used the same comments she provided the late T. D. Burleigh for the first diagnostic Idaho specimen (Burleigh 1973, Auk 90: 693).

The birds were reported previously as Common Terns (*Sterna hirundo*) by Austin et al. (1972, California Birds 3: 43). The first hint that they were actually Arctic Terns came from Allan Phillips, who examined them on one of his periodic visits to the University of Arizona.

Arctic Terns may occur in the inland West more commonly in the fall than now believed to be the case, owing to the general difficulty in separating them from Common Terns in the field. Besides Arizona, inland specimens are reported only from Idaho (Burleigh, ibid.) and Colorado (two specimens, Bailey and Niedrach 1965, Birds of Colorado, Denver, Denver Mus. Nat. Hist., p. 390). We thank Mrs. Laybourne for identifying these birds.—GALE MONSON, *Arizona-Sonora Desert Museum, Tucson, Arizona 85703* and STEPHEN M. RUSSELL, *Department of Biological Sciences, The University of Arizona, Tucson, Arizona 85721*. Accepted 20 Dec. 73.

Herring and Great Black-backed Gulls nesting in North Carolina.—In 1971 we began a study of community succession on dredge islands in North Carolina's estuaries. Part of this study, a survey of the use of man-made dredge islands by nesting birds, involved locating and visiting the major nesting sites for gulls and terns in North Carolina. An unexpected find was a sizable colony of Herring Gulls (*Larus argentatus*) and one or two pairs of Great Black-backed Gulls (*Larus marinus*) nesting on a dredge spoil island near Oregon Inlet in Dare County, North Carolina, and a scattering of Herring Gulls nesting as far south as the lower Cape Fear River near Southport, Brunswick County, North Carolina (Fig. 1).

Herring Gull populations have been increasing dramatically in the northeastern states in recent years (Kadlec and Drury 1968), but according to the A.O.U. Check-list (1957), their breeding range extends southward along the east coast regularly only to Long Island, New York, and casually to Chincoteague, Virginia (about 150 miles north of Oregon Inlet).

Great Black-backed Gulls nest south along the East Coast to Long Island, New York (A.O.U. 1957) with the most southerly nesting site at Jamaica Bay (Peakall 1967).

Twice previously Herring Gulls have been reported nesting in North Carolina. In 1962 Hailman (1963) found two nests on Gull Island in Pamlico Sound, and the next year Ames (1963) found a single nest on Beacon Island in Ocracoke Inlet (Fig. 1). These two sightings involving three nests are the only known records of Herring Gulls breeding in North Carolina prior to 1971.

Immature and adult Herring Gulls have been seen regularly in North Carolina during recent summers, but they were generally assumed to be nonbreeding birds. The discovery of 81 nests at two sites in 1972 and 98 nests at six sites in 1973 indicates that this species has become established in northeastern North Carolina and is apparently still spreading southward.

In addition to the large colony of Herring Gulls at Oregon Inlet, small numbers of nests were found on five other nearby islands. South of Oregon Inlet Herring Gull nests were scattered and always associated with nesting colonies of Laughing Gulls (*Larus atricilla*) or terns (Fig. 1). At Gull Island between Oregon Inlet and Buxton we found a single nest containing three eggs on 31 May 1973. We did not check this island in 1972, but it was the site of the two nests Hailman found in 1962. At Ocracoke Inlet we found single nests both in 1972 and 1973. Both nests were in

