

The Avocet

Volume XIV, Number 4

April, 1967

Amateur Night

Monday, April 10
8:00 P. M.

Rosegarden Library
Dana & Naglee Streets,
San Jose

All members are welcome, and each is invited to bring 3 to 5 slides of nature subjects. A stimulating evening -- and fun! Come and join the camera fans.

Bolinas Lagoon

In what the San Francisco Chronicle has labeled a "Conservation coup", the Nature Conservancy has purchased 110 acre Kent Island in Bolinas Lagoon for \$85,000. The Marin County Board of Supervisors unanimously accepted the gift of the land to serve as a wildlife refuge, thus preventing the destruction of the lagoon as a wildlife habitat. If you wish to contribute to the purchase price, please send your donation to:

Save Kent Island - The Nature Conservancy
c/o Wells Fargo Bank
P. O. Box 7776
San Francisco, California 94119

If You Walk in the Palo Alto Baylands . . .

Audubon members are urged to stay on the trails and dikes in the Baylands. Please keep away from the airport runway, and please observe the dump hours when using the trails to the south.

Coming Events at a Glance

Mon., Apr. 3	7:45 P.M.	San Jose (Board)
Sat., Apr. 8	9:00 A.M.	Los Altos Hills
Mon., Apr. 10	8:00 P.M.	San Jose (Reg. meeting)
Wed., Apr. 12	8:30 A.M.	Los Gatos
Sun., Apr. 23	9:00 A.M.	Stevens Creek
Wed., Apr. 26	9:00 A.M.	Woodside



April Calendar

Board Meeting

Monday, April 3, 7:45 P.M. at the home of Mrs. Del Winger, 7400 Tiptoe Lane, San Jose - AL 2-3796. (Turn off the Saratoga-Sunnyvale Road west onto Fallen Leaf about two miles south of Stevens Creek, then left at the first block onto W. Lynn and right again after one block onto Tiptoe Lane.)

General Meeting

Monday, April 10, 8:00 P.M. - San Jose (See first page)

Field Trips

Saturday, April 8, 9:00 A.M., to the Daveneck Ranch in Los Altos Hills. West on El Monte to Moody Road. Continue on Moody to "Hidden Villa Ranch" sign, not far beyond Adobe Creek Lodge. Drive in to the barn -- about $\frac{1}{2}$ of a mile or so beyond the gate. For information call Ralph Trullinger 842-4201. The public is invited.

Wednesday, April 12, to Chesbro Dam and Llagas Creek. Meet at 8:30 A.M. at King's Court parking area, corner of Blossom Hill Road and Los Gatos-San Jose Road, Los Gatos. We will leave promptly at 9:00 A.M.. Leader - Catherine Lintott - 356-4264

Sunday, April 23, to Stevens Creek Park. From the intersection of Stevens Creek Blvd. and Foothill go south on Foothill which becomes Stevens Canyon Road. Meet at the dam at Stevens Creek Reservoir at 9:00 A.M.. Bring lunch if desired. Leaders: Jane and Frank Goraj, 326-9527.

Wednesday, April 26, to Stone Dam in the San Francisco Watershed. Meet at the Pulgas Water Temple on Canada Road, Woodside, at 9:00 A.M.. Bring lunch and friends. We must go in together and return together (probably about 3 or 3:30) through locked gates. For further information call Kay McCann - 327-4138.

Individual Reports

- February 11 - Hooded Merganser, Palo Alto Yacht Harbor
Two American Plovers, Alviso
Virginia H. Puddicombe
- February 14 - Allens Hummingbird, Los Gatos
19 - Rufous Hummingbird, Los Gatos
Charlotte H. Kenna

Individual Reports (continued)

February 16 - Two Violet-green Swallows, Los Gatos

28 - Rufous Hummingbird, Los Gatos

March 1 - Allens Hummingbird, Los Gatos

Alan Walthers

March 1 - Two Virginia Rails, Audubon South Bay Sanctuary

Kay McCann and Carol Renfrew

Please send all Field Trip Reports in by the 10th of each month.

