



TORREYANA

THE DOCENT NEWSLETTER FOR
TORREY PINES
STATE NATURAL RESERVE

Issue 373

June 2016

Humans Need Energy. What Are We Going to Do About It?

by Pat Finn

By all rights UC San Diego Professor George R. Tynan ought to be a raging pessimist locked in a deep depression. After all, his subject is energy, an issue marked by accusations, ill will, sabotage and even panic among nations and next door neighbors. There's not enough energy to light the way of all the world's 7 billion people now. What happens in 2100 when the U.N. estimates there will be 11.2 billion of us?

Tynan's talk to the TPDS in May was about energy sources and worldwide demand. And it was not, oddly, a downer. He was basically hopeful, in spite of his declaration that energy demand will increase by two to four times in a few generations; that most of humanity needs more energy, not less; and that childhood mortality, the number of girls in school, the level of lifetime education, and growth of the world population are all directly related to energy access. And that energy currently comes mostly from climate-changing fossil fuels.

Tynan believes the current energy economy is unsustainable, and he used coal as an example. Coal, as a major part of the British economy, began to decline around 1900, and it is still declining today in Britain and the U.S. as well. It's being replaced by cheaper gas and oil whose by-products the industrialized world spews into the atmosphere by the ton, and we feel the consequences. So what's next? What is it going to take to meet the world's energy needs and avoid unacceptable levels of climate change?

Transitions to new energy sources take generations to accomplish. Tynan recommends the cocktail approach. No, we can't mix a stiff drink and forget the whole thing. But we do need a mix of energy sources that are efficient and can create profit. Among them: wind (several million large wind turbines), solar, nuclear (fission and, eventually, fusion), carbon capture and storage.

Docent General Meeting

Saturday, June 11th, 9 am

Location: St. Peter's Episcopal Rec Hall, Del Mar

Speakers: The four winners of the TPDS Science Fair will present their projects

Special: Graduation of 20 new docents. All with Honors!

Refreshments: Docents with last names beginning with **D, E, & F** will be responsible for providing snacks for this meeting.

If we utilize all these sources, Tynan says, we can stabilize current levels of climate change. And one gets the impression he thinks we will. Not exactly blatant optimism, but definitely in the neighborhood of hopeful.

Here is a link to Prof Tynan's bio page at UC San Diego:

jacobsschool.ucsd.edu/faculty/faculty_bios/



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The Torrey Pines Docent Society publishes the *Torreyana* monthly, edited by Joan Simon and Pat Finn on alternate months, and is formatted and produced by Roger Isaacson. Submissions are due on or about the 20th day of the preceding month and may be emailed to

Editors@torreypine.org.

Circulation manager: Marian Casazza

Extra copies of the printed *Torreyana* may be found in the docent library.

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Park Aides: Elliott Beltran, Samantha Collins, Joy Inton, & Johnson Jou (Interpreter)

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FLASH From Joy Inton: Don't forget to donate your ZooNooz magazines to the Museum Shop.

General Meeting Minutes: May 14, 2016

Meeting called to order at 9:00 am by Ingo Renner.

Speaker: George R. Tynan is a faculty member of UC San Diego's Jacobs School of Engineering. His talk was on Energy for the 21st Century.

Spotlight on: **Jeff Nordland** told us about the North American Herpetological Education and Research Project (HERP), whose database is a repository of sightings and information on North American herpetofauna contributed by amateur citizen scientists and professional herpetologists. It will allow us to view and store all of our observations in one place. Jeff asks that we enter sightings of reptiles and amphibians at Torrey Pines into their database at: naherp.com (Our log-in user name and password may be found on [Docent Login](#)). Include the time, location and a photo if possible. Jeff asks that if we see a red-sided garter or rosy boa we keep the record non-public as collectors seek those out as trophies.

Museum shop: **Nancy Woodworth** is compiling a list of docents who want a copy of Mary Ruth Cox's self-published personal history of Del Mar Terrace.

The New Light on the Kiosk: **Ingo Renner** described the light on the kiosk that indicates whether or not there is available parking. If the light is lit, the gate is closed, and there is no available parking. You can see the light from the top of High Bridge or Carmel Valley Rd by the stop sign at Via Grimaldi. For photos and a map see the Google Groups email by Roger "[tpds:3444] What's that light?"

Docent of the Month: **Paul Dunphy** for all his work at the TIK and Children's Program.

