

# TAIORA – MARINE LIFE MONITORING PROJECT



17INT27  
TE AOTĀIHI KUTIA--NGATA  
DR. TE TUHI ROBUST  
INTERNSHIP REPORT  
TE WHARE WĀNANGA O AWANUIĀRANGI  
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**NPM Summer Internship**

**NPM #17NPM27 Taiora - Marine Life Monitoring Project**

**Intern: Te Aotāihi Kutia-Ngata**

**Principal Investigator: Dr. Te Tuhi Robust**

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## **Whāinga**

Ko te whāinga o tēnei mahi he tiro tiro ki te wai tai mai i Tokomaru ki Whāngārā me ngā momo koiora e noho ana ki roto i wēnei wai. Mā wēnei kitenga ka tohungia te oranga o te wai, mehemea ka hua mai he ora, he mate rānei ki ngā koiora e noho ana ki te wai. Kia mutu ana tēnei mahi ka tūtaki atu ki ngā mana whakahaere, kaitiaki rānei o wēnei wāhi me ngā kohinga kōrero hei whakarite whāinga mo te whakatika, mo te whakaroa rānei i te oranga o te wai tai.

Ko te tino kino e pā nei ki ngā wai tai o te Tairāwhiti ko ngā hua o ngā pāmu, pēra ki te tūtae kau me ngā momo paturiha, ka taka ki rō awa, ka rere atu ki te moana. E ai ki ngā ripoata o te Kaunihera o Tūranganui-a-Kiwa, ko te takutai e tata ana ki ngā ngutuawa te wāhi kīkī ana i ngā momo paru e pokea nei te wai (Cornelisen, Dunmore, Knight, Jiang 2010). Ko tētahi o aua paru he ngārara paku rawa e kīia nei ko te *Enterococci*, ka hua mai i te tūtae o te kararehe, ka puta ki ngā wai tai (LAWA). Ko te mahi a te Kaunihera he kaute i ngā ngārara nei (cfu/100ml) kia mōhio mehemea he pai, he kino rānei te wai mo te kaukau. Ki te piki te nama o tēnei ngārara ki te 280 cfu/100ml neke atu, ka tino māuiui te tangata (LAWA). Ina he maha rawa te paru mai i ngā awa, ka whakararu i ngā kāinga o ngā koiora o te moana, ka mate.

## **Tikanga Mahi**

- Wāhi: E whā ngā wāhi i tae atu au ki te tiro tiro ki te wai - ko Tokomaru, ko Anaura, ko Uawa, ko Whāngārā (figure 1). I aua wāhi e whā, i kimi au i ngā wāhi ka hua mai he koiora, pēra ki ngā toka. I tīpakongia kia toru ngā wāhanga hei tiro tiro, ki te kōhi wai, ki te kaute koiora hoki. Mā ēnei wāhanga e toru ka hua mai he toharite mo te wāhi katoa.

