Hauraki Gulf Monitoring Project Report

NOVEMBER 2020

ABOUT THE PROJECT

In 2017, Foundation North provided funding to the New Zealand Association for Environmental Education (NZAEE) to facilitate a citizen-science project monitoring the seashore in Tikapa Moana - the Hauraki Gulf. The resulting Hauraki Gulf Monitoring Project (HGMP) builds upon the annual 'Seaweek' event to encourage on-going engagement, appreciation and guardianship of the marine/coastal environment.

The HGMP uses Marine Metre Squared (Mm^2) - Ngā Tini o te Waitai - as a tool to gather information on seashore ecology through the establishment of long-term monitoring programmes conducted by local schools and community groups (www.mm2.net.nz). Mm^2 is an easy way to conduct surveys that observe changes over time and to build links between schools, communities and scientists. Supported by the University of Otago's New Zealand Marine Studies Centre (NZMSC) (www.marine.ac.nz), the Mm^2 project provides access to resources, expert knowledge and education supplied from those in the field/industry.

The overarching purpose of the HGMP is to encourage Aucklanders to better understand how they fit in with the marine environment and how they can become kaitiaki/guardians of the Hauraki Gulf. Through collecting the data themselves, participants not only have the opportunity to develop practical science skills but also gather data for useful measures of ecosystem health such as biodiversity, species abundance and distribution.

Aless Smith from the NZMSC has taken over leading the HGMP with support from Sally Carson (NZMSC Director). Additional support has been provided by Shanthie Walker (EFS Intiatives), Sir Peter Blake Marine Education and Recreation Centre (MERC) and members from the Auckland biosecurity team at the Ministry for Primary Industries (MPI).

Surveying group from Waiheke Primary School working together to collect data during a rocky shore Mm^2 survey at Whakanewha Regional Park

Now in its fourth year of monitoring, the HGMP has a baseline of information to be used in future for assessing the state of environment and changes over time. Many schools have been involved in the project for multiple years. By consistently surveying the marine community in the same locations year after year, this can provide a better understanding of how local shorelines are changing over time.

nzaee Seaweek
NZ ASSOCIATION FOR ENVIRONMENTAL EDUCATION

Mm2 Mm2.net.nz
Marine Metre Squared

PROJECT FOCUS

This year marked the 20th anniversary of the establishment of the Hauraki Gulf Marine Park. The biennial 'State of the Gulf' report highlighted many issues such as crayfish being recognised as functionally extinct, declines of many valued fish species and increased numbers of non-indigenous/invasive marine species.

The last of these was the focus of this year's HGMP project. With one of the most active ports in the country, the Hauraki Gulf is vulnerable to the introduction of invasive marine species (henceforth referred to as marine pests) yet this issue is generally not as well understood by the public (compared to other environmental issues such as marine pollution/litter).

2020 PROJECT PLAN

Above: Two species of sea slugs/nudibranchs: lemon nudibranch (Dendrodoris citrina) *and gem nudibranch* (Dendrodoris krusensternii) – *found at low tide during a survey at Long Bay Regional Park.*

Top right: Mediterranean fan worms (Sabella spallanzanii) *found on the rocky shore at Long Bay Regional Park.*

The project began in November 2019 with a full day teachers workshop hosted by MERC. This proved a valuable opportunity to engage teachers and discuss how the project could link to their curriculum needs. It was attended by 14 teachers and environmental educators who found it valuable. The following is an example of the feedback:

"Giving confidence to see how easy the Mm² project was to conduct and how meaningful it was. Great to connect with Sally and see the community engagement that has come from the project. This is so much more than the traditional trip to the rocky shore!"

A highlight was a presentation by students from Long Bay Primary School. It was also useful to learn more about how the project could link with classroom studies. A secondary teacher outlined how they would use Mm² ...

"Incorporated into our Year 9 STEAM program under the umbrella topic 'global citizenship' which links together ecology, sustainability, politics of keeping the planet clean. Or into the Year 9 mainstream course as a research project to experience the nature of science."

The HGMP plan for 2020 was to deliver six structured sessions providing background information, support two data collection and data analysis sessions and conclude with a summary session. These sessions were scheduled around low tide periods and school schedules during Term 2 and 3, to allow for seasonal sampling. However, due to interruptions resulting from the COVID-19 virus, this schedule was altered.

