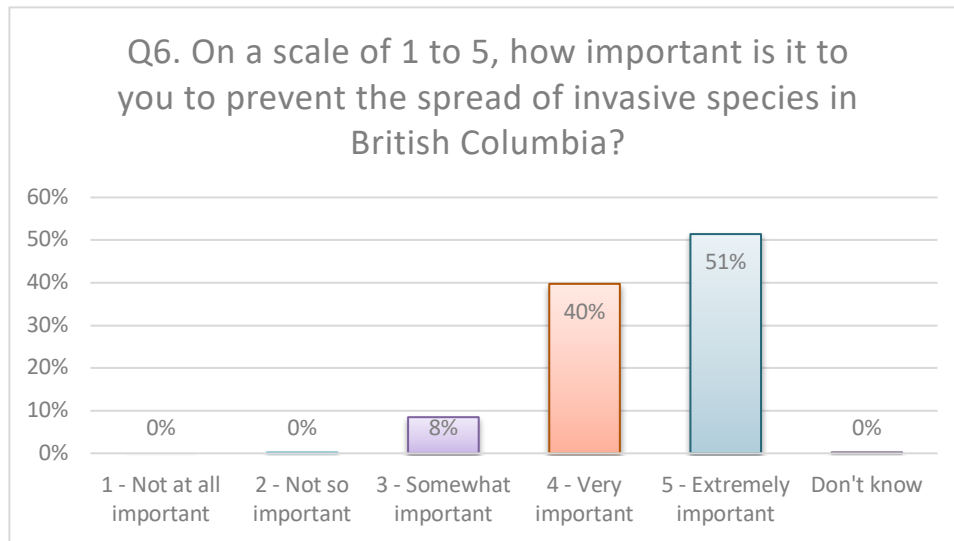


When asked how important it was to prevent the spread of invasive species in British Columbia, 91% of participants indicated it was very important or extremely important. No one indicated

that it was not at least somewhat important. This result is an increase over 2017 when 83.7% felt it was important or extremely important.

The strong support for preventing the spread of invasive species is a good foundation for developing habits that prevent the spread.

Figure 4 - Importance of stopping the spread (n=531)

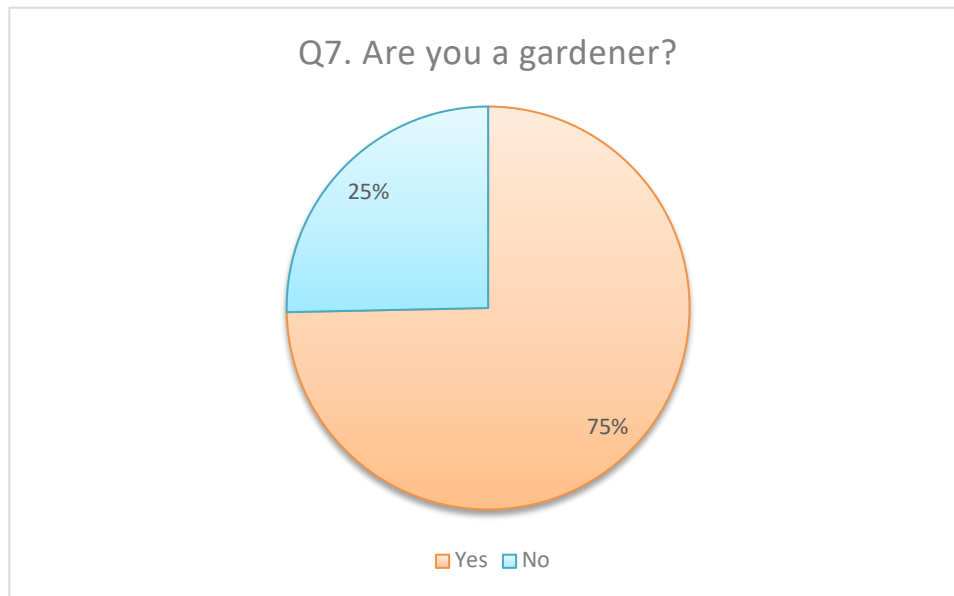


ISCBC Programs

Gardening and PlantWise Program

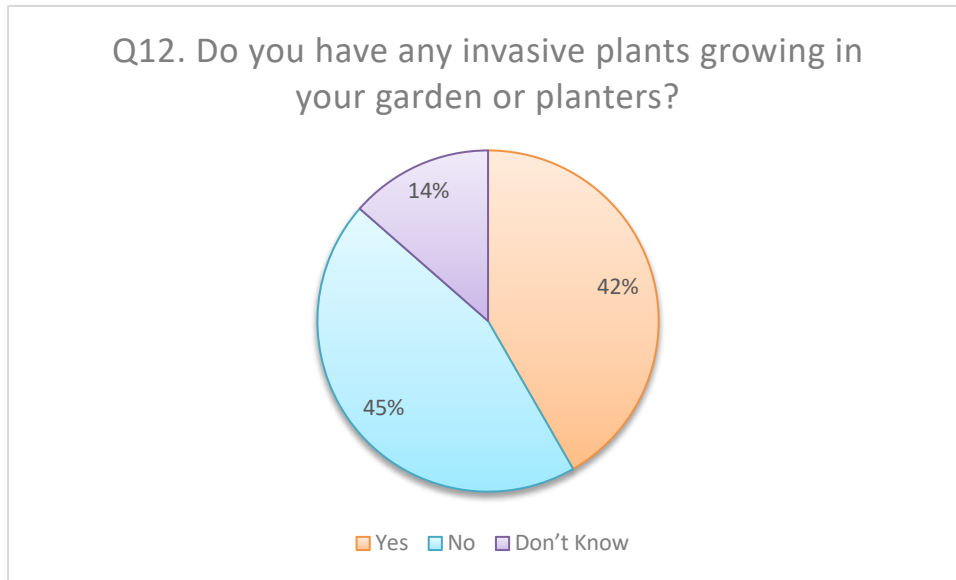
Gardening is popular in BC, and 75% of survey respondents indicated they were gardeners. Gardening was the most popular outdoor activity associated with ISCBC programs examined in the survey.

Figure 5 - Are you a gardener? (n=531)



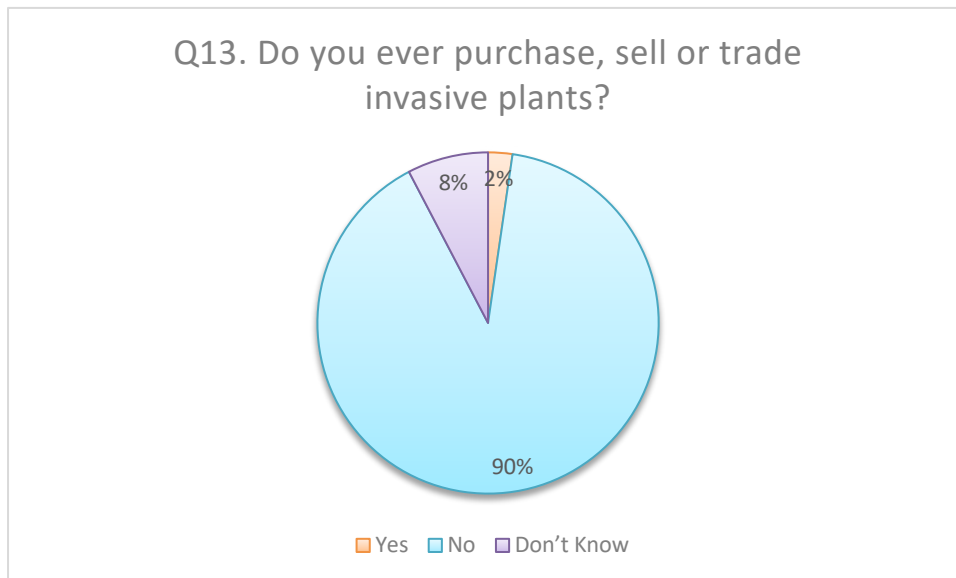
Less than half of gardeners reported they did not have any invasive plants growing in their garden or hanging baskets. Four in ten (42%) indicated that they had invasive plants, and 14% said they did not know. Interestingly, 41% of BC gardeners would knowingly have invasive plants in their gardens, while 91% of BC residents (and 92% of gardeners) feel it is important to prevent the spread of invasive species. This contradiction is an example of the Intention-Action Gap, whereby people knowing the right action don't always take it. The finding suggests outreach efforts have made people aware of the risks presented by invasive plants but have not entirely prevented people from planting invasive species.

Figure 6 - Do you have invasive species in your garden? (n=391)



The presence of invasive species in BC gardens is more surprising because 90% of gardeners reported they never purchase, sell or trade invasive plants. Invasive plants may have entered their garden before they became aware of what plants were invasive.

Figure 7 - Do you buy, sell or trade invasive plants? (n=391)

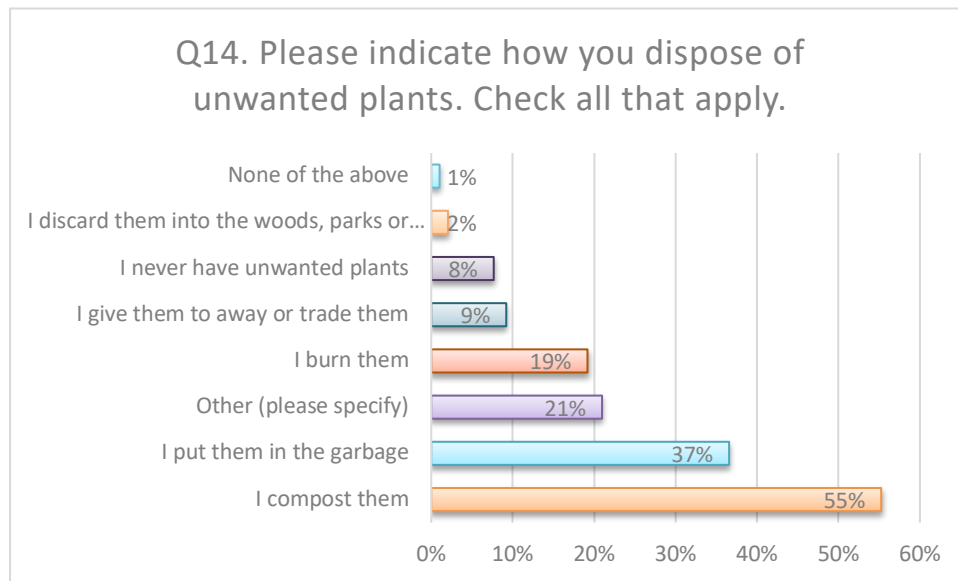


With many gardeners reporting invasive species in their gardens, it is essential to understand how they dispose of unwanted plants. More than half (56%) of respondents indicated that they composted unwanted plants (the question did not specify invasive plants). Gardeners often compost their plant waste, as has been found consistently in surveys about waste management and composting, including a study in 2010 in the Township of Langley, BC. The second most

popular method of disposing of plants is to put them in the garbage, reported by 36% of respondents. 19% indicated that they burned them. Only 2% indicated that they toss them into the woods to get rid of them.

