# Cape Falcon Marine Reserve What have we learned after the first 6 years of monitoring?



| RESTRICTIONS BEGAN        | 2016  |   |                   | ζ ζ                                   |
|---------------------------|---|---|-------------------|---------------------------------------|
| MONITORING BEGAN          | 2014  | CAP   | e FALCON eserve   | Cape<br>Falcon                        |
| SIZE                      | Reserve:  | 12.4 mi <sup>2</sup>  | NE RESERVE        |                                       |
| DEPTH RANGE               | Reserve:  | 0-184 ft  |                   | Manzanita                             |
| HABITATS                  | Mostly soft sedime<br>habitat in shallow<br>rocky intertidal ha<br>headlands, domin   | ent with isolated patches of<br>(~ 80 ft) depths. Stretches o<br>bitats associated with the tv<br>ated by cliffs. | rock<br>f •<br>vo |                                       |
| HABITAT<br>CONNECTIVITY   | Isolated, low-relief rock habitat in shallow (~80 ft)<br>depths   |   | 0 ft)             |                                       |
| PRIOR FISHING<br>PRESSURE | Relatively low fishing pressure on groundfish in<br>rocky habitat areas. Relatively moderate fishing<br>pressure on crab in sand habitat areas. |   | in<br>ng          | Garibaldi                             |
| CORE TOOLS                |   | O LANDER SCU  | Compariso<br>Area | on<br>Cape<br>Meares<br>0 1.5 3 Miles |

## WHAT MAKES CAPE FALCON UNIQUE?

REGON

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- Subtidal invertebrate and fish communities at Cape Falcon are distinct from other marine reserves, likely attributable to habitat differences.
- This site has the lowest aggregate and species densities for many nearshore fish species, which aligns with local fishermen knowledge that minimal rocky habitat within the reserve is associated with lower catch rates of fish.
- We observed the most Buffalo Sculpin at this site compared to other marine reserves.
- The first dissolved oxygen time-series data collected from north of Cascade Head in Oregon's territorial sea.



## A PLACE TO LEARN ABOUT DIFFERENT FISHING PRESSURES

- Not your typical study design, Cape Falcon historically had low fishing pressure, and the three comparison areas we monitor represent a range of fishing pressures (low, moderate, and high).
- This lets us examine how fish communities with different fishing pressures respond to changing ocean conditions.
- The reserve's fish community and abundance is most similar to the comparison area with low fishing pressure.
- We anticipate minimal changes at Cape Falcon attributable to marine reserve protections because of low historic fishing pressure and the small area of rocky habitat at this site.





# OUR FIRST SNAPSHOT OF NEARSHORE COMMUNITIES ON THE NORTH COAST

- Our hook-and-line surveys observed differences in fish communities among sites associated with varying Lingcod, Kelp Greenling, and Black Rockfish abundances.
- Our SCUBA surveys documented crustose coralline algae as a common organism covering rocky habitat.
- We observed eight Sunflower Sea Stars in 2016 at the marine reserve post-Sea Star Wasting Disease, which was responsible for greatly reducing the abundance of this species along the West Coast.
- Collaborative and cooperative research projects at this site have generated new knowledge on great white sharks, sturgeon, crabs and oceanography.

## **EXPANDING NEARSHORE OCEANOGRAPHIC DATA**

- Oceanographic data collection was made possible at Cape Falcon through a collaboration with a local fishing vessel out of Garibaldi, enabling us to expand nearshore oceanographic data collection on the north coast.
- Although we only have three years of data, we are learning how ocean conditons vary up and down the Oregon coast.
- For example, there were no observations of hypoxic (i.e. low oxygen) conditions in 2019 or 2020 at this site, differing from observations at Cape Perpetua and Cascade Head Marine Reserves.
- These oceanography data will provide important context for our biological surveys, such as understanding the response of subtidal fish communities to changing ocean conditions.



*Figure: Dissolved oxygen levels (ml/L) at Cape Falcon Marine Reserve during the summer and fall of 2020. No observations of low oxygen or hypoxic (less than 1.4 ml/L) conditions were observed.* 

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