Considerable effort was put into supporting home and classroom learning in preparation for the field work. This included the development of lesson plans, indoor activities, analysing previous years' data, and sharing marine knowledge via social media platforms and e-newsletters. A reduced schedule of school contact sessions included a single field trip to do the intertidal surveys, and a combined data analysis and summary session back in the classroom.

These new resource materials have provided a valuable online teaching unit that will support more schools to engage and extend their learning in future years. Introductory sessions via Zoom were also offered during the Covid lockdown, but few took up this offer due to conflicting demands on time and varying access levels to technology.

SCHOOL PARTICIPATION

Six schools participated in the HGMP in 2020, consisting of one secondary school, one intermediate school and four primary schools. Schools were distributed around the Gulf and all had been involved in previous years or had teachers attend workshops run as part of the HGMP in 2019. Most students were Year 4 (8-9 years old) but participating students ranged from Year 3 up to Year 12.

This year 34 surveys on both rocky shore and sandy shore environments from five locations around the Hauraki Gulf. 103 different species were identified from these surveys and two invasive species (*Undaria pinnatifida* – Wakame/Asian kelp and *Sabella spallanzanii* – Mediterranean fanworm) were found at one location.

GROUP 1: Wentworth College

Year 8 and 9 science students at Wentworth College, assisted by some Year 12 marine studies students, collected data at Manly Beach. The students were self-directed in their exploration and took the opportunity to collect other forms of data (using photographs). Upon returning to the classroom, discussions were focussed on ways to take action to protect the surrounding coastline which plays a very important part in the lives of people living in this area.

GROUP 2: Acadamy for Gifted Education (AGE) School

AGE School has been involved in the HGMP for the past two years and demonstrated a very active approach to sharing their findings through writing reports and presenting to the public. This year, a small group of very interested students and staff surveyed the Takapuna rock pools and, for the first time at this location, found a species of sea slug that has varying levels of toxin and has been linked to dog deaths in the past.

GROUP 3: Te Atatū Intermediate School

Te Atatū Intermediate has been participating in the Mm² project for numerous years and has already been part of the HGMP with support from Community Waitakere. They completed their data collection in Term 4 at Orangihina Reserve and had a beautiful day on the estuary finding a few species of shellfish. The HGMP ties in well to their school focus of protecting their own big backyard, especially as this area is a well-known stopover for species of migratory birds!

Year 3 students from Long Bay Primary School developing their Mm² skills in the classroom with Aless Smith.

GROUP 4: Balmoral School

New to the HGMP, Year 3 students from Balmoral School are keen to learn more about the Mm² project and the marine environment. Their data collection session was delayed further due to an increased Covid alert level, but they will complete their data collection in November after an introduction/preparation session via Zoom with Aless.

GROUP 5: Waiheke Primary School

Year 5 students from Waiheke Primary School participated in a Q+A session with Aless prior to going to the rocky shore. They had lots of questions about what they were going to find on their local shore at Whakanewha Regional Park. Despite the challenging environment, the students were able to collect some very interesting data. A representative from Biosecurity New Zealand was also present during the data collection and provided a lot of information on how students could engage in protecting the marine and terrestrial environments on their island. This was followed up by a very engaged discussion during the data entry/summary session.

GROUP 6: Long Bay Primary School

The Year 3 and 4 syndicate (made up of three classes) represented Long Bay Primary School this year. Their interest was in the impacts that nearby construction may be having on the rocky shore near Long Bay Regional Park. As another group at the school was working at the south of the park at Waiake Beach, this group chose to work at the southern end of the regional park. This group plans to complete their data collection in early Term 4 after bad weather forced them to delay their Term 3 data collection. A hands-on Mm² skill session was held in each classroom at the end of Term 3 to help prepare students for this upcoming trip along with a short discussion session about the purpose of their involvement in the HGMP. Staff from MPI, MERC and the NZMSC collected data from this location as back-up.

IMPACT

In 2020, 125 students and 15 adults/teachers from six schools participated in the HGMP. Since the project began in 2017, approximately 700 students and 65 adults/teachers from 17 different schools/community groups have participated In the HGMP with some schools involved over multiple years.

There are now 741 individuals and groups registered for the Mm² project in the Auckland Region (a 127% increase on the 340 in 2016) and 225 in Northland (a 127% increase on the 99 in 2016) indicating the level of interest in the project and the success of using both Seaweek and the HGMP in these regions to actively promote it.

