

## **Isles of Shoals Seabird Publications and Summary prepared by Dr. Julie Ellis**

### **A. Numbers of seabirds in the Isles of Shoals through time**

1) Before 1970 (Gross 1944, 1945, Jackson and Allan 1931, 1932; Shelley 1934; Wright 1937, Fowler 1960, Jackson 1947, 1960; Shelley 1932, Taber 1955, 1958, 1960; Palmer 1949; Forbush 1925)

After 1970: (Borrer and Holmes 1990; Drury 1973; Mulligan et al. 1974; Fefer 1977; Erwin 1979; Korschgen 1979)

2) Field Ornithology gull census (1999-2003) (Tom Good, Sara Morris, Julie Ellis)

3) Alcids (guillemots) in Maine including IOS (Cowger 1976; Steele 1979)

4) Transects at sea (Field Ornithology) all species of seabirds around IOS in June (Sara Morris, Tom Good, Julie Ellis)

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### **B. Toxicology**

1) Studies of gull egg and chick oiling on Appledore Island (Patty McGill, S.J. Lewis, M.E. Richmond)

### **C. Breeding biology and interspecific interactions**

1) Breeding ecology and competition between Great Black-backed Gulls and Herring Gulls on Appledore Island (Patty McGill, Tom Good, J. Ellis)

2) Breeding behavior of the Glossy Ibis and Snowy Egret and other wading birds on Appledore Island (Reusch, C and N. Shambaugh 1979; Tyler 1977)

3) Human disturbance and gull predation in cormorant colonies (Kury and Gochfeld 1975)

4) Breeding biology of Common, Arctic, and Roseate Terns (Diane DeLuca)

5) Cormorant banding (population) studies on Duck Island (Duff Wehle?)

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### **D. Foraging and diet studies**

1) Foraging ecology of gulls in the Isles of Shoals (Rome and Ellis; O'Keefe)

2) Tern diet studies (Diane DeLuca)

3) Gulls as intertidal predators (Shulman et al, Ellis et al,)

## **E. Physiology**

- 1) Energy allocation of nestling cormorants on Duck Island (Erica Dunn)
- 2) Effects of handling and captivity on gull physiology and histology (Andy Hoffman, Brad Taylor, etc.)

## *F. Effects of seabirds on vegetation in colonies*

- 1) Effects of gull and cormorant guano on soils and plants (Ellis et al.)

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## **Summary of seabird population trends in the Isles of Shoals**

### Double-crested Cormorants

Some have suggested that Double-crested Cormorants nested in the Isles of Shoals prior to European colonization in the 1600's (Lewis 1929, Gross 1944, Palmer 1949). After extensive hunting, cormorants were not noted in the Isles of Shoals until 1943, when 18 pairs were found on Duck Island (Gross 1944). By 1945, there were 100 pairs on Duck Island (Gross 1945). However, Duck Island was used a practice bombing target in the 1950's, which may have reduced populations on the island. In 1955, Taber (1955) noted over 100 pairs nesting on Lunging and Square Rock. In 1971 and 1972, the breeding population of cormorants on Duck Island was estimated at 250 pairs (Dunn 1975). Censuses conducted by A.C. Borror indicate that cormorant populations increased from 350 pairs in 1976 to 1,226 in 1995. Numbers increased consistently from 1976 until 1989, after which they declined (Fig. 1).

### Herring Gulls

There were no records of gulls between 1614-1847. There were a few references to nesting gulls during the hotel period from 1847 – 1914. For instance, Oscar Loughton (1930) wrote of seeing gulls flying overhead on the September morning in 1847 after his family first moved to Appledore from White Island. Loughton also saw great flocks of gulls in 1881 and referred to Herring Gulls nesting on Duck Island in 1884. In the late 1800's egg collecting and the millenary trade reduced populations of Herring Gulls to 200 pairs on the entire Maine coast by 1900 (Palmer 1949). In early 1900's there were no records of gulls, but many authors assumed that Herring Gulls had persisted on Duck Island. In 1920, Drury (1973) estimated that there were about 500 pairs of Herring Gulls on Duck Island. By the 1930's there were hundreds of Herring Gulls nesting on Duck Island (Shelley 1934; Jackson and Allan 1932) and in 1937, there were a few on Smuttynose Island (Wright?). By 1940, about 3,000 pairs of Herring Gulls nested on Duck, White, Smuttynose, Star, Cedar Islands and Lunging Island (Jackson and Allan 1932). Meanwhile, there were a few unsuccessful attempts at breeding on Appledore Island. In 1945, Herring Gulls reached about 5,000 pairs at the Isles of Shoals (Drury 1973). On the basis of 1977 data, the total population of Herring Gulls in the Isles of Shoals (4,654 pairs) was one of the largest local breeding assemblages on the east coast of the U.S. (Borror and Holmes 1990). Censuses conducted by Borror from 1974 until

1995, indicate that numbers of Herring Gulls in the Isles of Shoals have declined by half from 1976 to 1995 (Fig. 2).

