

14 December 2013

Dear Friends and Family,

Last year I wrote part of our Christmas letter on a newly built treadmill desk. This turned out to be a great success, with both of us, but especially Eileen, putting many miles on the unit. However, the treadmill started to run hot and then gave up the ghost a few days after its first birthday, so we've bought a second one, very similar to the first but with a motor having twice the horsepower. Much of this letter has been written while walking 2.5 miles per hour on the new unit.

After six years of decreasing home prices, the San Lorenzo Valley, where we live, finally cleared the queues of above-normal numbers of foreclosures and short sales, permitting some recovery of property value. The market surged 30% in a single year, still leaving us about 25% short of our purchase price, but no longer underwater. This also brightened the retirement picture considerably; 3 years hence now looks plausible. Our plan continues to be to sell the house and live full-time in our camper, starting perhaps a year or so after retirement. We expect to change our state of residence to shed state income tax, probably to Texas, one of three states with highly favorable laws for people without a fixed address.

Aptina continues to struggle, though we finished the year with a distinctly profitable quarter, much the best we have had since spin-out, so we may finally have turned the corner. A new technology that I co-developed with a number of colleagues, "Clarity+", is being evaluated by a number of customers, and we hope there is market acceptance in the coming year. It replaces the green pixels of a traditional sensor with clear pixels, allowing captures at lower light levels. In the past year, I have taken on the responsibility of running the patent committee, which is an interesting challenge, from which I am learning a lot. I just received a promotion to "Senior Fellow", the first in the company, placing me at a vice-presidential level – a real honor.

Eileen has continued to draw, both in the field (mostly plants) and at home and in camp (mostly birds). It's been a great activity for her and she has improved a great deal in the last year. She also continues to do jigsaw puzzles, crocheting, crossword puzzles, gardening, and a great deal of reading. Although it has been plagued by California Voles, her garden is probably at its best ever as a result of aggressive planting, and all new plants are planted inside flexible metal mesh to protect the underground parts, which are what is targeted by the voles. On the reading front, the Kindle has proven to be wonderful, and Eileen has found many books of interest in the \$1 - \$3 range. She also has had good luck locating historical accounts that are not available in hardcopy book form. She continues to have a strong interest in the Civil War, and in collections of letters from almost any era.

Some of Eileen's favorite books from the 75 she read in 2013 include: *How Private George W. Peck Put Down the Rebellion* by George W. Peck (an entertaining Civil War memoir); *Lee and His Army in Confederate History* by Gary Gallagher; *A Blaze of Glory: A Novel of the Battle of Shiloh* by Jeff Shaara (consummate historical fiction by a prolific author); *Dear Bob and Sue: One Couple's Journey through the National Parks* by Matt and Karen Smith (they visited all of them); and *I've Got Your Number* by Sophie Kinsella (classical chick lit). I greatly enjoyed

rereading the Spellman series by Lisa Lutz (wacky chronicles of a fictional family of detectives – several books). We also enjoyed several excellent “Great Courses” from The Teaching Company. We watched geology, anthropology, and astronomy courses together, and Eileen was pleased with a course on General Lee.

Lasts Christmas, we visited Eileen’s folks in El Paso, including her sister Kathleen’s family, and her brother Tommy, all down from Albuquerque. It was a fine reunion. We spent several days at one of our favorite places, Big Bend National Park. The first evening we did a late hike that featured one of the best sunset spectacles we had ever seen, with cerulean and gold to the east on the hike in, and flaming carmine to the west on the way out, with a full moon rising. We spent one marvelous day hiking the Lost Mine Trail, which we had not previously done in entirety; the highlight of that hike was a good sighting of a black bear crossing a high slope. These bears were absent entirely from Big Bend for many decades, but recolonized on their own from the Sierra del Carmen in adjacent Mexico. Now the population is doing quite well and sightings are no longer rare. We drove the length of the river road, which is pleasant in winter but too hot in summer. Lark Buntings several places were a first for us in the park.

