



Aratu Forests Ltd Monitoring Summary 2024



Monitoring Programmes:

Aratu Forests Ltd (AFL) undertake a range of monitoring activities at various stages of the forest growth cycle including but not limited to environmental, health and safety and operational monitoring. This report provides a summary of AFL's active monitoring programmes throughout the estate over 2023-2024.

Native Flora and Fauna Monitoring:

AFL have several native flora and fauna taonga within the estate and believe it is important that these are protected, maintained, and enhanced. Ongoing protection of these native flora and fauna species in the AFL Estate is essential in preserving biodiversity and ensuring healthy ecosystems.

Rare, Threatened and Endangered Species (RTE's):

The AFL Estate is home to the New Zealand Falcon (Kārearea), Long-Tailed bat (Pekapeka-tou-roa) and rare plant species like Hebe Tairawhiti and Kakabeak (Clianthus). Specific monitoring is carried out for all these species either annually or quarterly.

New Zealand Falcons (Kārearea):

Falcons are monitored on an annual basis during their breeding season in a range of locations throughout the AFL Estate. Falcons are called through a speaker at several locations within each forest. Survey areas were chosen based on the age of radiata pine trees, young stands varying between ages 2 – 4. These areas are common hunting spaces for falcons. During 2024 monitoring, two falcons were spotted in Huanui and Kopua. Falcons are frequently sighted within the estate and those sightings are reported and recorded. The table below shows all the falcon sightings throughout the AFL Estate in 2024.



Image 1: Falcon spotted in Ranganui Forest

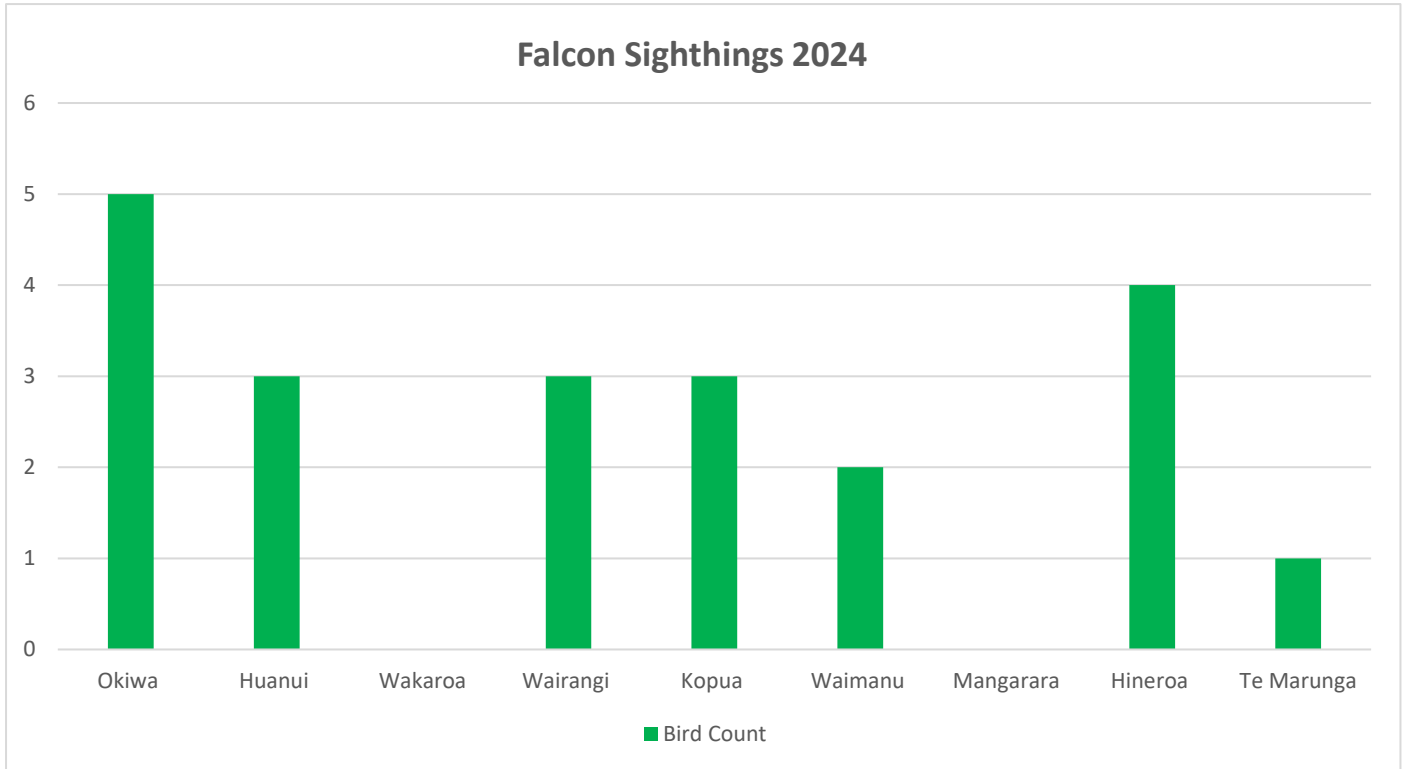


Figure 1: Falcon Sightings within AFL Estate

Long-tailed Bats (Pekapeka-tou-roa):

Long-Tailed Bat monitoring is carried out within the AFL owned Bat Management Zone (Huanui Forest) on an annual basis. Bat detectors were deployed at 9 sites throughout the Bat Management Zone for 21 nights.



In recent monitoring, a total of 4,741 bat passes were recorded over 21 nights (Table one). This is a huge increase in numbers from previous years (see figure 2). This data is updated alongside the Bat Management Plan that includes pest control, ongoing monitoring and protection planting recommendations to enhance bat numbers.

Image 2: AFL staff members Mikayla Craill and Kirby Scammell with the Artificial Roost box located in Huanui Forest.