Memorial for Marion Dixon: **Barbara Wallach** announced that there will be a memorial service for Marion Dixon in July and if you would like to go contact her daughter. **Marion Dixon** was an active docent for many years.

Library: **Mike Yang** mentioned that there are three new books in the library from Mary Ruth Cox.

Financial Update: **Ingo Renner** announced that the TPDS board has approved the change to the spending limit on non-budgeted items from 3k to 10k. All expenses over 5k will be announced to the TPDS at the general meetings.

Refreshments: Docents with last names beginning with **D, E, & F** will be responsible for providing snacks for June meeting.

Meeting ended at 11:08 am.

JUNE CEED EVENT

- **Date:** Tuesday, June 7th, 2016
- **Time:** 10:00 am
- **Place:** Crystal Cove State Park – Laguna Beach
– A 1-1/2 hour drive up Pacific Coast Highway to Laguna Beach where we'll see coastal strand and bluffs, coastal sage scrub, annual grasses, riparian woodland flora and fauna. Meet at the Moro Ranger Station in the day-use parking lot on the right side of US 1. Please bring your docent parking passes to waive the fee.
- **Duration:** 2 – 2 1/2 hrs.
- **Leaders:** Winter Bonnin – CA State Parks Ranger/Interpreter

Contact Joe Meyer for more info.

Children's Program

A Great School Year

by Janet Ugalde, Children's Program Director

The TPDS Children's Program completed another outstanding school year in May. Forty-three amazing, awesome docents donated over 1500 hours of their time. Please join in an ovation for all who contributed! Extra

applause for those who participated 20 or more times: **Pao Chau, Bob Doolittle, Kathy Glasebrook, Paul Howard, Marie Johnson, Barbara Justice, Bruce Montgomery, Patty Montgomery, and Janet Ugalde.**

A ginormous THANK YOU to **Louis Sands**, our treasured coordinator. Thanks to all who contributed to our success, including Lodge docents, park aides, TPDS Board of Directors & TPA.

See you in September.



BOB AMANN

by Gloria Phillips

Bob Amann, a lifetime Torrey Pines docent, passed away on April 9, 2016. Bob is survived by his loving wife Marge, a lifetime docent since 1983, and two daughters.

I have fond memories of Bob introducing me to the Torrey Pines Docent Society. Whenever I saw them at church, Bob would ask me when I was planning on joining the docent group. Well, this dear couple invited me as their guest to a catered Greek dinner for the docents and from that point, I tell people Torrey Pines is the best medicine.

Bob and Marge volunteered many hours at Torrey Pines. Barbara Wallach remembers Bob as instrumental in much of the work in the garden in front of the Lodge while Marge hosted at the docent desk. Their love for nature was apparent in the many years they spent volunteering for the State Park System, the Forest Service, Mission Trails Regional Park and the Sierra Club. Judy Schulman remembers going on a day trip with the Amanns to Cuyamaca Rancho State Park for the day. The chocolate chip cookies Marge baked were so good and the company simply outstanding. They were very gracious and loving people.

EARTH DAY

Earth Day at the Reserve was declared by all the docents who participated to be a great success. **Bruce and Patty Montgomery** developed a Passport Program that was popular with children, who picked up a passport at the TIK and got it stamped at the various booths. If you got five stamps you got a prize, a pencil that says "Earth Day is every day at Torrey Pines."

Docents manned several very busy booths, including:

- Welcome Booth, located by the entrance kiosk, greeting visitors, answering questions and explaining what a State Natural Reserve is all about.
- Green Team, whose booth included the Conservation Game
- Native Plants and Invasive Non-Natives with Whacky Weeders helping to show the difference
- Kumeyaay Native American, which featured interactive props from Children's Program

- Birds, Beaks & Feet, a booth brought in from San Elijo
- Torrey Pines Geology, including where does beach sand come from
- Children's Area, with games, crafts and animal "poop"
- Insects, live and displays

The non-docent booths included the event's "hottest" attraction, herpetologist Jeff Nordland, who encouraged people to handle his large collection of native snakes and lizards. Jeff stole the show with the largest crowds.

Also popular were San Diego Raptor Institute's live Red Tail Hawk, Gyrfalcon, and Great Horned Owl, and Project Wildlife's live Screech Owl and wild animal information.



