



Photo: A. O'Connor

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# Seabird Monitoring in Oregon's Marine Reserves

## A COMMUNITY SCIENCE PROJECT

### Background

Portland Audubon and partners (listed below) are monitoring seabird nesting colonies adjacent to two of Oregon's five Marine Reserve/Marine Protected Area complexes:

- Since 2014 at Cape Perpetua marine Protected Area & comparison area (Yaquina Head)
- Since 2016 at the Cape Falcon Marine Reserve & comparison area (Haystack Rock)

### Objectives

**Science:** Monitoring breeding success of nearshore, piscivorous (fish-eating) seabird populations in the Cape Falcon and Cape Perpetua Marine Reserve/Marine Protected Areas and compare to nearby seabird colonies outside of the MR/MPAs (Comparison areas).

**Outreach:** Promote wider recognition of Oregon's marine reserves and seabird conservation through local community participation, outreach and education.

### Study Species

We monitor nests of **3 cormorant species** (see photos). Cormorants are common colonial nesters and build grass or stick nests.

At Cape Perpetua we count **Rhinoceros Auklets** and **Pigeon Guillemots** in Sea Lion Caves. These birds nest in rock crevices so we can't see their nests.



**Marine Reserves** are areas that prohibit any extractive uses (e.g. fishing) in order to conserve marine habitats and biodiversity.

**Marine Protected Areas** allow for some extractive uses.

Non-consumptive uses (e.g. kayaking, surfing) are welcome in the reserves.



Photo: J. Cruce

Double-crested Cormorant

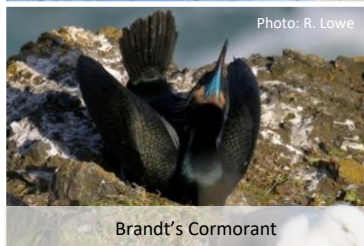


Photo: R. Lowe

Brandt's Cormorant



Photo: J. Liebezelt

Pelagic Cormorant



## How do we monitor seabird nests?

- We select a subset of cormorant nests in a colony to monitor. We label these nests on photos so they are easy to relocate (see photo).
- Colonies are monitored weekly from June to September by trained volunteers, a USFWS intern and Portland Audubon scientist.
- When adult birds get off their nests we count the eggs or chicks in the nest. Nests that fail (don't produce chicks) are recorded as well.
- We estimate chick size so we can determine the expected date they will be able to fly (fledge).
- Breeding productivity is calculated as the average number of fledglings produced per nest.
- We also monitor avian predators, whales that pass by, and weather conditions.



Colony: Mile 179, Plot: SCP2



Photo: A. O'Connor



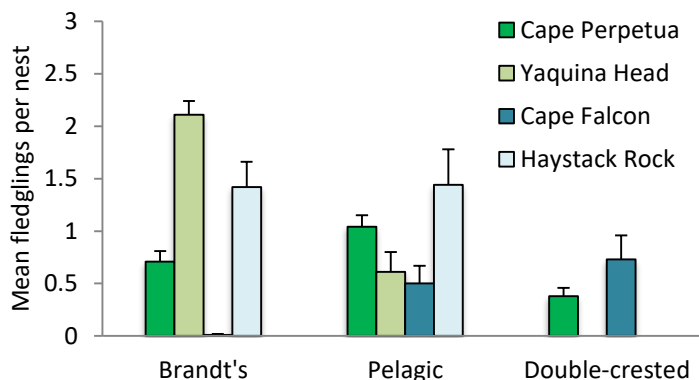
Photo: S. Blackledge



Photo: A. O'Connor

## 2019 Monitoring Results:

- 28 trained volunteers assisted in monitoring from June through mid-September, including 11 days at Cape Perpetua and 10 days at Cape Falcon.
- At Cape Perpetua we followed 69 cormorant nests (35 Brandt's, 26 Pelagic, 8 Double-crested) and saw 55 chicks (25 Brandt's, 27 Pelagic, 3 Double-crested) fledge (can fly).
- At Cape Falcon we monitored 35 nests (4 Brandt's, 20 Pelagic, 11 Double-crested) and saw 18 chicks (0 Brandt's, 10 Pelagic, 8 Double-crested) fledge from our monitored nests.



