successful feeding attempts. We noted, however, that aggressive and non-aggressive sandpipers had similar feeding attempt rates.

According to Recher and Recher (Wilson Bull. 81:140–154, 1969) a point is reached when the frequency and intensity of aggression among sandpipers declines as they become more concentrated in an area of abundant food. The adult sandpipers we watched may have reached this point but the juveniles may not have—possibly because they were less efficient than adults (see Recher, Ecology 47: 393–403, 1966) in catching prey and therefore had a higher threshhold for lowering aggression.

We thank D. G. Ainley, J. P. Hailman, and M. A. Howe for their helpful comments. This report is part of the results we have obtained in studies of migratory shorebirds funded by the Migratory Bird and Habitat Research Station, U.S. Fish and Wildlife Service, Contract No. 14-16-0008-687.—BRIAN A. HARRINGTON AND SARAH GROVES, *Manomet Bird Observatory, Manomet, MA 02345.* (Present Address SG: *Dept. of Zoology, Univ. of British Columbia, Vancouver, B.C.*). *Accepted 9 Apr. 1976.*

Herring Gull eating bayberry.—Several studies of the Herring Gull (*Larus argentatus*) (Harris, Ibis 107:43–53, 1965; Threlfall, Can. Field-Nat. 82:176–180, 1968; Tinbergen, *The Herring Gull's World*, 1960) have demonstrated the omnivorous and opportunistic qualities of its diet. In addition to the well known animal and garbage components, Herring Gulls consume grasses, grain, and blueberries (*Vaccineum angustifolium*) when available (Threlfall, Nature in Wales 11:67–73, 1968; Davis, Br. Birds 49:400–404, 1956; Haycock and Threlfall, Auk 92:678–697, 1975). This note describes a previously unrecorded vegetable food source.

On 30 August 1975 I observed an adult Herring Gull feeding on the fruit of bayberry (*Myrica pennsylvanica*) at Great Gull Island, Suffolk County, New York. The bird flew to the bush from downwind, lowered its feet and spread them in the upper twigs of the bush, and kept its wings spread so that it was supported by the wind. While in this position the bird bent its head several times and picked berries off the upper twigs. The gull fed in this manner for approximately 2 min and then flew off upwind.

Pellets of either Herring Gulls or Great Black-backed Gulls (*L. marinus*) containing bayberry fruit have been found by visitors to the island in late December and early January (Hays, pers. comm.), but no gull has ever been seen eating the fruit. (Observers are present on Great Gull Island every year from 1 May to at least mid-September.) The fruit is available throughout the year, although least common in late spring and early summer. The unusual feeding technique and scarcity of evidence suggest that for Herring Gulls bayberry fruit is an infrequent food item.

This is contribution No. 43 from the Great Gull Island Project, American Museum of Natural History.

I thank Helen Hays for reading an earlier version of this paper. Work at Great Gull Island is supported by the Linnaean Society of New York and the American Museum of Natural History.—ROGER F. PASQUIER, *Dept. of Ornithology, American Museum of Natural History, New York 10024.* *Accepted 9 April 1976.*

The Lesser Antillean Bullfinch in the Virgin Islands.—The polytypic Lesser Antillean Bullfinch (*Loxigilla noctis*) occurs throughout the Lesser Antilles (except the Grenadines), from Grenada in the south through Anguilla and Saba in the north and northwest. This species was not observed west of the Anegada passage, a 124 km strait separating the northern Lesser Antilles from the Virgin Islands and Puerto Rico until discovered by Raffaele and William Truesdell, Park Naturalist of the Virgin Islands Na-

tional Park, in 1971 (Bond, Seventeenth supplement to the check-list of the birds of the West Indies (1956), Acad. Nat. Sci., Phila., 1972). In this note we provide details of the occurrence of the Lesser Antillean Bullfinch and speculate concerning its dispersal to the Virgin Islands.

On 16 April 1971 Raffaele and Truesdell saw either a female or immature male Lesser Antillean Bullfinch .3 km from John's Folly Pre-school in the southeast corner of St. John. The bird, perched in a thicket of dry scrub and cactus, was giving a vocalization consisting of 5 "seeps" occasionally followed by a buzz note. The next morning Raffaele and Truesdell found a bullfinch at the same location. About .4 km to the south they located a pair of these bullfinches; a second pair was found .9 km further southwest on the trail to Kiddel Bay Salt Pond. Thus 5 birds were encountered in the xeric scrubland of the southeast coast. This is reported in summary by Bond (1972).

