

## National Wastewater Surveillance Programme - COVID-19

Week 17 2022 (Week ending 1 May 2022)

Report prepared on 5 May 2022

### Overview

SARS-CoV-2, the virus that causes COVID-19 disease, is shed in the faeces of people that are infected and so the viral RNA can be detected in wastewater. As such, testing wastewater for SARS-CoV-2 RNA is an efficient population-based COVID-19 surveillance tool. Based on national and international data, this method has been shown to be an indicator of increasing and decreasing cases (i.e., early warning system) and complements other surveillance tools. A national wastewater COVID-19 surveillance programme was established in 2021 by the Institute of Environmental Science and Research (ESR). This work is funded by the New Zealand Ministry of Health and is part of New Zealand's COVID-19 response.

Wastewater samples are collected from wastewater treatment plants across both the North and South islands of New Zealand. In addition, in Auckland there are a small number of sample sites that are pump stations and manholes. Most sites are sampled at least weekly between Monday and Thursday of any given week. The number of sites and frequency of collection varies over time. Grab or 24-hour composite samples are collected.

### Approach

Samples are sent from each wastewater treatment plant to one of the ESR laboratories (Porirua or Christchurch). Processing involves the concentration of virus and extraction of viral RNA. The presence of SARS-CoV-2 RNA in the sample is then determined using RT-qPCR.

A result of '**not detected**', means that SARS-CoV-2 RNA is either absent from the sample, or at a level too low to be detected. When SARS-CoV-2 RNA is **detected**, the concentration in the sample can be calculated. Low amounts of SARS-CoV-2 RNA in a sample may not be able to be accurately quantified and are recorded as less than the limit of quantitation. For quantitation, the raw concentration data (i.e., genome copies per L or per mL) is converted to a viral load of **genome copies per day per person**. This calculation takes into account the flow rate of wastewater entering the wastewater treatment plant and the population in the catchment. This is the population-normalised viral load.

## **Key Points and Limitations**

- SARS-CoV-2 RNA concentrations **should not be compared between wastewater catchments.**
- Day to day variability in SARS-CoV-2 RNA concentrations, especially in smaller catchments, is to be expected. Greater variability is expected with grab samples.
- Generally, increasing viral loads are associated with increasing numbers of people with SARS-CoV-2 infection and vice versa (decreasing concentrations indicating decreasing cases). However, there are a number of factors that affect the amount of viral RNA detected and so data from wastewater surveillance cannot indicate the exact number of COVID-19 cases in the catchment area.
- Results from wastewater testing should not be used in isolation but as an additional tool used for early detection and monitoring trends.
- The number of COVID-19 cases reported via individual testing are reported for each region to provide a comparison to the wastewater results. The cases in each catchment area are an estimate of the number of people in that wastewater catchment area that have reported a positive test. However, because the wastewater catchments do not exactly align with regional boundaries, the number of cases estimated by region and by water catchment area may be different.
- Data are provisional and may be subject to change by location.
- As septic tank systems are not connected to wastewater treatment plants, the wastewater from these households will not be represented in the data.

**Please see notes at the end of the document for further details.**

## Results from Week 17 2022

In the week ending 1 May 2022, 147 wastewater samples from 104 different sites have been collected and analysed.

SARS-CoV-2 RNA was detected in all the samples (Figure 1).

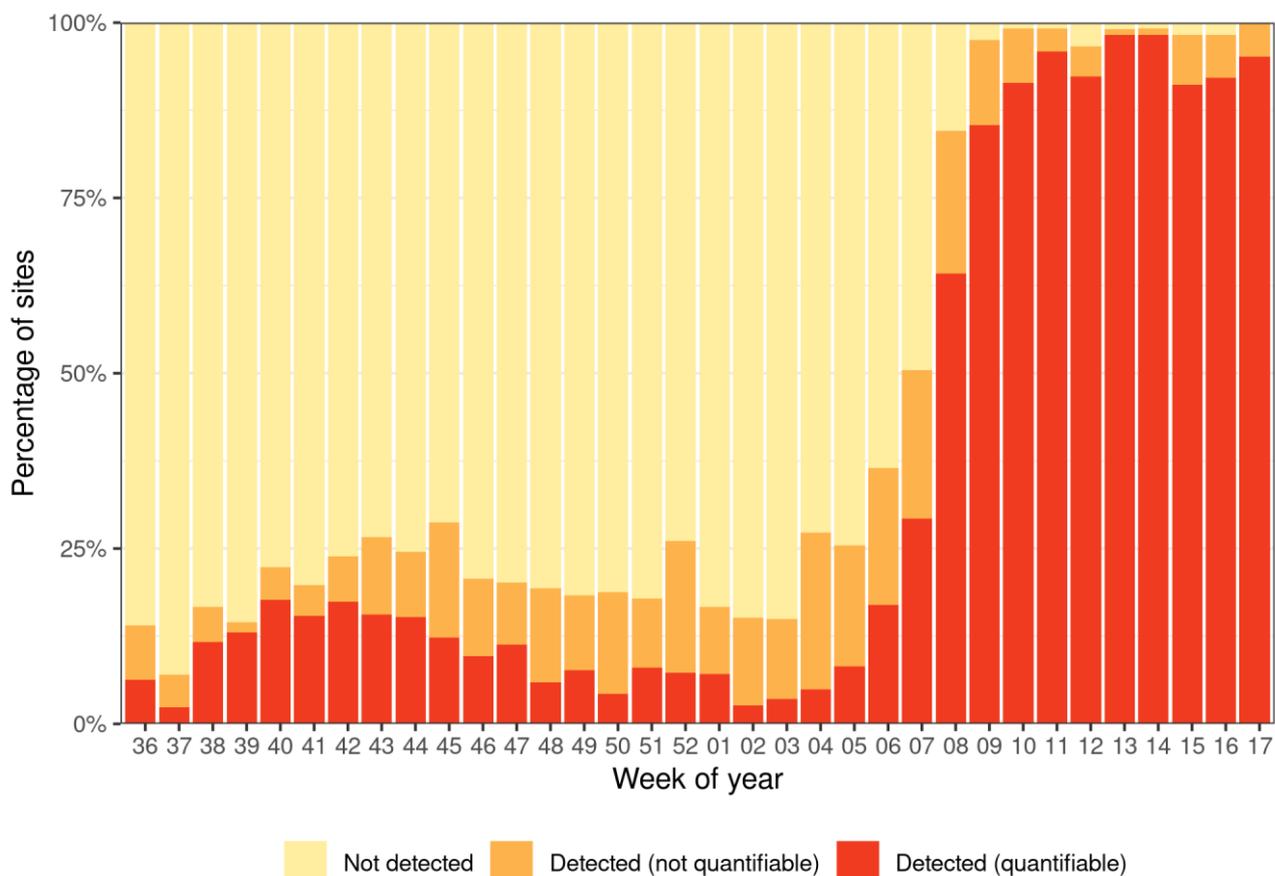


Figure 1. Results for SARS-CoV-2 RNA in wastewater collected across New Zealand by week (from week 36, 2021 to week 17, 2022).

This report also includes a visual representation of sampling locations (Figure 2), individual graphs from sampling locations, and a weekly summary of results from each site.

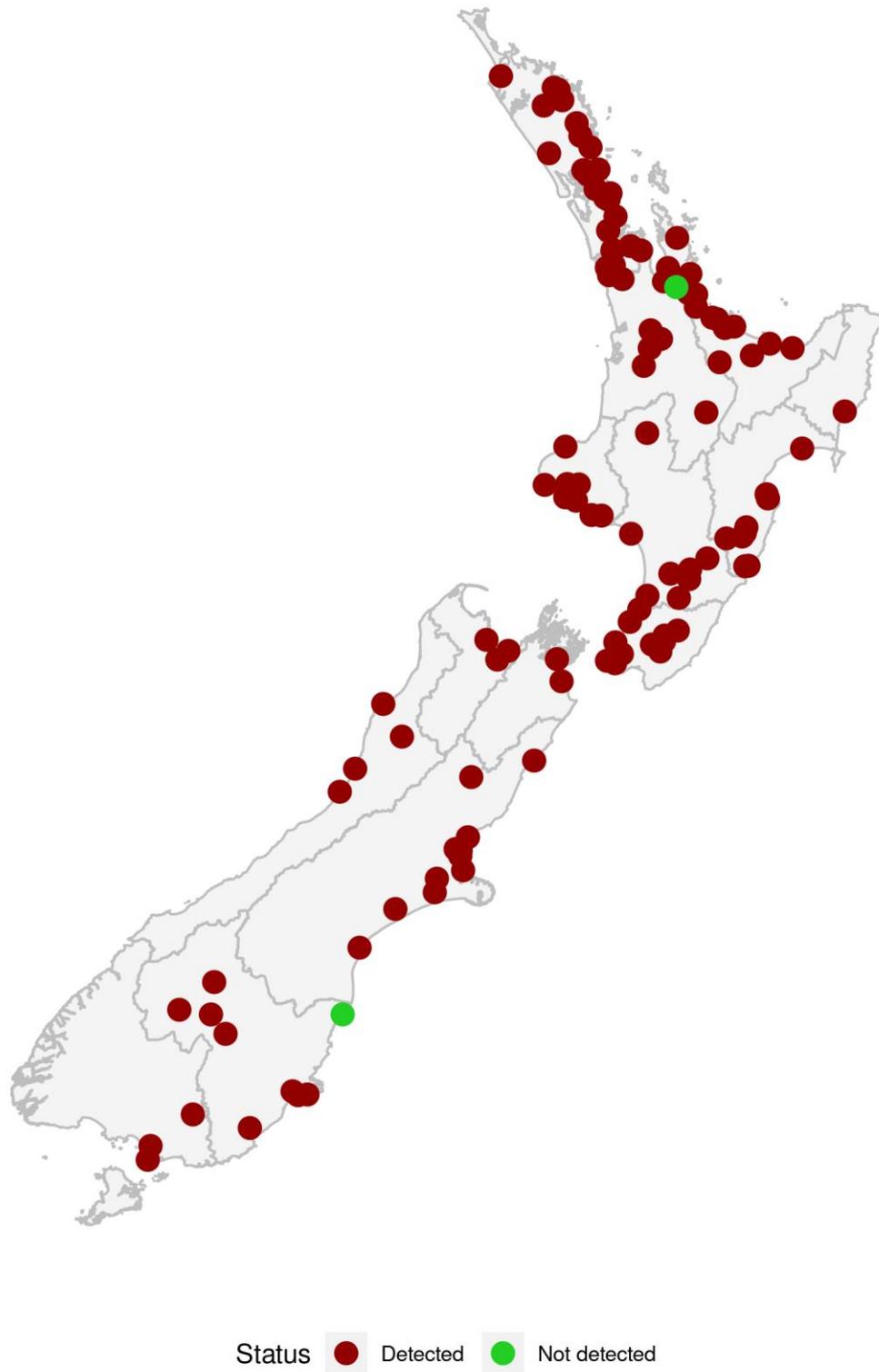


Figure 2 Location of sampling sites and latest results in the two weeks ending 1 May, 2022. Interactive map of weekly results available publicly at <https://www.esr.cri.nz/our-expertise/covid-19-response/wastewater-testing-results>

# Interpreting site graphs

Sample collection method. Results based on autosampler may be more representative than grab sample-based results.

## Wastewater Results

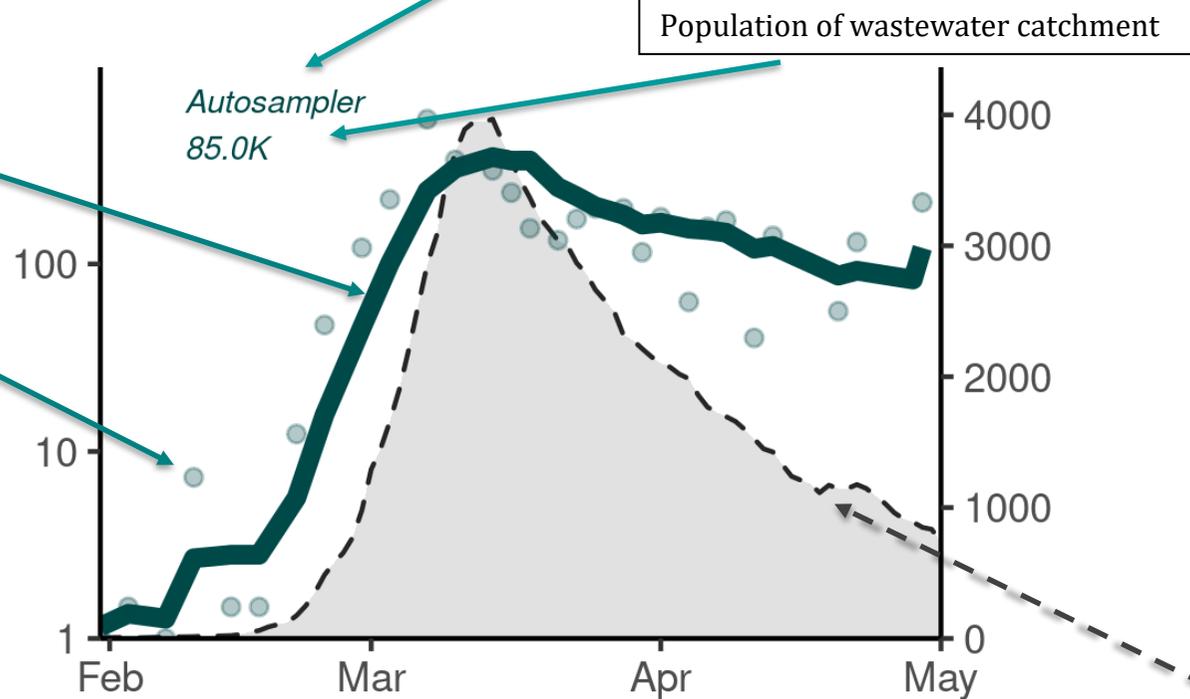
Rolling 14-day average of genome copies/day/person shown as solid line

Individual wastewater sample results are shown as circles

Log<sub>10</sub> scale

Genome copies/mL x Daily wastewater influent (m<sup>3</sup>) = genome copies x 10<sup>4</sup>/day

Genome copies/day ÷ population = genome copies x 10<sup>4</sup>/day/person



Rolling seven-day TOTAL new cases in the catchment

Dotted line (shaded)

Linear scale

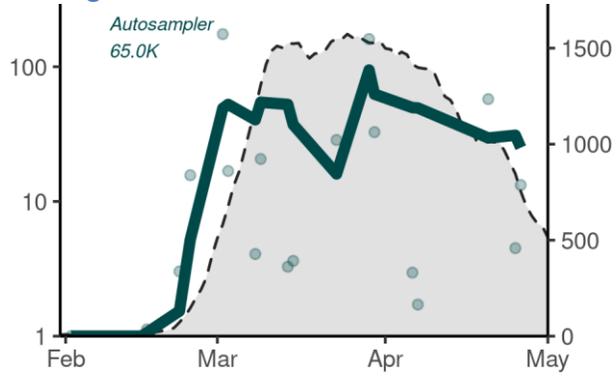
This data is not available for all sites, and subject to change.

