WESTERN TANAGER

Los Angeles Audubon Society *Volume 47* *Number 2* *October 1980*

Toward A Better Understanding of the Least Tern

by David Koeppel

Picture a narrow spit of open, gravelly beach, a hundred yards across at its widest point. Imagine a flat and featureless landscape, save for a sporadic clump of seaside goldenrod or patches of thinned-out grass. Envision an aerial procession of insatiable gulls by day, equally hungry Black-crowned Night Herons at dusk. Add to this setting the infringements of society: boats, joggers, dogs on the loose.

It hardly seems conceivable, yet this is a typical profile of the present-day nesting sight of *Sterna alba,* the Least Tern, one of the most dauntless breeders to brave the shorelines of the United States. The adaptable Common Tern likes shores too, but when necessary will resort to remote offshore islands or inland lakes to breed. The flexible Forster's Tern is just as at home in fresh water as in salt water marsh habitat. But the unpretentious habitat usually afforded by open sandy beaches — those same beaches relished by the hordes of humanity — is the only refuge for the monomaniacal Least. What precious little there is of it lays scattered along the Eastern Seaboard, the Gulf Coast, the once tern-replete coastline of Southern California, and in some inland valleys.

Against the unassuming backdrop of packed sand and scant plant life, the drama of Least Tern courtship and propagation takes place on a grand scale, with anywhere from fifty to four hundred pairs making up a single colony. As with other members of the subfamily *Sterninae* (terns), though, Leasts do not take the matter of mate selection lightly. The rites of courtship which culminate in the formation of the pair-bond turn the mating game into much more than just an arbitrary rendezvous. These birds are fussy when it comes to picking partners, and justifiably so; the survival of the brood is crucially dependent on the ability of the parents to cooperate.

New Insight Into Breeding Activities

Little has actually been written in detail about the prenuptial behavior of male and female Least Terns and carefully observing the birds at a safe distance from their breeding grounds can be an enlightening experience for the patient birder. Take, for example, the activities of the pair just prior to and including copulation; careful study of many pairs over several breeding seasons has revealed an astounding pattern of consistency.

Males typically advertise themselves to females by flying about the colony with fish in their bills. At some time, a male settles down on the sand with his catch, planting himself right beside a potentially receptive female. She reciprocates by crouching down as low as possible, depressing her abdomen into the sand in a submissive, prostrate position. Her actions emulate those that will be prerequisite to egg-laying: the Least Tern "nest," being nothing more than a shallow scrape in the sand, is formed in a similar manner. As she lowers herself, she points her tail upward like a vertical mast and flutters her wings, which are slightly distended. The male, meanwhile, stands before her in an absolutely upright position, his breast thrust forward and slightly above her. While alternately extending his wings high above his body and then folding them again, he waves the fish from left to right with jerky head motions. Often, she will pick up on his cue, simultaneously shaking her head from side to side too.

photograph by Herb Clarke

This ritualistic foreplay may continue for as long as five minutes. Finally, he will mount her, at which time mating takes on more the appearance of a game of piggyback than an act of reproduction. It is not unusual for the female to waddle about with her tenacious mate riding atop her! At this point, the male proffers his fish. She reaches up and back and takes it from him. He answers with a light peck to the top of her head and eventually dismounts.

The exchange of food from male to female is known as courtship feeding and is more than just a symbolic gesture of consummation, as it also takes place independent of sexual activity. Males make continual offerings of fish to members of the opposite sex both prior to actual copulation and during the period of egg incubation. Apparently, this diligence of duty is derived from an obsessive instinctual drive in the male to assert his competency as a provider of food. Indeed, even a female's selectivity in choosing her mate may largely be based on how she assesses her suitor's ability to sustain the young.

More appears to cement the pair-bond than just courtship feeding, the mating ritual and copulation itself, however. Least Tern couples also engage in what might best be described as "tandem flying," an activity characterized by a swift, close-knit aerial display. Like two jet fighters whose maneuvers are perfectly coordinated, the birds veer about in dextrous unison, flaunting both agility and sharpness of reflex. They often take up this impressive exercise immediately after mating, making it another probable manifestation of male-female solidarity. It should be mentioned, though, that because Elegant and Common Terns have been observed participating in similar feats far from their breeding grounds, the exact purport of "tandem flying" might also be unrelated to pairing.

Social Grouping and Nest Site Selection

Another peculiar phenomenon that needs clarification is the rare instance when three terns keep close company with one another. A case in point involves three terns that were seen landing together at McGrath State Beach this year. One of them, presumably a male, had a fish in his bill. He ended up offering it to one of his companions while flying off with the third! Several times during that same day, three Least Terns (possibly the same trio) were seen flying about — one had a fish — and they remained within very close proximity of one another. On another occasion last year at McGrath, two females that had already settled on their respective nests were visited by a single male carrying food. Only the second female was actually fed, so that this isolated incident could just as easily have been an instance of mistaken identities as a case of *menage à trois*. But evidence of possible threesomes has not only turned up in California but on the East Coast as well, and experts are not discounting polygamy as a viable explanation. Do males with superior fishing skills sire more than one brood? Could Least Terns have some kind of dominance hierarchy, on the order of mammals? Only further and careful observation can provide the answers.

Least Terns use discretion in choosing their nest sights, in spite of the undiversified landscape. Birds belonging to large colonies must pay particular heed to their neighbors' territory, while members of a small population, like those at McGrath, can afford to be a little more choosy. Areas of densely packed sand are far preferable to the loose stuff. Both the male and female participate in picking out the spot and may be seen during the mating season following each other about, shopping for real estate. One pauses and looks at the ground as if inspecting it. The other approaches the spot, leans forward, and points to the sand several times with its bill. The first bird moves away a short distance, examines another spot, and settles down on it. They remain fixed in their positions a short time before flying off together.

photographs by David Koeppel

There must be some specific conditions associated with the staking out of a nest sight because last year at McGrath there were ten nests arranged in a direct line, equidistant from the edge of a lagoon on one side and the leeward slope of a sand spit on the other. Linearity of this sort has been pointed out at a Least Tern colony on Long Island, New York, too. Are the terns reacting to wind factors or minute contours in the land, or is there a natural order to their setup, like houses on a suburban street?

Incubation, Hatching and Fledging

Most females lay two eggs; some lay three or, on rare occasions, four. A clutch of five eggs was discovered at Camp Pendleton in the Spring of 1971, but this is the extreme. In any event, three or more eggs turn up only during the first laying (some birds raise two broods within a season) when the females are well-nourished and hence better equipped to manufacture that many.

Incubation is alternately shared by both parents, who always face the wind while sitting on the eggs, probably to facilitate take-off. Lasting about two weeks, it is a period during which the terns are particularly sensitive to intruders. The benefits of colonization are fully realized now, for the terns work collectively to chase predators out of their territory, especially gulls. It is something amusing to watch five or more Least Terns band together and descend upon an unwary gull that has violated their air space. They are amazingly organized and doggedly persistent in these assaults, but at the same time, they are very discriminating about their enemies. Shorebirds, other tern species (including the Elegant,

which can resemble a gull), and passerines can fly over the colony unchecked. I have never witnessed an encounter between a Least Tern and a more formidable enemy, such as a Black-crowned Night Heron or Peregrine Falcon, and often wonder how well the elaborate defense strategy works against them.