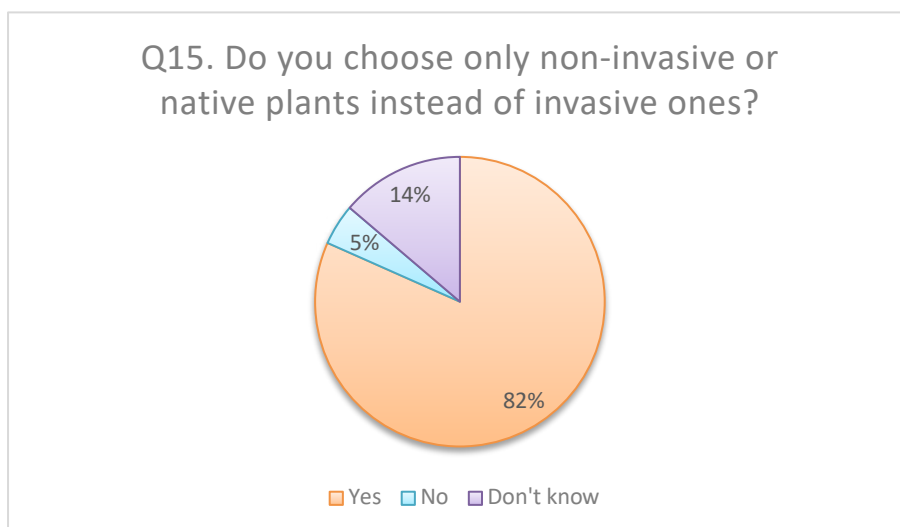
Composting unwanted non-invasive plants is not an issue. However, composting invasive plants is an issue because they could be spread in the resulting compost. Backyard composting does not reliably destroy seeds and plant material due to difficulty getting to the temperatures required for destruction.

Figure 8 - How do you dispose of unwanted plants? (n=391)



When acquiring plants, most gardeners (82%) choose only non-invasive or native plants, and 5% did not know, while 14% do not limit their choices to non-invasive or native plants.

Figure 9 - Do you choose only non-invasive plants? (n=391)



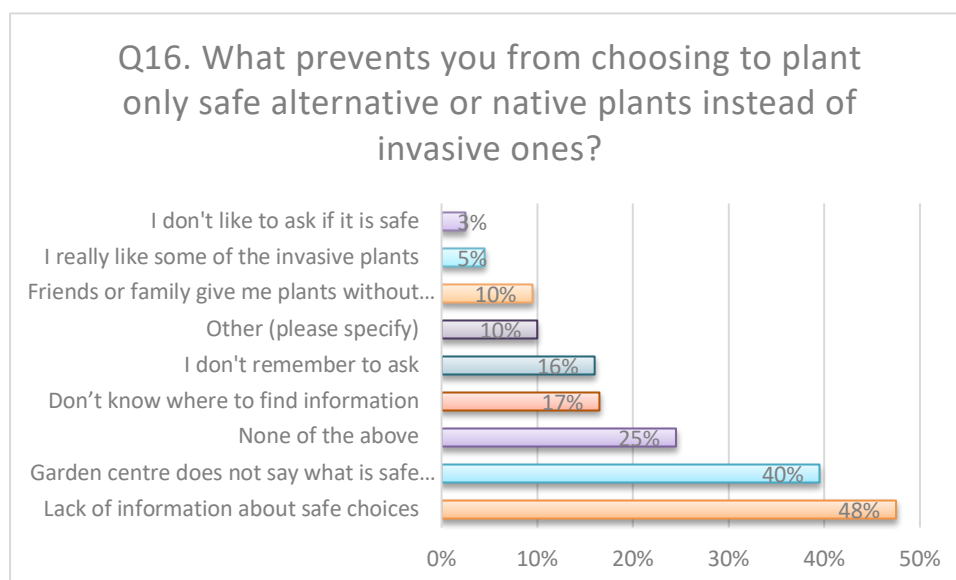
Gardeners were asked what might prevent them from choosing non-invasive plants instead of invasive ones. Almost half (47.5%) indicated a lack of information. The second most frequent answer was related as respondents indicated garden centres do not say what is invasive and what is not. The third most frequently chosen response was that people did not know where to find information about invasive species.

These top three barriers show the importance of providing the information that gardeners need to avoid purchasing or otherwise acquiring invasive plants. It is good news that half of the gardeners do not report lacking information as it indicates outreach efforts by ISCBC and others are reaching residents with information on invasive species. (Respondents most frequently identified ISCBC as a source of their information on invasive plants.) The outreach effort should continue, and garden centres could assist by delivering more information in their outlets.

Gardeners (16%) sometimes simply forget to ask if plants they are buying are invasive or not. This forgetfulness may partially explain why many gardeners said they do not choose invasive species.

Only 5% of respondents indicated that they intentionally purchased or acquired invasive plants because they liked them. However, this action may be under-reported, as respondents might have been unwilling to declare this transgression.

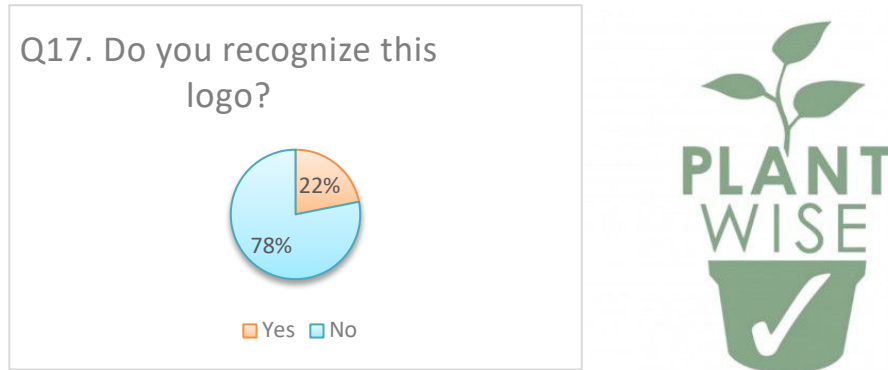
Figure 10 - Barriers to choosing non-invasive plants? (n=200)



All survey respondents were asked if they recognized the ISCBC PlantWise logo. About two in ten (22%) recognized the logo, and 78% did not. Among gardeners, 29% recognized the logo,

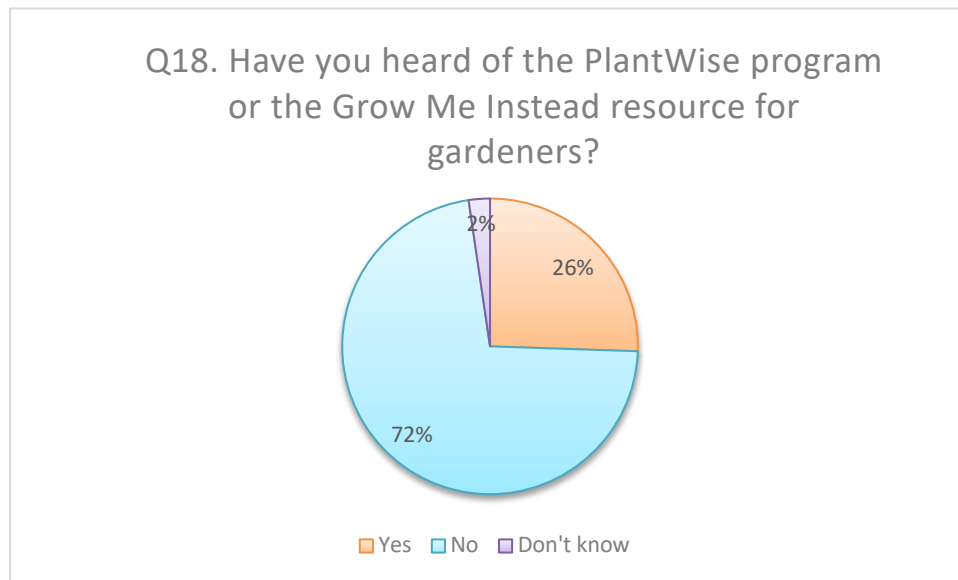
and 70% did not. These numbers compare favourably to 2017 when 14% had heard of the program.

Figure 11 - Do you recognize the PlantWise logo? (n=517)



A total of 26% of respondents had heard of the PlantWise program or the Grow Me Instead resource while 72% had not. Among gardeners, 29% had heard of the PlantWise program, 70% had not.

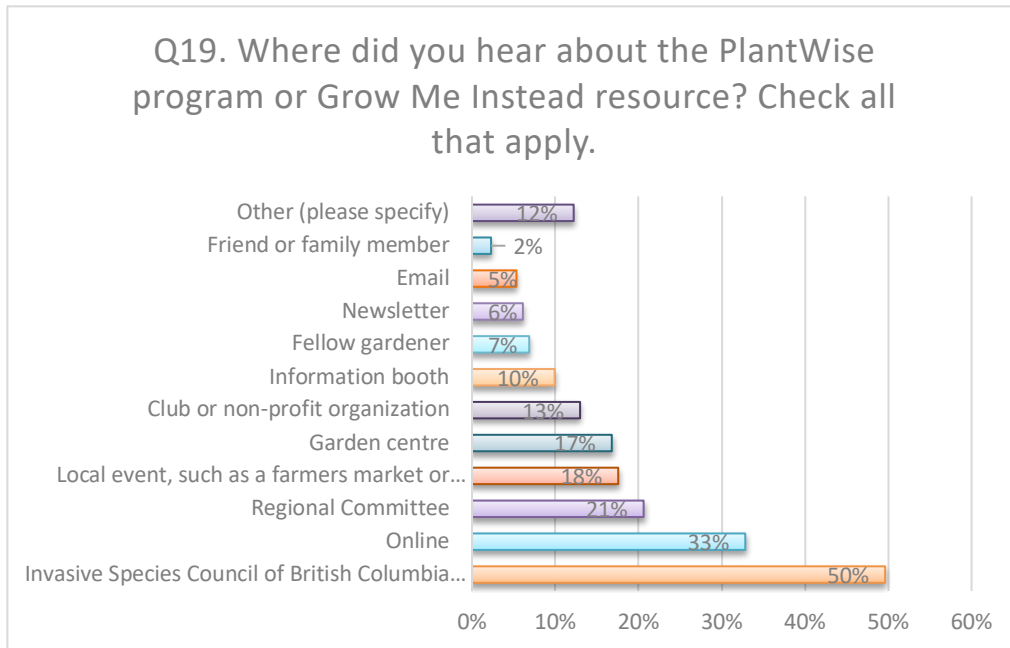
Figure 12 - Have you heard of PlantWise or Grow Me Instead? (n=517)



Those who recognized the program or the resource most often reported they learned about it through the ISCBC website (50%) or online (33%). Regional invasive species committees were the next commonly cited source of information at 21%, followed by local events such as farmers' markets and garden centres. The collection of emails, newsletters, information booths, and even friends or family members combined with clubs or non-profit organizations round out the sources identified; however, fewer respondents cited them.

In 2017 there were only 16 respondents to the question about information sources. Of those 16, half (51%) reported getting their information at local events, and 9% indicated online sources. In 2021, of 131 respondents to a similar question, 50% report ISCBC as a source for information, and 33% indicated online sources. These results indicate that ISCBC's outreach and online presence has been effective in reaching BC residents.