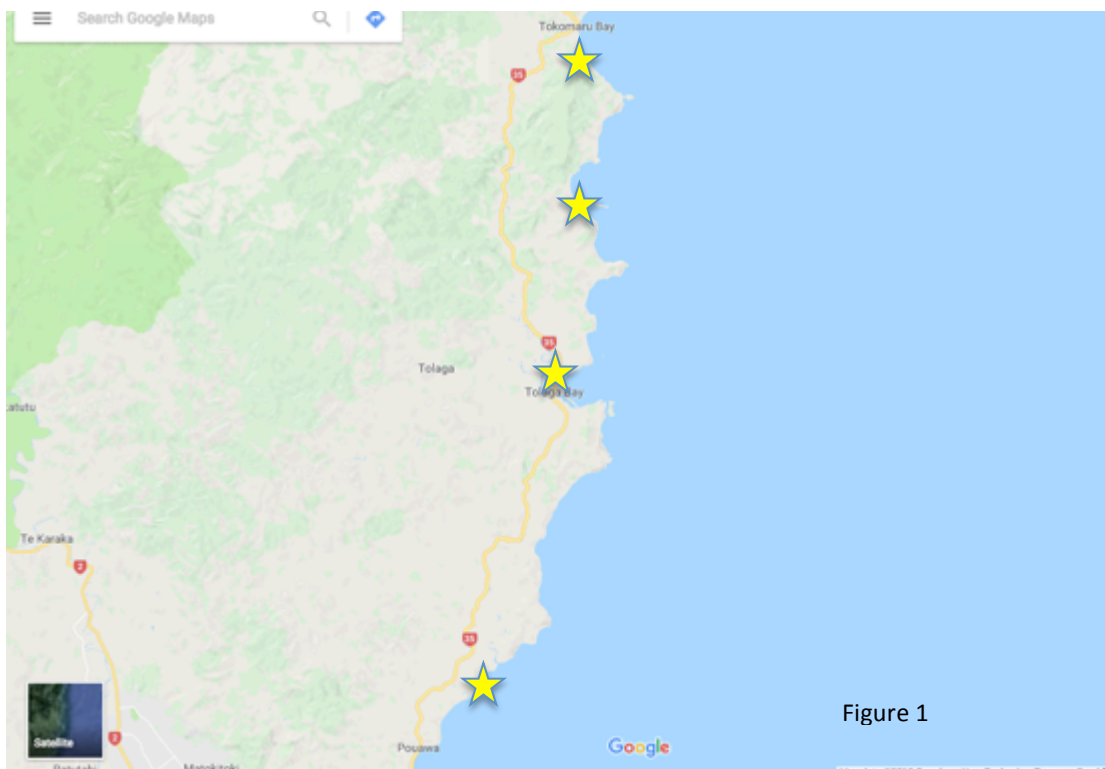


Figure 1

- Kohinga kōrero: Ko te nuinga o ngā kōrero kua kohingia e au e pā ana ki ngā pānga o te para ki te wai tai mai i ngā mahi kei runga whenua, pēra ki te mahi pāmu me te tope rākau. Ki te kaha heke te marangai, ka taka iho te nuinga o ngā para mai i te whenua ki ngā awa, ka puta ki te moana. Ehara i te mea he kino te katoa o ngā para. I ētahi wā, ka hua mai he kai mo ngā koiora e noho nei ki ngā “papa ngohe”, ēngari ki te nui rawa te para, ka raru ko ngā wāhi kai me ngā wāhi whānau ai te koiora (Gillespie 2007). E ai ki tētahi rīpoata a te Kaunihera o Tūranganui-a-Kiwa, ahakoa he pai ētahi wāhi o te Tairāwhiti mo te tipu kaimoana, ko te nuinga o te rohe kua paru i ngā tūtae a ngā momo kararehe (Cornelisen, Dunmore, Knight, Jiang 2010).
- Tikanga Mahi: Ka tae atu au ki te wāhi e tirohia nei e au. Ka puta i ngā wā e timu ana te tai. Ka tīpakongia kia toru ngā wāhanga o taua wāhi hei tātai. Kei ia wāhanga, ka ine au i te mātaitai me te pāmahana o te wai, kātahi ka kohia he wai mā te kapu, ka tango whakaahua o ngā koiora o taua wāhanga hei kaute (kia rua ngā whakaahua). Ka tuhi i ngā nama me ngā kitenga, ka kimi i te toharite. Kei ngā kohinga wai he para, nā reira ka tiro tiro hoki ki ngā momo para i hua mai i ia wāhi.

### Ngā Rapunga - Ngā koiora me ngā para

Location/Weather	Site 1	Site 2	Site 3	Water Debris
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<p>Ongaruru, Tokomaru Bay (fig. 2)</p> <p>Overcast, drizzle, sea was pretty calm, it had rained the day before so the water was still clearing out, no people.</p>	<p>- Little black mussels, between 150-300 of them. (fig. 2.1)</p> <p>- Heaps of little black mussels, 1 ngākihi. (fig. 2.2)</p>	<p>- 4 ngākihi (limpets), 1 strange looking crustacean. (fig 2.3)</p> <p>- 3 ngākihi, 1 strange looking fossil, 4 little pūtātara. (fig. 2.4)</p>	<p>- Heaps of seaweed. (fig. 2.5)</p> <p>- &lt;30 odd little bubu. (fig. 2.6)</p>	<p>Murky Pebbles Dark (fig. 2.7)</p>
<p>Anaura Bay (fig. 3)</p> <p>Sunny, not windy, water was murky because of rain, quite a few people around.</p>	<p>- Seaweed, and what looks like the little black mussels (fig. 3.1)</p> <p>- 4 fossil looking crustaceans (like ngākihi, but not cone-shaped) (fig. 3.2)</p>	<p>- 30-40 odd little pūtātara/crustaceans. (fig. 3.3)</p> <p>- 2 bubu (fig. 3.4)</p>	<p>- 3 little fish (fig. 3.5)</p> <p>- Seaweed, 1 little fish (fig. 3.6)</p> <p>- Crab, big bubu (fig. 3.7)</p>	<p>Murky Fine sediment (fig. 3.8)</p>
<p>Tatarahake, Tolaga Bay (fig. 4)</p> <p>Overcast, muggy, water was clearing up, few people. Boats usually get launched at this location, heaps of bluebottle jellyfish washed up.</p>	<p>- &gt;100 little black mussels, 12 little pūtātara. (fig. 4.1)</p> <p>- Heaps of little white cruataceans, and maybe a crab/crayfish leg (fig. 4.2)</p>	<p>- Heaps of seaweed and little black mussels. (fig 4.3)</p> <p>- Green/purple seaweed, short. (fig. 4.4)</p>	<p>- 2 bunches of orange/green seaweed, 1 fossil thing, heaps of little black mussels. (fig. 4.5)</p> <p>- Little round seaweed, like pods. (fig. 4.6)</p>	<p>Smaller pebbels Darker Like a fish tank More sandy (fig. 4.7)</p>
<p>Whangara (fig. 5)</p> <p>Sunny, clear water, few people, few bluebottles here too.</p>	<p>- Seaweed, harakeke-looking. (fig. 5.1)</p> <p>- Purple/pinkish algae looking seaweed with some brown, and a black blob. (fig 5.2)</p>	<p>- Seaweed, dark green/black, soft, parengo-looking. (fig. 5.3)</p> <p>- 2/3 little fish (NOTE: I kept missing the fish when I took photos, hence why there's no fish, but they were there!) (fig. 5.4)</p>	<p>Not quite sure, bad photo, invalid data. (fig. 5.5)</p>	<p>Fine, small, light-coloured. (fig. 5.6)</p>