Dr. Marcus Buchanan (pers. comm.), Director of the Virgin Islands Ecological Research Station on St. John saw 2 male bullfinches flying near Centerline Road above Coral Bay on 18 October 1971. On 16 November, Truesdell located at least 10 individuals (Bond 1972) in the Nanny Point subdivision near where the first female was observed and a Mrs. Learner on 25 November found 2 birds 1.1 km west-northwest of the head of Kiddel Bay Trail.

From 16 January to 5 February 1972 Daniel Roby observed bullfinches on 9 days with a maximum of 15 being observed in a single day. He estimated having seen 40 *L. noctis*, but due to the inaccessibility of much suitable habitat adjacent to that where sightings were made we think that 100 birds is probably a more accurate estimate of the number of bullfinches on St. John at the time.

Roby searched for *L. noctis* throughout the island, including the remote east end, but only found the species in the southeast corner. The greatest concentrations of the Lesser Antillean Bullfinch were on the western side of Ram Hill, on the hill behind Nanny Point, and at the head of Salt Pond Trail. With the exceptions of the sightings by Buchanan and Learner and a pair of females seen by Roby on the east side of Europa Bay Salt Pond (3.2 km westnorthwest of Salt Pond), all bullfinch observations were within 1.5 km of Salt Pond.

Roby noted that the underparts of all closely observed adult male bullfinches were smokey gray. On 7 December 1972 Raffaele collected a female *L. noctis* at the foot of Ram Hill on St. John. This specimen was sent to the Bird and Mammal Laboratories at the U.S. National Museum and was identified by Richard Banks as *L. n. ridgwayi*. The specimen will be deposited in the University of Puerto Rico, Rio Piedras campus collection.

Habitat.—The area around Salt Pond is among the driest on St. John and the vegetation type is referable to the cactus woodland of Robertson (Auk 79:44–76, 1962). This association is characterized by a predominance of columnar cactus (*Cephalocereus royenii*), and the century plant (*Agave americana*); woody plants occur only as low scrub. Except for 2 females feeding by mangroves at the edge of Europa Bay Salt Pond, all perched *L. noctis* were in cactus woodland a short distance from the sea.

Feeding.—Roby observed *L. noctis* feeding on fruits on 6 plant species. Five individuals were recorded feeding on dildo cactus (*C. royenii*). Three fed on barrel cactus (*Cactus intortus*), 2 on common sage (*Lantana involucrata*) and manchineel (*Hippomane mancinella*) (a plant poisonous to man), one bullfinch ate fruits of gumbolimbo (*Bursera simaruba*) and of the bromeliad *Tillandsia fasciculata*. These are all common plants of the cactus woodland which surrounds Salt Pond.

Nesting.—Roby found an active nest containing 2 brown-speckled eggs on 20 January

1972 about .7 km from Ram Head. This nest, placed 1.8 m above the ground in an isolated 2.5 m tall *Opuntia rubescens*, was 23 m from the high tide mark and the cactus was 4 m from the edge of the vegetation. The nest, constructed of dried grass stalks, small twigs, vines, leaves and lined with the soft, silky plant fiber from the dildo cactus, was situated between 2 lobes of the cactus and was well protected from all sides by thorns. This nest measured 16 cm long by 11 cm wide by 17 cm high with an opening on the north side measuring 3 cm high by 5 cm wide. The female bullfinch was observed entering and leaving the nest several times and the male was seen in the vicinity. The pair abandoned the nest before the eggs hatched. Truesdell and Roby found a second nest 200 m south of the first on 29 January again in *O. rubescens*. This nest also had 2 eggs and, again, was close to the sea, about 15 m from the high water mark. Its construction and placement resembled that of the first nest except that its opening faced east. The nest measured 13 cm long by 11 cm wide by 15 cm high. The eggs hatched on 1 February. On 2 February both parents were photographed feeding the young. Occasionally the female entered the nest and brooded the young for a short time. Both birds were quite tame and were easily photographed from a distance of 4 m.

There were several indications that some bullfinches had fledged their young at the time of these observations in late January and early February, while others were just beginning to nest. Roby observed a female with a fully-fledged immature bird following her and gaping for food. On Nanny Point Hill he found a nest placed high in a tall *C. royenii* that was very similar in construction to the 2 active nests. On the west side of Ram Hill, 5 partially completed nests were found in *O. rubescens*. Roby heard male bullfinches singing at Kiddel Bay, the head of the trail to Salt Pond, and 200 m south of the second active nest.

Method of introduction.—Marcus Buchanan observed 2 schoolgirls from Barbados arrive on Tortola with 2 caged male Lesser Antillean Bullfinches on 1 July 1971. Possibly then, the establishment of *L. noctis* on St. John might be the result of an introduction.

