
Photo: A. O'Connor

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Seabird Monitoring in Oregon's Marine Reserves

A COMMUNITY SCIENCE PROJECT

Background

The Audubon Society of Portland 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.

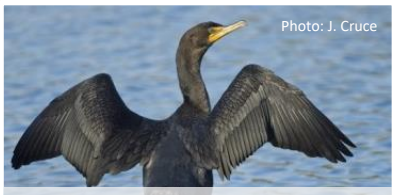


Photo: J. Cruce

Double-crested Cormorant

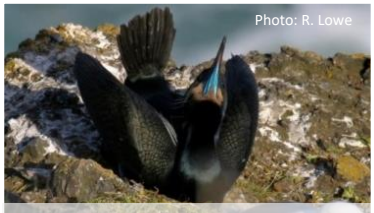


Photo: R. Lowe

Brandt's Cormorant

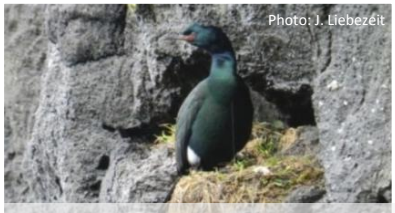


Photo: J. Liebezeit

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.

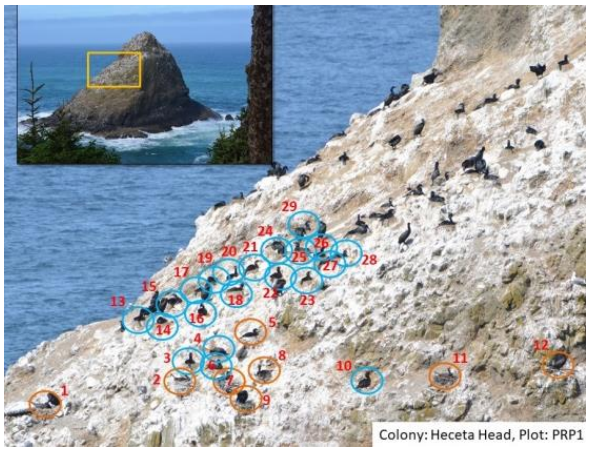
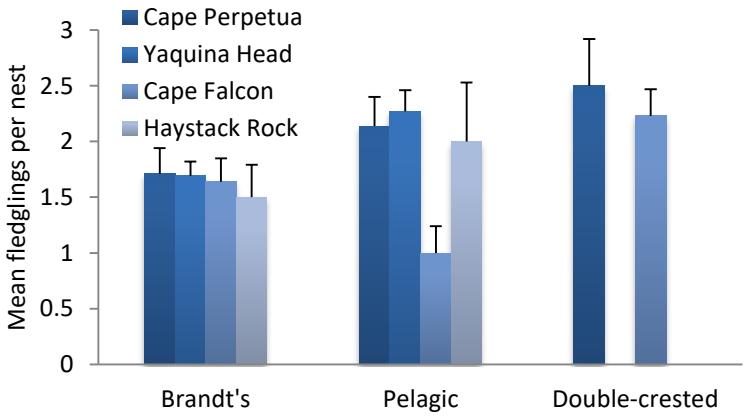



Photo: A. O'Connor


Photo: S. Blackledge

2018 Monitoring Results:

- 38 trained volunteers assisted in monitoring from June though August, including 12 Days at Cape Perpetua and 12 days at Cape Falcon.
- At Cape Perpetua we followed 50 cormorant nests (21 Brandt's, 21 Pelagic, 8 Double-crested) and saw 101 chicks (36 Brandt's, 45 Pelagic, 20 Double-crested) fledge (can fly).
- At Cape Falcon we monitored 34 nests (11 Brandt's, 10 Pelagic, 13 Double-crested) and saw 57 chicks (18 Brandt's, 10 Pelagic, 29 Double-crested) fledge from our monitored nests.



Breeding productivity (average fledglings per nest) was relatively high this year with Brandt's Cormorants averaging just over 3 fledglings per every two nests and Double-crested producing nearly 5 fledglings per two nests at both marine reserve sites. Pelagic Cormorants at Cape Perpetua averaged over two fledglings per nest while at Cape Falcon only one per nest. Sample sizes were low, especially for Pelagic Cormorants, this is partially because cormorants did not return to a few of our previously monitored colonies. With the exception of the Cape Falcon Pelagic Cormorants, breeding productivity was similar across monitoring sites for each species in 2018.

