

County: Clallam
Grant No: SEANWS-2016-CICoCD-0001

PROJECT TITLE: Kelp Monitoring

DELIVERABLES FOR TASK NO: 2.2

PROGRESS REPORT: ☐

FINAL REPORT ☒

PERIOD COVERED: July 1 – September 30, 2017

DATE SUBMITTED: October 3, 2017



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2017 Kelp Monitoring

Introduction

In 2017 Clallam MRC continued the collaboration with the NWSC on the kelp monitoring project. The goal was to monitor the size and density of kelp canopies at 2-3 locations during low-tide events between July and September, 2017 and develop a georeferenced database of kelp abundance and distribution that can be incorporated into Sound IQ.

The expected outcomes were 1) to use of established methods to produce georeferenced density data to be incorporated into SoundIQ and potentially the Department of Natural Resources database 2) to contribute georeferenced density data which can be used to evaluate longer-term trends support environmental decision-making.

To accomplish these tasks the Clallam MRC participated in all the meetings and training provided by NWSC.

Kelp Surveys in Freshwater Bay

Two monitoring surveys were conducted in Freshwater Bay between August 20 and September 17, 2017. The following sections provide a brief summary of the two surveys.

Survey August 20, 2017

Three surveyors, Jacob Carleson, Ed Bowlby and Alan Clark, conducted a survey of the large kelp bed east of the Freshwater Bay boat ramp. The survey of the kelp bed was initiated at 8:38 am under partly cloudy skies. The tidal elevation was -1.27 ft. at 7:21am (Crescent Bay data). The perimeter of the kelp bed was approximately 4.98 mile and the area approximately 174.7 acres (Figure 1.). Pictures taken at the west, east, north and south end of the kelp bed are included in Figure 2. The kelp bed consisted primarily of bull kelp with large patches of giant kelp. The datasheets for the survey are provided in Appendix A.