Least Terns live in harmony with other species of birds that breed in the vicinity of their colony. In the West, harmless Snowy Plovers and Killdeer roam about freely on the terns' breeding grounds. Overhead, American Avocets, valuable allies that nest within earshot of the terns at McGrath, charge headlong at gulls (and people!) like flying jousters with recurved lances. Snowy Plovers may even play a quasi-protective role for the terns, for their small size makes them good imposters for the more vulnerable chicks. Up and down the East Coast, Least Terns take up practically side by side with Common Terns. This sympatric relationship is somewhat paradoxical, since the same Common Terns that are such vigilant defenders of the mutual territory are often responsible for the mutilation of Least Tern chicks that stray too far.

The young hatch asynchronously, meaning at intervals of sometimes a day or more, and the order in which they are born may well determine their chances of survival. A study of Least Tern chick mortality at a colony on Long Island this year brought forth the interesting fact that mortality generally occurred with the second chick in a brood of two or more, and invariably occurred with the third when three were born. These findings bear out others obtained from research done on Common Terns and lead to a startling conclusion: fledgling success decreases in the order of hatching. This means that the firstborn is better able to compete for food brought by the parents than its siblings. Hence, this is nature's way of providing a built-in mechanism for culling out weaker individuals.

Of course, there are exceptions. The approximately fifty percent mortality rate of Least Tern offspring studied at the Long Island colony was attributed to other factors, too, many of which remain unexplained. For example, necropsies performed on several ostensibly healthy chicks that died revealed dehydration, rather than starvation, to be the cause of death. One of the victims was even seen being attended to regularly by its parents before it perished. If the young aren't getting enough water from the fish they're brought, then where are they getting it from? Or is the problem physiological? The answer is still a mystery.

Within days after hatching, the chicks are able to move about freely. They are remarkably fast runners, and often before I've had a chance to catch up to one, it has scurried to the nearest clump of vegetation and taken refuge. At other times I've come upon them when they've remained absolutely frozen, relying more heavily on camouflage than on fleetfootedness. But even juveniles that have had some practice flying would sooner leg it than take to the air when being pursued. Obviously, running ability in the early days of life is a Least Tern's saving grace against the perils of wide open terrain and is not quickly forsaken for flight.

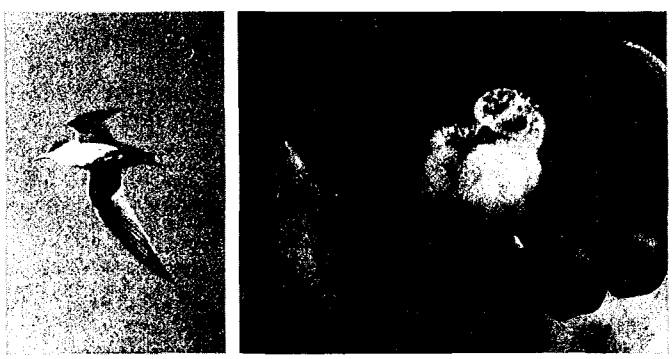
Help Needed For Endangered Species

It is the afternoon of June 15, 1980, and the vibrant bird activity of the previous week is strangely absent from McGrath State Beach. American Avocets, Snowy Plovers, and Least Terns all remain aloof, in sharp contrast to their abounding presence of the week before. Gulls pass freely through an area that not long ago was off limits to them. Tire tracks and ruts in the sand take the place of the delicate depressions that contained eggs. What once had been a sanctuary now lay ravaged by the aimless paths of dirt bikes, jeeps and land cruisers.

The stigma of man's negligence is echoed on the other side of the country just two weeks later at Eaton's Neck, Long Island. There, on the evening of July 1, against the dying ember of twilight, I take part in the gruesome task of cleaning up the dismembered carcasses of over 400 baby and juvenile Least and Common Terns. The carnage was the work of three dogs that a careless owner had allowed to run wild.

The Least Tern, by virtue of its stubborn taste for one kind of nesting habitat, seems forever destined to clash with a myriad of dangers. Colonies are as susceptible to floods (such as the one that blighted the nests at Ballona Creek this summer) as they are to predation and man's destruction. But if there is any consolation, it lies in the fact that increasing numbers of the birds are modifying their predelection for beaches to include the sand flats of estuaries and the dikes along salt ponds. Also, they bounce back from disaster with extraordinary resilience. No sooner are nests wiped out than the process of recolonization begins, and usually succeeds. Furthermore, the birds have become remarkably tolerant of human disturbances, and will tolerate the presence of persons and machines right up to the periphery of their territory.

By protecting what remains of our coastal wetlands and roping off designated nesting sights, there is no reason why this endangered species shouldn't be able to make a comeback. After all, these are pretty tough creatures. All they need is just a little help.



I am indebted to Ed Navojosky and Bill Kolodnicki for their generous contribution of data and observations acquired through persevering study of Least Terns at McGrath State Beach and on Long Island, respectively.— DK

The Condor Fund

Donations to the California Condor Fund aid the National Audubon Society in its efforts to preserve the condor. These funds are used to meet salary and equipment needs, to produce and distribute informational materials, and to support an active and ongoing public education program.

It is the conviction of experts on condor management that a program of captive propagation coupled with a continuing program of strict habitat protection stands a good chance of assuring the survival of the species.

Your tax-deductible contribution to the LAAS Condor Fund is urgently needed. Please use the enclosed envelope and make your check payable to the Los Angeles Audubon Society.

Research in Review

by Kimball Garrett

CHARLES Darwin. Alfred Russel Wallace. Lee Jones. Readers will recognize these names and undoubtedly associate them with the longstanding fascination of biologists with islands. Island ecosystems are usually relatively simple, and can provide the scientist with a manageable set of facts with which to test ecological and evolutionary theory. These ecosystems also tend to be delicate, easily perturbed — a researcher interested in the responses of populations to environmental change brought about directly or indirectly by humans often concentrates on islands. In California we have two of the most studied island systems in the world: The Channel Islands off Southern California, and the Farallons off San Francisco. This month's article will provide a brief introduction to some important research on these islands.

Channel Islands Breeding Turnover Rate High

Much of the impetus to recent research on the California offshore islands came from the work of the late ecologist Robert H. MacArthur. MacArthur felt that the number of bird species breeding on a given island represented a dynamic equilibrium between extinction of populations on the island and the immigration and establishment of new populations. The equilibrium number of species on an island was found to be largely a function of the size of the island and its distance from a source (mainland) area: Larger and nearer islands would be expected to have more species. While the "theory of island biogeography" is vastly more complex than this, there are, nevertheless, simple and testable predictions which MacArthur and fellow workers have developed.

Dr. Jared Diamond, an ecologist and physiologist at UCLA, surveyed the California Channel Islands in 1968 to compare breeding bird species lists with lists made earlier in the century. He found numerous cases of immigration and extinction (remember that "extinction" refers here to an island population, not to an entire species); these cases of immigration and extinction we'll call "turnover." While Diamond found high rates of turnover, species numbers on the islands had scarcely changed since the early 1900s.

Working under Diamond, our recent past-editor of the *Western Tanager,* Lee Jones, began intensive surveys of the breeding birds of the Channel Islands in 1973. His 1975 PhD dissertation contains a wealth of information about breeding birds on these islands. One of Jones' significant findings was that turnover rates of breeding landbirds on the Channel Islands were even higher than Diamond had detected, and that the species composition of a given island was therefore likely to change noticeably through the years (or even annually). These high turnover rates may partly explain why endemism is not pronounced on these islands. Only twelve species have subspecies which are primarily restricted to the Channel Islands. Of these, only in the Scrub Jay is the endemic subspecies *(Aphelocoma coerulescens insularis)* well marked.