[Ed: History and story about the Science Fair is in the June 2012 *Pinecone*, pg. 1: [download here.](#)]

Plant Communication

by Dina Dehaini, Islamic School of San Diego, grade 9

The purpose of this project was to test which of two forms of plant communication is better: underground communication through mycorrhizal networks or chemical signaling (above-ground communication). The test was of five different plant types.

I hypothesized that underground communication would be the most effective form of communication, as it allowed plants to communicate directly. I further hypothesized that coriander would be the best “underground communicator,” due to its being fast-growing and wide-ranging, and that the blue lake bean plant would be the best “above-ground communicator” because of its large leaves that provide more stomata from which the signals are sent.

I planted each plant type in three different bins. The first bin was the control bin and had separate cells to avoid underground communication and air-tight plastic bags on each plant to avoid above-ground communication. The second bin had separate cells and an air-tight plastic bag around the whole bin. The third bin only had air-tight plastic bags on each plant and endo mycorrhizae within the sterilized soil. Glyphosate was applied to two plants in each bin. The ferric chloride test was performed on the unharmed plants to test for the amount of salicylic acid, a hormone produced when defense mechanisms are activated, and the product was tested for its absorbance levels with an ultraviolet spectrophotometer. A calibration curve was then used to find which plants produced the highest concentration of salicylic acid.

Afterwards, I found that underground communication was actually the most effective form of communication and that the bean plant was the most effective above-ground communicator. However, the corn plant was the most effective underground communicator and not the coriander. This could be due to corn’s far wider-reaching fibrous root system, which could allow for more bonds to form between it and the fungus.



Photos by Mona Kuczenski

San Diego Science Fair - Docent Society Awards

For 2016, the TPDS judging team selected four students to receive awards at the Greater San Diego Science & Engineering Fair: Dina Dehaini, Islamic School of San Diego, grade 9; Riley Gooding, Rhoades School, grade 7; Samuel Kahn, High Tech Middle School, grade 8 (a winner last year for the first part of his project); and Caroline Zdanowski, Rhoades School, grade 7. All four will present their projects during the speaker section of the June 11th docent general meeting. The four will each receive a Certificate of Achievement, a check in the amount of \$250 from the TPDS and a State Park parking pass for the year.

Thanks to the judges who helped select the four winners: **Wayne Konreich, Chair; Sally Whitlock; Paula Shaw; Wes Farmer; Frank Burham; and Karen Lisi.** Following are the abstracts of the four projects.

Impacts of Restoration Versus Natural Recovery on Burned Coastal Scrub Soil

by Riley Gooding, Rhoades School, grade 7

I wanted to find out how well plants grew back after a fire when I was driving by the site of the 2014 Carlsbad fire. The reason I did this project is to try to inform people about how the aftermath of a fire should be handled and how people can help plants grow back after a fire. I believe that plants in the burned area will grow better than the plants in the planted or control areas. For this project I used a Three Way Meter, Rapitest Soil Test Kit, and a ruler to collect data from my twenty-four samples. I tested the samples for moisture, light, temperature, pH, nitrogen, phosphorus, and potassium. I also measured the leaf length on the plants.



The results I found supported my hypothesis. The reason for this is because the restoration area was not in the best area for plants to grow. The soil in the restoration area had a very high nitrogen level and had a very acidic pH level. This can cause plants to be susceptible to diseases and the bacteria responsible for breaking down the nutrients required for plant growth will be in small quantities.

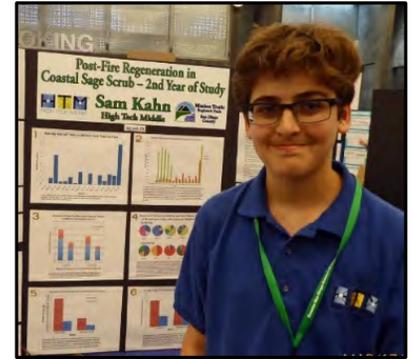
These results show that we should just leave the plants alone after a fire instead of trying to plant and add more minerals. The reason for this is because the more minerals that are added to plants, the faster they will grow, but they will not be able to survive long because they will have weak cell walls and will be unable to reproduce. I would recommend leaving the plants alone after a fire and letting them grow back naturally. But if one wanted to plant after a fire, they should not add any extra minerals. I would also recommend taking more tests to get a wider variety of results.

