

16 October 2023

File Ref: OIAPR-1274023063-23583

Tēnā koe

### **Request for information 2023-238**

I refer to your request for information dated 18 September 2023, which was received by Greater Wellington Regional Council (Greater Wellington) on 18 September 2023. You have requested the following:

*"I would like some information to help a small group of people better input into next years planning round. My queries are:*

- 1. Is there any work going on to renew the Wairarapa Coastal Strategy?*
- 2. What work is going on in respect to updating the Greater Wellington Regional Coastal Plan?*
- 3. In respect to informing planning - Has there ever been any inventory taken of coastal birdlife on the Wairarapa Coast - and also any inventory of other coastal native fauna such as marine mammals, geckos and lizards etc? I am thinking here of the coastline from Cape Turakirae to Mataikona North*
- 4. Is there any planning underway to enhance the environment for these species on the coast?*
- 5. Is there any work ongoing in council planning to enhance predator control work on the coast?*
- 6. Is there any planning underway currently to enhance the protection of archeological sites (burial sites, stone walls, kainga, Pa sites etc) and flora associated with Maori settlement (Karaka groves, Renga Renga etc) on the Wairarapa coast?*
- 7. Do prospective marine reserves come under a Greater Wellington coastal strategy or are they more likely to be discussed under some other Government document?*
- 8. Is there any discussion in relevant planning departments or documents of Greater Wellington in respect to better protection for the Moa Bone caves in the Ruakokoputuna Valley? If not what Government Department and document would this work come under the auspices of?"*

## Greater Wellington's response follows:

### **1. Is there any work going on to renew the Wairarapa Coastal Strategy?**

At present there is no intention to renew the Wairarapa Coastal Strategy.

### **2. What work is going on in respect to updating the Greater Wellington Regional Coastal Plan?**

The Greater Wellington Regional Coastal Plan has been integrated into and replaced by the Natural Resources Plan (NRP), fully operative as of 28 July 2023. The Regional Coastal Plan part of the NRP was adopted by Council on 25 August 2022, and approved by the Minister of Conservation on 9 June 2023.

As required by Section 80(8) of the Resource Management Act 1991 (the RMA), regional councils are required to identify the provisions in the NRP that form part of the Regional Coastal Plan. These provisions are identified by a coastal icon as follows: 

Provisions marked with the coastal icon apply to the coastal marine area, but the integrated nature of the NRP means that iconised provisions are also relevant to provisions managing air, land, and water outside of the coastal marine area (where the regional council has jurisdiction).

The operative version of the NRP is linked here: [gw.govt.nz/assets/Documents/2023/07/Natural-Resource-Plan-Operative-Version-2023-incl-maps-compressed.pdf](https://www.gw.govt.nz/assets/Documents/2023/07/Natural-Resource-Plan-Operative-Version-2023-incl-maps-compressed.pdf)

### **3. In respect to informing planning - Has there ever been any inventory taken of coastal birdlife on the Wairarapa Coast - and also any inventory of other coastal native fauna such as marine mammals, geckos and lizards etc? I am thinking here of the coastline from Cape Turakirae to Mataikona North.**

With respect to coastal birdlife, the first complete region-wide coastal indigenous bird survey was carried out in 2017-2018, with a report published in 2019 (McArthur et al). This report can be found here: <https://www.gw.govt.nz/document/21466/>

The second survey of the Wairarapa coastline was completed last year, the results of which will be available once the remainder of the region has been completed this summer (2023-2024). The available data on coastal indigenous birdlife on the Wairarapa Coast is therefore currently restricted to the report published in 2019.

The coastal bird survey was carried out in 1-kilometre stretches, with dedicated surveys for estuaries. The presence and number of all species of birds and marine mammals encountered was recorded for each separate 1 kilometre section of coastline surveyed. The report also includes mapped data of the distribution and abundance of New Zealand fur seals along the Wellington region coastline,

including the Wairarapa coast. The New Zealand fur seal was the only marine mammal species detected on land along the coastline during the survey period.

