Project Kelp Update – 14June2016

Content

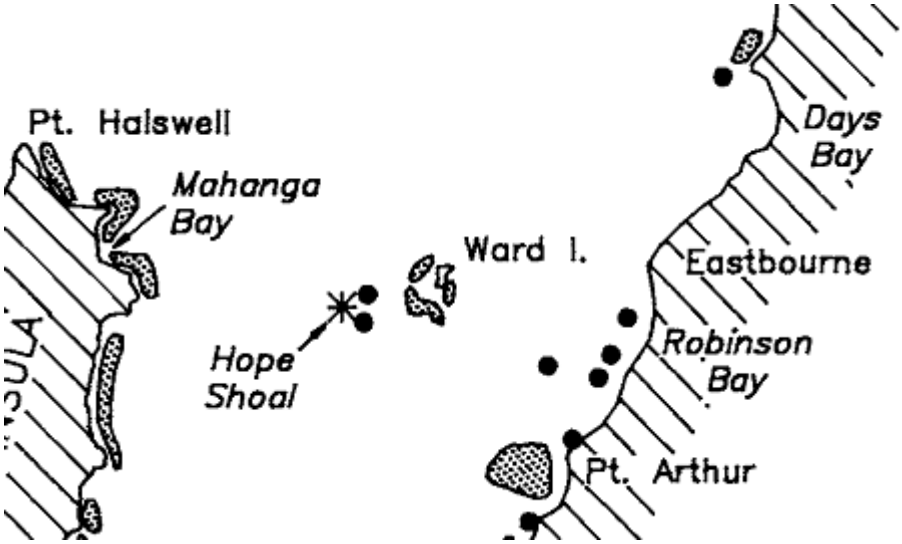
Background – Kau Bay and Eastern Bays

Cameron Hay described the distribution of giant kelp in the Wellington area in his 1990 publication *'The distribution of Macrocystis as a biological indicator of cool sea surface temperature, with special reference to New Zealand waters'*. The data in the publication is based on ***surveys in November 1988 and April 1990***.

Kau Bay, particular the point at the northern end of Mahanga Bay is a popular dive site in the Wellington area. The site also contains a giant kelp bed and is therefore well suited as a Project Baseline Survey Site to monitor the extend of the kelp bed over time.

We were also intrigued by the accounts of kelp beds along the eastern bays of the harbour between Days Bay and Point Arthur as they would provide easy access for surveying. Results of a scouting trip are included below.

Historic Baseline of Giant Kelp in the Wellington Area



Detail from figure 4 in Cameron H. Hay (The distribution of Macrocystis (Phaeophyta: Laminariales) as a biological indicator of cool sea surface temperature, with special reference to New Zealand waters, Journal of the Royal Society of New Zealand, 1990, 20:4, 313-336, DOI: 10.1080/03036758.1990.10426716; Figure 4: **strippled** – main beds of *Macrocystis*, **dots** – sporadic distribution and isolated records, note: the size of the bed is exaggerated for clarity, data mainly from surveys in ***November 1988*** and ***April 1990***).

Project Baseline Wellington – Kau Bay Observations 04-06 June 2016

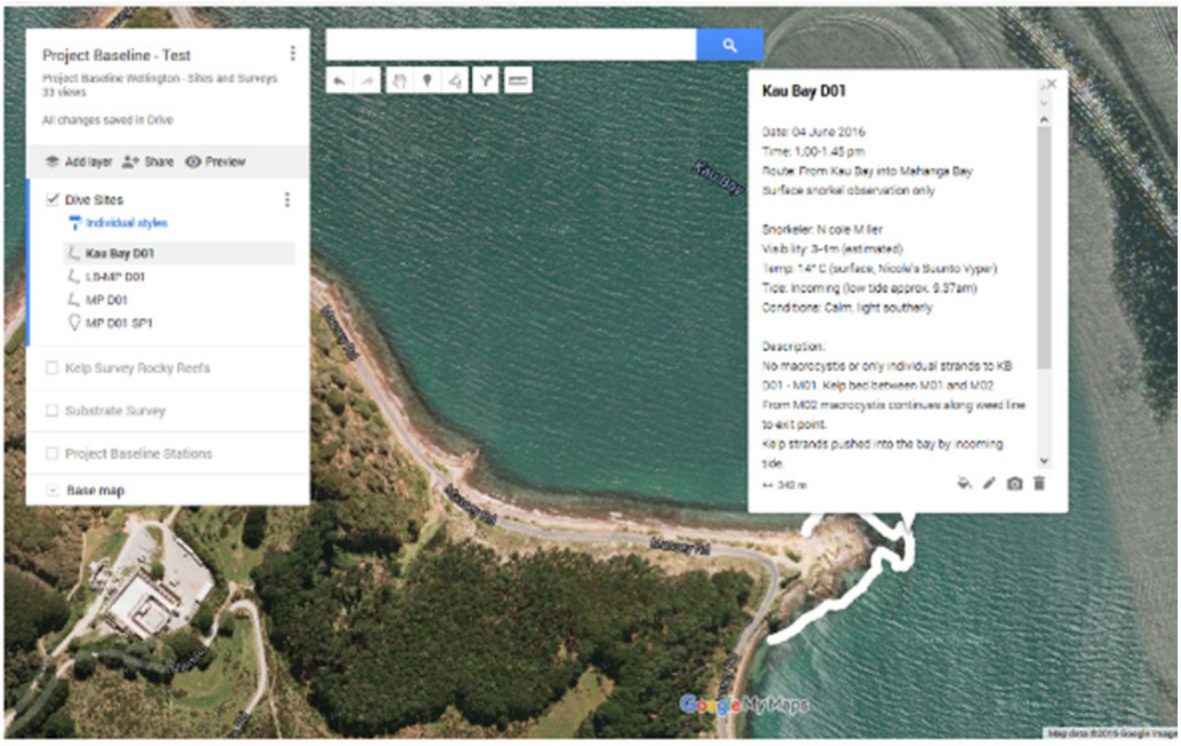
Kau Bay Kelp Observation – D01 (June 2016)