Evelyn Hester

Field Notes Editor

15015 Karl Avenue

Monte Sereno, California 95030

356-3728

Arizona Gift

In memory of Mrs. I. W. (Angelina) Snow, a gift of \$100 was sent to the Arizona chapter of the Nature Conservancy to help purchase the Patagonia-Sonoita Creek Sanctuary. Mrs. Snow, who died in January, was Membership Chairman of the SCVAS for fifteen years. The land being bought is a rare stream bottom sanctuary in Southern Arizona's Sonoran Desert that harbors at least 172 species of birds. Unique in this region due to its year-round water flow, the Sanctuary preserves more than a mile of beautiful cottonwood trees along the quiet stream.

May Board Meeting

Board members and committee members and their spouses are invited to a pot-luck supper board meeting on Monday, May 1, at 6:45 P.M. at the Conradson's, 4337 Miranda Avenue, Palo Alto, telephone 941-2102. Please let Diane know by April 3 (board meeting date) if you plan to attend.

New Members

We offer a special invitation to participate to these new members:

Dudley and Leona Davis
300 South Union Avenue
Campbell, California 95008

Mrs. Florence A. Pulford
25852 Westwind Way
Los Altos Hills, California
94022

-Caroline Davis
Membership Chairman-

SOME ECOLOGICAL ASPECTS OF SAN FRANCISCO BAY

By H. Thomas Harvey

This article is continued from the March issue of The Avocet and was prepared by H. Thomas Harvey for the Bay Conservation and Development Commission.

Mussels such as the horse or ribbed mussel produce great numbers of larvae in the spring. These larvae may determine in some part the migrations of fish which depend on them for food (Gilliam, 1957). In turn these mud-dwellers depend on food gleaned from the mud or water. They do so by a variety of clever devices, such as mucous nets, streams of water pumped over fine hair-like traps and the simple ingestion of sand and mud with the digestion of the food particles therein. The food which these filtering organisms trap comes in turn from two major sources: First, the microscopic plants and animals in the bay water or on the mud. These tend to be seasonal, and build up only in the late summer and fall in the bay. The algae on the mud surface perhaps constitute a major source of basic food in the labyrinth of food chains in the bay. Little is known of their productivity, however it has been suggested (Pomeroy, 1959) that it may constitute a source of food equal to some of the high yields from cultivated crops. The other major source is the detritus, the mixture of organic material and the decomposing bacteria and fungi working upon it. The detritus is derived from dead organisms of the water and also from the breakdown of the marsh plants. It has been reported that as much as 95% of the cord grass that grows in salt marshes is not eaten by animals in the marsh but goes into the waters of the bay to be decomposed and supply the basic food stuff for organisms there (Odum, 1961).

Thus, the mud flats are a key transitional habitat combining food sources from marsh and water into a form on which many wild birds, fish and mammals depend. These in turn provide recreation and enjoyment to many people throughout the Bay Area.

Salt Marsh Habitat

The flow of food from the marsh to the bay waters and the probable effect on smog pollutants by marsh plants constitute two major areas of interest in this report. Salt marshes are known to be one of the most productive natural areas in the world (Odum, 1959). Situated as they are in well watered, fairly temperate and sunlit sites, the plants adapted to such areas are highly productive. In San Francisco Bay there remains about 75 square miles, less than one fourth the marshland that originally existed (U. S. Dept. Comm., 1959) thus verging on extinction, particularly as they are the most vulnerable areas for filling or diking. These marshes grade imperceptibly into fresh water marshes along the estuarine gradient of the northern bay. As is to be expected, it is difficult to draw the line between salt marsh and fresh water marsh, for just as in the

estuary, physical factors grade from marine to fresh (Chapman, 1960). Much of the marshland around Suisun Bay is manipulated by man. In fact there are studies in process to attempt to determine which salinities of soil and time of water release into these areas will produce favorable conditions for the alkali tolerant plants which are known to be exceptionally good food for wild fowl (Kelley, 1963). In these manipulated marshes a great variety of herbaceous plants grow. About 125 species have been reported whereas in salt marshes proper as indicated by Purer (1942) about 50 species have been noted.

