

**The truck squeals** from the compound of Marine Corps Base Camp Pendleton and heads for the Pacific shore. Base biologist Slader Buck is stern and a bit weary. He's been on the phone with a base colonel about a crisis at the Endangered (California) Least Tern nesting area, located at the mouth of the Santa Margarita river on the southern California coast.

Buck heard that an amphibious personnel carrier had been driven upriver into a restricted nesting area, and that it had emerged from the water to turn around, disturbing recently arrived Least Terns. Buck parks the truck near the brackish estuary, walks the sandy beach to the river mouth, and turns upstream. "No Trespassing" signs identifying the area as a tern nesting area are posted everywhere: "Off limits to all personnel by order of the base commander."

The bird life in the estuary is incredible. Offshore, a formation of Brown Pelicans skims the waterline. Long-billed Dowitchers and Snowy Plovers wander the sands. Marbled Godwits, American Avocets, and terns buzz Buck and a visitor as they proceed upriver. Then Buck stops, his mouth drops. A set of amphibious vehicle tracks exits the water, makes a U-turn on the bank, and returns toward the beach. The screams and displays of the birds leaves no doubt that this is a nesting area. Buck takes note of the damage and leaves quickly, not wanting to further disrupt the terns during nesting season.

"The commander's not going to like this," he says with conviction.

Twenty years ago, the matter of a military vehicle straying into bird nesting habitat wouldn't have concerned the brass at a base like Pendleton. Just ten years ago, Buck had to argue with a commander to stop tanks from traversing a critical riparian habitat.

Today the response is different. The Pendleton command jumped into an investigation when Buck reported his findings. The result? A physical barrier will be placed at the Santa Margarita estuary, to prevent further straying by military vehicles—or by jet skiers who had recently been roaring through the area.

With the Endangered Species Act protecting wildlife like the Least Tern, military personnel have learned they are not above the law. Military lands, because of their

abundant open space, have become *de facto* bird sanctuaries, in which military commanders must learn to balance training with avian interests.

Pendleton occupies almost 126,000 acres; 75 percent of it—nearly 50 square miles—are unplowed, ungrazed, and undeveloped. Similarly large percentages of open space exist on much of the Department of Defense's 25.6 million acres nationwide. Troops need unobstructed space to practice maneuvers. Arsenal require buffer zones in case something explodes.

BY MICHAEL TENNEN

# Birds on Base



## Today's Military Is Friendlier to Wildlife, But Tightened Budgets Cloud the Future

From the Least Terns at Camp Pendleton, to Northern Harriers at Fort Sill, Oklahoma, to Tundra Swans at the Naval Air Station Patuxent River, Maryland, birds often find more secure wintering and breeding habitat on military installations than in surrounding civilian territory. And though the military has had its problems—everything from pollution spills to illegal timber sales in the nesting area of Endangered Red-cockaded Woodpeckers—some say there is evidence of



**A Least Tern  
hatchling near  
a runway at  
Patuxent River  
Naval Air Station  
in Maryland  
(left).**





a new attitude. The federal Clean Water and Endangered Species acts have mandated that the service branches take better care of the lands in their stewardship.

It is even more. Says Gene Stout, Fort Sill's civilian biologist: "We are no longer ramming it down their throats. You don't hear military commanders referring to 'those damn environmentalists' any more."

But cutbacks in military budgets, along with base consolidations and closures, could imperil these invaluable bird habitats. Will wild lands come out on the short end as closed bases convert to economic jumpstarters, such as light industry? Will larger military populations put more pressure on birdlife at consolidated bases? As the military focuses on expensive toxic cleanups, will conservation efforts go wanting, as some biologists and conservationists fear?

**Lying halfway** between Los Angeles and San Diego, Camp Pendleton's 17 miles of shoreline are among the last stretches of undeveloped coastal property in southern California. The base provides critical wintering and nesting habitat for more than 250 bird species. It is also an important stopover for raptors that follow the Pacific shoreline in their annual migrations to Central and South America. On a spring day's tour, Red-tailed Hawks, Turkey Vultures, an American Kestrel, Black-shouldered Kite, and Merlin are seen. Pendleton also has Rough-legged Hawks, Northern Harriers, Burrowing Owls, and Peregrine Falcons at various times.

