

Plight of the Plover

Do crowded beaches threaten this sand-loving shorebird?

By KATHY A. FACKELMANN

A jogger runs along a sandy strip where the gentle lap of waves signals the meeting of sea and shore.

Up ahead, a family of diminutive shorebirds use their black-tipped yellow bills to probe for beetles, marine worms and other tasty invertebrates churned up by waves.

This particular jogger hardly notices the small flock of plovers running back and forth on the water-washed sand. As she approaches, the birds freeze, cry out, then scatter in all directions.

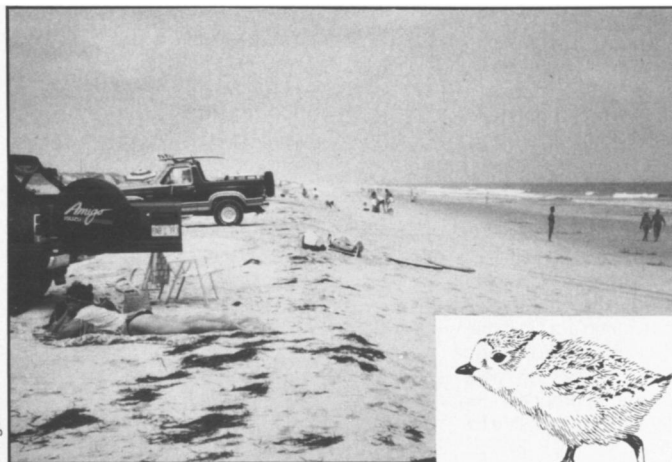
As the jogger's figure fades on the horizon, the mother plover frantically herds the straying chicks, and the whole family returns to the serious business of foraging. They must eat enough to build up strength for their long journey south.

Just as the chicks settle back into their feeding routine, two people searching for shells disturb the birds again, sending them off in another panic-stricken flight.

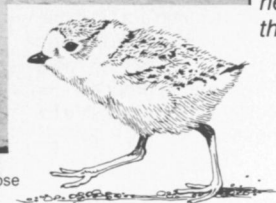
For humans, the crowding of once-pristine North American beaches seems merely a nuisance. For a type of shorebird called the piping plover, beaches packed with sunbathers, shell seekers, joggers and Frisbee players represent a lethal hazard. New research suggests that as the number of people on the beach swells, these and other shorebirds spend more time running or flying from humans and less time eating. While some piping plovers can weather the loss, many others succumb to starvation.

"When you increase the number of people, the [piping plovers] spend less time foraging," says Joanna Burger, an avian biologist at Rutgers University in Piscataway, N.J. "Young birds can't spend enough time foraging to lay down enough fat before they migrate."

Some 200 bird species, including oystercatchers, plovers, sandpipers, whimbrels and dowitchers, prefer beaches, mud flats, swamps, marshes or back bays along the North American coastline to inland areas. Piping plovers, *Charadrius melodus*, were so named for their melodious singing ability. The East Coast branch of the species nests on beaches from Maine to North Carolina in the spring and summer, heading south to wintering grounds from Florida to South



This photo of a Long Island beach illustrates some common dangers for the piping plover, including vehicles that leave deep ruts in the sand. Plover chicks walking home from a foraging foray can get trapped in those ruts and never make it back to their nest.



America by early fall.

Piping plovers flourished along the Atlantic Coast through much of history, foraging undisturbed on vast stretches of sand. After World War II, however, human activity on the East Coast skyrocketed as developers scrambled to build condominiums, hotels and summer homes with oceanfront views. Many shorebirds deserted the prime vacation spots and moved to salt marshes or mud flats where they could forage freely.

Unfortunately, the piping plover won't feed in such muck, and thus must compete with people for space on the beach. During low tide, these birds scamper after each retreating wave, searching for bits of food in the wet sand.

Although their population once numbered in the thousands, the U.S. Fish and Wildlife Service in 1986 put the Atlantic Coast population of piping plovers on its list of threatened species. A survey conducted last year by the same agency indicated that only 739 nesting pairs remained on the East Coast—a level that puts these birds in danger of extinction.

No one knows exactly what caused the precipitous decline, but most investigations have focused on the bird's vulnerable nesting site. The piping plover generally builds its shell-lined nest in a small depression in the sand between the dunes and the open water. Many wildlife biologists believe this practice puts the species in extreme danger from humans, who can inadvertently trample the nearly

invisible, sand-colored eggs.

Burger, however, took a different tack with her plover research. Instead of focusing on nest sites, she decided to study how people affect the foraging behavior of the piping plover.

She began by observing piping plovers at several New Jersey beaches, including Brigantine Beach, a flat, sandy stretch backed by a belt of dunes, just north of Atlantic City. Starting in early May of 1985, Rutgers University graduate students walked a regular route down the beach, through the dunes and back along the bay. The students observed the birds five days a week for ten hours a day.

Whenever they found a flock of piping plovers, they stopped at a distance and watched the birds forage for a two-minute period, using binoculars to avoid frightening them. The observers then counted the number of people within 10 and 50 meters of the flock. During the two-minute study period, they used a stopwatch to note the seconds plovers spent looking for food. In addition, they noted how long the plovers exhibited alert behavior, in which the birds look up and about in response to a threat (such as an approaching human). Finally, the students recorded the time plovers spent running or flying from people.