Note the scales may differ for each graph

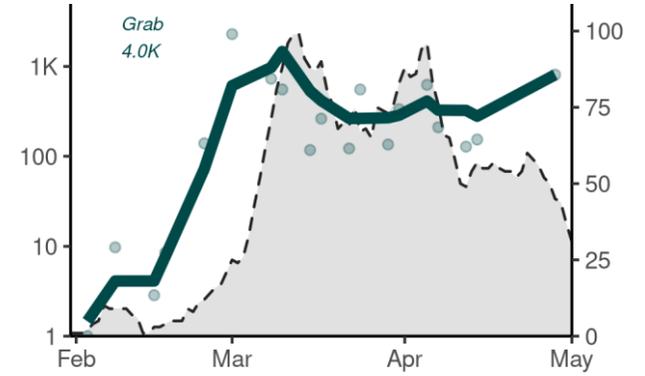
Wastewater results are on log<sub>10</sub> scale, while case data is on a linear scale.

# Northland

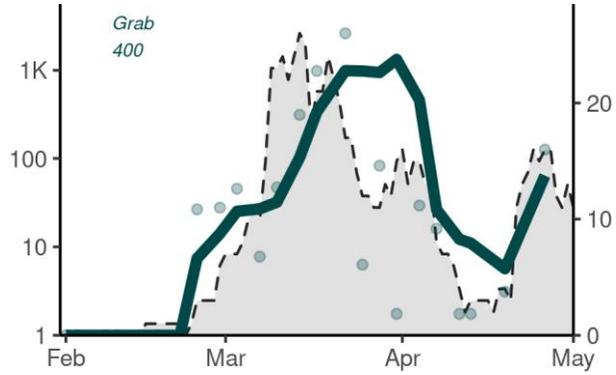
## Whangarei



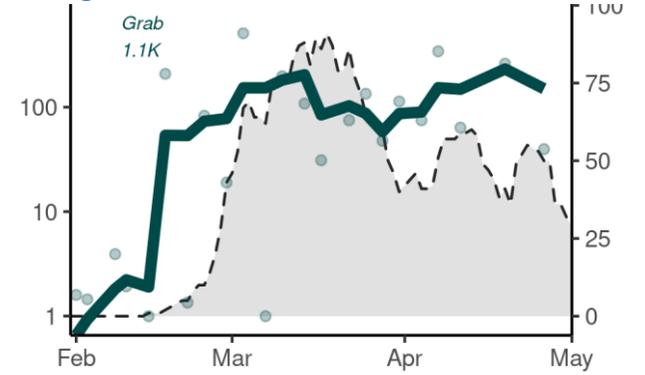
## Paihia



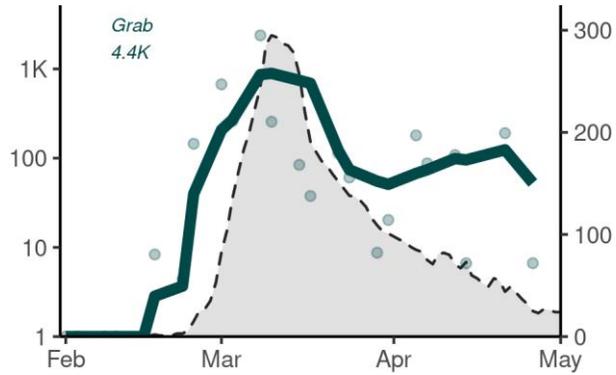
## Kaikawa



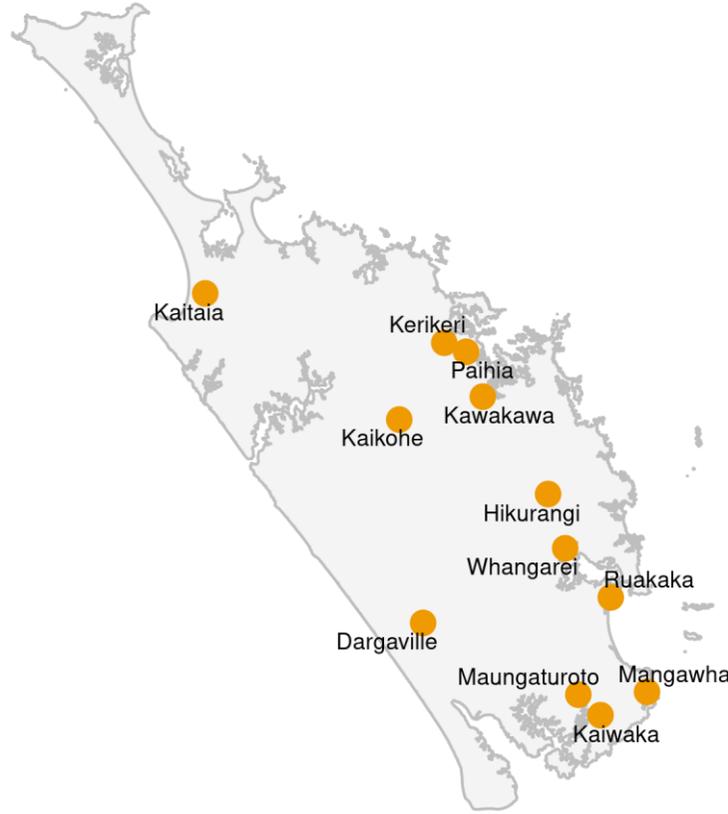
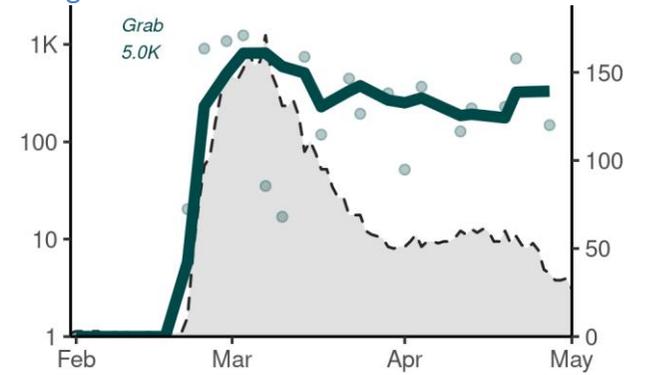
## Mangawhai



## Kaikohu

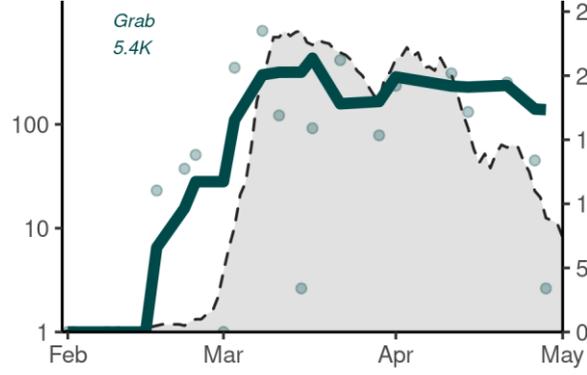


## Dargaville

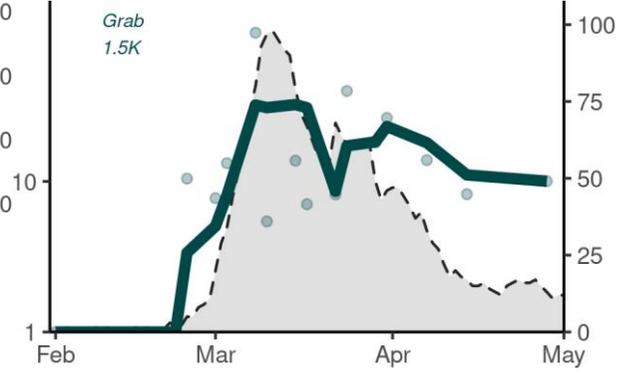


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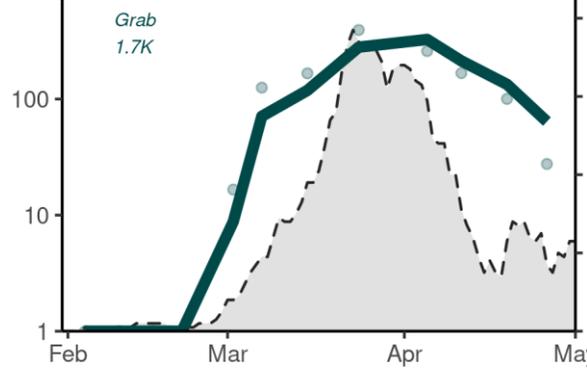
Kaitaia



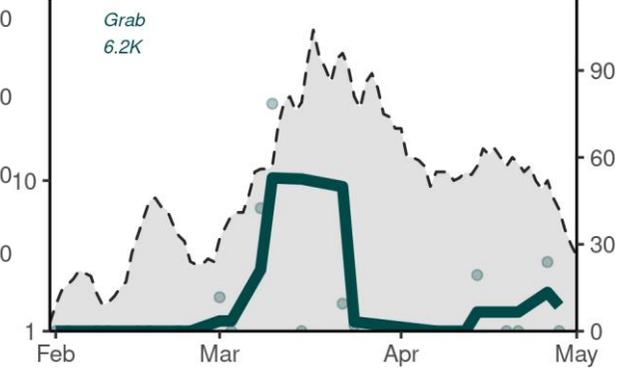
Kawakawa



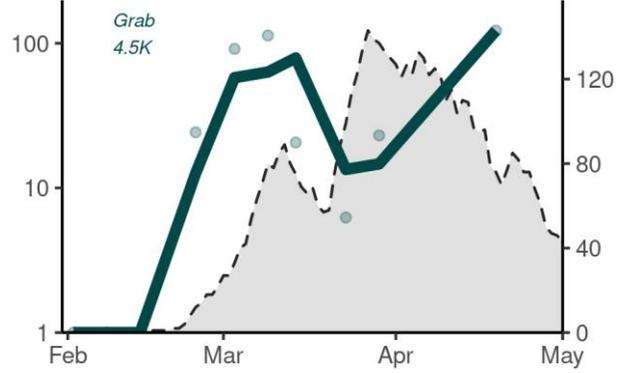
Hikurangi



Kerikeri

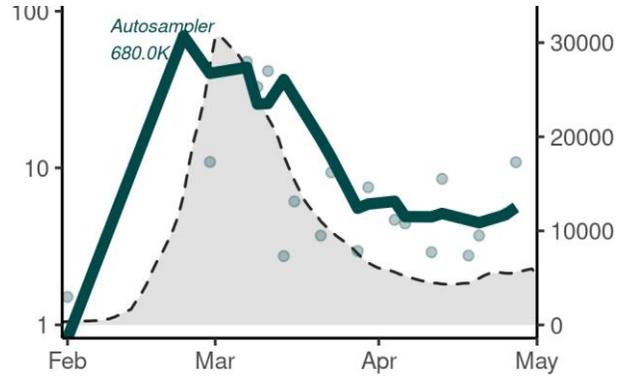


Ruakaka

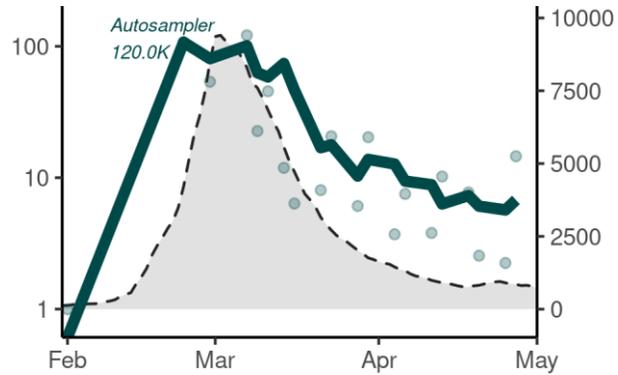


# Auckland

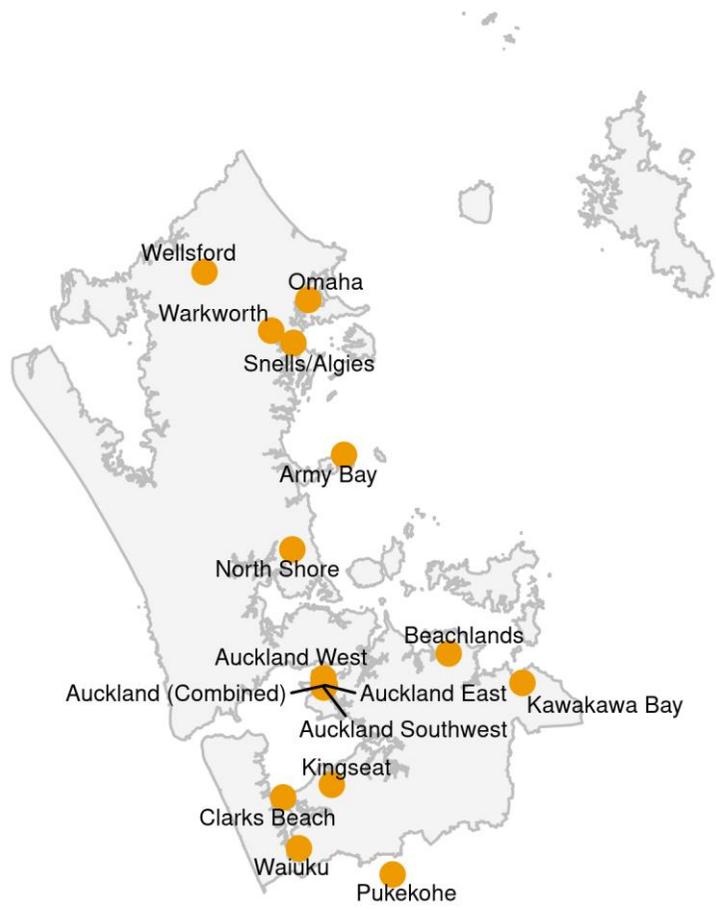
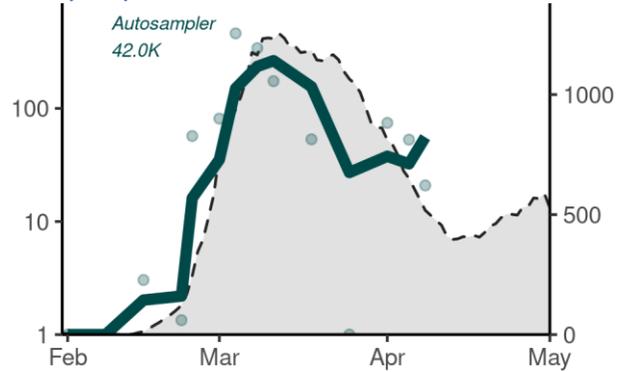
## Auckland East