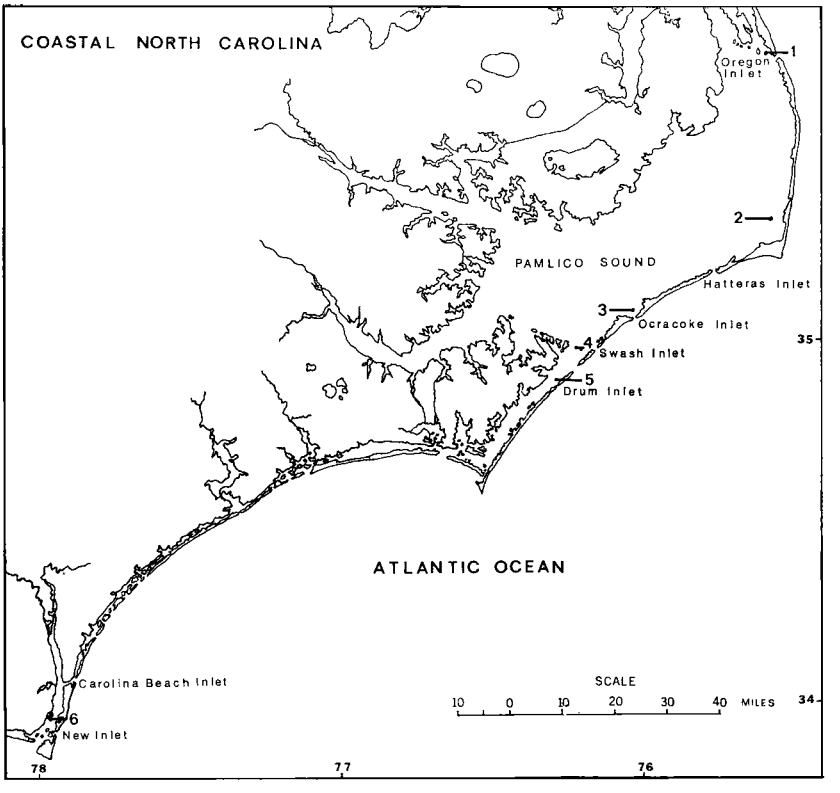

Fig. 1. Nesting locations for Herring and Great Black-backed Gulls in North Carolina: 1, Oregon Inlet; 2, Gull Island; 3, North Rock Island; 4, Harbor Island; 5, Dump Island; 6, Cape Fear River.

the North Rock Island complex near where Ames found the nest in 1963. Still farther south on Harbor Island at the junction of Pamlico and Core Sounds and just off Cedar Island, we found four active nests on 8 June 1973. This location was not checked in 1972. Four adults and one flightless chick found on 5 July 1973 at Dump Island near Old Drum Inlet indicated one or more active nests at that site. Approximately 150 miles south of Drum Inlet is the most southerly nesting site in North Carolina, near Southport on the lower Cape Fear River. At Southport we saw a pair of adults and an empty nest in 1971. In 1972 we located two empty nests with a single downy chick near them. In 1973 adults were present but apparently did not nest.

Ted Beckett (pers. comm.), who bands gulls and terns in breeding colonies along the South Carolina coast, has not found Herring Gulls nesting in that state, but has noted a marked increase in numbers of juvenile and adult birds during recent summers.

The Herring Gull colony near Oregon Inlet appears to have been highly successful in both 1972 and 1973. On 24 June 1973 we located 71 nests containing eggs.

Active nests averaged 1.64 eggs. Many chicks, most of them large and nearly fully feathered, were present. On 1 June 1973 we found 79 nests containing eggs. Clutch size averaged 2.1 eggs. In addition, we counted 57 juveniles ranging in age from freshly hatched chicks to nearly fully feathered individuals. Although a few dead chicks were present each year, mortality was obviously low and the colony appeared to be thriving.

This colony was on a dredge island approximately 1200 yards long by 200 yards wide. Maximum elevation was 10 to 12 feet. The island consisted of several domes separated by low swales. The substrate was mainly fine to medium sand with some shell material. The Herring Gulls nested exclusively on the upper slopes and tops of the domes. Large scattered clumps of bitter panic grass (*Panicum amarulum*) dominated the site, with horseweed (*Erigeron canadensis*), yellow-flowered camphorweed (*Heterotheca subaxalaris*), evening primrose (*Oenotheria humifusa*), and seaside goldenrod (*Solidago sempervirens*) scattered between the clumps of panic grasses. Vegetative cover was estimated at about 50%. Most of the nests were placed next to the large clumps of *Panicum amarulum*.

