

Fledgling flight to the sea

By TIM STEPHENS
Sentinel correspondent

UNUSUAL among seabirds, marbled murrelets build their nests in forests many miles from the coastal waters where they dive for fish. These robin-size birds fly on stubby wings better suited for maneuvering underwater than swooping through trees. Related birds such as puffins nest in colonies on islands or seacliffs.

Little is known about the nesting habits of marbled murrelets. So excitement ran high when, last summer, a team of scientists led by UC Santa Cruz graduate student Nancy Naslund and naturalist Steve Singer, found two marbled murrelet nests high in the trees of Big Basin Redwoods State Park. These were only the second and third nests of the species ever found in California, and the first anywhere at which scientists were able to make ex-

tended observations.

Tree nesting is extremely rare for a diving bird, and the location of the marbled murrelet's nest was a mystery to ornithologists from the time they first observed the species in 1789 until relatively recently. Articles in scientific journals bore titles such as "The Mystery of the Marbled Murrelet Deepens" and "Enigma of the Pacific."

Reports of marbled murrelets carrying fish to inland forest areas, and of flightless chicks found on the forest floor, suggested that the birds nest in forests over much of their range. Murrelets were seen and their calls heard in forests more than 40 miles inland. But the first North American tree nest was not found until the 1970s.

In 1974, a tree surgeon working at Big Basin disturbed a nest with a downy chick in it. The chick fell from the nest and later died in captivity. Park rangers called in Steve Singer. A former ranger at Big Basin, Singer had developed an interest in marbled murrelets and become an expert on them. He helped identify the chick and examine the nest site. Identification of the chick was fairly straightforward, he said. "There aren't too many birds with webbed feet that nest in forest trees around here," he said.

Murrelets nest on the ground along the tundra-covered shores of Alaska. But further south, the birds are found almost exclusively where the old-growth forests occur near the coast. The term "old-growth" usually refers to forests with trees at least 175 years old. In California, by some estimates, over 90 percent of the orig-

inal old-growth redwood forests have been cut down.

A 280-mile stretch of California coast between Eureka and Half Moon Bay is nearly devoid of marbled murrelets because the forests they nested in are gone.

The murrelet population remaining in central California is especially vulnerable to human activity. Because it is isolated, Naslund said, it could be devastated by a catastrophe. Marbled murrelets are particularly vulnerable to oil spills, for example, and they are frequently killed in fishermen's gill nets.

Yet the apparently dwindling population of marbled murrelets is not protected by state or federal agencies.

The U.S. Fish and Wildlife Service is reviewing its status to see if it should be listed as a threatened or endangered species. But this effort is hampered by a lack of detailed information about marbled murrelet populations and the kinds of habitats needed to sustain them. A report from the Fish and Wildlife Service states that "the lack of knowledge is, in itself, a threat to the species."

NASLUND and Singer wanted to learn about the habitats that marbled murrelets need, such as the age and species of trees and the size of stands they prefer to nest in. The two were assisted by Stephanie Singer, Steve Singer's wife, state park and forest service personnel and several UCSC undergraduates.

Identifying nesting areas was a high priority, but they knew finding nests was not easy. Marbled murrelets use a number of tricks to conceal their nest sites from predators. They usually fly to and



Bill Loveloy/Sentinel

from the nest sites in the near-darkness around dawn. Their breeding plumage camouflages them perfectly. It is a mottled brown, light below and dark with reddish-brown flecks above, and it blends in with the color of the bark on the branches where they nest.

The downy chicks also have a protective coloration. Even the egg, a pale greenish color with brownish-purple speckles, blends with the bed of moss on which it is laid.

Naslund started out doing surveys of murrelet activity in the forest. "We wanted to know when and where the birds are active, and how their activities change during the year," she said.

In mid-June, Singer developed a

After several unsuccessful attempts to feed the chick the whole fish, the adult ate the fish itself and later regurgitated it for the chick.'