## Auckland Southwest

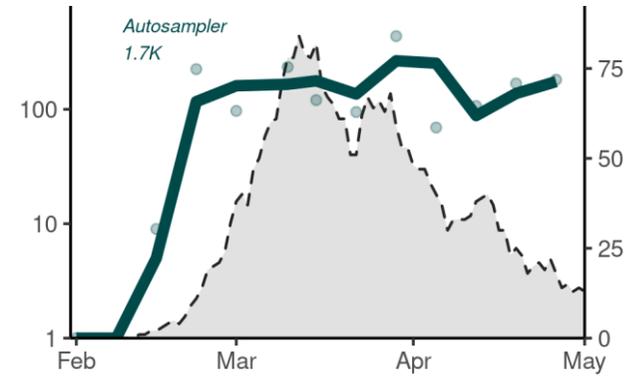


## Army Bay

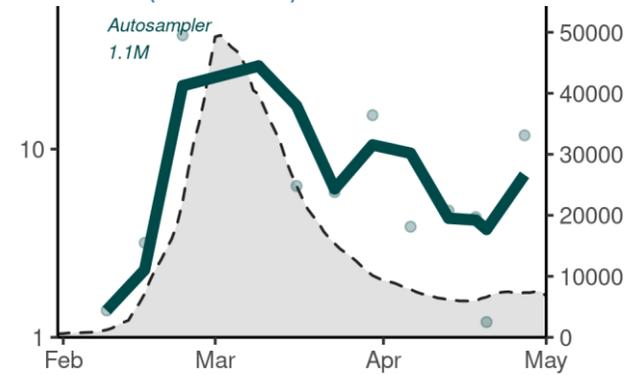


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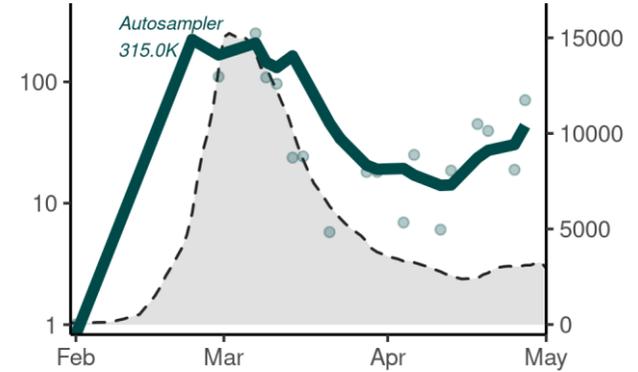
## Wellsford

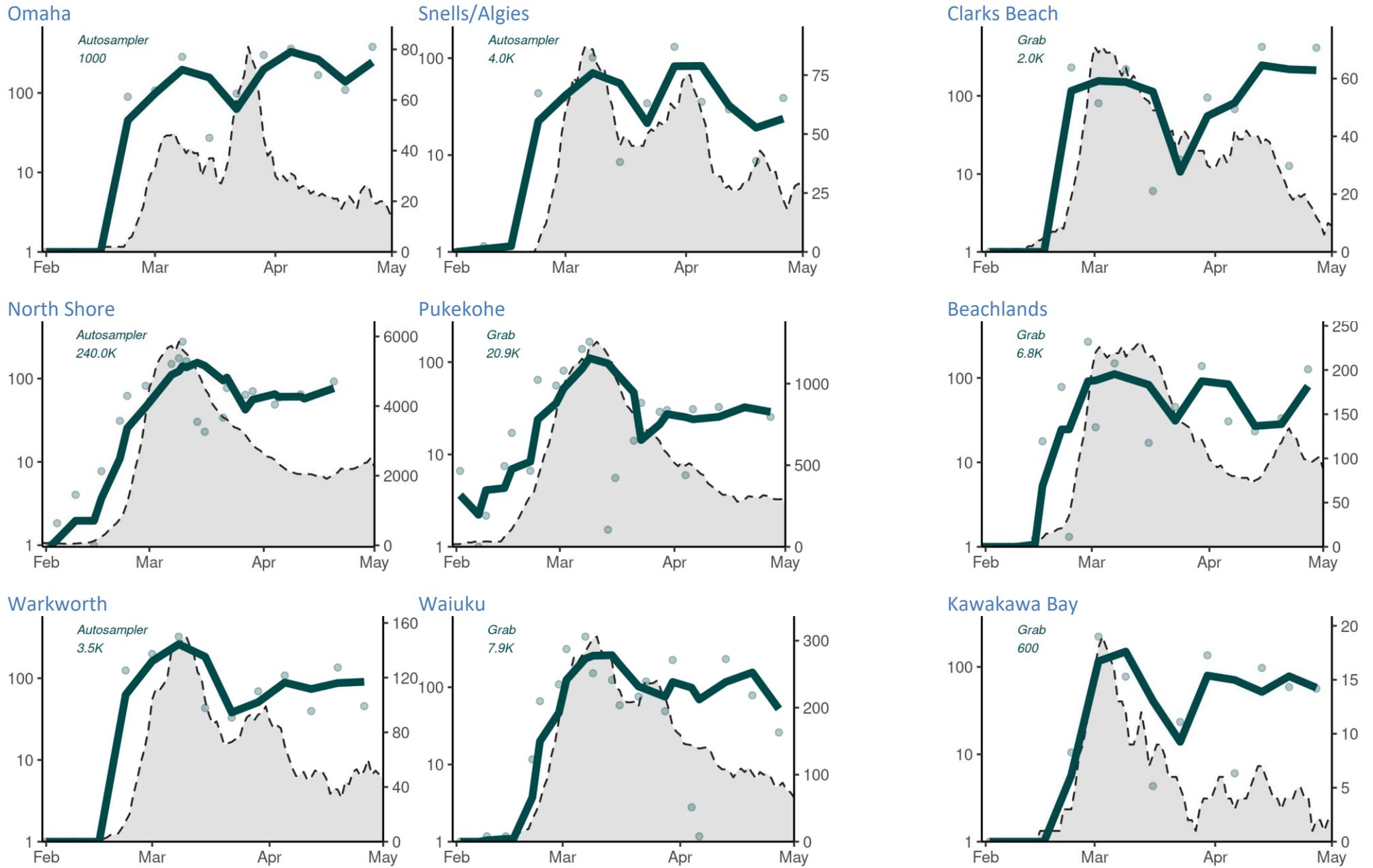


## Auckland (Combined)



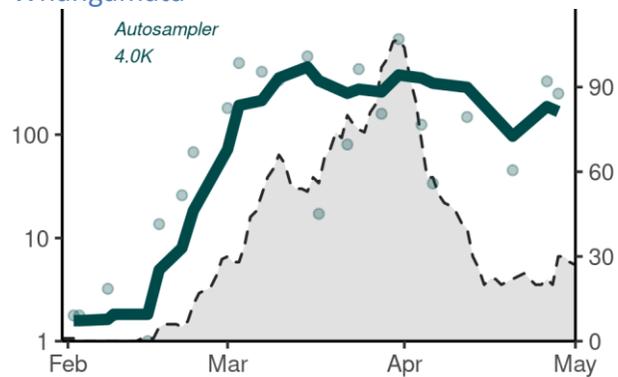
## Auckland West



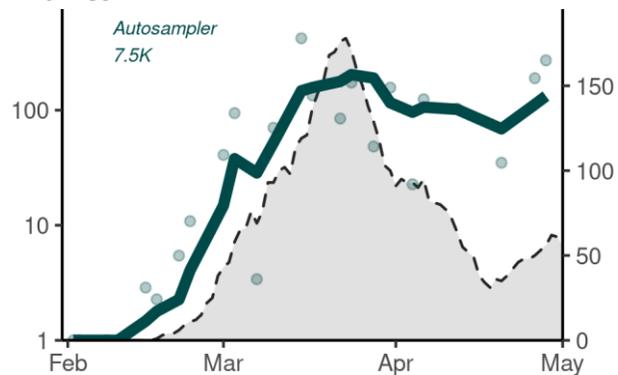


## Waikato

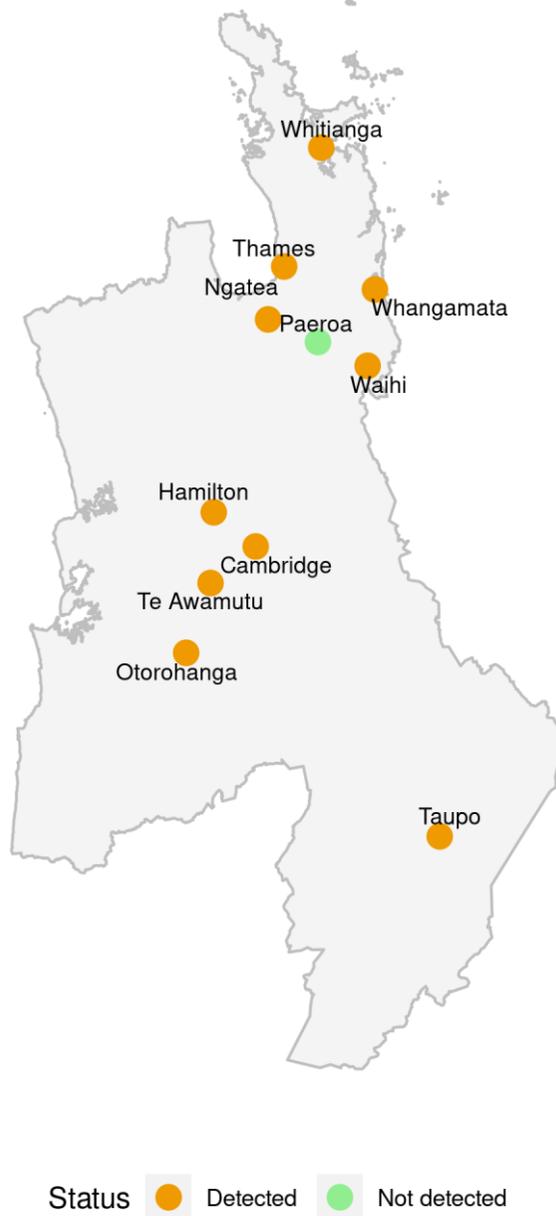
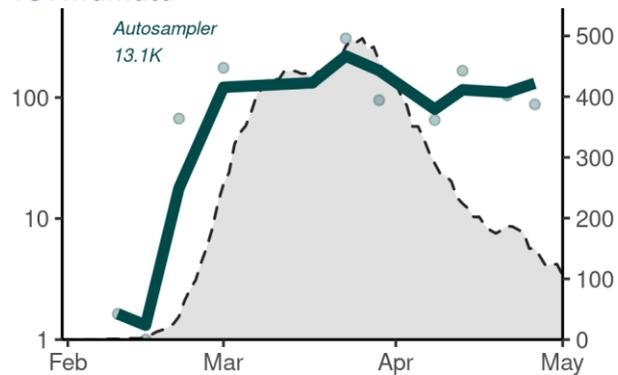
### Whangamata