Our major trip of the year was a 4-week long birding tour to Thailand. Asia was our final continent to visit; I had been there on business trips with brief birding, but that was all. We began working towards the goal of birding on each continent in 2004, with a trip about every two years on average since then. We saw a total of about 475 species of birds, of which just over 400 were new species for us. We saw between 6 and 12 new families of birds, depending upon the taxonomy adopted. There is still quite a bit of debate about higher classification of birds, though a lot has been clarified with molecular evidence; most of the disagreement is now regarding matters of degree, rather than underlying affinities. Mammals were average, with 19 species seen, all new for us, including two new families. In many areas of Thailand, larger mammals have been hunted to the point of being essentially impossible to observe. The trip had two leaders and 12 participants. There was a fantastic family ground crew in a third van, who served delicious food in the field and arranged outstanding, authentic dining in restaurants. Eileen and I both really enjoy spicy food, so this aspect of the trip was a real treat!

Unlike previous bird tours we have taken, this one was quite poorly led, with the leaders failing to communicate well, and not making a concerted effort to be sure people saw as many birds as possible. The group had some very nice people in it, and some who simply were not cut out to undertake a trip like this. There were too many highlights to list in any kind of completeness, but to give some flavor of the trip, some favorite things were mixed flocks of shorebirds (sandpipers); beautiful limestone scenery with cycads and Euphorbias; remarkable pheasants of several species; spectacular sunbirds (which occupy an ecological niche like hummingbirds, but occur in the Eastern hemisphere rather than Western); extraordinarily ornate temples in remote locations; Malayan Porcupine (not related to New World porcupines, but looking similar); Gaur (a huge, white-footed, native bovine); magnificent forest pigeons; stunning kingfishers; high-elevation rhododendron and sphagnum swamps; a wonderful collection of nocturnal birds including frogmouths and owls; gibbons; and blue magpies in diptocarp forest.

Our field work this year centered around a continuation of our “Genus Quest”, about which I wrote last year. The goal of this project was to see 90% of the 992 native genera of vascular

plants in the state, with our list having started in 2007, but the goal itself just set last year. We started the year at 85.5%, with about 140 genera remaining in the state; however, roughly 25 of these have not been seen in the state in years, or do not have a known, specific location on public lands. Furthermore, we had another serious winter drought, rendering at least another 35 genera impractical. So our task was to try to find about 45 new genera from among roughly 90 possibilities, a tall order given that few of the remaining genera were easy.

Three week-long trips this year were organized around searching for new genera. The first, starting in late April, concentrated on San Diego Co. Although we love the Anza-Borrego Desert of eastern San Diego Co., we are less fond of the western 2/3 of the county because of the bad traffic and limited camping. But this represented the last really significant concentration of potential new genera in the state, with around 25 possibilities, plus a few additional targets on the trips down and back; no other comparably sized area had more than 10 or so new genera possible. The trip actually was remarkably pleasant; although the camping was not remote, it was quiet, and with planning, we managed to spend relatively little time in slow traffic. The weather was fine and the plants exceptionally good. In total, we found 17 of 30 genera sought, some quite difficult. We were especially pleased to find *Ornithostaphylos*, a manzanita-like shrub that persists in the US only in one tiny area right on the Mexican border (the new border fence wiped out much of the remaining population).

The second trip, in early July, was a return to far northwestern California. We started with a lovely field trip with the California Native Plant Society (CNPS), led by our friend Peter Warner, to the north coast range highlands. Then we continued to Arcata, where we stayed with Carol and CJ Ralph, which is always a special treat. Carol showed us four new genera in one day, and gave us great directions to three more challenging ones farther north, each of which we found later in the trip. One highlight of this trip was seeing *Saussurea*, a plant a bit like joe-pye-weed, for which there is only a single stand known in California. It entailed a 14-mile round trip hike with about 2000 feet elevation gain, and finding it was challenging, because it was well off-trail, in extremely steep terrain, with the available coordinates being off by quite a bit. I found it after turning around and starting back, when I heard a faint trickle of water on the far edge of a meadow, which turned out to be the spot! Another highlight was fascicled lady's-slipper orchid, seen in fruit; this was our 9th of 12 North American species in this spectacular genus. We found a remarkable 12 of 13 targets on this trip, and might even have reached the last one had we not had a flat tire in a simply awful spot (landslide on one side, steep drop-off on the other, the truck as wide as the road).