— Nancy Naslund,
researcher

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hunch about a certain tree — an ancient Douglas fir with many large, mossy branches. It seemed like a perfect place for a murrelet nest. Observations during early morning stakeouts by Singer and other members of the group increased their suspicions: A bird would land in the tree, they would hear vocalizations as if two birds were greeting each other, and then a bird would fly out and away.

"We were all excited, and we certainly had high hopes that there was a nest," Naslund said. "But you have to be careful — we'd had false alarms before."

Finally, Stephanie Singer saw a bird stand up and reveal the nest,

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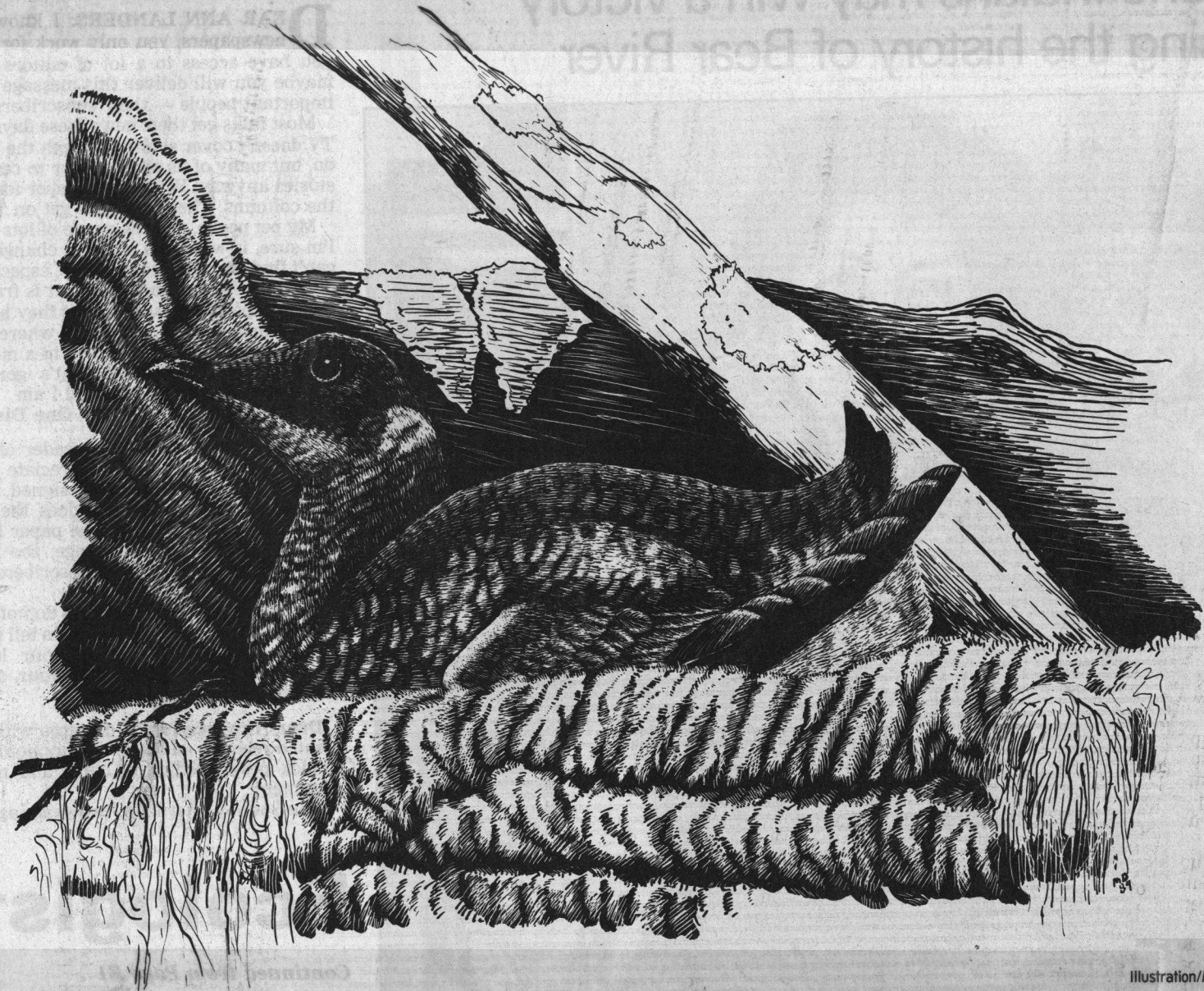
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Health/science

In the old-growth forests of the Pacific Northwest, marbled murrelets are more often heard than seen. They come and go during the periods of low light at dawn and dusk. Their rapid wingbeats make a whirring noise in the dark forest, and their varied flight calls — clear, high-pitched “keer” notes and throaty squawks — hang in the misty darkness.