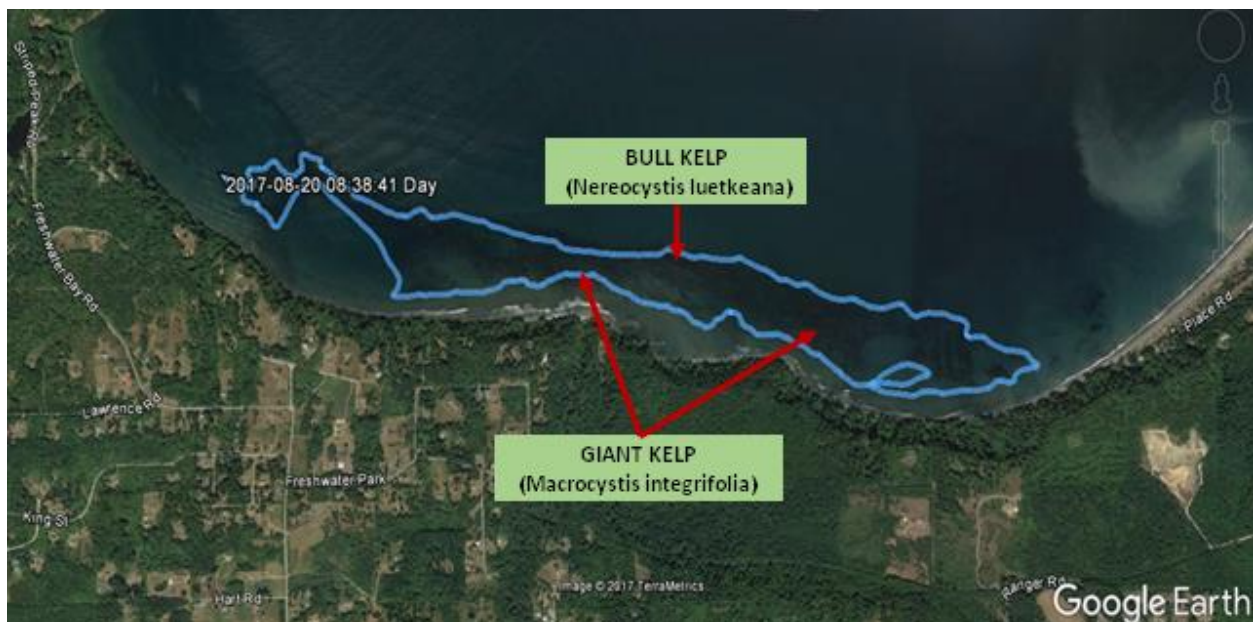


Figure 1. The map of the large kelp bed at Freshwater Bay based on the field recorded GPS readings taken August 20, 2017.



Figure 2. Pictures of the large kelp bed in Freshwater Bay taken during the 2017 survey.

Survey September 17, 2017

Two surveyors, Jacob Carleson and Alan Clark, conducted a survey of the small kelp bed west of the Freshwater Bay boat ramp. The survey of the kelp bed was initiated at 7 am under cloudy skies. At the start of the survey the tidal elevation was -0.0 ft. The perimeter of the kelp bed was approximately 0.25 miles and the area was 0.92 acres (Figure 3.). Pictures taken at the west, east, north and south end of the kelp bed are included in Figure 4. The kelp bed consisted of bull kelp. The datasheets for the survey are provided in Appendix A.



Figure 3. The map of the small kelp bed based on the field recorded GPS readings taken September 17, 2017.



Figure 4. Pictures of the small kelp bed in Freshwater Bay taken during the 2017 survey.

Kelp Surveys in Clallam Bay

Two monitoring surveys were conducted in Clallam Bay July 9 and July 23, 2017. The following section provides a brief summary of the two surveys.

Two surveyors, Jacob Carleson and Helle Andersen, conducted both surveys of the kelp bed identified in Clallam Bay during the land based reconnaissance survey in 2016. The first survey was initiated at 9:25 am on July 9th under cloudy skies. The tidal elevation was -1.0 ft. The second survey was initiated at 9:15 am on July 23rd under cloudy skies. The tidal elevation was -1.5 ft. The perimeter of the kelp bed based on the two surveys was approximately 1.14 miles and the total kelp bed area was approximately 23 acres. Most of the area was dominated by bull kelp, but approximately 8.3 acres consisted of a mix of giant and bull kelp (Figure 5.). The datasheets for the surveys are provided in Appendix A.



Figure 5. The map of the kelp bed in Clallam Bay based on the field recorded GPS readings taken July 23, 2017. The red sections of the kelp bed were dominated by bull kelp and the green includes a mix of bull and giant kelp.





Figure 6. Pictures of the kelp bed in Clallam Bay taken during the 2017 surveys.

2017 Intern Project

The kelp monitoring project was used as one of the 2017 intern projects. Jacob Carleson coordinated and participated in the four kelp bed surveys. He gave a PowerPoint presentation at the Intern Celebration, August 28, 2017.

Task Number: 6.3**What was the goal of this project and did you accomplish it?**

The goals of the 2017 field season was to train volunteers in conducting the monitoring effort and continue the kelp monitoring at the Freshwater Bay sites and expand the effort with surveys in Clallam Bay. All of these goals were accomplished.

Please provide a list of measurable outcomes or accomplishments from this project (e.g. number of people trained, miles of shoreline restored, etc.):

Three Clallam MRC members and staff and one intern were involved in the monitoring effort. Two surveys were conducted delineating the perimeter and area of two kelp beds in Freshwater Bay. Two surveys were conducted delineating the perimeter and area of the kelp bed in Clallam Bay identified during the land-based survey conducted in 2016.

Please list the specific deliverables associated with this project (e.g. educational/outreach materials, monitoring protocol, summary report):

Four GPX files containing the GPS data for the four surveys. The 2017 intern PowerPoint presentation of the kelp monitoring effort and this report.

Any difficulties encountered or lessons learned during the project?

