

sequoia needles

Bulletin of the Sequoia Audubon Society
San Mateo County Volume 46, No. 9
June, 1997

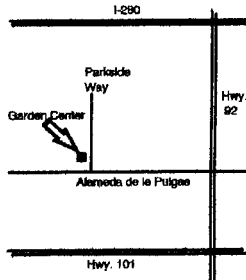
This Month's Program

Wildlife Rehabilitation



Jan Moughler, Wildlife Supervisor for the Peninsula Humane Society, will give a slide presentation focusing on the Orphan Bird Program, but with an overview of all the

wild birds and animals under the care of the Humane Society. Jan started at PHS as a wildlife technician in 1986, and after a short stint at Wildlife Rescue, returned to PHS in '91.



Its Potluck Time!

This month also brings us to our annual Spring Potluck Dinner.

Please remember to bring your own utensils and plates and a paper bag in which to take them home. Those people whose last name begins with the letters **A-F** should bring a **SALAD**; those whose names begin with the letters **G-L**, a **CASSE-ROLE** or other hot dish, and **M through Z** should provide the **DESSERTS**. Be sure your offering will feed at least 5 people.

The Potluck Dinner begins at 6:30 PM.



From the Editor

Cliff Richer



Last month, Sequoia Audubon saw fit to honor me as Environmental Educator of the Year. This is not the first time Sequoia has honored me. In 1984, I was presented with an award for overall contributions to the Society. (At that time I was Editor, Field Trip Chair and a member of the Board.) Although I had attended every meeting and almost every field trip, the award itself came as a mild surprise. As I commented at the time, "There are many others whose service was as great as mine and whose service to the Society has been over many years. This, however, is not false modesty since I would have been insulted had I not been nominated." In 1994, I was also given an award when I took what turned out to be a year's sabbatical from doing the *Needles*. This one was for sheer longevity as Newsletter Editor (then 11 years) and came as no surprise at all. This year's nomination and selection was different in that it came as a total surprise. For this reason it is most appreciated.

It is especially valued since I consider the highest mission of Audubon to be the education of both the young and the general public as to the overall value of maintaining our wild lands and their non-human inhabitants. We have lost 90% of our California wetlands and riparian areas. Large sections of this state and smaller parts of the Bay Area are notorious for their smog. The Los Angeles River is a world-class example of engineering technology vs. the environment. Most of our wild rivers have been sacrificed for irrigation and power. Much of the Central Valley and Mojave Desert have been sculptured to suit man's agricultural and recreational needs. Our remaining old growth forests are under constant pressure from loggers and every habitat is in danger from developers. All of this is fueled by a runaway growth in population -- mostly from immigration to the state. This degradation must stop and we must all be part of the movement to stop it.

I am honored beyond mere words that Sequoia has recognized that I may be a contributor to that movement.

Election of Officers

Our Nominating Committee, Francis Toldi, Mary Bresler and Merry Haveman, has done its usual fine job and the following are proposed as officers for the coming year:

President	Francis Toldi (Incumbent)
Vice-president	Marylyn Noah
Secretary	Debbi Frantz (Former VP and Treasurer)
Treasurer	Tom Vanden-Bosch (Incumbent)
Directors (Term Expires June, 2000)	Eileen Jennis-Sauppe (Incumbent) and Gary Deghi

The mission of Sequoia Audubon Society is to participate actively in environmental education, and conservation and in the restoration, preservation, protection and enjoyment of our native natural resources with emphasis on birds and their habitats.



The SAS Calendar

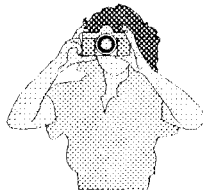
June

THURSDAY, JUNE 5 — BOARD MEETING at the Sequoia Audubon Office at 7:30 PM. All members welcome. Please call ahead to be sure there will be room.

THURSDAY, JUNE 12 — GENERAL MEETING at the San Mateo Garden Center on the Alameda at Parkside. An informal get-together begins at 6:30 followed immediately by the Potluck, Annual Business Meeting, Election of Officers and the program., featuring Jan Moghler of the Peninsula Humane Society.