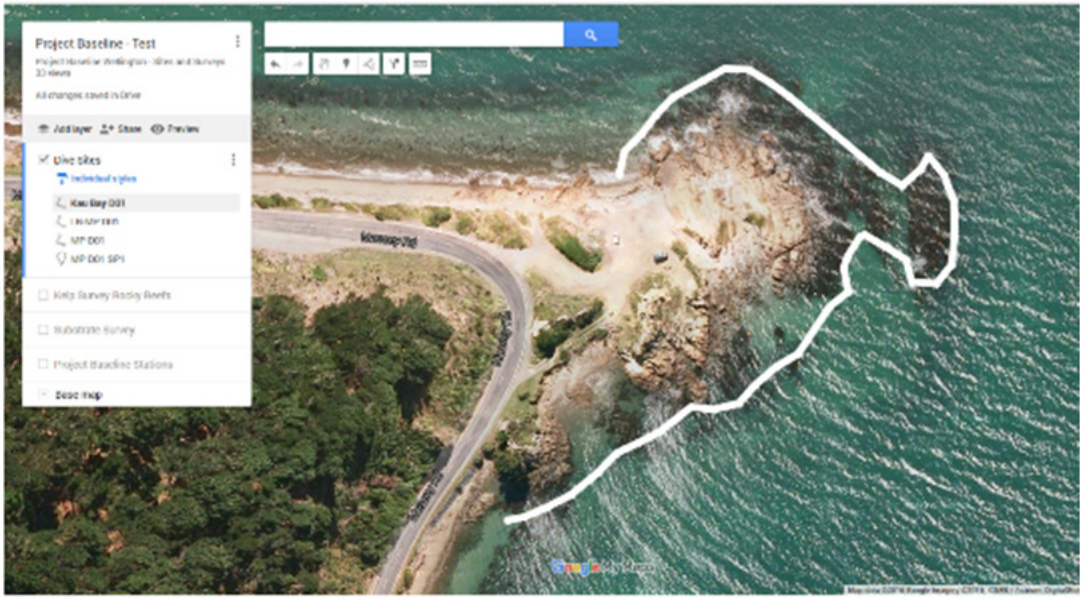
Reference: KB D01
Date: 04 June 2016
Time: 1.00-1.45 pm
Route: From Kau Bay into Mahanga Bay
Surface snorkel observation only
Snorkeler: Nicole Miller
Method: GPS tracking with phone in splash proof bag on top of free diving buoy behind snorkeler. Accuracy of iPhone 5S GPS combined with iHike NZ application (about +/- 5m). Snorkeler following the weed line around the point towards dense part of the kelp forest, then following on the outside boundary of the floating kelp strands.
Note: Snorkeler low in water – might be easier to see extend of kelp bed from a kayak

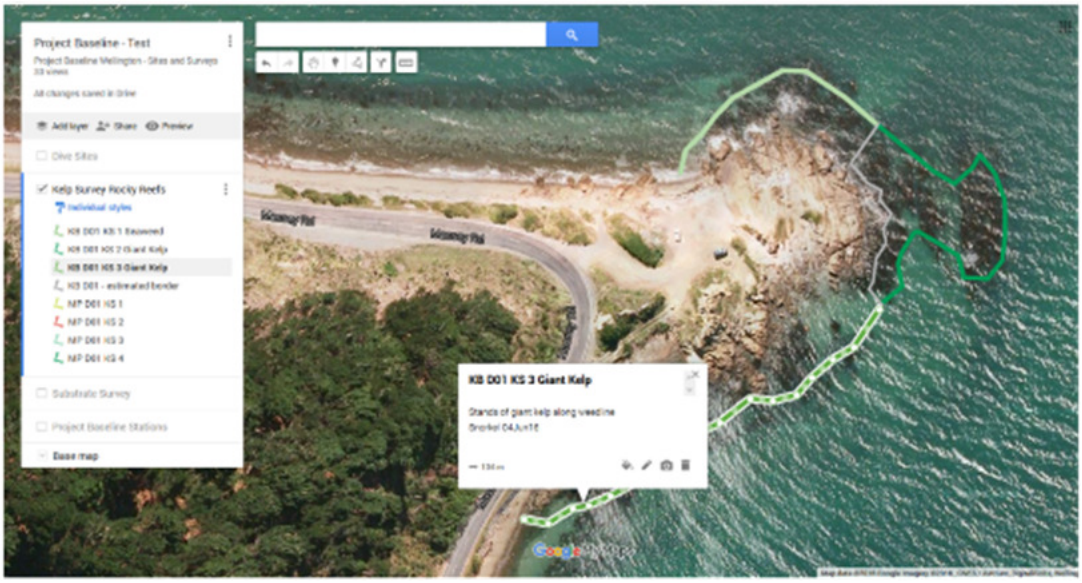
Visibility: 3-4m (at surface, estimated)
Surface Temp: 14° C (Nicole's Suunto Vyper)
Tide: Incoming (low tide approx. 9.37am)
Conditions: Calm, light southerly

Description:
No macrocystis or only individual strands to KB D01 - M01. Kelp bed between M01 and M02.
From M02 macrocystis continues along weed line to exit point.
Kelp strands pushed into the bay by incoming tide.

Shore side border of kelp bed:
From way points marking dense kelp stands perpendicular to shore and along shore based on satellite shore line.




Project Baseline - Test
Dive Sites
Kelp Survey Rocky Reefs
Substrate Survey
Project Baseline Stations
Base map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KB D01 KS 3 Giant Kelp


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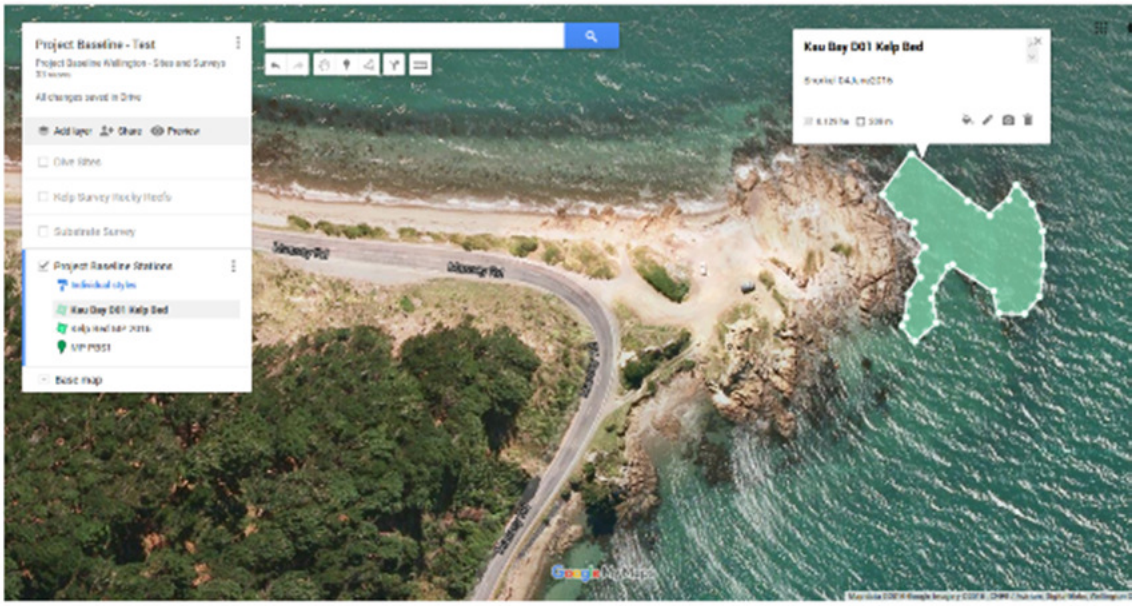


Estimated kelp bed size after KB D01 – 0.129ha (1,290m² or 35x35m as a square), 209m boundary

Kau Bay Kelp Observation – D02 (June 2016)

Reference: KB D02
Date: 06 June 2016
Time: 2.30-4.00 pm
Goal: Establishing a station for on-going monitoring on the outside of the kelp bed with good references at the surface
Route: Dive from station along the reef S / SE for familiarization with the site, then UW observations on scuba and surface snorkel observation (within 15-20m of station)
Observers: Scuba - Rob Edward, Snorkel (surface) - Nicole Miller