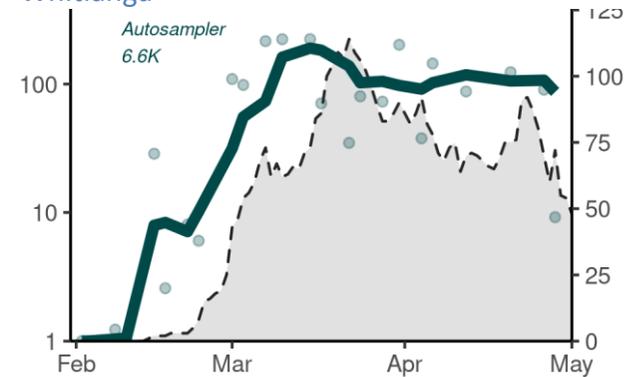
### Thames



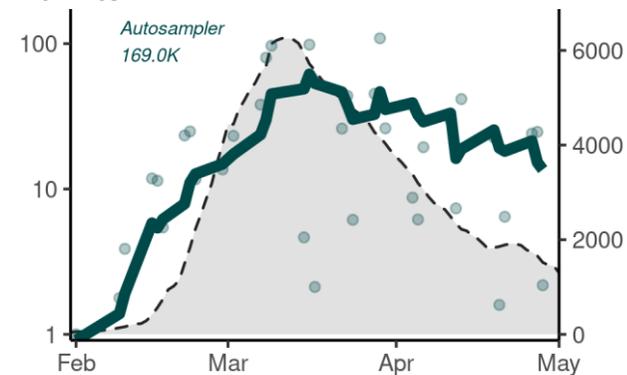
### Te Awamutu



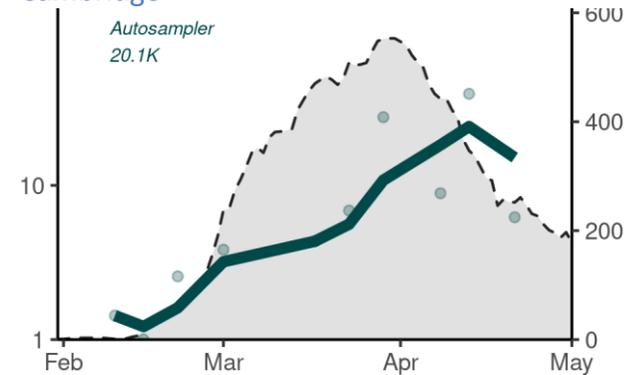
## Whitianga



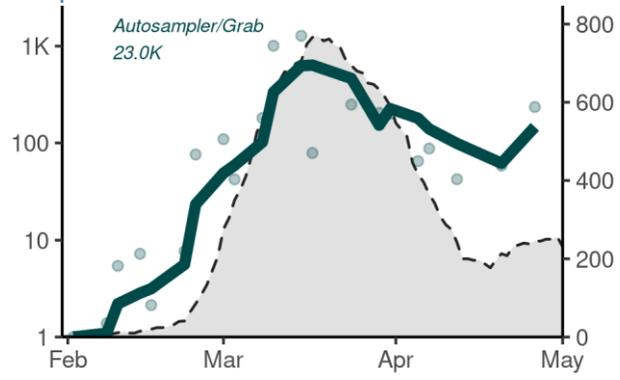
## Hamilton



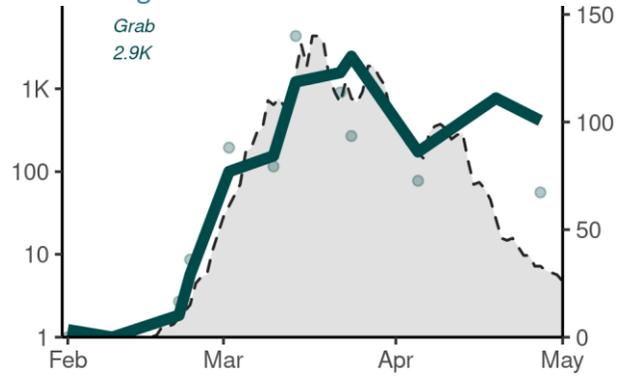
## Cambridge



### Taupo

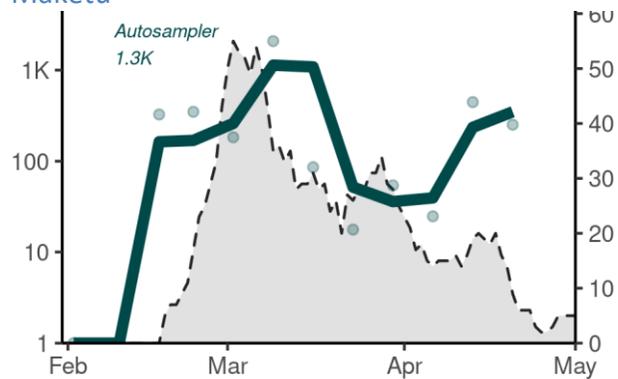


### Otorohanga

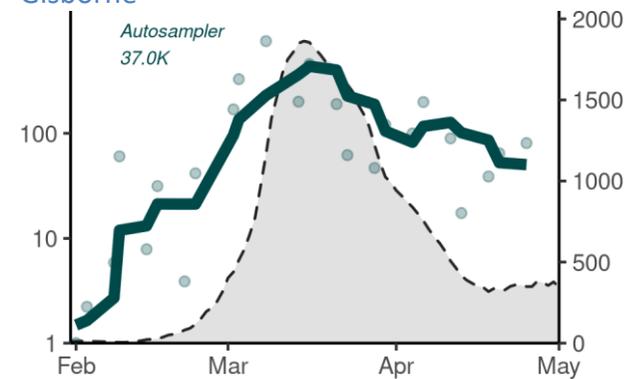


## Bay of Plenty and Gisborne

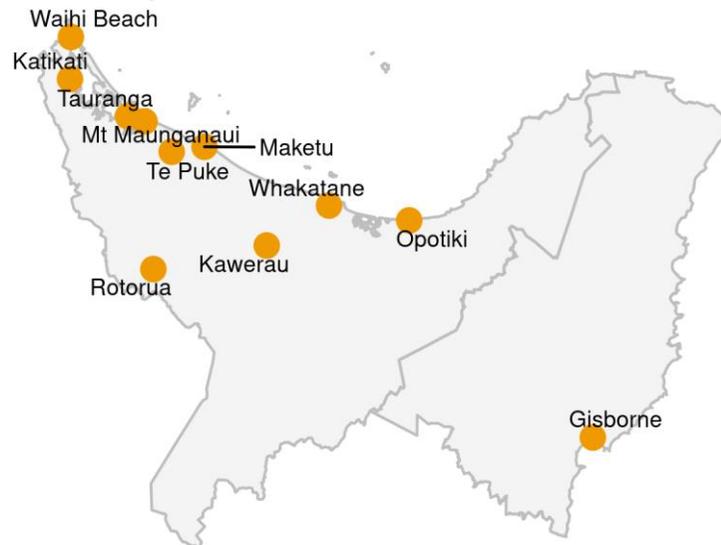
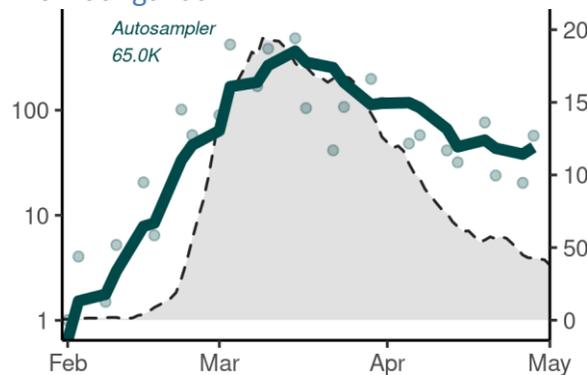
### Maketu



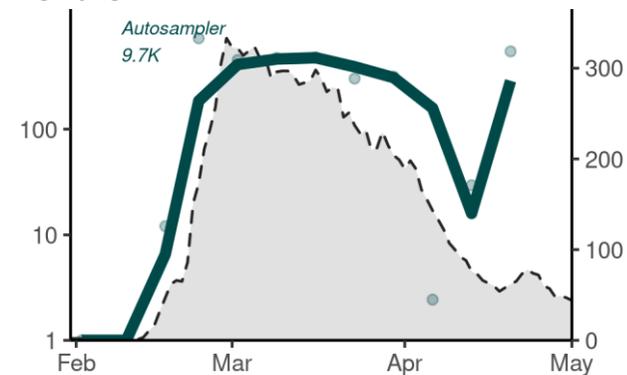
### Gisborne



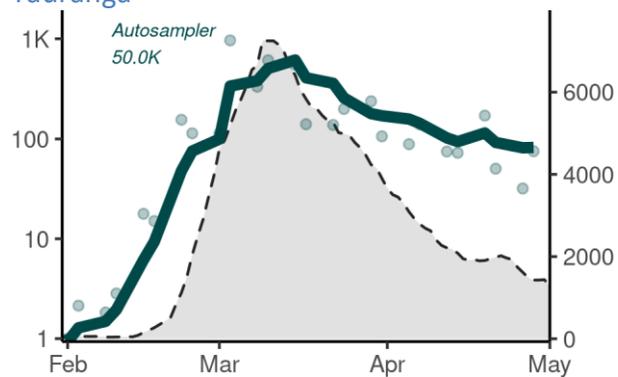
### Mt Maunganui



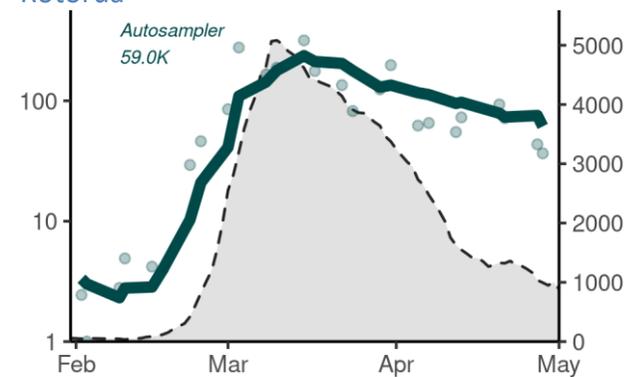
### Te Puke



### Tauranga

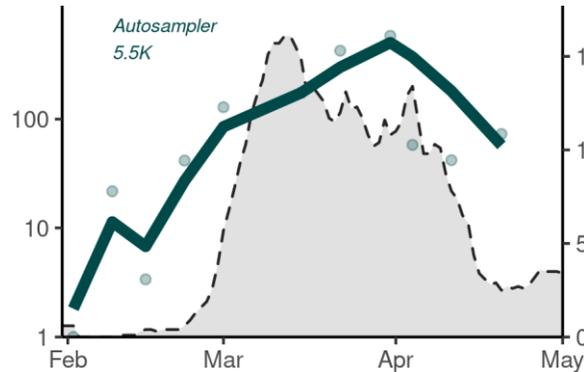


### Rotorua

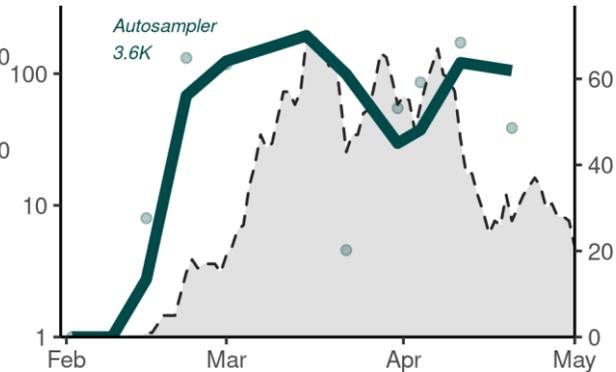


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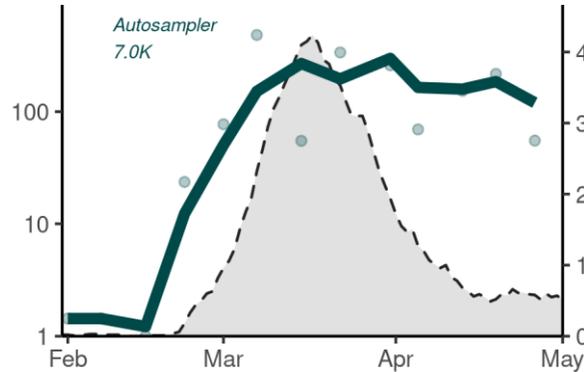
Katikati



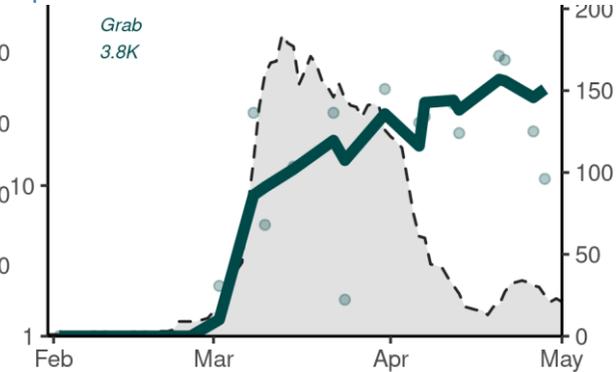
Waihi Beach



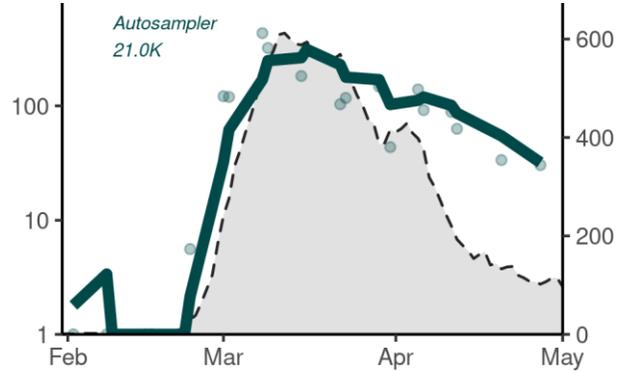
Kawerau



Opotiki

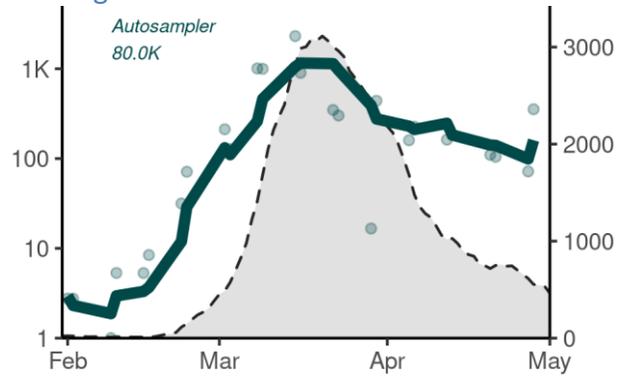


Whakatane

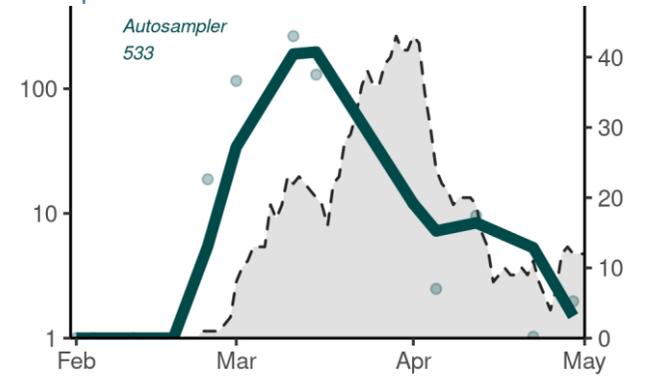


# Hawke's Bay

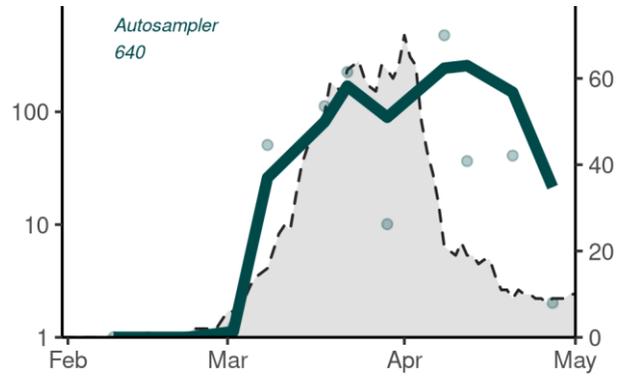
## Hastings



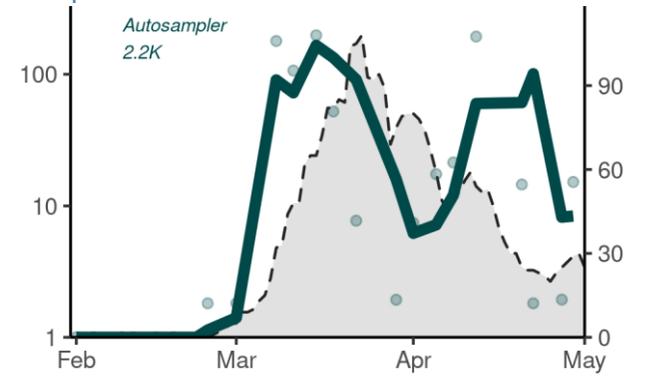
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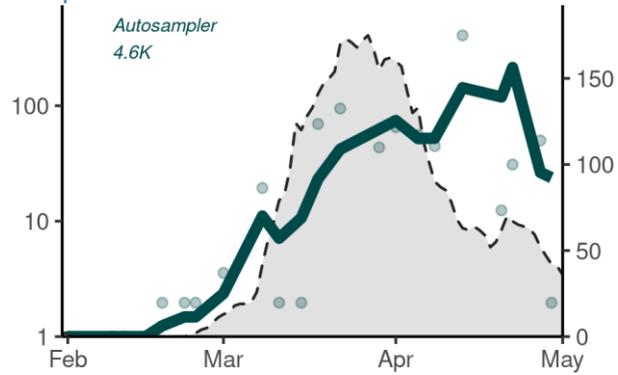
## Otane



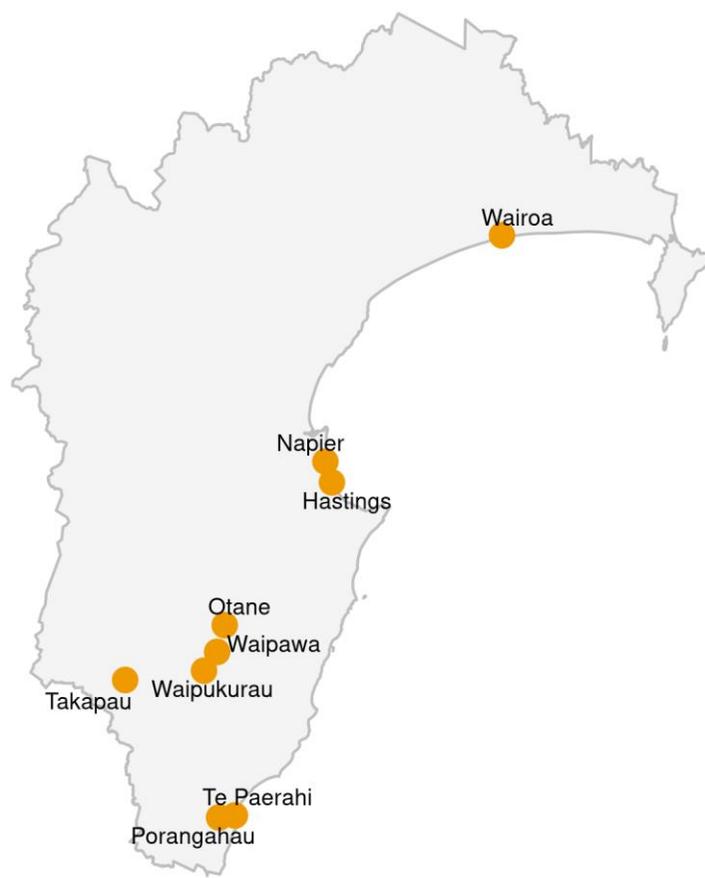
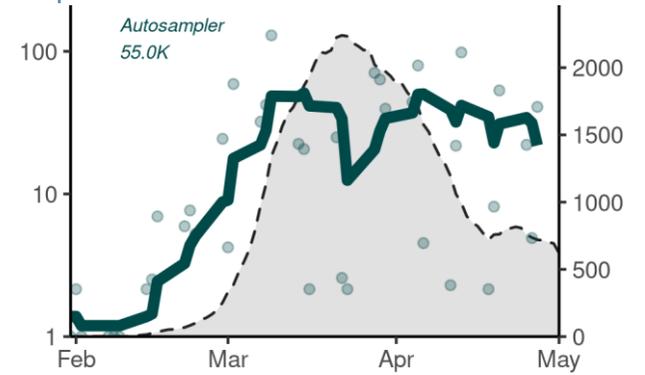
## Waipawa