The new field trip and program chairs need a little time to put their schedules together, so you'll just have to wait until the September Needles to see what's happening this fall. 'til then...

Have a good summer!



Owls Of San Mateo County Part II Saw-Whet Owl



This tiny (7 or 8 inches long) owl is named for one of its least heard but most distinctive calls. This call sounds like a man sharpening a saw. (A very common sound for our early settlers - a very rare sound for us today.) Its most common call is a high pitched single note repeated two or three times a second and repeated over and over.

It has one of the widest vocabulary of sounds of all the owls and many of its calls have not been recorded.

Despite the fact that this owl often perches in the open during the day, it is extremely hard to see as it resembles a pine cone more than it does a bird and is more often overlooked than seen.

It is a cavity nester, using old woodpecker holes as nests.

Despite its small size, it is a formidable hunter and depends mainly on rodents to sustain itself, although it will feed on large insects, small reptiles and amphibians as well.

It prefers dense coniferous growth, but like the other two small owls is surprisingly common in our coastal scrub habitat



If you would be a real seeker after truth, it is necessary that at least once in your life you doubt, as far as possible, all things.

—Rene Descartes

Northern Pygmy Owl



This little owl is our smallest (6½-7 inches) local owl and is hardly any bigger than its usual prey - songbirds.

This little predator is active day and night and actually gets most of its prey in the daytime. The Pygmy Owl does not depend on silence but on a quick rush and sharp talons to secure his prey and so - unlike the county's other owls - does not have soft downy flight feathers.

While these owls sometimes call during the day, they are normally heard only at night. Their single-note whistled call (lower and slower than the saw-whet owl) is sometimes repeated interminably when they are seeking mates or establishing their territory.

While they are normally associated with coniferous woodlands, they are frequently found in the coastal scrub.

They are cavity nesters, usually taking over old woodpecker (esp. flicker) holes.

Burrowing Owl

Once common in the uplands along the Bayshore marshes and in the county's grasslands, this bird hovers on the edge of extirpation from the county, and, indeed, from all of northern California. Its preferred habitats are also the preferred areas for commercial developers and are rapidly disappearing. In some parts of its territory, aggressive poisoning of ground squirrels (in an effort to prevent the spread of rabies and plague) has also contributed significantly to its decline. A pair or two are known to inhabit Bair Island and there is anecdotal evidence of a small colony on the inaccessible areas of San Francisco Airport.



Known as a daylight hunter, it has increasingly become nocturnal in areas where it is threatened by development. It is the only owl that hovers like a kite or kestrel while searching for large insects and small mammals that comprise its diet. Its long legs are an adaptation to its grassland habitat and it is usually seen standing next to the nest burrow "dipping" up and down to get a better view by the avian equivalent of standing on tip-toe. It does not excavate its own burrow, but takes one over from ground squirrels and "improves" it to suit its own purposes. In other areas, prairie dogs and other burrowing animals do the original earthwork. Efforts in Santa Clara County and elsewhere to provide artificial nest boxes and burrows have been successful.

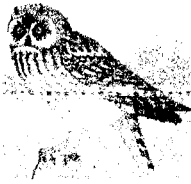
Its vocal range is impressive. It can emit soft cooing sounds, imitate a rattlesnake, or challenge you with a chattering series of scolding clicks, rattles and whistles if you approach too closely.

From bill to tail, it averages about 9½ inches long, but may look longer (because of its long legs) when standing by its burrow.

Owls of San Mateo County — Part II

(Continued from Page II)

Short-eared Owl



A ground-nesting owl of grass and marshlands, the Short-eared Owl is mostly a winter resident, although there have been reports of nesting

on Bair Island.

The "ears" of this owl are rarely seen and it usually appears smooth-headed.