Station Observations (PB Station 01, 3.30 pm)
Depth: 3.7m
Visibility: 2.5m (both methods on Secchi / Dutchi combi plate) and 3-4m at surface (estimated)
Bottom Temp: 13°C (Rob's Shearwater Perdix)
Surface Temp: 13°C (Nicole's Suunto Vyper)
Tide: current, 0.25kt outbound (low tide approx. 11.37am)
Conditions: Calm, light southerly wind

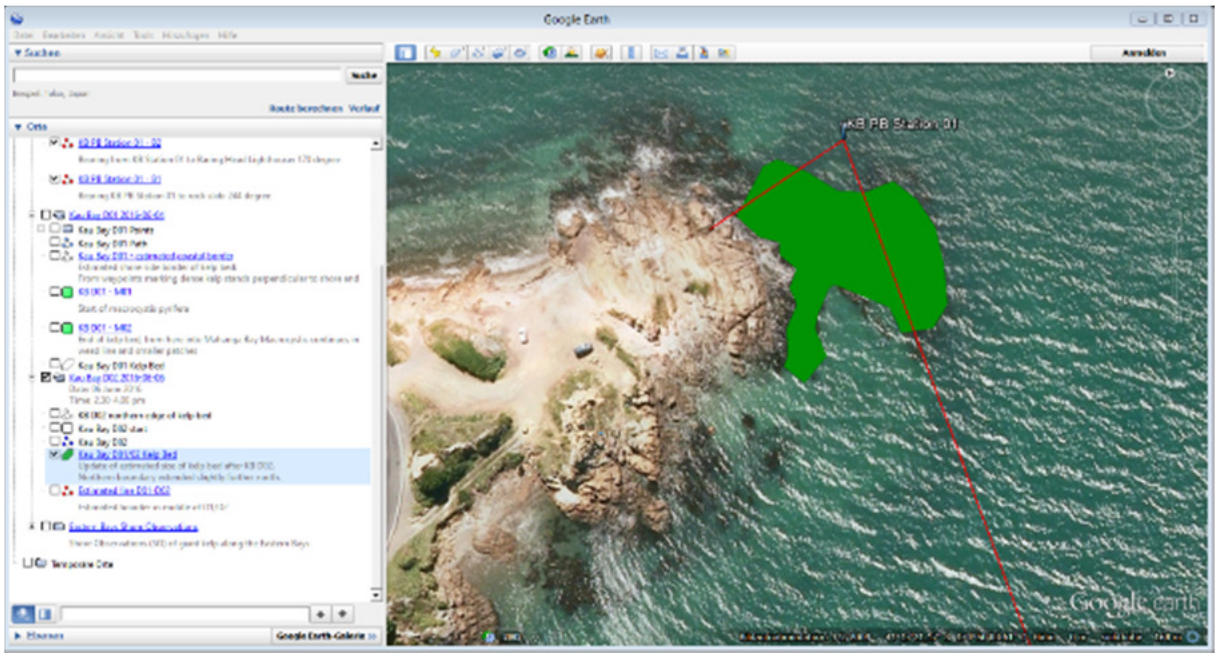
Kau Bay Station – PB Station 01

Kau Bay PB Station 01 - Details

Established on KB D02 (June 2016)
PB Station 01 is on the edge of giant kelp in Kau Bay.
Lat -41.28875, Lon 174.83459
DMS: 41°17'19.50"S, 174°50'4.524"E
Bearings to shore features (based on GPS coordinates from the station):
To Baring Head Lighthouse: 170 degree
To distinctive rock slab: 244 degree

Station Observations (PB Station 01, 06June2016, 3.30 pm)
Depth: 3.7m
Visibility: 2.5m (both methods on Secchi / Dutchi combi plate) and 3-4m at surface (estimated)
Bottom Temp: 13°C (Rob's Shearwater Perdix), Surface Temp: 13°C (Nicole's Suunto Vyper)
Tide: current, 0.25kt outbound; Conditions: Calm, light southerly wind

Diver with prominent rock slab – surface location of station



Bearings to surface features – rock slab at Kau Bay Point and Baring Head Lighthouse in the distance; green polygon shows extend of kelp bed after analysing tracking data from KB D01 and D02 (June 2016).

UW photograph within close proximity of the PB Station 01 (Wellington - Kau Bay, 06 June 2016, by Rob Edward)

