TABLE 1

FOODS OF 6 FULVOUS WHISTLING DUCKS FROM COLLETON COUNTY, SOUTH CAROLINA

Item[a]	Occurrence (No. Stomachs)	Percent Volume		
		Gullet	Gizzard	Total
Panicum dichotomiflorum	6	67.9	40.9	62.8
Cuphea carthagensis[b]	5	22.5	4.3	19.0
Panicum agrostoides	6	4.3	30.4	9.3
Fimbristylis autumnalis[b]	1	3.6	15.9	5.9
Paspalum boscianum[b]	5	1.0	2.4	1.3
Eleocharis sp.	3	—	4.9	0.9
Echinochloa walteri	6	0.6	0.6	0.6
Paspalum dissectum[b]	5	0.1	—	0.1

[a] Items which contributed only a trace amount (< 0.1%) in either the gullet or gizzard are *Cladium jamaicense, Cyperus polystachyos, Digitaria sanguinalis, Hydrocotyle* sp., *Panicum verrucosum, Paspalum floridanum,*[b] *P. laeve,*[b] *P. setaceum,*[b] *Polygonum hydropiperoides, P. lapathifolium, P. punctatum, Rhynchospora macrostachya,*[b] *Scirpus olneyi, Setaria glauca,* bivalves (Mollusca), and insects (Insecta).

[b] These occurred in no other duck species in the peat marsh area.

14 duck species in the samples. We identified 24 food items, but only 7 contributed more than trace amounts to the diet (Table 1). Grasses made up 74.1% of the total food volume, and fall panic grass (*Panicum dichotomiflorum*) composed about 63%. Redroot (*Lachnanthes caroliniana*), which was the principal item in other ducks (mostly *Anas* spp. and *Aythya* spp.) from the peat marsh, did not occur in the Fulvous Whistling Ducks. Fall panic grass and redroot were managed species of food plants in impoundments in the peat area. Seeds of 8 species that did not occur in other ducks from this marsh composed over 26% of the volume. Of these, marsh waxweed (*Cuphea carthagensis*) and fringed sedge (*Fimbristylis autumnalis*) were particularly important.

These foods are similar to those used by the species in Louisiana, as revealed by analysis of digestive tracts and droppings from areas under rice cultivation (Meanley and Meanley, Wilson Bull. 71:33–45, 1959). Meanley and Meanley (op. cit.) described areas where most food plants grew as grassy places in rice fields that were just high enough above water for convenient feeding. The 8 major food plants and most lesser food plants in our analysis grew most abundantly along dikes and impoundment margins, except for fall panic grass that was abundant inside impoundments as well. Rylander and Bolen (Auk 91:86–94, 1974) depict this duck as an aquatic siever with skeletal structures adapted for this feeding niche.

Further studies are needed to gather information on the natural history and behavior of this little-known species. Its successful range expansion may be reflected partially in the adaptation to similar feeding habitats between old and new range sites.—J. LARRY LANDERS AND A. SYDNEY JOHNSON, *School of Forest Resources and Institute of Natural Resources, Univ. of Georgia, Athens 30602.* *Accepted 6 Aug. 1976.*

Some effects of human activities on the Great Blue Heron in Oregon.—During the breeding season of 1974 we took part in a survey to determine the locations and number of nests in heronries of the Great Blue Heron (*Ardea herodias*) on the Oregon coast. We collected data on nesting activity, physical size of the heronries, and, indirectly, on

TABLE 1

SUCCESS OF GREAT BLUE HERONS AT HERONRIES IN WESTERN OREGON

Location (Co.)	Number of Nests		Area (ha)	Fledging Rate*	Notes
	Active	Inactive			
Columbia R., Clatsop Co.	161	14	0.36	2.70 (n = 43)	undisturbed
Wheeler, Tillamook Co.	33	21	0.24	2.20 (n = 21)	logging road
Ball Mt., Lincoln Co.	15	0	0.12	—	newly formed
Mill Creek, Lincoln Co.	18	—	1.21	—	undisturbed
Yaquina Bay, Lincoln Co.	35	—	—	—	newly formed
Beaver Creek, Lincoln Co.	32	18	0.41	—	clearcut near
Reynolds Ck., Lincoln Co.	44	14	0.65	—	clearcut near
Siuslaw R., Lane Co.	88	4	0.36	2.53 (n = 16)	undisturbed
North Spit, Coos Co.	97	7	0.36	—	undisturbed
South Slough, Coos Co.	86	3	0.24	2.58 (n = 30)	undisturbed
Bandon, Coos Co.	97	12	0.53	2.18 (n = 22)	undisturbed
Rogue R., Curry Co.	38	—	0.08	—	undisturbed

* This is an average number of young per successful nest at 7–8 weeks.

the influence of man in the heronry. In those heronries we examined, Great Blue Herons typically built their nests from 7 to 25 m in red alder (*Alnus rubra*), western hemlock (*Tsuga heterophylla*), and sitka spruce (*Picea sitchensis*). Great Blue Herons were the only ardeids present in those heronries examined.