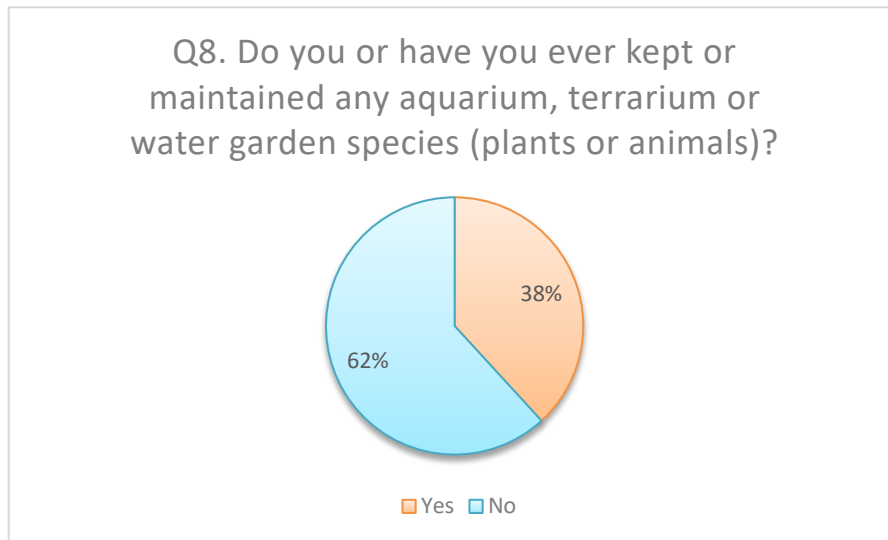
Figure 13 - Where did you hear about PlantWise? (n=517)



Aquariums, Terrariums and Ponds and Don't Let it Loose Program

Results indicate that six in ten (62%) survey respondents have maintained an aquarium, terrarium or water garden.

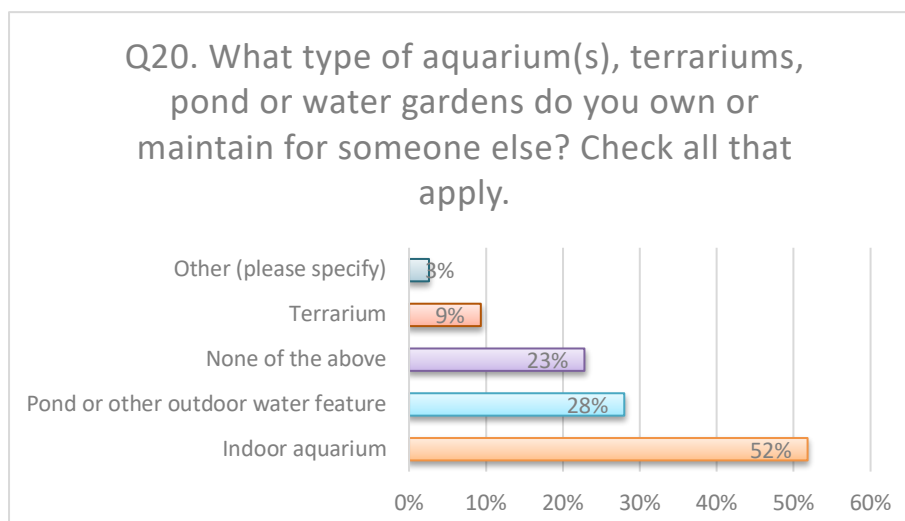
Figure 14 - Have you had aquariums, ponds or terrariums? (n=529)



Interestingly, 75% of those involved in aquarium, terrarium or water gardens are also gardeners.

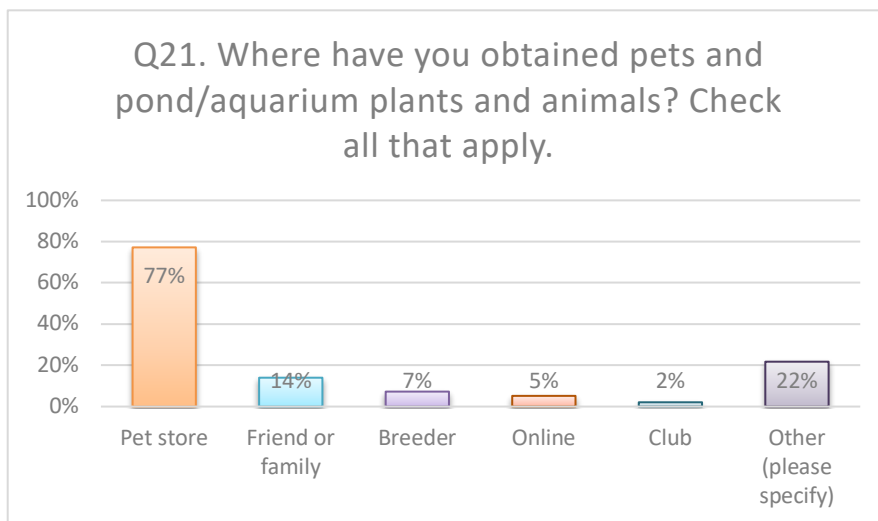
Of aquariums, terrariums and water gardens, the most popular choice is the aquarium, followed by an outdoor pond or water feature. Terrariums are reported by 10% of respondents. Those who selected "none of the above" (23%) have likely been enthusiasts in the past but are not presently.

Figure 15 - Which have you had (aquarium, pond, terrarium)? (n=193)



Plants and pets are most often acquired through a pet store (77%). Friends and family are also sources, as well as breeders. About 5% of respondents indicated that they purchased their species online, and only 4% through a club. Several respondents indicated that they bought plants at garden centres, and a small number collected them from the wild.

Figure 16 - Where do you get species? (n=193)



An essential goal of the Don't Let it Loose program is the safe disposal of unwanted pets and plants in ways that do not risk introducing invasive species. The survey found that placing in the trash (32%) and flushing down the toilet (22%) were the most common disposal methods indicated. Several indicated that they composted plants and buried pets that died. Only two respondents out of 194 indicated that they released a species into the wild.

Approximately 3 in 10 (28%) of all respondents recognized the Don't Let it Loose logo, and 25% had heard of the Don't Let it Loose program for pet owners. For people who have had aquariums, terrariums, and ponds, 31% recognize the logo, and 28% were aware of the program. In 2017 the numbers were slightly lower, but the study's authors stated that the statistic was not a reliable indicator due to a small sample size (n=34) for the question.

Figure 17 - How do you dispose of species? (n=193)

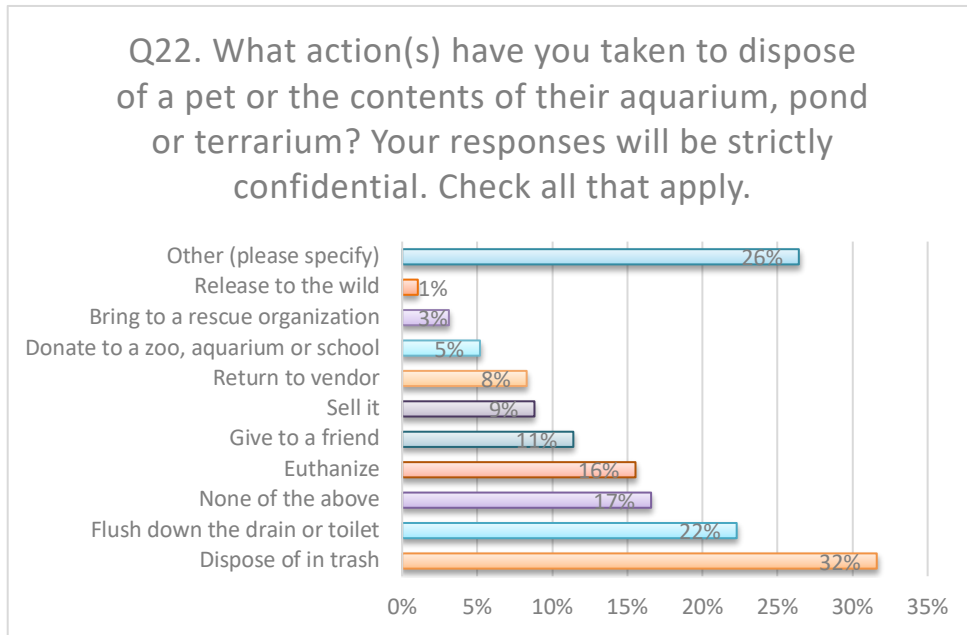
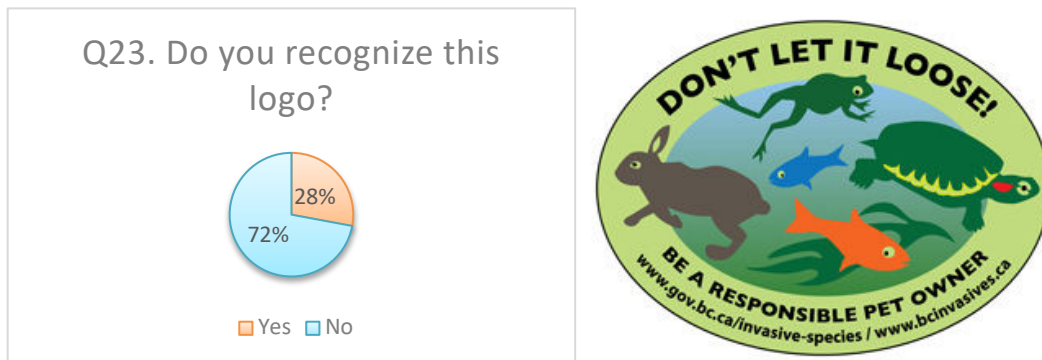


Figure 18 - Do you recognize the DLIL logo? (n=512)



Those who recognize the logo and the program often cited ISCBC (38%) and other invasive species organizations (23%) as the sources of the information they have, with online sources identified by 29%. One in 10 (10%) participants learned from their pet store, and similar numbers received their information at local events, regional committees, the provincial and local governments. It appears that the model of outreach by a network of organizations has been successful in reaching people about Don't Let it Loose.

The findings demonstrate the importance and success of the outreach work of ISCBC and the regional committees in educating people about invasive species and reducing the risk of introductions and spread. Without their success in connecting with enthusiasts, awareness of the issue would be much less.