Other initial observations in proximity to PB Station 01

Kina barren along the margin of the kelp bed with a size of approx. 30x15m

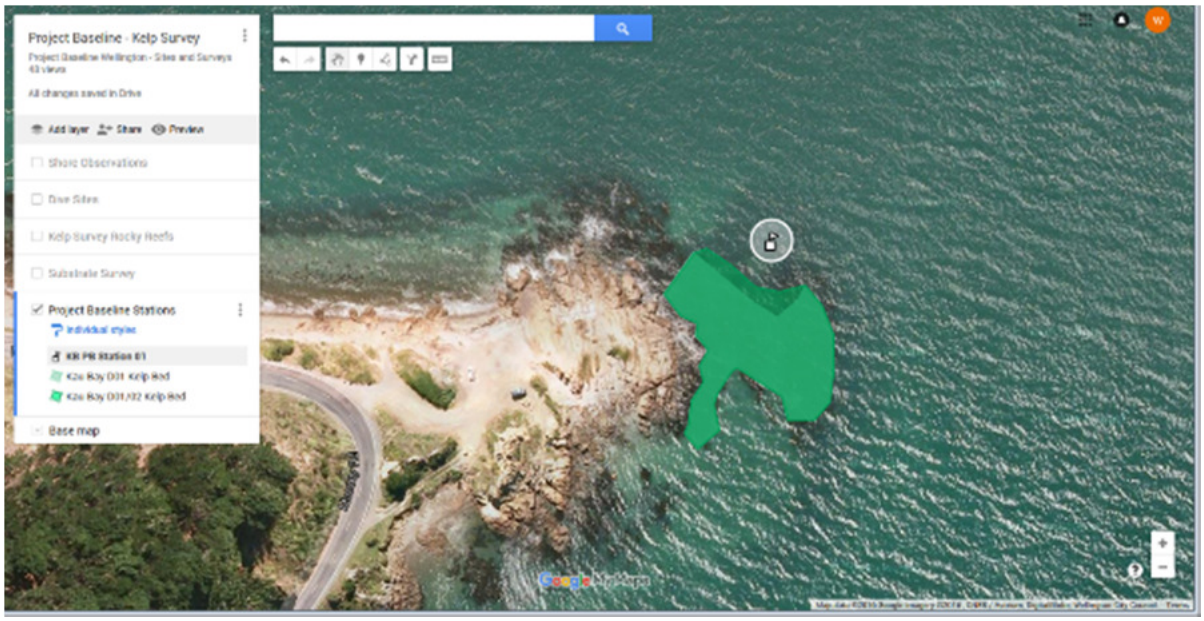
Nursery for baby crayfish

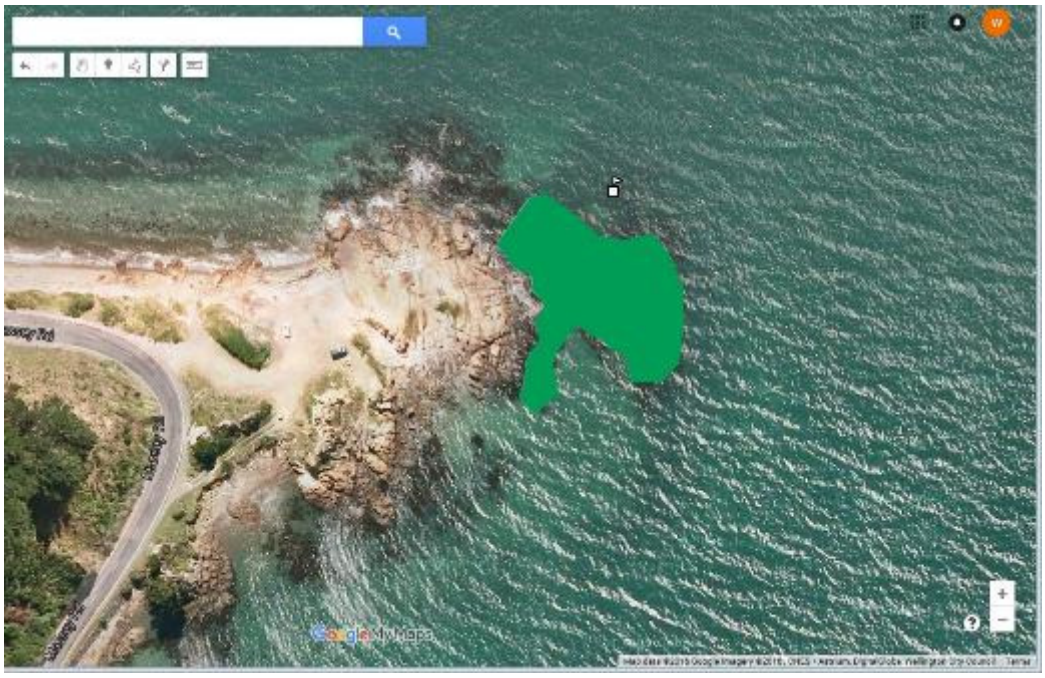
Kau Bay - Combining data from KB D01 and KB D02

On the first snorkel survey the kelp bed was estimated to be further south compared to the tracked route on return on D02 (the closer one to shore of the two blue lines close to the kelp bed and between the two markers on the image above)

The edge of the kelp to the right seems to be well aligned as snorkeler was swimming into the kelp bed.

To refine the size of the kelp bed we could perform a few more runs on the scooter on the surface and set more markers with notes. For now we set a line based on the two dives with the boarder placed between the two dives at the northern edge of the kelp





Estimated kelp bed size – 0.144 ha (1,440m² or 38x38m as a square), 203m boundary

Eastern Bays Observation – 05 June 2016

Eastern Bays SO 01

Point Howard
Date: 05 June 2016, approx 1.34pm (low tide 10.37am)
Conditions: calm, light northerly
Observations (Nicole Miller):
Neptune's necklace
Carpophyllum maschalocarpum (common flapjack)

EB SO 01 2016-06-05 (3)

EB SO 01 2016-06-05 (2)

Eastern Bays SO 02

Lowry Bay Slipway
Date: 05 June 2016, approx 1.20pm (low tide 10.37am)
Conditions: calm, light northerly
Observations (Nicole Miller):
Carpophyllum maschalocarpum (common flapjack)
Undaria pinnatifida (wakame)

EB SO 02 2016-06-05 (1)

EB SO 02 2016-06-05 (2)

Eastern Bays SO 03

Point Mahina Bay / Sunshine Bay
Date: 05 June 2016, approx 11am (low tide 10.37am)
Conditions: calm, light northerly
Observations (Nicole Miller):
Neptune's necklace

Carpophyllum maschalocarpum (common flapjack)
Undaria pinnatifida (wakame)

EB SO 03 2016-06-05 (1)

EB SO 03 2016-06-05 (7)

EB SO 03 2016-06-05 (4)

EB SO 03 2016-06-05 (8)

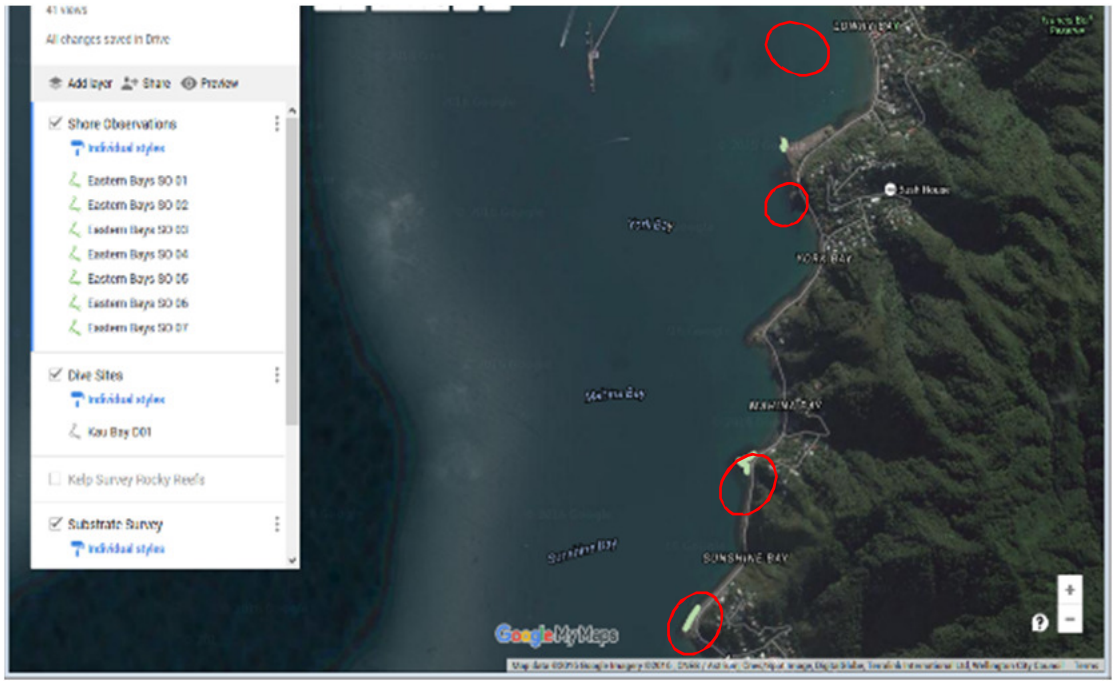
EB SO 03 2016-06-05 (12)

Eastern Bays SO 04

Point Sunshine Bay / Days Bay
Date: 05 June 2016, approx 11.11am (low tide 10.37am)
Conditions: calm, light northerly
Observations (Nicole Miller):
Carpophyllum maschalocarpum (common flapjack)
Undaria pinnatifida (wakame)