In Auckland the number of groups uploading data has increased from 38 in 2016 to 104 (174% increase). The percentage of those registered and uploading data is 14%. However, the number of Mm² surveys has increased to 527 (an increase of 336% from 113 surveys in 2016).

A significant development in 2020 was the focus on marine biosecurity in the Hauraki Gulf. Students were encouraged to research marine pests to better understand their impact on species already residing in the Gulf. This was achieved by working closely with the biosecurity team from MPI and promoting their online resources to track the spread of marine pests. The HGMP has provided a platform to promote marine biosecurity and kaitiakitanga/guardianship of the Gulf ecosystem. This work has supported the NZMSC in their selection as a finalist for the 2020 Ko Tātou This is Us Biosecurity Awards.

Our 2019 impact report noted that an evaluation methodology had been developed to measure outcomes of the project. Accordingly, students involved in the HGMP in 2020 were asked to complete a self-efficacy for environmental action survey[1] at the end of the project. This survey was designed to measure students' confidence in their ability to effectively address environmental concerns surrounding the seashore[1]. The survey was made up of eight questions using a 5-point Likert scale and responses were averaged for each student. Overall, students were confident in their ability to address environmental concerns affecting the seashore. Age of the students or the school they attended did not appear to influence their confidence. A sample of their comments are included below.

[1] Porticella, N., Phillips, T., Bonney, R. (2017) Self-Efficacy for Environmental Action Scale (SEEA, Custom). Technical Brief Series. Cornell Lab of Ornithology, Ithaca NY.

VALUE TO SCHOOLS

Student responses to why they would like to continue monitoring the Hauraki Gulf in the future:

"*Because Waiheke is our home and we need to protect our environment.*" – Year 6 student Waiheke Primary School

"*Because the ocean is very important to my family and if I do my part to help with the problem then hopefully that will make an impact*." – Year 9 student Wentworth College

"*I would like to continue because I would like to see how it changes throughout the seasons.*" – Year 8 student Wentworth College

Student responses to the most important thing they have learned during the project:

"*About the pest surveys and biosecurity.*" – Year 5 student Waiheke Primary School

"*That protecting the ocean is important and that you need to try your best helping.*" – Year 5 student Waiheke Primary School

"*That even if you do a small amount of work it makes a big impact on the research that the scientists are doing.*" – Year 9 student Wentworth College

"*That we need to stop thinking for ourselves and think for others.*" – Year 4 student Long Bay Primary School

"*I've learnt how to use a quadrat and learning how to identify some species.*" – Year 9 student Wentworth College

"*What the metre square is and the marine pests and how to look after the Hauraki Gulf.*" – Year 3 student Long Bay Primary School

Teachers thought that the strengths of the HGMP were: its hands-on nature, exploration of local natural environment and participation in an authentic science research project. Overall teachers thought that the HGMP was very valuable for students.

"*Fantastic for better understanding of biodiversity/ adaptations/how scientists work.*" – Science teacher Wentworth College

"*We are completing the marine meter square project with senior students, however it was great to have specialist knowledge and in addition to give PD to another member of staff.*" - Science Teacher Wentworth College

