

Kauri Dieback Track User Study 2020

Kathryn Ovenden

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Executive summary

Kauri dieback disease (*Phytophthora agathidicida*) is a serious threat to our native kauri and has no cure. Kauri are taonga of the ngahere (forest) and act as indicators of ngahere wellbeing. To prevent the spread of kauri dieback disease Auckland Council, as a partner in the national Kauri Dieback Programme¹, contributes a suite of initiatives. These initiatives include, but are not limited to, installing and managing over 100 cleaning stations, delivering communications campaigns, supporting landowners to care for kauri on private land, and a summer ambassador programme to educate track users and increase awareness of kauri dieback disease.

The annual track user survey monitors the success of initiatives aiming to raise awareness of kauri dieback disease and enable correct use of the cleaning stations. The intercept survey was first initiated in 2012 and is administered through the ambassador programme.

Key findings on participant awareness and knowledge:

- Four in five track users (83.3%) had heard of kauri dieback. Awareness of kauri dieback disease, track closures, the existence of a rāhui (temporary Māori ritual prohibition), and Waitākere Ranges and Hunua Ranges Controlled Area Notices² (CANs) were significantly higher for Auckland residents compared with international visitors.
- On-park signage continues to be the most common way track users hear about kauri dieback disease, track closures, and the CANs. This suggests there is more work to be done to ensure awareness *before* visitors arrive at the park.
- There is an increasing awareness of human-mediated vectors of kauri dieback disease with 90.3 per cent of participants reporting humans and 82.6 per cent reporting dogs as vectors.
- When asked, what are ways that track users can reduce the spread of kauri dieback disease? – Very few participants reported cleaning equipment (7.1%) or cleaning their dogs (3.7%). Greater ability for cleaning stations to cater for equipment (including prams and wheelchairs) in addition to awareness of needing to clean equipment is required.

¹The programme also known as Keep Kauri Standing is a partnership between Biosecurity New Zealand (Ministry for Primary Industries, MPI), Department of Conservation, Waikato Regional Council, Northland Regional Council, Bay of Plenty Regional Council, Te Roroa, and Tangata Whenua Roopu.

² A Controlled Area Notice is put in place under Section 131 of the Biosecurity Act 1993. The establishment of a Controlled Area allows initiatives to restrict the movement of pests in the area such as kauri dieback disease.

Key findings on track user behaviours:

- ‘Scrub, spray, stay’ messaging is reaching track users. Three-quarters (74.6%) of participants report ‘scrub then spray’ is the correct cleaning station procedure up from two-thirds in 2018 (66.3%) and 2019 (63.6%). Nearly all (95.2%) participants said using cleaning stations or cleaning shoes is a way they can reduce the spread of kauri dieback disease. A little over half (54.6%) said staying on the tracks or avoiding kauri roots is an action they can take.
- Auckland residents were more likely to report ‘usually’ cleaning their shoes (97.6%) compared with international visitors (85.4%).
- Participants were more likely to report ‘usually’ cleaning their shoes if they had heard of kauri dieback disease (98.8% reported they ‘usually’ clean), were aware of track closures (97.3%), or were aware of the rāhui (98.4%). There was no relationship between self-reported cleaning and awareness of the Controlled Area Notices for Waitākere and Hunua Ranges.
- Camera surveillance and self-reported behaviour are near identical. Almost all (94.3%) participants said they ‘usually’ use cleaning stations and 94.2 per cent of track users observed through camera surveillance did something to clean their shoes. Three quarters (74.9%) of track users were observed to scrub then spray their shoes (through camera surveillance) and 74.6 per cent said the correct way to use the station was to ‘scrub then spray’.

Recommendations:

- The ‘scrub, spray, stay’ messaging and kauri dieback awareness building activities should continue. It is suggested that consideration be given to communication channels that can reach track users *before* they arrive at parks.
- Ensure cleaning stations can accommodate dogs and equipment (e.g., pushchairs, walking poles, wheelchairs) to improve cleaning compliance.
- Facilitate a shift from track users ‘usually’ cleaning their shoes to cleaning their shoes ‘every time’ by designing for the end-to-end track user experience. Further research into the track user experience can inform the development of interventions to complement cleaning stations and enable this change to cleaning ‘every time’.

Table of contents

1.0	Background	1
1.1	Objectives	2
2.0	Methods	3
2.1	Intercept survey	3
2.2	Surveillance cameras.....	5
3.0	Results and discussion.....	6
3.1	Demographics.....	6
3.2	Track visitation	8
3.3	Awareness and knowledge	11
3.3.1	Kauri Dieback Disease	11
3.3.2	Controlled Area Notice.....	13
3.3.3	Rāhui	15
3.3.4	Track closures	16
3.3.5	Information channels	17
3.4	Cleaning station use	18
3.4.1	Awareness and understanding of cleaning station process	18
3.4.2	Self-reported use of cleaning stations.....	20
3.4.3	Surveillance video recorded use of cleaning stations	22
3.5	Drivers of cleaning station use	24
3.5.1	Self-reporting reasoning	24
3.5.2	Awareness of kauri dieback disease, rāhui, track closures and CAN	25
3.5.3	Values.....	26
4.0	Conclusions and recommendations	28
5.0	References	30

1.0 Background

Kauri dieback disease (*Phytophthora agathidicida*) is a serious threat to our native kauri and has no cure. Kauri are taonga of the ngahere (forest) and act as indicators of ngahere wellbeing. Slowing the spread of kauri dieback is therefore of great importance to Aucklanders and Auckland Council. This research monitors the awareness of kauri dieback disease and track user behaviours that contribute to reducing the spread.

The Kauri Dieback Disease Track User Survey is an annual summer (mid-February to mid-March) survey administered by ambassadors over nine Auckland locations. Awareness surveys and compliance monitoring (via concealed surveillance cameras) have been conducted by Auckland Council annually from 2012-2015, then again in early 2017-2018. The survey was first established to measure awareness of kauri dieback issues to inform activities in the park and improve the reach of communications. A focus on self-reported behaviour has grown over time while maintaining measures of awareness and communications.

Methods have varied since surveying began and a survey was not undertaken in 2016. Inter-annual comparisons have been made where possible in key areas such as kauri dieback awareness and knowledge of cleaning station procedures. The survey method was re-designed in 2015 to allow more rigorous comparisons in the future. From 2015 to 2019, the survey was administered on paper with all members of a group invited to participate by ambassadors. Invitation was opportunistic, there were no quotas on user types (but aimed for a mix) and participants self-completed the survey. Data was collected over a mix of weekdays and weekend. In 2020, sampling became systematic (every 3rd person was invited to participate), and data collection was undertaken through a tablet.

There were several minor tweaks to the questionnaire in 2017 (such as including a question about the new ambassador programme), in 2018 to ask further questions about cleaning station use, and in 2019 questions were added about the Controlled Area Notices that had been put in place on the Waitākere and Hunua Ranges. Further changes to the questionnaire were made for the 2020 wave.

The findings from the survey and surveillance cameras are used to inform future management and communications strategies to prevent the spread of kauri dieback disease in Auckland. The ambassador programme and summer communication campaigns have previously been directly influenced by findings from this survey. The ambassador programme aims to educate track users about kauri dieback and encourage correct use of the cleaning stations.

1.1 Objectives

The Kauri Dieback Track User Survey monitors changes over time of:

- kauri dieback disease awareness
- knowledge of disease vectors
- the sense of personal responsibility for protecting kauri and the sense that individuals can make a positive difference
- how people hear about kauri dieback
- awareness of methods to prevent disease spread (scrub, spray, stay)
- self-reported compliance with scrub, spray, stay
- drivers for use/non-use of cleaning stations.

Surveillance cameras aim to:

- Monitor compliance with checking and cleaning of shoes, pets, and other equipment.

This research has been reviewed and approved by the Auckland Council Human Participants Ethics Committee, Application 2020-001.

2.0 Methods

2.1 Intercept survey

The survey was administered through a kauri dieback ambassador who acted as an intercept surveyor. The ambassador invited every visitor to complete the survey when it was quiet (or every 3rd track user when it was busy) as they entered or exited the track. The ambassador rotated shifts at nine locations in the Auckland region from 15th February to the 22nd March 2020. Ambassadors were positioned by cleaning stations.

Figure 1: Map of data collection locations



Table 1: Count of survey participants by track and area

Area	Track	Count of survey participants
North	Warkworth	11
	Shakespear	54
	Tāwharanui	46
South	Clevedon	24
	Hunua Falls	45
	Wairoa Falls	7
West	Arataki	33
	Kitekite Falls	32
	Look out track	24
Location not recorded		23
Total participants		299

One track user per group was asked to complete the survey (except for large tour groups when every 3rd person was invited to participate). Track users aged 15 years and over were invited to participate. All adults qualified to participate with no quotas on local/tourists, group type, or other demographics. The survey was self-completed on a tablet using UbiQuity (with paper versions as backup).

Weather conditions were noted on each day of data collection. Approximately 20-25% of track users approached agreed to participate resulting in 299 responses. Most (70%) participants participated as they were exiting the track.

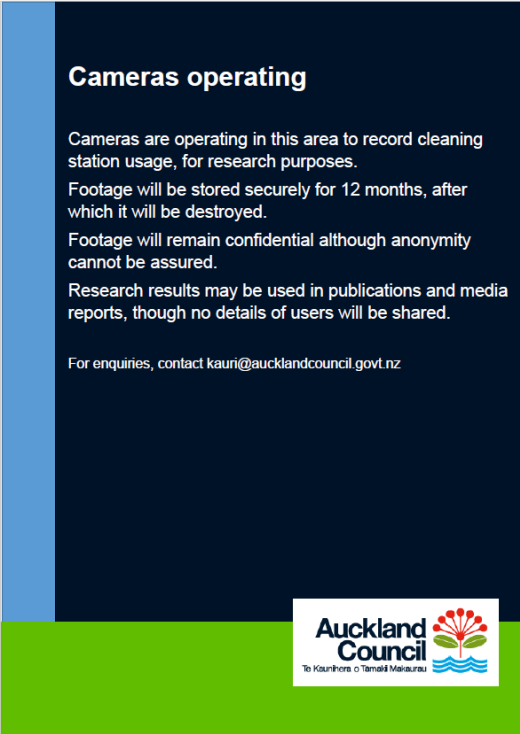
It is possible that the developing covid-19 pandemic influenced the sample. In late February and into early March travel restrictions began before entering covid-19 alert level 3 on March 23rd (data collection finished on March 22nd). Ambassadors carried hand sanitizer, practiced physical distancing, and wiped down tablets between interactions. This context may have reduced track users' willingness to participate and the volume of track users overall resulting in a lower sample size than previous years.

Data collected through the tablet was combined with paper response data, weather condition and location data. Data was cleaned (inappropriate and incomplete responses removed), numerically coded and open responses coded using a multiple-code framework before being set-up for analysis in SPSS Version 20.

2.2 Surveillance cameras

Cameras were set around the cleaning stations to monitor reported compliance against actual compliance. Signs were in place to alert visitors to the presence of cameras. A lack of video data captured when an ambassador was present unfortunately limits analysis to determine the influence of ambassadors on cleaning station use.

Figure 2: Sign at parks with cameras operating, printed to A4 size.



Video data was analysed by the council compliance team who recorded the track user category (walker, cyclist, dog walker, etc.) and cleaning station use behaviour (scrub then spray; spray then scrub; only scrub; only spray; clean dog, bike or equipment; or no action).