Breeding productivity (average fledglings per nest) was relatively low in 2019, averaging one or less fledgling per nest for all three species of cormorants at Cape Perpetua and Cape Falcon. Moreover, monitored Brandt's colonies exhibited high inter-colony variability in breeding success with two colonies completely failing early in the season and the third performing relatively well, producing nearly two fledglings per nest. Comparison colonies exhibited slightly higher breeding success for Pelagic and Brandt's Cormorants. Sample sizes were low, especially for Brandt's Cormorants at Cape Falcon and Double-crested Cormorants at Cape Perpetua, this is partially because cormorants returned in fewer numbers to many previously monitored MR colonies.

Species and Loc.	No. Nests	Eggs / Chicks	Nests w/ Hatch Success	Nests w/ Fledge Success	Chicks per Nest (M±SE)	Fledglings per Nest* (M±SE)	No. Chicks at 25 days	No. Chicks Crech / "large"	No. Chicks "huge"
Brandt's (CP)	35	16 / 28	34%	34%	0.80±0.12	0.71±0.10	25	25	24
Brandt's (YH)	35	74/87	100%	86%	2.49±0.08	2.11±0.11	74	NA	NA
Brandt's (CF)	4	NA / 0	0%	0%	0.00±0.00	0.00±0.00	0	0	0
Brandt's (HR)	24	NA / 36	67%	67%	1.50±0.26	1.42±0.24	34	34	32
Pelagic (CP)	26	49 / 33	58%	54%	1.27±0.12	1.04±0.11	27	29	24
Pelagic (YH)	28	17/52	86%	32%	1.86±0.10	0.61±0.09	17	NA	NA
Pelagic (CF)	20	35 / 13	30%	25%	0.65±0.19	0.50±0.17	10	10	9
Pelagic (HR)	9	NA / 18	89%	78%	2.00±0.37	1.44±0.34	13	13	13
Double-crested (CP)	8	NA / 3	25%	25%	0.38±0.08	0.38±0.08	3	3	3
Double-crested (CF)	11	NA / 8	36%	36%	0.73±0.23	0.73±0.23	8	8	7

Table 1. Summary Statistics from our 2019 Cape Perpetua (CP) and Cape Falcon (CF) sites and comparison colonies at Haystack Rock (HR) and Yaquina Head (YR). Egg counts are low at many sites because many nests were hard to see into. "Large" chicks are roughly 3 weeks and walk around the nests. A "huge" chick is adult sized and ~ 4-5 weeks old.





Photo: A. O'Connor



Photo: M. Robell



Photo: P. Thompson

## Interannual Comparison

For all cormorants we have seen high interannual variability in breeding success. Many factors can affect breeding success including weather events, food availability and predation. In general, Double-crested cormorants have consistently had the highest breeding success, however in 2019 we saw a less successful year for Double-crested nests. In 2019 there was an increase in observed avian disturbances at both Cape Perpetua and Cape Falcon resulting in lost eggs for all cormorant species. Early summer storms may have also contributed to the abandoning of two Brandt's colonies and part of a Double-crested colony this season. In addition to summer storms, the "warm water blob" and late summer heat waves may also influence cormorant breeding success annually. The 2019 season exhibited greater variability across sites but overall was a relatively poor year for breeding success compared to 2018.