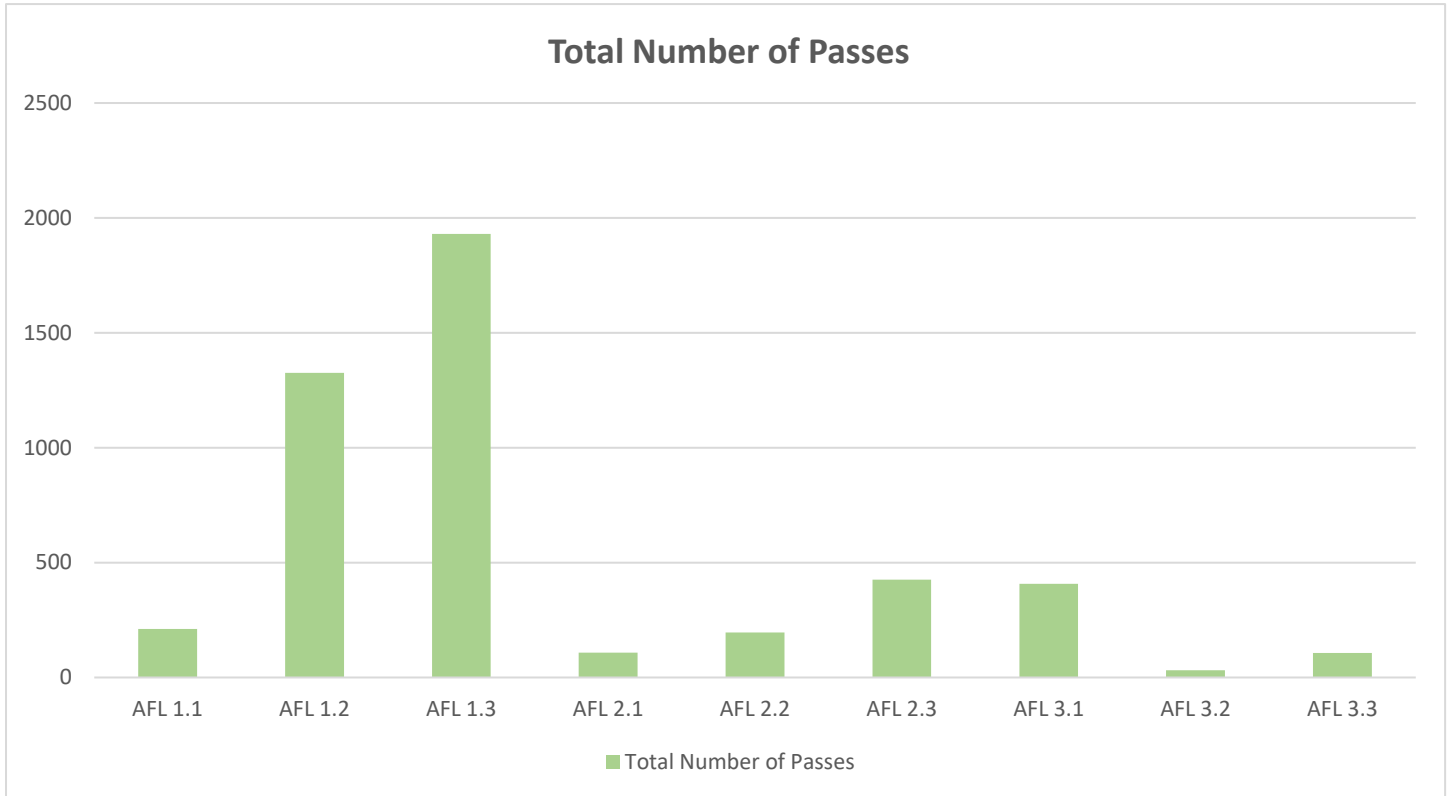


Figure 2: Long-tailed Bat Monitoring 2023

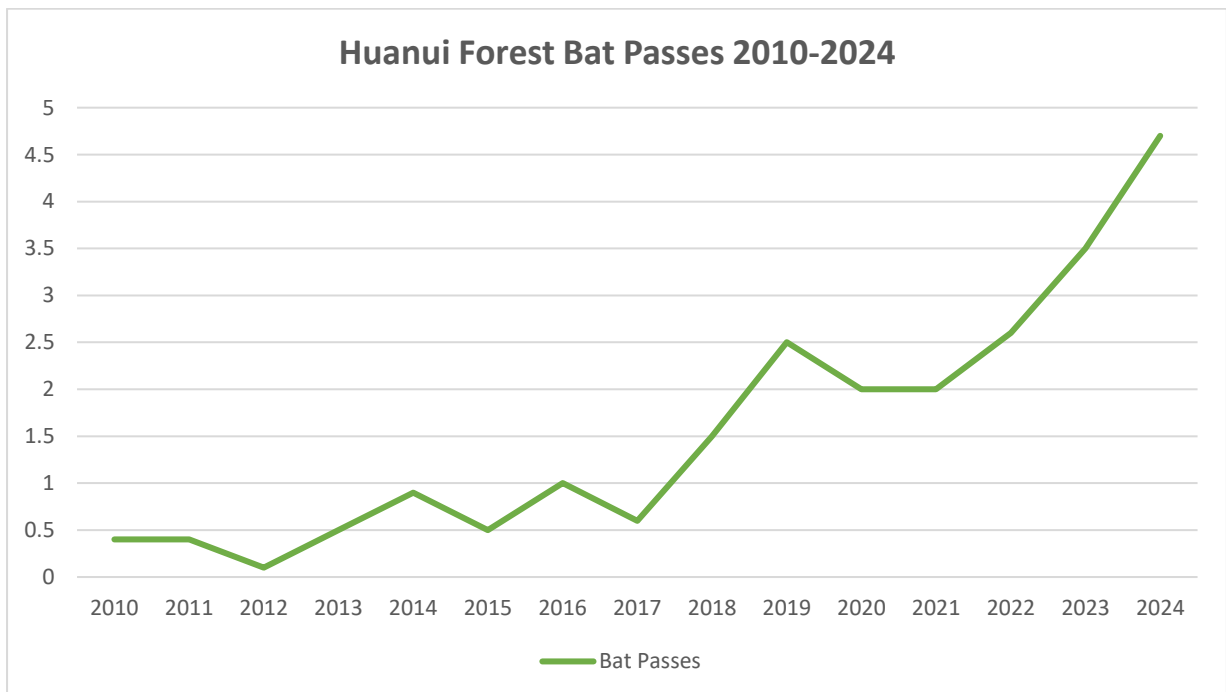


Figure 3: Bat passes in Huanui 2010-2024

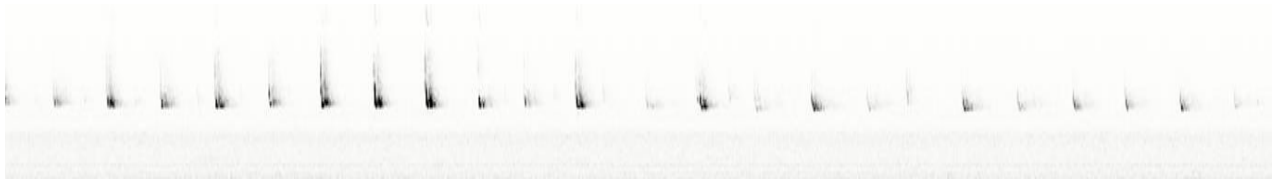


Image three: *Spectrogram gathered from AR4 bat recorder (AFL 3.1) during 2024*

Kakabeak (Ngutukaka):

The Department of Conservation accompany Aratu with Kakabeak monitoring monthly. This monitoring includes checking for any new sign of Kakabeak in Kopua, as well as maintaining/protecting the current population in Whareongaonga. A lot of this monitoring involves maintenance of enclosures e.g., weeding and spraying. At the end of 2024, another collaboration between Aratu, Department of Conservation, Rangiwaho Marae, Tamanuhiri Iwi and Muriwai School will occur, where more Ngutukaka will be planted in the second Whareongaonga enclosure. This site has been monitored closely over the past year to ensure the plants have the best chance at survival. During November 2024, there were 9 Kakabeak planted by AFL staff members in a newly built enclosure in Waimanu Forest.

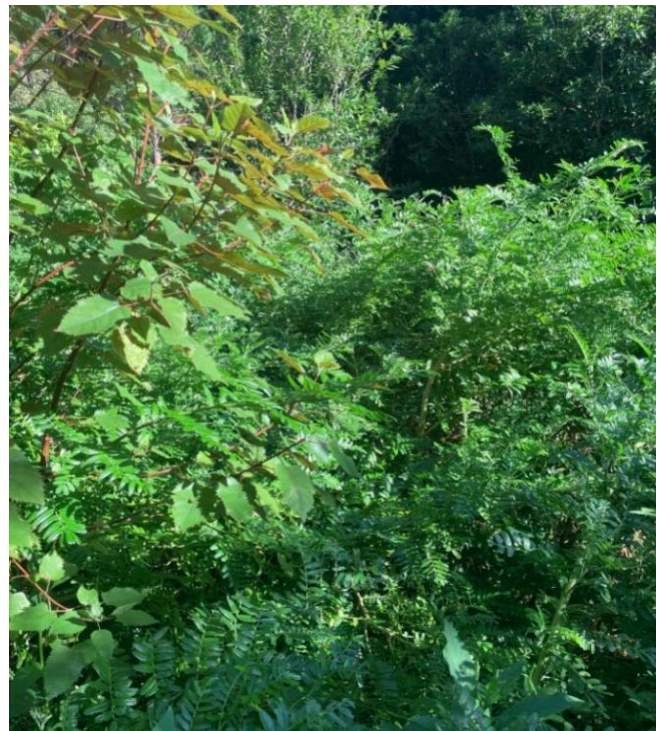


Image 4 and 5: *Ngutukaka in the Whareongaonga enclosure*

Protected Management Areas (PMAs) and High Conservation Value Areas (HCVs):

The general wellbeing and composition of all AFLs PMAs and HCVF is monitored annually by a member of AFL staff through a survey. The survey provides ongoing information on:

- Condition (including a comparison of trends from the last visit and the current visit)
- Pest/Weed Species or other Threats.
- Photo points.
- Condition of the attribute within each HCV
 - (Please note that this is only applicable for HCVs – not all PMAs)

Protected Management Area's (PMA'S)

| Forest | Number | Date assessed | Assessed by | Actions post monitoring 2023 |
|---------------|-------------|---------------|-------------|---|