Table 2: Track users counted through surveillance cameras

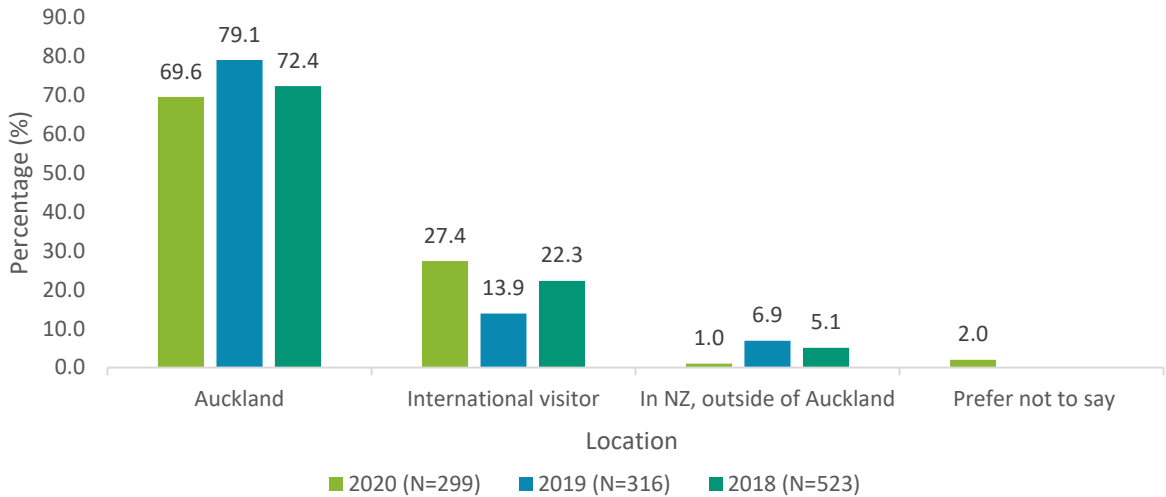
Area	Location	Count of track users
West	Arataki Lookout	1330
	Arataki Nature Trail	2,092
	Kitekite Falls Track	2,376
South	Hunua Falls	518
	Clevedon Reserve	700
	Suspension	164
North	Parry Kauri	1,389
	Shakespear	466
	Tāwharanui	531
Total		9,566

3.0 Results and discussion

3.1 Demographics

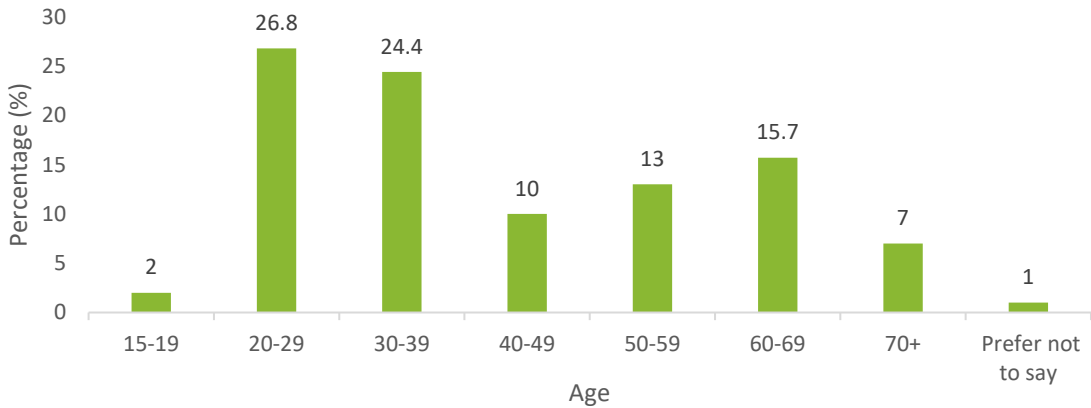
Two-thirds (69.6%) of participants usually lived in Auckland and just over a quarter were international visitors (27.4%). This is a different sample to 2019 in which 79.1 per cent of participants were Auckland residents and only 13.9 per cent were international visitors. The 2019 survey collected data only from intercepts in the Northern and Southern parks (none in West). In 2020, international visitors were more likely to visit parks in the West compared with Aucklanders (45.1% of international tourists visited a part in the West compared with 27.0% of Aucklanders). This difference in sample accounts for some differences between 2019 and 2020 in awareness described through Section [3.3 Awareness and Knowledge](#).

Figure 3: Locations participants usually live



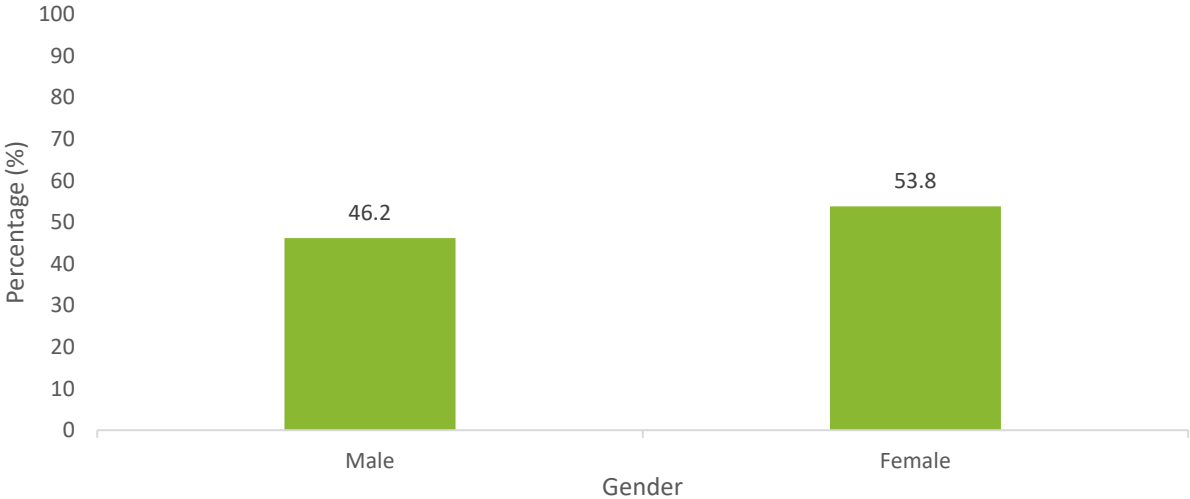
Half of participants were aged between 20-39 years (51.2%). Over a third (38.8%) were aged between 40-69 years.

Figure 4: Age of participants (N=299)



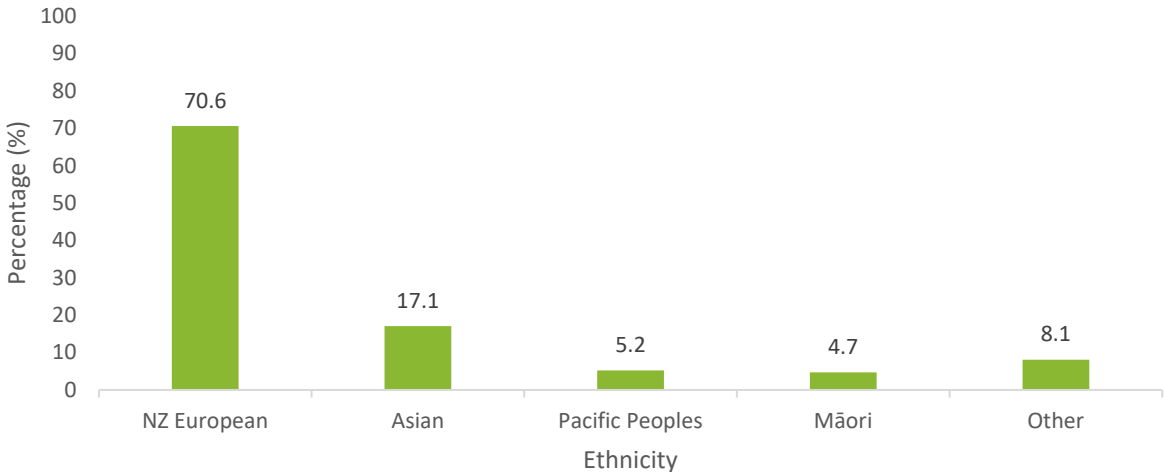
Slightly more than half of participants were female (53.8%) and the remainder identified as male (46.2%). No participants identified as gender diverse.

Figure 5: Gender of participants (N=299)



Ethnicity, in 2020, was asked only of New Zealand residents. New Zealand European comprised the largest ethnic group (70.6%) followed by Asian at 17.1 per cent. NZ European are overrepresented compared with census (53.5% identified as European in 2018) resulting in other groups being underrepresented (2018 census: 28.2% Asian, 15.5% Pacific Peoples, 11.5% Māori)³.

Figure 6: Ethnicity of participants (Base: NZ residents N=211, multiple response % don't add to 100)

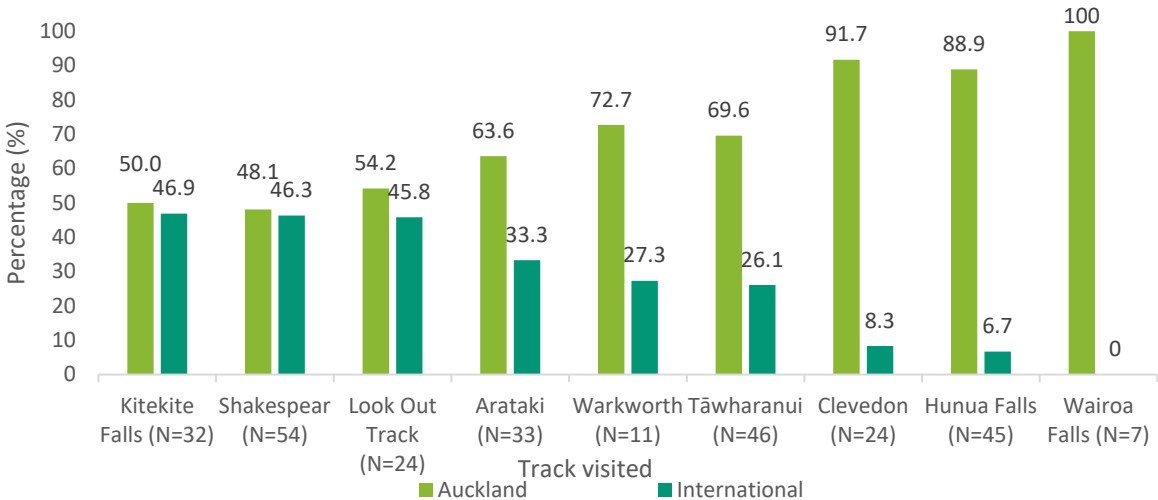


³ <https://knowledgeauckland.org.nz/media/1180/auckland-2018-census-info-sheet.pdf>

3.2 Track visitation

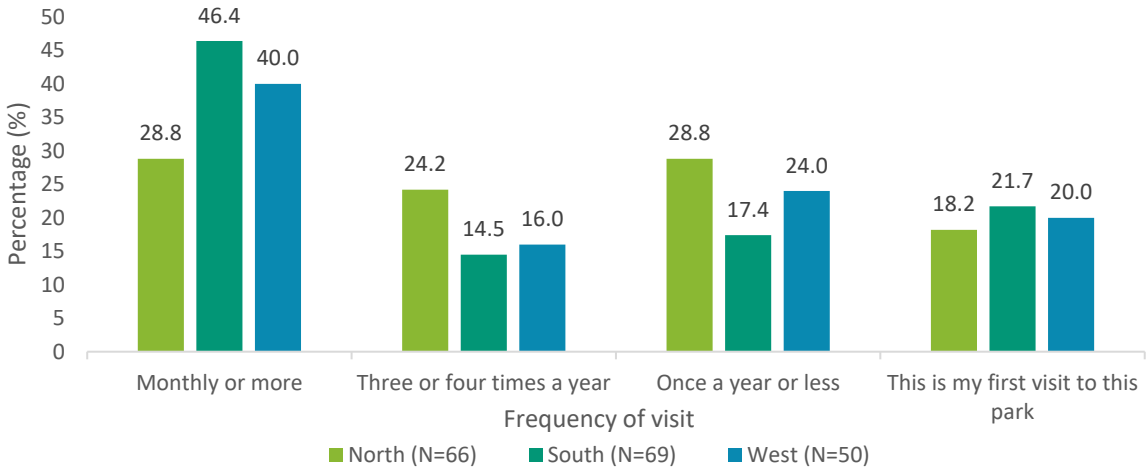
There is some variation in where track users live and the tracks they visited. Kitekite Falls, Shakespear, and Look Out Track had close to even proportions of Auckland and international track users (Kitekite Falls: 50.0% Aucklanders and 46.9% international, Shakespear: 48.1% Aucklanders and 46.3% international, Look Out Track: 54.2% Aucklanders and 45.8% international). Clevedon and Hunua Falls saw significantly more Aucklanders and international visitors.

