November (LeSassier and Williams, Wilson Bull. 71:386–387, 1959); nests with young fledged in September (Pache, Wilson Bull. 86:72–74, 1974); and nest with recently fledged young 26 October 1975 (Mader, Auk in press).

The Arizona nest was located in excellent Harris' Hawk habitat. Additionally, 1975 was a year of high desert cottontail (*Sylvilagus auduboni*) numbers, and the caretaker of the nearby golf course was systematically shooting these mammals and not retrieving them. Coyotes (*Canis latrans*) were observed carrying off the carcasses, and the Harris' Hawks may also have been using this source of food; cottontail skulls, tails, and legs were found in the nest and around the base of the nest site. A few feathers of Gambel's Quail (*Lophortyx gambelii*), and the tail of a Harris' antelope ground squirrel (*Ammospermophilus harrisii harisii*) were also collected from the nest.

The nest was built in a Saguaro (*Carnegiea gigantea*), about 7 to 8 m from the ground. Because of the large size and lack of cup in the nest, we believe it to have been rebuilt or added to several times. Klimosewski first saw it in the winter of 1974–75, and in the spring of 1975 he saw an adult female sitting on the nest; however, no young were fledged from this presumed nesting attempt. The next indication of use was on 22 November 1975, when 2 large young were seen in the nest.

Two males and a female (sex determined by comparative size), all in adult plumage, were in attendance at this nest both in the spring and in November/December and would support the conclusion that this late nesting was at least the second attempt by the same group. A nest-helping system has been recorded for Harris' Hawks by Mader (Living Bird, 14:59–85, 1975).—ELEANOR L. RADKE, *P.O. Box 446, Cave Creek, AZ 85331* and JOHN KLIMOSEWSKI, *1810 N. 16th Ave., Phoenix, AZ 85007. Accepted 15 March 1976.*

The spatial distribution of wintering Black-bellied Plovers.—The Black-bellied Plover (*Pluvialis squatarola*) is a common winter resident along much of the coastal United States. Individuals in foraging flocks of wintering Black-bellied Plovers are generally quite scattered. This is in contrast to most other winter shorebirds (e.g., Sanderlings, *Crocethia alba*; Semipalmated Plovers, *Charadrius semipalmatus*; Knots, *Calidris canutus*; and Ruddy Turnstones, *Arenaria interpres*) which frequent the same beaches in fairly compact flocks. This note discusses the spatial distribution of wintering Black-bellied Plovers along the Gulf coast beaches of Sanibel Island, Florida. From 25 through 30 December 1975, I made 13 surveys of Black-bellied Plovers on Sanibel Island, each time pacing off the distance between adjacent plovers. I measured 201 inter-plover distances, sampling only sections of beach bordered by vegetation. I avoided stretches of beach with many people and all areas where there were dogs, for the plovers seemed to avoid both situations. To avoid sampling regions where recent disturbance (e.g., a dog running along the beach) may have caused all the plovers to leave the area temporarily, I did not record any inter-plover distances which were greater than 270 m. The groups of inter-plover distances were homogeneous (Kruskal-Wallis test, $P > .975$), so all samples were combined.

The null hypothesis that the 201 observed distances are indistinguishable from a random distribution of plovers along the beach was tested against the alternative hypothesis that observed distances were more evenly spaced than a random distribution of plovers would produce; the plovers were obviously not clumped. The random distances were generated from the equation,

$$N_m = \frac{1}{S} \sum_{I=1}^{m} \frac{1}{S-I+1},$$

where N_m is the proportional length of the mth segment of a line divided into S random lengths (MacArthur, Proc. Natl. Acad. Sci. U.S. 43:293–295, 1957). To account for the fact that I sampled only inter-plover distances which were less than 270 m, I used $S = 239$ to produce 201 random distances which were less than the proportional equivalent of 270 m, and 18 random distances which would not have been recorded because they were greater than the proportional equivalent of 270 m. ($S = 238$ or 240 also produces 201 appropriate random distances, and the ensuing statistics are similar to those presented here.) The 2 frequency distributions are presented in Table 1; the null hypothesis, that Black-bellied Provers are randomly distributed within the scattered foraging flocks, is strongly rejected (G-test, $P < .001$). The plovers are somewhat evenly dispersed within the foraging flocks.