Burger presented the New Jersey findings in the Winter 1991 JOURNAL OF

COASTAL RESEARCH. "Overall, when more people were present, plovers spent more time running, flying and crouching," she told SCIENCE NEWS.

Like the human "snowbirds" who migrate to warm-weather spots with the first chill of autumn, piping plovers leave their northern breeding sites in late summer or early fall. The New Jersey study showed that people posed a problem for plovers during breeding season; Burger wanted to find out whether human interference affected plovers who spend their winters in sunny Florida.

Burger knew that the decline in the Atlantic plover population meant she couldn't find enough piping plovers to yield statistically significant results. So she picked another shorebird, called the sanderling (*Calidris alba*), which summers in the Canadian Arctic and winters in warmer climes including Florida, the Caribbean and South America.

Sanderlings, like plovers, generally feed on mollusks, worms and insects found in the tidal zone at low tide. Burger reasoned that a study of sanderlings and their foraging behavior in the presence of people might yield clues about their rarer cousins, the piping plovers.

So she and Michael Gochfeld of the Robert Wood Johnson Medical School in Piscataway picked the sunny study spot of Delray Beach, Fla., where they spent the last week of December and the first two weeks of January in 1986, 1988 and 1990 on their birdwatching mission.

To survey the birds' behavior, Burger and Gochfeld walked along a stretch of beach at various times in the day and evening. Whenever they spied feeding sanderlings, they noted the number of birds in the flock and the number of people nearby. They then observed the sanderlings for one minute, recording the time the birds spent foraging or fleeing from humans.

In the May 1991 CONDOR, the team reported that the number of people within 100 meters of the birds increased dramatically, from two in 1986 and 1988 to 17 in 1990. During the same period, the sanderlings became increasingly alert and spent less time looking for food, they note.

On average, sanderlings had to stop foraging to run or fly away from people five times per minute in 1990. In 1986 and 1988, the birds ran or flew no more than three times per minute.

"The most significant finding is that when you increase the number of people, the birds spend less time foraging," Bur-

ger told SCIENCE NEWS. Since less time foraging meant less food eaten, that finding points to problems during migration for sanderlings as well as for piping plovers, she adds.

"They've been able to show that recreational activities on beaches are affecting shorebirds," says Brian A. Harrington, a staff biologist at the Manomet (Mass.) Bird Observatory. Although sanderlings have not been listed as a threatened species, Harrington believes these and several other shorebirds are nonetheless at risk. In 1989, he reported research showing that many shorebirds experienced population downturns between 1972 and 1983, with sanderlings suffering a particularly dramatic decline.

Although sanderlings can feast undisturbed at their summer nesting grounds in the Arctic, Harrington notes that their odyssey south can put them on the beaches of eastern North America in July and August, a time when most beaches are crowded with vacationers. To fuel up for the final leg of their migratory journey, these birds gorge themselves for three or four weeks, he says. If they can't put on enough weight during their North American pit stop, they may not survive the grueling trip.

"A lot of these flights are going on at altitudes of up on the order of 15,000 feet, so the physiologic demands are pretty extraordinary," Harrington notes.

Sanderlings that winter in South America enjoy isolated feeding grounds once again. Many piping plovers, however, feel the squeeze at both ends of their range, competing with the summer crowds for prime surf area from Maine to North Carolina and then jostling the "snowbirds" in Florida.



Burger

This plover's distraction display is intended to lure predators away from its nearby nest.

And that's just the beginning of the crowd-related problems. While Burger's work shows decreased shorebird feeding at low tide, avian biologists suspect that crowded beaches create other problems at high tide, when beach space shrinks for both people and birds. After expending so much energy foraging at low tide, shorebirds need to rest at high tide.

"The birds need a place along this high beach where they can tuck their heads under their wings and get a little nap time," says Ralph Andrews, a wildlife biologist at the U.S. Fish and Wildlife Service in Newton Corner, Mass. If birds constantly face disturbance, they burn stored body fat that could have been used later to help fuel their migration.

In extreme cases, shorebirds spend the entire high-tide rest period in motion. "I've seen situations where the beach is so crowded that the birds just fly up and down the length of the beach for two hours until the tide goes out," says Harrington.

Although crowding places significant stress on piping plovers and perhaps on sanderlings as well, many complicated factors underlie bird-population declines, cautions Anne Hecht, an endangered species biologist who works with Andrews. Crowding is just one of the ways in which humans can disrupt a bird's life on the beach, she says. People who leave garbage on the beach lure plover-loving predators, including foxes, raccoons, skunks and gulls. And beachcombers often bring pets — dogs and cats especially — that may eat plover chicks or eggs, she adds.

The Fish and Wildlife Service has taken several steps to protect the piping plover. Last spring and summer, the agency closed the entire beachfront at Parker River national wildlife refuge in Massachusetts to provide the plovers with a peaceful nesting habitat. In the past, the agency closed a number of federal beaches during plover breeding season, including beachfront spots at Trustom Pond in Rhode Island, Edwin B. Forsythe refuge in New Jersey and Chincoteague refuge in Virginia.

But biologists say it will take more than a few protected beaches to save the plovers from the threat of extinction. While the federal government can close off its own beaches, the vast majority of piping plovers rely on state and private land, notes Hecht. In the end, the fate of the plover may rest with humans who love the beach.

"The average citizen can have a big impact," Hecht says. People can help protect the birds from predators by keeping beaches clean and pets leashed. And joggers, for their part, can maintain a respectful distance from these highly flappable foragers. □