Post-Fire Regeneration in Coastal Sage Scrub - 2nd Year of Study

by Samuel Kahn, High Tech Middle School, grade 8

I am studying regrowth after fire in Coastal Sage Scrub (CSS), in particular the number and type of species (native vs. non-native) that grow in burned and unburned areas, and whether this changes over time. I also looked in more detail at the recovery of one native species, *Artemisia californica*, to see how the number and height of this common native was affected by growing in an area that recently burned, compared to an area that didn't burn.

I began my study in October 2014, after a fire in Mission Trails Park in July 2014. I put 8-meter long transect lines in a burned and an adjacent unburned area. I sampled four 1 meter-square quadrants along each transect line once a month, recording the type and number of plants that grew. In July 2015, I added a third transect in the burned area, and began weeding all non-natives out of it. I also counted and measured the height of *Artemisia californica*, a common native plant, in two large 8-meter by 3-meter quadrants in the burned and unburned areas.



During the drier months of summer, there were fewer plants growing in both transects. Very few new seedlings were growing, and some plants died. Then during the winter, many plants popped up because of the winter rains. There were more species in the burned area, but also more non-natives. Eighteen months post-fire, Rattlesnake Spurge was the most common native species in the burned area, and Matchweed the most common native in the unburned area. Indian Sweet Clover and Black Mustard were the top non-natives in the burned area, and Red-Stemmed Filaree in the unburned area. I also discovered that in the burned area there were significantly more and larger *Artemisia californica*. This could be because there are more nutrients in the soil.

My project can help to understand how CSS recovers from fire and how to manage this habitat. I saw major differences in the type of species and when they appeared between the burned and unburned areas. This information can help with management because I identified major non-native invasive species in CSS near an urban area (Indian Sweet Clover and Black Mustard). These plants could be the focus of removal efforts. I also identified what natives grow and when they grow, which could help with replanting of natives. In the future I plan to study whether weeding of a burned area will help to prevent native habitats from being taken over by invasive species.

Exploring Native Fern Habitats in the Coastal Sage Scrub Plant Community

by Caroline Zdanowski, Rhoades School, grade 7

With the drought of four years in San Diego, ferns are in real trouble. The species of ferns that are native to the San Diego area -- even with their adaptations to the arid climate -- are struggling. I wondered what impacts the years of drought might have had on our local native ferns.

Ferns require more water than many of the other plants that make up our Coastal Sage Scrub plant community. Would the ferns prove resilient and now flourish in their coastal habitats during this El Niño year? In order to survive, ferns have to find refuge and optimize their surroundings. North-facing slopes are shaded by the south-facing slopes receiving direct sunlight. With the most water being in the shade, and the most shade being on the north-facing slopes of hills, I hypothesized that that is where I would find the most, if not all the ferns. I expected to see the California Polypody, Lace Fern, Lip Fern, Cloak Fern, and the Cotton Fern. In my research, I learned about these ferns and how their native habitats are similar to the coastal areas I planned to test.

I visited seven locations: the north and south sides of the San Elijo Lagoon, two different trails along the north side of the Baticuitos Lagoon, the north and south sides of the San Dieguito River valley, and Torrey Pines State Reserve. I used a light meter, infrared thermometer (on the fern's fronds), UV light meter, anemometer, soil pH and moisture meter, hygrometer, and a compass to document the conditions in which the ferns grow. I recorded all my data on the field log that I created. In some places, such as the south-facing side of the San Elijo Lagoon, I did not find any fern specimens. Still, I documented soil temperatures, light levels, soil pH, soil moisture, UV levels, humidity, and air temperatures as a comparison to try to examine why there were no ferns. I took photographs of the ferns and documented the environment using my tools. I used the book *San Diego County Native Plants* by James Lightner and a chart of native ferns that I created to identify the species.

The fern species that I documented, Lace Fern and California Polypody, were found on the south side, north-facing slope of the San Elijo Lagoon, the Indian Head Trail, and the Torrey Pines Reserve. At the San Elijo Lagoon, I documented both Lace Fern and California Polypody. At the Torrey Pines Reserve, I saw only California Polypody. On the Indian Head Trail, I documented Lace Fern. There were four coastal locations I explored where I did not find any ferns.