## Waipukurau

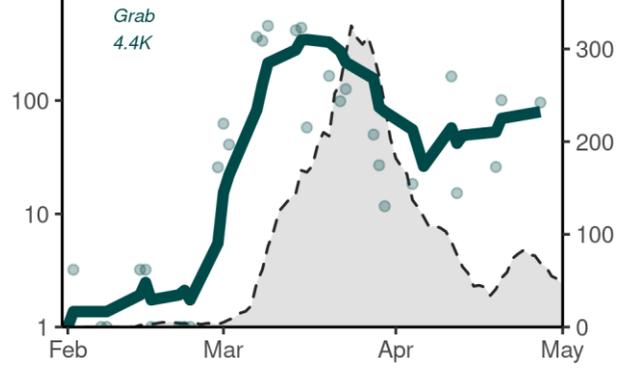


## Napier



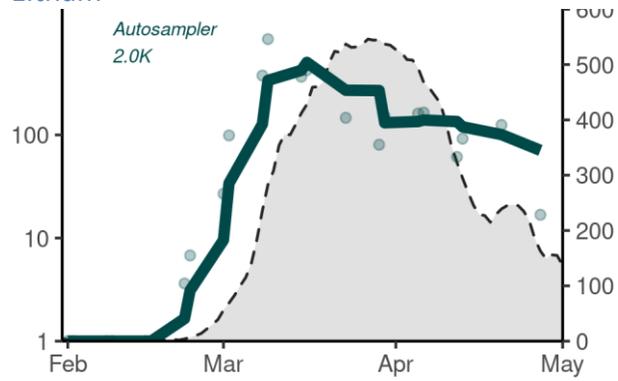
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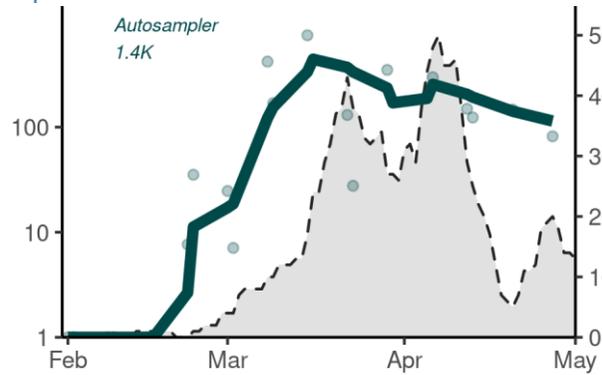


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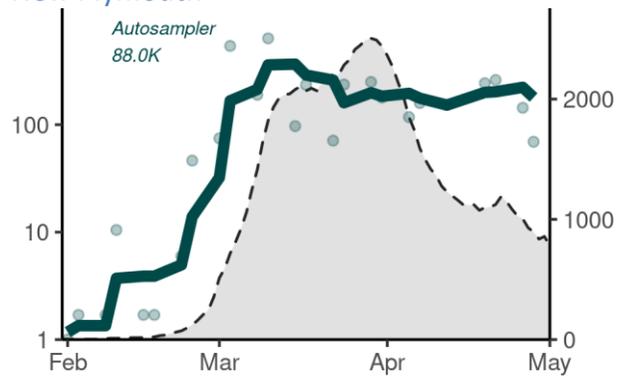
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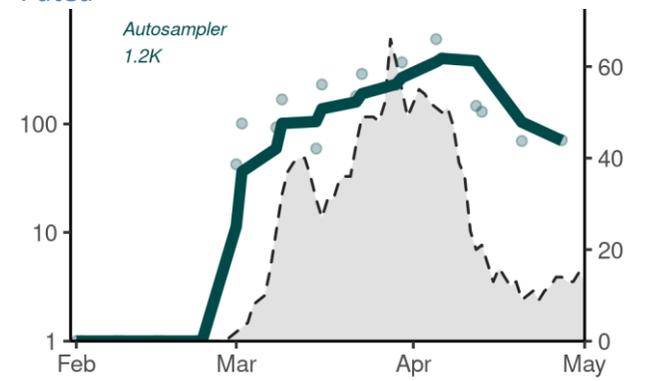
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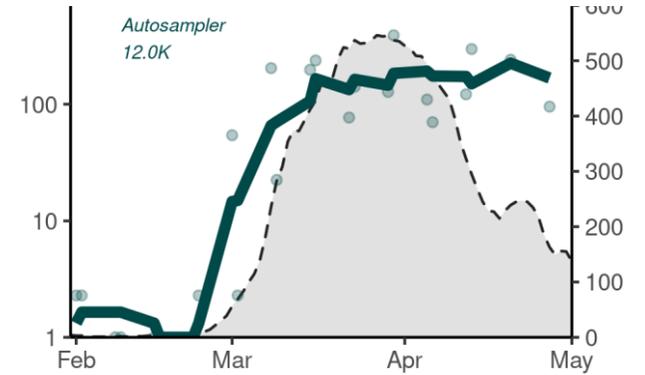
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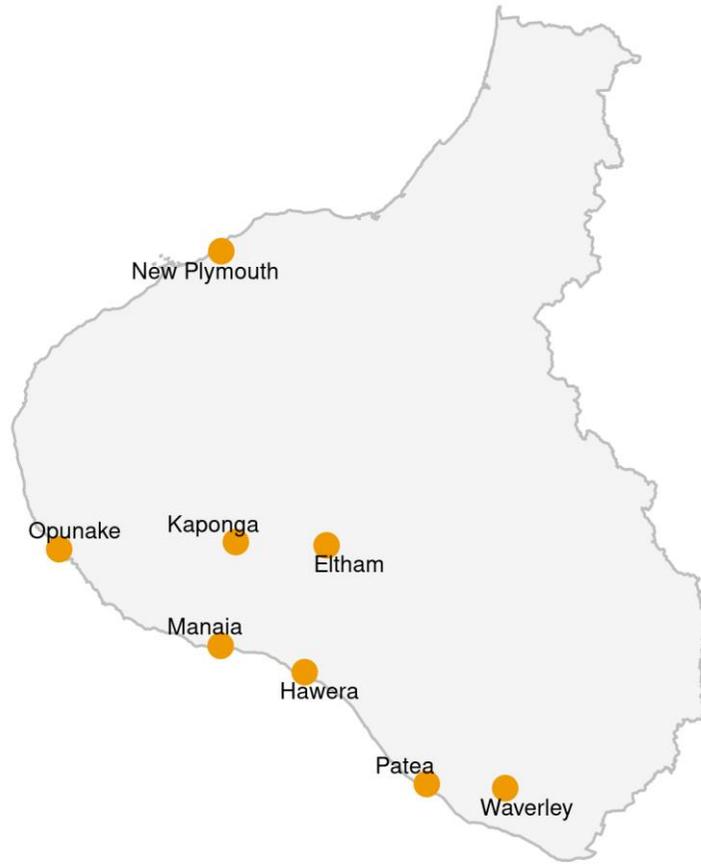
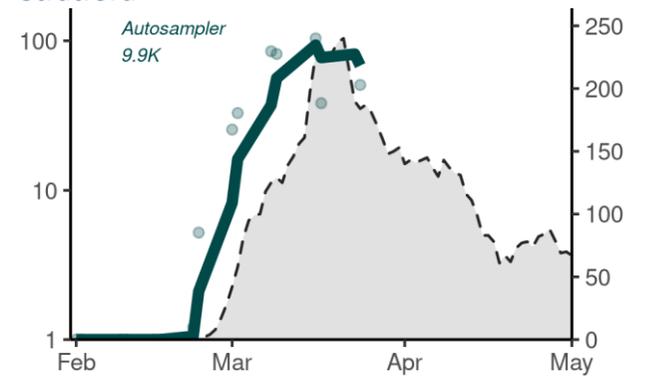
### Patea



### Hawera

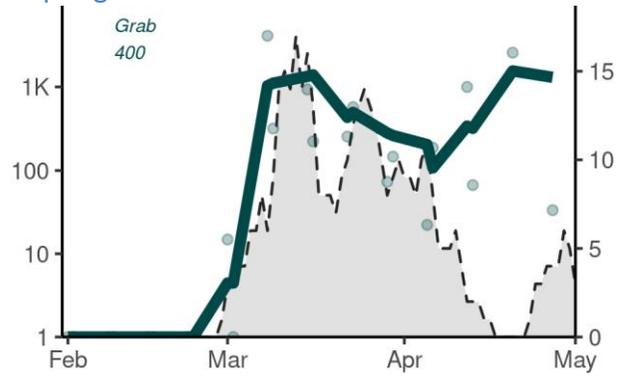


### Stratford

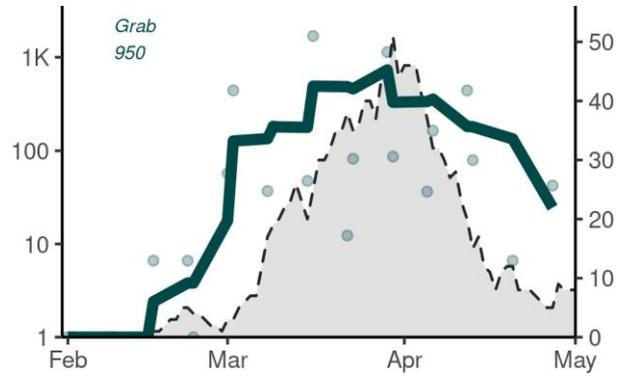


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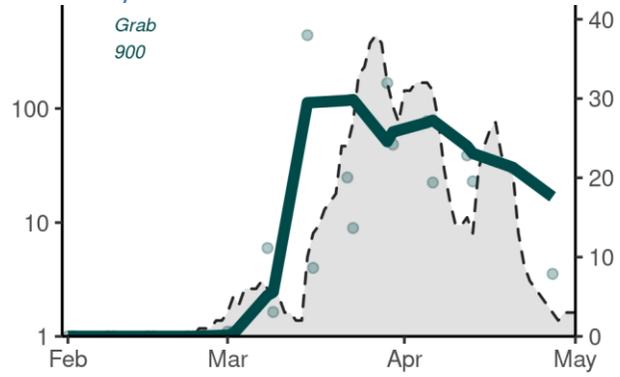
### Kaponga



### Manaia

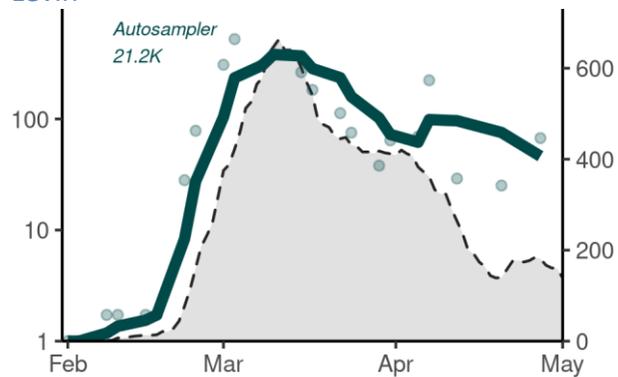


### Waverley

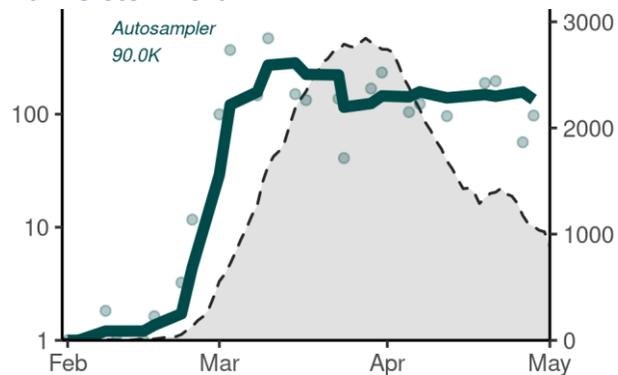


# Manawatu-Wanganui

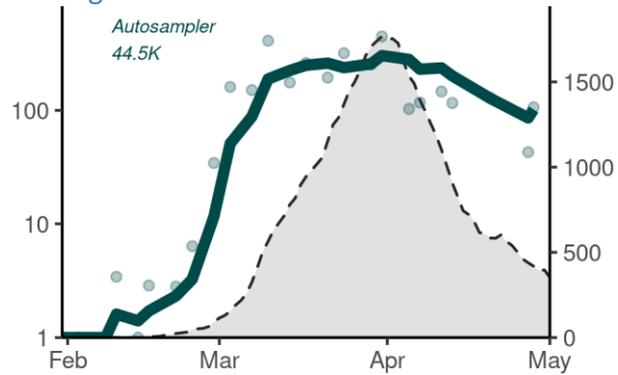
Levin



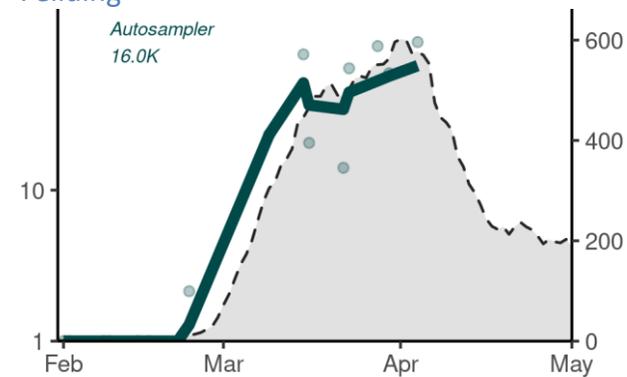
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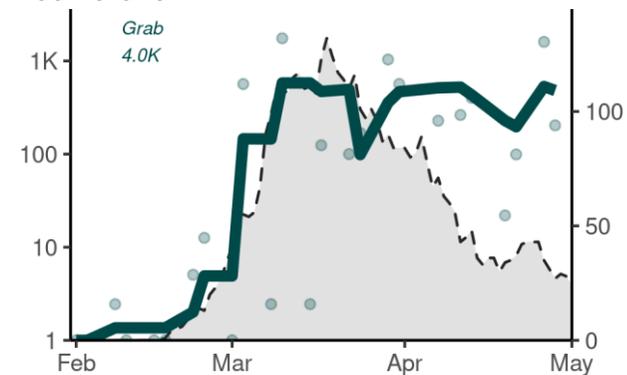
Whanganui Urban