Figure 7: Track users who participated in survey at each track



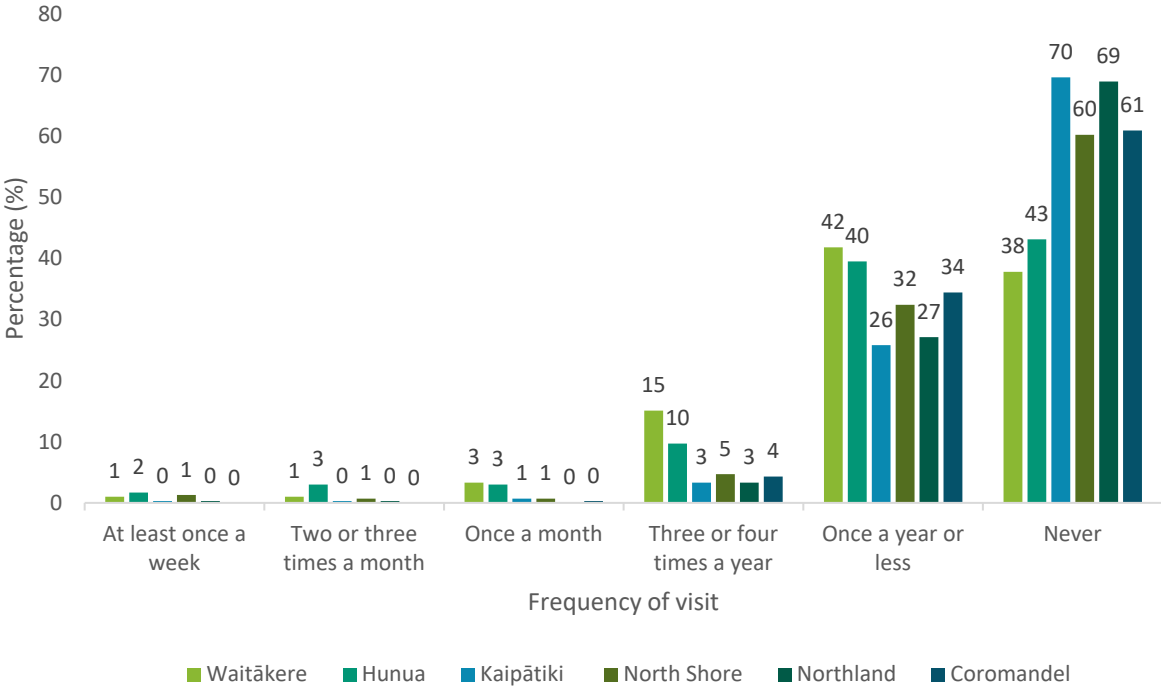
Auckland residents tend to return to the same parks if they are visiting often. Five in ten participants who visited parks in the South (46.4%) or West (40.0%) of Auckland report visiting that park monthly or more. One in five participated in the survey on their first visit to that park (18.2% at Northern parks, 21.7% at Southern parks, and 20.0% at Western parks).

Figure 8: Frequency that Auckland residents visit the park at which they participated in the survey (Base: Auckland residents and survey location known)



Participants were asked at what frequency they visit other parks in and around the Auckland region. Auckland residents visited other parks infrequently with over half having never visited Kaipātiki (61.5%), North Shore (52.9%), Northland (63.0%), or Coromandel (52.4%). Hunua and Waitākere Ranges are more frequently visited with 24.5 per cent and 27.9 per cent (respectively) of Auckland residents visiting more than once a year.

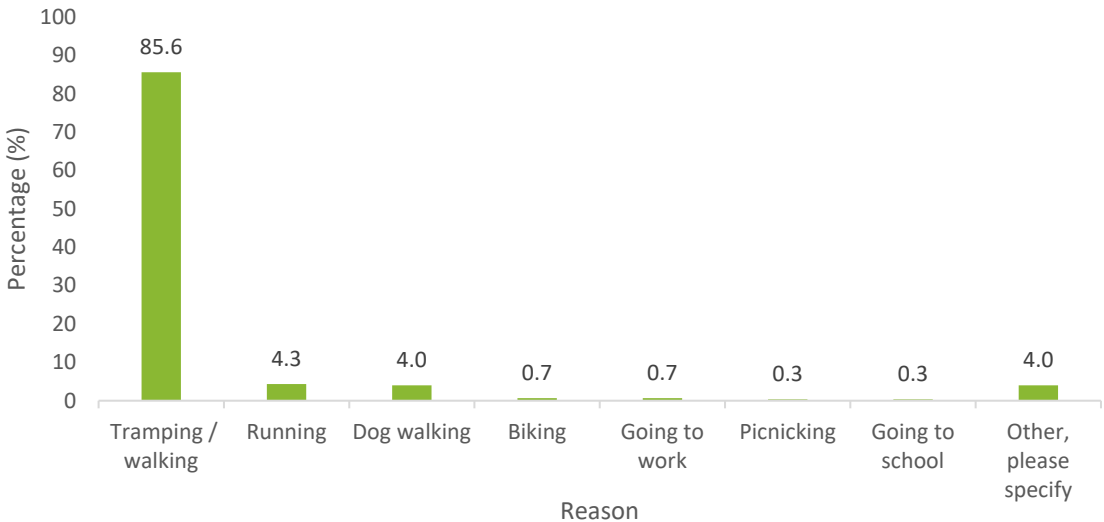
Figure 9: Auckland resident frequency of visiting tracks (Base: Auckland residents N=208)



The majority (85.6%) of participants visited the track at which they were surveyed for tramping or walking. Four per cent of participants visited to go running (4.3%) or dog walking (4.0%). Other reasons for visiting included ‘tourism’, ‘bird watching’, ‘photography’, ‘education’, and ‘swimming’. The reason for visiting did not vary by ethnicity or age. There was minimal variation in reason for visiting across locations⁴.

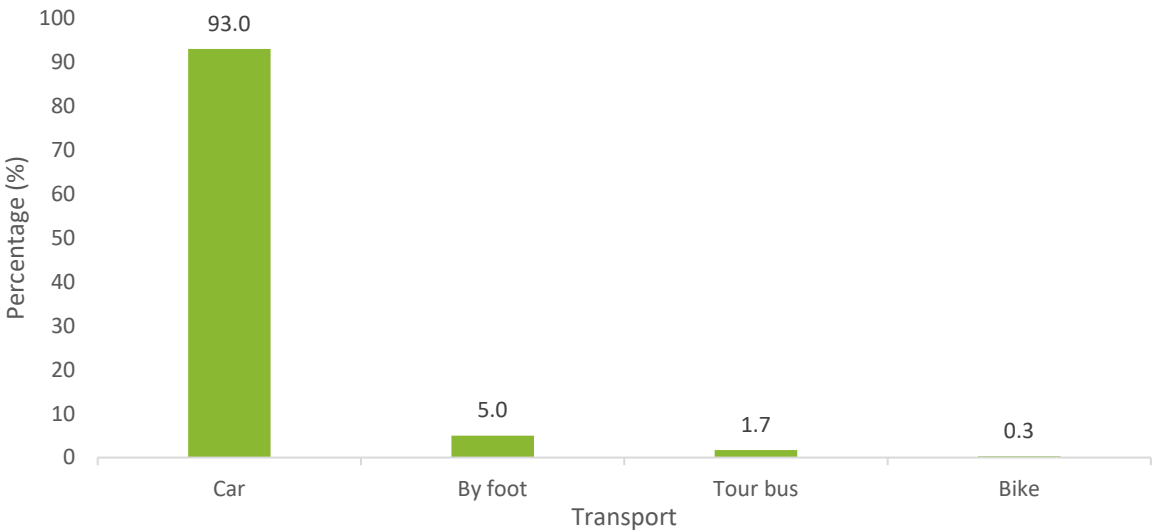
⁴ There were more dog walkers at Clevedon compared with some other tracks, however, the small sample size (n=24) restricts confidence in this finding.

Figure 10: Reason for visit (N=299)



Nine in ten (93.0%) of participants travelled to the track by car. Only international visitors travelled by tour bus (6.1% of international visitors).

Figure 11: Means of transport to arrive at the track (N=299)



There is some variation in the distance residents from different parts of Auckland travelled to the track at which they participated in the survey. Almost two-thirds (61.8%) of south Auckland residents and only 2.3 per cent of central Auckland residents travelled up to 20-minutes compared with one-third (32.7%) of Auckland residents overall. This suggests that south Auckland residents are visiting parks closer to home compared with other areas of Auckland.

Figure 12: Estimated duration to track from home



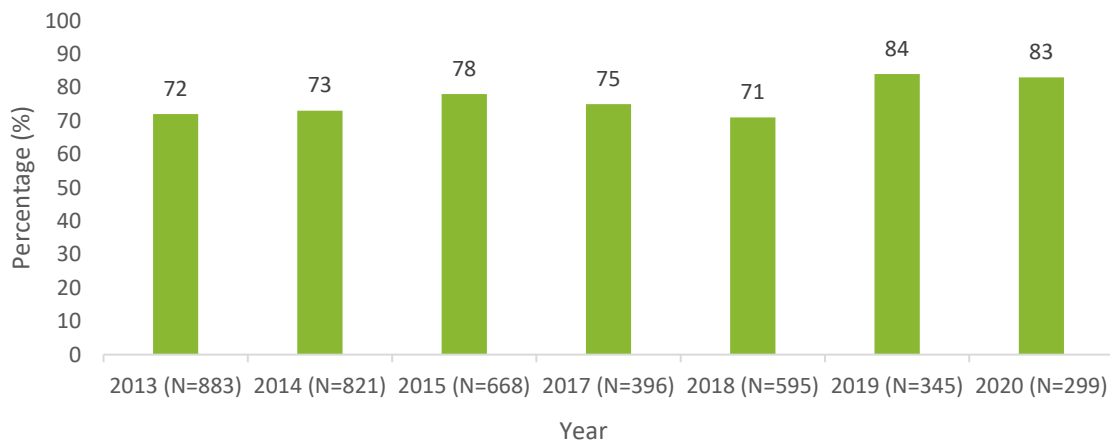
3.3 Awareness and knowledge

3.3.1 Kauri Dieback Disease

Four in five track users (83.3%) had heard of kauri dieback disease with only 16.4 per cent having not heard. This is very similar to 2019 and a continuation of the high awareness trend. Auckland residents in 2020 were significantly more likely to have heard of kauri dieback disease (90.9% have heard) compared with international visitors (64.6% have heard).