Jones was also interested in what determined the success of various species at colonizing the islands. What qualities of the Rock Wren, for example, have made it the only landbird to breed regularly on all of the Channel Islands? (The American Kestrel, Barn Swallow, Horned Lark, Orange-crowned Warbler, Western Meadowlark and House Finch have also bred on all islands, but not regularly.) What attributes of the Black-chinned Hummingbird, a long-distance migrant and strong flier, have predisposed it to "miss" the Channel Islands (where it has never been recorded)? It may be clear why weak-flying, sedentary birds such as the Wrentit, California Thrasher, Brown Towhee and Greater Roadrunner have never reached the Islands, but how does one explain the absence or scarcity of such strong fliers as the Turkey Vulture, Red-shouldered Hawk or Common Crow? The complex answers to these questions must touch on the life-history strategies of the individual species involved, and in many cases our knowledge is far from complete. Dr. Jones has offered many valuable insights in his dissertation and his forthcoming book on the birds of the California Channel Islands. A by-product of Jones' bird surveys of the Islands has been the addition of dozens of species of transients, visitants, and vagrants to the lists for each island.

Pt. Reyes Bird Observatory Conducts Daily Censuses

For thorough studies of birdlife on California's islands, nothing can match the efforts of the Pt. Reyes Bird Observatory, which has conducted daily censuses of landbirds on the South Farallon Islands for the past twelve years! Dave DeSante and David Ainley have recently published a summary and analysis of this trove of data, including species accounts for all of the birds recorded on the South Farallons. Birders will be struck by the function of the South Farallons as "vagrant traps," clearly a combination of geography and intensity of coverage. What other small piece of land on earth has been visited by Red-footed Booby, Northern Dotterel, Northern Wheatear, White Wagtail, White-eyed Vireo, Golden-cheeked Warbler, Field Sparrow, and Snow Bunting (not on the same day, mind you)? DeSante and Ainley include an interesting analysis of the abundance of transients and visitants on the Farallons as a function of their source areas and migration tendencies.

California "Islands" Deserve Additional Study

California has countless additional islands deserving of study. These may be "islands" of coniferous woodland on a mountain peak in the desert (such as Clark Mtn. on the eastern Mohave), "islands" of prairie marsh and grassland in the technologically-devoured Central Valley, or "islands" of shaded woodland (in the form of parks) within major urban centers. Readers are urged to consult the references below to gain additional insight into the features and processes of the biogeography of islands of all types.

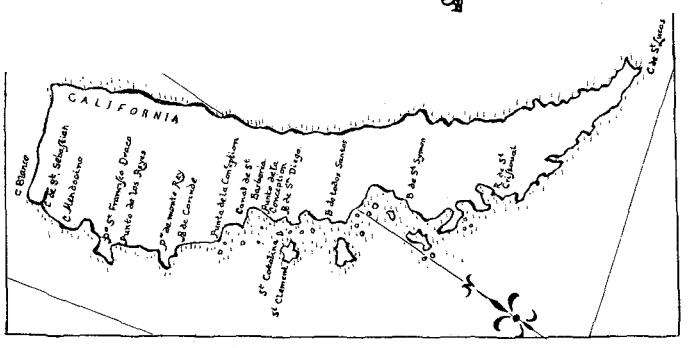
Selected Bibliography:

DeSante, David F. and David G. Ainley 1980. The avifauna of the South Farallon Islands, California. *Studies in Avian Biology* No. 4, pp. 1-104.

Jones, H. Lee 1975. Studies in avian turnover, dispersal, and colonization of the California Channel Islands. PhD Dissertation, UCLA.

Jones, H. Lee and Jared M. Diamond 1976. Short-time-base studies of turnover in breeding bird populations of the California Channel Islands. *Condor 78:* 526-549.

MacArthur, Robert H. and Edward O. Wilson 1969. *The theory of island biogeography.* Princeton University Press.



Notes From a Bird Bander

by Bob Stewart

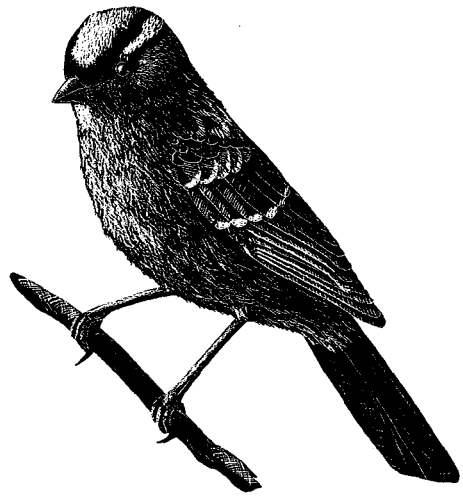


illustration by David Mooney

Banders use mist nets to catch birds either during the migration season or on the breeding grounds. These are fine nylon nets which are very soft and hold the bird quietly until the bander removes it from the net. Some large birds like seabirds and birds of prey are banded as young birds while in the nest. At an early age their legs are as big or bigger than they will be as adults and of course they can be easily banded as youngsters but not as adults. I have seen birds peck at their new bands for several minutes after they are freed, but after that they ignore their bracelets.

For years scientists studied bird populations and thought of birds as statistics — but now more and more studies are showing that there are individuals out there. If you've seen one White-crowned Sparrow you *haven't* seen them all.

Banding personalizes an individual bird. When we add color bands (plastic bands the same size as the aluminum Fish and Wildlife Service band) we can recognize an individual without ever catching it again. This aspect of banding — the recognition of an individual bird — is the foundation for knowing wild birds as unique, like knowing a person. We then have the opportunity of knowing who the star birds are just as we like to know who important people are.

For instance, I have just talked to Luis Baptista, who with Marty Marten (both of Occidental College), are working on song dialects in White-crowned Sparrows at Tioga Pass (10,000 feet). Because of low spring temperatures and high water content, the snow did not melt but remained so that the breeding season was at least a month late. I remarked to Luis that he must have been disappointed that the White-crowns were not singing in all their normal abundance — there were only a few willow patches that were free from snow in late June. Luis and Marty, because they had individually banded and color-banded the birds at Tioga Pass, discovered that it wasn't the males who were singing on these isolated willow patches, but the *females*. Normally, female White-crowned Sparrows never sing during the breeding season. There would have been no way of finding this out if they had not color-banded the individual birds.

I was color-marking White-crowns on the coast in winter flocks to determine what their dominance hierarchy or pecking order was. I discovered that a female was head of the whole flock — a very unusual thing in winter flocks where the males usually dominate. Not only was she number one in the pecking order, but she *sang* complete songs in the middle of *winter* from the center of a grain pile I put out — apparently to accentuate her position. I further know that in the previous two breeding seasons she had successfully raised 12 and eight young, respectively, while most White-crowns in the same period would have been lucky to raise eight young, not 20. So again, by banding we discover the existence of "super females."

Dr. L. R. Mewaldt took banded White-crowned Sparrows that returned year after year from Alaska to his backyard in San Jose, California. He flew some of these to Baton Rouge, Louisiana, during the early spring and they were released there 1,500 miles from their normal winter home. That fall some returned to Mewaldt's backyard! He then sent them to Maryland — 3,000 miles east — and some made it back to his yard again. One individual lived to be 12 years old.

In the Wilson's Warblers I have color-banded on the coast and at Tioga Pass, I found that a five-year-old male came back to the coast one year a couple of days later than most of the older ones — the older more experienced birds came back first, allowing them to pick the best territories. Because this five-year-old was late, a two-year-old took a large portion of his previous year's territory. I thought this old guy was getting senile but the next year he was the first Wilson's Warbler to return and he regained all his former territory! He continued to come back until he was eight years old, the oldest known Wilson's Warbler.