| Kopua | TN43 | 13/04/2023 | AFL | Continue to monitor during and after logging has occurred. As well, continue to monitor deer presence. |
| Kopua | TR25 | 17/04/2023 | AFL | Continue with pest control and monitor regen. |
| Hineroa | TN56 | 17/04/2023 | AFL | Continue with pest control and monitor regen. |
| Hineroa | TN57 | 17/04/2023 | AFL | Continue with goat control and monitor coastal edge. |
| Whareongaonga | TN44 | 17/04/2023 | AFL | Continue with pest control and monitor western edge. |
| Huanui | WR100 | 12/05/2023 | AFL | Continue with pest control and monitor understorey growth. |
| Huanui | WR101 | 12/05/2023 | AFL | Continued pest control of goats and pigs. |
| Wairangi | WR138 | 9/05/2023 | AFL | Continue to monitor edges and understorey. Control with pest control (particularly deer). |
| Wairangi | WR97 | 9/05/2023 | AFL | Fence may need fixing again. Continue with pest control (particularly deer). |
| Wairangi | WR96 | 9/05/2023 | AFL | Monitor pests (goats and deer tracks through the PMA and goats seen in area). Wilding - one has fallen in the PMA. |
| Wakaroa | AFL Reserve | 13/06/2023 | AFL | Monitor wildings on edge of PMA. Fencing been pulled out by harvesting crew, may require fixing. Pine on edge of PMA require felling. |
| Okiwa | QE2 | 13/06/2023 | AFL | Continue to monitor pests and regen in certain areas. |
| Mangarara | AFL Reserve | 13/06/2023 | AFL | Continue to monitor pests and regen certain in areas. |
| Te Marunga | WR73 | 20/06/2023 | AFL | Continue to monitor pests and regen certain in areas. |
| Te Marunga | AFL Reserve | 20/06/2023 | AFL | Continue to monitor pests and regen certain in areas. |
| Te Marunga | WR74 | 20/06/2023 | AFL | Continue to monitor and control regen when required on such steep terrain. |
| Te Marunga | WR76 | 20/06/2023 | AFL | Continue to monitor through aerial imagery (steep). |