TABLE 1

OBSERVED INTER-PLOVER DISTANCES COMPARED WITH EXPECTED RANDOM DISTANCES

Distance (m)	Observed	Expected
0–29	22	43
30–59	36	37
60–89	43	29
90–119	36	24
120–149	31	20
150–179	18	16
180–209	7	13
210–239	4	10
240–269	4	9
	201	201

In an attempt to investigate how such spacing was maintained, I paid close attention to 4 sets of 2 Black-bellied Plovers which were less than 3 m apart. Additionally, on 3 occasions, I was successful in "herding" together 2 plovers which had originally been separated by more than 30 m. In 30 min of observation on each of the 7 pairs, I never observed any behavior (aggressive or otherwise) which seemed responsible for the spacing. In all cases, the plovers which were close together would simply slowly move apart. Apparently, the birds space themselves by mutual avoidance rather than by aggressive actions. The fairly large standard deviation (57.4 m) around the mean inter-plover distance (95.9 m) also suggests a low-key spacing behavior. In contrast to the subtlety of the intra-specific behaviors which produced the spacing, it was not at all uncommon to see a plover peck at and chase away other species of shorebirds which wandered by. This is in contrast to the finding of Recher and Recher (Wilson Bull. 81:140–154, 1969) that intra-specific aggression was much more common than inter-specific aggression in foraging flocks of migrant shorebirds.

Goss-Custard (pp 3–35 *in* Social Behavior in Birds and Mammals, J. H. Crook, ed., Academic Press, London, 1970) described 2 main types of shorebird foraging flocks: compact and widely scattered. He suggested that flocking while foraging facilitates detection of predators (e.g., Page and Whitacre, Condor 77:73–83, 1975), and that compactness of the flock is dependent on whether or not feeding efficiency is decreased by compact flocking. The observation that Black-bellied Plovers are somewhat evenly spaced within these foraging flocks is consistent with the idea that such scattered flocking is an attempt to avoid intra-specific interference.

Mitchell A. Byrd, Bruce S. Grant, Stewart A. Ware, Barbara S. Warren, and two anonymous reviewers made very helpful comments on an earlier draft of this note. H. Wade and Barbara R. Stinson provided room and board on Sanibel Island. My sincere thanks to all of the above.—CHRISTOPHER H. STINSON, *Dept. of Biology, College of William and Mary, Williamsburg, VA 23185. Accepted 13 Apr. 1976.*

Predation and dispersion of Herring Gull nests.—Tinbergen (1960, The Herring Gull's World, Harper and Row, New York) reported that Herring Gulls (*Larus argentatus*) deserted most nests from which red fox (*Vulpes vulpes*) took eggs. The adults so affected reportedly renested at the borders of the colony, and their deserted territories were incorporated into territories of adjacent pairs. This "spreading out phenomenon," as it was termed, was believed to function as a passive defense by dispersing the nests making their location by predators more difficult.

We noted a different response in the reactions of Herring Gulls to red fox (*Vulpes fulva*) predation on South Manitou Island in northern Lake Michigan (Leelanau Co., Mich.). During studies of productivity at this colony in 1974, Shugart marked and mapped the location of 51 nests in a strip transect (10 m × 215 m) encompassing about 15% of the central nesting area. Eggs in the 51 nests were marked. Hatching began 18 May and newly hatched chicks were banded within 1–2 days of their hatching date. Shugart made the following observations. In 23 of the 51 nests during the first week of hatching, 18 chicks were killed by fox, 16 other chicks disappeared and were probably taken by fox, and 9 small chicks apparently died from exposure during nightly fox visits to the colony. Evidences for the fox predation were the presence of fox tracks on the perimeter of the colony and canine tooth punctures in the chick carcasses following the nights in question. Seven unhatched eggs that remained in the predated nests were found broken and addled outside of nests several days after the chicks were killed, disappeared, or died. The latter indicated that incubation of the original remaining eggs did not continue after the nests were predated.

Within 2–8 days after the death of the first Herring Gull chicks, Shugart observed that grass and twigs were being added to the predated nests or that new nests were being constructed near the original nests. Eight (34%) of the original predated nests had additional eggs laid in the same nest cup. Of the remaining pairs, 14 (61%) apparently laid in newly constructed nests 1 to 9 m ($\bar{x} = 2.05$ m, SD $= 1.21$ m) from the originally predated nests. The distance between initial nests in the sample area averaged 4.88 m (SD $= 2.15$ m) which is significantly more ($t = 4.580$, $P < 0.001$) than the distance between the predated nests and the newly constructed nests. Because new clutches of eggs appeared in the original nests or in new nests constructed near the original nests, we consider it likely that the same pairs of adults were renesting on the same territories.

Renesting after hatching and death of chicks from the original clutch has previously been reported for the Herring Gull (Paludan, Vidinsk. Medd. fra Dansk naturh. Foren., 144:1–128, 1951), the Glaucous-winged Gull (*Larus glaucescens*) (Vermeer, Occas. Paper, B. C. Prov. Mus. No. 13, 1963) and the Black-headed Gull (*Larus ridibundus*) (Ytreberg, Nytt. Mag. Zool. 9:5–15, 1960, cited *in* Vermeer, Can. Wildl. Serv. Rep. 12, 1968). These