EB SO 04 2016-06-05 (1)

EB SO 04 2016-06-05 (2)

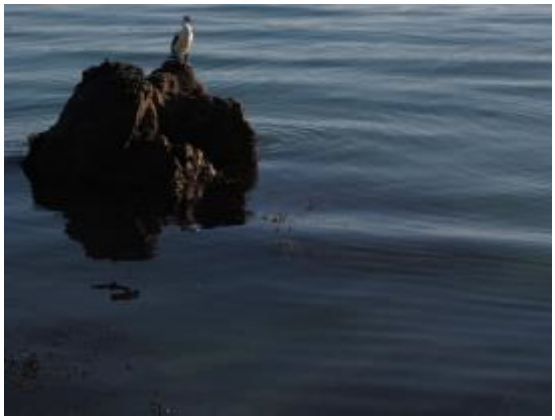


Eastern Bays SO 05

North end Rona Bay, Eastbourne
Date: 05 June 2016, approx 11.25am (low tide 10.37am)
Conditions: calm, light northerly
Observations (Nicole Miller):
Carpophyllum maschalocarpum (common flapjack)
Undaria pinnatifida (wakame)
One strand of macrocystis pyrifera (giant kelp)

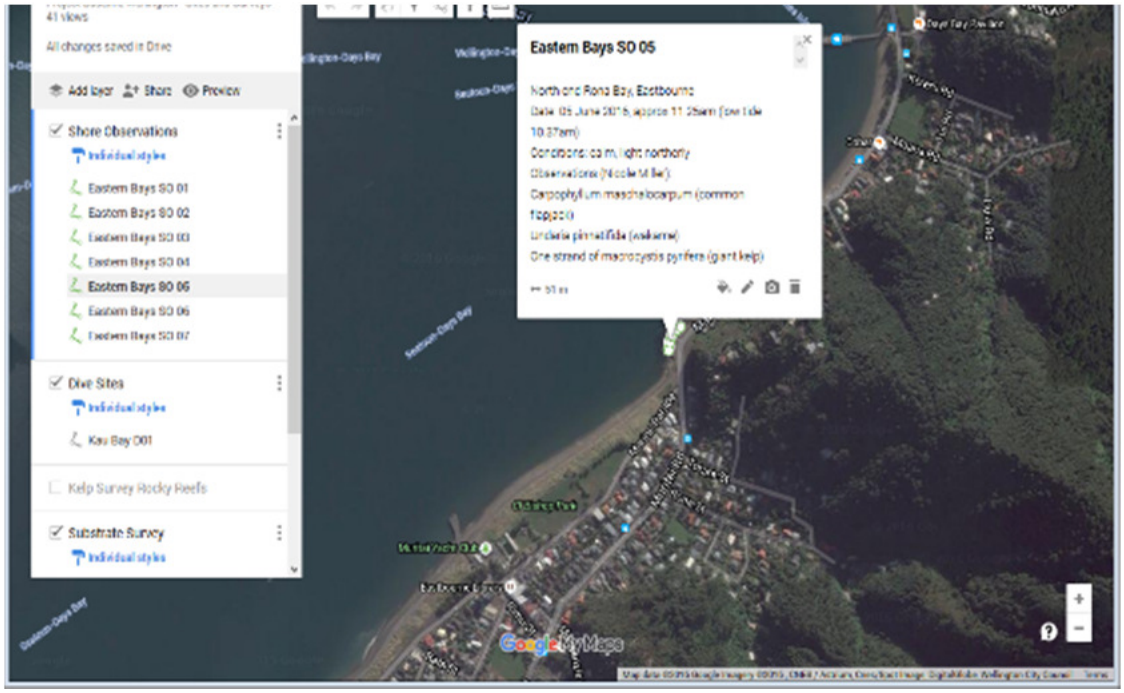
EB SO 05 2016-06-05 (1)

EB SO 05 2016-06-05 (2)



EB SO 05 2016-06-05 (10)

EB SO 05 2016-06-05 (14)



Eastern Bays SO 06

Point Arthur, Eastbourne
Date: 05 June 2016, approx 11.53am (low tide 10.37am)
Conditions: SW swell
Observations (Nicole Miller):
Carpophyllum maschalocarpum (common flapjack)
Macrocystis pyrifera (giant kelp) small patches around the rocks, a few individual strands off the point
Note: No photo of Carpophyllum maschalocarpum at EB SO 06 (requires confirmation); poor visibility & swell at site EB SO 06&07 – sites require repeat visit with good dive or snorkel conditions.

EB SO 06 2016-06-05 (5)

EB SO 06 2016-06-05 (7)

Eastern Bays SO 07

Pencarrow Coast Rd Gate
Date: 05 June 2016, approx 12.20pm (low tide 10.37am)
Conditions: SW swell
Observations (Nicole Miller):
Carpophyllum maschalocarpum (common flapjack)
Macrocystis pyrifera (giant kelp) small patches around the rocks, a few individual strands off the point
Note: poor visibility & swell at sites EB SO 06&07 – sites require repeat visit with better dive or snorkel conditions.

EB SO 07 2016-06-05 (11)

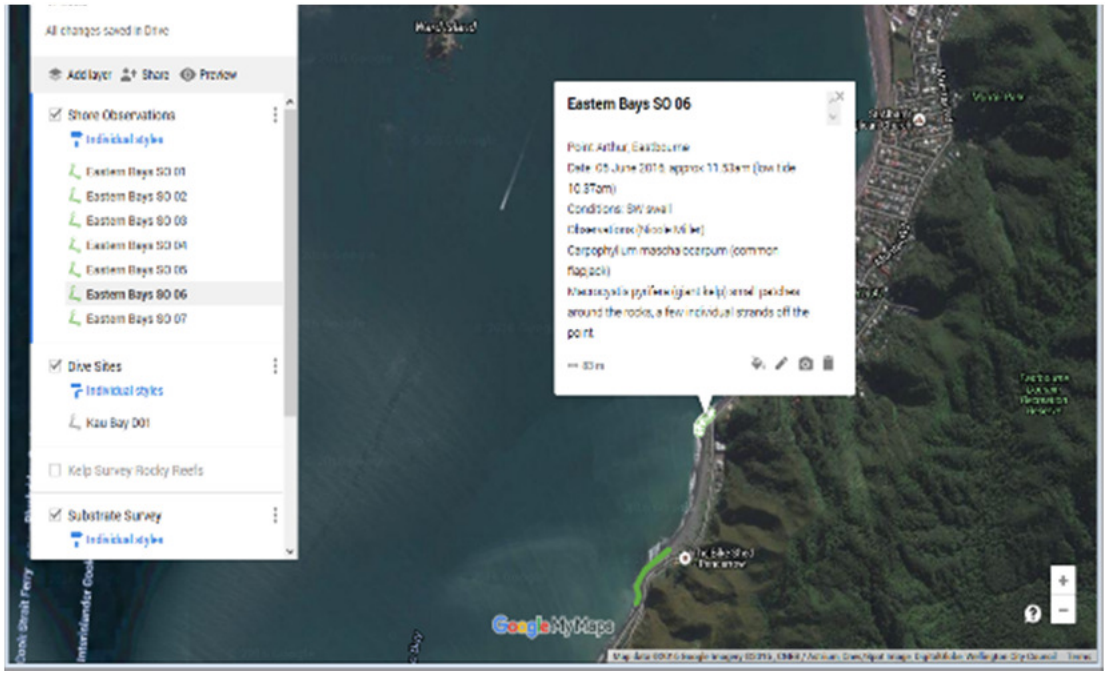
EB SO 07 2016-06-05 (12)

