

# Seabird Sales Pitch

For seabirds starting their first family, home is where biologists fake it

By WILLIAM STOLZENBURG



**L**ate at night on a tropical island in the Pacific, an eerie clamor rises from an old volcanic crater.

Drawn by the sound, visitors from the sky soon arrive — graceful, gull-like seabirds, coursing through the misty equatorial air. They descend and disappear into a dripping forest of ferns and evergreen shrubs.

Which is just as ornithologists Richard H. Podolsky and Stephen W. Kress have planned. Beneath the green canopy, the birds find ready-made nesting burrows in the volcanic ash — the kind of burrows these dark-rumped petrels might excavate for themselves. As they waddle about, inspecting the burrows, some pass right beneath a loudspeaker blaring the recorded calls of a teeming colony of petrels. At dawn, the noise stops and the last petrels head back out to sea.

But they will return. For 62 nights each summer on the Galápagos island of Santa Cruz, the two ornithologists hold open house for nuptially motivated petrels. Although scientists by profession, Podolsky and Kress are also salesmen of sorts — salesmen of seabird real estate. Using recorded bird calls, model decoys and artificial burrows, they mimic the sights and sounds of thriving seabird colonies. By luring their avian customers to these realistic sets, they try to breathe life back into ailing island ecosystems that once rang with the racket of nesting seabirds.

“Basically, we try to influence the nest-site selection of prebreeders,” says Podolsky, director of science and research at the Island Institute, a nonprofit ecology research organization in Rockland, Maine.

Compared with most inland birds, oceanic birds wait a long time before breeding — from four to five years for puffins to

as many as 10 years for the gigantic albatrosses, explains Podolsky. “These prebreeders are what we call prospectors,” he says. “Prospectors wander widely, cruising to lots of different areas, and they either settle near their natal site or somewhere on an island nearby.”

But not just any island will do. In the discriminating eyes of a prospecting seabird, an attractive island usually means one with an established, growing colony of the same species. Healthy colonies offer protection against predators, better chances to meet mates, and perhaps even a source of information for finding food, says Kress, who works with the National Audubon Society in Ithaca, N.Y. So it behooves the inexperienced prospector to choose a “good” colony — one not too thinly or thickly settled, and one exuding a particularly confident tone of chatter.

With their various props and sound effects, Podolsky and Kress try to duplicate the prospector’s dream neighborhood. Though they have yet to decipher

the individual calls that form the din of a vigorous seabird colony, Kress says, “the basic message we think we’re sending to a young bird looking for a place to nest is, ‘Ah, this is a good place, because there are many other birds here.’”

**F**or centuries, that message resounded from Eastern Egg Rock, a treeless, granite island off the coast of Maine. Thousands of terns — sleek and nimble little aerialists that hover and plunge headfirst after fish — and other seabirds gathered there each summer in noisy masses. But the late 1800s brought an era of feather-hatted fashions, transforming the Eastern Egg seabirds into human hood ornaments. Although the 1916 Migratory Bird Treaty Act finally checked the milliners’ annual slaughter, aggressive gulls soon filled the island’s void, forcing wandering terns looking for a friendly neighborhood to search elsewhere.

*Dark-rumped petrel atop a Miconia shrub on Santa Cruz Island.*

*The evergreen’s dense canopy conceals colonies of petrel nesting burrows.*



Podolsky

Arctic tern with a gift shrimp, wooing a wooden decoy on Eastern Egg Rock.



Kress

In 1978, following a federally assisted gull-eradication campaign on Eastern Egg Rock and nearby islands, Kress saw a break for the terns' return.

For the next two summers, terns flying over Eastern Egg Rock looked down on a "colony" of 33 wooden terns — some standing alert, others apparently incubating — from whose midst arose the recorded racket of a typical tern gathering. Nearly every day, terns hovered and then settled down among the new colony. Some pecked and bluffed menacingly at their stiff rivals; some courted the more appealing models, offering gifts of fish and even mounting the coy seductresses. Gull and human intruders were hurried off by the little bombardiers.

Within five years of the phony colony's first beckoning, Eastern Egg Rock bustled with 1,000 pairs of nesting terns. Though an avian cholera epidemic decimated the population in 1984, the terns have since rebounded, reaching 1,232 pairs this summer.

Since that initial success, Kress and Podolsky have experimented with sound and sight lures to attract other prospecting seabirds — ranging from Atlantic puffins and robin-sized Leach's storm petrels in the Gulf of Maine to Laysan albatrosses with 7-foot wingspans in Hawaii.

Their latest prospect lives on the Galápagos Islands, 600 miles off the coast of Ecuador. The dark-rumped petrel — known locally as *pata pegada*, or web-footed one — is an oceanic bird whose arm-length nesting burrows once pocked the islands' humid volcanic highlands. For perhaps a million years or more, petrels had nested there in relative safety, free from mammalian predators.