The main challenge which persisted to the end of the survey period was how to identify the edge of the kelp bed consistently between the surveyors.

If this task was part of an ongoing project, please provide a brief summary of the project to date, including initiation and expected completion dates, overall goals and anticipated outcomes:

This is a NWSC project supported by all seven MRCs.

Were any other resources or funding leveraged for this project?

This is a NWSC project

Did you work with any partners or other MRCs to carry out this project?

NWSC and Jefferson MRC.

What are the regional cumulative significance/impacts/results of this project?

The amount and condition of floating kelp will be documented along shorelines in seven counties.

Which NWSC Performance Benchmarks or PSP Near Term Actions does this project address?

NWSC Goal 3: protect and restore marine species and habitats to improve ecosystem health.

Appendix A – Field Data Sheets

Bull Kelp Survey Data Sheet (on shore)

Pre-Survey Section (on the beach)

Names of surveyors: Jacob Carleson Ed Bowley Alan Clark

Location: Fresh Water Bay

Date: 8/20/17 Weather conditions (circle one)

Clear

Clouds

Heavy rain

Light rain

Fog/mist

Tide height (ft): Start -2.5' Tide station: Pillar Point + NOAA

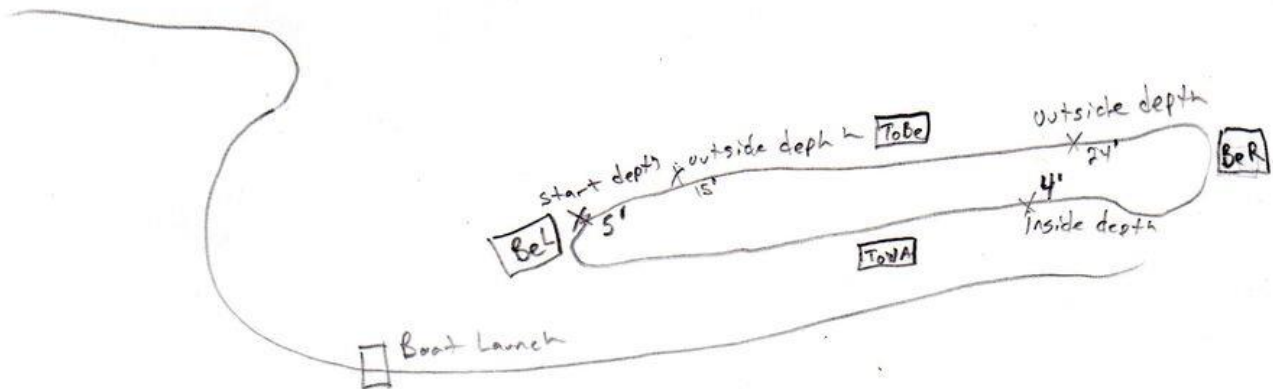
Current (knots): -2.55 Station/source: Pillar Point + NOAA

Name of GPS unit or phone app Garmin GPS Vmapsc Accuracy of GPS: +/- 6 ft

- ☐ Proceed to page 2 to conduct survey. Following your survey, fill out Post-Survey section below.

Post-Survey Section (back on the beach after the survey)

Provide a sketch of the area surveyed, including approx. location of kelp bed boundary line, temperature, depth measurements and locations of photo points.



Post-survey checklist:

- ☐ Kelp bed perimeter track is saved in one or more GPS units
- ☐ GPS units are collected for storage until next survey
- ☐ Data sheets are completely filled out and legible.
- ☐ Photo points have been taken (and are later uploaded with properly labeled names)

Bull Kelp Survey Data Sheet (on the water)

Kelp Bed number or Name Freshwater Bay

Start time (time of temperature measurement): 8:38 Am

Water Temp. (°C): N/A (forgot thermometer)

Depth (ft):

Edge closest to shore: 4 ft, GPS Point name: 52 Time: 9:57 Am Secchi: 2'

Edge farthest to shore: 24 ft, GPS Point name: 51 Time: 9:27 Am Secchi: 15'

Perimeter:

GPS point name at beginning of paddle around bed: #48

GPS perimeter track name: 2017-08-20 @ 8:38:41

GPS point name at end of paddle around bed: #54

Photo points: (take first photo, then immediately take a photo of this data sheet with the corresponding box checked off)

☒ ToBe

☒ ToWa

☒ BeL

☒ BeR

☐ Volunteer photos

Observations (consider density, animals present, overall health of blades, presence of understory kelp, human impacts, etc.): Very large bed! Density range from sparse to thick.