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| Te Marunga | WR75 | 20/06/2023 | AFL | Continue to monitor pests and regen in certain areas. |
| Te Marunga | WR25 | 20/06/2023 | AFL | Continue to monitor pests/edges and areas post storm. |
| Waimanu | AFL Reserve | 20/04/2023 | AFL | Continue to monitor understory growth. |
| Waimanu | WR61 | 20/04/2023 | AFL | Continue with goat control. |

High Conservation Value Areas (HCVs)

| Forest | HCV | Name | Attribute Comment | Status of Attribute (June 2024)-based on monitoring |
|---------------|-----|---------------------------|---|--|
| Kopua | 3 | Mangakotukutuku Stream | A highly significant semi-coastal/Lowland kanuka forest & broadleaved/small-leaved scrub cliff vegetation, supporting a sizeable population of the 'rare' Hebe Tairawhiti, a newly described shrub with a limited distribution, and the 'endangered' shrub Kakabeak far from other populations in the northwest. | Kakabeak is still being protected in the HCV area, with potential for growth in the future. The HCV is still in stable condition, with Hebe Tairawhiti still present along the stream with good understorey growth. |
| Whareongaonga | 2 | Waikoura Bush Stream | Coastal tawa/kohekohe forest, broadleaved forest, small-leaved scrub, and coastal cliffs. The site is significant as it contains a compact area of primary forest within the coastal bioclimatic zone, of which only c. 68 ha remains. | The coastal forest is in good/stable condition. Tawa and Kohekohe dominate majority of the canopy, with stable edges and understorey. |
| Hineroa | 2 | Hineroa Forest | Highly significant semi-coastal-lowland conifer/tawa forest. One of the most intact and diverse remnants of primary rimu/tawa forest in the upland southeast region of the Tiniroto Ecological District. | This forest is in good condition with a diverse canopy and understorey. The canopy of tawa and rimu specimens appear to be in good stable condition. |
| Hineroa | 2 | Pamoa Waterworks Corridor | A highly significant lowland conifer/beechn forest, conifer/tawa forest, kanuka scrub, manuka-kanuka scrub, manuka scrub and freshwater wetland. This area is important because of its linkages with Waterworks Bush. The wetland is recognised as an important wildlife habitat with an SSWI ranking of 'moderate'; spotless crane & other waterfowl recorded there. The area has a high value as a landscape amenity. | Visual inspection of the forest and general area in general presents as a forest in good condition with a number of the species present. The wetland is in stable condition. |
| Te Reinga | 2 | Mt Whakapunake | This is a highly significant lowland to montane beech forest, conifer/tawa-beech forest, conifer/tawa forest, tawa forest and kanuka-manuka scrub. The area encompasses a range of significant ecological and geological/landscape values. It is important as a wildlife habitat with an SSWI ranking of 'moderate to high'. Threatened NZ Falcon, pied tit, rifleman, whitehead, kereru, tui, bellbird, and fantail are present. | The highly significant lowland to montane beech forest with tawa and kanuka/manuka scrub is in good condition. There has been NZ Falcon sightings as well as a range of bird species were identified during AR4 survey that was carried out. |
| Huanui | 3 | Parariki Stream | Kahikatea, matai, and totara emergent over a dense canopy dominated by tawa. | Tawa still dominates the canopy, with Kahikatea, Totara and Matai evident throughout. Pine trees remain standing by the company, this could create a risk to the condition if they were to fall. |

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| | | | | Understorey remains in good condition with more light exposure. |
| Wairangi | 2 | Kereruhua-hua Bush | Area of high significance. Silver beech, tawari &, kamahi & Halls are dominant in canopy | All species were sighted throughout the canopy, with Kamahi, Tawari and Silver Beech in a stable condition. |
| Te Marunga | 2 | Mangatokerau Gorge | High significance. Secondary kanuka forest and scrub dominate the steep country. With kowhai, lacebark and Rewarewa. One of the few surviving wild populations of kowhai ngutukaka is located on steep cliffs. | Houhere and Rewarewa are still present and appear in good/stable condition. Kaka beak could appear through slip in future. Therefore, monitoring will continue for the fore sable future. Kowhai is still in good condition. |
| Mangarara | 2 | Hiwiroa Kanuka | High significance - separated into two units. Tall secondary forest dominated by kanuka with scattered Rewarewa. Understorey includes prickly mingimingi, mahoe, lacebark, kowhai, kohukohu, and mapou. | Kanuka still dominates the canopy, with limited Rewarewa. The understorey is dense with limited access points. Mingimingi, lace bark and mahoe are noted. |



Image 2: Drone footage of Whareongaonga including TN44.