### Great Black-backed Gulls

Great Black-backed Gulls were extirpated from the Maine coast by 1900 due to egg collecting and the millinery trade. The first New England nesting record after 1900 was of three breeding pairs reported from Duck Island in 1928 (Jackson and Allan 1931). In the 1930's there were around 10-15 pairs of Great Black-backed Gulls nesting on Duck Island (Shelley 1934; Jackson and Allan 1932). On Duck Island in 1938, 40-50 pairs occurred (Jackson 1947), 80 pairs in 1945, 120 pairs in 1950, and 700 pairs by 1960 (Gross 1945, Drury 1973). In 1944, six pairs nested on Smuttynose, and in 1955, there were about 50 seen flying over Appledore Island (Taber 1955). Census data from Borrer indicates that the population of breeding Great Black-backed Gulls has steadily increased over time in the Isles of Shoals reaching a peak of 2,408 in 1995 (Fig. 3).

### Common Eiders

Common Eiders were reduced to a single colony in Maine by 1907 due to hunting and the millinery trade. By 1943, the population along the Maine coast grew to 2,000 pairs. In the Isles of Shoals, the first hen with ducklings was observed off the coast of Lunging Island in 1977 (Borrer and Anderson pers. obs.). There were single nests on Appledore in 1985 and Duck in 1986. By 1995, there were 149 pairs in the Isles of Shoals (Fig. 4).

### Black Guillemots

In 1970, Borrer and Hewitt saw a Black Guillemot carry food into a crevice on Smuttynose Island, the first record of their nesting so far south on the New England coast (Cowger 1976). Guillemot habitat (storm tossed boulders above the high tide mark) are only found in three areas of the Isles of Shoals: east side of Appledore, north and south sides of Smuttynose, and the east side of Star. Every year since 1975, 1-6 pairs of Black Guillemots have been observed in courtship behavior off the rocks on the south side of Smuttynose. In 1985, Star Island conferees watched guillemots exploring the east side of Star Island; the first nesting record for New Hampshire. The definitive proof of nesting on Smuttynose was the discovery of two chicks in a nest on 30 June 1975. Star Island represents the southern most breeding site in its range.

### Terns (Common, Arctic, and Roseate)

Terns were first mentioned by Celia Thaxter in 1840's when she saw them nesting on Duck Island. Oscar Loughton also remembered both Herring Gulls and terns nesting on Duck in the late 1880's. The millinery trade drastically reduced the abundance on terns of the Maine coast by 1900 (Palmer 1949). Terns bred on Lunging Island as early as 1922 (Jackson and Allan 1931). In 1928, there were about 1,000 pairs on Lunging-most were Common Terns, with 10-12 pairs of Roseate Terns. In 1936, the island still supported Common Terns and about 25 pairs of Arctic Terns; in 1938 Roseate Terns also nested (50-60 pairs) (Jackson 1947). Around 60 pairs of terns nested on Lunging in the late 1940's (Drury 1973), Taber (1955) found none there in 1955. Terns remained absent

from the Isles of Shoals, presumably as a result of the growing numbers of gulls, which outcompete terns for nesting sites and are predators of eggs and chicks.

In 1997, New Hampshire Audubon and New Hampshire Fish and Game initiated a Tern Restoration Project on Seavey Island, NH. Restoration efforts involved using nonlethal means of gull control along with decoys and tern-colony sounds to attract breeding terns back to the Isles of Shoals. A small colony of six pairs of Common Terns raised and fledged six young on Seavey in 1997. The colony grew quickly, and between 1998 and 2003 the number of breeding Common Terns increased from 45 to 2,414 pairs. Roseate and Arctic pairs colonized Seavey Island more recently. There was one pair of Roseate Terns in 2001 and 63 in 2003; Arctic Terns only colonized the island in 2002 and increased from one pair in that year to 6 in 2003.

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