Coastal Sage Scrub plant community ferns were clustered in groups under trees or on steep, well-shaded, north-facing slopes. I was surprised to find ferns on the northwest exposures. I also documented some that grew on northeast and northwest facing slopes. I did not find any ferns on south-facing slopes. On north-facing slopes, conditions of more water and indirect sunlight are better able to support



delicate life. Through adaptation, ferns are able to maximize chances for survival in places where resources are limited.

Every Hand Helps

by Mark Embree

“Hello there! How’d you like to help the Reserve?”

Just as the sound of the Wrentit reverberates throughout the coastal chaparral of Torrey Pines State Natural Reserve to greet every visitor, so does the urging of Seabee volunteer Brian Fujita. Brian greets every park visitor that crosses the paths of the trail-restoration crew on Tuesday mornings. Many guests respond to his urging with a sheepish grin and an excuse ranging from “I’m just trying to get to the beach” to “these hills are tough enough; I don’t need any extra weight.”

In recent weeks, the Seabees have abandoned the vehicle-friendly access of the sandy beach at low tide and the stairs near flat rock to tackle the arduous descents to reach Yucca Point and Razor Point. Wheelbarrows, sweat, and brawn are required to negotiate the rutted trails and frequent sets of stairs. After four hours of work, the idea of hauling out the bulky tools and discarded materials typically overwhelms the crew. They needed help.

Difficult situations call for innovative solutions. Re-enter Brian. Inspired by the posted signs of Bob Doolittle warning park visitors to stay on the trails, Brian created a sign of his own to encourage park visitors to become part of the restoration efforts. The occasional fit male carrying out an individual 4X4 or an eye-rod or two quickly metamorphosed into couples challenging each other to see who was the fittest. Family members joined the movement. On a recent Tuesday, Jack from Alabama, Ashley and Carmen from Chicago, and Joseph and his friend from San Diego (pictured on pg. 8) participated.

Park visitors are often surprised to discover the individuals carrying the tools and working to protect the park’s fragile environment are volunteers. Reactions typically range from a genuine “thank you for your efforts,” to “that’s really cool.” Brian’s efforts to involve park visitors in the restoration and preservation of the Reserve help to create a sense of ownership for all participants. It’s this sense of ownership that ensures not only the park’s survival for future generations, but instills a sense of wonder in those willing to look behind a shrub or deep within the branches of a tree.

[Ed. Note: The Whacky Weeders started enlisting the assistance of visitors in 2012 to carry out the heavy bags of invasive plants they had pulled out and have continued to receive help ever since: torreypine.org/wp-content/uploads/nl/2012/1210.pdf]



Photos by Barbara Wallach

Torrey Pines Book Club

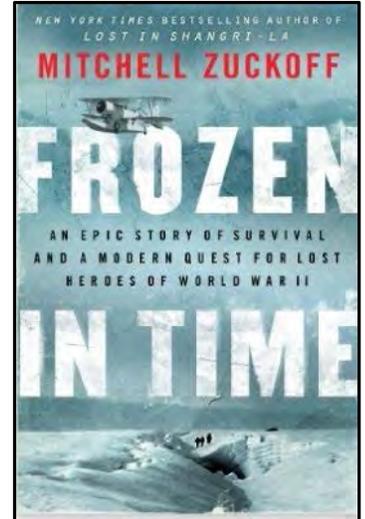
When: Tuesday, June 14th at 2:00 pm

Where: Marty Hales' home in Kensington

What: *Frozen in Time: An Epic Story of Survival and a Modern Quest for Lost Heroes of World War II* by Mitchell Zuckoff.

Here's Amazon's review:

Frozen in Time is a gripping true story of survival, bravery, and honor in the vast Arctic wilderness during World War II, from the author of *New York Times* bestseller *Lost in Shangri-La*.



On November 5, 1942, a US cargo plane slammed into the Greenland Ice Cap. Four days later, the B-17 assigned to the search-and-rescue mission became lost in a blinding storm and also crashed. Miraculously, all nine men on board survived, and the US military launched a daring rescue operation. But after picking up one man, the Grumman Duck amphibious plane flew into a severe storm and vanished.

Frozen in Time tells the story of these crashes and the fate of the survivors, bringing vividly to life their battle to endure 148 days of the brutal Arctic winter, until an expedition headed by famed Arctic explorer Bernt Balchen brought them to safety.