- Ehara au i te tohunga mo ngā koiora o te moana, nā reira ko te nuinga o wāku kitenga ka whakaingoatia mo te āhua o aua koiora (eg. “little pūtātara”, “fossil-looking” etc.) Nāku anō wēnei ingoa i tīpako.

- He āhua makaro, marumaru rānei wētahi o ngā pikitia nā reira he uaua mōku te kaute koiora.

### Ngā Rapunga - Ngā inenga mātaitai & pāmahana

Location	Site 1	Site 2	Site 3	Average
Tokomaru Bay	OS: 39.1, 18.7C° IN: 38.6, 19.4C°	OS: 38.8, 18.8C° IN: 39.8, 19.2C°	OS: 39.2, 17.9C° IN: 40.0, 19.2C°	OS: 39.0, 18.5C° IN: 39.5, 19.3C°
Anaura Bay	OS: 39.6, 19.7C° IN: 39.8, 22.4C°	OS: 40.0, 21.0C° IN: 41.0, 21.7C°	OS: 39.5, 22.6C° IN: 40.8, 21.6C°	OS: 39.7, 21.1C° IN: 40.5, 21.9C°
Tolaga Bay	OS: 37.7, 26.5C° IN: 39.8, 21.3C°	OS: 39.2, 21.5C° IN: 40.4, 21.1C°	OS: 39.6, 20.8C° IN: 40.8, 21.1C°	OS: 38.8, 22.9C° IN: 40.3, 21.2C°
Whangara	OS: 40.2, 20.8C° IN: 38.5, 21.2C°	OS: 40.4, 24.0C° IN: 39.3, 21.2C°	OS: 40.3, 23.4C° IN: 39.6, 21.2C°	OS: 40.3, 22.7° IN: 39.1, 21.2C°

OS = On-site (Results were recorded at the site)

IN = Inside (Results were recorded inside a controlled environment)

- Ko te nama tuatahi te inenga mo te mātaitai me te mana kawenga (conductivity) o te wai. Ko te nama tuarua te pāmahana o te wai. Kāore au i te tino mārama i te kōrero a ngā nama, he aha rānei te nama tika mo te wai tai.
- I te nuinga o te wā, ka taka te pāmahana i waenga i te 20C° me te 21C°. Arā atu anō wētahi i waho atu i tēnei pēra ki te wai ki Tolaga Bay (26.5C°) engari pea nā te mihini ine, na te kaiwhakamahi rānei o te mihini te hē.



