Methods for OCNMS surveys 2016 & 2017.

Context and locations:

**These are the focal sites for sampling:**

Destruction Island

Cape Johnson

Cape Alava

Tatoosh Island

Neah Bay

**Sample each site at two depth zones:**

* 5m
* 10m

**At each site, 3 types of surveys:**

Target 8 replicates per depth zone per site, spread across two dive areas.

Spatial Nesting: Olympic coast -> Site -> Area -> Depth Zone -> Transect

**Surveys**

1. [**Swaths for benthic invertebrates**](https://drive.google.com/open?id=0B19J8gHIuD3vUWs2N1poT0JJME0)
   1. 30m x 2m wide transects broken into 10m sections.
   2. Only count inverts > 2.5cm in diameter
      1. Diameter for carapace width
   3. Dig through understory algae to look for inverts
2. [**Point contact surveys**](https://drive.google.com/open?id=0ByUaKrR_Uh1ceE9odHJfQTVRZHc) **for algae and sessile invertebrates**
   1. 1 point each meter
      1. Substrate type
      2. Relief
      3. Major algal groups
3. [**Fish surveys**](https://drive.google.com/open?id=0B19J8gHIuD3vYWNmblYtdVBUXzg)
   1. 30m x 2m x 2m
      1. Fish only slightly above the kelp understory.
      2. Record visibility (potentially exclude viz <3m on analysis side). Use distance at which your dive buddy can no longer differentiate the 5 fingers you are holding up.
      3. Count fish >=5cm TL only
4. [**Kelp stipes**](https://drive.google.com/open?id=0B19J8gHIuD3vTDl2WllEZWJqZ0k)
   1. Species- and height-specific counts:
      1. Macrocystis: Count all stipes >=1m in height
      2. Nereocystis, Pterygophora, Laminaria, Pleurophycus: Count all stipes >=30cm in height
      3. Others: Count all plants (Alaria, Costaria, C. triplicata, Desmerastias, etc)
   2. Option for places like DI where there is no algae deep (10m):
      1. 5m depth transects: 1 diver surveying 2m swath
      2. 10m depth transect: 2 divers, each surveying a 1m swath while also surveying inverts

Divers split the duties into teams. One diver pair will do Fish and UPC. One diver pair will do Inverts and Algae. This is to ensure that the speed at which the divers do the survey is approximately the same and avoid divers getting separated underwater. This means that the two dive teams will not be surveying the same transect for all of the four surveys.

**All surveys: Target 3, 30m transects per dive**

Extras:

Camera for cool footage to document sites and other fun stuff.

Biomass of kelp?

eDNA - Talk with Jimmy and Linda.

Check with Gary Winans.- ARMS.

360 degree camera?

Take a look at deeper areas if possible (20m?)