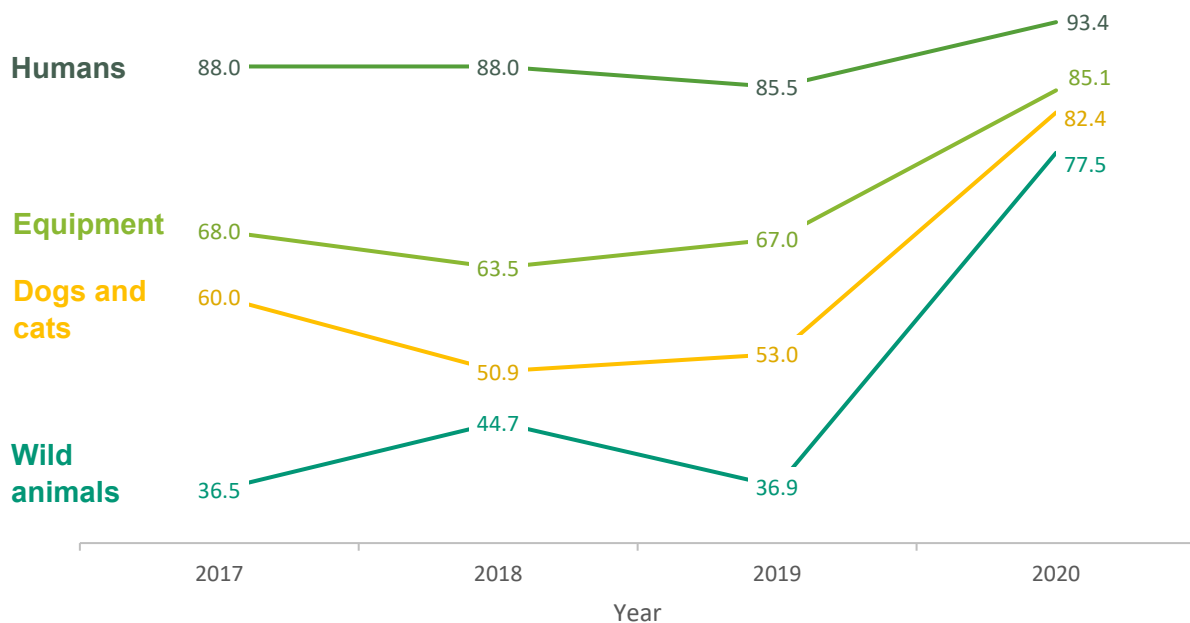
2020 saw a larger proportion of international visitors participate (27.4%) relative to Auckland residents (69.6%) compared with 2019 (13.9% international visitors and 79.1% Auckland residents). This variation in sample is likely to explain some of the fluctuation in awareness of kauri dieback disease over time considering the impact of where track users live.

Figure 13: Heard of Kauri Dieback Disease over time



Participant knowledge of human-mediated spread of kauri dieback disease is increasing. Most participants said that humans (93.4%) were a way that kauri dieback disease can be spread which is slightly higher than previous years. Equipment and tyres (85.1%), dogs and cats (82.4%), and wild animals (77.5%) were also common ways participants thought the disease was spread. These proportions are larger than previous years where just over half of participants reported dogs, two-thirds of participants reported equipment and a bit more than a third reported wild animals.

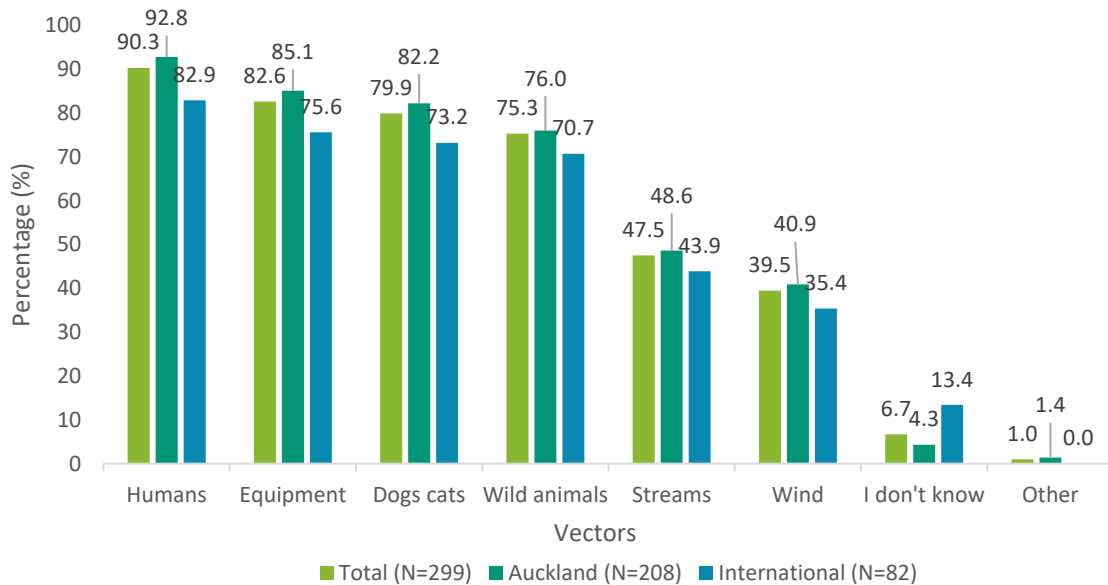
Figure 14: Vectors of kauri dieback disease (2020 N=289, 2019 N=339, 2018 N=279, 2017 N=285, multiple response % do not add to 100)



Auckland residents are more likely to report humans as vectors (92.8%) compared with international visitors (82.9%). International visitors are more likely to report that they 'don't know' the vectors (13.4%) compared with Auckland residents (4.3%). This

highlights the difference in awareness and knowledge across these two groups and need for tailored messaging.

Figure 15: Vectors of kauri dieback disease (multiple response % do not add to 100)



3.3.2 Controlled Area Notice

Less than a third of participants (29.4%) have heard of a Controlled Area Notice (CAN). Almost two thirds (62.9%) had not heard and the remaining 7.7 per cent were unsure if they had heard.

Only a quarter (25.4%) of participants were aware there was a CAN in the Waitākere and Hunua Ranges. Over two thirds (64.5%) were not aware and the remaining 10.0 percent were unsure. In 2019, 56.0 per cent of participants said they were aware of the CAN. This drop in CAN awareness might be explained by different proportions of Auckland residents and international visitors in 2019 and 2020 (more Auckland residents in 2019). Auckland residents in 2020 were significantly more likely to be aware of the CAN (32.7% aware) compared with international visitors (8.5% aware).

Participants were asked to choose from a list of descriptions which best described a CAN. Less than four in ten (37.1%) participants could correctly describe a CAN while 41.8 per cent did not know how to best describe a CAN. The remaining 21.1 per cent of participants incorrectly described a CAN.

Figure 16: Heard of CAN (N=299)

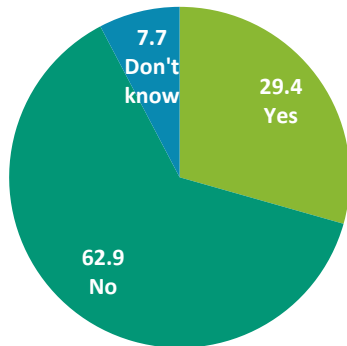


Figure 17: Aware of CAN in Waitākere and Hunua Ranges (N=299)

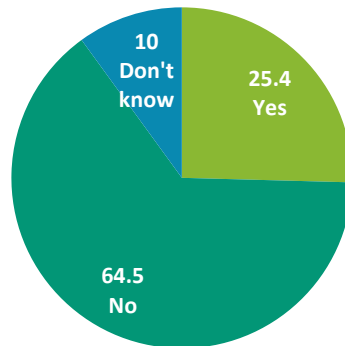
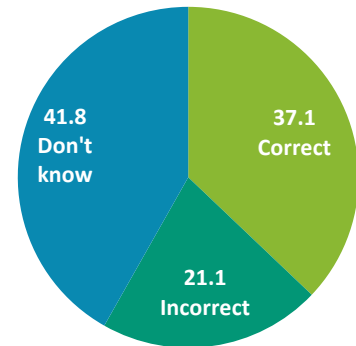
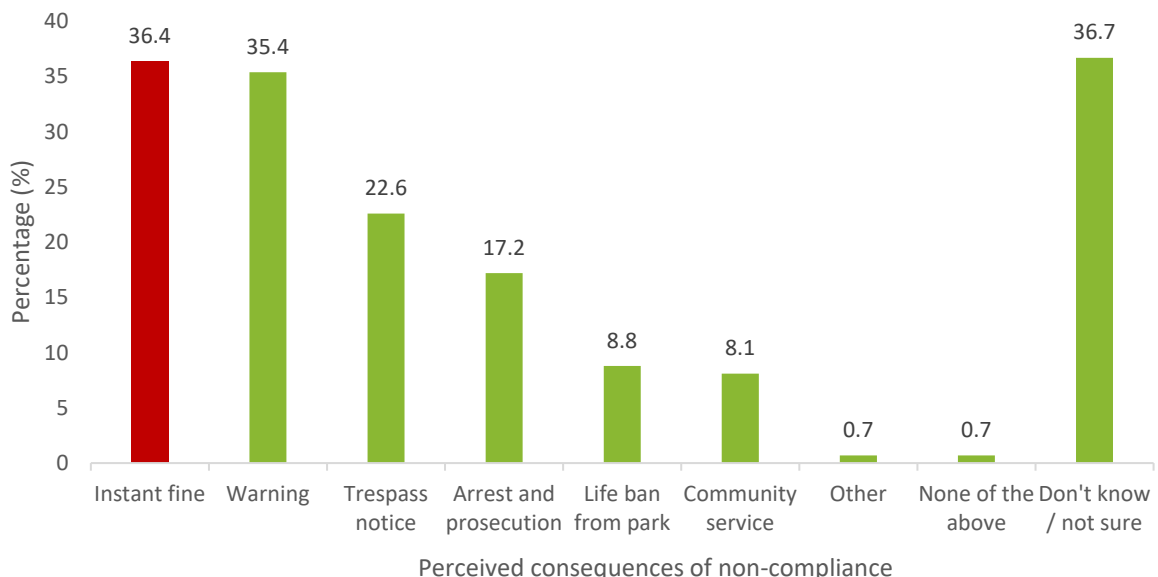


Figure 18: Description of CAN (N=299)



Over a third of participants (36.7%) did not know the consequences of non-compliance with the CAN. All the answer options, *except* instant fines, are possible consequences of non-compliance. Over a third reported an instant fine (36.4%) or a warning (35.4%) and close to a quarter reported trespass (22.6%).