But along with settlers in the last 60 years came pigs, horses, burros, cattle, goats, dogs, cats, and rats — ecological additions the petrels were unprepared to handle. The cows and horses trampled burrows; the dogs, cats and rats ate birds and eggs; and the pigs efficiently did both. "During the [petrel] breeding season," says Kress, "the locals couldn't even eat the pigs because their flesh smelled so much like petrels."

Surviving petrels retreated to the islands' steepest, most rugged and most inaccessible canyons, where even pigs feared to tread. But cats and rats were not so easily eluded, and the petrel population continued to plummet. Rough population estimates in the mid-1980s revealed a 30 percent yearly decline of the Galápagos petrels — and a grim 10- to 15-year countdown to extinction.

With biologists from Ecuador's Galápagos National Park and the Charles Darwin Research Station on Santa Cruz Island, Podolsky and Kress set out to help the dark-rumped petrels. They planned to lure petrels to dense colonies of artifi-

cial burrows, where wildlife managers could guard them against predators. On Santa Cruz Island, a volcanic crater lush with evergreen *Miconia* shrubs provided the perfect test habitat.

The crew's work began in 1988 with a sound test not far from the crater rim. From 10 p.m. to 6 a.m., June to early August, biologists randomly broadcast half-hour recordings of different petrel calls under 40-foot-tall "mist" nets. Birds dropping by to investigate would fly into the soft, nearly invisible nets, where biologists stood by to examine and band them.

To no one's great surprise, the more aggressive calls and the periods of silence lured relatively few petrels. But when the calls of a contented colony piped up, the researchers found themselves plucking petrels from the nets at twice the normal rate. And when beckoned by the recording of a colony taped over itself to double its intensity, petrels hit the nets three to four times more often than during silent periods.

But the more-the-merrier concept had its limits: Triple-intensity recordings drew fewer petrels than the double-intensity calls.

Once the petrels had voted for their favorite tune, the researchers took the recording to the crater — where they had dug several "colonies" of 20 artificial burrows beneath the *Miconia* canopy — to begin luring tenants. Each colony encircled a speaker playing the double-intensity sounds. By loosely lining burrow entrances with toothpicks (to detect any visitors brushing past) and by looking closely each morning for footprints, feathers and droppings, the observers kept a running tally on each burrow's nightly occupants.

"Right away we started luring birds," says Podolsky, "but most didn't stay long. The birds just kind of nipped in, spent a few hours, . . . and were gone by the morning."

By the end of the 1988 field season, however, petrels were not only investigating burrows by night, but moving in for a day or two at a time, he says.

If that had been the sole accomplishment of the 1988 season, Podolsky and Kress would have considered it a success. The petrels they had netted during the sound tests revealed that most of those investigating the colony were young prospectors, not yet old enough to lay eggs. Their mere interest in the artificial colonies hinted they would someday return with more serious intentions.

Yet some, it turned out, had come better prepared. The following year, as two crew members began checking the artificial burrows to start the new field season, a handful of soil from deep within

Incubating dark-rumped petrel in an artificial burrow on Santa Cruz Island.



Podolsky

Continued on p. 139

bodies, note Kissileff and his colleagues at the Columbia University College of Physicians and Surgeons.

According to another paper in the same journal, high-protein diets can suppress appetite—at least in monkeys. By a feat of surreptitious plumbing, a Baltimore research team bypassed finicky monkey noses and taste buds to feed four monkeys a dietary supplement containing 50 percent protein. Anticipating that the animals might change their eating habits when presented with the modified diet—and thus throw a primate-wrench into the experiment—the scientists implanted tubes into the monkeys' stomachs and connected them to food-delivery pumps. The monkeys, trained to feed at nozzles connected to other suction-activated pumps, unknowingly triggered both pumps with each oral feeding, thus getting a measured double-dose of food.

The protein-boosted diet caused the monkeys to eat less overall, dropping their total calorie intake by 25 percent, report Judy S. Hannah, Anil K. Dubey and Barbara C. Hansen of the University of Maryland School of Medicine. The finding, they say, adds to the body of evidence suggesting that high-protein diets can aid in weight reduction.

"A high-protein diet does appear to have an appetite-suppressing effect, and of course, if you want to lose weight, that could be beneficial," Hannah says. She warns, however, that people with kidney problems, high blood pressure or diabetes should not undertake a high-protein diet on their own. "In fact, anyone should always consult a physician before making major dietary changes." □

#### Letters continued from p.131

nary gift for poetic improvisation, which he demonstrated by producing immediate English versions of French, Italian or Latin verse and rhyming, scanning verses on such trivia as children's hats. A world-class procrastinator, he produced some of his best-known essays at the last moment at great speed and apparently never revised his work. Although functioning at a high artistic and intellectual level, Samuel Johnson recalls Dr. Oliver Sacks' "Witty Ticky Ray" in his ability to adapt his disability to creative ends.

Thinking of Johnson as a Tourette rather than a gross eccentric enhances our appreciation for his achievements and for the 18th-century ability to appreciate talent while overlooking what we today would call pathology.