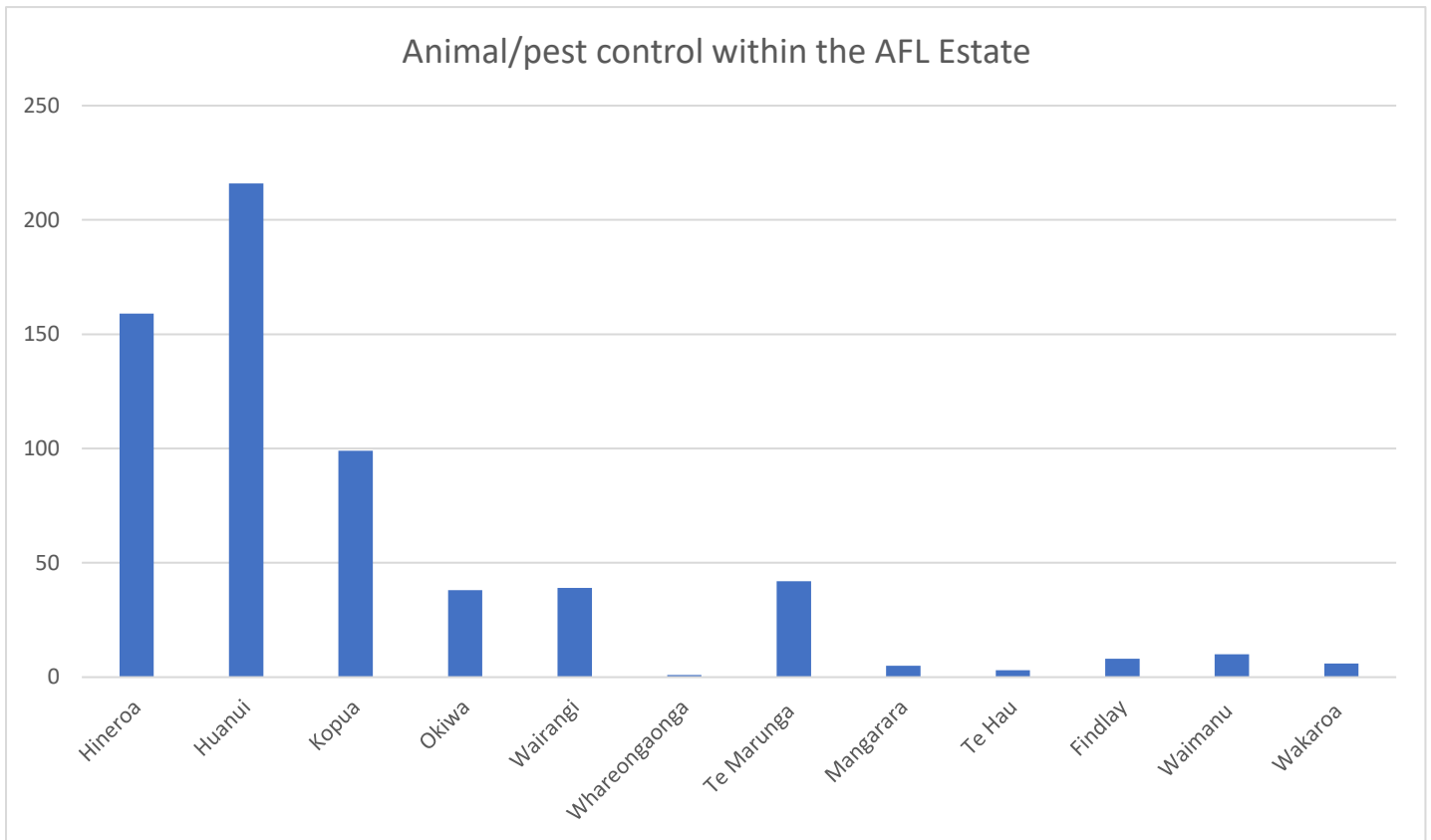


Figure 4: Animal /pest control May 2023-May 2024

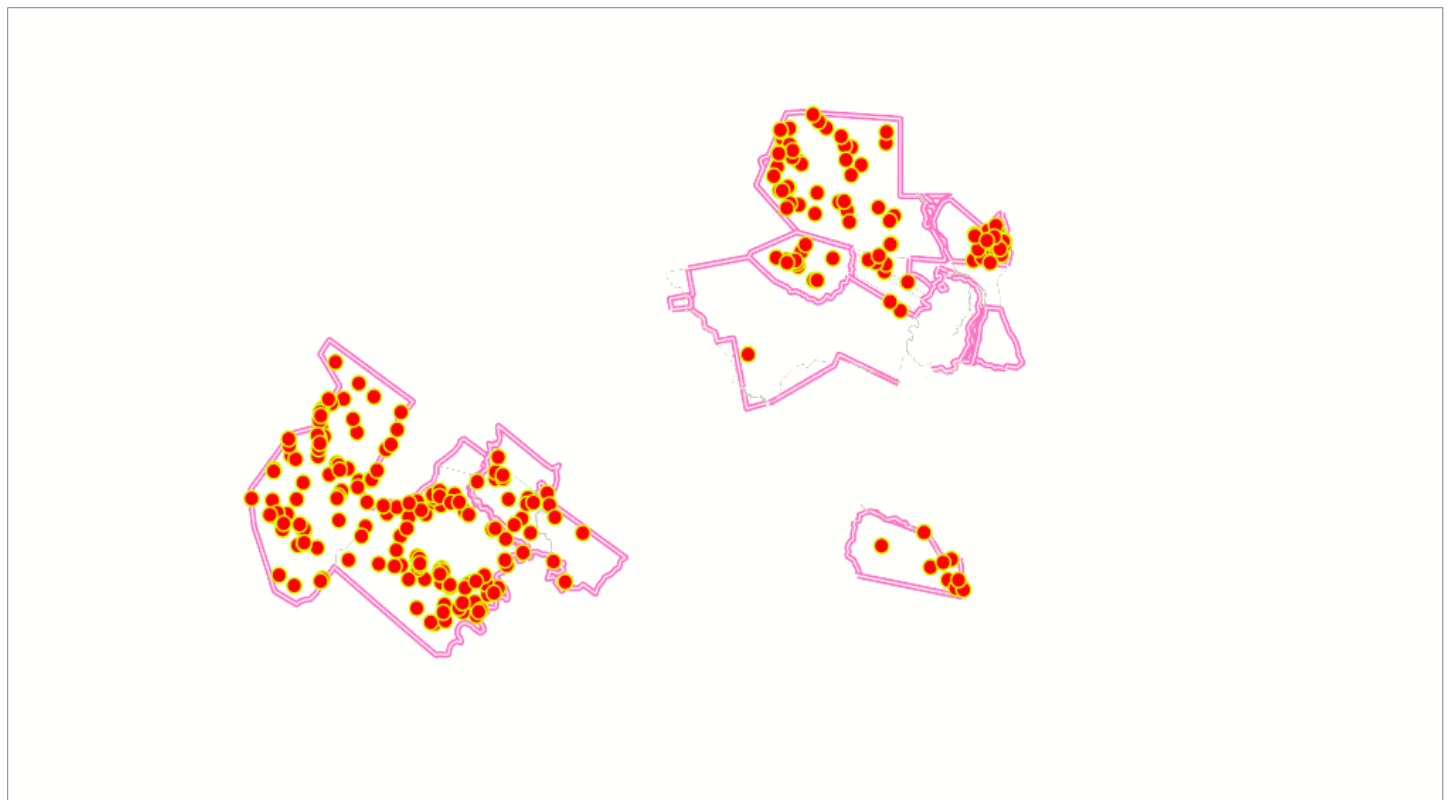


Figure 5: Animal control (culls) within Hineroa, Whareongaonga and Kopua Forest (May 2023-May 2024)