With regard to inventory of lizards on the Wairarapa Coast, a report included as **Attachment 1** (Romijn 2020) details the lizard species (including geckos and skinks) known from the Key Native Ecosystem sites around the region, including those on the Wairarapa coast. In addition, management plans for the Key Native Ecosystem sites (KNEs) prepared to date contain further information on the lizards expected to be present in these areas; these are available on the Greater Wellington website at the following link: <https://www.gw.govt.nz/environment/our-natural-environment/our-unique-ecosystem-types/key-native-ecosystem-programme/>

Greater Wellington is currently drafting management plans for the Mataikona Coast, Riversdale Coast and Homewood Coastal Plains KNE sites; these will be published to the Greater Wellington website at the above link when completed.

Further, Greater Wellington publishes conservation assessment reports on indigenous species in the Wellington Region, including reptiles, bats, freshwater fish, birds, and vascular plants. These are available on the Greater Wellington website document library under the tags **Conservation** and **Assessment**:

[https://www.gw.govt.nz/document-library/?topics\[\]=Conservation&categories\[\]=Assessment](https://www.gw.govt.nz/document-library/?topics[]=Conservation&categories[]=Assessment)

With respect to informing planning, surveys of indigenous species inform the NRP Schedules A (waterbodies with outstanding indigenous ecosystem values), F (ecosystems and habitats with significant indigenous biodiversity values), and W (vegetation and sediment removal management plan).

**4. *Is there any planning underway to enhance the environment for these species on the coast?***

NRP Schedule F (ecosystems and habitats with significant indigenous biodiversity values) provides robust protections for the scheduled sites, including several on the Wairarapa Coast.

Please refer to the NRP Schedules available on our website. Schedule F can be found on page 484 of this document:

<https://www.gw.govt.nz/assets/Documents/2023/07/Chapter-12.pdf>

The proposed Change 1 to the NRP includes several updates to Schedule F, and is due to be notified by Council and publicly available in late October 2023.

**5. *Is there any work ongoing in council planning to enhance predator control work on the coast?***

At present the only plans for predator control work on the Wairarapa Coast come through the KNE management plans, of which there are several covering a large area of the Wairarapa Coast. KNEs

are priority sites of significant biodiversity around the region which Greater Wellington has identified for protection, restoration, and management. These sites are found in regional parks, local reserves, and on private land where landowners allow. As noted in our response to question 3 above, Greater Wellington is currently drafting management plans for the Mataikona Coast, Riversdale Coast and Homewood Coastal Plains KNE sites; these will be published to the Greater Wellington website at the link provided.

Predator control in the Wellington region is also managed through the Regional Predator Control Programme (RPCP). At present the RPCP does not extend to the Wairarapa Coast. A map of control areas can be found on our website: <https://www.gw.govt.nz/your-region/plans-policies-and-bylaws/plans-and-reports/environmental-plans/regional-pest-management-plan/regional-predator-control-programme/>. The intent is to expand the RPCP throughout the Wellington Region as funding allows; this expansion will likely prioritise areas with high predator populations.

**6. Is there any planning underway currently to enhance the protection of archeological sites (burial sites, stone walls, kainga, Pa sites etc) and flora associated with Maori settlement (Karaka groves, Renga Renga etc) on the Wairarapa coast?**

Schedule C (Sites with significant mana whenua values) in the NRP provides robust protection for the scheduled sites. Schedule C5 was prepared in consultation with Greater Wellington's mana whenua partners whose ancestral rohe includes the Wairarapa, Ngāti Kahungunu ki Wairarapa and Rangitāne o Wairarapa, and may therefore be assumed to be an accurate summation of relevant archaeological and Māori settlement sites in the Wairarapa.

This schedule includes pā sites, burial sites/urupā, and kāinga, as well as sites with relevant flora such as sources of healing plants/rongoā and weaving plants/raranga.

Please refer to the NRP Schedules on our website. Schedule C5 can be found on page 408. <https://www.gw.govt.nz/assets/Documents/2023/07/Chapter-12.pdf>

**7. Do prospective marine reserves come under a Greater Wellington coastal strategy or are they more likely to be discussed under some other Government document?**

Marine reserves are subject to the Marine Reserves Act 1971, and as such are administered by the Department of Conservation | Te Papa Atawhai (DOC). In terms of other marine protections, Greater Wellington has jurisdiction to restrict activities which may have adverse effects on the seabed; these require a resource consent, the conditions on which are designed to protect marine biodiversity. For further information on prospective marine reserves, Greater Wellington recommends contacting DOC.