I now have a six-year-old color-banded male Wilson's Warbler at Tioga Pass I affectionately call "Bandelero." So far he is the oldest individual I have found at this 10,000-foot site. "Bandelero" often takes more than one female in his territory during the breeding season, sings much more than other males, keeps getting a bigger territory every year upon his return from wintering in Mexico, and one year he was attracting a third female while he was helping feed the nestlings of the other two! In other words, "Bandelero" is a "super male" and we know that only because we color-banded him many years ago.

Only one-tenth of one percent of all the birds banded during migration are refound later on. A very discouraging result, but even so that is the way the migration routes of species all over the world have been discovered. The percentage of success is considerably higher if you band birds on their breeding grounds — at least 60 percent will return the next year; that is because birds return to the same spot each year. In this way, we can tell how long they live. At Pt. Reyes Bird Observatory we know a Warbling Vireo migrated from Mexico for 13 years in a row, clocking over 50,000 miles in his lifetime!

If you find a dead bird with a legband, send the number on the band to Fish and Wildlife Service, Washington, D.C. You will get a card in the mail telling you where and when it was banded. The bander will also get information about where you found it. All banders in the U.S. are coordinated by the Government. Banders must be qualified and have a permit from the State as well as the Federal Government.

Bob Stewart is a Northern California-based naturalist whose work has included many banding projects. He also conducts classes for PRBO, Yosemite Natural History Association and College of Marin.

Topics of Conservation

by Sandy Wohlgemuth

Some years ago we were on a spring weekend field trip to Greenhorn Mountain — a staple Los Angeles Audubon trip that has somehow fallen by the wayside. A beautiful conifer forest in the southernmost tip of the Sierra with warblers, Golden-crowned Kinglets, Fox Sparrows, solitaires, nesting woodpeckers and a family of weasels. We had a great time. And we had just begun collecting aluminum cans in the first flush of the Environmental Revolution. With our kids doing much of the work, we scoured the campground and surroundings and came home with over 200 cans! Like the time we saw a beer can in Morning Glory Pool in Yellowstone, we were appalled by the insensitivity and waste of our throwaway society. We added to our hoard at home and when we had piled up all the cans our garage could hold we hauled them off to the recycling center where we got 15¢ a pound for them. With what must have been an annoying self-righteousness, we donated the proceeds to various conservation organizations. We also saved newspapers. And for a couple of years we were the crazies who collected glass. Neighbors brought their empty bottles and jars over to us instead of putting them out with the trash. We smashed them with a sledgehammer and carted them miles to the glass factory. If you weren't fussy about mixed drinks you could get high on the residues in the liquor empties in our notorious garage.

The truth is, we didn't know the half of it. We weren't more than subliminally aware that the world was running out of resources; that the USA, with 6 percent of the population, was consuming 40 percent of the raw materials. It wasn't until the 1973 gas lines that most people began to suspect that there might be an energy problem lurking. There had been reports tucked away in dull economic surveys and the financial pages of the newspapers that necessary ores (bauxite, chromium, molybdenum, etc.) and other essentials for our industrial prosperity were running low overseas and that we might be facing a materials OPEC in the near future.

Reaching the Limits of the Frontier

The trouble lies in a peculiarly American heritage: the myth of the limitless frontier. Our ancestors moved from the east coast to the virgin land just to the west, cut down the forests and raised their crops. When things got bad, they pulled up stakes, pushed further west and started over again. For them — and the immigrants who arrived later — the golden frontier was always there, offering adventure, freedom and reward for hard work. Though we ran out of frontier a hundred years ago we still carry around the notion that in this superabundant land we will never run out of material things; our god-like, miraculous technology will always provide us with the solution to our difficulties. This consumer paradise has given us the disposable diaper, the throwaway razor, the unrefillable cigarette lighter, the nonreturnable soda bottle. And so on. All in the name of convenience, spelled W-A-S-T-E.

To many of us such criticism of our lifestyle is downright irritating, if not impertinent. It's a free country, dammit, and if I want to throw a Coor's empty out of my gas-guzzler's window, that's *my* business. Yes, it is. But do we know the cost — to all of us?

Last year this country generated 6 *trillion* pounds of waste — 29,000 pounds for every man, woman and child. This enormous trash heap chewed up 10 percent of our energy and 30 percent of our major materials. In this heap was buried two-thirds of our paper, two-thirds of our glass, one-fifth of our aluminum, one-sixth of our plastics, and one-eighth of our iron and steel. Most of the things we use that give us our treasured standard of living are made from these five materials. And all but the paper are non-renewable resources. Since we import 33 percent of our iron ore, 40 percent of our oil and 91 percent of our aluminum ore (bauxite), we are accelerating scarcity and cost by throwing so much of it away. These three imports are costing us over $40 billion a year with no ceiling in sight. We are tossing away a million tons of aluminum a year, worth $600 million at the current recycling rate of 30¢ a pound. Add to that 13 million tons of steel worth $260 million. We're the last of the big spenders!

When we throw out our trash we are getting rid of more than the broken toy, the empty can, the defunct vacuum cleaner, the paper bags from the supermarket. In making all the things we need hidden wastes are created. Mine tailings: ugly blemishes on the face of mining towns and the surrounding countryside. Sulfuric acid: fallout from our factories that becomes smog and acid rain. Acid rain: the newly-recognized gift to the great outdoors that destroys trees and kills wildlife in lakes hundreds of miles from its source. Solid particles and noxious gases that foul the air and reduce the quality of life. Make no mistake about it, the pollution in the air and the garbage in our waters are the unwanted by-products of our industry. They are *wastes*. For every pound of finished product — and, thus, every pound of waste — we use 20 pounds of raw materials.

Just to collect and dispose of our refuse costs us $4 billion a year. The great bulk of our waste ends up in landfills. We tried incineration — both backyard and municipal — for a long time, but the air quality became unacceptable. Now we're discovering that burying our junk is no environmental bargain either. The chemical disaster of Love Canal in New York is alerting us to similar health problems all over the country. Even so-called nonhazardous wastes rotting in the earth produce poisonous gases and serious groundwater contamination. The medical cost of waste disposal has to be added to the total bill for our throwaway society.

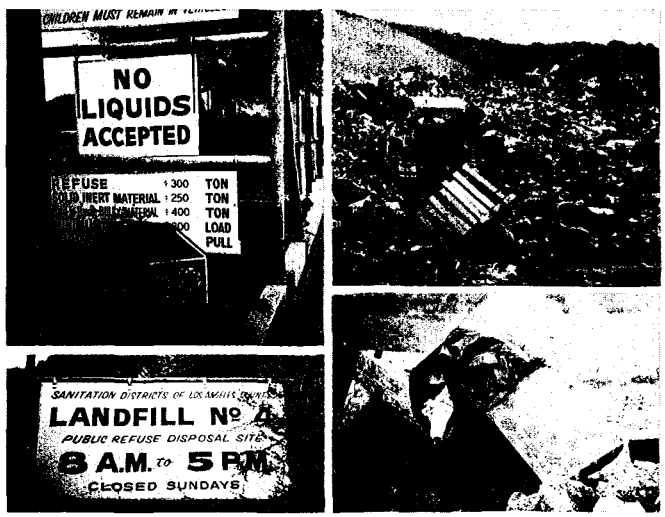
What Can We Do About It?