Figure 19 - Have you heard of the DLIL program? (n=512)

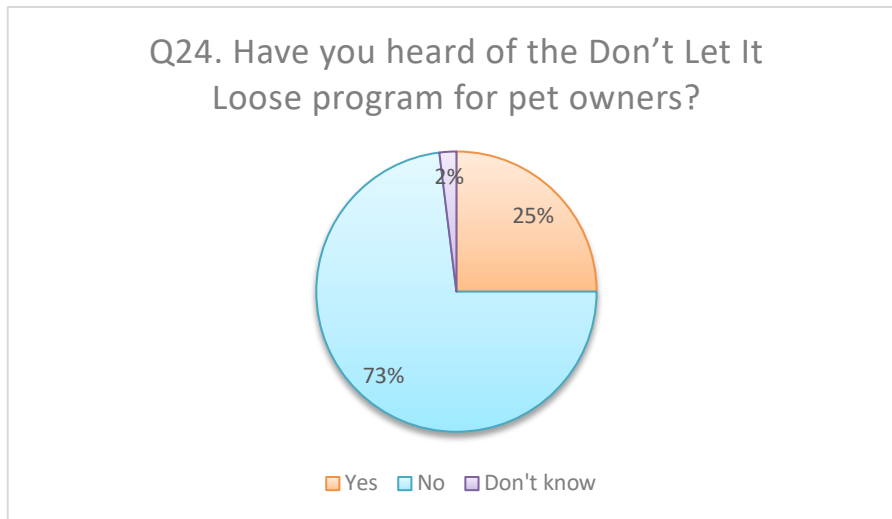
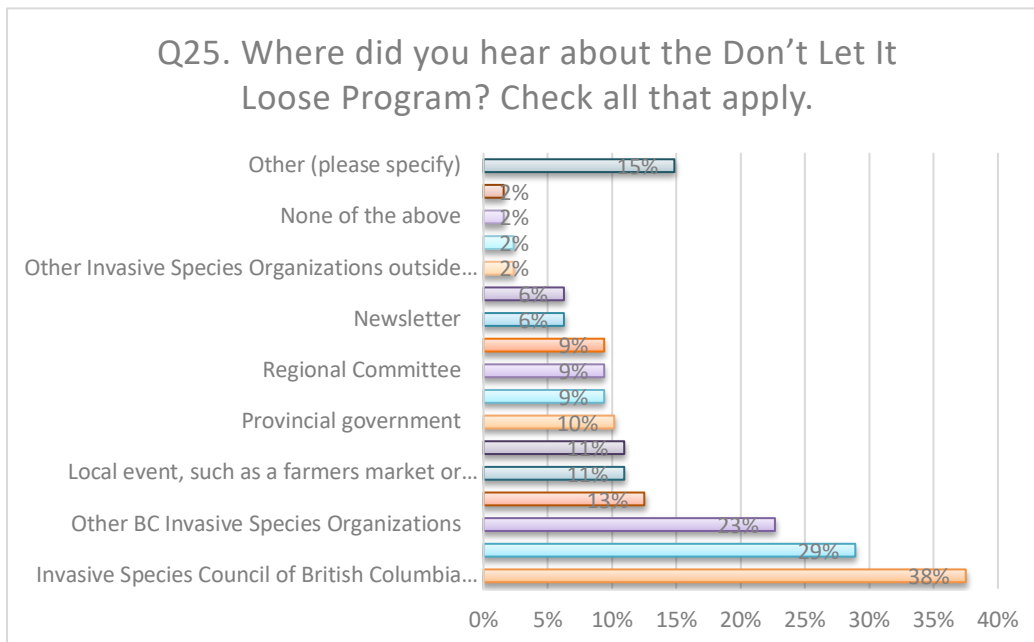


Figure 20 - Where have you heard about DLIL? (n=128)



Watercraft and Clean Drain Dry Program

In 2017, the survey asked only about motorized boats and found that 27% of respondents owned or operated one. Because Clean Drain Dry applies to all watercraft, the 2021 survey asked about motorized and non-motorized watercraft. Almost two in three (64%) respondents to the 2021 survey own or operate a motorized or non-motorized watercraft.

Limiting the question to motorized boat owners in 2017, combined with a smaller overall survey sample size, resulted in relatively small sample sizes (22 to 24) for boater behaviour questions. In the 2021 survey, the sample size of 183 for boater questions is much larger. Comparisons between 2017 and 2021 are made in this section, but the small sample size in 2017 makes the data less reliable.

Table 1 - How often do you Clean Drain Dry?

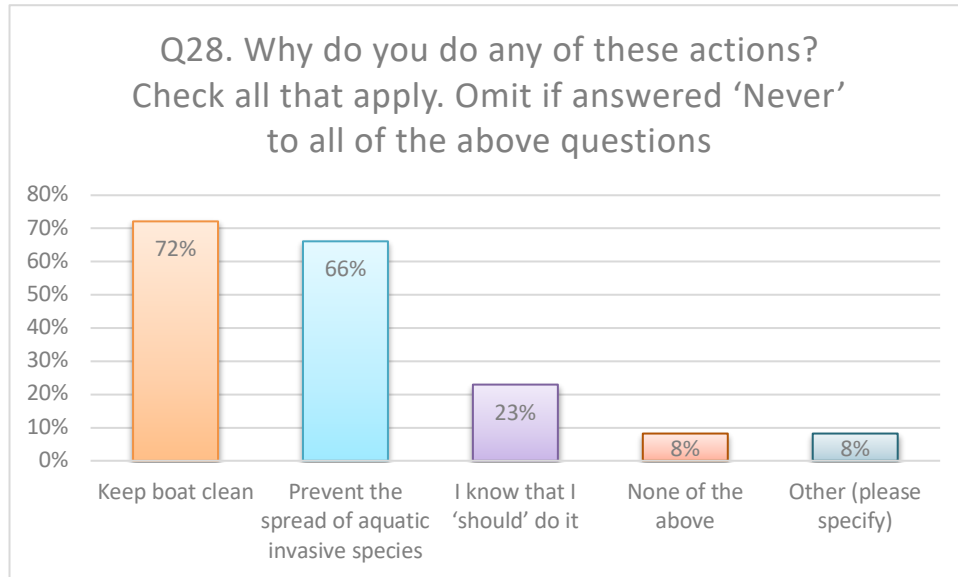
Q27. Please indicate how often you take the following actions after removing your boat from the water. Please use the following scale.

	Never	Rarely	Sometimes	Usually	Always	N/A	Total
I clean off all visible debris from my boat and trailer after leaving a waterbody	3%	4%	4%	24%	54%	12%	183
I use a power wash station to clean my boat if available	26%	9%	7%	12%	12%	33%	180
I drain onto land areas of my boat that can hold water (e.g. buckets, wells, bilge and ballast)	17%	4%	7%	11%	30%	31%	181
I dry my boat and trailer before launching into another waterbody	6%	2%	1%	13%	54%	23%	181
						n =	183

When asked what motivated them to take the actions associated with Clean Drain Dry, the most frequent response was to keep the boat clean (72%). This finding is similar to that of the 2017 survey, which found 85% wanted to keep their boats clean, and similar surveys conducted over the past several years across Canada, in Minnesota and New York State. This motivation among boat owners should inform outreach campaigns, as it could help change the behaviour of the 34% of boat owners who are not necessarily concerned about invasive species.

At 66%, the second-highest motivator was to prevent the spread of invasive species. Almost one in four reported that they did it because they knew they should, indicating the effectiveness of social norms.

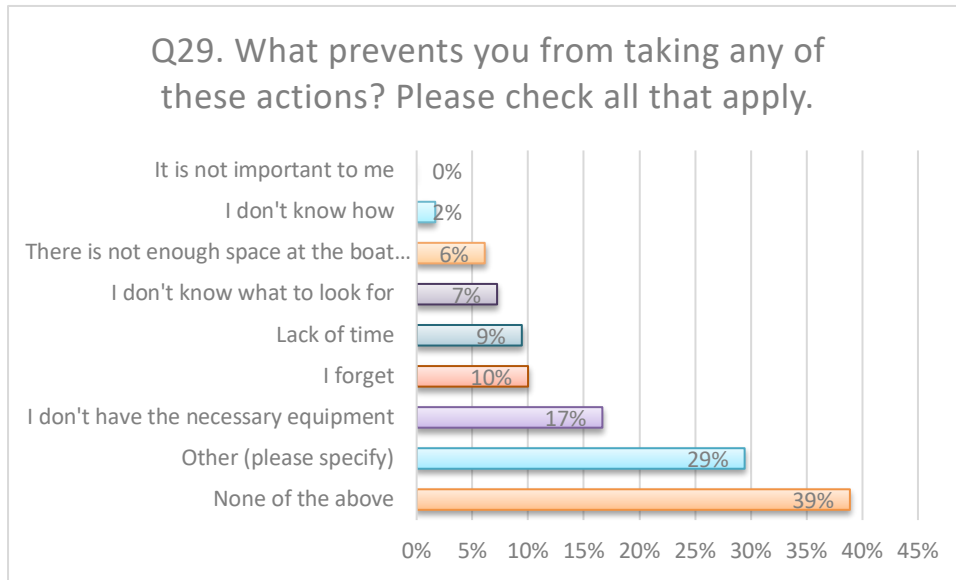
Figure 21 - Why do you Clean Drain Dry? (n=183)



Respondents were asked what prevented them from taking Clean Drain Dry actions. Four in 10 stated that nothing was preventing them from taking those actions. Conversely, 17% said they don't have the necessary equipment, 10% said they lacked the time, and 6% said there was not enough space at the boat launch to perform the actions. While a total of 10% indicated that they forget, underscoring the importance of reminding people through signage that they should be cleaning, draining and drying their boats at boat launches. Only 7% of participants said they don't know what to look for; this low percentage is an indicator of success in communications and outreach.

Other respondents noted they did not need to take Clean Drain Dry actions because they only used their watercraft in one body of water. Some indicated they believed there were no invasive species in the water they frequented, or their canoe or kayak was easily tipped and cleaned.

Figure 22 - What prevents you from Clean Drain Dry? (n=180)



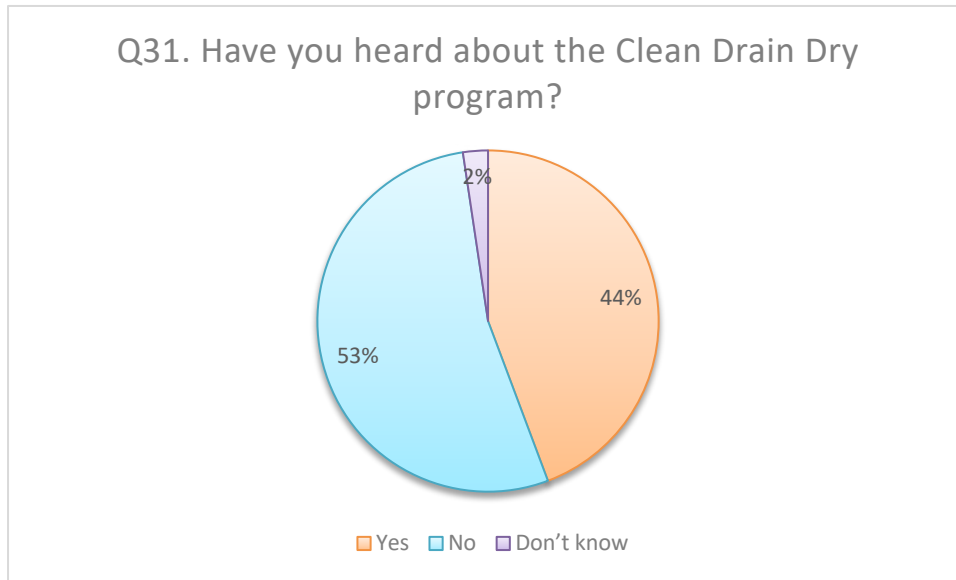
The ISCBC has recently developed a new Clean Drain Dry logo. The survey asked people if they recognized the new logo or the one used in the past. Of total respondents, 42% recognize at least one of the logos. Among watercraft users, the recognition was also 42%.