Figure 19: Reported consequences of Controlled Area Notice non-compliance (Base: knew a consequence N=297, multiple response % don't add to 100)



**Instant fine is not a possible consequence of non-compliance*

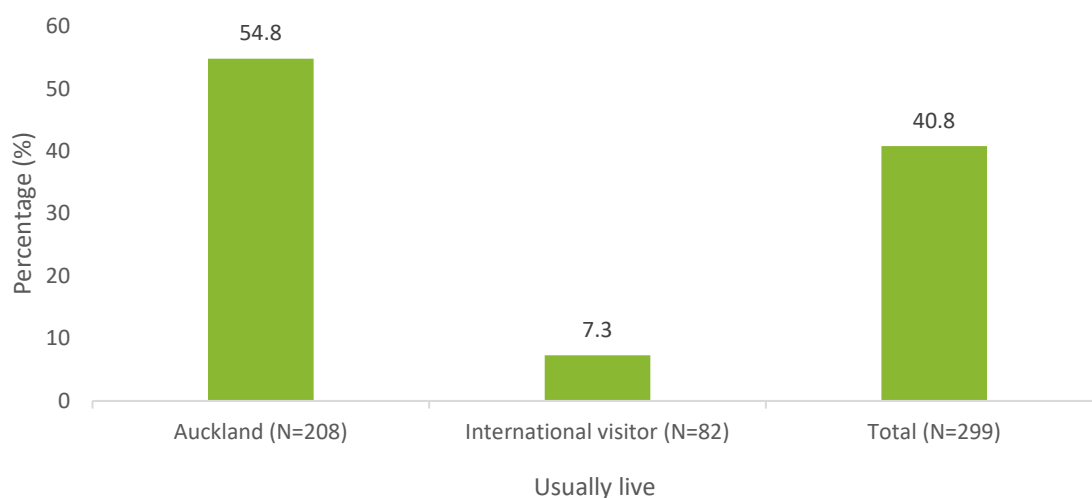
These findings suggest that more awareness and education in relation to CANs are required *if* it is deemed important for track users to understand. It is worthwhile considering, however, the end impact of track users better understanding a CAN

before pursuing this action. Informing track users of the desired biosecurity behaviour, regardless of the legal backing, might result in greater compliance. The CAN could be acknowledged in a footnote or equivalent in communications advocating for the desired behaviours.

3.3.3 Rāhui

Four in ten (40.8%) of all participants knew about the rāhui placed on the Waitākere Ranges. Over half (54.8%) of participants in 2020 did not know about the rāhui and 4.3 per cent had heard about it but did not know what it meant. Rāhui awareness is lower in 2020 than 2019 (55.2% aware of rāhui) and comparable to 2018 (37.6% aware of rāhui). This decrease in awareness from 2019 is likely to be due to differences in where the participant sample usually live as with the CAN. Auckland residents were more likely to have heard of the rāhui (54.8%) compared with international visitors (7.3%).

Figure 20: Rāhui awareness



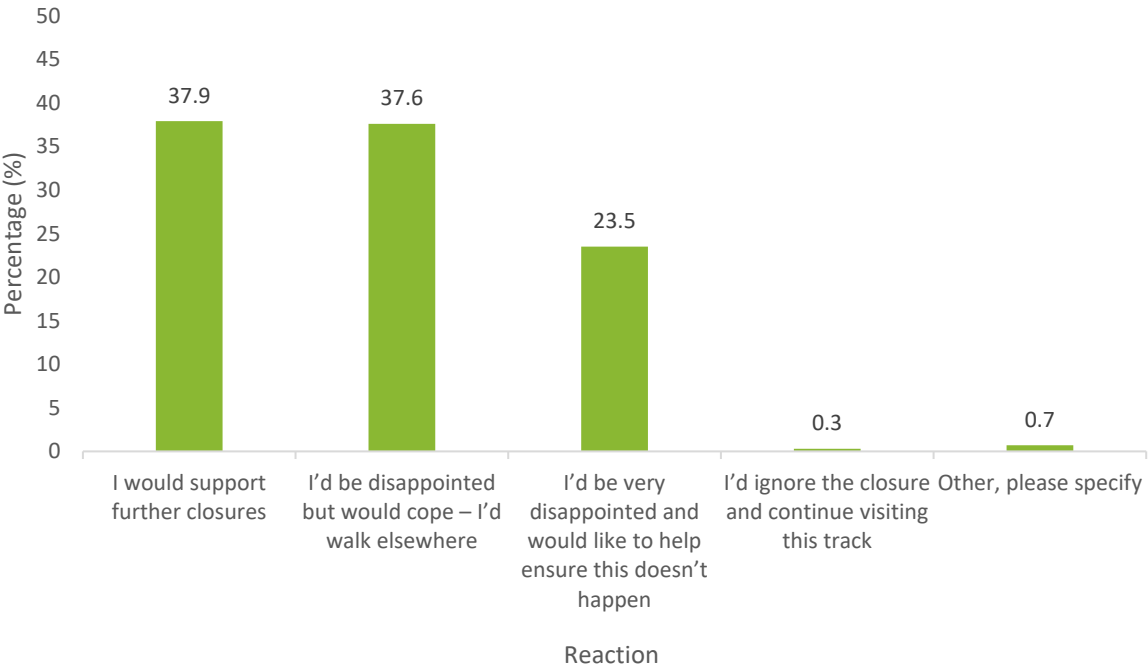
Participants in the Waitākere Ranges who were unaware of the rāhui were asked if they had known about the rāhui would they choose to walk elsewhere. Six in ten (55.8%) of Western track participants said they would *not* choose to walk elsewhere if they have known about the rāhui. Participants at Northern and Southern tracks who were aware of the rāhui were asked if they choose to walk there because of the rāhui. No participants at Northern tracks and only four participants at Southern tracks visited that track due to the rāhui. This might suggest that the rāhui has little impact on participants choice of track location. It may be that other factors, such as proximity of the track to home, have greater impact on track choice.

3.3.4 Track closures

Three-quarters (74.6%) of participants were aware that Auckland Council had closed some tracks to protect kauri. Auckland residents were more likely to be aware of track closures (88.5%) compared with international visitors (41.5%). Awareness of track closures over time shows the same trends as rāhui, CAN, and kauri dieback disease being impacted by where the sample usually live. 2020 awareness is down on 2019 (80.0% aware) and up on 2018 (57.3% aware).

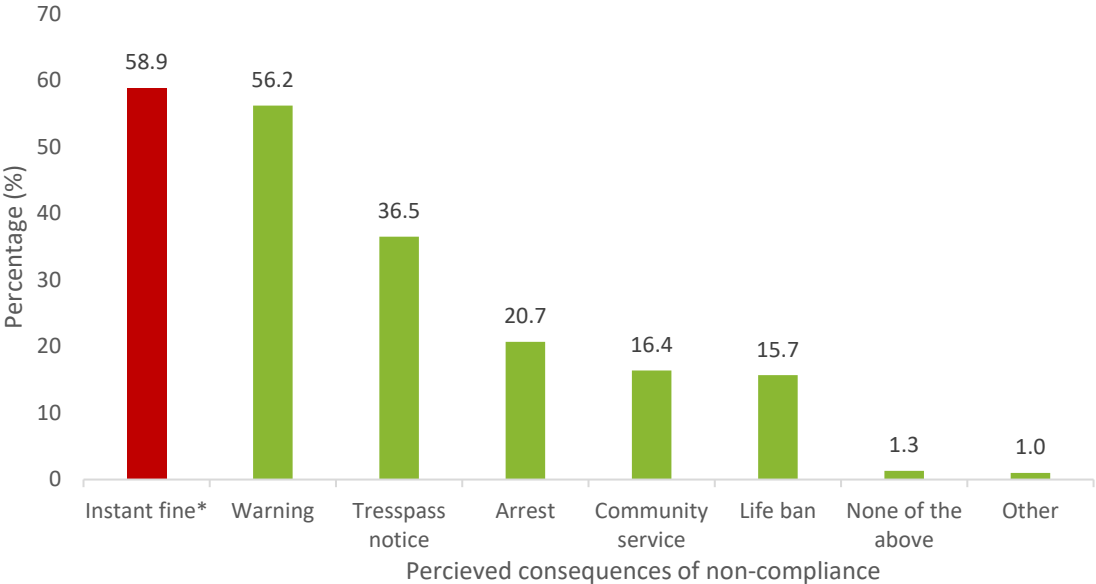
Over a third (37.9%) of participants would support further track closures, 37.6 per cent would be disappointed by further closures but would walk elsewhere, and almost a quarter (23.5%) would be very disappointed and would be interested in helping to ensure this does not happen. Only one participant said they would ignore the closure and continue to use the track. Reactions to further track closures did not differ by where participants usually live, ethnicity, age, or gender.

Figure 21: Reaction to further track closures (N=298)



Participants most often reported an instant fine (58.9%), warning (56.2%) and trespass notice (36.5%) as consequences of non-compliance with track closures. This is very similar to understandings of non-compliance with the CAN. All the answer options, except instant fines, are possible consequences of non-compliance. As with the CAN, this suggests track users are unaware of the correct consequences of non-compliance.

Figure 22: Reported consequences of track closure non-compliance (N=299 (an error in survey programming resulted in no ‘I don’t know’ option), multiple response % don’t add to 100)



*Instant fine is not a possible consequence of non-compliance

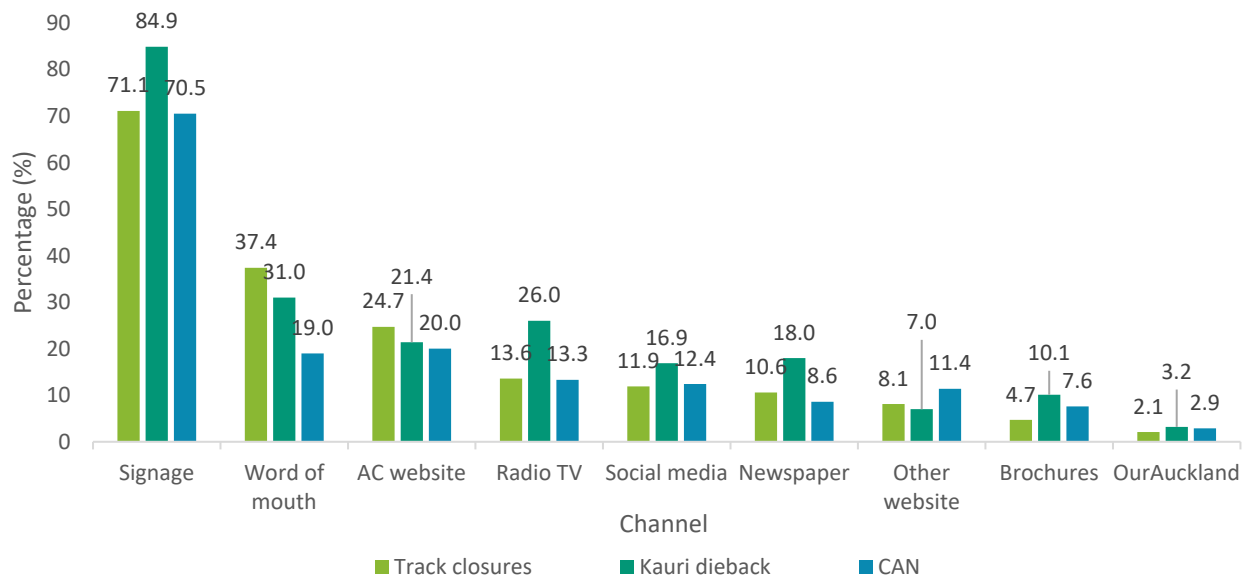
3.3.5 Information channels

Participants were asked where they had heard about kauri dieback, track closers and the controlled area notice. Of those who had heard, signage is by far the most common way participants have heard about kauri dieback (84.9%), track closures (71.1%) and the controlled area notice (70.8%). Signage has been the most reported channel for hearing about kauri dieback disease since 2015 (61% in 2015, 84% in 2017, 63% in 2018 and 75% in 2019).

Council-managed channels are reaching low proportions of participants (including radio and TV, the Auckland Council website, newspapers, and brochures). One in four (24.7%) participants heard about track closures from the Auckland Council website. These channels are all down compared with 2019 which again may be the result of a sample composed of different proportions of Auckland residents and international visitors.