**8. Is there any discussion in relevant planning departments or documents of Greater Wellington in respect to better protection for the Moa Bone caves in the Ruakokoputuna Valley? If not what Government Department and document would this work come under the auspices of?**

Currently, Greater Wellington does not have any particular protections for the Moa Bone caves in the Ruakokoputuna Valley; there are no future plans for protection of this site. Greater Wellington recommends contacting DOC or Heritage New Zealand to discuss this issue further.

If you have any concerns with the decision(s) referred to in this letter, you have the right to request an investigation and review by the Ombudsman under section 27(3) of the Local Government Official Information and Meetings Act 1987.

Please note that it is our policy to proactively release our responses to official information requests where possible. Our response to your request will be published shortly on Greater Wellington's website with your personal information removed.

Nāku iti noa, nā



Lian Butcher  
Kaiwhakahaere Matua, Taiao | Group Manager, Environment Group

# Lizards in the Key Native Ecosystem Programme

Prepared by Richard Romijn, January 2021

## Introduction

The Key Native Ecosystem (KNE) programme aims to protect a representative sample of original ecosystem types within the Wellington region. Additionally the programme also helps to protect a range of species, including lizards, which live within the KNE sites. We have just recently received an update of the Bioweb Herpetofauna data (November 2020) from DOC, which has been used to develop a GIS layer for us by Matt Velde. Up until now we have worked with Bioweb Herpetofauna data from 2010, so it is timely for us to review the state of lizards within the KNE programme. Unfortunately, not all records are included in the DOC Herpetofauna data, so I have also collated and reviewed other reports about lizards within the KNE sites. The purpose of this paper is to:

- Outline the lizard species present in the region
- Summarise lizard species known to be present within KNE sites
- Summarise what is known about lizard abundance from coastal KNE sites
- Summarise where each lizard species can be located in the KNE network
- Discuss next steps for gathering data and managing lizards in the KNE programme

## Lizards in the Wellington region

There are ten species of skink and seven species of gecko known from the Wellington region. However, eight of these species are either locally extinct, almost locally extinct in the wild or only found on islands (species asterisked in Table 1).

**Table 1:** Lizards of the Wellington region and their distribution.

Scientific name	Common name	Regional distribution
<b>Skinks</b>		
<i>Oligosoma aeneum</i>	Copper skink	Widespread
<i>Oligosoma alani</i> *	Robust skink	Regionally extinct
<i>Oligosoma kokowai</i>	Northern spotted skink	Sparse, scattered populations
<i>Oligosoma macgregori</i> *	Macgregor's skink	Mana Island
<i>Oligosoma ornatum</i>	Ornate skink	Widespread
<i>Oligosoma 'southern North Island'</i> *	Kupe skink	Last seen in the Wairarapa
<i>Oligosoma infrapunctatum</i> *	Speckled skink	Mana island (translocated)
<i>Oligosoma polychroma</i>	Northern grass skink	Widespread
<i>Oligosoma whitakeri</i> *	Whitaker's skink	Pukerua Bay
<i>Oligosoma zelandicum</i>	Glossy brown skink	West of Tararua range
<b>Geckos</b>		
<i>Dactylocnemis pacificus</i> *	Pacific gecko	Last seen in Upper Hutt
<i>Hoplodactylus duvaucelii</i> *	Duvaucel's gecko	Mana Island (translocated)
<i>Mokopirirakau 'southern North Island'</i>	Ngahere gecko	Widespread

<i>Naultinus punctatus</i>	Barking gecko	Widespread
<i>Woodworthia chrysosiretica</i> *	Goldstripe gecko	Mana and Kapiti Islands
<i>Woodworthia maculata</i>	Raukawa gecko	Widespread
<i>Woodworthia</i> 'Marlborough mini'	Minimac gecko	Wellington south and west coast

\* locally extinct, almost locally extinct in the wild or only found on islands

### Lizard species known to be present within KNE sites

Lizards are recorded within 40 of the 57 KNE sites, although at five sites only unidentified skinks or geckos were observed (Table 2). Ten of the 17 lizard species known from the Wellington region have been recorded within KNE sites:

- Copper skink
- Northern spotted skink
- Ornate skink
- Whitaker's skink
- Glossy brown skink
- Ngahere gecko
- Barking gecko
- Raukawa gecko
- Minimac gecko
- Northern grass skink

Wellington Western Forest has the highest species richness for a forest with six lizard species recorded. Eleven forest sites have recorded two or more lizard species. Seven species have been recorded from these eleven forest sites: Barking gecko at 11 sites; Ngahere gecko at 10 sites; Northern grass skink at 7 sites; Copper skink and Raukawa gecko at 4 sites; Ornate skink at 3 sites; Glossy brown skink at 1 site.



**Figure 1:** The two most commonly reported lizards in forest sites: Barking gecko and Ngahere gecko.

Raroa Pukerua Coast has the highest species richness for a coastal site with five lizard species recorded. Eight coastal sites have recorded two or more lizard species. Seven species have been recorded from these eight coastal sites: Northern grass skink and Raukawa gecko at 8 sites; Copper skink at 5 sites; Northern spotted skink and Glossy brown skink at 2 sites; Minimac gecko and Whitaker's skink at 1 site.



**Figure 2:** The two most commonly reported lizards in coastal sites: Raukawa gecko and Northern grass skink.

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Table 2: Lizard species known to be present within KNE sites.

KNE site	Nos. of species	Skins							Geckos				
		Copper	Northern spotted	Ornate	Northern Grass	Whitakers	Glossy brown	Unidentified	Ngahere	Barking	Raukawa	Minimac	Unidentified
Wellington Western Forests	6	X		X	X		X		X	X			
East Harbour Northern Forest	5	X			X				X	X	X		
Fensham	5	X			X				X	X	X		
Raroa Pukerua Coast	5	X			X	X	X				X		
Waterfall Road Bush	5	X		X	X				X	X			
Baring Head/Ōrua-pouanui	4	X	X		X						X		
Paekākāriki Escarpment	4	X			X		X				X		
Rewanui	4				X				X	X	X		
Ngā Manu Wetland Complex	4				X				X	X	X		
Parangarahu Lakes Area	4	X			X					X	X		
Porirua Western Forests	3							X	X	X			
Te Kawakawa	3		X		X						X		
Wainuiomata/Orongorongo WCA	3				X				X	X			
Wellington South Coast	3				X						X	X	
Whitiria Coast	3	X			X						X		
Belmont - Dry Creek	2								X	X			
Belmont - Korokoro	2								X	X			
Cape Palliser – Te Mātakiatake a Kupe	2				X						X		
Wi Tako Ngātata	2			X						X			
Battle Hill Bush	1									X			
Belmont - Speedy's	1										X		
Haywards Scenic Reserve	1									X			
Hutt WCA	1								X				

Kaitoke Regional Park	1								X				
Karehana Bay Bush	1								X				
Kelson Bush	1								X				
Lake Pounui	1										X		
Lake Waiorongomai and Stream	1							X					
Pākuratahi	1									X			
Queen Elizabeth Park	1				X								
Strang's Bush	1										X		
Sulphur Wells	1				X								
Taupō Swamp Complex	1										X		
Te Horo Forest Remnants	1			X									
Trentham Memorial Park	1	X											
Omahu	1							X					
Owahanga	1							X					
Tora Coast Bush	1							X					
Whangaimoana	1				X								
Waikanae River Complex	1												X
<b>Total:</b>		<b>10</b>	<b>2</b>	<b>3</b>	<b>18</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>1</b>	<b>1</b>

\*Unidentified skinks and unidentified geckos are listed only when there is no other species of skink or gecko listed at a site so we can be assured that there is an additional species present at the site.

There are no records of lizards from seventeen KNE sites. This is mainly due to lack of survey effort at these sites. An exception to this rule is Akatarawa Forest. A survey was conducted at Akatarawa in 2009, but the weather conditions were not ideal and no lizards were located. The KNE sites where lizards have not been recorded are:

- Akatarawa Forest
- Haruātai / Pareomatangi
- Homewood Coastal Plains
- Te Harakeke Wetland Complex
- Keith George Memorial Park
- Kourarau
- Lower Waikanae Forest Remnants
- Mātaikonā Coast
- Otepua-Paruāuku Wetlands
- Ōtaki Coast
- Peka Peka Coast
- Riversdale Coast
- Ruamāhanga River Terraces
- Tauherenikau Bush Remnants
- Te Hāpua Wetland Complex
- Waihora
- Waitohu Coast and Wetlands

#### Lizard abundance at coastal KNE sites

Visual searches and pitfall trapping at several KNE sites can give some indication of relative abundance of lizards at rocky coastal sites. We do not have sufficient data to comment on lizard abundances in forest and wetland sites.