Although it usually hunts at dawn and dusk, it can often be seen hunting on overcast days and at night. In daylight flight over a marsh or grassland its hunting technique may bear a superficial resemblance to that of a Northern Harrier. The lack of a rump patch and the buffy to black crescents in the wing distinguish it from the harrier.

Slightly smaller than a Barn Owl, the short-eared is primarily a rodent catcher, but may also eat small reptiles or amphibians and an occasional large insect.

Long-Eared Owl

Very similar in size and flight to the Short-eared, this owl is strictly a winter visitor to the Bay Area. Its long, feathery "ears", the orange facial disk and its habit (locally) of roosting in the densest willow thickets distinguish it.

Generally it is gray or gray-brown in color as contrasted to the light to dark brown of the Short-eared. It closely resembles the Short-eared in appearance during flight but is nocturnal in habit and rarely seen in daylight unless disturbed.

Secretive in habit and rare throughout its range, less is known of this bird than of any other North American owl.

The Spotted Owl is an infrequent visitor to our county although there are persistent reports from the Skyline Drive area that it may be a year-round resident.

A giraffe's heart is the size of a basketball.

The Bookworm

Cliff Richer

Birds of Costa Rica (Video)
by Rich Kuehn and Dean Schuler
As a long-time fan of Rich and

Dean's videography, and having seen five of their presentations — including three on Costa Rica and one on Birds of San Mateo County — I was expecting a good, well-done, professional-looking video but was absolutely bowled over by the best bird video I have seen — bar none!

It concentrates almost exclusively on the birds with only an occasional well-placed mammal, reptile, amphibian, flower or landscape shot to smooth some of the transitions.

In order to avoid the appearance of merely appearing loyal and patronizing to a couple of fellow SAS members, I found myself nit-picking. Among the videos of more than 225 species, I found one video (Snail Kite) to be marginal, and one other (Yellow-headed Caracara), obviously taken at long distance, to be merely acceptable. The remaining 223+ ranged from excellent through superb to magnificent. Several were literally breathtaking.

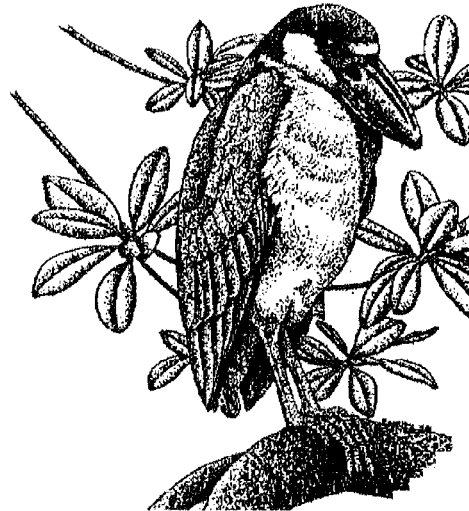
I also found one misspelled title, ("Slatey", instead of Slaty Tinamou) and two very minor editing errors. In one case, the narration was cut off a syllable or two too soon and in another the title

appeared too late, just as the Prothonotary Warblers were fading off-screen.

Having therefore discharged my duty to be critical, I must conclude by saying that I was absolutely astounded by the quality of this video.

The sharpness of the images and the depiction of the field marks are amazing.

As one who has tried to photograph these same birds in this same habitat and ended up with hundreds of under-exposed slides I am absolutely open-mouthed over the results obtained by Rich and Dean. I not only recognized the Common Tody-Flycatcher, but even the bush in



which the video was taken. My photo of this bird in this bush consists of a yellow streak against a muddy brown background.

If you are going to Central America, have been to Central America or are thinking about going to Central America, get this video! It won't replace your field guide and its 840+ species, but if you're like me, who cannot learn the birds without seeing them in the field, this is just as valuable. It will make a great Father's Day, Bastille Day, Birthday, Christmas or just plain "I-deserve-it" gift.

This 120 minute video is currently for sale through the American Birding Association's ABA Sales. But we expect Rich and Dean to make the video available either directly or through SAS. Contact them at 596-7127 for details.