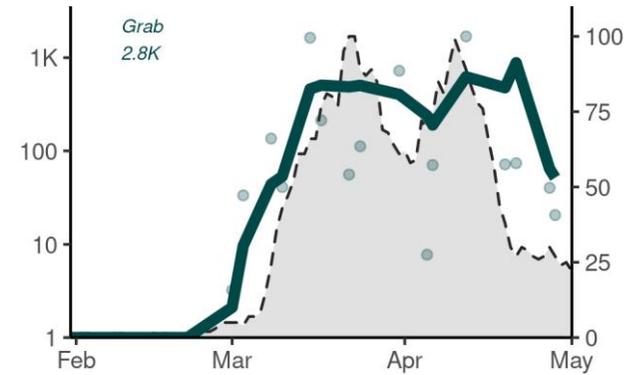
Feilding



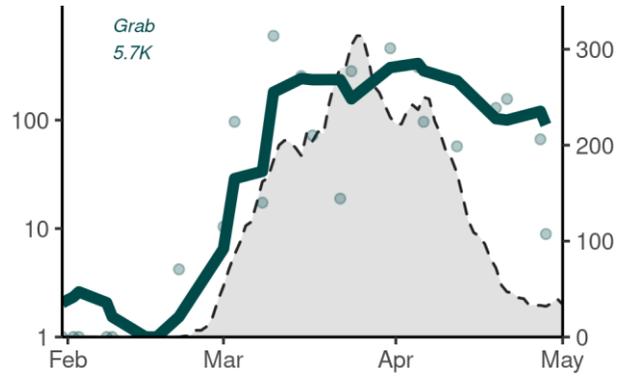
Taumarunui



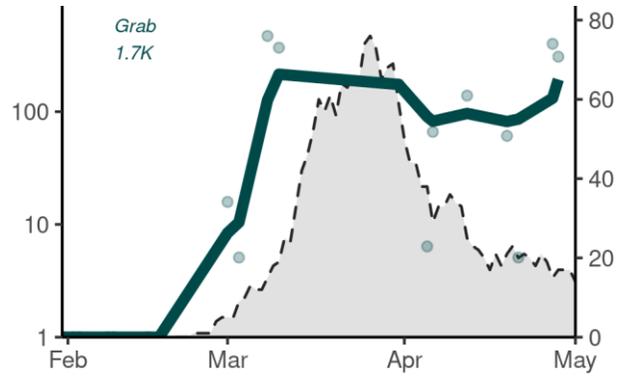
Pahiatua



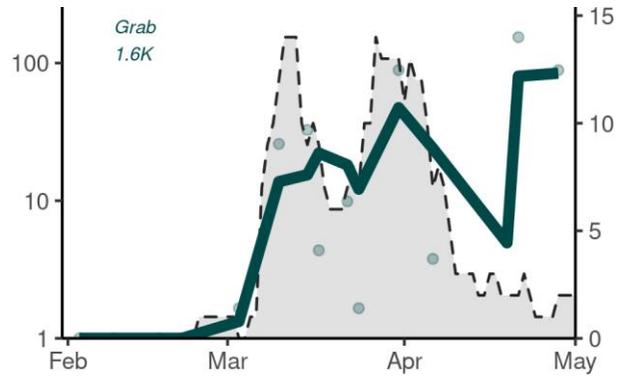
### Dannevirke



### Woodville

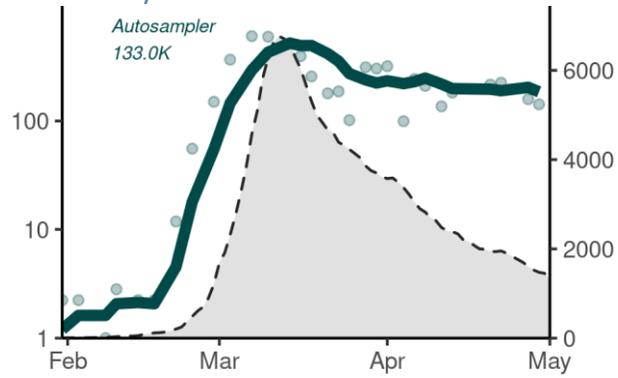


### Eketahuna

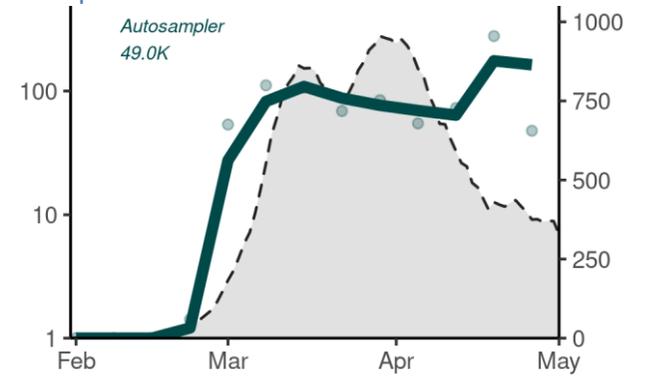


## Wellington

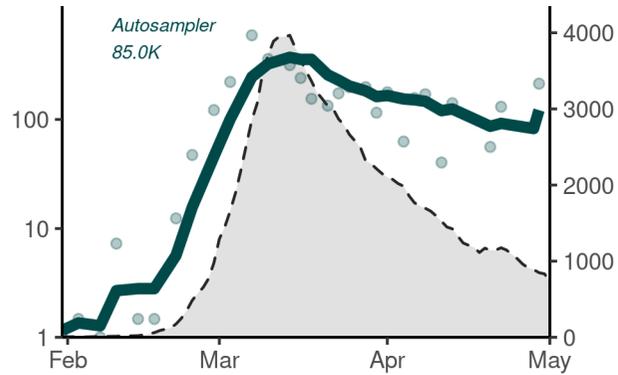
### Hutt Valley



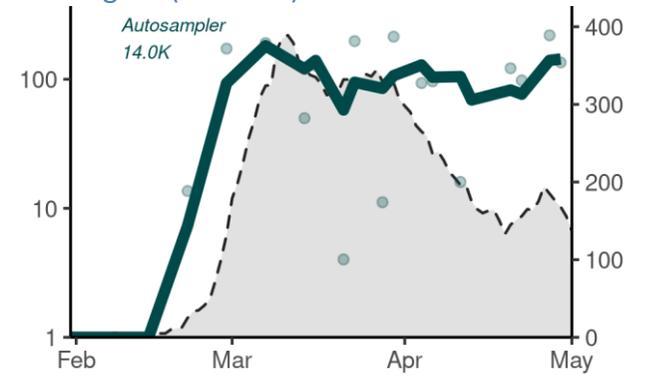
### Paraparaumu



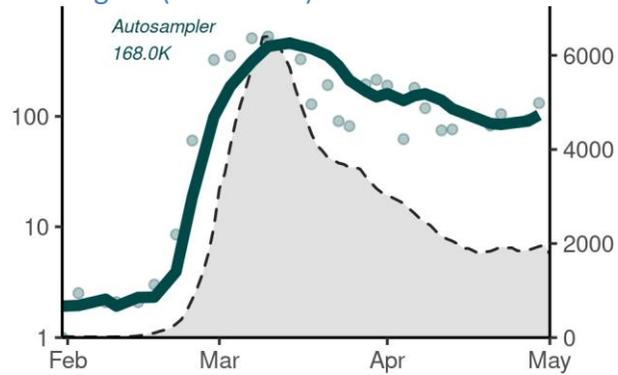
### Porirua



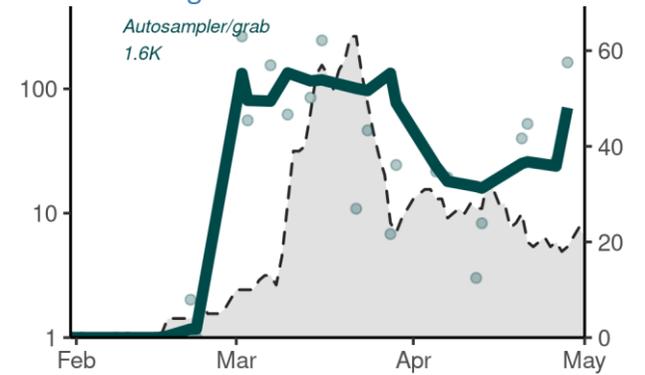
### Wellington (Western)



### Wellington (Moa Point)

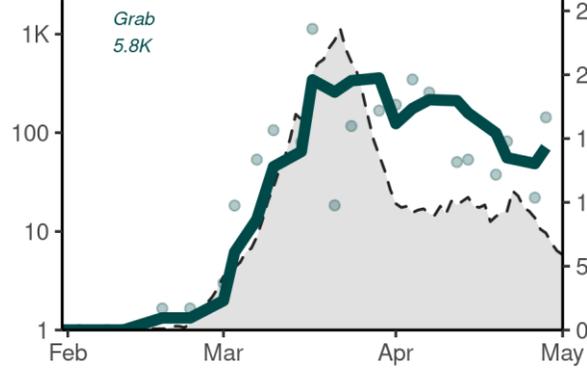


### Martinborough

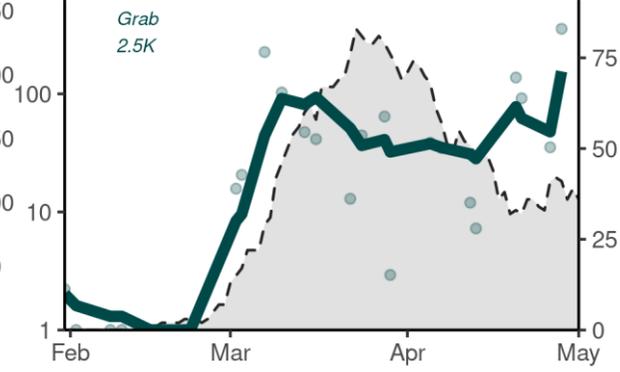


Status ● Detected ● Not detected

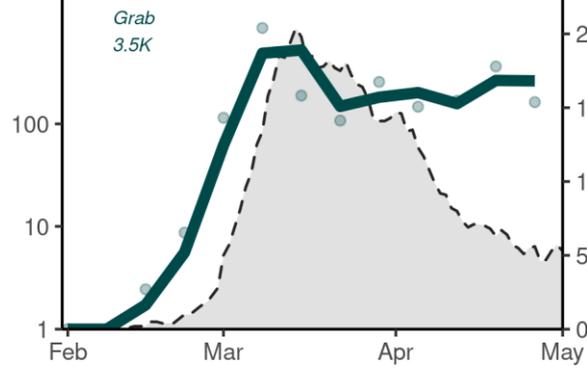
Carterton



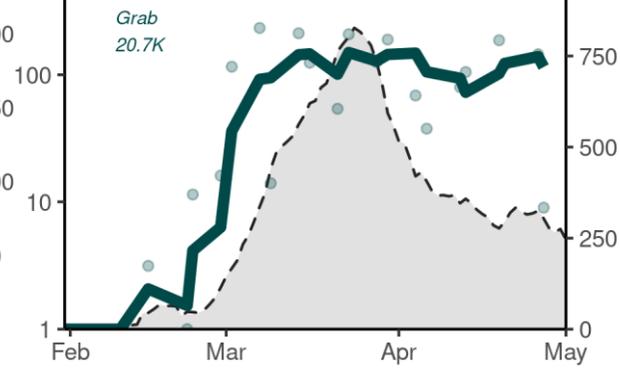
Featherston



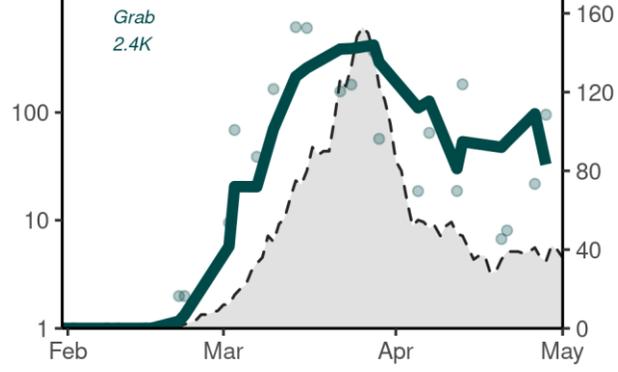
Otaki



Masterton

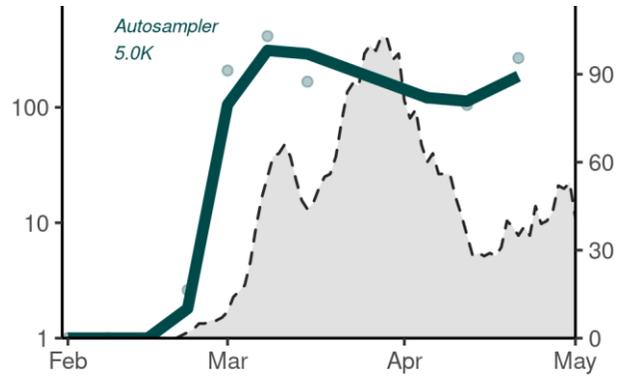


Greytown

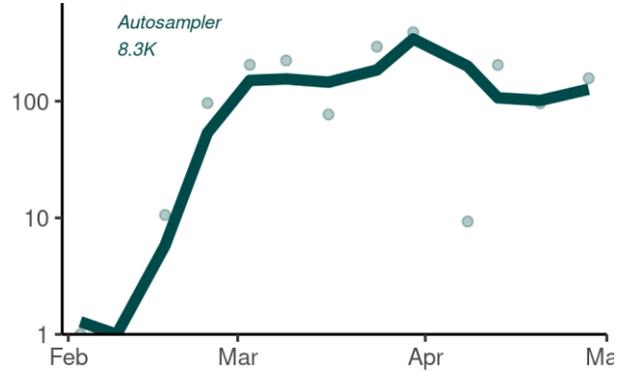


## Tasman, Nelson, and Marlborough

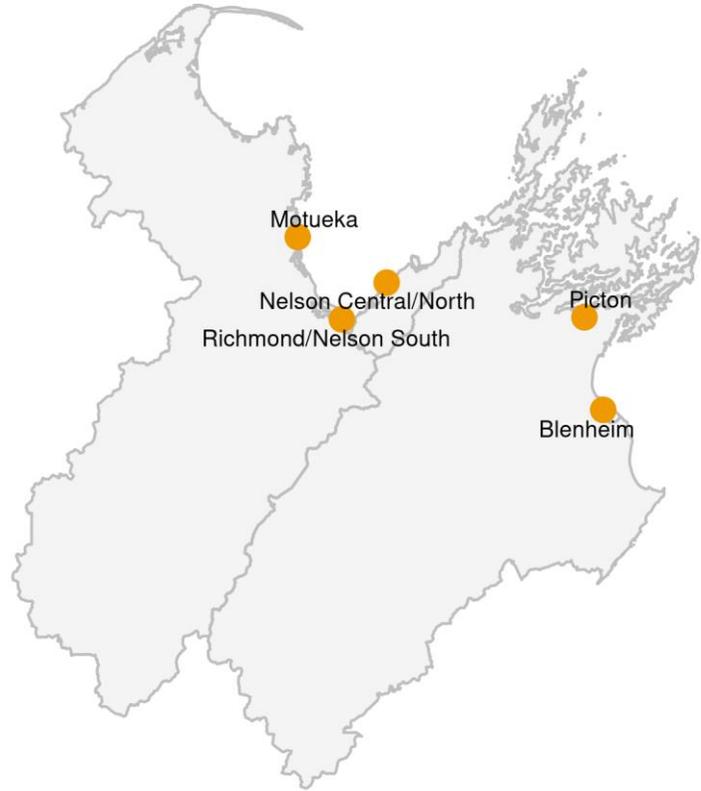
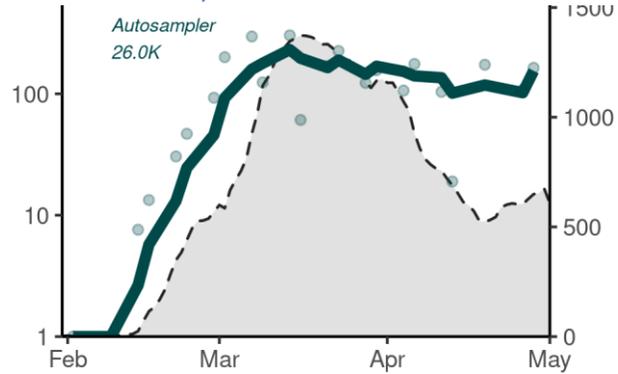
### Picton



