

A Large Heron and Egret Colony on the Stillwater Wildlife Management Area, Nevada.—Conspicuous among the members of the avian fauna that utilize the Stillwater Wildlife Management Area for nesting are the herons, egrets, and ibis which congregate in large numbers in the marsh. One very large colony consisting of the nests of these birds was found in 1950. Three smaller colonies, occupied by ibis or herons, were also present. The principal colony seemed unusually large in view of its inland location, containing an estimated 1,191 nests.

Nests in the largest colony included those of Black-crowned Night Herons (*Nycticorax nycticorax*), Great Blue Herons (*Ardea herodias*), Snowy Egrets (*Leucophoyx thula*), American Egrets (*Casmerodius albus*), and White-faced Glossy Ibis (*Plegadis mexicana*). Two of the smaller colonies contained ibis nests, and the third, Great Blue Heron nests.

All of the colonies were found in or adjacent to the Stillwater Marsh which is located 14 miles northeast of Fallon in the Lahontan Valley of west-central Nevada. This marsh lies on the eastern edge of the recently established Stillwater Wildlife Management Area.

The marsh is a waste-water sump, one of several receiving drain water from the extensive irrigation system supplied by the Carson and Truckee rivers. Originally the marsh was maintained only by run-off in the spring of the year through the Stillwater Slough. This produced violent fluctuations, with extremely high water in the spring and drought during the rest of the year. Today, the marsh obtains nearly all of its water from ditches which drain the irrigated lands and, consequently, receives its greatest inflow in the hottest months when the rate of evaporation is highest. This change has effectively increased the size of the marsh and has tended to stabilize water levels so that all but a few of the shallower, outlying ponds have permanent water.

Accompanying the stabilization of water levels have come improvements in both food and cover which benefit marsh birds particularly. Fish, frogs, and aquatic invertebrates have become permanent members of the fauna, while extensive new areas of emergent plant growth have increased the available nesting cover.

At the present time, there are approximately 24,000 acres within the marsh area. Water, flowing north and east through several drainage ditches, spreads out into a series of marsh ponds varying from two to four feet or more in depth and characterized by wide margins of cattail (*Typha angustifolia* L. and *T. domingensis* Persoon). North of these ponds the marsh is more shallow. Cattail still predominates along the central channels, but hardstem bulrush (*Scirpus acutus* Muhl.) makes an extensive growth in some of the marginal ponds. Beyond this median zone, the water spreads out in a shallow basin formed by an arm of the Carson Sink. The upper limits of this flooded area support a growth of alkali bulrush (*Scirpus paludosus* A. Nels.). The lower end, which is known locally as the "Big Water," fluctuates too greatly for emergent plants but produces wigeon grass (*Ruppia maritima* L.) in years when sufficient water is available. Other important submergents in the marsh are sago pondweed (*Potamogeton pectinatus* L.) and muskgrass (*Chara* sp.). Emergent vegetation is well interspersed with open water and amounts to some 10,000 acres or slightly more than 40 per cent of the total marsh acreage. Aquatic growth occurs in about half of the open water present.

Offering such a diversity of conditions, the marsh attracts a large and varied assortment of birds. Thousands of waterfowl and shorebirds use the area on migration with many of these remaining as summer residents to breed.

The largest colony is located in an 18-acre stand of hard-stem bulrush which is entirely surrounded by cattail growth. This stand of bulrush is in the north-central

part of the marsh. It is isolated from the mainland but is in close proximity to two of the interior islands. At the south end, a three-acre portion is separated from the main body by a narrow band of cattail. Water depth in the bulrush varies from 18 inches to 3 feet. The bulrush makes an exceedingly rank, dense, growth with culms extending 6 to 8 feet above the surface of the water. The stand is broken in the center, however, by numerous interconnected small pools and channels. It was along the periphery of these interior openings that most nesting occurred.