If, you haven't been yet,

Get to Audubon Canyon Ranch

this month before the season is over!



Black Point Suit Under Appeal

The former site of the Renaissance Pleasure Faire is a pleasant tract of roiling oak savanna hills near the mouth of the Petaluma River. The Novato City Council initially disapproved a large development there. Then, under threat of a suit by the developer the Council, in a closed session illegally approved it. Marin Audubon Society joined the Sierra Club and Marin Conservation League in a suit to reverse the back-door-approval. The suit was successful and the approval of the development was nullified.

Novato and the developers have appealed the decision, and the developer has resubmitted the proposed development. The appeals will probably be denied and then taken to the California Supreme Court. The process is expected to be long and expensive.

Marin Audubon needs financial help to carry this forward. If you can, you should send donations in any amount to:

Marin Audubon Society
Black Point Legal Challenge
Box 599
Mill Valley, CA 94942-0599

New Coastal Commissioners

Assembly Speaker Cruz Bustamante has appointed four new members and four alternates to the California Coastal Commission. The new commissioners are Andrea Tuttle, a longtime environmental consultant from Arcata, Dave Potter, a Monterey County Supervisor with a favorable environmental history, Pedro Nava, an associate of the speaker from Santa Barbara, and Christine Kehoe, a conservation-minded city council member from San Diego. The alternates are George Miller Jr., an attorney and son of Congressman Miller, Gary Giacommini, a long-time Marin Supervisor, and Winston Hickox, former president of the California League of Conservation Voters, all with impressive environmental credentials. The final alternate is Terry Johnson, a member of the Oceanside City Council, whose environmental record is unknown.

These represent a major change

from his predecessors. Republican Speaker Curt Pringle's commissioners were certainly not preservationists and several appointees actually had a record of violating the Coastal Commission's regulations. His predecessor, Democrat Speaker Willie Brown, had made it a practice to appoint a "balanced" set of commissioners, representing both environmental and development interests.

Defending The Coastal Act

Dan Taylor

California's coastline is unique and draws nature-lovers from around the world. America's other coasts also offer habitat, scenery, and terrain that inspire residents and lure visitors. But visitors to California always note one special thing about our coast, which they can't match elsewhere, and which we take for granted -- access. Our coastline is open, public, protected and planned over its entire length. Our beaches are not fenced off, walled in or built up. No visitor has to drive far to find legal coastal access, and -- with few exceptions -- coastal parking. Californians pursuing shore or pelagic birds or just beach walking enjoy the experience without the fear of trespass that Atlantic and Gulf birders endure.

This is not accidental. Only California has its Coastal Protection Act. Californians drafted and approved the Coastal Act, after state and local government refused to protect our coasts. The Coastal Protection Act is California law. No other state has attempted more to preserve coastal habitat, and public access to that habitat. For birders, this means ready access to California's birds, from rare ones like the snowy plover to majestic ones like our pelicans. We hold our coastline in trust for California and posterity.

For much of its 25 years, the California Coastal Act has been successful. Most coastal communities adopted local coastal plans. Most at least make an effort to publicize and enforce them; a small, highly professional Coastal Act staff brings good science, zoning and public policy together; and the Coastal Act is administered for the public good by a Coastal Commission drawn from

local elected officials and citizens. Until recently most Coastal Commissioners took their oath -- to defend and enforce the Coastal Act for the people of California -- seriously and tried to support the Act's letter and spirit. This led to better coastal resource mapping, prevention of inappropriate development and mitigation of adverse environmental impacts from other types of development. In many parts of California, the rate of prime coastal habitat and wetland loss was reduced. Sadly, the recent recession's economic pressure and the political weight of developer contributions have begun to erode the size and morale of the Coastal Act staff and the Commissioners' commitment to the Coastal Act.

The reasons for the State's declining support of the Coastal Act are many, complex and political. Some landowners don't want stringent Coastal Act review for their development plans. Local officials duck controversial projects. In Los Angeles and Orange Counties local coastal plans haven't been fully adopted and there's no effective penalty to make coastal communities obey the state law.