The reliance on on-park signage and word of mouth to generate awareness may be resulting in a poor experience for those who are arriving at a closed track to learn of its closure only then. It is possible that this poor experience could motivate track users to not comply with closures. Consideration should be given to alternative channels that can reach potential track users *before* their arrive at the park to improve compliance.

Figure 23: Channels for hearing about the track closures (N=235), Controlled Area Notice (N=106), and kauri dieback disease (N=259). Bases exclude 'I don't know' and 'Haven't heard', multiple response % don't add to 100.



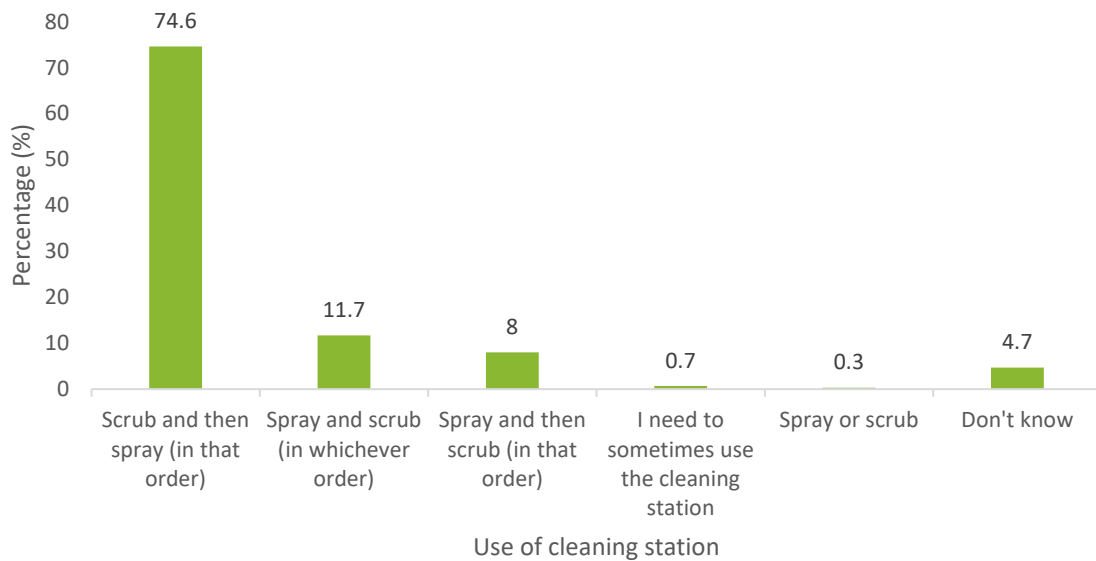
3.4 Cleaning station use

3.4.1 Awareness and understanding of cleaning station process

Eight in ten (82.6%) participants agreed or strongly agreed that cleaning stations are an effective way to prevent the spread of kauri dieback disease.

The 'scrub, spray, stay' messaging is continuing to reach track users. Three quarters (74.6%) of participants correctly stated that they needed to 'scrub then spray' their shoes. One in ten (11.7%) said they need to 'spray and scrub in any order' and eight percent said they need to 'spray then scrub'. The reported "correct" way to use a cleaning station was consistent across track locations.

Figure 24: Reported “correct” way to use a cleaning station (N=299)



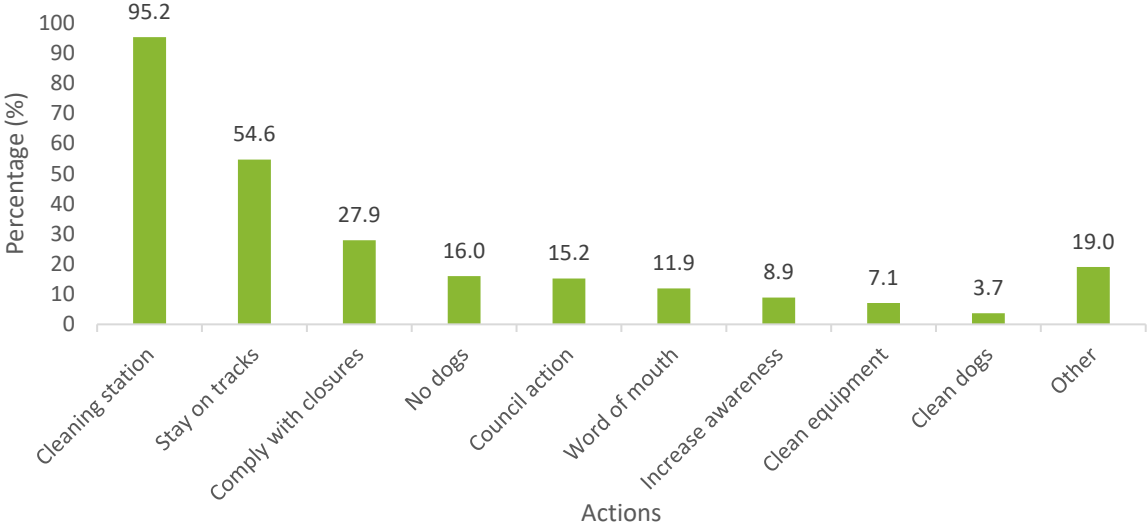
Participants were more likely to correctly identify how to use cleaning stations if they had heard of kauri dieback disease before (79.1%), were aware of the rāhui (82.8%) or reported being aware of track closures (79.4%). Where participants usually live, awareness of the CAN or the frequency of their visit to parks showed no difference in reporting the correct process of station use.

2020 shows an increase in participants who reported the correct cleaning procedure. Two-thirds of participants in 2018 (66.3%) and 2019 (63.6%) answered ‘scrub then spray’. One in five in 2018 (20.4%) and in 2019 (20.6%) answered ‘spray then scrub’.

Nearly all (95.2%) participants said using cleaning stations or cleaning shoes is a way they can reduce the spread of kauri dieback disease. This finding is very similar to previous years where nine in ten participants answered ‘using cleaning stations’ (94% in 2017, 88% in 2018 and 93% in 2019). A little over half (54.6%) said staying on the tracks or avoiding kauri roots is an action they can take. Again, this is similar to previous years where half or more of participants answered ‘staying on tracks’ (57% in 2017, 50.3% in 2018 and 77.6% in 2019).

The lower awareness of cleaning equipment (7.1%), cleaning dogs (3.7%) or leaving dogs at home (16.0%) conflicts with the large proportions of participants stating equipment (85.1%) and dogs (82.4%) as vectors for kauri dieback disease. There may be a need to target communications at dog owners, walkers with equipment (e.g. walking poles and prams) and mountain bikers stressing that cleaning reduces the risk posed by these vectors. The cleaning stations themselves could benefit from redesign to better enable the cleaning of equipment, dogs, and bikes.

Figure 25: Reported ways individuals can reduce the spread of kauri dieback disease (N=269, multiple response % don't add to 100)⁵



3.4.2 Self-reported use of cleaning stations

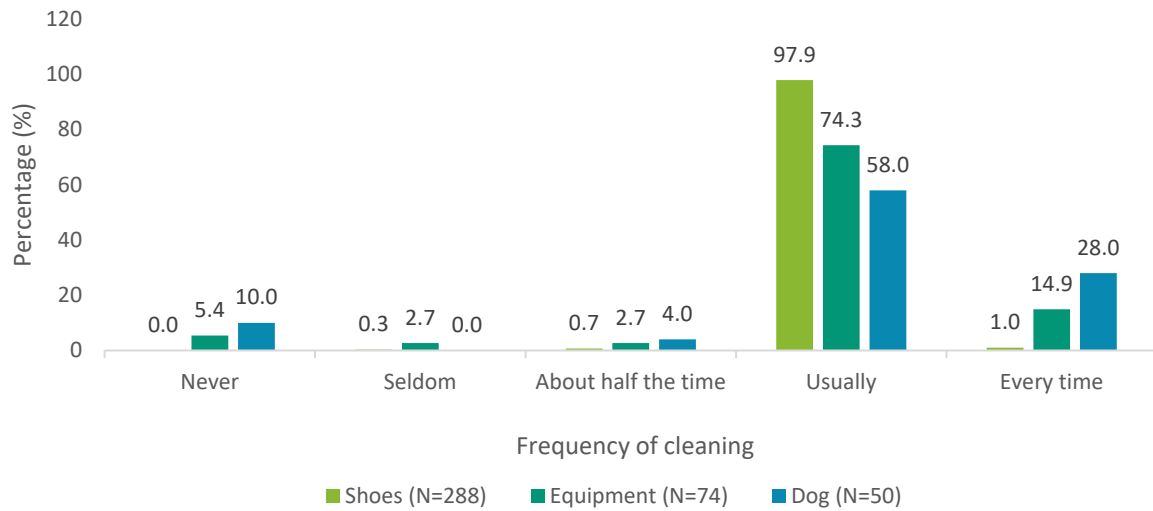
The majority (94.3%) of all participants said they ‘usually’ clean their shoes at cleaning stations when visiting parks. More international visitors (n=8) answered ‘not applicable’ compared with Auckland residents (n=3). This result may be impacted by international visitors having not visited parks and had the opportunity to use cleaning stations previously. When ‘not applicable’ responses are removed, 97.9 per cent of participants report ‘usually’ cleaning their shoes at cleaning stations. Self-reported frequency of cleaning shoes did not differ by track, weather, age, gender, ethnicity, duration to travel to the track, reason for visiting, awareness of vectors, or frequency of visiting tracks.

Large proportions of participants reported that cleaning ‘equipment or tyres’⁶ (75.2%) or ‘paws of dogs or pets’ (83.2%) was ‘not applicable’. Of participants who answered cleaning ‘equipment or tyres’ or ‘paws of dogs and pets’ as applicable, 28.0 per cent of dog owners and 14.9 per cent of people with equipment cleaned them ‘every time’ compared with only 1.0 per cent of people cleaning their shoes ‘every time’.

⁵ The question asked: Can you list four ways that you can reduce the spread of kauri dieback disease? Some responses (15.2%) to this open ended question suggest misinterpretation of the question as they described actions to be undertaken by Auckland Council such as fining people who are non-compliant, put up signs, close tracks, and raise awareness through communication campaigns.

⁶ Question wording may be encouraging participants to answer ‘not applicable’. If the question asked about ‘walking poles, pushchairs and bikes’ this may change the proportion of participants who felt it was applicable to them.

Figure 26: Frequency of cleaning shoes, equipment, and dogs at cleaning stations (NA responses excluded)



In previous years participants were asked to report the frequency on which they cleaned their shoes/equipment/dogs on the scale: ‘never’, ‘1’, ‘2’, ‘3’, ‘4’, ‘every time’. This mixed numerical and worded scale was modified in 2020 to the worded scale seen in Figure 26 (above). Most participants in previous years have answered that they clean their shoes ‘every time’ and this proportion has been increasing since 2015. This drastic decrease in the proportion of track users who clean their shoes ‘every time’ in 2020 is likely to be the result of a change in question rather than a significant reduction in the proportion of users who are cleaning shoes ‘every time’.

