
 NESTING OF DOUBLE-CRESTED AND BRANDT'S CORMORANTS
 IN TILLAMOOK AND LANE COUNTIES, OREGON IN 1983

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 A. INTRODUCTION

The purpose of this paper is to provide my results about the nesting of Double-crested Cormorants (*Phalacrocorax auritus*) and Brandt's Cormorant (*P. penicillatus*) in Tillamook and Lane Counties.

 B. STUDY AREAS

B-1. CAPE LOOKOUT, TILLAMOOK COUNTY

Approx. Center of Site: 45 20' N, 123 58' W
 Oregon Natural Heritage Program Hexagon: 27,173
 Location: Township 2S, Range 11W, Section 1
 Area Studied: ?
 Habitat(s) Studied: ledge along cliff over ocean
 Elevation: ? ft (? m)
 Minimum Distance to Coastline: 0 mi (0 km).

B-2. SEA LION CAVES, LANE COUNTY

Approx. Center of Site: 44 07' N, 124 07'
 Oregon Natural Heritage Program Hexagon: 27,281
 Location: Township 17S, Range 12W, Section 4
 Area Studied: ?
 Habitat(s) Studied: mainland cliffs
 Elevation: about ? ft (? m)
 Minimum Distance to Coastline: 0 mi (0 km).

 C. METHODS

In this paper, I use "subcolony" to mean a discrete area of nesting that is physically distinguishable from other nesting areas in the nearby vicinity.

On 27 July 1983, Phil Pickering and I hiked to Camp Clark at the south side of Cape Lookout. There, I used my 20x Bushnell Spacemaster II spotting scope to count the number of nests and young at some Double-crested Cormorant stick nests on cliff ledges along the south side of Cape Lookout.

The afternoon of 3 August 1983, I purchased a ticket to go into Sea Lion Caves; I took in my 20x spotting scope and counted the number of Double-crested Cormorant young, but I did not count the number of their stick nests because some were not visible. I also counted the number of active and abandoned Brandt's Cormorant nest cups (which are quite different from the stick nests made by the Double-crested Cormorants that were also present) and young that were easily visible from inside the Sea Lion Caves facility and from their outside observation decks. However, not all Brandt's Cormorant nests or young may have been visible, so these counts should not be construed as representing a total census of nests or young. I assumed that the number

of active and abandoned Brandt's Cormorant nests was equal to the total number of nests built.

D. SHORTCOMINGS OF OBSERVATIONS

Unfortunately, my observation sites were unsatisfactory because not all nests or young were visible, or a site was logistically difficult to visit. Consequently, nests were not monitored as often as they should have been to accurately determine the total number of nests built or to accurately measure fledgling success. Some, or many, of the young in nests may have died after my single observation at each area. Thus, my data are estimates of nest success.

My nest counts are not total counts because not all nests at a site were visible.

E. GENERAL RESULTS AND DISCUSSION

E-1. DOUBLE-CRESTED CORMORANT

At Cape Lookout on 27 July 1983, I counted three nests with at least one young each and six abandoned Double-crested nests that appeared to have been used for nesting earlier during 1983, but I was unable to count the total number of young present. It is unclear if young may have already fledged from the abandoned nests.

At Sea Lion Caves on 3 August 1983, the only Double-crested nests I saw were visible from the South Outside Observation Deck; I counted 18 young Double-crests, but I was unable to count how many nests they were at.

Because of inadequate observation sites and inadequate observation effort, it is unclear if nesting success of Double-crested Cormorants was low during the 1983 El Nino. But since fledging does not occur until August near San Francisco (Boekelheide et al. 1990b), the abandonment of six out of nine of their Cape Lookout nests suggests that their nesting was poor there.

E-2. BRANDT'S CORMORANT

The nesting success I observed in 1983 was low (Table 1), although all young at Sea Lion Caves were fully feathered and appeared to be near fledging. The young at Sea Lion Caves during the afternoon of 3 August 1983 were larger than many of those that I had seen at Yaquina Head (Lincoln Co.) that morning (Bayer in prep.), and all appeared to be at least 2/3 or more of adult size. However, an adult was in an incubating posture at each of two nests at Subcolony C at Sea Lion Caves.

The nesting success reported by Graybill and Hodder (1985) and Hodder and Graybill (1985) for a colony just north of Sea Lion Caves was higher than what I noted. But they measured nesting success about two weeks earlier (July 17) than I did (Table 1), and nesting success at their colony may have declined as the season progressed.

It appears that nesting success of some Brandt's Cormorants during the El Nino year of 1983 may have been reduced (Table 1); however, observation effort and methods were inadequate to properly document this. In California, nesting success can vary widely among years and with the age of breeders (Boekelheide and Ainley 1989, Boekelheide et al. 1990a).

More information is needed about the timing and variation in the timing of fledging for Brandt's Cormorants in Oregon, so that dates to measure fledging success can be planned effectively. Scott (1973:23) noted that young first fledged on 9 August 1970 and 9 August 1971, but, in 1995, I noted that some young at Yaquina Head had already fledged by August 2 and that a few young were still at nests in the first week of September. In California, fledging can be protracted and occur from August through early October (Ainley 1990:355).

 F. TABLE

TABLE 1. Nesting success of Brandt's Cormorants.

Date=date when the number of young were counted; these young were sometimes used to estimate the number that would have fledged, but this could be an overestimate because some may have died before fledging.

SC=subcolony.

+ = at least the indicated number.

Site	SC	Total Nests Built	Observ- ation Date	No. of Young	Young per..... Nest Built	Nest with Young	Source
Yaquina Head		45	8/9/1971	70+	1.56+	?	Scott (1973) *
Yaquina Head	B	10	8/3/1983	19	?	1.90	Bayer (in prep.)
Sea Lion Caves A		42	8/3/1983	19	0.45	?	This Paper
Sea Lion Caves B		52	8/3/1983	16	0.31	?	This Paper
Sea Lion Caves C		69	8/3/1983	2	0.03	?	This Paper
north of Sea Lion Caves		84	7/17/1983	49	0.58	1.23	**

* Scott (1973:9, 23) did not appear to make an intensive effort to measure nesting success; on his p. 23, he notes in a column "First Young Fledged" that there were "70 young completely feathered and ready to fledge," but he does not indicate the number of other young that were not yet ready to fledge. Thus, Scott's (1973) data may underestimate their nesting success.

** Graybill and Hodder (1985:206) list 84 total nests, but Hodder and Graybill (1985:538) list 82 nests; the mean value for young/nest in Hodder and Graybill (1985) is correct if there are 84 nests.

 G. ACKNOWLEDGMENTS

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