### Motueka

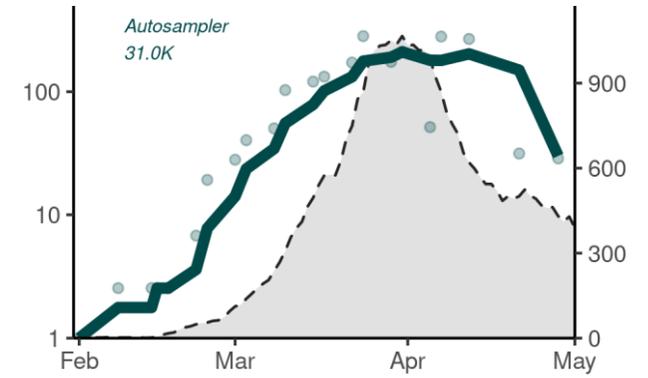


### Nelson Central/North

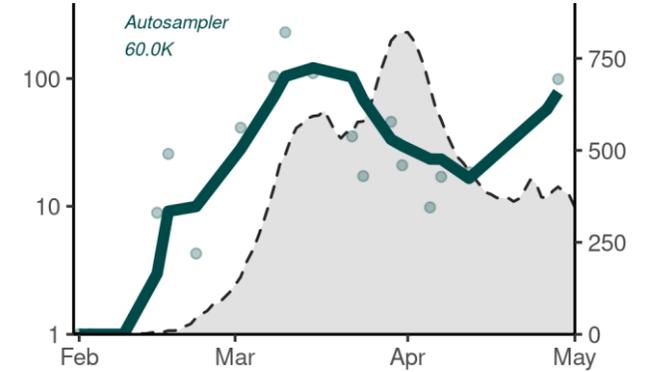


Status ● Detected ● Not detected

### Blenheim

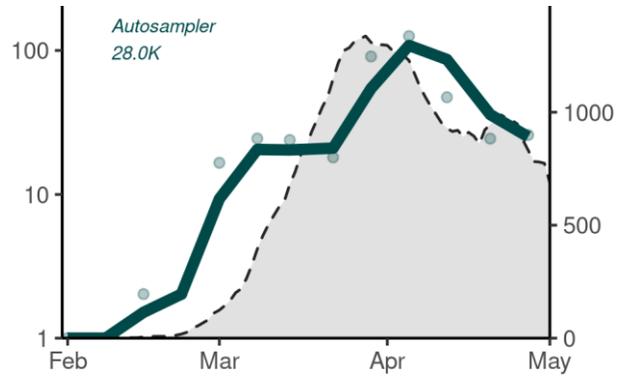


### Richmond/Nelson South

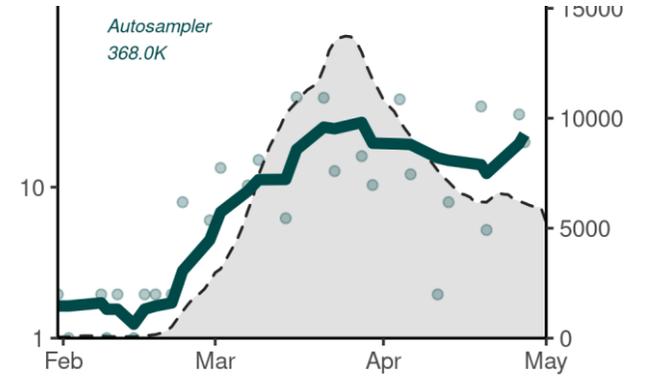


## West Coast and Canterbury

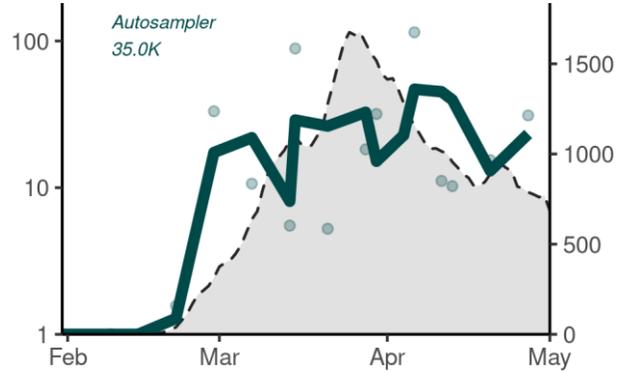
### Timaru



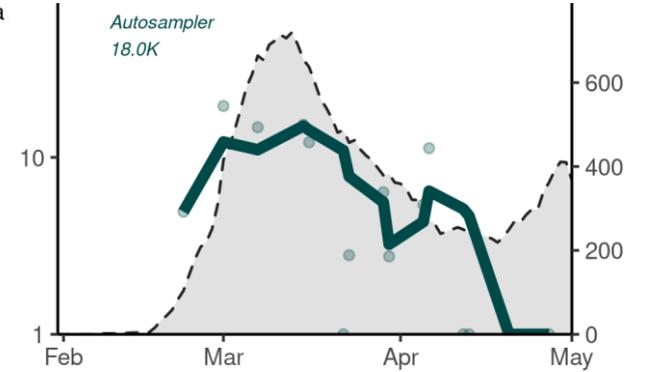
### Christchurch



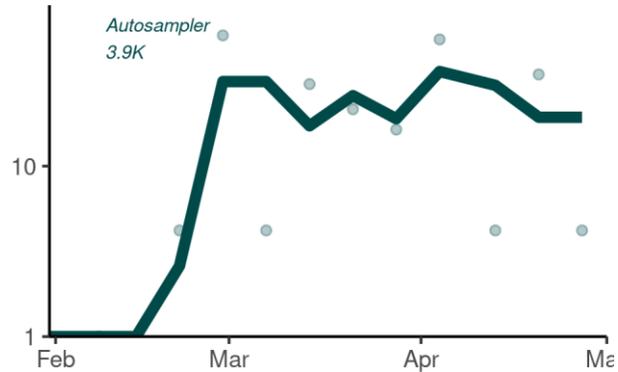
### Rolleston & Eastern Selwyn



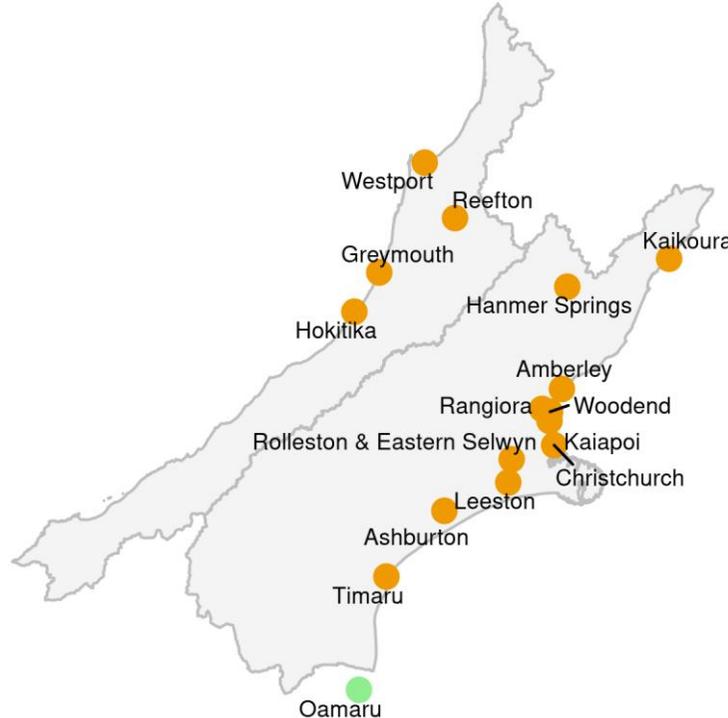
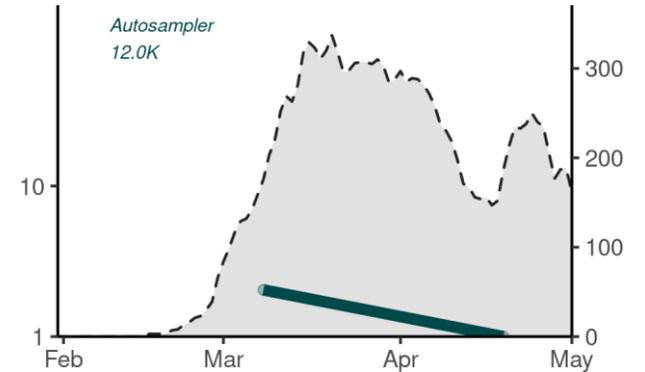
### Ashburton