Figure 27: Proportion of track users who ‘every time’ clean their shoes over time



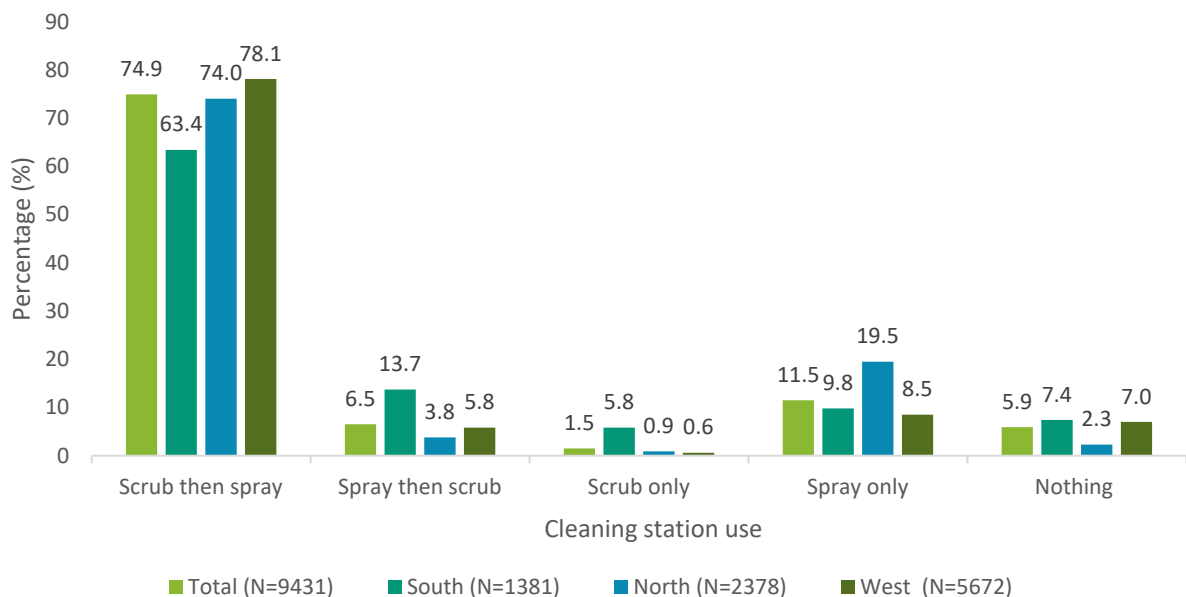
3.4.3 Surveillance video recorded use of cleaning stations

9431 track users were observed at cleaning stations. Almost all (94.2%) of observed track users took some action at the cleaning station and only 5.9 per cent took no cleaning action. This is exceptionally high use of the cleaning stations and very close to the proportion of participants who reported they ‘usually’ use the cleaning stations (94.3%).

Surveillance video was not recorded in 2019. Video was recorded in 2018 and 2017, however, it was recorded at different locations and analysed differently preventing comparison.

Three quarters of track users (74.9%) were observed to use the cleaning stations correctly by scrubbing then spraying their shoes. One in ten (11.5%) sprayed only and 6.5 per cent sprayed then scrubbed. Three quarters (74.6%) of survey participants said, ‘scrub then spray’ was the correct way to use cleaning stations and 8.0 per cent said ‘spray then scrub’. These findings are very similar to actual cleaning station use which is unusual. Self-reported cleaning behaviour is expected to over-report the ‘correct’ behaviour. There is variation across the three areas with Hunua having significantly lowest correct use at 63.4 per cent and Waitākere significantly higher than total at 78.1 per cent.

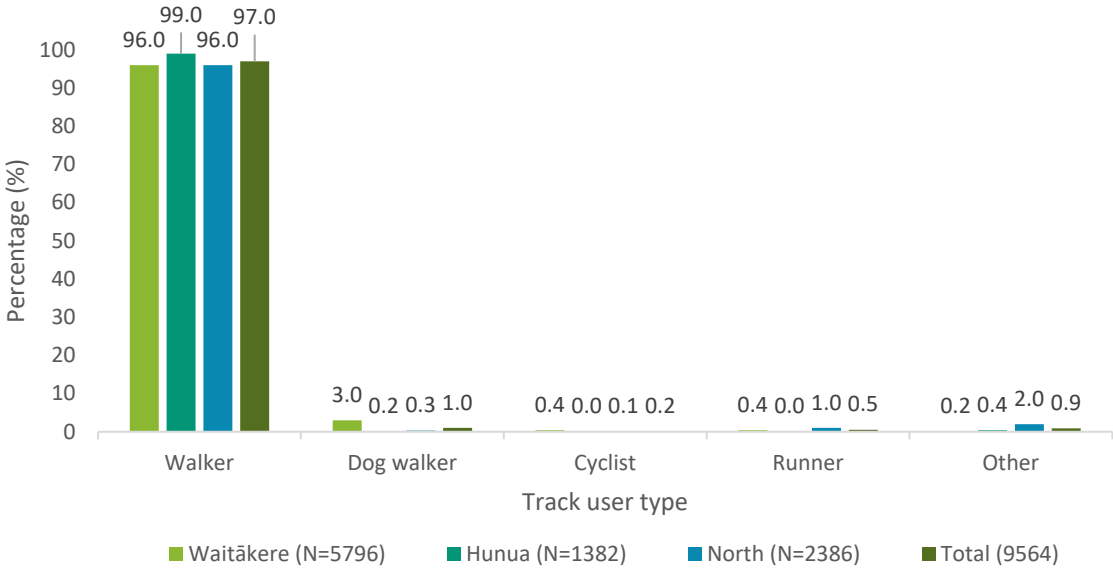
Figure 28: Cleaning station use across park locations



Nearly all track users were identified as walkers. A small proportion of dog walkers (3.1%) were recorded at Waitākere. Cyclists were defined as people with bikes. Runners were identified by running through the cleaning station or jogging on the spot

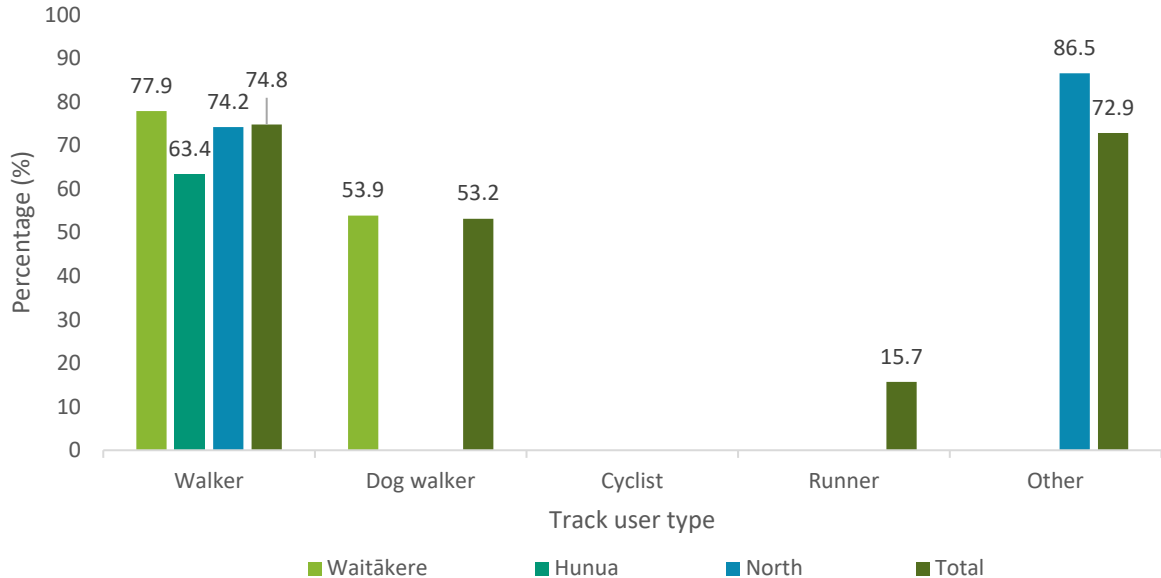
as they used the cleaning station. Other includes staff, people in uniform (e.g. firefighters), prams, and 'others' not further identified.

Figure 29: Types of track users at different track locations



On average, only half of dog walkers (53.2%) were 'scrubbing then spraying' their shoes. Runners have low compliance with only 15.7 per cent 'scrubbing then spraying'. Only one of the 23 cyclists at Waitākere was recorded to scrub then spray their shoes. Low compliance of cyclists aligns with finding only 7.1 per cent of survey participants said 'cleaning equipment' was something they can do to reduce spread.

Figure 30: Proportion of track user type who 'scrub then spray' (data deficient track user types have been excluded)



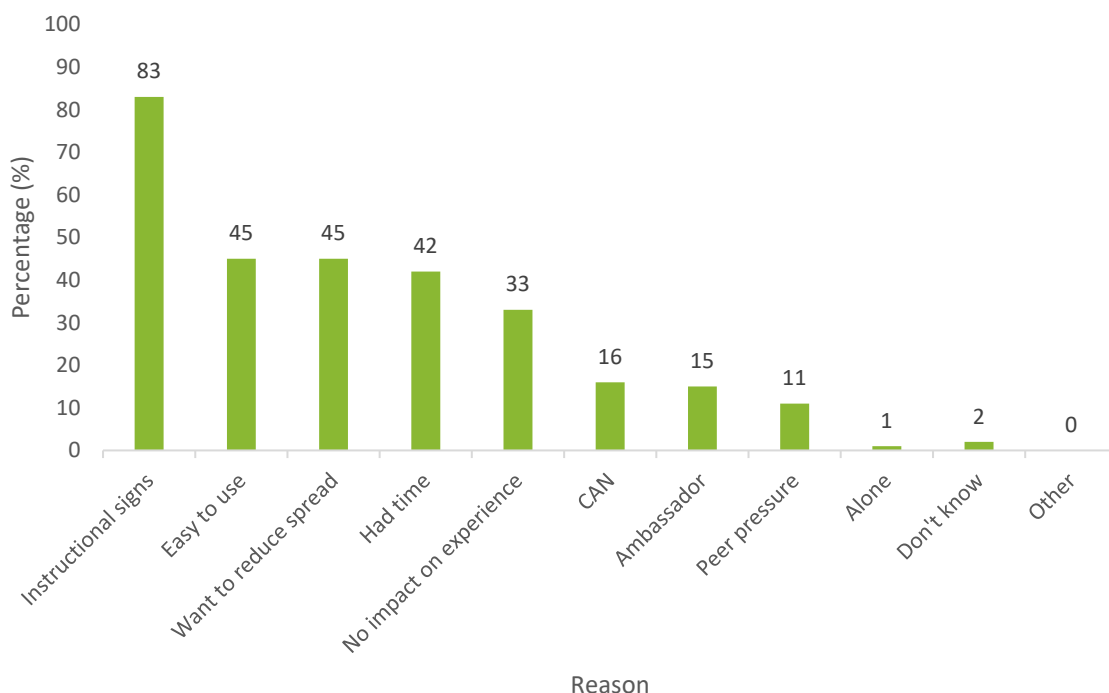
3.5 Drivers of cleaning station use

3.5.1 Self-reporting reasoning

Signage (83.2%) instructing the use of cleaning stations was the most common reason participants said they used the cleaning station. Four in ten participants reported stations being easy to use (44.5%), wanting to reduce the spread of kauri dieback disease (45.3%), and having the time (41.6%) as reasons for using the cleaning station.

Interpersonal communication, which can be delivered through an ambassador, has been shown to influence behaviour more than knowledge or attitudes alone (Green et al., 2019). Further, a study by Aley (2019)⁷ found the presence of an ambassador significantly increased cleaning station use and normative signage had no impact on use. The limitations of self-reported reasons for performing behaviours and the findings of these other studies suggest caution is needed it applying the findings in Figure 31.