James Bond (Nineteenth supplement to the check-list of the birds of the West Indies (1956), Acad. Nat. Sci., Phila., 1974) suggests another feasible mechanism for the transportation of *L. noctis* to St. John is via cruise ship en route to Charlotte Amalie from St. Martin or Antigua. While such a mechanism may be excellent for explaining the arrival of a flocking species such as the House Sparrow (*Passer domesticus*), it has its drawbacks when one considers a territorial species like *L. noctis* that demands trees or brush and is not likely to be found near docks or flying offshore.

There are several factors that support natural colonization by this bullfinch: (1) *Loxigilla n. ridgwayi* occurs on the Lesser Antillean islands of Anguilla, St. Martin, St. Barthelemy, Barbuda and Antigua that lie adjacent to the Virgin Islands. Therefore this race is the most likely of the 9 Lesser Antillean Bullfinch races to have invaded the Virgins. Anguilla and St. Martin, the closest islands in the range of *L. n. ridgwayi* to the Virgin Islands are also the closest of all Lesser Antillean islands (supporting bullfinches) to the Virgins. Saba, the closest source to the Virgins of another race of Lesser Antillean Bullfinch (*L. n. coryi*), is not only farther from these islands (with the exception of St. Croix which is not known to have bullfinches) than Anguilla and St. Martin, but *Loxigilla* is rare on Saba while it is common on Anguilla and St. Martin.

(2) The only islands directly in the path of expansion of *L. n. ridgwayi* from its native islands to St. John are Norman and Peter islands. Both of these have now been reported to support Lesser Antillean Bullfinch populations. Though no bullfinches have been found on St. Thomas nor St. Croix (Murray, Birds of the Virgin Islands, Dukane Press Inc., Hollywood, Fla., 1969; G. A. Seaman, pers. comm.), Anegada (La Bastille and Richmond,

Carib. J. Sci. 13:91–110, 1973), Virgin Gorda and Beef Island (Raffaele, pers. observ.), nor on Tortola (Raffaele, pers. observ.; A. Wetmore, pers. comm.), none of these islands is in the most direct potential route of expansion of *L. n. ridgwayi* from Anguilla or other islands inhabited by this bullfinch. Norman Island lies 8 km due east of Salt Pond, the population center of *L. noctis* on St. John, and is thus directly in the path of any expansion from Anguilla. Peter Island, because of its location 2.2 km northeast of Norman Island is probably less important than that island to any immigration. In May of 1972 Marcus Buchanan received reports of bullfinches inhabiting both Norman and Peter islands.

(3) Hurricane Donna provides a plausible mechanism for the transport of the bullfinch to the Virgin Islands. On 5 September 1960 the eye of hurricane Donna passed directly over Anguilla. At this time the San Juan, Puerto Rico Weather Bureau reported the highest winds above 135 kph extending 135 km in a northeast semicircle and 72 km in a southwest semicircle. Outside these areas were gale force winds ranging from 61–133 kph extending 35 km northeast and 180 km southwest of the hurricane's center. Later that morning Donna passed a short distance north of St. Thomas in the Virgin Islands. Wind gusts up to 108 kph were reported there even before the hurricane. This hurricane which passed directly over Anguilla and through the Virgin Islands could have been responsible for transporting *L. noctis* to the Virgin Islands.

Since 1957, when the thorough study of Robertson (1962) indicated that there were no bullfinches on St. John (Robertson, pers. comm., spent 5 days on the coast from Lameshur to John's Folly and Ram Head), the only other major storm that passed between Anguilla and the Virgin Islands was hurricane Faith in August 1966. This hurricane, however, was weaker than Donna and passed farther to the north of the islands under consideration, striking them with lesser winds (61–133 kph) (Herbert, Weatherwise 20:17–23, 1967). We doubt that Faith's winds would have been strong enough to dislodge bullfinches from Anguilla, and as this hurricane passed relatively far to the north of the Virgin Islands we could expect the Lesser Antillean Bullfinch's invasion to have involved more northerly islands in the group.

(4) The pattern of *L. noctis* distribution in the Virgin Islands when compared to that of human settlement argues for natural expansion rather than human introduction as the means of bullfinch dispersal. If the species had been brought in as a cage bird and had escaped, the probability of such an incident occurring would be greatest near human population centers. The bird would then establish itself in the nearest suitable habitat to these centers. This has been the case in Puerto Rico where of the 11 Ploceidae and Fringillidae found to be recently established on that island the majority have their population centers in or near large cities and appear to be spreading outward from them while only 1 species has done all its colonizing completely removed from a heavily populated metropolitan area.