This year the voice of those trying to weaken the Coastal Act has been stronger than ever in Sacramento. We struck bottom last summer when anti-Coastal Act commissioners tried a coup against Peter Douglas, their Executive Director. Auduboners can be proud that several Southern California chapter leaders took time away from work to go to Huntington Beach to help prevent that.

Although after 25 years there is room for genuine reform of the Commission and its process, throwing out the Act and its key provisions is unacceptable.

Audubon-California and other conservation groups seeking coastal habitat preservation and access should become more visible in defense of the Coastal Act, its professional staff and the State Commission that oversee it. The California Coastal Act makes the one key difference between California's coastline and all others in the nation. It must be saved.

(Dan Taylor is the Executive Director of Audubon California. Adapted and reprinted from the Audubon California newsletter, winter 1997)

New Proposal for Second Folsom Dam Expected

Following this winter's disastrous flooding in the Central Valley, most politically active members of the environmental community expected that the advocates of the new Folsom Dam on the American River would once again be calling for the resurrection of this project under the guise of flood control.

Speculation now is that the dam's adherents are lying low and — while still advocating new enabling legislation in a budget-minded Congress — are working on the still nebulous proposal to give control of the entire system to California.

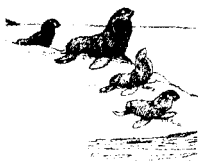
One of the reasons may be the poor performance of the existing dams during the height of the floods. California's river system is one of the most controlled in the world, and if flood control were a priority, no floods would have occurred. But these dams are managed for three purposes — a supply of irrigation water, hydroelectric power and flood control.

These are in the order of priority. Therefore when the heavy rains came the dams, being managed for irrigation, were nearly at capacity and had no flood control function whatsoever. Every gallon of flood water on every over-developed flood plain in California had already passed through and been released by at least one dam that had once been constructed under the excuse that it was needed for "flood control."

Flood control is incompatible with the other two uses. If you want to see a true flood control reservoir, take a look at the Little Panoche Reservoir the next time you bird Panoche Valley. In the summer this is virtually dry and in a normal winter it is a shallow pond with the dam towering many feet above it. 90% of the dam's capacity is unused and is available for retention of flood water.

Expect the Folsom Dam proposal to be revived after the congressional budget battles are over, but before the next rainy season. By then, the horrors of the flood season will still be in our memories, but the details — like the ineffectiveness of the existing dams — will be forgotten.

Fur Seals Back on Farallons



Last August northern fur seals bred on the Farallon Islands for the first time since 1817. A bull fur seal established a mini-harem with an adult and two immature females. A pup was born to the older female.

Fur seals once bred on the Farallons in large numbers and were abundant along the California coast until hunting and trapping drove them to near extinction. Between 1810 and 1812 New England whalers took over 150,000 fur seals. Shortly thereafter Russian scalers established Fort Ross and soon had an outpost Farallons in 1817. By 1834 the annual yield of pelts from the Farallones had dropped to less than 60, and by 1840 the Russians abandoned their posts. The small number of remaining fur seals supported a local scaling business for a short time but by the time of the Gold Rush all breeding colonies had disappeared from California.

Northern fur seals now breed only in Alaska and on the Channel Islands off Santa Barbara, where fur seal pups were discovered in the late 1960s. Individual fur seals have occasionally been sighted on the Farallons for 25 years, but this was the first indication that these marine mammals had begun to reproduce there again. The 1996 birth may be an isolated incident or it may be the beginnings of a recolonization. If it is a recolonization attempt, the fur seals may face some tough competition from the well-established and much larger elephant seals. The US Fish and Wildlife Service and PRBO will be monitoring the status of these seals closely in 1997.

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Cowboys go high-tech! More and more ranchers are foregoing old-style livestock branding in favor of using liquid nitrogen. Super-cooled branding irons can be applied more quickly and cause little pain. When the hair grows back over the branded areas it is pure white, making it visible from long distances, (except of course on white horses).