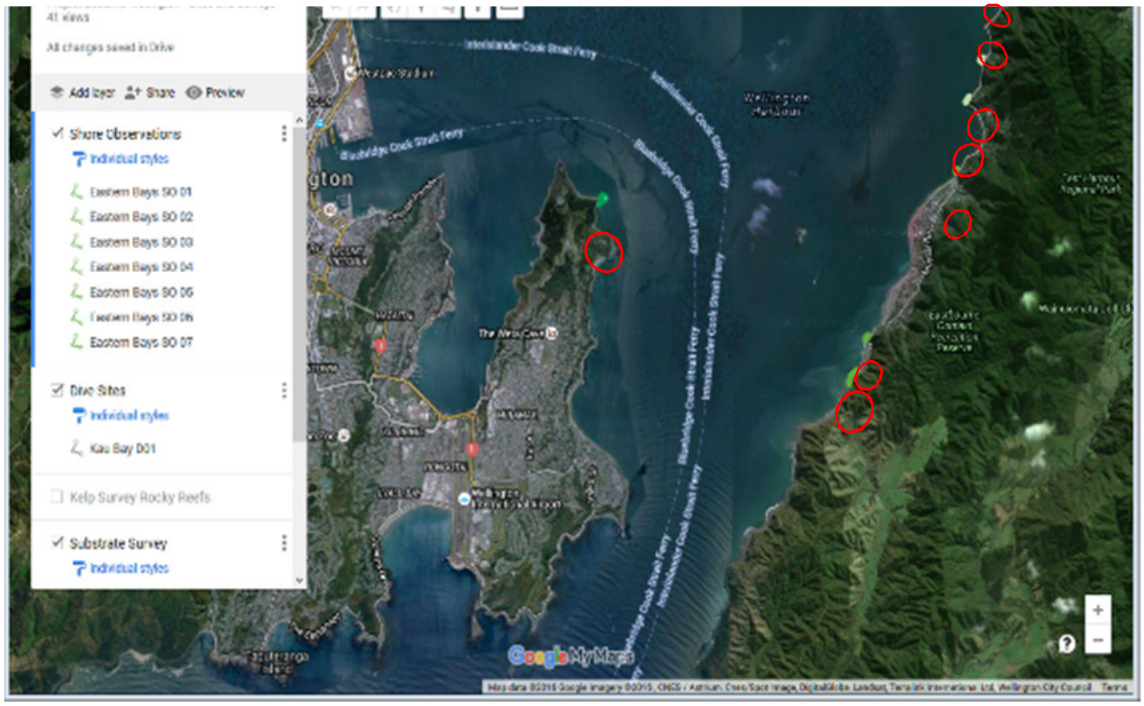
EB SO 07 2016-06-05 (1)

EB SO 07 2016-06-05 (3)

EB SO 07 2016-06-05 (9)

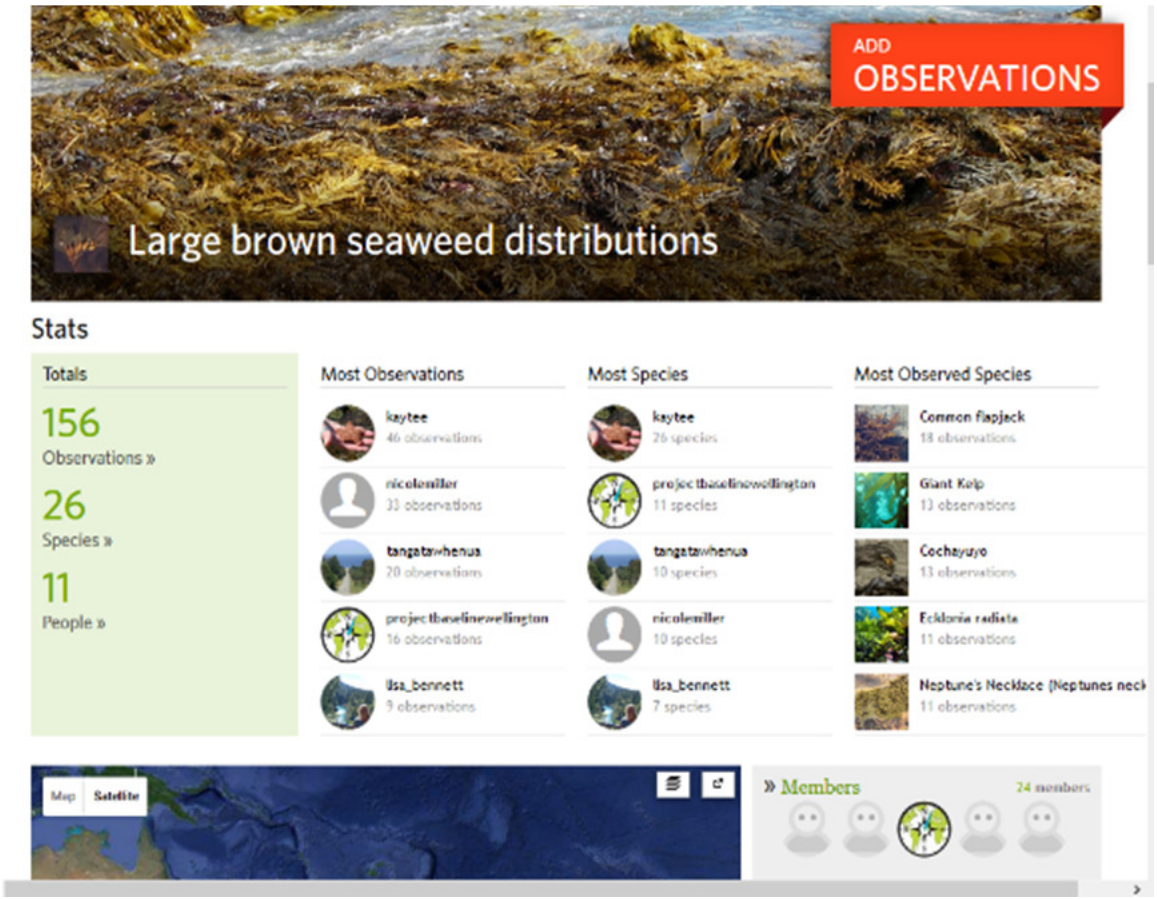
EB SO 07 2016-06-05 (16)