The colony was first seen from the air on April 24, 1950, by Marshall while making a waterfowl census from an airplane. A preliminary investigation was made on the ground on April 27, followed by a more detailed survey on April 29 by Marshall,

TABLE 1
NEST CENSUS OF NORTH END OF COLONY, APRIL 29, 1950

<i>Species</i>	<i>Nests with eggs only</i>	<i>Nests with eggs and young</i>	<i>Nests with young only</i>	<i>Nests empty or abandoned by young</i>	<i>Total nests seen</i>	<i>Total nests estimated</i>
Black-crowned Night Heron	192	64	89	78	423	564
Great Blue Heron	43	13	15	2	73	77
Snowy Egret	60	1	0	2	63	90
American Egret	3	0	0	0	3	4
White-faced Glossy Ibis	1	0	0	0	1	4

Giles, and Fred Wright, Waterfowl Technician of the Nevada State Fish and Game Commission. A part of the colony, located in the isolated southern portion of the bulrush growth, was overlooked on these first two visits and was not checked until May 19.

The colony was surveyed by wading its length, one observer going through the middle and the other two covering the sides. Each man took data on all nests found. Information tabulated included the species using the nest, number of eggs and/or young, and type of nest construction. The presence of food items was also noted. Some of the corners of the rookery were not thoroughly examined. This was not done for lack of time and the need for minimizing disturbance.

The nests of some species were easier to find than those of others. A considerable number of nests was concealed by the bulrushes and therefore overlooked. The Snowy Egrets, in particular, tended to build their nests a short distance back in the vegetation. Most of the large and conspicuous Great Blue Heron nests were seen. A large percentage of the night heron nests were also found, though allowance had to be made for some of the peripheral marsh openings which were not thoroughly examined.

We feel that it is worthwhile to make an estimate of the total number of nests. Such an estimate will better illustrate the actual size of this colony than could the nest count alone. By comparing the number of birds flushed ahead of us with the number of nests seen and by extending our counts from areas searched carefully to other parts of the colony more hastily inspected, but having similar proportions of plainly visible nests, we were able to arrive at total figures which are indicative if not precise.

The final columns in tables 1 and 2 show our estimate of total number of nests present. The combined total by species for both segments of the colony is:

Black-crowned Night Heron, 867; Great Blue Heron, 142; Snowy Egret, 168; American Egret, 6; and White-faced Glossy Ibis, 8. It is possible that more ibis nested later in the season. At the time the north portion of the colony was examined ibis were still migrating.

On April 29, nesting was well underway, that of the Black-crowned Night Herons being the most advanced with 36 per cent of the nests seen containing young birds. A few young in the flapper, or early flight, stage were noted, and many others were old enough to sneak away from the nest to hide in the emergent growth as we approached. It was frequently difficult or impossible to assign these more active birds to definite nests, and this in large part, accounts for the high incidence of empty nests (18 per cent).

TABLE 2
NEST CENSUS OF SOUTH END OF COLONY, MAY 19, 1950

Species	Nests with eggs only	Nests with eggs and young	Nests with young only	Nests empty or abandoned by young	Total nests seen	Total nests estimated
Black-crowned Night Heron	12	5	39	126	182	303
Great Blue Heron	5	3	40	1	49	65
Snowy Egret	17	4	16	2	39	78
American Egret	1	0	0	0	1	2
White-faced Glossy Ibis	1	0	1	0	2	4

The clutches of the Great Blue Herons were nearly all complete, and hatching had occurred or was in progress in 38 per cent of the nests. Snowy Egrets had started laying somewhat later. Two nests were still under construction, and young were noted in only one nest. Only 3 American Egret nests and one ibis nest were seen. Each contained eggs which were probably being incubated. The data in table 2 were obtained on May 19 from the smaller, south end of the colony and provide a record of nesting progress. At the time of this visit many of the young night herons were flying, and a considerable number of Great Blue Herons, though still at the nest, were fully feathered.