Camp Pendleton has employed civilian wildlife biologists since the late 1970s. The initial momentum for conservation on military bases began with the Sykes Act of 1960, which sought to manage fishing and hunting on bases. Today the Sykes Act is evolving to promote profes-

sional, integrated natural resource management on military lands. Still, most of today's 500 or more biologists were not hired until the 1980s, when federal environmental legislation demanded that base commanders pay heed.

**Pendleton is not** a wilderness, nor is it managed as a preserve. Marines have trained here for over 50 years, and it shows—pockmarks from artillery shells, woods disturbed by frequent fires, roads that crisscross otherwise unused areas.

Yet the disturbance is minor compared with the checkerboard pattern of houses and shopping malls that outlines the base's boundary. Buck admits the fires and roads aren't good for the wildlife, but adds, "The alternative is condominiums."

There is a variety of native habitats, including beach, sand dunes, fresh water estuary, salt water estuary, fresh water marsh, riparian woodlands, coastal sage scrub, both annual and perennial grasslands, oak woodlands, and chaparral.

Camp Pendleton is, simply, closer to a natural state than the land around it. On base, oak trees droop into tall grasses.

"Off base, where grazing occurs, oak trees look like somebody took a knife and sliced off any branches that reached lower than four-and-a-half feet above the ground," says Buck. "Vegetation is cut low."

The base has eight bird species that are federally listed as Endangered or Threatened. Of those, two are actively managed—the (California) Least Tern and the (Least) Bell's Vireo. Both have healthier populations on the base than they do in the surrounding development. The Least Tern was the first Endangered bird that Pendleton had to actively manage. It is a gregarious nester which generally lays eggs on open sand flats at the

mouths of rivers—exactly the type of real estate Californians love to develop. The Santa Margarita estuary has four separate nesting areas. The base has approximately 20 percent of the known (California) Least Tern nesting sites.

Pendleton's tern management program includes banding, censusing, and tracking from the time the birds arrive in mid-April until they fly south at the end of August. The program also removes some predators, such as coyotes. Part of the future plan is to improve habitat and create new nesting islands.

Buck sympathizes with military commanders. Not only must they avoid disturbing critical wildlife habitats, they must still accomplish their military mission.

"In five years, there won't be a place on Camp Pendleton that you won't be right on top of endangered species habitat, or looking right into endangered species habitat," he notes. More than one-third of the 52 animal species that are candidates for federal listing at Pendleton are birds; Buck expects that six will be listed within three years.

**According to 1992** estimates, 45 to 50 percent of the known (Least) Bell's Vireo population is at Pendleton. To protect the vireo, Pendleton traps and removes Brown-headed Cowbirds, parasites that lay eggs in the nests of other birds. The cowbird often destroys the hosts' eggs; at the very least, cowbird nestlings crowd out the hatchlings, or steal their food.

After Pendleton started removing cowbirds, parasitism dropped from 40 percent to almost zero, and the (Least) Bell's Vireo population increased dramatically. Pendleton also saw an increase in the Yellow-breasted Chat and the Pacific-slope Flycatcher, which nest in the same riparian habitat as the vireo.



The federal government is studying how Prairie Falcons are affected by military training near their feeding grounds in Idaho.

As one of the busiest United States military installations in the world, Pendleton sees 26,000 flights a month from the base. In an average year, Pendleton trains more than 175,000 marines day and night.

Birds seem to adapt to the clamor. At Fort Sill, Oklahoma, a Wild Turkey roost thrives just beyond the range of fire of an Air Force Reserve strafing area. Fort Sill is the Army's busiest artillery base, training 40,000 soldiers annually.

"The centers of the impact zones are pockmarked like the moon," says biologist Gene Stout. "But surrounding those areas are buffer zones [a requirement, should a shell go astray], and at Fort Sill those buffer zones contain tall grass prairie, looking much like it did when the pioneers crossed this country."

**In winter,** Fort Sill's prairie grasses provide habitat for a very large Northern Harrier roost—up to 1000 birds. The harriers don't seem terribly bothered by the shelling, says Stout. Firing ranges may actually be "friendly" to birds. Fear of unexploded ordnance—duds—keeps people out.