- **Reduce waste at the source.** This is the surest way to save energy and materials and cut down pollution. If you don't need a product, don't buy it. If you need it, buy one that will last and can be repaired. Avoid disposables. One deposit bottle used ten times saves the cost of making nine throwaways. It also curtails litter, as anyone driving Highway 101 north into Oregon will tell you. Incredible as it may seem, in 1960, 95 percent of beverages were sold in returnable containers; today 75 percent are in non-returnables. If we went back to 1960 in our habits we would save about $3 billion a year. Vote for a bottle bill! To repeat: to reduce waste, reduce unnecessary consumption.
- **Recycle.** The huge mound of our national waste has been called "urban ore" that could be mined to replace a substantial portion of virgin raw materials. Aluminum is a marvelous metal but it takes a great amount of energy to produce it from bauxite. It takes only 5 percent of that energy to recycle the metal from salvaged aluminum cans. Thus, recycled aluminum will reduce air and water pollution by 95 percent. In another area, the major part of the newsprint used by the *Los Angeles Times* is paper stock made entirely from old newspapers. Recycling not only gives us a source that replaces raw materials but it reduces the size of the awesome pile of waste. Less waste means fewer landfills and less contamination of the environment.
- **Organize trash collection.** Recycling newspapers, aluminum and glass by determined citizens is fine and dandy but, realistically,

a very small number of people will be motivated to participate. The sensible route is organized municipal trash collection. Those of us with long memories will recall that 25 years ago in Los Angeles we separated our trash before it was put out for the trucks. Garbage was picked up twice a week and metal and trash every three weeks. It is much easier and cheaper to recycle sorted trash than the random mixture we throw out today. An up-to-date system of separate collections would make an enormous difference in the effectiveness of a recycling program.

• **Change our attitudes.** Is all this a disagreeable, disturbing subject? Yes. Just as the days of 29¢ gasoline will never return, so the supply of cheap essential raw materials is probably a nostalgic memory. Improved technology will help. But somehow our awareness and our attitude will have to change. It will be difficult to substitute the conservation ethic for the throwaway ethic; we've been the Affluent Society for too long. It *can* be done. It *is* being done in several European countries. With a standard of living comparable to ours they generate only half as much waste per person as we do. Do we wait until we're forced by the hot breath of necessity to change? The specter of bankruptcy is finally persuading Detroit that a light, fuel-efficient car is the way to go. But that's the hard way. Gasoline prices are already altering our driving habits. We're making fewer unnecessary trips; we're planning our shopping so we can combine our stops. We're being compelled to think, to make logistical decisions we never bothered with before. Can we examine our lives in regard to waste in a similar fashion? Let's give it a try.

"The Waste Watchers: A Citizen's Handbook For Conserving Energy and Resources." Arthur H. Purcell.



Estimated Time of Biodegradation:

Following is a list of common objects and the approximate times required for them to degrade beyond recognition in the open. Climate and other factors can influence this time span. Direct sunlight reduces biodegradation time; degradation is slow under water.

Orange peels — 1 week to 6 months
Human body — 1 to 3 months
Wool sock — 1 to 5 years
Paper containers with plastic coating — 5 years
Plastic bags — 10 to 20 years
Nylon and polyester fabrics — 30 to 40 years
Leather shoe — up to 50 years
Plastic containers — 50 to 80 years
Aluminum cans — 80 to 100 years
Plutonium-239 — half-life is 24,390 years

Caltech Neurobiologists Study Birds' Navigational Systems and Geomagnetic Field

Do birds use the earth's geomagnetic field as part of a homing system? Sixty homing pigeons housed on the roof of Caltech's Beckman Behavioral Biology Laboratory are helping to provide the answer. These specially bred birds have been coming and going from this site (arriving by air, leaving by car) as part of a research project being conducted by neurobiologists John Pettigrew and David Presti.

Pettrigrew and Presti are searching for the ways in which birds use magnetic material in their bodies as a compass to get them where they want to go. They are working with both homing pigeons and migratory White-crowned Sparrows to discover how birds extract navigational information from the geomagnetic field.

Ornithologists have long known that birds receive basic directional information from the sun. More recently, however, the presence of a backup system that uses the earth's magnetic field to obtain navigational information has been substantiated by discoveries of permanently magnetic materials in the tissues of the birds.

In their studies of the locations and mechanism of action of these magnetic receptors and how they are connected to the brain, Pettigrew and Presti have found some previously undiscovered patches of black magnetic material embedded in the neck muscles of the pigeons. The material is composed primarily of iron and consists of the magnetic mineral magnetite, also known as lodestone — Fe_3O_4. The neurobiologists believe that the magnetic material in the birds may be coupled to muscle sensory receptors.

One such possible receptor, the muscle spindle, is acutely sensitive to stretch. The Caltech scientists propose that these receptors might be what is stimulated by the geomagnetic field. The existence of such a detection mechanism could explain why researchers have had difficulty eliciting response from pigeons in the laboratory. If in-flight motion is a prerequisite to the operation of the receptors — via the stretching muscles — naturally tests on immobile pigeons would yield the negative response they have been getting.

In addition to this ongoing research, Pettigrew and Presti are currently starting a new series of studies focusing on the behavioral rather than the anatomical and physiological aspects of the pigeons. Testing their hypothesis that it is the magnetic material in the neck muscles that is doing the compass work, the researchers are comparing flight behavior of pigeons that have had a light local anesthetic injected into the neck muscles with untreated control birds.

Hundreds of such tests will be made, under various weather conditions, with the pigeons being released from near and far — up to 40 miles away.

Presti and Pettigrew contemplate that man might also carry a similar sensitivity to the earth's geomagnetic field. However, since magnetic field information is normally not useful to humans in contemporary civilization, such sensitivity would lie well below normal levels of awareness.

The work of Drs. Pettigrew and Presti was originally written up in CALTECH NEWS, August 1980, and is reprinted here with permission.

The Jizz of a Volunteer

by Dorothy Dimsdale

The phone rang: "Can you take two Canadians out birding for a day?" "Who? Me? But ... Well ..."

"They'd be very grateful. They don't know the birds around here at all." "Oh, well ... but ..."

"Even a Brown Towhee would be a life bird."

"Really? Well ... Oh, why not? Yes, certainly. I'd be delighted." I replaced the phone and then — PANIC.

Suppose they ask me why a Dusky Flycatcher isn't a Hammond's? What if they want to spend the day on immature Gull identification? There is something in my mental filing system which *refuses* to index gulls. Perhaps a call I once answered at Audubon House somehow added to my block. The caller was upset because I refused to swim out to a buoy off Terminal Island to rescue a gull with an injured wing. "Why not?" he cried accusingly. "They're *your* birds!" I shuffled under a cloud of guilt for several days, feeling personally responsible for the possible demise of the gull. Paddling out might at least have brought me near enough to study and memorize the unfortunate creature's markings.

So I worried, almost to the hour of Diane and Mike's arrival.

Just before they arrived, I was stalking the front yard and was lucky enough to roust out a Costa's Hummingbird. This was a good start and kept Diane and Mike happy on the way out. I was taking them to Mt. Pinos — it's pretty, birdy, with always the hope of a Condor to take back as a prize life bird (and no problem with Gulls!). Then seeing a Roadrunner cross in front of the car just past Lake of the Woods was a surprise — I'd never seen one in that area before and the Canadians were ecstatic.

It was from then on I found how much I enjoyed describing what to look for in a Brewer's Sparrow, Calliope Hummingbird and so on, and how much more aware I was of each species we found. The highlight was *four* Condors. It was a super day, and I felt absolutely brilliant by the end of it, though, of course, I'd done practically nothing but enjoy myself.