Pishing or Not?

Cliff Richer

While I generally regard "pishing" — the sound made by forcing air through one's teeth while using the lips to make a pish sound — as an exercise that keeps the birder occupied until the bird decides to show up, there have been occasions when its affect has been both effective and immediate.

There are, however, some birders who are dedicated pishers. In my experience these people are relatively new birders, impatient and *very* annoying. After their pishing has driven every bird within hearing distance away (my usual result) some of these birders resort to squeaking — either by self-adoration (kissing the backs of their hands) or by technology (wood and metal squeakers sold at nature shops).

In either case, common courtesy dictates that you limit your pishing to those occasions on which you are birding away from a group, birding by yourself or with just one or two friends. Otherwise let the field trip leader decide when he should make a fool of himself by indulging in this practice.

Incidentally, I think of squeakers as being in the same class as most fishing lures — intended to trap or attract the practitioner rather than the prey.

Steelhead for the American

Before the construction of Folsom Dam on the American River, tens of thousands of steelhead trout, an ocean going fish that spawns in rivers, migrated up to the very top of the American River.

The Department of Fish and Game (DFG) has endorsed a study of a plan proposed by the Planning and Conservation League (PCL). The plan calls for transporting steelhead and spring-run salmon around Folsom and Nimbus Dams, so they can return to their original spawning grounds. Peter Moyle of UC Davis has also endorsed the study idea, but so far state and federal officials have refused to fund the study.

Clapper Rail Habitat Restoration

Between 1850 and 1915 over-hunting by market and sport hunters decimated rail populations. The California Clapper Rail never fully recovered. Destruction of tidal marsh habitat for urban use and salt production accelerated in the 1920s and proceeded at a rapid pace until federal and state laws were enacted in the mid-1960s. Since that time, large-scale habitat loss has been limited, but the cumulative effects of many small habitat losses has resulted in significant wetland loss and degradation.

In the last 100 years, approximately 85% of the salt marsh habitat in San Francisco Bay has been destroyed by filling and diking. This dramatic loss and fragmentation of salt marsh habitat has been the primary factor leading to severe long-term declines in California Clapper Rail populations.

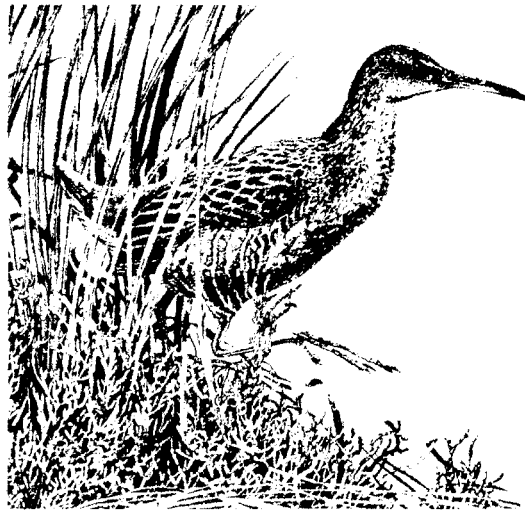
In 1972, the most crucial positive action toward rail recovery occurred with the establishment of 23,000-acre San Francisco Bay National Wildlife Refuge in the marshlands of south San Francisco Bay. The Refuge protects approximately 3,500 acres out of the (remaining) 8,600 acres of salt marsh habitat in the South Bay from further development.

In 1984, the US Fish and Wildlife Service drafted a California Clapper Rail recovery plan to provide a framework for implementing recovery strategies for this endangered species. The focus of the recovery plan involved restoration and enhancement of salt marsh habitat for the benefit of the rail. In 1988 Congress approved expansion of the Refuge to 43,000 acres. This action will allow additional habitat to be protected and restored for the benefit of the rail.

Presently, California clapper rail populations are restricted to fragmented salt marshes in San Francisco Bay. Remaining marshes are geographically disjunct, and characterized by lack of a natural transition zone between the marsh and upland habitat, relatively small size, and close proximity to urban and industrial development. As habitats have become more fragmented, with easier access for terrestrial predators

such as the non-native red fox and feral cats, predation pressures have increasingly threatened the survival of ground nesting species.