Birds also seem resilient to another staple of the military base environment: aircraft noise. At the Patuxent River Naval Air Station, Least Terns nest within a triangle formed by three major runways. Some nest within 100 feet of a take-off pad for Harrier jets, which can take off vertically. Terns have been observed sitting on their nests as the jets take off, their feathers blown back by the exhaust backwash.

"The terns can tolerate the jet noise, the heat, the jet blasts—but if they see people walking around, they'll abandon their nests," says Kyle Rambo, the natural resources manager at Patuxent. "They've apparently learned their real enemies have two legs."

The base covers 6400 acres, with 4000 acres of open space, and 283 recorded bird species. Situated on the Chesapeake Bay, it has 54 acres of edge-water habitat for wading birds. Ospreys, Red-tailed Hawks, and Great Horned Owls are found there, as well as a number of ducks, including Canvasback, Bufflehead, and Oldsquaw.

The base is also one of the largest wintering areas for Tundra Swans on the East Coast. Planes are forbidden to fly below 500 feet during the winter, not only to keep from disturbing the swans, but to prevent aircraft from sucking up large birds into their engines—something that can bring a plane down.

But Patuxent River Naval Air Station is not a paradise for wildlife. As at many bases, the developed portion of the installation has a history of environmental pollution, and is monitored by state agencies. Pentagon officials have currently identified 10,924 hazardous hot spots at 1877 installations nationwide, including 123 Superfund sites—the federal Environmental Protection Agency's most hazardous list. The EPA monitors those sites.

The Rocky Mountain Arsenal, a military installation just nine miles from downtown Denver, is—according to Army Major Phil Soucy at the Pentagon—"the most polluted 21 square miles on the planet."

**The Army** acquired the land during World War II. It manufactured chemicals and weapons there until the 1960's. Then it leased some of the land to the Shell Oil Chemical Company to produce agricultural pesticides. Paradoxically, there are approximately 230 different species of animals living at the site—mammals, amphibians, reptiles, and birds. A great concentration of wintering birds of prey includes more than 100 Bald Eagles.

But in the long run, can birdlife withstand the noise, the shelling, the toxic disasters, and the pressure that comes with sharing habitat with the military?

**The federal** government is doing a number of studies to determine the long-term effects of military training on birds. John Marzluff is the principal investigator for an environmental research firm in Boise, Idaho, which is studying the Orchard Training Area of the Idaho Army Natural Guard, and its effects on the Prairie Falcon population in the nearby Snake River Birds of Prey Area. Over the 80 miles of the Birds of Prey Area, as many as 200 pairs of falcons gather during to their breeding season to consume about 60,000 Townsend's ground squirrels that burrow in the soft soils on the bench lands above and around the Snake River canyon.

The falcons travel some 12 to 15 miles out onto the bench lands to hunt for squirrels. There they may come in contact with tank traffic and artillery fire on the military range, which is about six miles from the Snake River. Marzluff says that he has found that the Prairie Falcons that hunt the training area have larger home ranges and don't rely completely on ground squirrels, capturing Cliff Swallows, Horned Larks, and Western Meadowlarks to supplement their diet. But Marzluff has found that the number of chicks produced by falcon pairs was the same for birds which foraged on or off military lands.

"When you shake out all the marbles, there was really no effect that we could attribute to military training; but next year we predict a lower population of ground squirrels, and the birds may be pushed to their limit," Marzluff says.

At the Eagle River Flats impact area at Fort Richardson, Alaska,



artillery crews routinely practiced firing shells, which included white phosphorous, or smoke rounds, into a march. Though the phosphorous stopped burning when it hit the marshy waters, it remained lethal to waterfowl that feed in the swamps, such as the Northern Pintail and American Wigeon. Past use of white phosphorous may have killed several

the remainder may put more pressure on species. The Clinton Administration accepted a recent list of 130 military installations to be closed. An additional 45 will be affected by consolidations. Though Pendleton will remain open, nearby El Toro Marine Corps Air Station is one of the bases to be closed.