Figure 23 - Do you recognize the CDD logos? (n=452)



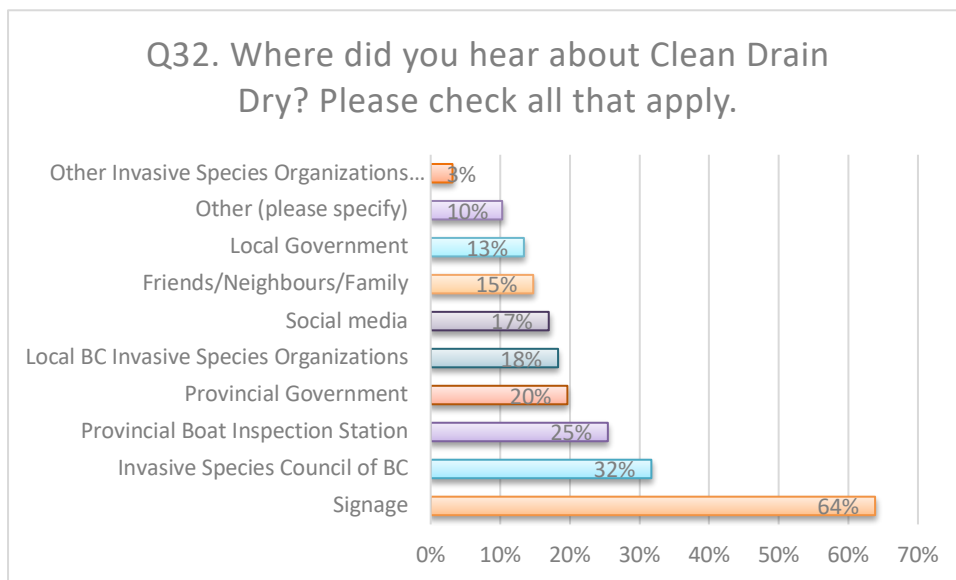
Slightly more people recognize the Clean Drain Dry program than the logo. A total of 44% of all survey respondents recognize the program, with watercraft users slightly higher at 46%.

Figure 24 - Have you heard of CDD? (n=529)



The use of signs at boat launches has increased recognition of the Clean Drain Dry program. Two-thirds (64%) of all survey respondents (and 66% of boaters) reported knowing about the Clean Drain Dry program from signage. One-third (32%) of all respondents (and 44% of boaters) indicated they heard about the program from the ISCBC. Eighteen percent of survey respondents (28% of boaters) learned about Clean Drain Dry from local BC invasive species organizations. The provincial government was cited by 20% of all respondents (25% of boaters), and provincial boat inspection stations were mentioned by 26% of respondents (34% of boaters). Social media has reached 17% of all participants in the survey and a greater proportion of boaters (21%).

Figure 25 - Where did you hear about CDD? (n=224)



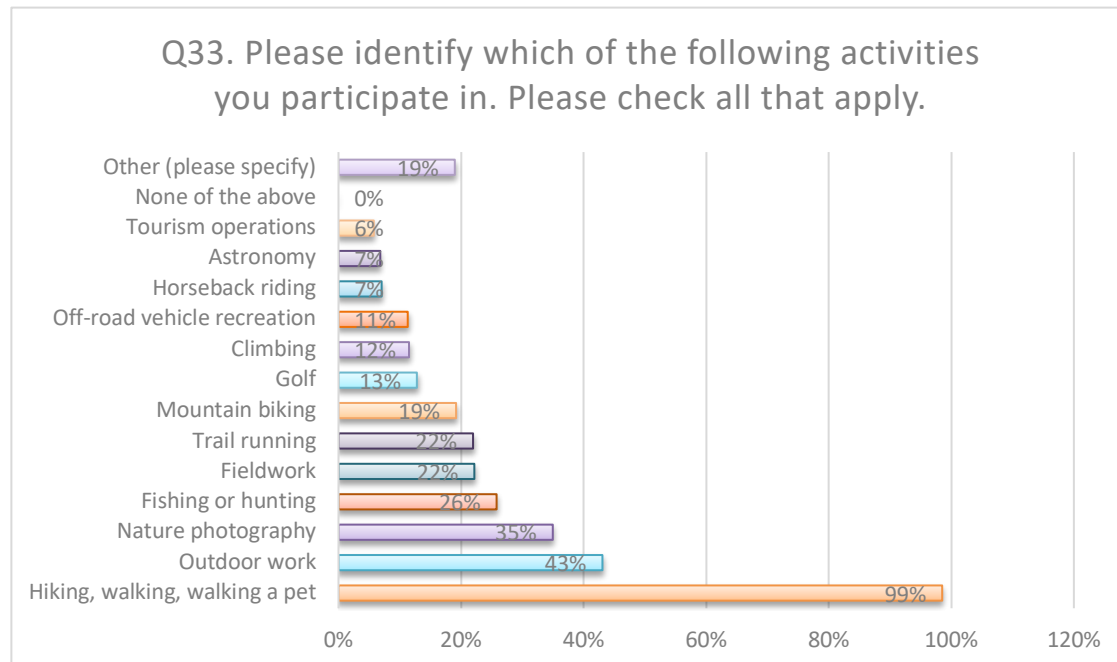
The higher proportion of boaters reached is likely a product of outreach strategies and a greater likelihood of boaters paying attention to the messaging than non-boaters.

Outdoor Activities and The Play Clean Go Program

Almost all (94%) of respondents indicated that they are active outdoors either for recreational purposes or because they work outdoors. Not surprisingly, 98% of respondents indicated that they either hike, walk, or walk a pet.

Almost half (43%) of respondents indicated that they work outdoors. Other popular activities include nature photography, fishing and hunting, trail running and mountain biking. Golf, climbing and off-road vehicle recreation were cited by about one in 10 of BC respondents.

Figure 26 - What are your outdoor activities? (n=469)



For those active, 68% indicated that they never or only occasionally check their equipment for invasive species, and 78% indicated that they never or only occasionally remove invasive plants and animals from their recreational equipment. About two out of 10 said they check frequently or always, and 16% reported that they remove plants and animals frequently or all the time. There may be minimal risk for some of these people because they do not have equipment that needs to be cleaned.

The 2021 survey findings for checking for and removing invasive species are similar to those of the 2017 survey.

Figure 27 - How frequently do you check equipment? (n=469)

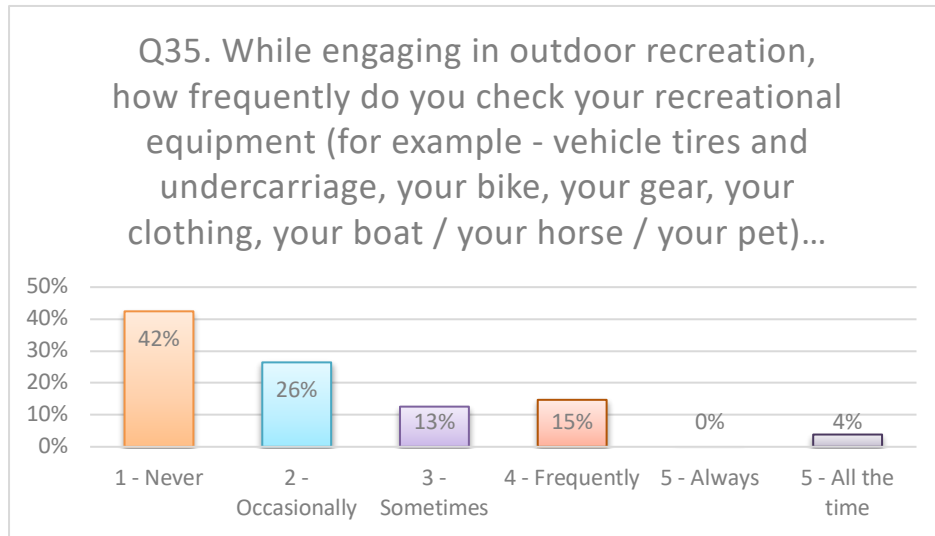
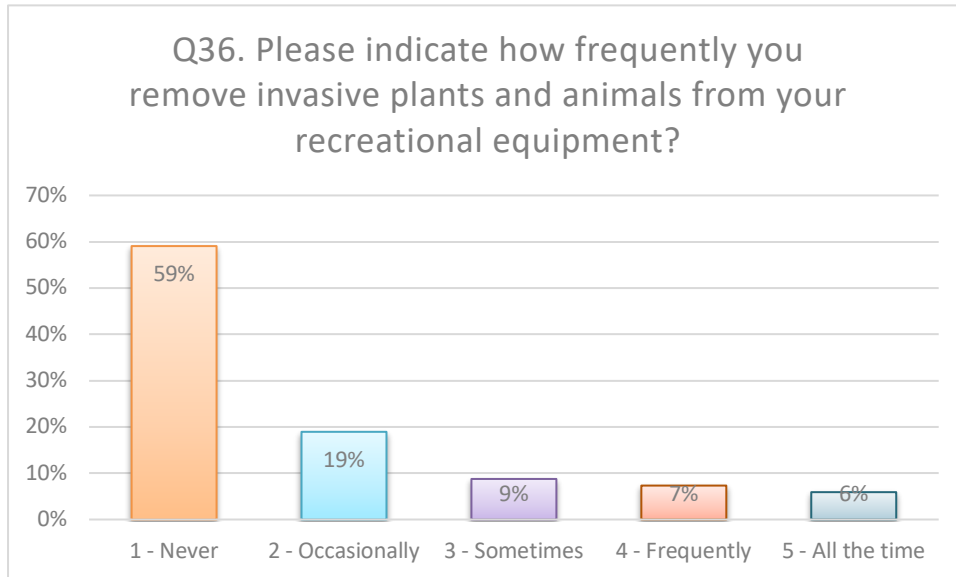
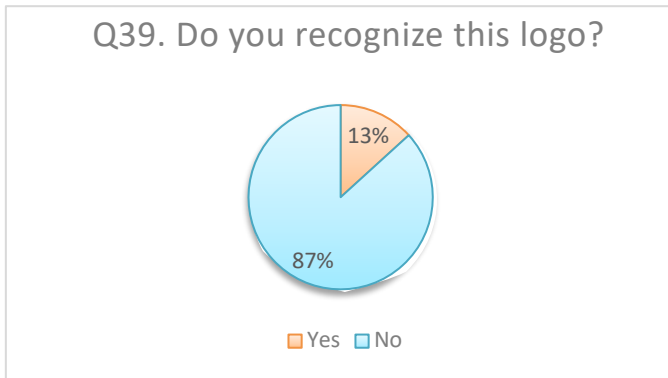


Figure 28 - How often do you remove invasives from equipment? (n=491)



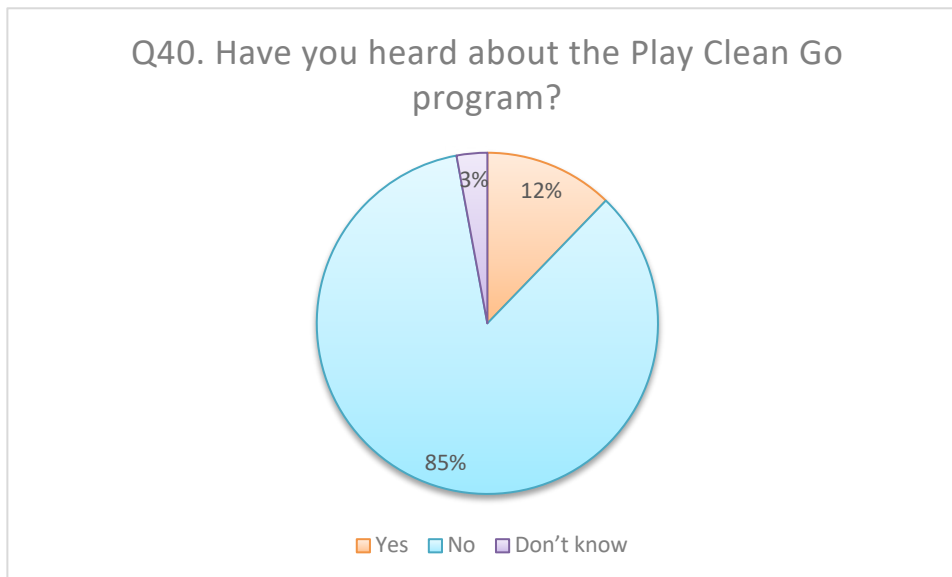
The Play Clean Go logo was recognized by 13% of respondents.