Plants of the Month: Bedstraws

by Margaret Fillius

There are at least three members of the Coffee or Madder family (Rubiaceae) at Torrey Pines, all in the *Galium* genus. Two woody-stemmed Bedstraws are **Narrow-leaf Bedstraw** (*Galium angustifolium* ssp. *angustifolium*) and **San Diego Bedstraw** (*Galium nuttallii*). The name Bedstraw came from the use of the dried, matted foliage to stuff mattresses. Hairs on Bedstraw branches cause the branches to stick together and so help keep the filling a uniform thickness. The genus



name was given by Linnaeus from the use of a *Galium* species as an aid to curdle milk (Greek *gala* = milk).

The leaves of both *G. angustifolium* and *G. nuttallii* are in whorls of four leaves, but in the case of the latter the leaves have more hairs and have sharper points. The latter plant also turns red with age. Both are dioecious (i.e. plants are all of one or the other sex). Their fruits are quite different: *G. angustifolium* has two nutlets, which are densely covered by long white hairs, whereas *G. nuttallii* has a single fruit.



The third genus member is the weak-stemmed *Galium aparine*, commonly called Goosegrass, Cleavers, Common Bedstraw, or Stickywilly. *G. aparine* has leaves in whorls of 6-8, and it is monoecious (i.e. all flowers contain both sexes). *G. aparine* was used as a poultice to treat skin



problems and to relieve stings and bites. The fruit has been dried and roasted, then used as a coffee substitute. The plant is edible as a cooked leaf vegetable as long as it is gathered before fruits appear. It may have also been used to make a sieve to strain milk. A red dye can be prepared from the roots.

The *Galium* you are most likely to see throughout the Reserve is Narrow-leaf Bedstraw (*G. angustifolium* ssp. *angustifolium*). If you find a female plant, you can look nearby for a male plant.

Torrey Pines Docent Society Bird Survey: May 7, 2016

Number of species: 81
Uncommon species bolded

Gadwall 12
Mallard 18
Blue-winged Teal 1
Cinnamon Teal 2
California Quail 13
Pacific Loon 1
Pied-billed Grebe 5
Eared Grebe 1
Western Grebe 6
Black Storm-Petrel 20
Brandt's Cormorant 2
Double-crested Cormorant 2
Brown Pelican 30
Least Bittern 1
Great Blue Heron 1
Great Egret 13
Snowy Egret 19
Black-crowned Night-Heron 2
White-faced Ibis 1
Osprey 1
White-tailed Kite 3
Cooper's Hawk 2

Red-tailed Hawk 3
Killdeer 1
Spotted Sandpiper 2
Whimbrel 1
Bonaparte's Gull 40
Western Gull 3
California Gull 4
Caspian Tern 6
Forster's Tern 5
Royal Tern 2
Elegant Tern 5
Eurasian Collared-Dove 4
Mourning Dove 21
Vaux's Swift 12
White-throated Swift 32
Anna's Hummingbird 24
Allen's Hummingbird 1
Rufous/Allen's Hummingbird 3
Nuttall's Woodpecker 2
American Kestrel 3
Peregrine Falcon 2
Black Phoebe 2
Ash-throated Flycatcher 2
Cassin's Kingbird 1
Warbling Vireo 3

Western Scrub-Jay 1
American Crow 9
Common Raven 27
Northern Rough-winged Swallow 79
Tree Swallow 25
Barn Swallow 20
Cliff Swallow 72
Bushtit 15
House Wren 2
Marsh Wren 7
Bewick's Wren 9
California Gnatcatcher 10
Wrentit 26
California Thrasher 6
Northern Mockingbird 6
European Starling 4
Orange-crowned Warbler 15
Common Yellowthroat 16
Yellow Warbler 1
Black-throated Gray Warbler 1
Townsend's Warbler 4
Hermit Warbler 2
Wilson's Warbler 3
Yellow-breasted Chat 6

Dark-eyed Junco 1
Song Sparrow 27
California Towhee 38
Spotted Towhee 17
Western Tanager 1
Blue Grosbeak 1
Red-winged Blackbird 29
Hooded Oriole 2
House Finch 60
Lesser Goldfinch 27
House Sparrow 6

Observers: Gary Grantham, Steve Neal, Jack Friery, Marty Hales, Herb Knüfken, Frank Wong, Kathy Dickey, Bob Glaser, Mark Embree, Andy Rathbone, Margaret Fillius, John Bruin, and Anonymous

Herb Knüfken's amazing photo gallery, including many birds, may be found here: pbase.com/herb1rm



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