

# ODFW Marine Reserves Program

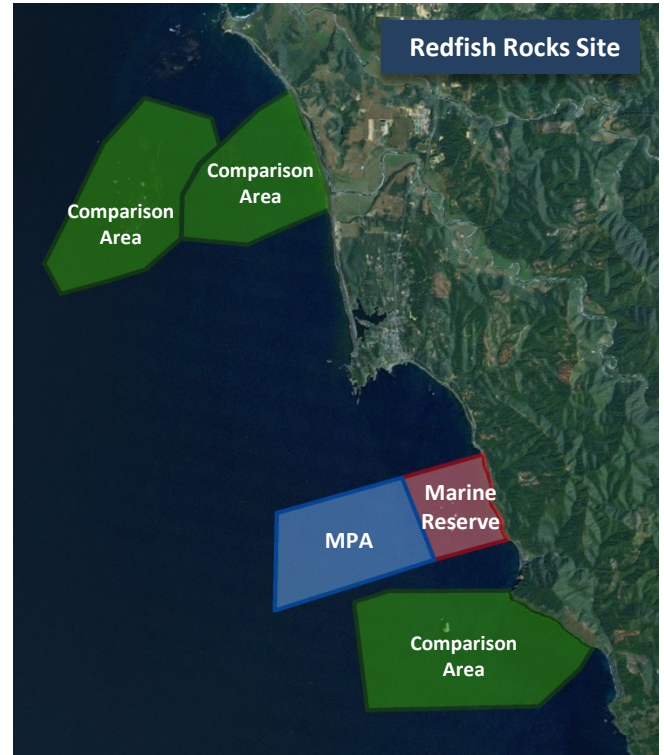
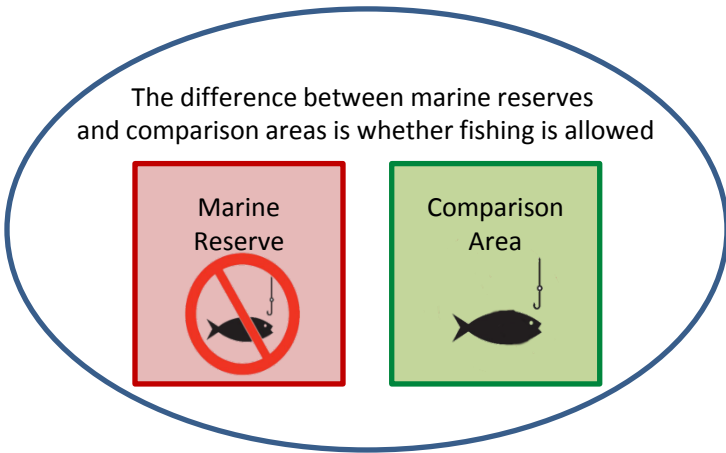
## Comparison Areas – tools for understanding changes over time



In 2012, Oregon completed designation of five marine reserve sites within its state waters to advance scientific research and conserve habitats and biodiversity. Oregon Department of Fish & Wildlife is responsible for overseeing the management and monitoring of Oregon's marine reserves.

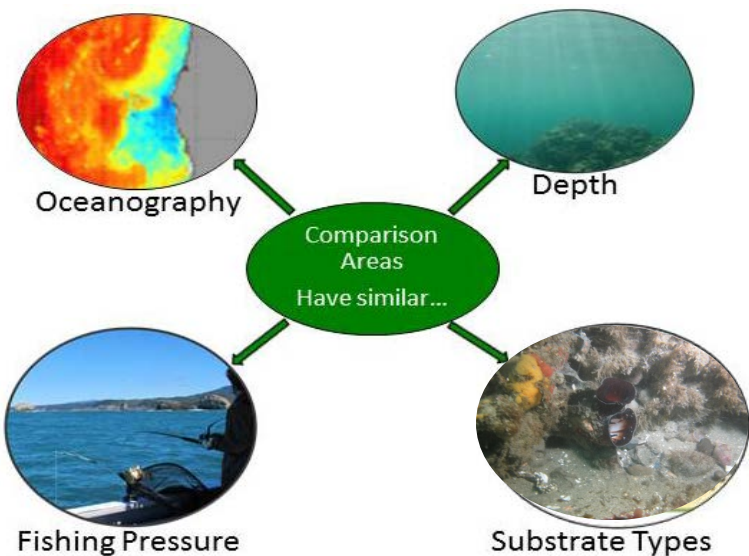
### What are Comparison Areas?

Comparison areas are monitoring sites, in close proximity to the marine reserve, that remain open to fishing. Long-term monitoring will be conducted identically in both the reserve and comparison areas so that we can understand whether the changes we are seeing in the marine community (fish and invertebrate species) are from environmental variation or from the marine reserve protections.



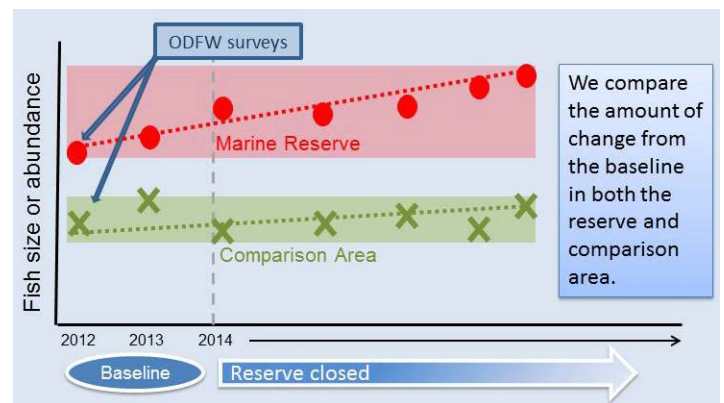
### How do we choose Comparison Areas?