I was much more calm when the next request came. An Australian lady with the lovely name of Noela had one day in Los Angeles before traveling to South America and everything would be new to her. We scoured Tapia Park and Malibu Lagoon and came up with 58 species. Her rapture over the California Thrasher had me viewing the bird with new eyes.

Another time, Ruth Lohr and I drove to Placerita Canyon and sat in the rain in my very small car with a very tall Nova Scotia birder. We made cheery remarks such as: "There's a Wrentit calling!" or "Listen to that Red-shafted Flicker." There wasn't a bird in sight. We did eventually see Black-headed Grosbeaks and a Western Tanager when the rain wasn't beating too fiercely against the windows. At the end of the day as he stretched his cramped legs our friend vowed he'd had a lovely time. And who knows, perhaps he had. Perhaps we underestimate the impact of our common birds.

Recently, I took a Scotsman, James Maxwell, to the Switzer Picnic area. I really didn't "lead" Jim at all, but had only to mention the birds likely to be in the area, and before I could lift binoculars to eyeballs, he had them spotted and called. We saw a female Yellow Warbler and Jim asked what she was feeding. It was an enormous baby Cowbird! With every feeding, the tiny warbler almost disappeared down the Cowbird's throat, but it gave us a good view of the oval yellow spots on her tail.

illustration by Dana Gardner

"... I have discovered that the bird which produces the most universal ecstacy with out-of-towners is the Acorn Woodpecker."

I was quite stymied, however, when Jim asked me what the Jizz of a Costa's Hummingbird was. The Jizz? (I had seen the word in English publications, but could not find it in an American dictionary; I believe the word has an unmentionable connotation in the Eastern U.S.) Apparently it is all those characteristics pertaining to a species and by which it alone can be identified and distinguished from others.

We ate our lunch by the stream in the company of Black-headed Grosbeaks, Western Tanagers and Stellar's Jays which hopped around our feet picking up crumbs, as tame as the sparrows in Europe, and Jim was able to get some good close photographs.

Overall, I have discovered that the bird which produces the most universal ecstacy with out-of-towners is the Acorn Woodpecker. The colors are striking and it is an openly active bird. Show the old A.W. and immediately you're a super leader. I guess it has a jazzy Jizz.

Now panic has left me and showing travelers around I have made many contacts for future travels. Try it, you'll like it, that's my advice. Just jive with the Jizz!

Birding in the Cucamonga Area

by Henry E. Childs, Jr.

Jack Benny's favorite town is changing from vineyards into housing tracks. Soon the wintering flocks of *Western* and *Mexican Bluebirds, Yellow-rumped Warblers* and *Pipits* will be gone and replaced by urban sprawl — industry, housing and motels. Yet, good birding is still to be found.

Guasti Regional Park

North of the freeway at Archibald Avenue. The park itself contains a lake which attracts waterfowl in winter. Drainage ponds across the street and to the north attract a variety of migrants; a variety of shorebirds can usually be found in winter. Check the weeds for *Vesper Sparrows.* A visit to Brookside Winery for a "taste" will make the trip more enjoyable.

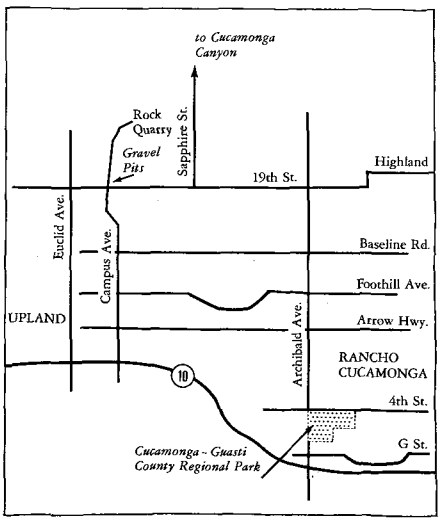
Gravel Pits

Nineteenth Street and Campus Avenue. Lakes in gravel pits throughout the Los Angeles area provide nesting and feeding areas for wintering waterfowl and other birds. The 1979 Christmas Count turned up 32 species at this pit, including *Hooded Merganser, Gadwall, Canvasback, Greater Yellowlegs, Common Snipe, Rock Wren* and *Lincoln Sparrow. Costa Hummingbirds* reign in summer.

Cucamonga Canyon

Drive to the top of Sapphire Street from Nineteenth Street on the east side of the wash. Turn left and then right and park at the end of the pavement. At this level and to the west to the creek, *California Thrashers, Lazuli Bunting, Phainopeplas* and *Black-chinned Sparrows* are regularly present at the appropriate times of the year. Occasionally *Rufous-crowned Sparrows* can be found in the chaparral, and *Northern Shrikes* in the wash. *White-throated Swifts* are usually seen overhead.

Hardier souls can hike up the dirt road which leads to the top of the ridge. Typical chaparral birds are present in good numbers — *Costa Hummingbirds, Wrentits, Bewick Wrens, Brown* and *Rufous-sided Towhees. Golden Eagles* are a possibility also. The presence of migrants makes this locality an exceptionally good spot in the spring.



Audubon Workshop Scholarships Offered

It seems a little premature to think of summer in October, but scholarships to the Audubon Workshop of the West, held in the Wind River Mountains of Wyoming, must be awarded early in 1981. Nothing but praise for this ecology study vacation has come back from participants in previous years.

There are four sessions through the summer. Entrants must be 18 or over by July of 1981. Preference will be given to those most likely to apply their experience in future work or studies. Applications consist of a letter explaining applicants' reasons for wanting to attend this camp, and how they expect their work or study to be enhanced by the experience.

All letters of application should be received by 15 January 1981. Letters or further questions should be directed to the Scholarship Committee at Audubon House. A member of the Committee is at the House on Tuesdays and Thursdays.

Birds of the Season

by Shum Suffel

Early October will find most able-bodied birders in the field at every opportunity. This is a time of change in the bird world — the last of the summer residents, the first of the winter birds, and the best of all the migrants, including those ever-fascinating "vagrants." Most of the vagrants are just that — birds lost from their traditional migration routes and blindly continuing on until stopped by the coast or a need for food, rest or water. This, of course, is the reason that the vagrant traps, coastal promontories and canyons, islands and desert oases, are so faithfully covered.

Late July, as expected, was uneventful except for additional reports of **Magnificent Frigatebirds** along the coast — a female at Pacific Coast Highway and Sunset Blvd. (Jim Clements, 17 July), an immature at Manhattan Beach pier on 20 July and later two at King Harbor on 10 August (Hal and Nancy Spear), two sightings at Marina del Rey (Jerry Johnson, 6 and 10 August), and another at Santa Monica beach (Doug Elerath, 10 August). More surprising was a female far inland at Lake Isabella in the southern Sierra Nevada east of Bakersfield (Lee Wilson, 21 July), and another from Highway 101 five miles north of Buellton and some twenty miles inland (Walter Nichols, 23 July). The second successful nesting of **Little Blue Herons** in the state, this time in a Cattle Egret colony south of San Diego, gives hope that "Little Blues" will become permanent residents of California. The adult **Roseate Spoonbill** with the **Wood Storks** at the south end of the Salton Sea proved quite elusive for so conspicuous a bird.