Animals: Whale, Seals, otters, heron, marine birds.

Random Macroalgae w/ large patch near shore in center of survey area

Other notes:

Bull kelp most prevalent w/ large quantity of macroalgae and pockets of eelgrass, Feather Boa, Surf grass

End time (time of last measurement or observation before returning to shore): 10:49 Am

Bull Kelp Survey Data Sheet (on shore)

Pre-Survey Section (on the beach)

Names of surveyors: Alan Clark Jacob Carlsson

Location: Freshwater Bay Small becl

Date: 9/17/17

Weather conditions (circle one)

Clear

Clouds

Heavy rain

Light rain

Fog/mist

Tide height (ft): Start 0.0 Tide station: Port Angeles

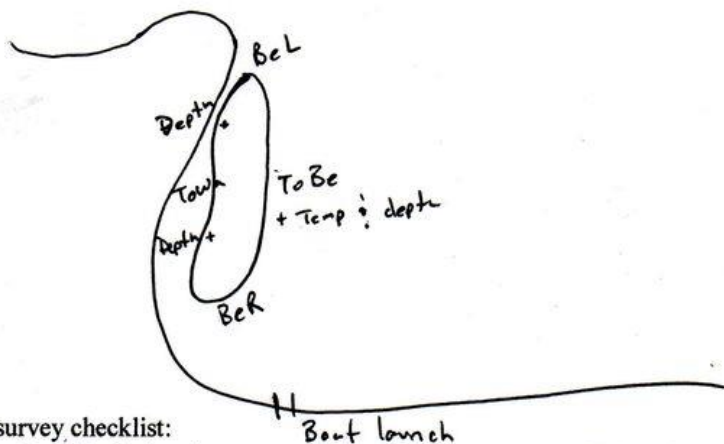
Current (knots): -2.21 Station/source: NOAA Piller Point

Name of GPS unit or phone app Garmin GPSmap 785c Accuracy of GPS: +/- 10 ft

- ☐ Proceed to page 2 to conduct survey. Following your survey, fill out Post-Survey section below.

Post-Survey Section (back on the beach after the survey)

Provide a sketch of the area surveyed, including approx. location of kelp bed boundary line, temperature, depth measurements and locations of photo points.



Post-survey checklist:

- ☐ Kelp bed perimeter track is saved in one or more GPS units
- ☐ GPS units are collected for storage until next survey
- ☐ Data sheets are completely filled out and legible.
- ☐ Photo points have been taken (and are later uploaded with properly labeled names)

Bull Kelp Survey Data Sheet (on the water)

Kelp Bed number or Name Freshwater Bay Small bed

Start time (time of temperature measurement): 7am

Water Temp. (°C): 51°

Depth (ft):

Edge closest to shore: 8 ft, GPS Point name: 58 Time: 7:31am

Edge farthest to shore: 12.5 ft, GPS Point name: 56 Time: 7:16am

Perimeter:

GPS point name at beginning of paddle around bed: 56

GPS perimeter track name: 2017-09-17 07:27:32

GPS point name at end of paddle around bed: 57

Photo points: (take first photo, then immediately take a photo of this data sheet with the corresponding box checked off)

☒ ToBe

☒ ToWa

☒ BeL

☒ BeR

☒ Volunteer photos

Observations (consider density, animals present, overall health of blades, presence of understory kelp, human impacts, etc.): No Macroalgae, Fronds deteriorating, over