Currently, the SF Bay Refuge is involved in an integrated predator management program to reduce effects of non-native predators on native wildlife species. Efforts include predator barriers, removal, and habitat management to reduce suitability for these predators. Without control of non-native predators, benefits of other long-term recovery actions for the rail, such as habitat protection and marsh restoration, would be limited.



Restoration of salt marsh habitat is the only long-term solution to recovery of the rail. In order to plan restoration projects which have a higher chance for supporting rail populations, biologists need to consider the physical characteristics of marshes which affect rail use. This allows us to create marshes supporting large, self-sustaining populations of rails.

Some of the physical characteristics of marshes which affect rail use are size of marsh, location relative to other marshes, buffer area between marsh and upland, elevation and hydrology. These factors all contribute to the "quality" of the habitat for rails. Elements of quality include food resources, cover from predators, nesting habitat, and habitat

available during high tide. Rails in "high quality" marshes don't need as much area to fulfill their requirements because resources are more abundant.

Marsh size and habitat quality, considered together, determine the maximum number of rails which can be supported in a particular marsh. Parcels of low quality habitat may not be able to support a viable rail population because rails call to each other to advertise breeding status. If a rail cannot hear another rail because they are too far apart, it may not find a mate or breed. A population of unmated rails will not sustain itself.

Marshes to be managed for breeding clapper rails should be in close proximity to each other to facilitate dispersal without excessive predation. Marsh corridors (low-quality, narrow marsh habitats not used by rails for breeding), should be available between the primary breeding marshes to provide cover for migrating rails.

Size of buffer areas or transitional habitat (area between the marsh and uplands) is important because outside influences from the upland area may have devastating effects in the marsh. The larger the buffer, the less severe or direct the impacts will be. For instance, one of the reasons the non-native red fox is able to have a large impact on rail populations is because there is no buffer area between the uplands and the marsh. Most remaining marshes have levees on at least two sides and the foxes use the levees to reach the marsh.

The shape of marshes also determines ease of access for foxes. The narrower the marsh, the easier it is for terrestrial predators to gain access. Historically, marshes were very wide, with ample transition zones and terrestrial predators limited their activities to the edges. In the interior of the marsh was safe from this type of predation.

The presence of intricate networks of tidal channels in marshes is one of the most important characteristics of high quality rail habitat. Rails feed in the mud

of the channels during lower tides. Generally, marshes with more tidal channels can support more rails because food resources are more abundant. Rails in the tidal channels are also fairly safe from most predators because rails can evade predators by running quickly down a channel system and taking cover in the overhanging vegetation. Most predation of clapper rails takes place during higher tides, when the tidal channels are filled with water and most marsh vegetation is flooded.

The elevation of the marsh greatly affects which type of vegetation will grow. Low marsh areas with sparse vegetation and tidal sloughs are used by rails for foraging. Higher marsh areas with dense vegetation are used for nesting. A marsh needs to have both to supply all the needs of the rail. Marsh elevation has been a problem in many restoration projects because of limitations in the methods used to construct the marsh.

Most of the restorable parcels in the San Francisco Bay area have subsided due to drying of the soil after being diked and are currently too low to support marsh vegetation. The two main methods of raising the level of restoration sites are introduction of dredge spoils on top of the existing soil surface and opening the area up to tidal action and allowing natural sedimentation to raise the ground level. Both methods are subject to problems.