Biogeography.—Rather than representing a haphazard invasion into an area, the Lesser Antillean Bullfinch's expansion to the Virgin Islands appears to fit a trend if looked at as the expansion of a Lesser Antillean element. Of 13 endemic West Indian genera known from the Lesser Antilles at least 3 have relatively recently expanded to Puerto Rico or the Virgin Islands. Among these are the 2 hummingbirds (*Sericotes* and *Orthorhyncus*), of South American origin (Robertson 1962), and now *Loxigilla*. Also new to these islands is the Caribbean Elaenia (*Elaenia martinica*), an endemic West Indian species (see Robertson 1962). *Margarops*, a fourth West Indian genus that appears to be increasing in numbers on Puerto Rico, is not considered here to be a recent arrival to that island because of other evidence suggesting long residency there (Bond, Eighteenth sup-

plement to the check-list of the birds of the West Indies (1956), Acad. Nat. Sci., Phila., 1973). In contrast to Puerto Rico and the Virgin Islands only a single West Indian genus has undergone a range expansion in recent times anywhere in the Lesser Antilles. That is the case of *Eulampis*, another hummingbird, which has been found in Grenada and Barbados (Bond, Eleventh supplement to the check-list of the birds of the West Indies (1956), Acad. Nat. Sci., Phila., 1966). The expansion of *L. noctis* into the Puerto Rico-Virgin Islands region strengthens the hypothesis suggested by Robertson (1962) that the species arriving there may be part of a contingent that moved through the Lesser Antilles more or less at the same time. Certainly the 3 endemic West Indian genera extending their ranges through the Virgin Islands to Puerto Rico as compared to the 1 for all of the Lesser Antillean islands combined suggests an unusual circumstance that needs an explanation, particularly with respect to the source area and time of initiation of such a dispersal.

Loxigilla noctis is surviving well on St. John and habitat similar to that which the species inhabits there abounds on other nearby islands. We might therefore expect the dispersal of *L. noctis* through the Virgin Islands to Puerto Rico where it may compete with its congener *L. portoricensis*. Should the ranges of *L. noctis* and *L. portoricensis* come to overlap, the interaction of the species should be carefully observed as this might shed light on the extinction of *L. p. grandis* on St. Kitts which at one time coexisted with *L. noctis* there.

Acknowledgments.—We thank William Truesdell, Park Naturalist of the Virgin Islands National Park during the course of our investigation on St. John, for his assistance in numerous ways. We also thank Cameron B. Kepler for his advice and critical reading of the manuscript, William B. Robertson, Jr. for his suggestions and reviewing of the manuscript and Richard C. Banks for his specimen identification. Bedford Brown of the U.S. Weather Bureau gave invaluable assistance with respect to the hurricane data.—
HERBERT A. RAFFAELE, *Dept. of Natural Resources, Box 5887, Puerta de Tierra, PR 00906 and* DANIEL ROBY, *228 W. Washington Lane, Phila., PA 19144.* *Accepted 13 Jan. 1976.*

Foraging behavior of the White Ibis.—The foraging behavior of many ciconiiforms is fairly well known. There is a particularly extensive literature on herons (Kushlan, Auk 93:86–94, 1976) and storks (Kahl, Behaviour 27:76–106, 1966; J. Ornithol. 112: 21–35, 1971; Ibis 114:15–29, 1972; Condor 75:17–27, 1973). However, little is known about the feeding behavior of ibises. Most accounts note merely that they probe in the water or on land. Bent (U.S. Natl. Mus. Bull. 135, 1926) reported Audubon's claim that the American White Ibis (*Euducimus albus*) can force crayfish from burrows by placing mud in them, and Vestjens (Emu 73:21–22, 1973) reported that the Australian White Ibis (*Threskiornis molucca*) breaks mussels on stones. The purpose of this paper is to document the various behaviors used by the American White Ibis and to note some of the circumstances in which they are used. I hope that this will provide a foundation for future study of this generally neglected group. Observations reported here were made both in the field and under various experimental conditions on captive birds.

The White Ibis is primarily a non-visual, tactile forager, and most techniques involve placing the partially opened bill in the water or bottom sediment and closing the tip on encountered prey. Ibises often swallow items by thrusting the head downward. Prey can also be worked upwards to the gullet by closing the bill tip since there is a gap between the mandibles midway up the bill when the tips are closed. This may permit backward propulsion of a food item when the bill tips are brought together. The gap between