During visual searches at coastal KNE sites lizards have been observed at a rate of between 1.55 and 35.3 lizards per hour (Table 3), while pitfall trapping has caught animals at a rate of 1.66 and 34.81 lizards per 100 traps nights (Table 4). In these surveys coastal lizard communities were dominated by Northern grass skinks and Raukawa geckos (with Minimac geckos dominating on Wellington South Coast), with smaller populations of Copper skinks and Northern spotted skinks.

**Table 3:** Daytime searches at coastal sites.

KNE Site	Search hours	Total Lizards (N)	N/hr	Copper	Northern grass skink	Raukawa	Minimac	gecko	Lizard
Baring Head	21.5	441	35.3	5	54	16	366	0	0
Cape Palliser	5.26	23	4.37	0	0	1	22	0	0
Parangarahu	22.54	67	2.97	1	22	7	37	0	1
Whitireia	8.82	21	2.38	1	6	5	8	0	1
Wellington South Coast	27.1	42	1.55	0	6	30	0	6	0

Table 4: Pitfall trapping at coastal sites

KNE Site	Trap nights	Total Lizards (N)	Catch per 100 trap nights	Copper	Northern grass	Northern spotted	Raukawa
Baring Head	270	94	34.81	0	45	1	48
Whitireia	75	26	34.66	1	24	0	1
Parangarahu	60	1	1.66	0	1	0	0

The long-term study of coastal lizards at the Pukerua Bay Scientific Reserve, which is adjacent to the Raroa Pukerua Bay KNE site (Hoare et al 2007) indicates how management, the removal of grazing, can have a detrimental effect on lizard communities. The study covered a 23-year period 1984-2006 and captured 1,693 lizards over 7,597 trap nights. The five lizard species present were Whitaker's skink, Copper skink, Glossy brown skink, Northern grass skink and Raukawa gecko. During this period Whitaker's skink had a 34-fold decrease (1.03/100 trap nights to 0.03/100 trap nights), Copper skink had a 20-fold decrease (11/100 trap nights to 0.55/100 trap nights), Northern grass skink and Glossy brown skink had no discernible change, and Raukawa gecko increased. The lizard community has changed dramatically during this period. The species composition was:

**1984-1988:** Copper skink 28.8%, Whitaker's skinks 2.8%, Northern grass skink 49.3%, Glossy brown skink 14.8%, Raukawa gecko 4.3% (n = 466 lizards)

**2000-2006:** Copper skink 3.1%, Whitakers skink 0.2%, Northern grass skink 49.3%, Glossy brown skink 12.9%, Raukawa gecko 34.5% (n = 1034 lizards)

The study proposed two mechanisms for the declines in the large Whitaker's skink and Copper skink.

1. Increased rank grass associated with the removal of stock supported irruptions of rodents and their mustelid and cat predators, which also prey on lizards, and
2. Increased subsurface binding vegetation decreased interstitial spaces between substrate particles and limits lizard's access to refugia that afford protection from introduced predators.

#### Lizard species known from the KNE network

The threat status of lizards can help us prioritise our work throughout the KNE network (Table 5).

Three of the eight species that are classified as Nationally Threatened, Nationally At Risk, Regionally Threatened or Regionally At Risk are well represented across several KNE sites.

##### **Barking gecko** (Nationally At Risk: Regionally At Risk)

Barking geckos have been recorded from 15 KNE sites. Most sites only have records of a few geckos and some records are very old. Only Rewanui KNE site has had any monitoring undertaken of green gecko populations (6 geckos found in 2008, 7 geckos found in 2010).