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)	21	9 / 42	90%	81%	2.00±0.22	1.71±0.23	36	37	33
Brandt's (YH)	61	42/128	93%	89%	2.08±0.08	1.69±0.13	98	NA	NA
Brandt's (CF)	11	1 / 19	82%	82%	1.73±0.20	1.64±0.21	18	18	18
Brandt's (HR)	12	1 / 22	67%	67%	1.80±0.35	1.50±0.29	18	18	17
Pelagic (CP)	21	4 / 46	86%	86%	2.19±0.26	2.14±0.26	45	46	45
Pelagic (YH)	37	56/102	92%	86%	2.76±0.16	2.27±0.19	84	NA	NA
Pelagic (CF)	10	23 / 13	60%	50%	1.30±0.27	1.00±0.24	10	11	10
Pelagic (HR)	5	NA / 14	80%	80%	2.80±0.55	2.00±0.53	10	12	10
Double-crested (CP)	8	1 / 21	100%	88%	2.63±0.32	2.50±0.42	20	20	18
Double-crested (CF)	13	NA / 29	85%	85%	2.23±0.24	2.23±0.24	29	29	28

Table 1. Summary Statistics from our 2018 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

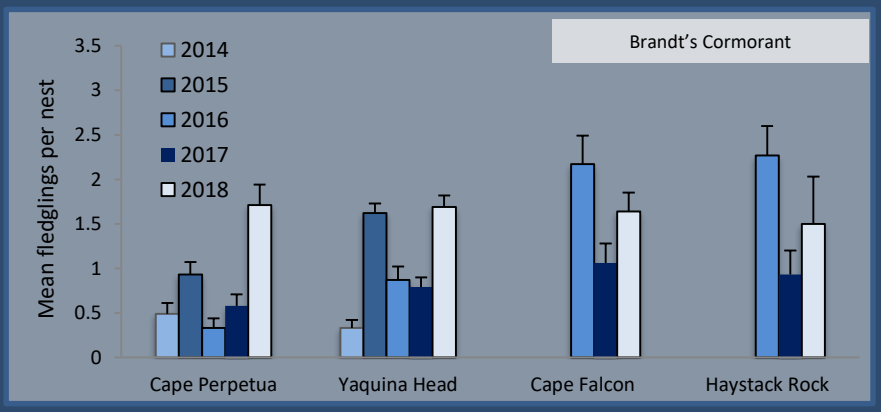

Photo: M. Robell


Photo: T. Scherban

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. Double-crested cormorants have consistently had the highest breeding success compared to the other species. Only two disturbances have been observed resulting in Bald Eagles taking two Brandt's chicks adjacent to monitored colonies. 2018 was a relatively good year for all cormorant species and the first year no early summer storms were observed, this likely led to colonies fledging nearly a month earlier than in previous years. Besides intense summer storms, the recent "warm water blob" and late summer heat waves may also have been important factors influencing cormorant breeding success.


Photo: A. O'Connor

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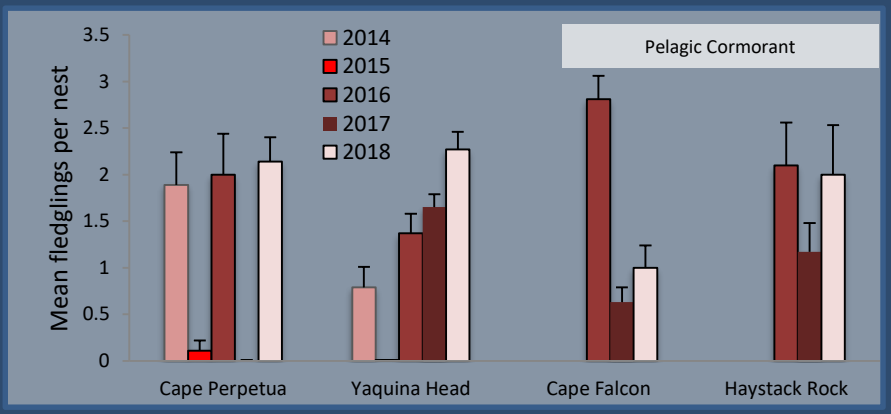