Figure 29 - Do you recognize the PCG logo? (n=483)



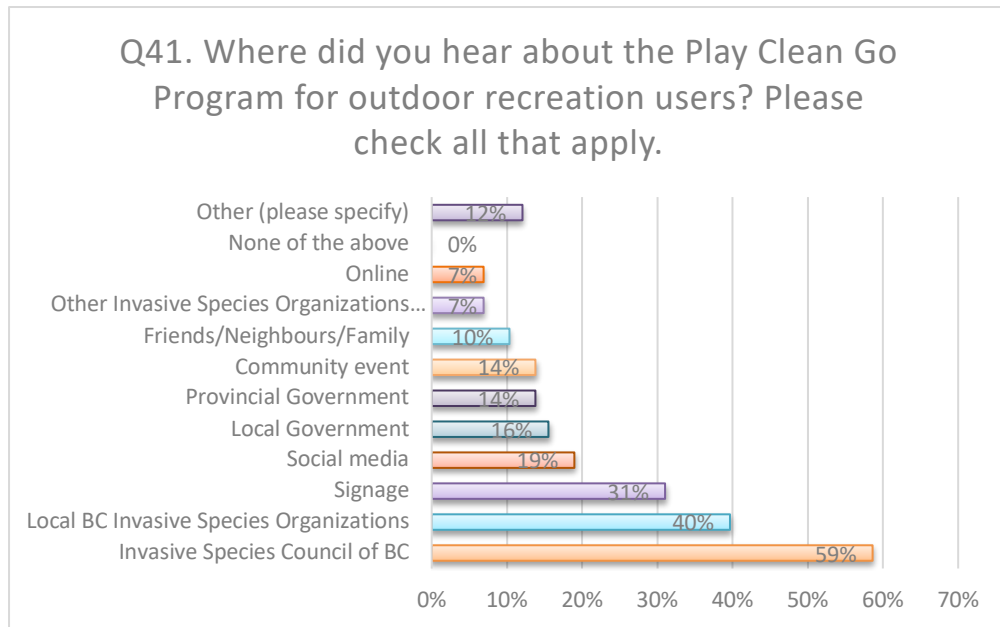
Recognition of the program was lower than others at 12% of respondents. The Play Clean Go logo and program are more recent additions to ISCBC's invasive species work. However, at 12%, the recognition is improved from 2017 when it was only 3.2%.

Figure 30 - Have you heard of the PCG program? (n=483)



Fifty-nine percent of those who do recognize the program identified ISCBC as the source of their information. Signage was cited by 31% and the provincial government and local government at 14% and 16%, respectively. Social media has impacted awareness, with 19% of participants identifying it as a source of information. A comparison with 2017 is not warranted due to the small sample sizes in the earlier survey.

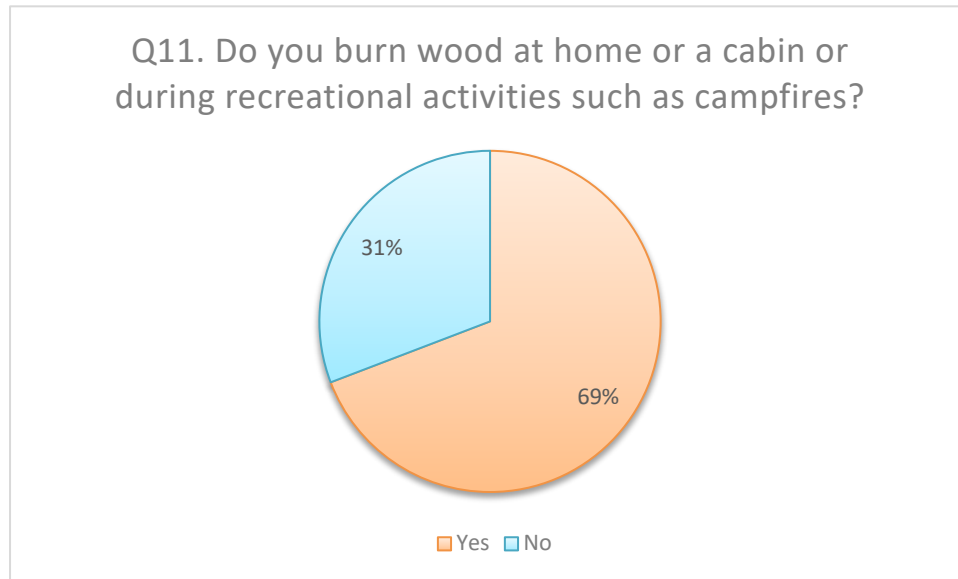
Figure 31 - Where did you hear about PCG? (n=58)



Firewood and The Buy Local Burn Local Program

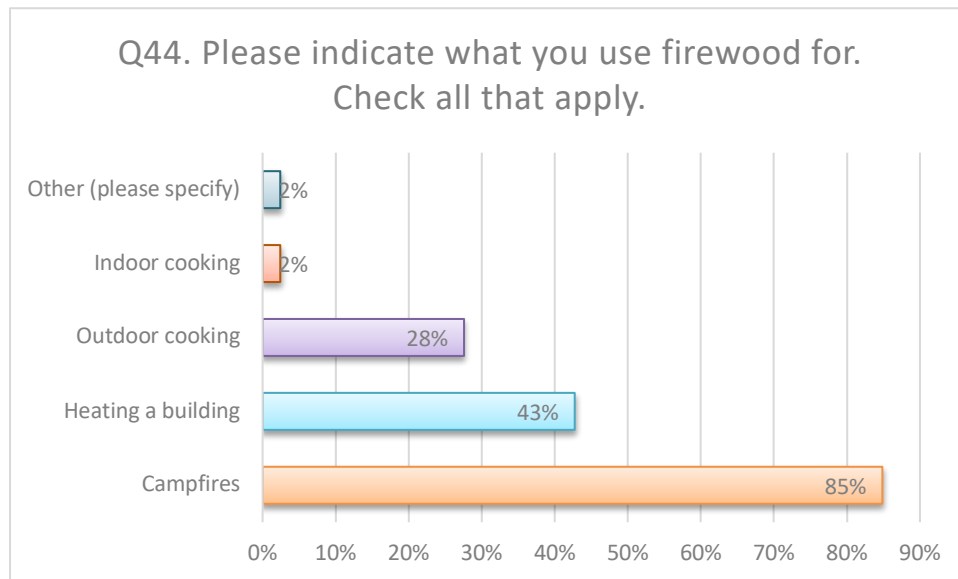
Seven in ten (69%) of respondents reported burning firewood either at home or at a cabin during recreational activities like campfires.

Figure 32 - Do you burn firewood? (n=529)



Most (85%) of firewood users burn firewood for campfires, and 43% report that they use it for heating a building. About one-quarter (27%) of respondents use firewood for outdoor cooking.

Figure 33 - For what purpose do you use firewood? (n=330)



The vast majority of firewood users (92%) report that they purchase or collect their firewood near where they burn it. This activity may result from strong awareness about the damage that forest pests can do to BC's natural areas, as 77% of firewood users indicated that they were aware of the risks of forest pests being transported with firewood. The finding is a substantial improvement from 2017, when 57.4% reported they were aware of the risk associated with moving firewood.

Figure 34 - Do you acquire firewood locally? (n=330)

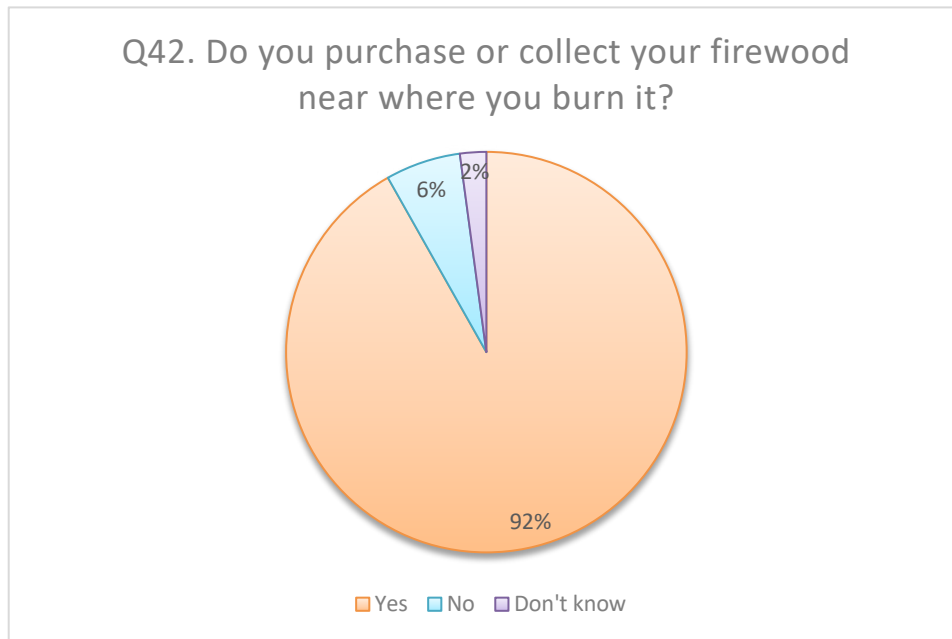
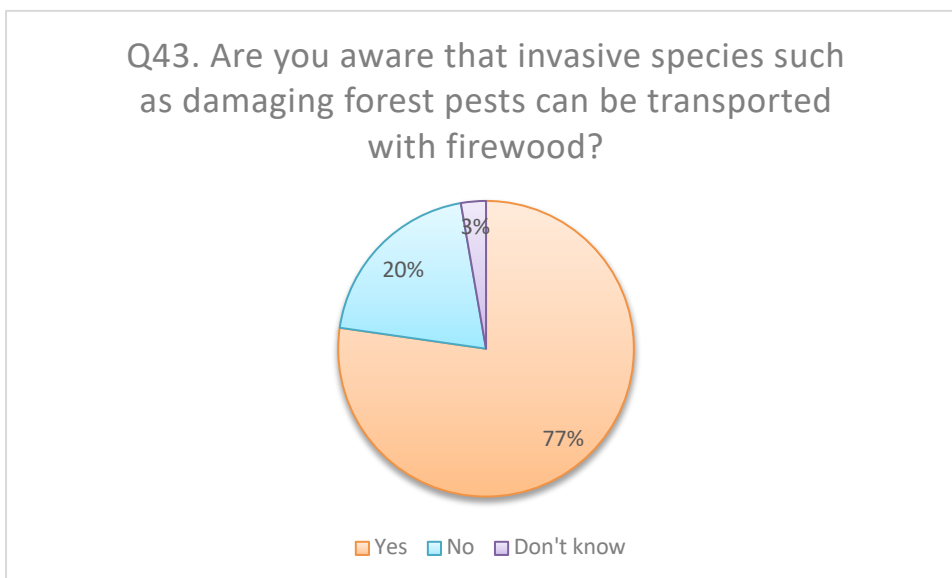


Figure 35 - Are you aware of forest pest damage? (n=330)



One tool that can reduce the risk of spreading forest pests by transporting firewood is certified firewood. Certified firewood has been treated by heat to ensure no pests are present. The survey included a question designed to gather information about the knowledge and use of certified firewood. The awareness of certified firewood is not strong, as only 39% of firewood users have heard of it. Only 12% of firewood users have seen certified firewood somewhere, and 14% of firewood users have bought it.