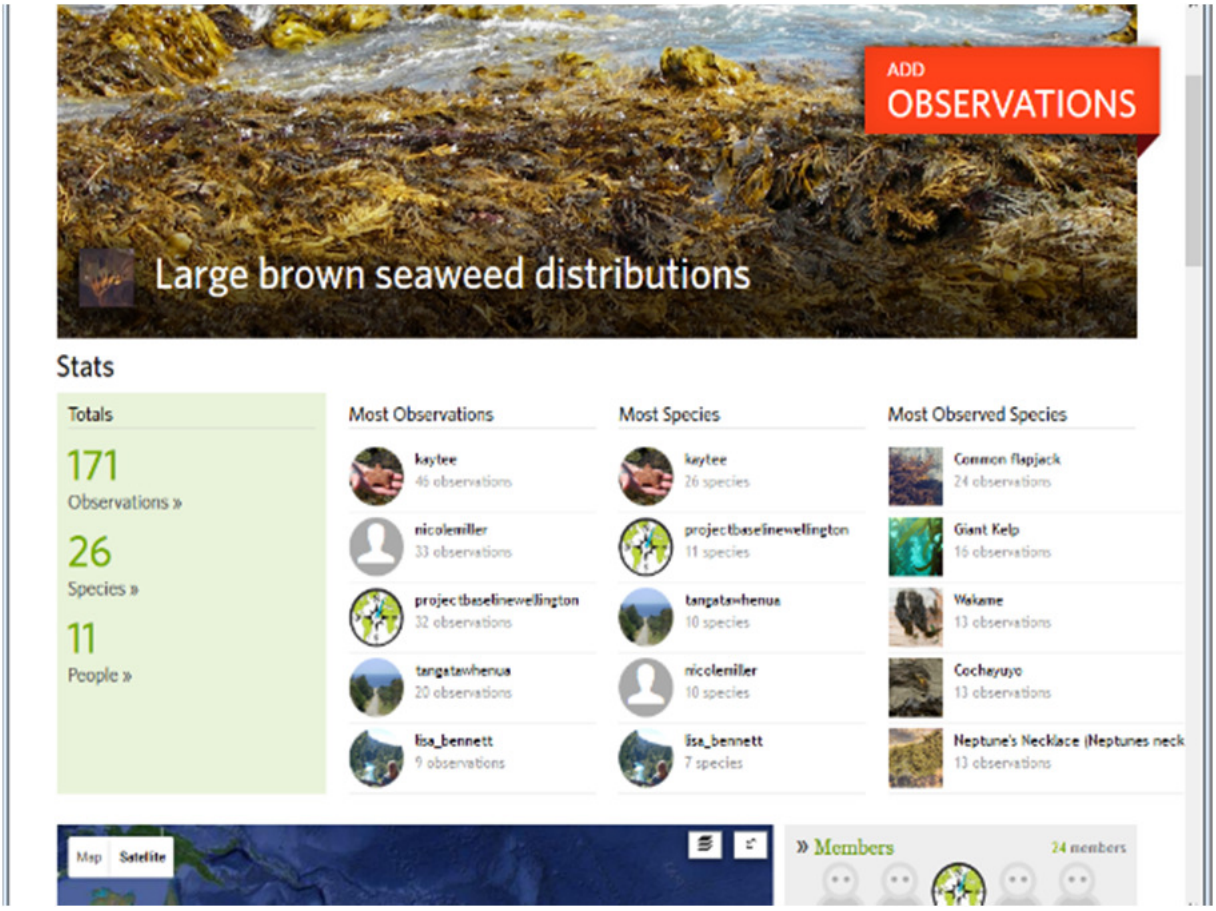


Other Seaweed observations – Nature Watch

Niwa (National Institute for Water and Atmospheric Research) is hosting a citizen science project funded by the Ministry of Primary Industries 'Large Brown Seaweed Distributions Project'. We will be encouraging divers and non-divers to learn about the different seaweed species and to log their observations on the platform. We will be able to use sightings of giant kelp in the Wellington region from the public to identify potential dive sites with giant kelp.



Previous page: Screenshot of NatureWatch's Large Brown Seaweed Distributions Project (12th June 16), posted on our Facebook page: *Add your seaweed observations to the Large Brown Seaweed Distributions Project by NIWA New Zealand and Ministry for Primary Industries on Nature Watch NZ. We've logged 16 observations of 11 species from 04June, most from our beach walk at Lyall Bay with marine biologists and seaweed experts Dr Roberta D'Archino and Dr Wendy Nelson.*



After addition of Easter Bays observations…. About to take over second place ;)

Summary

Kau Bay is a popular dive site in the Wellington region and is known for its giant kelp bed. We established a reference site (PB Station 01) and measured the extend of giant kelp reaching the surface at low tide. The collected data will provide a baseline for ongoing monitoring of the size of the kelp bed as well as further documentation of the marine ecosystem around the reference site (e.g. kina barren mapping).

PB Station 01 References:
Lat -41.28875, Lon 174.83459; DMS: 41°17'19.50"S, 174°50'4.524"E
Bearings to shore: Baring Head Lighthouse: 170 degree, Distinctive rock slab: 244 degree

PB Station 01 Observations:
Date/Time: 06June2016, 3.30 pm
Depth: 3.7m; Visibility: 2.5m (bottom), 3-4m (surface, estimated)
Bottom / Surface Temp: 13°C / 13°C

UW photograph within close proximity of the PB Station 01 (Wellington - Kau Bay, 06 June 2016, by Rob Edward, reference S01-160606-01).

KB D01 - 04 June 2016, Surface snorkel observation only, Method: GPS tracking with phone in splash proof bag on top of free diving buoy behind snorkeler following the weed line and along the outside boundary of the floating kelp strands at low tide.

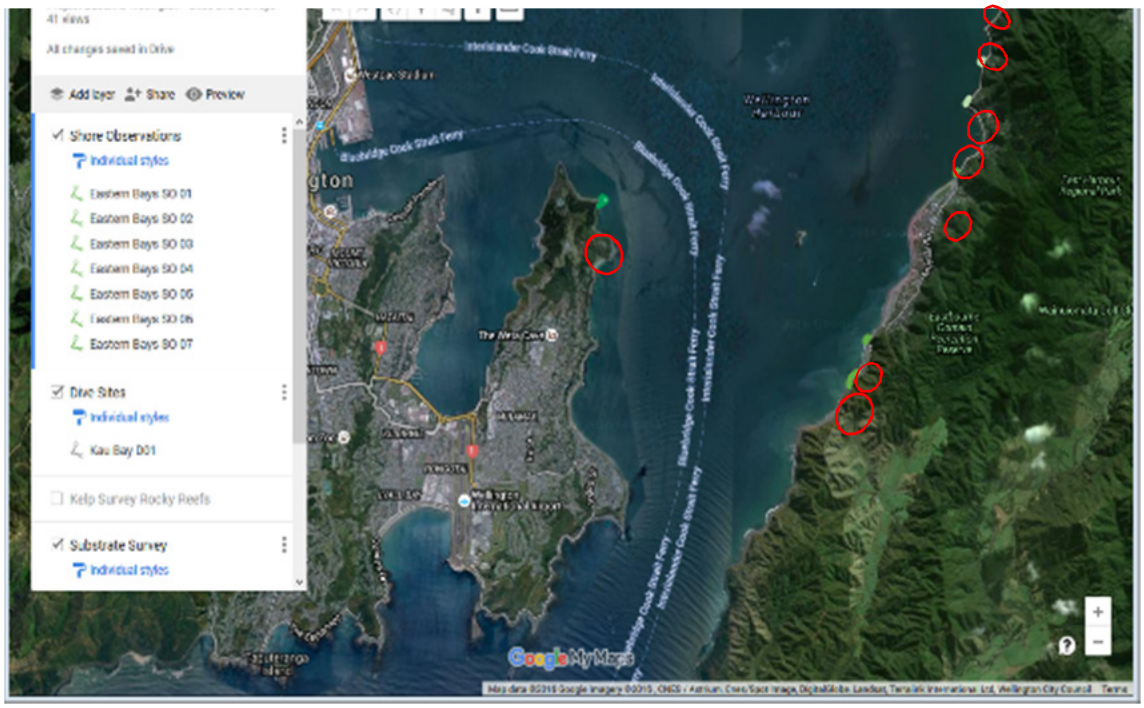
KB D02 - 06June2016, PB Station 01 Observations: Depth: 3.7m; Visibility: 2.5m (bottom), 3-4m (surface, estimated), Bottom / Surface Temp: 13°C / 13°C; refining the norther boundary of the kelp bed.