Although the first trickle of the passerine migration had started by mid-August, the shorebirds dominated the early part of the month. The rarest bird, without question, was the **White-rumped Sandpiper** at the Edwards Air Force Base marsh north of Lancaster (Jon Dunn, Hal Baxter and Shum Suffel, 15 August). This is the first confirmed fall record for the west coast of the U.S. (there is a single-observer record from southeastern Alaska on 8 September 1973). Fortunately, it stayed for at least a week and was widely seen. A very early Solitary Sandpiper was below San Diego in late July (fide Guy McCaskie), and single "Solitaries" were at McGrath (Richard Webster, 13 August), Edwards AFB (Hal Baxter, 15 August), Zuma Beach (Kimball Garrett and Harvey Gilston, 22 August), below San Diego (Dave Povey, 13 August), and in the San Joaquin Marsh, Irvine (three on 17 August, Dave Markley). An early **Pectoral Sandpiper** was at McGrath from 4-13 August (Richard Webster), but **Baird's Sandpipers** were reported in numbers early in the month: 35-40 at McGrath with a high daily count of 15 (Richard Webster), 28 in the Antelope Valley (Jon Dunn), two at Playa del Rey (Jerry Johnson, 10 August), and several more below San Diego. A probable **Red-necked Stint** was photographed near six **Semipalmated Sandpipers** (they are almost identical in fall) below San Diego (Guy McCaskie, *et al*, 10 August). An indication of the increased knowledge of field marks and the expertise of local birders was the identification of more than twenty **Semipalmated Sandpipers** (all juveniles) in southern California. This species was seldom identified in our area prior to the last couple of years. A single **Dunlin** at McGrath since late July (Richard Webster) was exceptionally early, as the Dunlin is a very late migrant for a shorebird. The only **Stilt Sandpiper** along the coast was at Buena Vista Lagoon on 2 August (Russ and Marion Wilson). Another was in Unit One of the Salton Sea Refuge on 13 August (Jon Dunn). An adult male **Ruff** in full alternate plumage (a first for California) stayed for one day only below San Diego. The presence of juvenile **Black-necked Stilts** in the Ballona wetlands indicated nesting there for the first time in many years (Jerry Johnson). **Wilson's** and **Northern Phalaropes** were abundant both along the coast and inland, with Northerns favoring the coast and deeper water, while Wilson's were more common inland and near the shores of shallow ponds. Two **Red Phalaropes** at McGrath may have been "oiled," as were several of the Northerns there (Richard Webster, 3 August).

An unusual number of **Franklin's Gulls** were reported, with three at the Salton Sea (Jon Dunn, 13 August) — two year-old birds and a juvenile, and another juvenile in the Seal Beach marsh on 16 August (Brian Daniels). Two **Common Terns** at the Edwards AFB marsh were unusual away from the coast (Jon Dunn, 6 August). A **Black Tern** was seen by several observers at McGrath, where they are unusual, and another was at the Edwards AFB marsh on 18 August (Doug Willick). Alcids are usually rare off our coast in summer. This year, in addition to a scattering of **Common Murres** (including unprecedentedly large numbers off the Santa Barbara Co. coast), there was a **Pigeon Guillemot** in King Harbor (the Spears, 10 August and several days thereafter), an alternate-plumaged **Marbled Murrelet** along the Ventura Co. coast just south of Big Sycamore Canyon, far south of its summer range (Cliff Pollard, 9 August), and a **Craveri's Murrelet** at Corral Beach above Malibu, 19-22 August (Kimball Garrett).

Among the earliest passerine migrants were **Western Flycatchers** at the Arcadia Arboretum, 22 July and 16 August (the latter accompanied by a probable **Dusky Flycatcher;** Barbara Cohen). **Ash-throated Flycatchers**, too, were widely reported by early August. An exceptionally early **Brown Creeper**, always scarce in the lowlands, was in a West Los Angeles yard, 11-22 August (Tricia Glatt). **Swainson's Thrushes** nested again in Griffith Park, as in 1978, according to Justin Russell who covers that area regularly. Warblers appeared in the lowlands after mid-August; a somewhat early **Townsend's** was in Topanga Canyon, 18 August (Lee Jones and Kimball Garrett). Further evidence of the expanding range of the **Great-tailed Grackle** comes from Harold Ericsson, who saw a male on 26 May 1979 at Indian Ranch in the Panamint Valley, on the other side of the Panamint Mtns. from Furnace Creek Ranch in Death Valley, where grackles have been resident for the past three years.

The second **Little Stint**, mentioned last month, was found on Grand Manan Island in the Bay of Fundy by a post-ABA-convention tour. Another tour found **Ross's Gulls** nesting near the highway south of Churchill on Hudson Bay, far south of their usual high Arctic nesting grounds. A real shocker was another report of the **Gray Silky-Flycatcher** in the U.S. at Patagonia in southeastern Arizona (Rich Stallcup). Another was in Ventura a few years back (Paul Lehman); the status of both birds is questionable, as this beautiful relative of the Phainopepla does not normally range north of Sinaloa, Mexico. Another bit of miscellany: The California Dept. of Fish and Game wardens report that one of the immature **Bald Eagles** they were hoping to reintroduce on Catalina Island was last

seen flying toward the mainland. The wardens are asking for further reports from mainland observers.

Most exciting, in view of the upcoming pelagic trips, are the results of Fred Heath's trip to the waters 150 miles off San Diego on 15-18 August, which produced not only the expected **Black-footed Albatross** and shearwaters, but both **Red-billed** and **Red-tailed Tropicbirds** and about 40 **Cook's Petrels.**

Early October is the time for **Tropical Kingbirds** along the coast, and for **Red-throated** and possibly **Sprague's Pipits** on the open fields or sod farms (where one might encounter **Golden Plovers** and rarer shorebirds). Then there are the coastal canyons and promontories, some no further away than Pt. Fermin and Big Sycamore Canyon, which will harbor exciting vagrants when conditions are right. So, let's get out in the field while the birding is good — it should be superb in October.

Send any interesting bird observations to:
Shum Suffel, 1105 No. Holliston Ave., Pasadena, CA 91104

Announcing — Special Pre-publication 10% Discount

Birds of Southern California: Status and Distribution
by Kimball Garrett and Jon Dunn
Published by the Los Angeles Audubon Society

- — species by species account of the 500+ birds recorded in So. California
- — seasonal bar graphs for quick review
- — line drawings by Lee Jones
- — material on biogeography, taxonomy, population trends, bird movement
- — maps of breeding ranges

The cost of **Birds of Southern California** after January 1, 1981 will be $15.95. Until then, you can order your copy at a 10% discount, with pre-payment. Make check payable to LAAS and mail to "Southern California Birds" c/o Audubon House — $14.35, plus $1.00 for postage and handling. (California residents add $.86 sales tax.)

WESTERN TANAGER

EDITOR Mary Lawrence Test

Published ten times a year, monthly except January and July, by the Los Angeles Audubon Society, 7377 Santa Monica Blvd., Los Angeles, CA 90046.

PRESIDENT Jean Brandt
1st VICE-PRESIDENT Fred Heath
2nd VICE-PRESIDENT Bob Shanman
EXECUTIVE SECRETARY Carol Friedman
TREASURER Art Cupples

Audubon membership (local and national) is $20 per year (individual), $25 (family), or $13.50 (student or senior citizen), including AUDUBON Magazine, and THE WESTERN TANAGER. To join, make checks payable to the National Audubon Society, and send them to Audubon House. Subscriptions to THE WESTERN TANAGER separately are $6.00 per year (Third Class), or $9.00 (First Class, mailed in an envelope). To subscribe, make checks payable to Los Angeles Audubon Society.