Photo: A. O'Connor

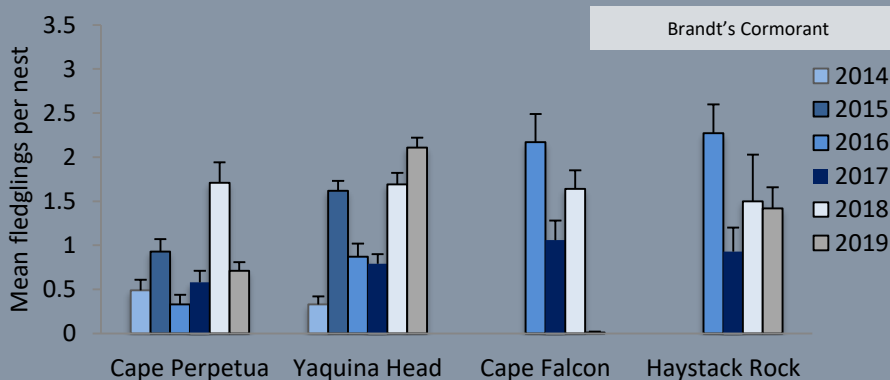


Photo: A. O'Connor

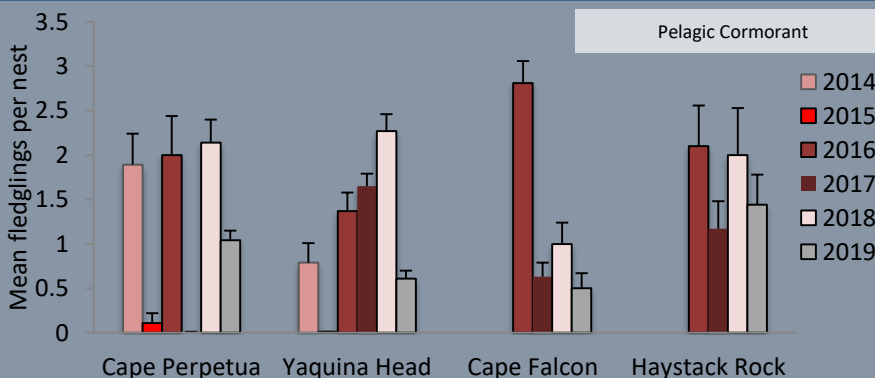


Photo: S. Blackledge

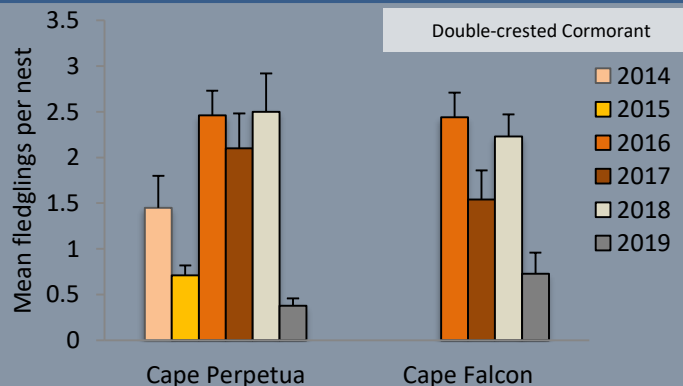






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### Sea Lion Cave counts in 2019

Highest abundance counts for were 6 Rhinoceros Auklets and 129 Pigeon Guillemots. Lighting in the Sea Lion Caves is dim and these birds are crevice nesters, so this is a minimum estimate of birds using the caves. This year's auklet count is slightly lower compared to previous years while the Pigeon Guillemot count is similar to previous years. Counts were conducted on 9 days in 2019.

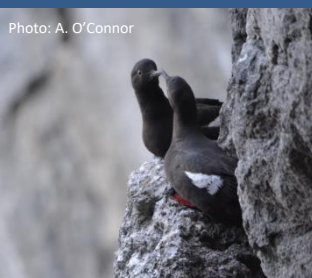


Photo: A. O'Connor



Photo: Mick Thompson

Pigeon Guillemot

Rhinoceros Auklet

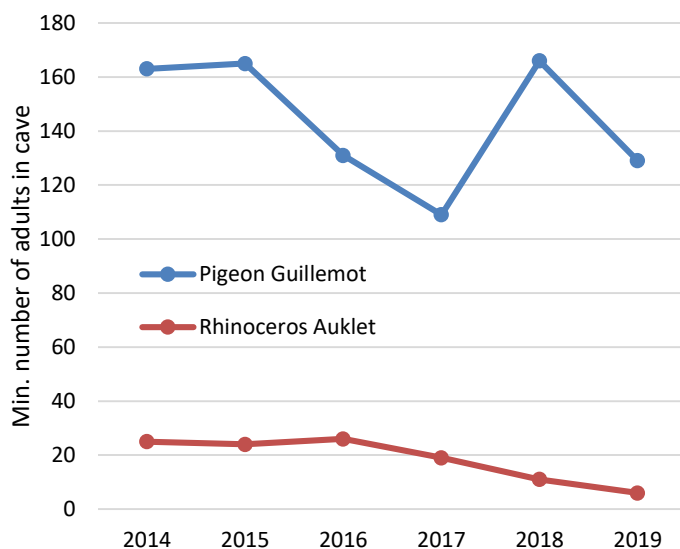


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### Conservation Impact

- In 2019 we connected with over 250 visitors about seabird conservation and the Marine Reserves and thousands more through social media.
- Long-term breeding success data collected for this project is contributing a "bird picture" to ODFW's ecological monitoring in the Marine Reserves.
- Data from this project is contributed to USFWS's long-term seabird monitoring and may help inform future seabird management.

**Thank you!** We plan to continue this project in 2020 and want to say a huge thank you to the 28 volunteers who helped make monitoring successful this season! Also, thanks to our partners and OSU's Seabird Oceanography Lab and Haystack Rock Awareness Program for monitoring and providing data for comparison at Yaquina Head and Haystack Rock colonies, respectively.

**Community Scientist power!** We rely on volunteers for data collection and outreach to the public

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