“Those extra soldiers aren’t just

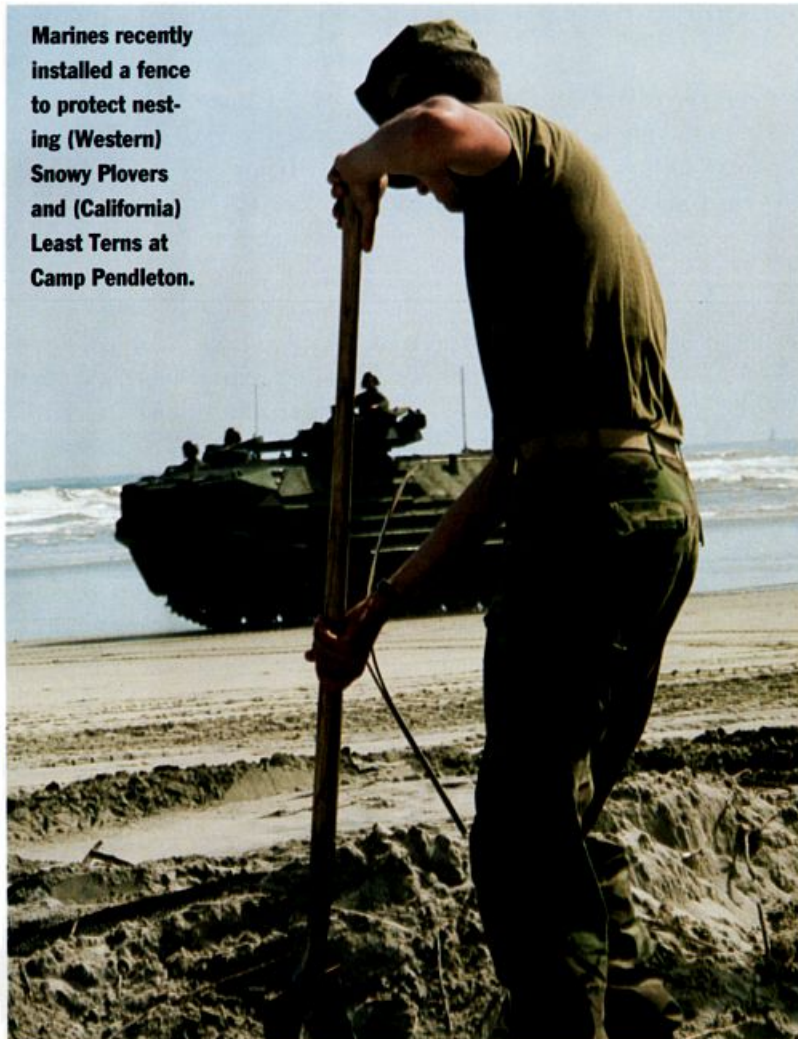
lean and public attention focused on hazardous waste, the military has tended to fund cleanups rather than conservation efforts. Fort Huachuca—with 14 species of hummingbirds, and Mexican Spotted Owls and Elegant Trogons—has cut its staff of conservation biologists from five to one.

Part of the emphasis on cleanup was caused by the notorious Aberdeen case in 1989, when three high-ranking engineers at the Aberdeen Proving Ground in Frederick, Maryland, were convicted on felony charges of knowingly and willfully violating hazardous waste laws. EPA inspectors analyzed a storm drain on base and found evidence that 200 different toxic chemicals had been dumped there illegally. The engineers each paid \$15,000 and served three years probation. Military commanders got the message: Take hazardous waste seriously.

The message on habitat protection so far has been less compelling. In January 1992, a federal grand jury indicted three civilian employees at Fort Benning, Georgia, under the Endangered Species Act, for allowing the commercial harvest of timber in a nesting area of endangered Red-cockaded Woodpeckers. Camp Pendleton’s Buck thought Fort Benning might become the “Aberdeen” for wildlife conservation on military bases. The men were given probation and a \$1500 fine.

“Do we need for somebody to go out there and destroy a whole large population of endangered species before [we] get the message that these [conservation] programs are important, and they have to be funded?” asks Buck. ♣

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**Marines recently installed a fence to protect nesting (Western) Snowy Plovers and (California) Least Terns at Camp Pendleton.**

hundred ducks annually. Several years ago, the Army banned firing of white phosphorous rounds into wet areas. It is now studying how to clean up Eagle River Flats. The Army is seeking to have Fort Richardson made a Superfund site.

National policies closing military bases and consolidating training on

going to disappear,” says biologist Slader Buck at Camp Pendleton. At Fort Huachuca in Arizona, local conservationists and military biologists worry about the competition for scarce water resources that will occur as the base population increases. It will likely impact birdlife there.

With military budgets running