Five of 12 heronries (42%) had been affected by logging operations. Three of the heronries had recent clearcutting or road construction within 0.5 km, and 2 had newly formed in 1974 after destruction of nearby 1973 heronries by logging or logging related activities. Seven heronries were undisturbed in terms of current land management or other obvious influences of man. Mean colony size for the areas with logging operations was 36.3 active nests ($n = 3$), while for undisturbed areas it was 107.2 active nests ($n = 5$). We have no information on colony size in previous years. Colony size for the 2 newly formed heronries was 15 and 35 active nests (Table 1). Nest density was measured for the area enclosed by the peripheral nest trees. There was an average of 94.4 active nests/ha for the 3 disturbed heronries and 259.2 active nests/ha for the 5 undisturbed heronries ($t = 3.98$, $p < 0.01$). Nest density for 1 newly formed heronry was 35.8 active nests/ha. Data on fledging success per successful nest were collected from blinds when

the young were approximately 7–8 weeks old at 4 undisturbed heronries and 1 disturbed heronry. Though we realize fledging rate should have been measured at more disturbed sites, it is worth mentioning that the fledging rate at the Wheeler heronry (disturbed) was 2.2 young per nest ($n = 21$), one of the lowest figures obtained at any of the heronries.

Nest occupancy, defined as active nests in relation to total number of nests, was significantly higher in undisturbed areas. In the disturbed areas 67% ($n = 162$) were active; 93% ($n = 573$) were active in undisturbed areas ($\chi^2 = 79.8$, $p < 0.005$). Within a disturbed heronry the probable effect of human disturbance on nest occupancy could be quantified. For example, the average distance from the nearest point of disturbance to active and nonactive nests in the Wheeler heronry (Table 1) was 148 m ($n = 21$) for inactive nests and 219 m ($n = 33$) for active nests ($t = 5.62$, $p < 0.001$). This phenomenon of nesting activity shifting away from the point of disturbance was observed in those heronries with logging operations nearby and such a movement in any direction was unnoticed in undisturbed heronries.

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Swimming by Bobwhite chicks.—On 8 June 1975 when driving over an unpaved rural road in Granville County, North Carolina, I saw a female Bobwhite (*Colinus virginianus*) cross the road close in front of me with her brood of 8 recently hatched chicks. On coming to the water-filled ditch at the side of the road the mother bird flew across the ditch, and the chicks followed her by swimming. The ditch was about 0.5 m wide and the water in it a maximum of 8 cm deep.

To further test the swimming ability of Bobwhite chicks, I later placed 2 three-day-old incubator-hatched chicks on the water of a farm pond about 1 m from its shore. The chicks quickly swam to shore, swimming with the head and about ½ of the body above the surface of the water.

I know of no published report of swimming by Bobwhite chicks. However, Stoddard (The Bobwhite Quail its Habits, Preservation and Increase, Charles Scribner's Sons, New York, N. Y., 1931) noted that older Bobwhites swam when placed on a water surface after removal of their flight feathers. Also, Schorger (The Wild Turkey its History and Domestication, Univ. Okla. Press, Norman, 1966) reported Turkey (*Meleagris gallopavo*) poults being able to swim surprisingly well.—Paul A. Stewart, *203 Mooreland Drive, Oxford, NC 27565.* *Accepted 13 July 1976.*

Seasonal variation in foraging territory of Red-cockaded Woodpeckers.—The habitat requirements of the endangered Red-cockaded Woodpecker (*Dendrocopos borealis*) must be known in order to implement effective forest management practices for the preservation of this species. The few published estimates of territory size for this woodpecker are of 2 types. Estimates derived by dividing the size of a discrete area by the number of clans occupying that area can provide information on their minimum requirements if it is assumed that (a) all of the habitat is suitable, and (b) the birds are present at maximum density. This technique has produced estimates of 26.7 and 67.7 ha per clan in 2 Texas forests (Lay and Russell, Auk 87:781–786, 1970) and 86.2 ha per clan in South Carolina (Beckett, EBBA News 37:3–7, 1974).