When we found the Herring Gull colony at Oregon Inlet on 24 June 1972, four adult Great Black-backed Gulls were present. Their actions were suspicious, but we were unsure as to whether or not young of both species were present. The following day Soots returned to the island and anchored offshore. Four large flightless juvenile gulls fled the beach at his approach. After they became accustomed to the boat, they returned to the beach and were subsequently fed by at least two adult Great Black-backed Gulls. We are sure that at least one and possibly two pairs of these gulls nested with the Herring Gulls near Oregon Inlet in 1972. Four adult Great Black-backed Gulls were again present on this island in 1973, and a Great Black-backed Gull nest containing three eggs was found on 1 June 1973. The eggs were identified by measurements of 56 × 78 mm, 55 × 79 mm, and 54 × 77 mm, which are larger than Herring Gull eggs (Bent 1921: 106). These records represent the first known evidence of nesting by the Great Black-backed Gull in North Carolina.

Southward breeding range extension of Herring and Great Black-backed Gulls may have ominous ecological significance. Both are predators on the young of other colonial nesting birds (Bent 1921: 82–83; Hatch 1970) and represent new and perhaps important factors in the breeding ecology of such regular North Carolina nesters as the Royal Tern (*Thalasseus maximus*), Common Tern (*Sterna hirundo*), and Laughing Gull. Considerable mortality of young Royal Terns was noticed in a colony near the nesting Herring and Great Black-backed Gulls in 1972. No such mortality was found elsewhere, and circumstantial evidence indicates the possibility of gull depredation. Royal Terns abandoned this site in 1973. Whether this was due to the presence of the gulls or to some other factor is not known.

The island with the large Herring Gull colony also contained a colony of 4000 to 6000 Laughing Gulls that nested primarily in the low swales between the domes and in the dense *Spartina patens* along the edges of the island. Laughing Gull nests extended much farther up the domes where Herring Gulls were absent and did not overlap into the Herring Gull colony. A colony of mixed herons and egrets was also present nearby in low scattered clumps of wax myrtle (*Myrica cerifera*) and groundsel tree (*Baccharis halimifolia*). In 1972 many dead juvenile Laughing Gulls were present when we visited the site. In 1973 mortality appeared lower but most Laughing Gull eggs had not hatched at the time of our visit.

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Relationships of nesting hawks with Great Horned Owl.—Several studies of raptor breeding populations have intimated that the Great Horned Owl, *Bubo virginianus*, does not normally tolerate other raptors nesting near its nest (Smith 1943, Craighead and Craighead 1956, Hagar 1957), but the literature reports the following raptors nesting close to the owl: Harris' Hawk, *Parabuteo unicinctus* (Freemyer and Freemyer 1970); Red-tailed Hawk, *Buteo jamaicensis* (Smith 1970); Red-shouldered Hawk, *Buteo lineatus* (Bendire 1892, Sharp 1906); Bald Eagle, *Haliaeetus leucocephalus* (Jacobs 1908, Broley 1947).

While investigating the breeding biology of the Red-shouldered Hawk I watched several Great Horned Owl nests from January through July 1973 in Orange County, California. A pair of Cooper's Hawks, *Accipiter cooperii*, attempted to use a Great Horned Owl nest after the owl nest had failed. The owl began nesting activity in a stick nest that Cooper's Hawks had built the previous year. In 1972 three Cooper's Hawks fledged from the nest, which was 6.7 m high in a small live oak (*Quercus engelmannii*) in a large grove above the floodplain of a seasonal stream. The Great Horned Owl laid three eggs beginning on 18 February 1973. Regular nest checks showed the owl incubating between 18 February and 14 March. I saw an adult Cooper's Hawk within 200 m of the owl nest tree on 24 and 28 February, and on 19 March watched an adult Cooper's Hawk vigorously attack an adult Horned Owl approximately 30 m from the owl nest tree. The hawk dived on the owl from an overhead perch while cackling. The owl flew to another perch 10 m away with the hawk in close pursuit. The hawk did not strike the owl, but dived close enough to displace it. After 5 min the Cooper's Hawk flew to a perch out of my sight where it continued to cackle loudly for 4 min. Throughout the attacks another adult Great Horned Owl remained on the nest in a low profile incubating position.

No owl was seen at the nest on 27 March and a check of its contents revealed no eggs. Both adult owls were found still within 100 m of the nest.

A female Cooper's Hawk was on the nest incubating two eggs on 5 May. On 9