Water Monitoring:

Turbidity:

Aratu continue to monitor stream turbidity at eleven locations throughout the estate. Turbidity is the measure of the quality of being cloudy, opaque, or thick with suspended matter. For Aratu, the data collected is in the form of water samples that are analysed for sediment load. Sediment load is related to rainfall and exposure of soils to this rainfall. Over the past year, data was collected by AFL. The data is analysed in house using a calibrated Hach Turbidity meter. Updates of the calibration are performed when required and validated monthly before the samples are analysed. Turbidity data has been collected by Aratu since 2005.

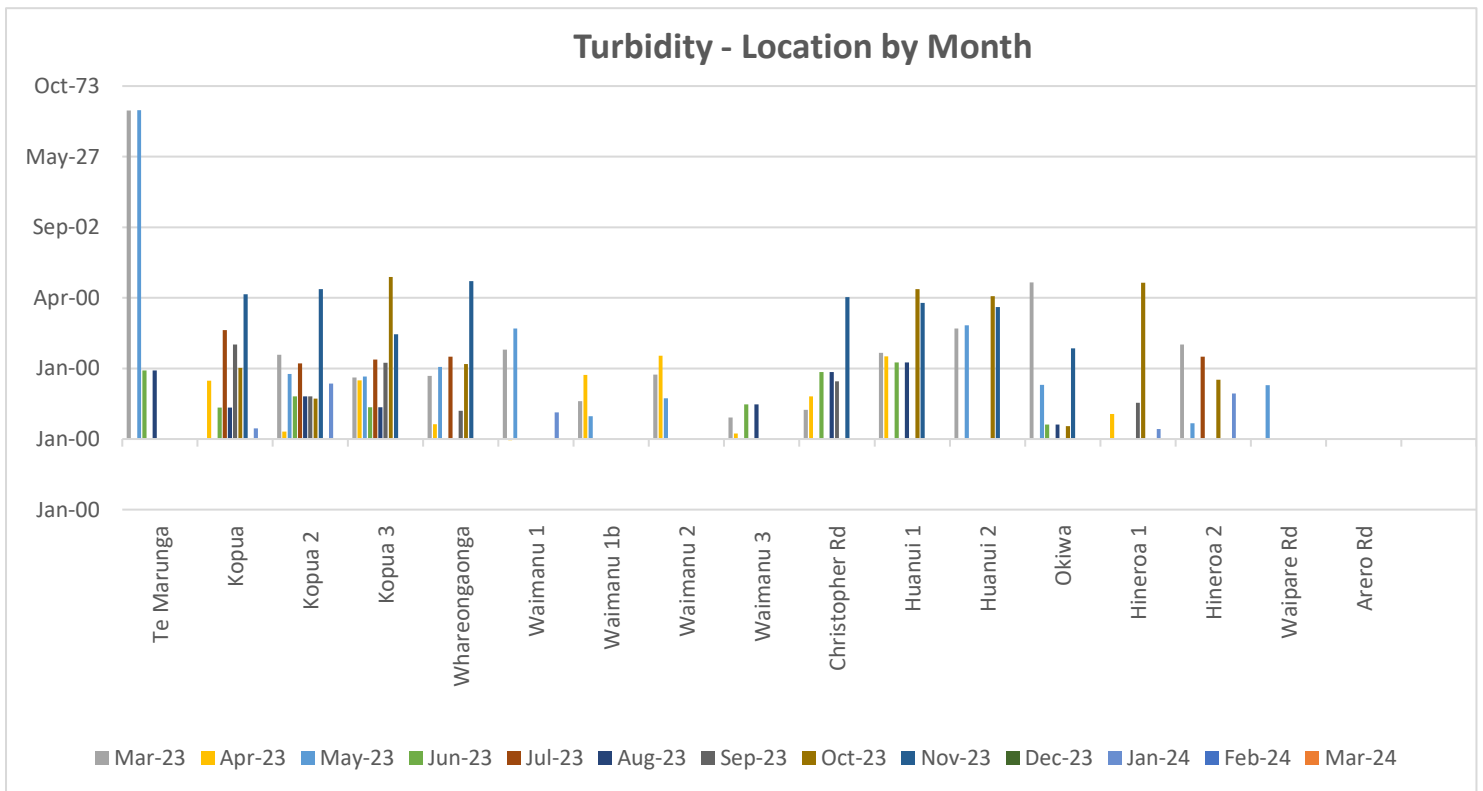


Figure 6: Turbidity Results location by month (March 23-March 24)

Stream Health Monitoring Assessment (SHMAK):

SHMAK testing is still being carried out in the AFL Estate to assess whether land-use practices are affecting waters. SHMAK testing is important as it allows stream health to be tracked over time and to recognise if stream health is getting better, worse or staying the same. The graph below showcases some SHMAK results from 2023-2024.