Figure 31: Reasons for using the cleaning stations (Base: used cleaning station N=137)

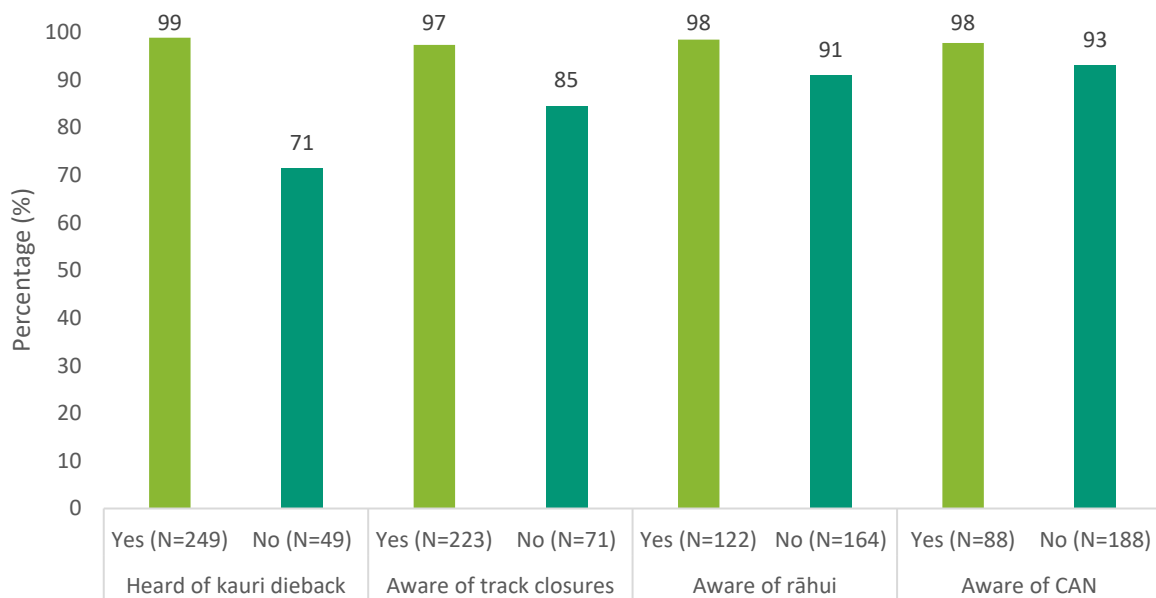


⁷ <https://ourackland.aucklandcouncil.govt.nz/media/30131/234-behaviour-change-and-kauri-dieback-jo-aley.pdf>

3.5.2 Awareness of kauri dieback disease, rāhui, track closures and CAN

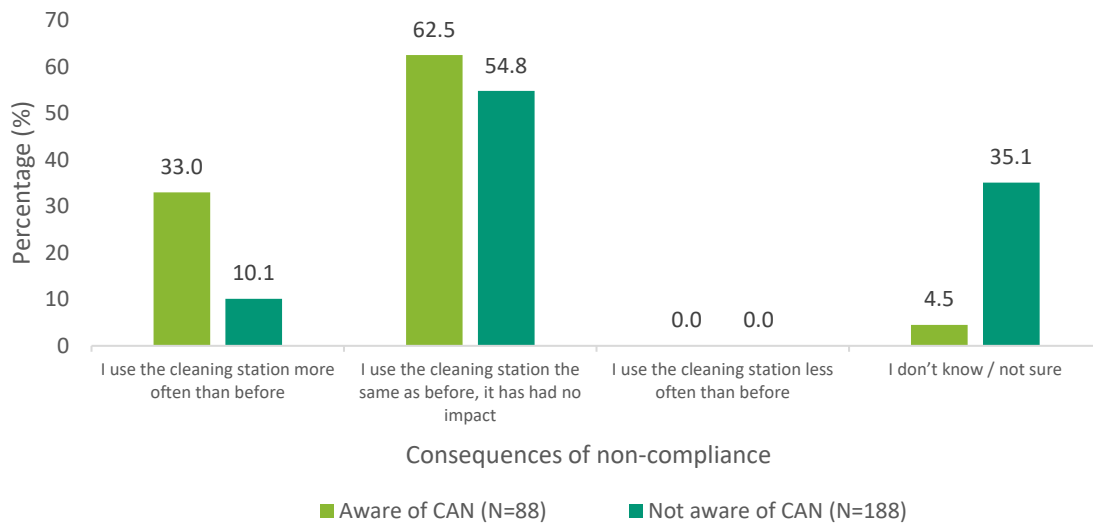
Participants were more likely to report ‘usually’ cleaning their shoes if they had heard of kauri dieback disease (98.8% reported they ‘usually’ clean), were aware of track closures (97.3%), or were aware of the rāhui (98.4%). Awareness of the CAN shows no significant difference in self-reported shoe cleaning frequency. This result may be impacted by the low awareness of the CAN overall. This suggests that awareness of kauri dieback disease, rāhui, and track closures are factors contributing to track users cleaning their shoes and high awareness should be maintained.

Figure 32: Awareness of kauri dieback, track closures, CAN and rāhui for participants who ‘usually’ clean their shoes



Over half (56.9%) of all participants and two thirds (62.5%) of participants who had heard of a CAN said the CAN had no impact on their likelihood of using the cleaning stations. Those who had heard of a CAN were more likely to say that they are using the station more often than before (33.0%) compared with those who hadn’t heard (10.1%). People who were aware of the CAN, however, showed no significant difference in self-reported frequency of cleaning station use. This discrepancy suggests CAN awareness has minimal impact on cleaning station use.

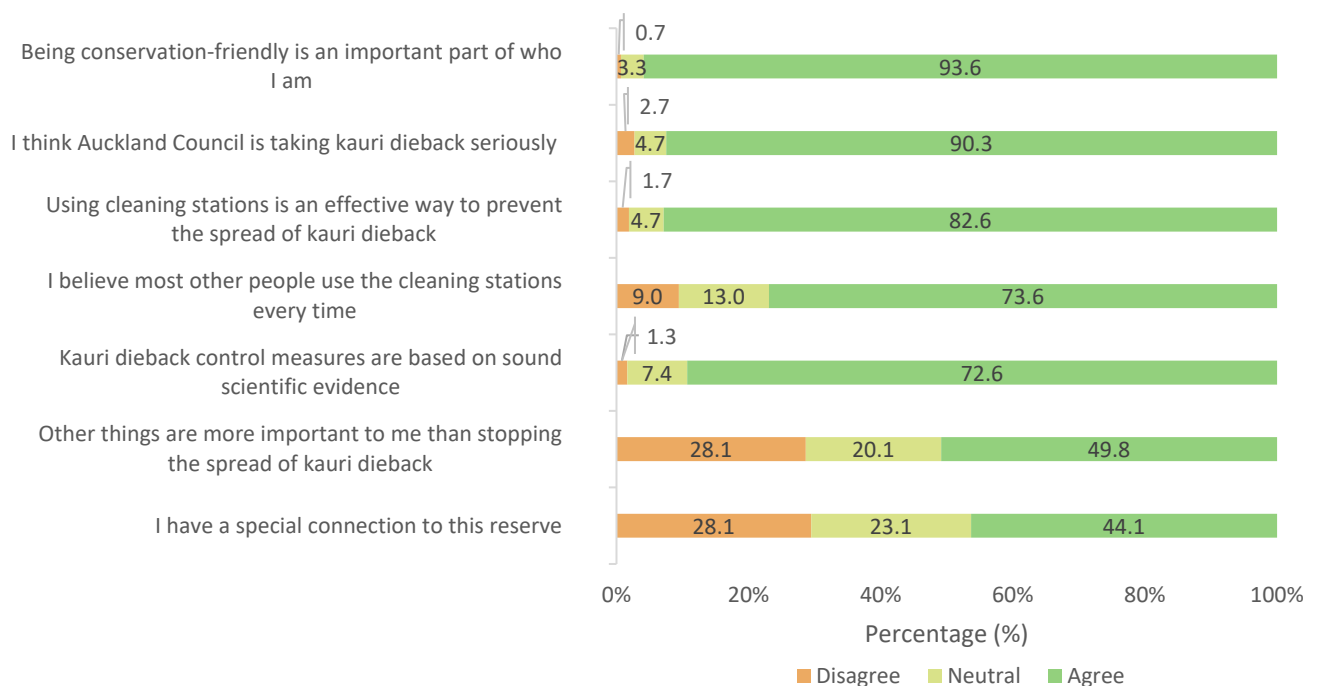
Figure 33: Impact of CAN on cleaning station on cleaning station use



3.5.3 Values

Participants were asked to state their agreement with a series of values statements intended to indicate possible motivations for cleaning station use. Agreement with these statements showed no relationship with cleaning station use due to the lack of variance in self-reported frequency of use (94.3% of participants answered 'usually').

Figure 34: Agreement with values statements (N=299)



Frequency of visit has a relationship with the statement 'I have a special connection to this reserve' (base all: $R^2=0.82$, base Aucklanders: $R^2=0.83$). Participants who visit more frequently tend to 'agree' or 'strongly agree' with this statement. We cannot say, however, if a sense of connection is driving the frequency of visitation or if frequency of visitation is driving a sense of connection. It is possible that these two are mutually reinforcing.

4.0 Conclusions and recommendations

Keep awareness of kauri dieback, rāhui and track closures high. Participants with awareness of kauri dieback disease, rāhui and track closures were more likely to report 'usually' cleaning shoes.

Ensure track users are getting messages *before* they arrive at the park. On-park signage is by far the most frequently reported channel visitors heard about kauri dieback (84.9%), track closures (71.1%), and the CAN (70.8%). Visitors need to arrive knowing their chosen track is open and the biosecurity behaviours required of them to enable a positive park experience.

Increase awareness for international visitors by considering off-park pre-visit channels. International visitors (85.4%) were less likely to 'usually' clean their shoes compared with Auckland residents (97.6%). International visitors have lower awareness of kauri dieback, rāhui, and track closures than Auckland residents.

Ambassadors should consider asking track users where they usually live to indicate their awareness and gauge their conversation. Awareness of kauri dieback, rāhui and track closers were significantly higher for Auckland residents than international visitors as described in the previous section.

Continue 'scrub, spray, stay' messaging. 'Scrub then spray' is increasingly being reported as the correct cleaning station procedure with three-quarters (74.6%) in 2020 up from two-thirds in 2018 (66.3%) and 2019 (63.6%). Consider incorporating 'every time' into this messaging.

Increase awareness of equipment as a vector and usability of cleaning stations for equipment and dogs. Cleaning of equipment and dogs is infrequent. Compliance video data found wheelchair users were unable to use the cleaning stations. This suggests research into the usability of cleaning stations for different kinds of visitors is needed to ensure compliance behaviours expectations are inclusive.

Facilitate shift from 'usually' to 'every time' using the cleaning stations through better understanding drivers and enablers of cleaning station use. The knowledge-behaviour gap tells us it would be wrong to expect increasing awareness alone to result in increased compliance (Kollmuss and Agyeman, 2002; McLeod et al., 2015; Schultz, 2011). Researching the experience of track users focusing on their motivations for visiting the parks, their capabilities to perform the desired behaviours, and the opportunities provided throughout their park experience to perform these behaviours could inform the design of park experiences in which track users comply with desired biosecurity behaviours. Furthermore, shifting the focus from transactional cleaning station use to the complete forest experience within which the cleaning station

is one component opens the possibility for forest experiences to build a sense of personal responsibility for limiting pest spread and developing a conservation ethic. To provide resources to undertake this research, it is suggested that the annual survey is reduced in length to collect data only on key metrics such as self-reported cleaning behaviour and kauri dieback disease awareness.

5.0 References

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