Figure 2



Figure 2.1



Figure 2.2



Figure 2.3

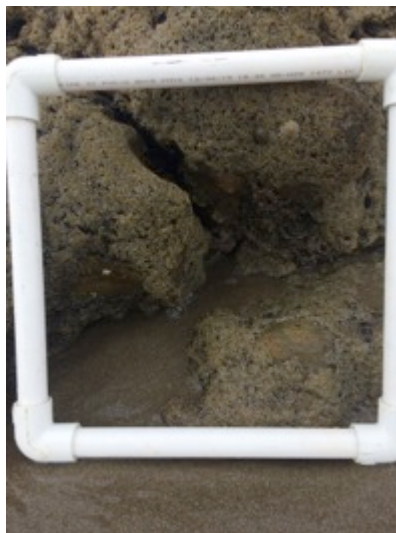


Figure 2.4



Figure 2.5



Figure 2.6

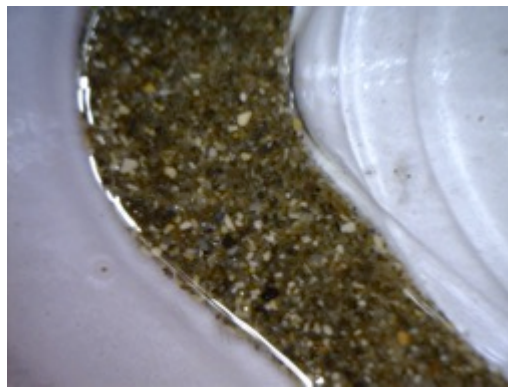


Figure 2.7



Figure 3

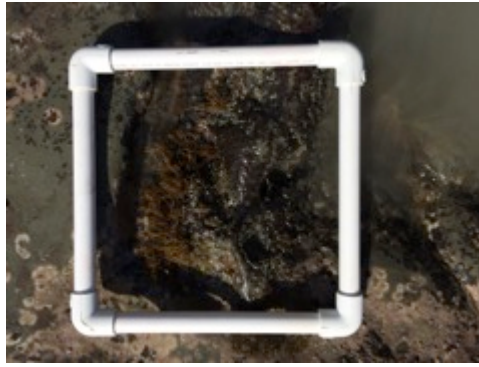


Figure 3.1



Figure 3.2



Figure 3.3

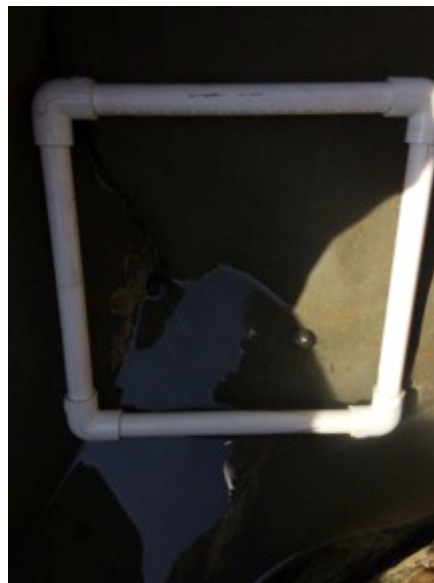


Figure 3.4



Figure 3.5



Figure 3.6



Figure 3.7



Figure 3.8





Figure 4



Figure 4.1



Figure 4.2



Figure 4.3



Figure 4.4



Figure 4.5



Figure 4.6



Figure 4.7



Figure 5



Figure 5.1



Figure 5.2



Figure 5.3



Figure 5.4



Figure 5.5



Figure 5.6

### **Whakakapinga/Conclusion**

He uaua mōku te mārama i ngā kōrero pūtaiao. I ētahi wā, i raru ngā kohinga i te kore aro atu, engari kei te ako tonu. Ehara hoki au i te tohunga koiora moana, tohunga wai rānei nā reira kei te pāpaku noa waku kohinga me waku inenga.

I ahau e kōhi tauira hei ine, ka tirotiro au ki ngā mea kei ngā taha, mehemea he awa e tata ana, mehemea he poti, he tangata rānei kei te wai. Ka titiro hoki ki te huarere, ina he marangai, he wera, kei te kaha pupuhi te hau. Mā wēnei au e ako ai he aha i pēnei ai waku inenga mo ngā kohinga wai. Hei tauira, he makariri rawa ngā wai o Tokomaru ki ngā wai o Whāngārā nā te huarere me te āhua o te moana i aua rā e rua.

Ehara i te mea he mahi ngāwari tēnei. Ahakoa ko tāku anake he tirotiro ki te wai, tērā he wā anō ka āta wetewetehia ngā nama, mehemea he tohu pai, kāore rānei. Engari, e ai ki ngā whatu, he ora rawa ngā uri a Tangaroa, kāore hoki he para, he paru kai ngā wāhi i tirohia e au. Ko ngā rīpoata i pānuitia e au, kīkī rawa i ngā kōrero me ngā ingoa pūtaiao, ka nui taku akoako i ēnei, ā, kāore anō kia mau katoa ēnei kōrero i a au.

Ahakoa ngā piki me ngā heke o tēnei momo mahi, kua kī rawa te kete mātauranga, kua kī hoki te ngākau i te aroha mo ngā tai o te kāinga. He tino kaupapa te moana mōku, nā reira he pai te ako i wētahi mea hou e pā ana ki ngā kaupapa e kaingākautia nei e au.

### **Rārangi Pukapuka/References**

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