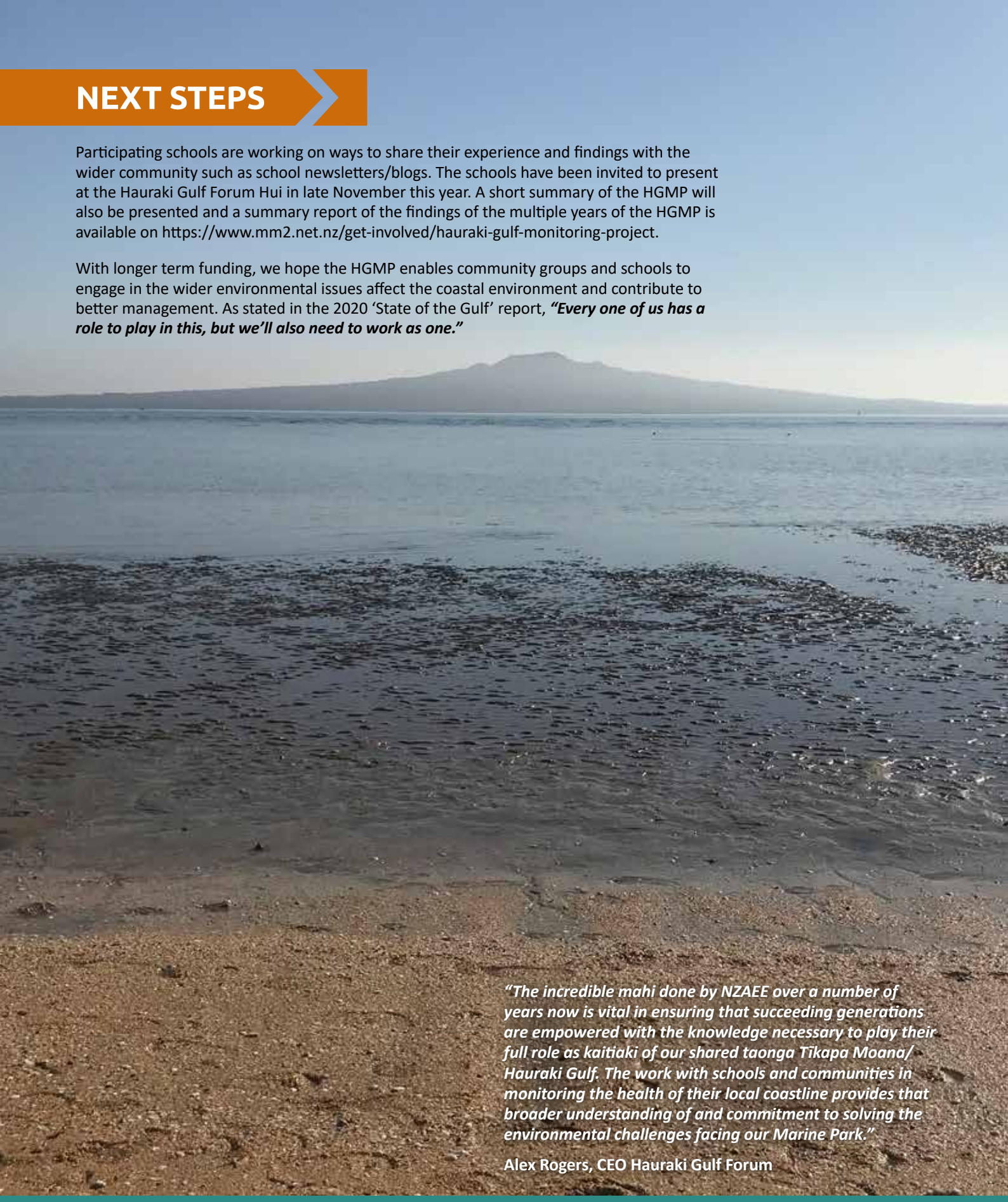
"*We were looking into Long Bay Marine Reserve as part of our 'special place' inquiry unit. This linked in perfectly and was such an engaging and educational experience for students.*" – Year 3 teacher Long Bay Primary

"*We are studying ecosystems. This project allowed us to investigate the unit with appropriate scientific expertise and a real life context to help us.*" – Year 5/6 teacher Waiheke Primary

NEXT STEPS

Participating schools are working on ways to share their experience and findings with the wider community such as school newsletters/blogs. The schools have been invited to present at the Hauraki Gulf Forum Hui in late November this year. A short summary of the HGMP will also be presented and a summary report of the findings of the multiple years of the HGMP is available on https://www.mm2.net.nz/get-involved/hauraki-gulf-monitoring-project.

With longer term funding, we hope the HGMP enables community groups and schools to engage in the wider environmental issues affect the coastal environment and contribute to better management. As stated in the 2020 'State of the Gulf' report, ***"Every one of us has a role to play in this, but we'll also need to work as one."***



"The incredible mahi done by NZAEE over a number of years now is vital in ensuring that succeeding generations are empowered with the knowledge necessary to play their full role as kaitiaki of our shared taonga Tīkapa Moana/ Hauraki Gulf. The work with schools and communities in monitoring the health of their local coastline provides that broader understanding of and commitment to solving the environmental challenges facing our Marine Park."

Alex Rogers, CEO Hauraki Gulf Forum

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FOUNDATION NORTH
Te Kaitiaki Pūtea ō Tāmaki ō Tai Tokerau

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