Illustration/Michelle Davis

Murrelet/ Nest mystery unravels

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which sat on top of a large branch, partially obscured by foliage. The group lost no time in setting up an observation post, 320 feet away on a nearby slope at a site that was level with the nest. Watching through a spotting scope, members of the team recorded their observations on tape.

Most of the time, Naslund said, the adult bird just sat on the nest, incubating the single egg. Periodically it stood up to roll its egg, turning it to keep the developing embryo from adhering to the inside of the egg shell. The male and female traded off 24-hour shifts incubating the egg.

The researchers saw the parent birds exchange incubation duties in a pre-dawn ritual. When the returning bird arrived, it landed on the branch a few feet from the nest. Soft, buzzy cooing sounds issued from the tree as the other bird left the nest and walked over, bowing its head several times in front of its partner before flying off. After a few minutes, the returning bird walked over and took its place on the nest.

Several times, the observers saw a raven landing near the nest. Then, two weeks after the nest was discovered, the raven attacked the adult murrelet, knocking it off the nest. Ranger Brooks Collom, who was observing at the time, ran to notify the others. Fifteen minutes later, they flushed a raven carrying a bloody mass, which may have been part of the adult or the embryo. Later in the day, jays could be seen with

bits of eggshell in their beak, picking over the nest site.

Devastated, Naslund returned to her surveys. Within a week, she said, she noticed murrelets flying in and out of a certain tree and heard a familiar pattern of "keer" calls. It was all very similar to what she had seen at the first nest site. So she and Rob Burton, a recent UCSC graduate, staked out the tree — another big Douglas fir, 300-500 years old. Eventually Naslund saw a marbled murrelet stand up in its nest to roll its egg.

THE TEAM began videotaping the nest activity, using a big Mead 2400mm telescope, a smaller spotting scope and a night scope for viewing in low light conditions. They took shifts observing the nest all day long, beginning at least 45 minutes before dawn and continuing until after dusk. Naslund and undergraduate Juliet Schear did much of the observing, sleeping on the ground near the observation post.

"At one point," said Naslund, "I realized that we had about \$46,000 worth of other people's equipment up there. But despite all the expensive equipment, we were really doing 19th-century biology. We were trying to answer very basic questions about the life history of these birds — the sort of things that are known for pretty much every other species in North America."

In late July, about a month after the nest was discovered, the

chick hatched, allowing Naslund to observe the parents feeding their young.

"I saw one adult bring back a fish that obviously was too big for the chick to eat," Naslund said. "After several unsuccessful attempts to feed the chick the whole fish, the adult ate the fish itself and later regurgitated it for the chick."

But a few days later, that nest also fell victim to a marauder. A Steller's Jay, which had visited the nest several times before, killed the chick while both parents were gone to hunt for fish. Naslund said they don't know if it is unusual for the adults to leave a chick alone, nor how common this type of predation is, since so few nests have been observed.

No one knows how many murrelets live in most areas, said Naslund, so it is difficult to say if the murrelet numbers are declining. The birds are more easily observed on the ocean than in the forest, so Naslund began doing surveys at sea in September.

Next spring, when a new breeding season begins, she and Steve Singer will continue their search for nests in the forest. It is important, said Singer, because "the more nests we can find and examine, the more we will learn about their nesting requirements."

The Singers, Naslund and C.J. Ralph of the U.S. Forest Service, presented a paper on their work Feb. 24 to the Pacific Seabird Group in Victoria, B.C.

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