Books

Briefly Noted:

J. F. Lansdowne, Birds of the West Coast, Volume Two. Houghton Mifflin Company, Boston, 1980.

Volume two of **Birds of the West Coast** is the fifth volume of Lansdowne's monumental series on the birds of North America. Forty-eight full-color paintings from the Red-necked Grebe to the Song Sparrow are included, as well as preliminary pencil sketches. The text is highly personal, but also informative. In his foreword, Prince Philip evokes Lansdowne's seemingly effortless assurance in capturing the magic moment when a long-sought bird is finally seen; this ability "... can only come from intimate knowledge, immense care and remarkable talent." A description of Lansdowne's work becomes unnecessary in light of reknowned artist George Sutton's comment that "... the sheer elegance of his work has inspired me."

Roger Caras, The Forest. Houghton Mifflin Company, Boston, paperback edition 1980.

"On a dozen levels, each discrete and assertive, the air moved across the land.... *Acquila chrysaetos,* the golden eagle, came in over a high ledge in the east and felt the turbulence beneath her... She had seen her tree and picked her branch at 4,000 feet.... The hemlock on which the eagle had landed was more than 450 years old and stood 200 feet tall.... The perfect circle of the forest turned on, as it had for hundreds of millions of years.... And over all, like a god of that cosmos, the eagle perched and waited until hunger or the urge to play with the wind would launch her free to enter again into a system of her own."

The Forest by Roger Caras details the saga of a three-week stay in the forest of the female eagle, during which we participate in insect wars in the giant hemlock, the desperate struggle of worms, snakes, moles, shrews, foxes, bobcats and bears to survive.

The Forest reads like a poetic drama of the balance of nature. Caras, who is the author of over forty books on animals and the environment, captures for young and old the lyric impact of evolution and survival. Line drawings by Norman Arlott should help make this book a classic. *(Not offered for sale at bookstore.)*

CALENDAR

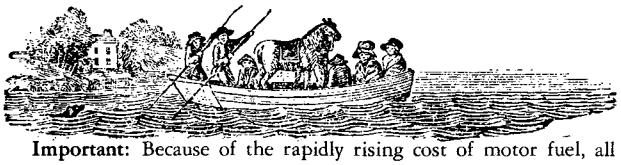
Los Angeles Audubon Headquarters, Library, Bookstore, and Nature Museum are located at Audubon House, Plummer Park, 7377 Santa Monica Blvd., Los Angeles, CA 90046. Telephone: (213) 876-0202. Hours: 10-3, Tuesday through Saturday.

Audubon Bird Reports:

Los Angeles *(213) 874-1318*
Santa Barbara *(805) 964-8240*

LAAS Pelagic Trip Reservations

To make reservations for pelagic trips, send a check payable to LAAS plus a self-addressed stamped envelope, your phone number and the names of all those in your party to the Reservations Chairman, Audubon House. No reservations will be accepted or refunds made within two weeks of departure. *To guarantee your space, make reservations as early as possible.* Trips will be cancelled 30 days prior to departure if there is insufficient response. If you wish to carpool, please so indicate, and you will be contacted two weeks prior to the trip. Please send a separate check for each trip.



Important: Because of the rapidly rising cost of motor fuel, all listed trip prices are subject to change. Please bring an extra $5 with you in one dollar bills for possible fuel surcharge, should such prove necessary. Boats will not leave port until trips have been paid in full, including any surcharge.

Pelagic Trips

Starting immediately, LAAS is bowing out of the pelagic trip business north of Morro Bay. Arrangements for pelagic trips will be made through:

Debi Love Millichap
302 Oxford Way
Santa Cruz, CA 95060
Tel: (408) 425-8111, after 6 p.m.

Scheduled trips out of Monterey Bay for fall and winter cost approximately $19.00. Trips and leaders include:

Sun., Oct. 5 — Alan Baldridge & Dick Erickson
Sat., Oct. 11 — Don Roberson & Guy McCaskie
Sun., Oct. 12 — Joe Morlan & Arnold Small
Sun., Nov. 16 — Jeri Langham & Alan Baldridge
Sun., Dec. 7 — Bill Reese & Steve Bailey
Sat., Jan. 3 — Ted Chandik & Alan Baldridge
Sat., Feb. 21 — Ted Chandik & Arnold Small

Write for details. Space still available for all trips.

SATURDAY, NOVEMBER 15 — Kimball Garrett and Arnold Small will present *Identification of California Birds,* A Saturday Workshop, Part I, through UCLA Extension. Program focuses specifically on coastal birds, shorebirds, diurnal raptors, owls and vagrant land birds. Cost: $35.00. Information: (213) 825-7093.

SUNDAY, OCTOBER 5 — Bird walk at **Trippet Ranch in Topanga Cyn** at 7 a.m. with Jerry Haigh (455-1696). Beginners welcome!

MONDAY, OCTOBER 6 — Malibu Lagoon to McGrath. Meet at 7:30 a.m. in market parking lot at Malibu Lagoon. Group will head north to Big Sycamore at lunch, then to Pt. Mugu and McGrath State Beach. Bring lunch. Ed Navojosky (938-9766) leads this trip for the ninth year.

SATURDAY, OCTOBER 11 — Monterey Bay. Departure at 8 a.m. aboard the *Miss Monterey* from Sam's Fisherman's Wharf. Return at 3 p.m. Price approximately $20. No galley. Leaders: Bruce Broadbooks and Arnold Small.

SATURDAY, OCTOBER 11 — Zuma area, concentrating on migrant passerines in **Zuma Cyn** and seabirds from **Pt. Dume.** Meet at 7:30 a.m. along Westward Beach Dr., off Pacific Coast Hwy, at the so. end of Zuma Beach. Bring lunch. Leader: Kimball Garrett (455-2903).

TUESDAY, OCTOBER 14 — Evening Meeting, 8 p.m. Plummer Park. Condor Naturalist **John Borneman** will discuss program to preserve the condor.
Conservation Committee Meeting, 6:45 p.m.

SATURDAY, OCTOBER 18 — Bird **Harbor Lake** with the Voice of Audubon. Meet at the boat house at 7:30 a.m. Bring lunch. Looking for vagrant warblers and shorebirds. Leader: Starr Sapphir (828-0146).

SATURDAY, NOVEMBER 1 — Ballona Wetlands. Meet at 8 a.m. at the Ballona Creek Bridge at the north end of Pacific Ave. Emphasis on common and migrant shore- and waterbirds. Leaders: Bob and Roberta Shanman (545-2867, after 6).

SUNDAY, NOVEMBER 9 — Trippet Ranch in Topanga Cyn to look at chaparral birds and plants. Vagrants are possible. Meet at 7 a.m. Beginners welcome! Leaders: Jerry Haigh (455-1696) and George Davis.

TUESDAY, NOVEMBER 11 — Evening Meeting. 8 p.m. Plummer Park. **Tom Keeney,** Terrestrial Ecologist, will speak on seasonal movements of migratory birds in the California deserts: desert resting spots, effects of topography, migration fluctuations and densities, and more.
Conservation Committee Meeting, 6:45 p.m. Do attend!

SATURDAY, NOVEMBER 29 — Spend the morning at **Tapia Park** and **Malibu Lagoon** with Art & Janet Cupples (981-4746). Beginners welcome! Meet at 8 a.m.

SATURDAY, DECEMBER 6 — **Ballona Wetlands** with the Shanmans. 8 a.m. Same details as November 1st.

Los Angeles Audubon Society
7377 Santa Monica Blvd.
Los Angeles, CA 90046

Sherman Suter
c/o 2209 Oakwood Dr., Apt. E
Columbia, MO 65201

Non-Profit Organization
U.S. Postage
PAID
Permit No. 26974
Los Angeles, CA