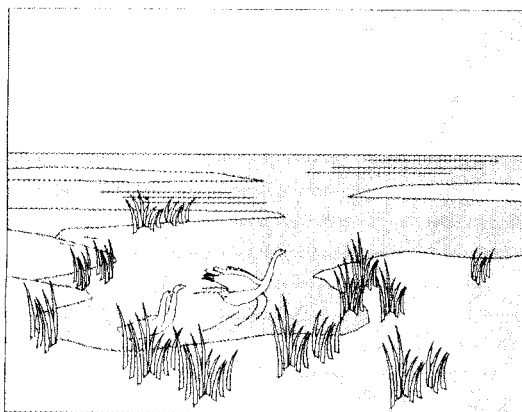
When using dredge spoils, it is difficult to predict how much material should be imported to increase the elevation. Materials are brought in as wet mud and will eventually dry and settle. If the mud settles too much, the restored area will be too low for marsh vegetation and may require additional materials. However, if the mud doesn't settle as much as predicted, the area will be too high and dry for growth of healthy vegetation and formation of tidal channels. Dredge spoils may contain high levels of certain contaminants making them unsuitable for use in wetlands restoration projects.

Opening restoration areas to tidal action allows sedimentation and formation of marshes to occur at a slower rate. Since the sediment load in San Francisco Bay is quite high the elevation of restoration areas can increase quite rapidly up to

a level that will support marsh vegetation. The advantage of this method is that it allows tidal channels to form naturally. Depending on sedimentation rates and initial elevation, sedimentation may take approximately 5-15 years before marsh vegetation begins to grow.

Marsh restoration is still in the experimental stage and we have not yet discovered how to recreate marshes as good as those created naturally*. Therefore, monitoring the success of restoration projects is critically important.

There are many current marsh restoration projects in the San Francisco Bay



area. The San Francisco Bay National Wildlife Refuge Complex is involved in several, including restoration of a 1,500 acre parcel of former farmland, called the Napa Marsh Unit (formerly known as Cullinan Ranch), in the Napa River area of the north bay. This area is planned to be restored to full tidal action for the benefit of clapper rails and other species, with levee breaching and natural sedimentation.

The Refuge has contracted with the National Biological Service to plan restoration of the Knapp Property, a 452-acre salt pond in the Alviso area, on the edge of the bay between Alviso and Guadalupe Sloughs. The levee may be breached in several locations, allowing full tidal action. Wetland vegetation is expected to

**This indicates why mitigation projects rarely produce wetlands as satisfactory as the original habitat which was displaced. For this reason, mitigation should not be an acceptable alternative unless unavoidable and unless the mitigation area is much larger than the displaced wetland. --Ed*

become established and grow within five to ten years in this area.

The East Bay Regional Park District is involved in a cooperative project with the Refuge and other organizations to enhance a 325-acre area of diked salt marsh known as Oro Loma Marsh, located along the shore of Hayward. The area will be restored to tidal marsh and seasonal wetland habitat.

The Refuge has also been working closely with the Regional Water Quality Control Board, the California Department of Fish and Game, and the City of San Jose to plan mitigation for conversion of salt marsh to brackish marsh which occurred in the Coyote Creek area due to excessive freshwater outflow from the San Jose Water Pollution Control Plant. This effort has resulted in a purchase by the Conservation Board of 835 acres of inactive salt evaporators in Hayward to be restored to tidal marsh and seasonal wetlands. In addition the City of San Jose has purchased the Moseley Tract located just north of the west approach to the Dumbarton Bridge for restoration.

The largest potential addition to the Refuge is Bair Island, a 1673-acre diked wetland in Redwood City. The purchase of this land for restoration to tidal salt marsh. This parcel is especially important to the recovery of rail populations due to its large size and location adjacent to a fairly large existing population of rails on Greco Island.

Short-term predator management is still required to maintain viable populations, but it is not the solution to increasing future populations. Only restoration of high quality salt marsh habitat will ensure future survival and recovery of the California Clapper Rail.

(Condensed from an article by Joy Albertson in the Winter 1996 issue of Tideline, the newsletter of the San Francisco Bay National Wildlife Refuge. Ms. Albertson is a Wildlife Biologist with the US Fish and Wildlife Service. Her Master's thesis was titled "Ecology of the California Clapper Rail in south San Francisco Bay".)

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**Carolyn Gann and Jean Durick
in memory of
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