Figure 36 - Certified firewood awareness and experience? (n=330)



The Buy Local Burn Local logo is recognized by 19% of respondents (22% of firewood users) and 21% (24% of firewood users) who have heard of the program.

Figure 37 - Do you recognize the BLBL logo? (n=478)

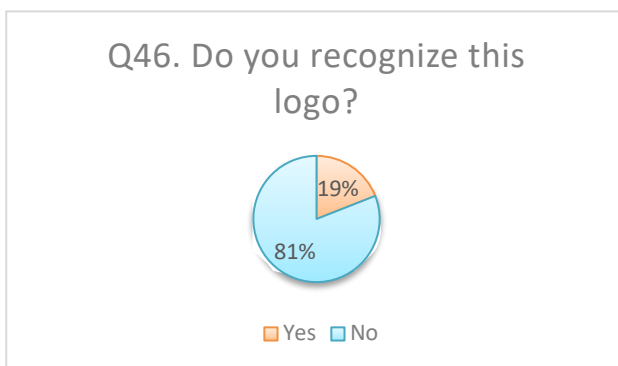
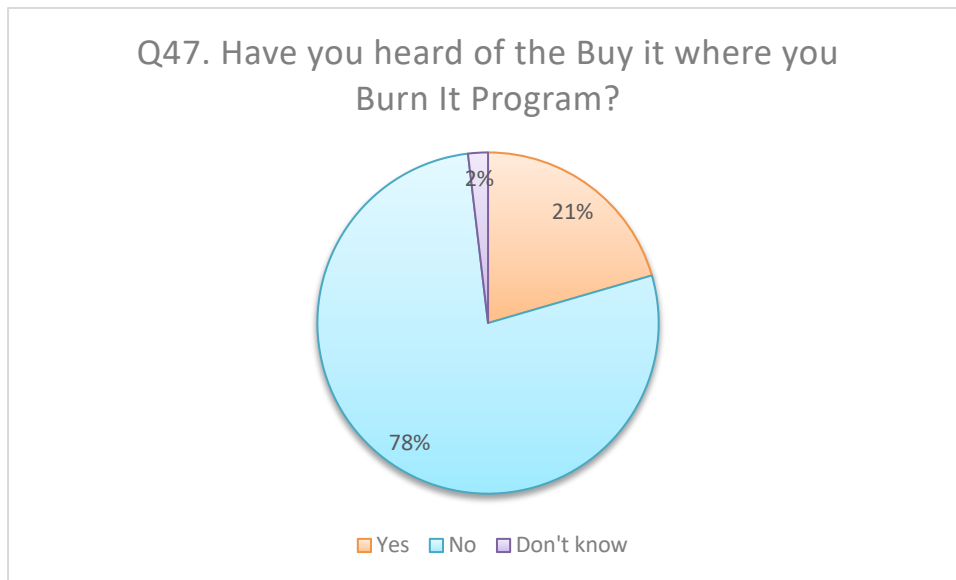
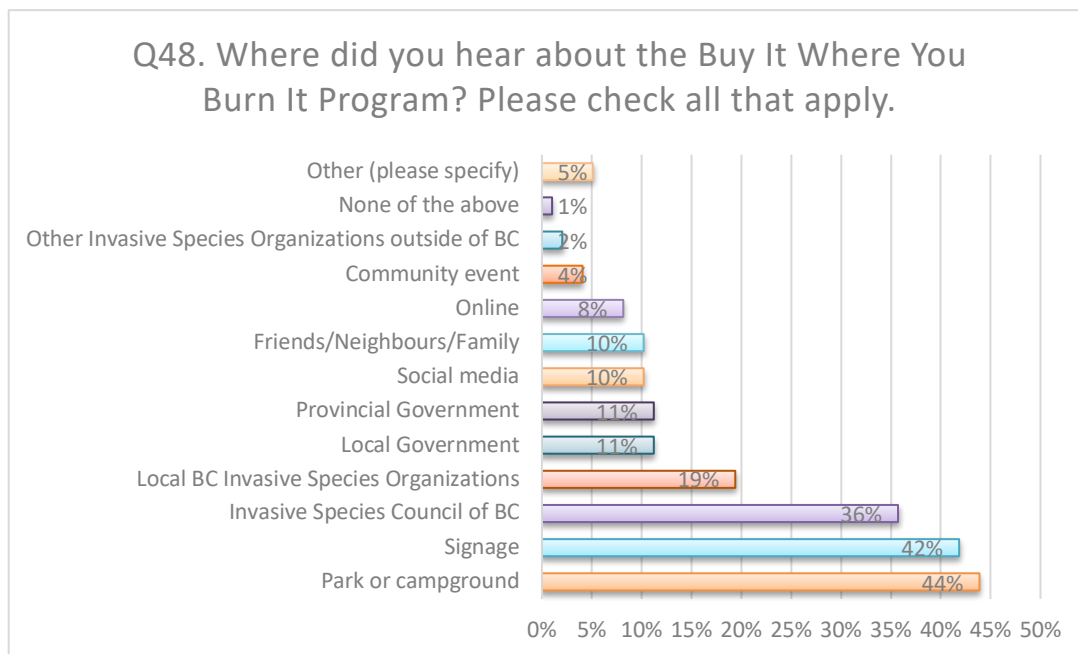


Figure 38 - Have you heard of the Buy It Where You Burn It program? (n=478)



Respondents were asked if they had heard of the Buy It Where You Burn It program, which was the program's name until it was recently rebranded to Buy Local Burn Local. Of those who recognize the logo or program, the most frequently cited sources are parks or campgrounds at 44%, signage at 42%, and ISCBC at 36%. Local BC invasive species organizations were cited by 19%, and the local and provincial governments were each cited by 11%. Social media accounted for 10%.

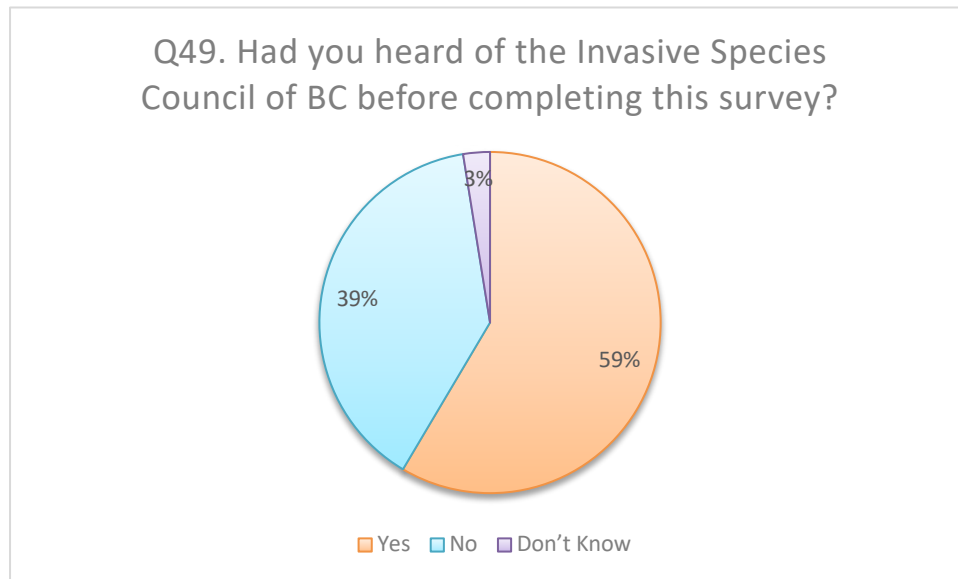
Figure 39 - Do you recognize the BLBL program? (n=98)



Awareness of the ISCBC and Local Organizations

Almost six in 10 (59%) survey respondents had heard of the ISCBC before completing the survey. This recognition was a large increase from 2017 when 36% of respondents were familiar with the organization. Even among the subgroup of people who have never volunteered or worked for an invasive species program, awareness of ISCBC stands at 43%. Others have seen signage and similar materials.

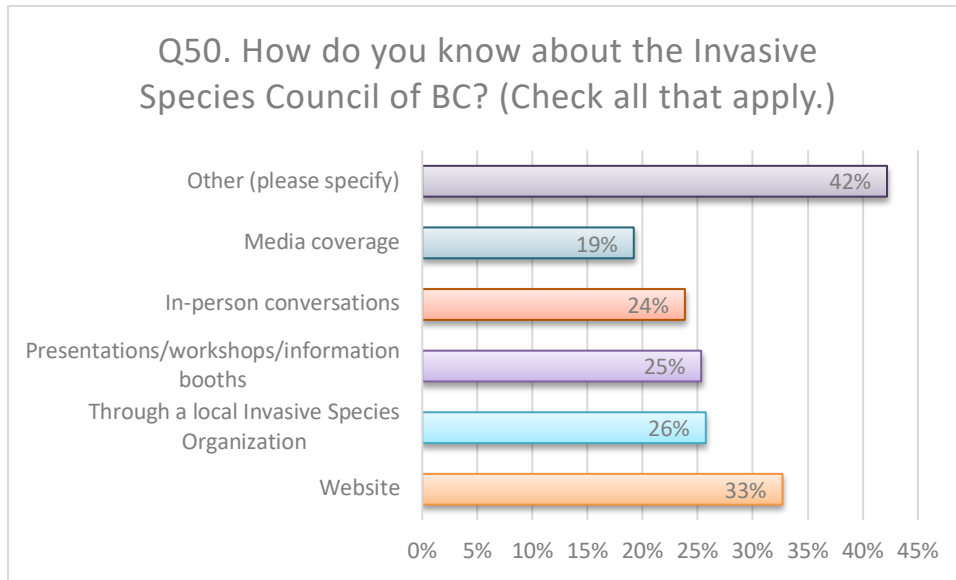
Figure 40 - Have you heard of ISCBC? (n=475)



Most people (33%) identified the website as their source of information about ISCBC. Other leading sources were local invasive species organizations (26%). An indication of success in outreach is that presentations, workshops and information booths were mentioned by 25% of respondents, and 24% mentioned in-person conversations. ISCBC is reaching a large number of people through various outreach channels.