### Leeston

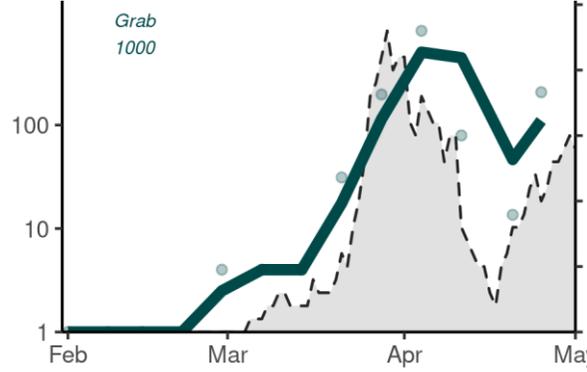


### Oamaru

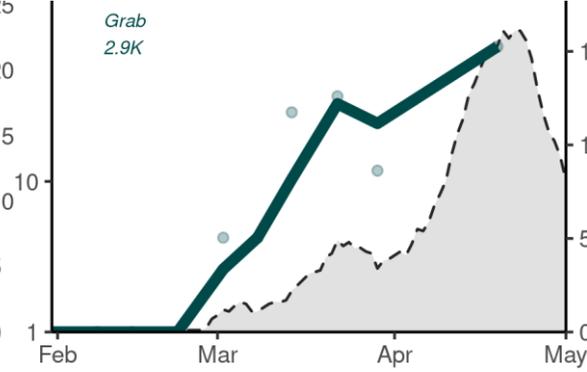


Status ● Detected ● Not detected

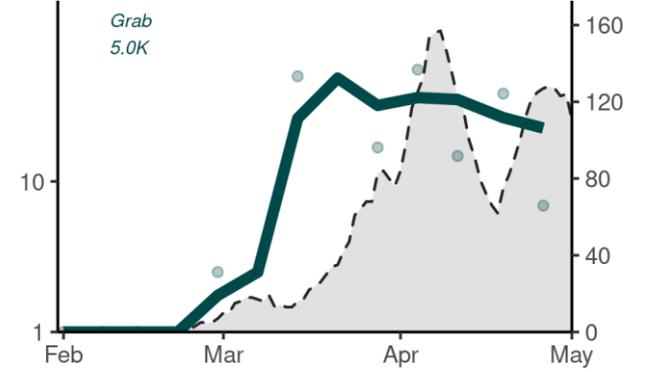
Reefton



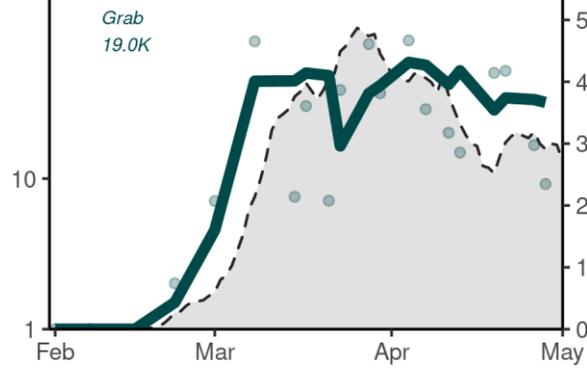
Hokitika



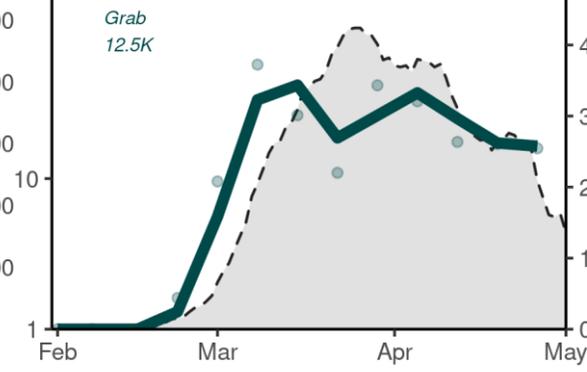
Westport



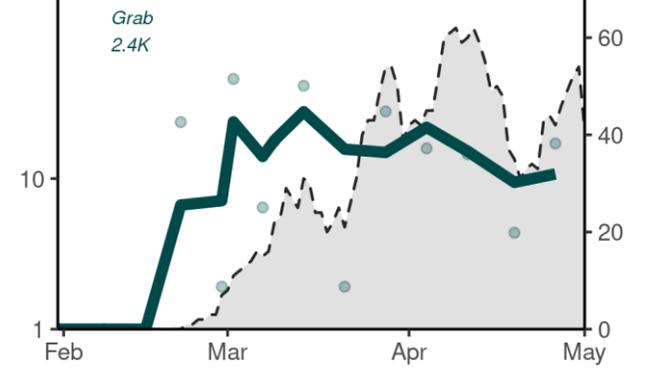
Rangiora



Kaipoi

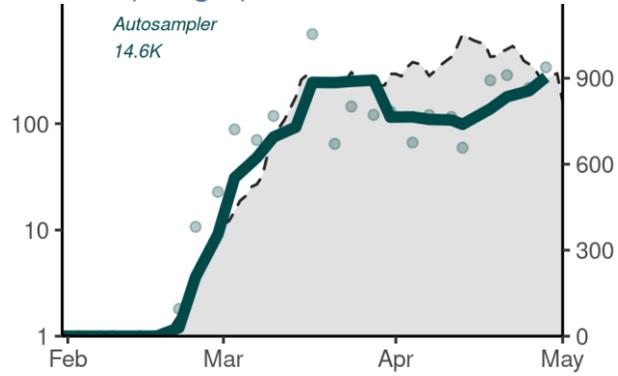


Kaikoura

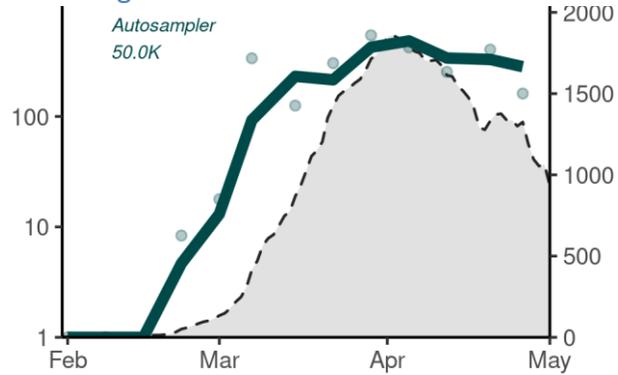


## Otago and Southland

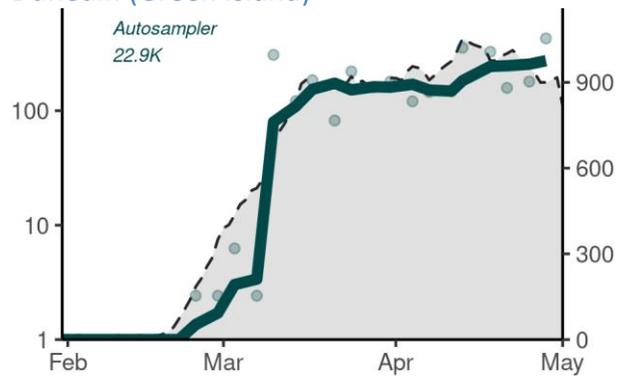
### Dunedin (Mosgiel)



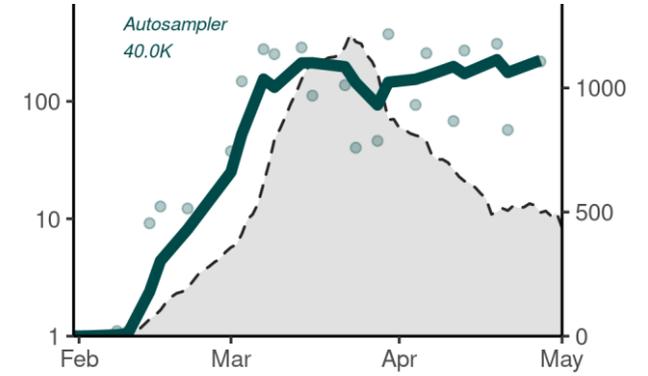
### Invercargill



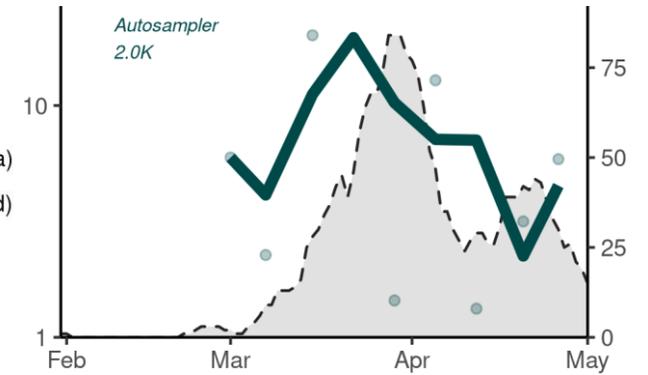
### Dunedin (Green Island)



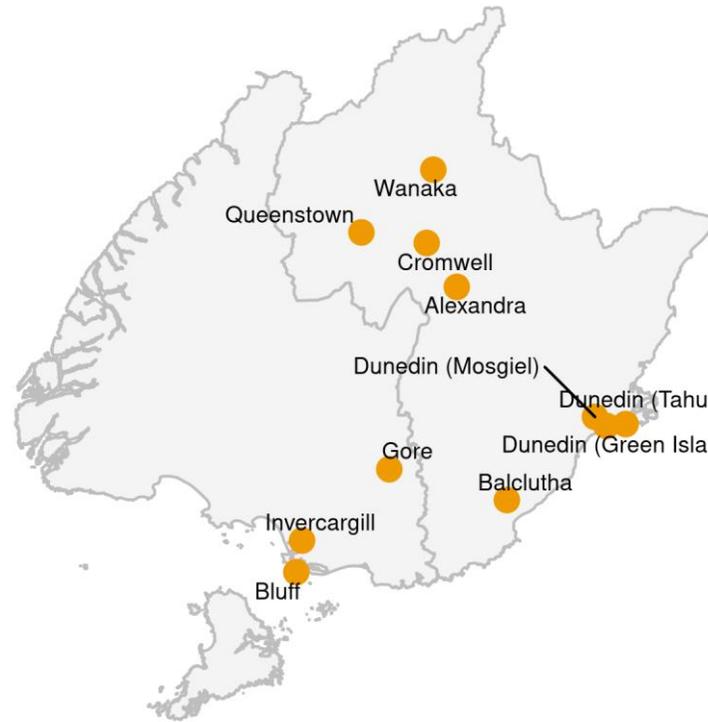
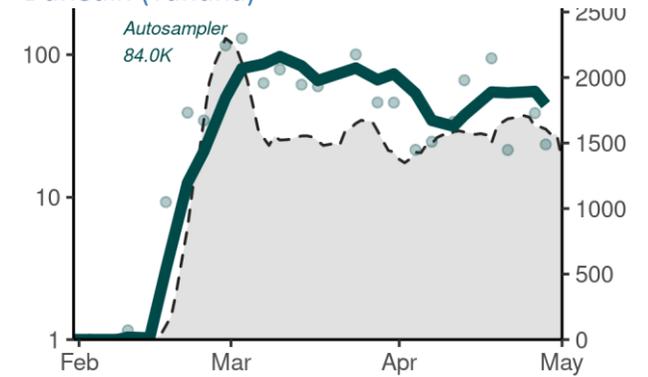
### Queenstown



### Bluff

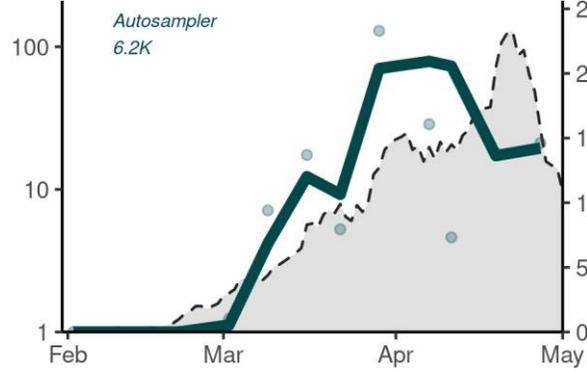


### Dunedin (Tahuna)

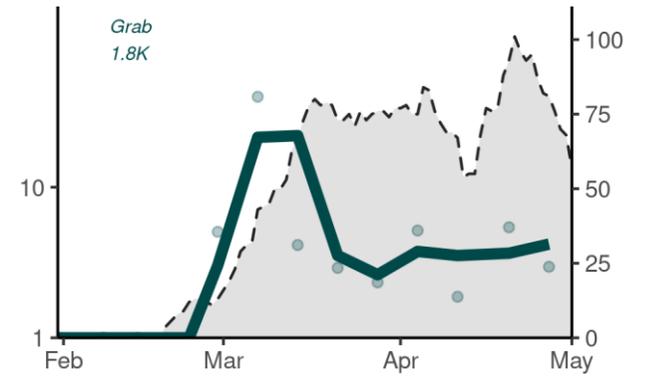
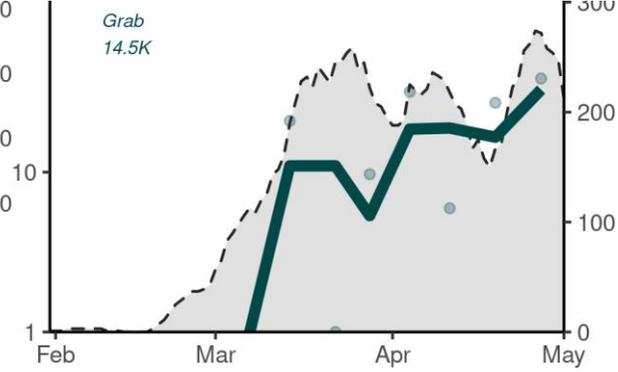


Status ● Detected ● Not detected

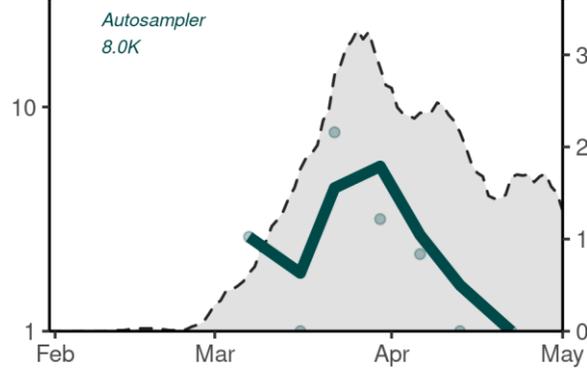
### Alexandra



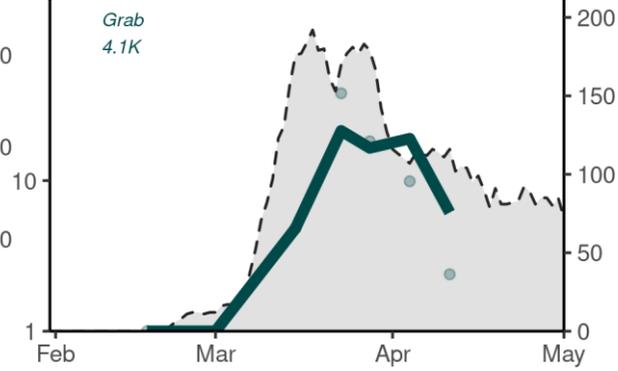
### Wanaka



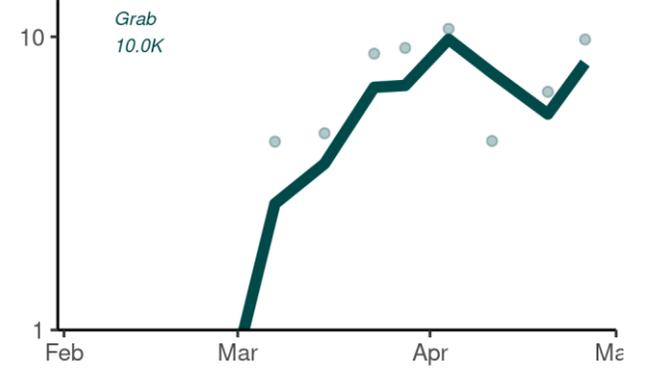
### Gore



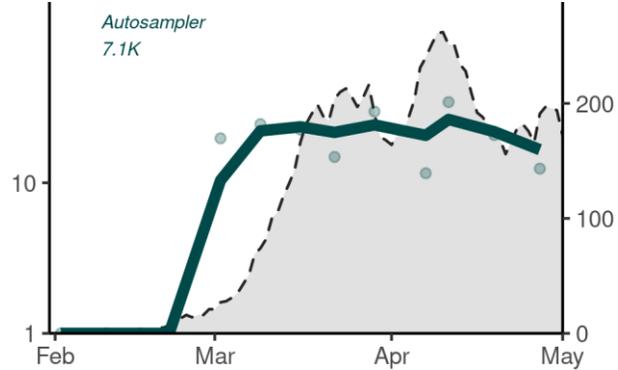
### Balclutha



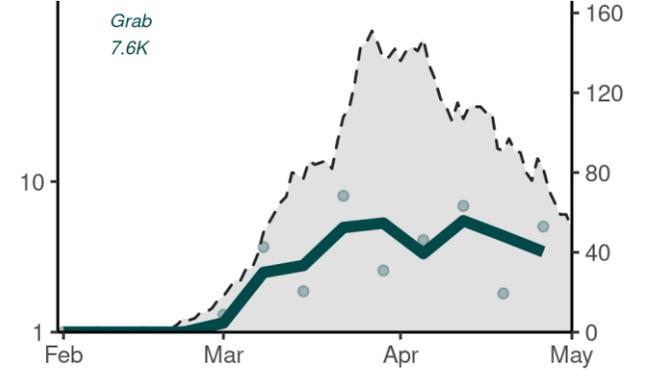
### Greymouth



### Cromwell



### Woodend



# Weekly summary

Key: Not Detected (white) Detected (below limit of quantification) (yellow) Detected (quantifiable) (orange/red) White: No sample collected (white)

Site	2021														2022																			
	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
<b>Northland</b>																																		
Ahipara																																		
Awanui																																		
Dargaville																																		
Haruru																																		
Hihi																																		
Hikurangi																																		
Kaeo																																		
Kaikohe																																		
Kaitaia																																		
Kaiwaka																																		
Kawakawa																																		
Kerikeri																																		
Kohukohu																																		
Mangawhai																																		
Maungaturoto																																		
Opononi																																		
Paihia																																		
Rangiputa																																		
Rawene																																		
Ruakaka																																		
Russell																																		
Taipa																																		
Waipu																																		
Whangarei																																		
Whatuwhiwhi																																		
<b>Auckland</b>																																		
Army Bay																																		
Auckland (Combined)																																		
Auckland East																																		
Auckland Southwest																																		
Auckland West																																		
Beachlands																																		
Clarks Beach																																		
Helensville																																		
Kawakawa Bay																																		
Kingseat																																		
North Shore																																		
Omaha																																		
Pukekohe																																		
Snells/Algies																																		
Waiheke Island																																		
Waiuku																																		
Warkworth																																		
Wellsford																																		
<b>Waikato</b>																																		
Cambridge																																		
Coromandel																																		
Hamilton																																		
Huntly																																		
Kihikihi																																		
Kinloch																																		
Mangakino																																		
Maramarua																																		
Matamata																																		
Matangi																																		
Meremere																																		
Morrinsville																																		
Motuoapa																																		
Ngaruawahia																																		
Ngatea																																		
Omori																																		
Otorohanga																																		
Paeroa																																		
Pauanui																																		
Putaruru																																		
Raglan																																		
Taupo																																		
Tauwhare																																		
Te Awamutu																																		