750 individual bulbs counted. Fairly small
bed located close to shore

Other notes:

End time (time of last measurement or observation before returning to shore): 7:40am

Bull Kelp Survey Data Sheet (on shore)

Pre-Survey Section (on the beach)

Names of surveyors: Jacob Carleson & Helle Andersen

Location: Clallam Bay West County Park

Date: 7-9-17

Weather conditions (circle one)

Clear

Clouds

Heavy rain

Light rain

Fog/mist

Tide height (ft): Start -1.0^{ft} Tide station: 9443361 Sechi, Clallam Bay, WA

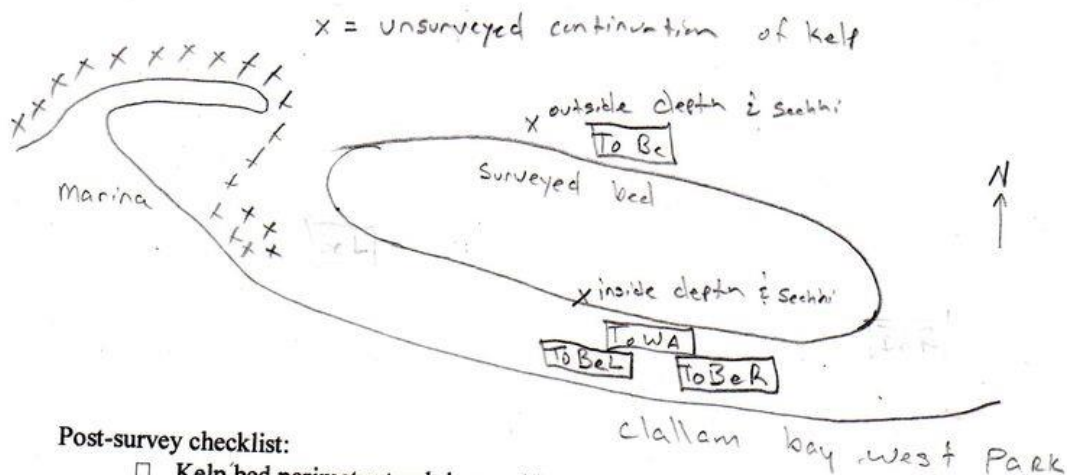
Current (knots): -2.24 Station/source: Pillar Point / NOAA

Name of GPS unit or phone app Garmin GPSmap 78Sc Accuracy of GPS: +/- 10 ft

- ☐ Proceed to page 2 to conduct survey. Following your survey, fill out Post-Survey section below.

Post-Survey Section (back on the beach after the survey)

Provide a sketch of the area surveyed, including approx. location of kelp bed boundary line, temperature, depth measurements and locations of photo points.



Post-survey checklist:

- ☐ Kelp bed perimeter track is saved in one or more GPS units
- ☐ GPS units are collected for storage until next survey
- ☐ Data sheets are completely filled out and legible.
- ☐ Photo points have been taken (and are later uploaded with properly labeled names)

Bull Kelp Survey Data Sheet (on the water)

Kelp Bed number or Name Clallam Bay West

Start time (time of temperature measurement): 9:25 Am

Water Temp. (°C): 55°

Depth (ft):

Edge closest to shore: 6.25' ft, GPS Point name: 701 Time: 10:20 Am Secchi disk: 6.25' (ft)

Edge farthest to shore: 13.83' ft, GPS Point name: 201 Time: 9:25 Am Secchi disk: 12.58' (ft)

Perimeter:

GPS point name at beginning of paddle around bed: 301

GPS perimeter track name: CBW 07-09 08:53:02 Day 001

GPS point name at end of paddle around bed: 501

Photo points: (take first photo, then immediately take a photo of this data sheet with the corresponding box checked off)

☒ ToBe

☒ ToWa

☒ BeL

☒ BeR

☒ Volunteer photos

Observations (consider density, animals present, overall health of blades, presence of understory kelp, human impacts, etc.):

Bull Kelp dense and reaching 99% at West end of bed.
Middle of bed 50-90% Macroalgae. Beach side had higher variety
of algal species inc. Boa, bull, macroalgae, and surf grass.
Bald eagles, gulls, and other sea birds present.