If attention is focused on those marshes which are usually subject to tidal action of waters of salinities near that of the ocean certain generalizations can be made. Most salt marsh plants have developed special structures to excrete salt and/or tolerate salt in their tissue in concentrations 20 times that of normal plants (Daubenmire, 1959). They also have structures similar to those of plants in arid regions, such as rolled leaves and succulent stems. Each serves to retain water which in a certain sense is difficult to withdraw from the water soaked muds of salt marshes because of the high salinity of the water in the mud. Most plants placed in salt water tend to lose fresh water, but the salt marsh plants are adapted to overcome this.

Different kinds of plants are also adapted to various levels and duration of submergence. Cordgrass, for example, forms a zone on the low bay edge of most salt marshes in San Francisco Bay. It possesses air passages in its leaves and roots which probably aid the roots in continuing respiration even though they are in waterlogged soil most of the time (Purer, 1942). Thus each form of life is to be found in a habitat to which it is well adjusted. And furthermore just as shorebirds feed in rather restricted levels in the mud flats so marsh plants are found in bands or zones in large part due to the gradients of salinity and duration of submergence during the tidal cycle (Hinde, 1954). Of interest in the south bay is the effect of man on existing marshes where they are subsiding due to water withdrawal from underground reservoirs. The Palo Alto marsh was predominately pickleweed with only a small strip of cordgrass along the edge in 1954 (Hinde, 1954); it has since subsided as much as 2 feet and now the cordgrass covers a much greater area. (Harvey, 1966).

As indicated earlier cordgrass is primarily decomposed in the bay's water and thus serves as the detritus food source for filter-feeding organisms. It not only produces food at about 7 times the rate of an equal acreage of wheat (Odum, 1961) but utilizes carbon dioxide from the air and releases oxygen proportionately. There is growing evidence that many plants can oxidize a common air pollutant, carbon monoxide, into carbon dioxide (Chappelle, 1961) and thus reduce the potential hazard of this toxic gas. For example it is estimated (Bay A.A.P.C.D., 1965) that 6,600 tons of carbon monoxide on the average are released into the S. F. Bay Area atmosphere per

day. It would seem prudent to study the role of the most efficient natural community in North America, namely the salt marsh, in this context prior to its elimination. The salt marsh is not only one of the vital first links in the numerous food chains in the bay, but may play a vital role in health and welfare of man.

Conclusion

The present ecological balance of the Bay has been derived from numerous natural processes modified by the increasing number of human beings. Changes will continue to shift the ecological balance. The direction of change toward either a relatively healthy ecosystem or toward stagnation of water and air will be largely determined by the ecological awareness of responsive citizens.

San Francisco Bay is a highly complex system influenced by forces as far away as the Sierra where the amount of rainfall affects the distribution and numbers of many kinds of plants and animals as great quantities of fresh water course into the Bay. The patterns of life in the Bay are the result of countless centuries of shifting balances. The connecting strands of interdependence have formed such intricate webs that to distort any one of them affects many parts. For, just as a pebble tossed into a pool sends out ripples to the far shore, so do adding wastes to the bay spread their influence far and wide.

The natural attributes of the Bay are unique. The kinds of living forms present are especially adapted to this special mixture of physical factors. Some are found here and nowhere else on earth.

San Francisco Bay is one of the greatest meetings of people and their natural heritage in the world. For people, there are uncountable values that are unique and irreplaceable.

SANTA CLARA VALLEY AUDUBON SOCIETY
BRANCH OF
NATIONAL AUDUBON SOCIETY

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Field Trip	Mr. Ralph Trullinger	1960 Santa Cruz Menlo Park	854-4201
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Editor	Mrs. Philip LaRiviere	453 Tennessee Lane Palo Alto	327-2854
Circulation Manager	Miss Elsie Hoeck	1311 Cristina San Jose	293-5668
Mimeographers	Mr. & Mrs. E. Taylor	Sycamore Ave. Rt. 1, Box 116A Morgan Hill	779-9097