Estimated kelp bed size 06June16: 0.144 ha (1,440m² or 38x38m as a square), 203m boundary (based on KB D01 and KB D02)

Comment:
A snorkeler is very low in the water. It might be easier to see the extend of kelp beds from a kayak.

Cameron Hay (1990) also describes giant kelp beds and individual reports of giant kelp on the east coast of **Wellington harbour between Howard Point and Pencarrow Head**.

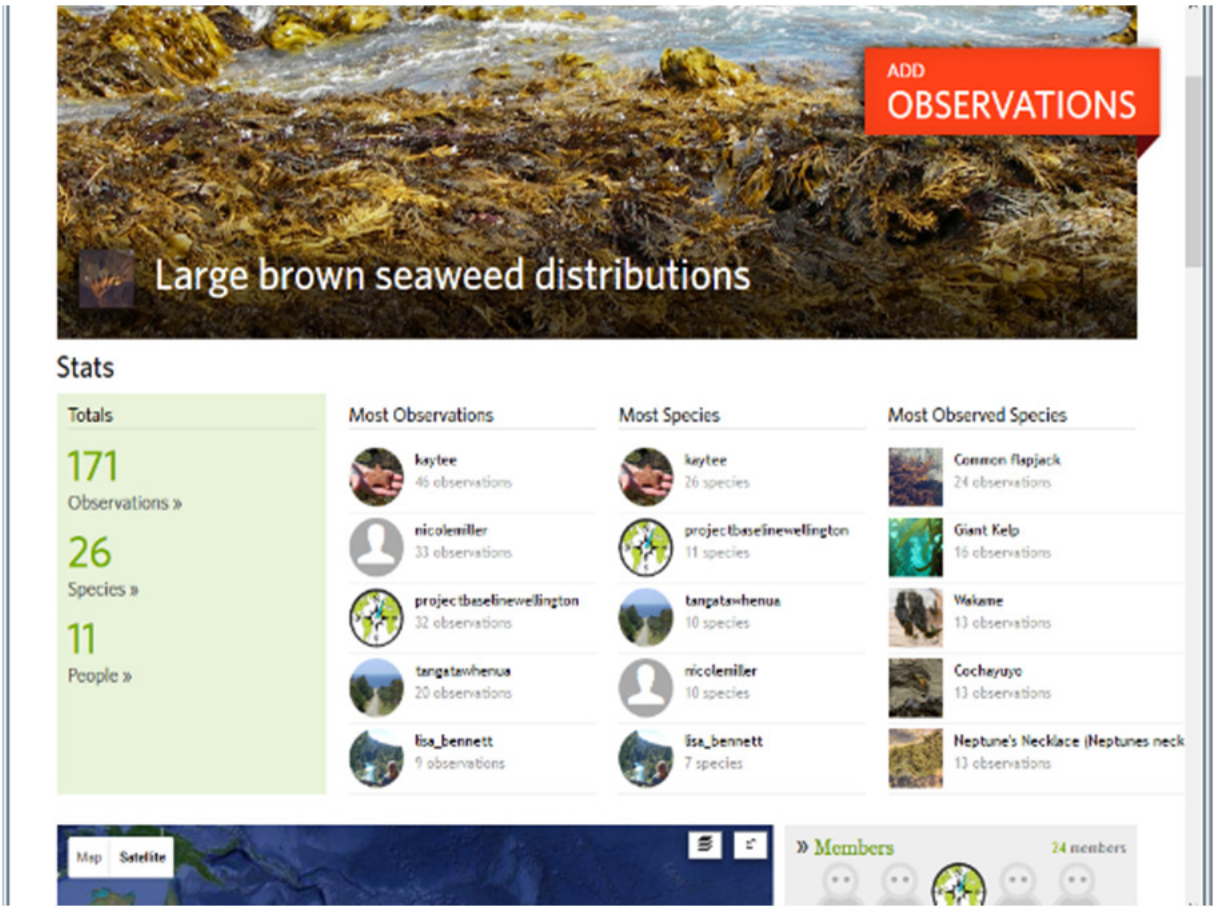
We revisited headlands along the coast at low tide and performed shore surveys for kelp along the intertidal zone and rocky outcrops.
No giant kelp was observed north of Days Bay (at EB 01, 02, 03 and 04), only one single report was observed at the north end of Rona Bay (Eastbourne, EB 05). Giant kelp was found around Arthurs Point (EB 06) and the rocks at the Pencarrow Coast Rd Gate (EB 07) and individual reports floating off the points. However, no kelp beds were observed at any of the observation points EB 01-07.



Observation Points 04 to 06 June 2016. Kau Bay (KB) on the Miramar Peninsula and Sites 01 to 07 (north to south) along the Eastern Bays (EB).

Comment:
We encountered poor visibility and swell at sites EB SO 06&07. These sites require repeat visit with better dive or snorkel conditions.

Other Kelp Observations
We have logged 32 kelp observations from the weekend 04-06 June 2016 on Nature Watch NZ under the project 'Large Brown Seaweed Distributions Project'. These include observations from Kau Bay and the Eastern Bays as well as the beach walk along Lyall Bay with seaweed experts.



Logging observations on Nature Watch NZ.

Contact, Outreach & Social Media

- Email the Project Team projectbaseline.wellington@gmail.com
  or contact Nicole Miller (+64 (0)210549865, proventure.nz@gmail.com) for details
- Facebook: Project Baseline – Wellington
  https://www.facebook.com/Project-Baseline-Wellington-1212001542157847/
- Occasionally share posts via Wellington Underwater Club Facebook page:
  https://www.facebook.com/Wellington-Underwater-Club-231703176891615/
- Twitter: #ProjectBaselineNZ, @baseline_NZ
- Nature Watch – Large Brown Seaweed Distribution Project
  Username: ProjectBaselineWellington
  www.naturewatch.org.nz/projects/large-brown-seaweed-distributions