Other notes:

Bed may extend west past marine and terminate
around back side of Marine Rock armoring
(west end)

End time (time of last measurement or observation before returning to shore): 10:20 Am

Bull Kelp Survey Data Sheet (on shore)

Pre-Survey Section (on the beach)

Names of surveyors: Jacob Carlesen, Helle Andersen

Location: Clallam Bay West Park

Date: 7-23-17

Weather conditions (circle one)

Clear

Clouds

Heavy rain

Light rain

Fog/mist

Tide height (ft): Start -1.5 Tide station: Seki'u Clallam bay WA

Current (knots): -2.77 Station/source: Piller Point / NOAA

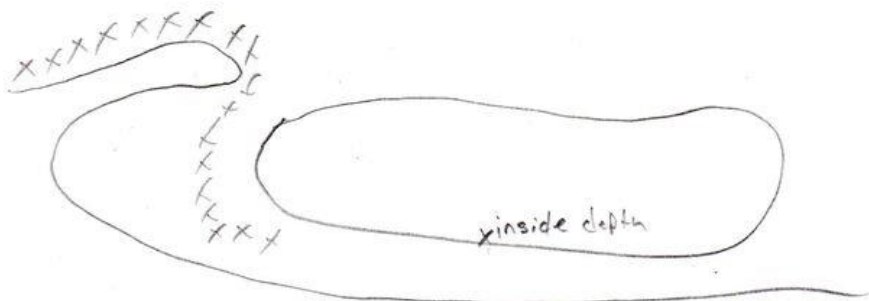
Name of GPS unit or phone app Garmin GPSmap 78sc Accuracy of GPS: +/- 10 ft

- ☐ Proceed to page 2 to conduct survey. Following your survey, fill out Post-Survey section below.

Post-Survey Section (back on the beach after the survey)

Provide a sketch of the area surveyed, including approx. location of kelp bed boundary line, temperature, depth measurements and locations of photo points.

x = un-surveyed beds



Post-survey checklist:

- ☐ Kelp bed perimeter track is saved in one or more GPS units
- ☐ GPS units are collected for storage until next survey
- ☐ Data sheets are completely filled out and legible.
- ☐ Photo points have been taken (and are later uploaded with properly labeled names)

Bull Kelp Survey Data Sheet (on the water)

Kelp Bed number or Name Clallam Bay West County Park

Start time (time of temperature measurement): 9:15 AM

Water Temp. (°C): 54°F 12.2°C

Depth (ft):

Edge closest to shore: 4.9 ft, GPS Point name: 28 Time: 9:45 AM

Edge farthest to shore: N/A ft, GPS Point name: N/A Time: N/A

Seckhi disk 4.9'

Perimeter:

GPS point name at beginning of paddle around bed: 27

GPS perimeter track name: 2017-07-23 08:50:49 Day.gpx

GPS point name at end of paddle around bed: 28

unable to measure
due to drift

Seckhi - unable due
to drift

Photo points: (take first photo, then immediately take a photo of this data sheet with the corresponding box checked off)

☒ ToBe

☒ ToWa

☒ BeL

☒ BeR

☒ Volunteer photos

Observations (consider density, animals present, overall health of blades, presence of understory kelp, human impacts, etc.):

Large Macrocystis bed in center of
bull kelp bed ranging from 10-90% of kelp in center
of bed, other species: Surf grass, eisenia, feather Bra, alaria, ulva.
Bull kelp appears healthy & protecting other kelp
species. Many marine birds present

Other notes:

Also completed Gps track of center Macrocystis bed.
Unable to get depth & Seckhi disk reading on outside of
bed due to current/drift.

End time (time of last measurement or observation before returning to shore): 10:55 AM