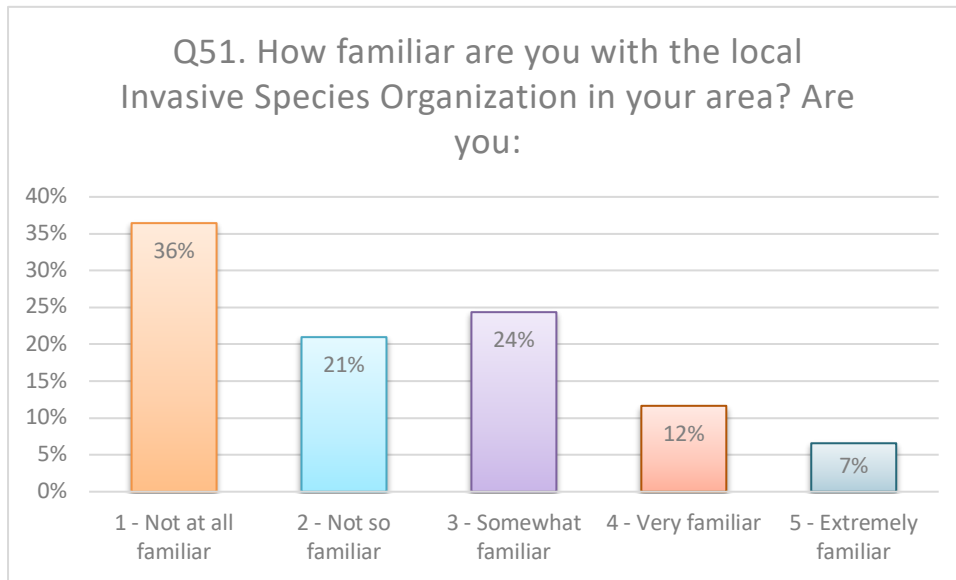
Many people indicated that they know about ISCBC through either work or acquaintances involved in environmental work. That spreading of the message through social diffusion indicates that the outreach work is maturing and has reached a significant tipping point.

Figure 41 - Where have you heard about ISCBC? (n=474)



Local invasive species organizations were less well known, but over 40% of respondents were at least somewhat familiar with their local invasive species organization.

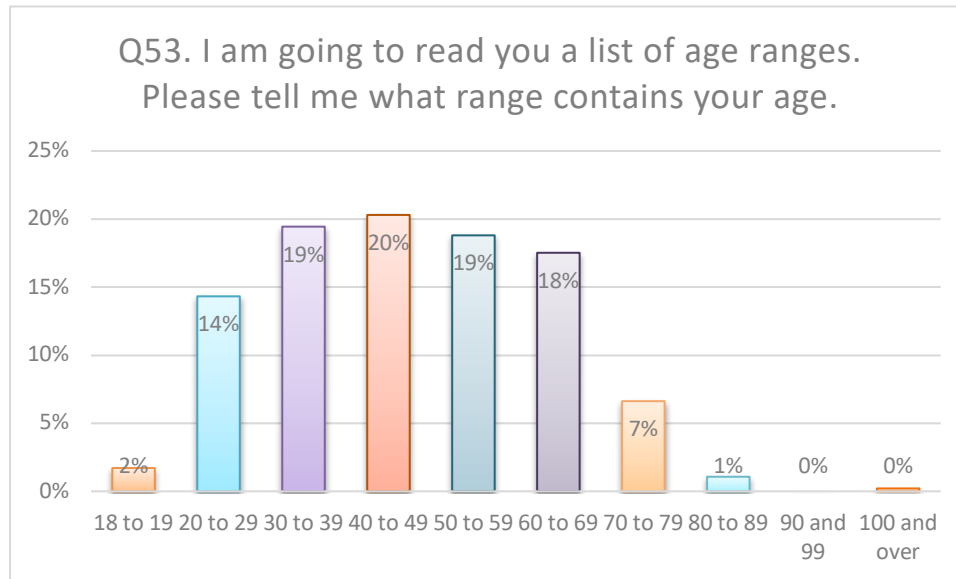
Figure 42 - How familiar are you with your local Invasive Species Organization? (n=478)



Demographics

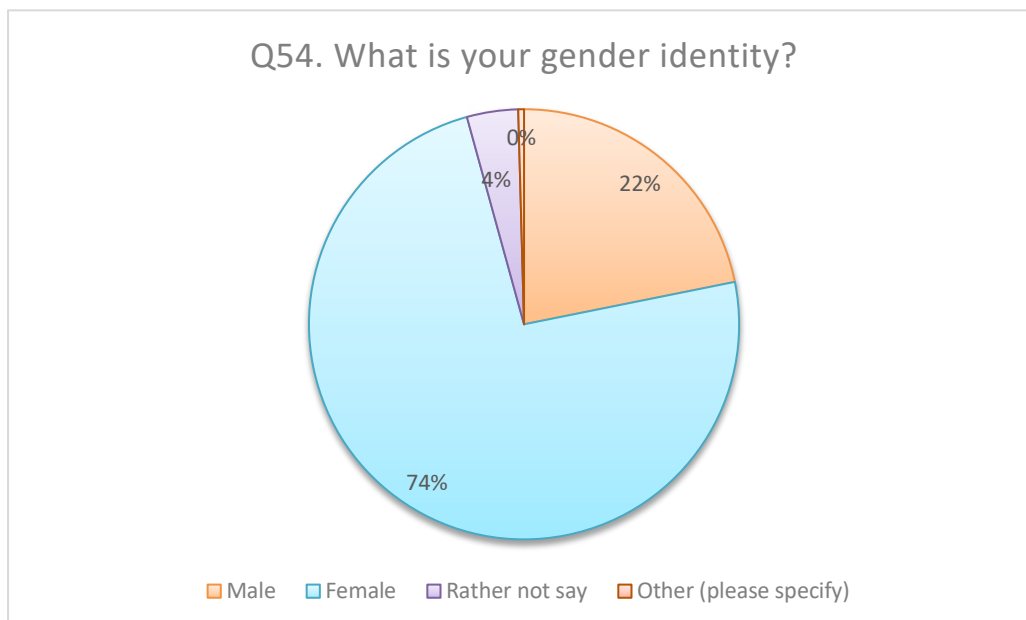
The following chart shows the list of age ranges of people who took the survey.

Figure 43 - What is your age? (n=468)



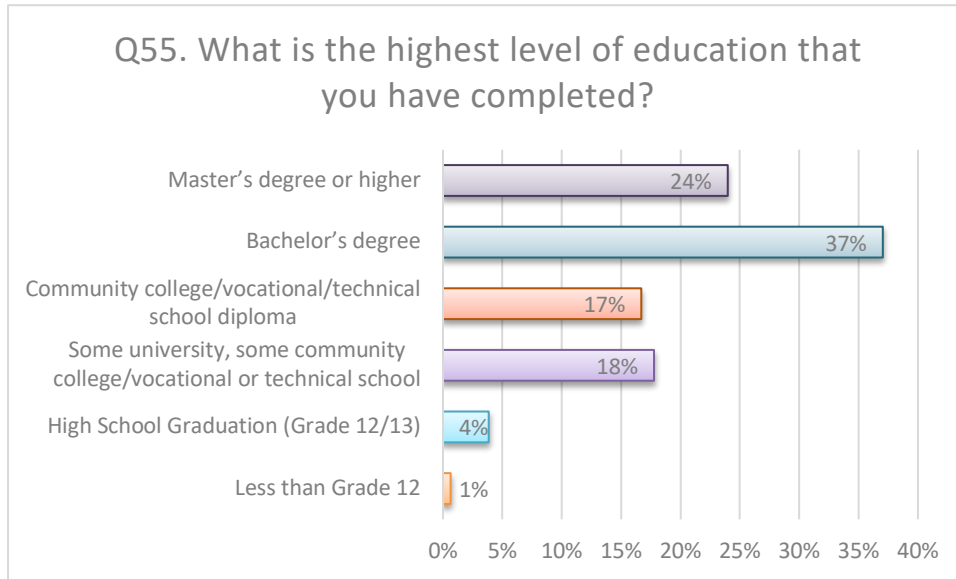
Almost three out of four respondents were female. In 2017, females comprised 60% of the respondents. It is expected that females respond to surveys in larger proportions than males.

Figure 44 - What is your gender identity? (n=467)



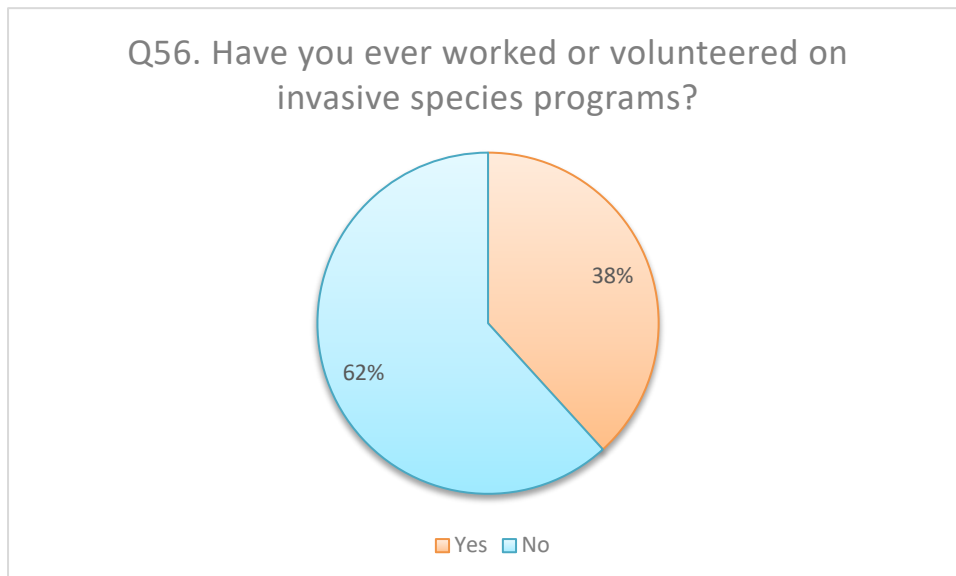
Sixty-one percent of respondents had a Bachelor's degree or higher, compared with 46% in 2017. Another 35% of participants either had at least some university or community college education, compared with 45% in 2017.

Figure 45 - What is your education? (n=467)



A total of 38% of respondents had worked or volunteered on invasive species programs, and 62% had not. Generally, a comparison of those with experience and those without found that the former group had only slightly more awareness about invasive species than the latter.

Figure 46 - Are you experienced in invasive species programs? (n=414)



Conclusion

The 2021 survey of BC residents determined that since ISCBC last surveyed BC residents four years ago, there has been a substantial increase in awareness and understanding of invasive species in British Columbia. There is now more robust support for invasive species programs and greater recognition of the term invasive species. The programs run by ISCBC all demonstrate increased recognition since surveyed in 2017.

British Columbians in 2021 are much more familiar with the ISCBC than when surveyed in 2017. They identify ISCBC as their primary source of information about invasive species across all invasive species programs. It is clear that as a lead agency, ISCBC is effectively reaching BC residents and increasing awareness. The survey results also indicate that regional invasive species organizations and provincial and local governments also play essential roles in invasive species outreach.

Some of the research findings indicate that ISCBC's focus on Behaviour Change is paying dividends. Social norms and social diffusion have emerged as effective components of the behaviour-focused outreach strategy. These critical elements of Behaviour Change typically occur in the latter stages of outreach programs, and their presence now is an indication of outreach effectiveness and maturity. Some programs are more mature than others, but all have progressed significantly in the past four years.

The survey results also demonstrate that BC residents are taking action to stop the spread of invasive species in more significant numbers than in 2017. Again, this demonstrates the effectiveness of the Behaviour Change focus in outreach programs.