The principal material used in nest construction was hardstem bulrush; all night heron nests, except six, and all egret and ibis nests were formed of this material. The six exceptional nests were located in clumps of cattail and were composed principally of the leaves of this plant. The Great Blue Herons reinforced their nests with the woody branches of burro-weed (*Allenrolfea occidentalis* Wats.) and of sea-blite (*Suaeda torreyana* S. Wats.) but built upon a foundation of hardstem bulrush.

The young birds observed did not regurgitate the remains of their previous meal as is commonly noted among pelicans and cormorants, hence only a few records of their food were obtained. On two Great Blue Heron nests and one night heron nest dead carp (*Cyprinus carpio* L.) were found. These fish measured from 7 to 10 inches in length and were present probably because they were too large to be eaten. In fact, one young night heron, found floating in the water with a carp of similar size protruding from its mouth, quite evidently had been able neither to swallow nor to disgorge the fish and died as a result. Since carp are the most abundant and readily obtainable fish in the marsh, they can be expected to provide a major source of food.

The colony was apparently a new one. No evidence of previous nesting was found. Because of its large size it would seem that the use of this area represents a change in nesting sites rather than a new concentration of breeding birds. No other colony of this size has been recorded from any of the several marshes in the Lahontan Valley, so its origin is unknown. Possibly the birds moved from another location within the Stillwater area. Extensive stands of hardstem bulrush occur in the northwestern part of the marsh offering possible locations. Parts of this bulrush growth burned during the early spring prior to the start of nesting, and the fire removed the mat of dead material essential to nest construction.

Besides the large colony there were other nesting areas of much smaller size. Two ibis colonies were found: one, containing 25 nests, was in a patch of hardstem bulrush within the zone of alkali bulrush near the lower end of the marsh; the second, with 11 nests, also in hardstem bulrush, was on the Canvasback Gun Club, a privately owned tract comprising the southwestern corner of the marsh. This latter colony was unique in that the nests were constructed in an area of dense growth away from open water.

Immediately to the south of the Stillwater Marsh, on the Freeman Ranch, Great Blue Herons nested in a strip of large cottonwood trees (*Populus fremontii* Wats.) growing beside an irrigation ditch. In 1949, these trees contained 85 nests. Originally we thought that some of these birds might have deserted to join the nesting colony in the big marsh, but such was not the case. The number of nests in the cottonwoods increased to 106 in 1950. Further evidence concerning the type of food eaten was obtained from one of these blue heron nests. This nest held 10 carp measuring from 10 to 12 inches in length.—LEROY W. GILES, AND DAVID B. MARSHALL, *U. S. Fish and Wildlife Service, Fallon, Nevada.*

Nest of Barn Swallow Saddled on Wire.—In eastern Ohio, Barn Swallows (*Hirundo rustica*) normally plaster their nests to the sides of rafters and joists or place the nests on the tops of girders in barns. A notable exception to this practice was found on June 19, 1941, in the barn of C. A. Bieber near Youngstown, Ohio. This nest was found saddled on the top of a single small wire and had no other support than that furnished to it by the wire.

The wire to which the nest was attached carried an electric current and was insulated. This wire with the insulation was five millimeters in diameter, and its surface was quite smooth. The wire extended between two adjacent joists 60 centimeters apart, and it was attached to each joist. It was not stretched tightly but could be moved four millimeters from side to side as measured at a point midway between the joists. This condition was responsible for a significant amount of swaying of the nest each time the birds alighted on it. The nest was attached to the wire about five centimeters nearer to one joist than to the other.

The top of the nest was circular in outline. The nest extended 52 millimeters above the wire and 38 millimeters below at the farthest point. It was somewhat less bulky than other nearby nests which were plastered on the sides of the joists. Nearby, there were ample supports of the types usually chosen and where the nest might have been placed. Fourteen additional pairs of Barn Swallows occupied the barn at the same time.

Four eggs were laid, but after incubation had been in progress for about a week, the nest broke loose from the wire and fell to the floor.—PAUL A. STEWART, *Department of Zoology and Entomology, Ohio State University, Columbus 10, Ohio.*