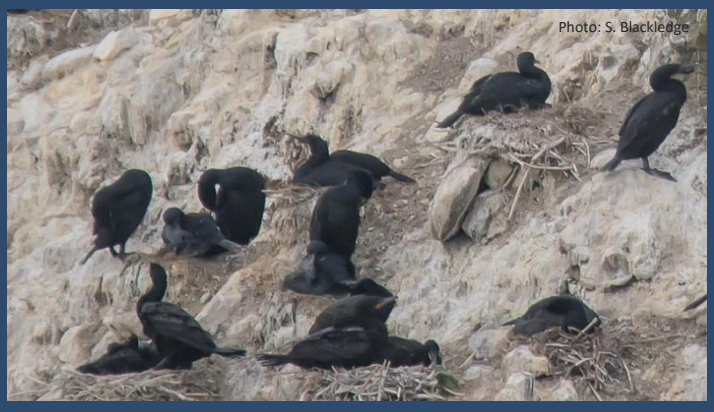
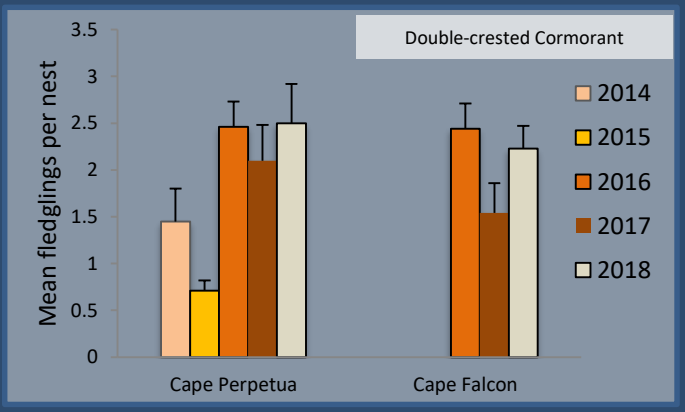


Photo: S. Blackledge

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Sea Lion Cave counts in 2018

Highest abundance counts for were 11 Rhinoceros Auklets and 166 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 2014 and 2015. Counts were conducted on 12 days in 2018.

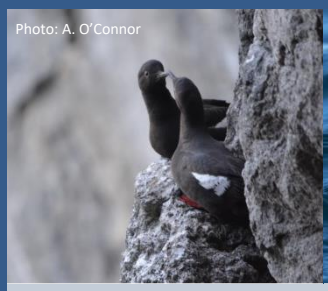


Photo: A. O'Connor

Pigeon Guillemot

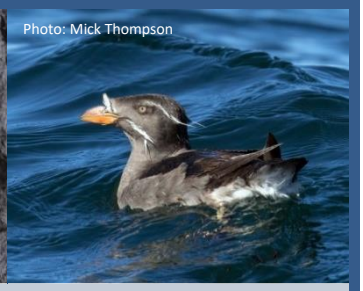
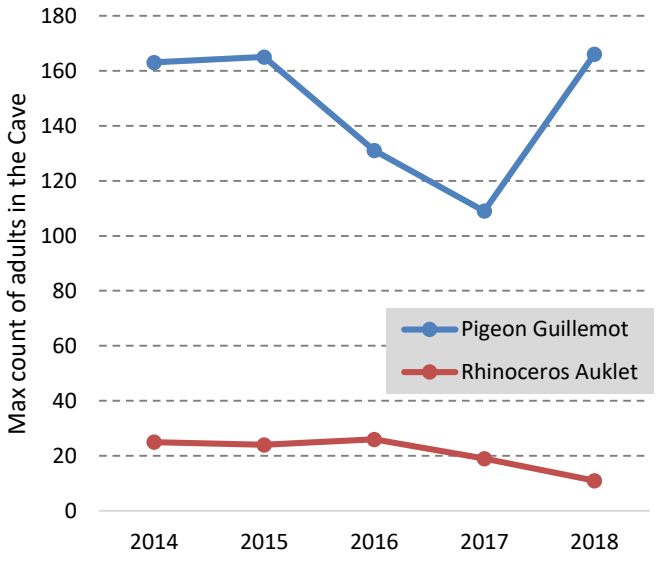


Photo: Mick Thompson

Rhinoceros Auklet



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Conservation Impact

- In 2018 we connected with over 600 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 2019 and want to say a huge thank you to the 38 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 Yaquina Head and Haystack Rock colonies, respectively.

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

To get involved contact Joe Liebezeit: jliebezeit@audubonportland.org