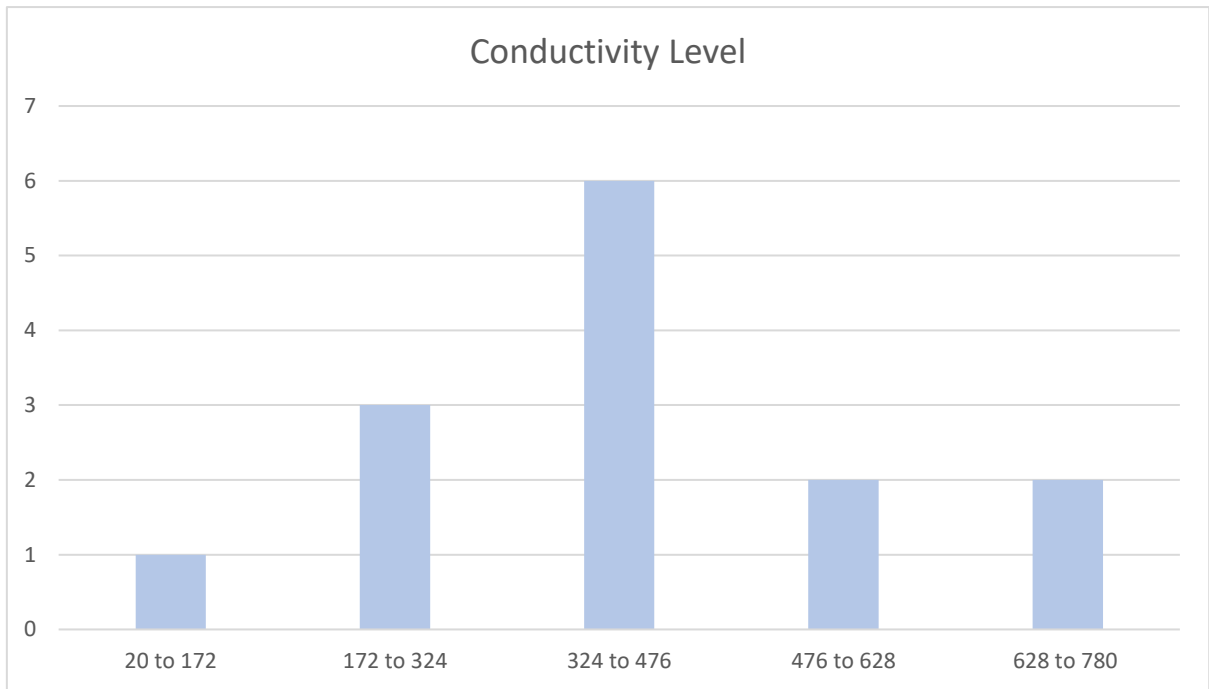


Figure 7: Conductivity levels

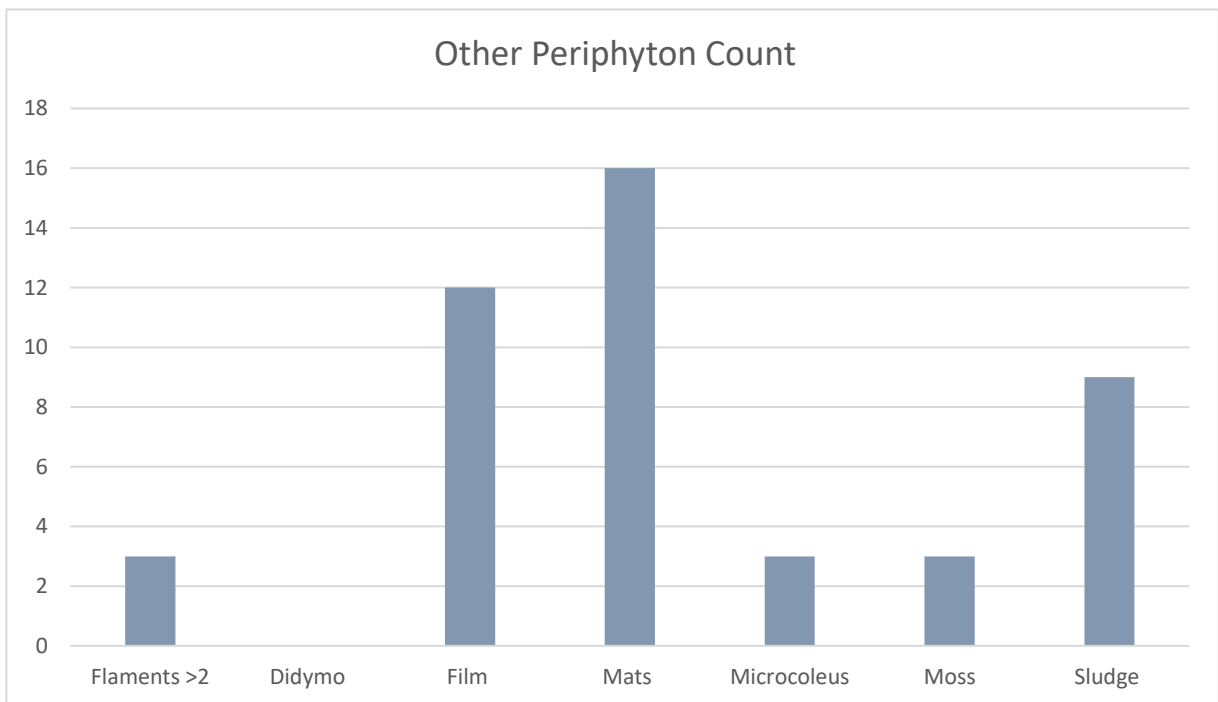


Figure 8: Other Periphyton present

Environmental DNA Testing (eDNA):

Environmental DNA testing still occurs within the Aratu Estate. This is carried out on an ad hoc basis in the AFL annual monitoring programme. Most recently, eDNA testing has been carried out in Waimanu, Wakarua and Te Marunga forests and it is planned that there will be more testing in Hineroa, Huanui, Mangarara and Okiwa.

Environmental DNA is genetic material that is shed by organisms through the loss of skin, scales, fluids and faeces. It can be isolated by filtering water and used to monitor the distribution of species through time and space using sensitive molecular tests. From this testing, Aratu can identify a range of fish, bird, mammals, reptiles, amphibians, plants, fungi, protists, and other organisms.