Ideally, a comparison area would be identical to the marine reserve in all ways except that it remains open to fishing. In reality, it is impossible to find two areas that are perfectly identical. Instead, we find areas as similar as possible and select more than one comparison area per reserve. We look to find comparison areas that have similar ocean conditions, habitats, and fishing pressure as the marine reserve.



### Where do we start? Baseline ...

Prior to the prohibition of fishing, we sample in the reserve (red) and the comparison areas (green) to quantify the initial conditions of these areas. This allows us to identify differences that already exist between the areas.



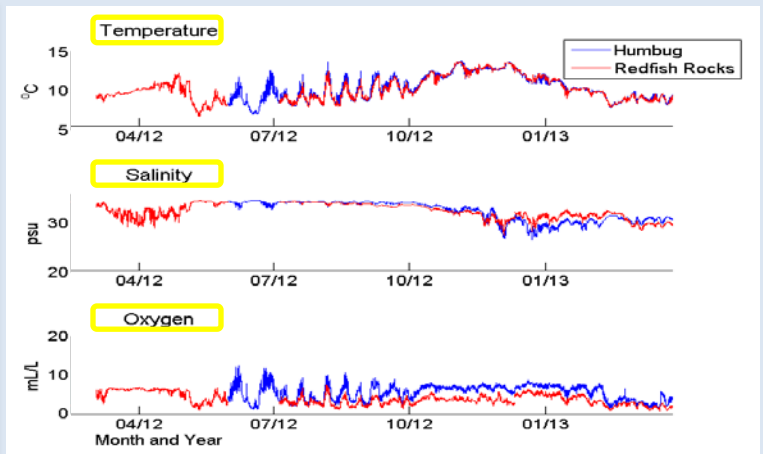
### What's next? Understanding changes over time ...

From our baseline, we are now tracking the changes occurring in the reserve and in the comparison areas over time. This allows us to isolate reserve effects from natural variations. We are looking for changes in species composition, size, and abundance.

**Do the comparison areas have similar ocean conditions as the marine reserve?**



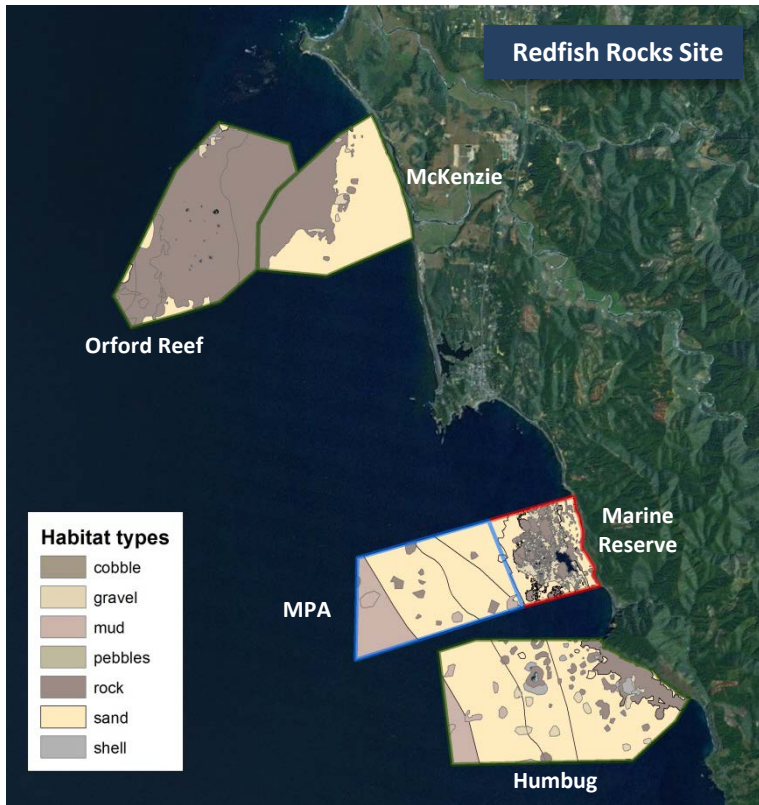
Oceanographic instrument (CTD) bolted to the ocean floor collecting data at Redfish Rocks.



Temperature, salinity, and oxygen measured April 2012 - January 2013. Marine reserve in red; comparison area in blue.

Ocean conditions were very similar between the marine reserve and the comparison area suggesting that Humbug is a good comparison area to the reserve.

**Do the comparison areas have similar habitat and fishing pressure as the Redfish Rocks marine reserve?**



During our baseline assessments, we found Humbug Comparison Area to have very similar ocean conditions, proportions of habitats, and fishing pressure to the marine reserve. Also, we found similar habitats at Orford Reef and McKenzie Comparison Areas to the marine reserve. However, these two areas have more fishing pressure than the reserve experienced prior to protection. We therefore are using Humbug as our primary comparison area and Orford Reef and McKenzie as secondary comparison areas.

**Comparison Areas: Facts and Myths**

- ✘ MYTH:** Comparison areas are meant to catch fish that swim out of the reserve

**Actually,** comparison areas are meant only to be a scientific control to detect change over time.
- ✔ FACT:** A reserve can have more than one comparison area

**Yes,** since no area is a perfect match to the marine reserve, more than one comparison area is usually selected.
- ✘ MYTH:** Comparison areas are meant to catch larval fish that originated from the reserve

**Actually,** comparison areas are meant only to be a scientific control to detect change over time.
- ✔ FACT:** Fishing is allowed in comparison areas

**Yes,** be sure to consult all current fishing regulations before fishing in a comparison area.



**For more information from ODFW**

Website:  
[www.oregonocean.info/marinereserves](http://www.oregonocean.info/marinereserves)  
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