Donald R. DeGlopper  
Bethesda, Md.

Many researchers indeed cite Dr. Johnson as an early documented case of Tourette's syndrome.

— B. Bower

#### **Solar vs. sidereal days**

Earth rotates on its axis every 23 hours and 56 minutes, yet an Earth day is 24 hours. Likewise, Earth rotates 366.26 times per year, yet an Earth year has only 365.26 days. The reason for these differences is that, as commonly defined, days are measured relative to the sun ("solar days") while rotations are measured relative to the stars. Consistent with this, if Earth did not rotate at all, it would still experience a day, actually an "inverse" day, for each orbit around the sun ("inverse" meaning the sun would rise in the west and set in the east). This accounts for Earth's "missing" day after 366.26 rotations each year and also for the "extra" 4 minutes (1/366.26 day) required beyond a rotation period in order to complete a day.

For other planets the magnitude of this effect can be fairly astounding—an interesting and

important fact that was not included in your discussion of Mercury's cyclic solar exposure ("Cold message from Mercury's hot poles," SN: 6/16/90, p.375). You state that "a Mercury year lasts but 1½ Mercury days" and that "Mercury [turns] three times on its axis for every two trips it makes around the sun." Clearly, you are referring to "sidereal days" (synonymous with rotations) instead of solar days, despite the discussion's solar context. While sidereal and solar days differ by only 0.27 percent on Earth, they differ by 200 percent on Mercury.

The "inverse" day resulting from Mercury's orbit leaves that planet with a net of only ½ solar day per year. In other words, a stationary observer on Mercury would experience alternating years of daylight and darkness. Thus, each longitude directly faces the sun at only one point (and always at the same point) during each two treks along Mercury's highly elliptical orbit. This results in only two longitudes (180° apart) ever directly facing the sun at the orbit's perihelion, and consequently results in the occurrence of the equatorial "hot poles."

Robert E. Crippen  
Jet Propulsion Laboratory  
Pasadena, Calif.

#### **CORRECTION**

In "Sweet tooth, rotten kid: A theory gone sour" (SN: 8/11/90, p.84), the name of the California State University scientist who commented on the sugar study was misspelled. The correct spelling is Stephen Schoenthaler.

Address communications to:  
Editor, **SCIENCE NEWS**  
1719 N St., NW  
Washington, D.C. 20036

Please limit letters to 250 words.  
All letters subject to editing.

#### Continued from p.137

burrow D-17 came up speckled with tell-tale white fragments. Sometime late in the '88 season, unbeknownst to the observers, a dark-rumped petrel had laid an egg.

The team repeated the experiment in '89 and '90, adding a total of 140 artificial burrows. Each year, the number of night visitors increased, and more of them lingered through the day. Podolsky and crew found birds sitting in burrows during morning checks in 1989, with burrow D-17 again housing incubating petrels. This summer, the number of nesting petrels tentatively stands at one pair. With the verdict still out on some suspiciously busy burrows, Podolsky is optimistic that the count will rise before the birds head out to sea in a few months for the winter.

**A**t the suggestion that a handful of petrel nests seems a modest return for 220 hand-dug burrows and three seasons of avian advertising blitzes, Podolsky smiles like a salesman

about to close a million-dollar deal. For he knows the nature of his customers.

The dark-rumped petrel often lives into its 30s and takes eight years to mature—an unusually long time for a bird of its size. "When we play our recordings, we don't appear to lure in breeders, we appear to only lure in young prospectors," Podolsky says. "We think they start returning to the island at 2 years old and continue to prospect until they're 8 years old." That leaves a comforting window of time before the return on his investment comes due. And in light of the finding that young petrels have already perused more than 70 percent of the 220 artificial burrows, the prospect of a petrel boomtown becomes easier to envision.

Podolsky and Kress see an expanding global need for their services, and they may be the world's only salesmen to view a rising demand as sad news. Dark-rumped petrels of the Galápagos and Hawaiian islands face a continuing threat from expanding agriculture and introduced predators, they say. And seabird situations around the world look sim-

ilarly grim. Of the approximate 270 species of seabirds worldwide, 30 are listed as endangered or threatened.

"Ultimately, our responsibility as biologists is to maintain the biological richness, the natural heritage of this planet," says Podolsky. "It's like the rivet puller analogy by [ecologist] Paul Ehrlich: You start pulling rivets from an airplane and nothing seems to happen. But there comes a point. . . ."

For now, most of the ornithologists' efforts are mere stopgaps, helping to settle and protect new colonies of endangered seabirds until less predator-infested island homes can be found. For some birds, however, the menaces aren't limited to rats, gulls, pigs and people.

Consider the short-tailed albatross. All but seven of the last 100 or so breeding pairs nest on Tori Shima Island off Japan. "The idea is to lure them to the other side of the island," says Podolsky. In the meantime, the heart of the short-tailed albatross population innocently gathers each fall to lay its precious eggs in the shadow of an active volcano. □