##### **Ngahere gecko** (Nationally At Risk: Regionally At Risk)

Ngahere geckos have been recorded at 14 KNE sites. Most sites only have records of a few geckos. Only Western Wellington Forest and Belmont Dry Creek (salvage as part of Belmont Quarry work) have had several animals located in a survey.

**Copper skink** (Nationally Not Threatened: Regionally Threatened)

Copper skinks have been recorded at 10 KNE sites. Most sites have relatively recent records of a small number of skinks, but Raroa-Pukerua Coast and East Harbour Norther Forest records date back to before 1983.

The other five Threatened or At Risk species are not well represented in the KNE programme.

**Whitaker's skink** (Nationally Threatened: Regionally Threatened)

Whitaker's skinks are only recorded from the Raroa-Pukerua Coast KNE site with one historic record from 1970. In the region the species is confined to this stretch of coast (mainly in DOC reserve), however, all animals if found, are captured and put into a captive breeding programme run by DOC.

**Minimac gecko** (Nationally Not Threatened: Regionally At Risk)

Minimac geckos are only recorded in the Wellington South Coast KNE site. In the North Island this species distribution is limited to an area between Ohiro Bay and Makara on the west coast of the Wellington region.

**Northern spotted skink** (Nationally At Risk: Regionally At Risk)

Northern spotted skinks are recorded from Baring Head/Ōrua-pouanui and Te Kawakawa KNE sites. The population at Baring Head/Ōrua-pouanui is being monitored and a brief survey in 2020 confirmed the presence of the species Te Kawakawa.

**Ornate skink** (Nationally At Risk: Regionally At Risk)

Ornate skinks are only recorded from Wellington Western Forests, Wi Tako Ngātata and Waterfall Road Bush KNE sites. The Western Wellington Forest has one relatively recent record (2007), Waterfall Road Bush has one record (2021), whereas Wi Tako Ngātata has three records from the 1980s.

**Glossy brown** (Nationally At Risk: Regionally At Risk)

Glossy brown skinks have been recorded in Western Wellington Forests, Raroa Pukerua Coast and Paekākāriki Escarpment. There is only one record from Western Wellington Forest (2007), many historic records from the Raroa Pukerua Coast (latest in 1983), four records from Paekākāriki Escarpment (2017/18).

The two Nationally Not Threatened and Regionally Not Threatened species are well represented across the KNE sites.

- **Northern grass skink** is found at 17 sites, several of which are known to have relatively large populations (Raroa-Pukerua Coast, Baring Head, Paekākāriki escarpment, Parangarahu, Wellington South Coast and Whitireia Coast).
- **Raukawa gecko** is found at 16 KNE sites, several of which are known to have relatively large populations (Raroa-Pukerua Coast, Baring Head, Paekākāriki escarpment, Parangarahu and Whitireia Coast).

**Table 5:** Lizard species in the KNE network and their threat status.

Species	National threat status	Regional threat status	Nos. of KNEs
Whitaker's skink	Threatened Endangered	Threatened Critical	1
Barking gecko	At Risk Declining	Threatened Vulnerable	14
Ngahere gecko	At Risk Declining	At Risk Declining	14
Ornate skink	At Risk Declining	At Risk Declining	3
Glossy brown skink	At Risk Declining	At Risk Declining	4
Northern spotted skink	At Risk Relict	At Risk Recovering	2
Raukawa gecko	Not Threatened	Not Threatened	16
Minimac gecko	Not Threatened	At Risk Naturally Uncommon	1
Copper skink	Not Threatened	Threatened Critical	10
Northern grass skink	Not Threatened	Not Threatened	17

### Next steps

This review of the lizards in the KNE programme allows us to prioritise some key actions:

#### Gathering and maintaining data

- 1. More survey work in the region.** Support Wellington Regional Lizard Network to get a global permit to undertake lizard surveys across the region. This will make it easier for us to undertake surveys in some of our KNE sites. Once we have a permit it will provide good staff training opportunities as well as possibilities landowner and mana whenua engagement.
- 2. Survey KNEs.** Survey the 17 KNE sites where lizards have yet to be recorded.
- 3. Encourage staff to record lizard sightings.** Staff going to sites could be more aware of lizards and to record what they find. This is especially important for sites where there is currently no data. Richard will update his presentation on identifying and reporting observations of lizards and offer to deliver this presentation to relevant staff.
- 4. Data gaps.** Richard to contact people who have done lizard work in KNEs about sending their data to DOC (eg. Paul Callister - Paekākāriki escarpment; Angus Hulme-Moir – Whitireia Coast; Chris Woolley – Western Wellington Forest; Trent Bell – QEP, Fensham, Baring Head/Ōrua-pouanui; Peter Kiernan – Waterfall Road Bush (Alex); Nyree Fea – Rewanui; Rhys – Ngā Manu); Aroha Spinks – Lake Waiorongomai
- 5. Regular update of data.** Richard will be responsible for ensuring an annual update of data from DOC and liaising with Matt Velde to create an updated GIS layer. Richard will be responsible for ensuring that people know when the layer is updated.
- 6. Identify potential monitoring in a forest site.** We currently have some good monitoring from coastal sites (eg. Baring Head/Ōrua-pouanui). It may be useful to encourage the monitoring of lizards in a large forested site. For example, the East Harbour Northern Forest or

Wainuiomata Mainland Islands where we know there are forest geckos, good habitat and high degree of predator control, or in a smaller remnant.

### Plan writing

7. **KNE operational plan development.** We can standardise how we discuss lizards in KNE operational plans. It is important to make it clear which species have actually been located within the boundaries of the site (as per this document) and mention their National and Regional threat status. If Threatened or At Risk species have not been recorded within the site for a long time it is important to mention this. However, it is also appropriate to make comments about other lizards that are likely to be present due to records of their close proximity to the site. In some cases where we have data it may be appropriate to refer to overall abundance of lizards at the site to give some indication of its value. In the reference section of new KNE operational plans we should state when the database we are using was last updated.

### Review management

8. Review how KNE sites with significant lizard values are managed and look at the best approach for continued management. For example:
  - a. Minimac gecko only occurs on a small area of coast in the North Island so it is important to ensure that management is appropriate for the maintenance of the population at the Wellington South Coast KNE site.
  - b. Northern spotted skinks are rare on mainland sites in the North Island. Can we improve management at Baring Head/Ōrua-pouanui and Te Kawakawa KNE sites to allow recovery of this species?
  - c. Investigate the survival of lizards translocated from recovery sites to improve site selection and management.

**References:**

Bell T. 2017. Fensham Reserve, Carterton: Lizard survey results and recommendations. May 2017.

Bell T. 2017. Kākipi Coast Biodiversity Project lizard survey: Queen Elizabeth Park and Whareroa Farm. EcoGecko Consultants Ltd, April 2017.

Bell T. 2018. Survey for northern spotted skinks (*Oligosoma kokowai*) at Baring Head, East Harbour Regional Park. Prepared for the Greater Wellington Regional Council. Technical report by EcoGecko Consultants Limited, May 2018.

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## Appendix 1: KNE sites and references for lizard survey and/or monitoring

KNE sites	References for lizard survey and/or monitoring
Akatarawa	Romijn 2010
Baring Head/Ōrua-pouanui	Romijn 2011, Bell 2018, Bell & Herbert 2018
Belmont - Korokoro	Romijn 2010
Belmont – Dry Creek	Romijn 2010
Cape Palliser Te Mātakiatake a Kupe	Romijn & Masters 2020
East Harbour Northern Forest	Romijn 2010
Fensham	Bell 2017, 2018
Parangarahu Lakes Area	Romijn 2010
Paekākāriki Escarpment	Ngā Uruora 2017, 2018
Raroa - Pukerua Coast	Hoare et al 2007, Newman 2018 (papers about adjacent DOC reserve)
Queen Elizabeth Park	Romijn 2010, Bell 2017, Bell 2018
Rewanui	Fea 2009, 2010, 2020
Taupō Swamp Complex	Bell & Wiles 2016
Te Kawakawa	Romijn & Masters 2020
Wainuiomata Orongorongo	Romijn 2010
Waterfall Road Bush	Bell & Wiles 2016, KERP 2018
Wellington South Coast	Melzer and Bell 2014, Bell 2019
Western Wellington Forests	Romijn et al 2014, Melzer and Bell 2014, Bell 2019
Whangaimoana Coast	Thorp et al 2021
Whitireia Coast	Romijn 2011