
Colonial waterbird banding and species interaction

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Goose Island, located in Long Island Sound about 5 km south of Guilford, Connecticut, and about 1 km west of Falkner Island, has been the site of a gull colony for many years. In conjunction with the research being conducted on the Roseate (*Sterna dougallii*) and Common Terns (*S. hirundo*) nesting on Falkner Island (Sibley 1981, Spendelow 1982), the gull colony has been visited at least twice a year since 1977 to monitor its reproductive success, to band the young gulls, and to search for evidence of gull predation on the tern chicks. On one visit in 1978, an examination of the unconsumed remains (mostly wings) scattered around a single nest indicated that an individual gull, or both members of the pair together, had carried off at least 9 2- to 3-week-old Common Tern chicks (Spendelow, pers. obs.), but few or no remains of tern chicks have been found on trips made in recent years.

Satter (1978) described the gull colony site as being roughly 210 feet (64 m) by 100 feet (30 m) in size at high tide, and studied the behavior of the colony for 2 years during a period of time when it was dominated by Herring Gulls (*Larus argentatus*). Since her study there has been a noticeable change in the ratio of Herring Gulls to Great Black-backed Gulls (*L. marinus*) nesting on Goose Island. Because of the irregular timing of our visits, we do not have accurate figures for the total number of pairs of gulls that have attempted to nest each year, but the changes that have taken place annually can be approximated by comparing the number of young banded of each species (Table 1).

In 1982 a new species began nesting on Goose Island. On 26 June, JAS, together with Townsend Dickinson and Will McFarland, found 15 Double-crested Cormorant (*Phalacrocorax auritus*) nesting platforms in the center of the gull colony in an area that had been used by Great Black-backed Gulls for the past several years. Not all of the cormorant nests found on this first visit in 1982 looked active; only 10 had eggs in them, and we counted a total of 24 eggs. Most of the gull nests on the island apparently had been destroyed by a storm on 6-8 June, and despite the late date of this first visit, only 6 Great Black-backed Gull chicks were found that were old enough to be banded.

A second visit made 10 days later confirmed that only 13 of the cormorant nests were active. Five young had

hatched, and we counted 27 eggs, indicating that at least 8 more eggs had been laid since our previous visit. At least 7 more young had hatched by 9 July, and 6 of 9 young present on 13 July were banded. Only 16 eggs were still being incubated at that time.

At least one young cormorant attempted (unsuccessfully) to fly and several others swam off or hid, but 11 chicks remained at their nests when the colony was visited on 27 July. Of the 5 eggs in 2 nests that were still being incubated on that date, one was pipping. The bands that had been used on 13 July proved to have been too small for the now quite large legs of the young cormorants, so DSH and FJG removed bands from the legs of all the birds they could capture on 30 July. Two of the banded birds evaded capture.

The last trip to Goose Island in 1982 was made on 6 August by DSH, MGB, and David E. Emerson. At that time DSH estimated 25 cormorant chicks had hatched from all the eggs laid. Eleven chicks were caught and banded using bands issued to MGB, for a total of 13 banded chicks for the year.

In 1983 Goose Island was visited 4 times by DSH and several assistants. On 30 May an estimated 100-120 cormorants were present on the island, but only 13 nesting platforms were seen and only 9 of these had eggs in them. Three nests each with 2-, 3-, and 4-egg clutches were found for a total of 27 eggs. A few Great Black-backed Gull nests were found in the same area as the cormorant nests, but most of the 45 gull nests of both species were found on the perimeter of the cormorant colony.

On 12 June 2 Great Black-backed Gull chicks were caught and banded, and 2 cormorant chicks estimated to be only 1-3 days old were seen. The next trip to Goose Island was made on 17 July when 9 gulls and 15 cormorants were banded. Five more small cormorant chicks remained in 2 nests, but only 4 of these were still alive and were banded when the last trip to the island was made 8 days later on 25 July. A 12th Great Black-backed Gull chick was banded on this last trip, and a few late-hatching Herring Gull chicks were seen but were too small to be banded.

Even though the adult gulls returned to their nests before the adult cormorants did to theirs, thereby al-

lowing the gulls the chance to attack unguarded eggs and young for a period of about 2-3 minutes, at no time during the visits that were made to Goose Island in 1982 and 1983 did we see any gull predation on the eggs or young cormorants during the 5-10 minutes of observations made after we had returned to our boat. Gull predation on cormorant eggs and young following human disturbance has been reported at several other colonies (Kury and Gochfeld 1975, Ellison and Cleary 1978, DesGranges and Reed 1981).

Double-crested Cormorants nested in Connecticut for the first time on East White Rock, off Norwalk, in 1980. No nests were found in 1981, but 3 nests were found there in 1982. The number found nesting on Goose Island in 1982 and 1983, the large number of "loafing" birds sighted in 1983, and the sighting by the first three authors of several flocks of 100 or more immature cormorants off Goose and Falkner Islands in late July and August of each year since 1981 suggests that a rapid expansion in the size of the breeding population of this species in Connecticut may be imminent.

If nesting cormorant populations increase, it will be interesting to observe the effects that they will have on the gull and tern populations in Long Island Sound as the gulls that are displaced by the cormorants seek new areas to nest. Many of the large tern colonies of the early 1900's in Massachusetts were lost to expanding gull populations (Crowell and Crowell 1946, Drury 1965, Nisbet 1973, and references cited therein), and Herring Gulls attempted to nest in the tern colony on Falkner Island in 1980 and 1981 (Spendelow, pers. obs.). The expanding cormorant population may cause renewed attempts by the gulls to nest at Falkner Island, and also may cause the loss of some of the other smaller tern colonies along the Connecticut shore if the gulls begin using these sites.

Table 1. Gull and cormorant chicks banded on Goose Island, Connecticut, 1977-1983.

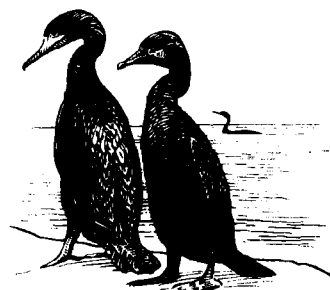
Year	Visits	Period of visits	Great Double-crested		
			Herring Gulls banded	Black-backed Gulls banded	Cormorants banded
1977	2	06 Jul - 21 Jul	110	6 ¹	0
1978	8	24 May - 27 Jul	50	19	0
1979	4	13 Jun - 11 Jul	68	28	0
1980	2	18 Jun - 04 Jul	57	15 ¹	0
1981	4	14 Jun - 26 Jul	60	25	0
1982	7	26 Jun - 06 Aug	0 ²	7	13
1983	4	30 May - 25 Jul	0 ²	12	19

¹ Because of the late date of the first visit of the year, several older Great Black-backed Gull young escaped capture and banding by swimming away.

² Some late-hatching Herring Gull chicks were captured on the last visit of the year, but were too small to be banded.

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