Health and Safety:

AFL uses the IRIS (Incident Recording Information System) through FOA (Forest Owners Association) to record all accident and incident data in a central system, which includes:

- Hours worked and hours lost due to injuries.
- Near hits (Commonly referred to as “Near Miss”)
- Minor injuries (Also referred to as first aid injuries)
- Medical treatment injuries
- Lost time injuries

The system is used to monitor improvements in our Health and Safety performance, we also use this benchmark to ourselves to industry standards. This system helps us to monitor and review and align with our goal of “Be a Hero 4 Zero Harm”. At Aratu we believe that all accidents are preventable. The graph below shows Aratu’s Health and Safety rolling frequency rates for all incidents and injuries for the period of May 2023- May 2024. The business is recording relatively low numbers of incidents with most reporting in the Near Hit and Property damage categories. Therefore, any incident can impact the statistics significantly given the relatively small scale of the operations and labour hours per year.

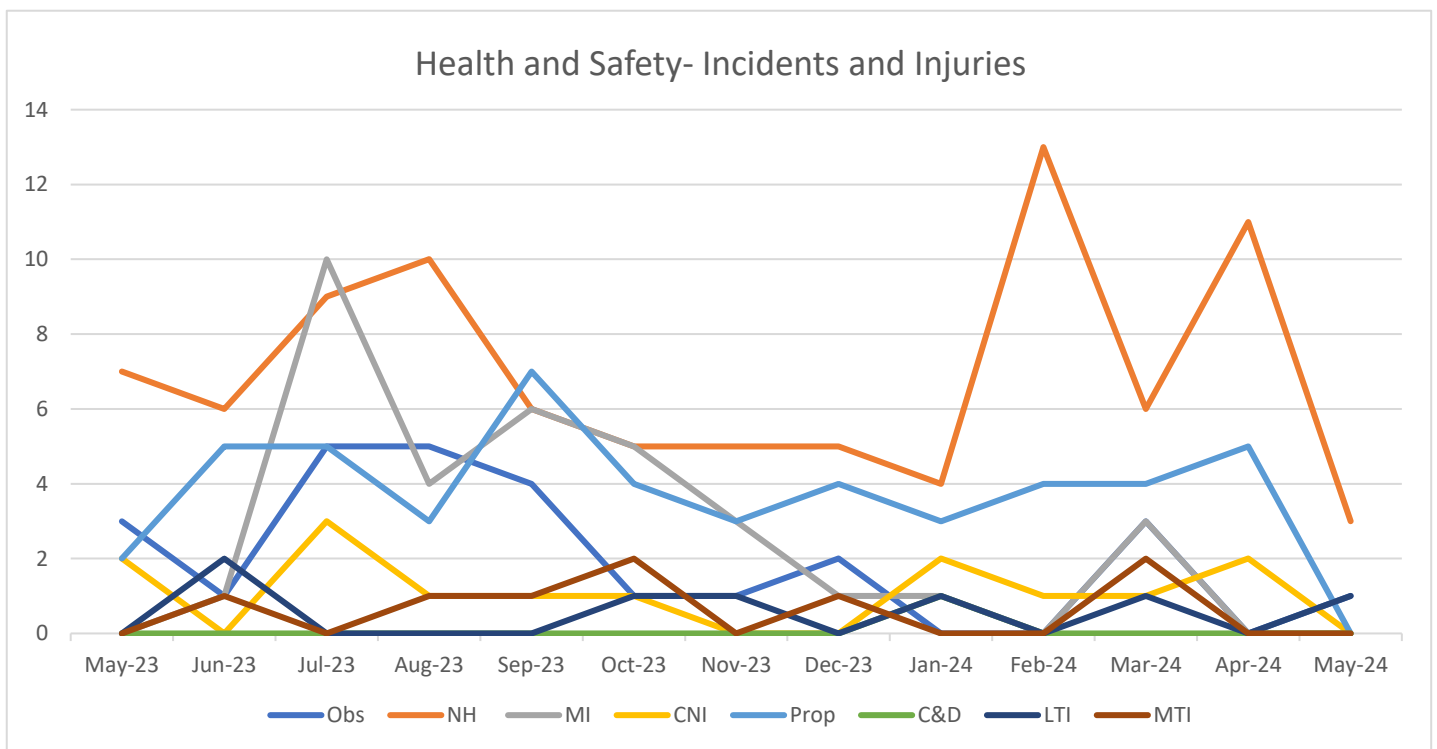


Figure 9: Health and Safety (Injuries and Incidents May 2023- May 2024)

Forest Health Monitoring:

Forest health monitoring is carried out annually by external contractors, SPS Biota. The most recent forest health surveillance was carried out in September 2023. This revealed the following:

- Possum damage was seen in Huanui, Te Marunga, Wairangi and Wakaroa. The damage was generally minor, but on-going control is recommended to ensure the level of damage does not escalate.
- Dothistroma Needle Blight was found in Wairangi compartment 3 and in parts of Hineroa. The symptoms were minor, but foliar sampling could be considered to determine whether the deficiency is low enough to warrant correction.
- RNC was present in all forests, Mangarara had the most notable population.

The issues noted have provided Aratu staff direction on where management interventions are required. Aratu staff also carry out fine-level forest health assessments during the year.

Aratu conducts foliage sampling on an ad hoc basis by staff or following annual forest health surveys. If there are deficient nutrient levels detected, then further investigations or management interventions through fertiliser application are undertaken.

Monitoring of Red Needle Cast and Dothistroma Needle Blight is also carried out on a regular basis by Aratu staff members.



Historic and Culturally Significant Sites:

Aratu have over 80 confirmed historic sites primarily made up of pits, terraces and pa sites. Any operations involving site disturbances in or around a historic site is only done in consultation with both the local Iwi and the Heritage New Zealand Pouhere Taonga, and an approval must be granted from the HNZPT. On occasion, a site is blessed prior to any operations within the area, or an Iwi representative visit the site post-harvest.

Once operations have finished, the site is given a buffer and cordoned off to prevent future damage to the site. Sites are monitored for weeds such as wildling pines. Some Iwi have opted to contribute towards management of Historic sites into the future. Tree jacks are used to directionally fall leaning trees away from the historic sites, to further reduce the risk of damage.