The last major genus quest trip was in August, with most of the time spent in the San Bernardino Mountains. We visited several hot springs, which can be interesting places for plants; targets included several grasses and a sedge that are restricted to such habitats. One highlight was seeing a tiny *Malaxis* orchid at its only known location in the state; we had seen this species only once before, in upstate New York. We came home along the eastern Sierras and did some great hikes in incredible scenery, at the perfect time of year for this area. In total, we located 8 of our 12 targets on this trip, a number of which required full-day hikes.

We spent 63 days in the field this year primarily botanizing; (another 30 or so days/nights focused on bats, and a similar number on birding, mostly in Thailand). We did a total of about 96

targeted searches for genera, of which 49 were successful. In addition, we incidentally happened across 3 additional new genera at sites where we did not know they occurred. So we finished the year at 91% of the native genera, and all the great experiences have inspired us to try to track down additional new genera in 2014, particularly if there is good winter rain this year. I should also mention that we found about 236 new taxa (species, subspecies, and varieties) this year, nearly the same number as last year in considerably fewer days in the field, a testament to the interesting suite of habitats to which our genera searches took us. We finished at 48.2% of the native taxa, and so, barring catastrophe, should easily reach our 50% goal next year.

In addition to field work focused on the genus quest, we took a number of trips with various CNPS chapters, and also participated in a couple of their Rare Plant Treasure Hunts (RPTH), in which taxa classified as having very limited occurrences in the state are systematically searched for and documented. We've done several RPTHs in the desert previously, and did some of this sort of work in New York State as well. The first RPTH was to the mountainous area just inland from the coast, on the Monterey/San Luis Obispo county line. It was a great group, the camping was lovely, and the plants were really interesting in the dry and especially wet serpentine areas. On this trip, we met Danny Slakey from CNPS, who organized the central California RPTHs. I mentioned to him that as part of our family quest a few years back, we had done quite a bit of research on, and searching for, Water Stargrass, and we questioned whether it still existed in the state. Danny said he would look into having it added to the official roster of rare and endangered plants in the state. He and Aaron Sims of CNPS followed up, and it is officially listed. The review process turned up one collection of the species about 5 years ago, so we'll go search for that next summer, to try to see our last native vascular plant family in the state.

We also joined Danny for a RPTH in the delta formed by the junction of the Sacramento and San Joaquin Rivers. Exploration here was done by canoe and kayak, and several of the rare species were spectacular, including the large, red and white Woolly Rose-Mallow. There was a journalist along on this trip, and you can see her article, which includes a photo of yours truly, at [this link](#). Since the field season wound down, Danny and I have been working together to mine useful information from our database of 7500 plant records accumulated since 2007, our first field season in California. I have wanted to do this for a long time, but the task was daunting. However, Danny has expertise in geographical information systems, and once I wrote perl programs to put our data into a usable spreadsheet format for him, he was able to plot the records overlaid against known occurrences of each rare species, and determine whether the records represented new occurrences, or were interesting for other reasons (such as clarifying the exact location of previously vaguely described sites; or extending a known occurrence; or updating an old record). In total, we have found slightly over 50 new locations for rare plants in the state, and there are another 70 or so records that are of value. So we'll be doing quite a bit of paperwork this winter to fill out forms documenting these occurrences. A nice side benefit of all this analysis was that it made it relatively easy to format our data for uploading to the CalFlora database, which covers all the plants in the state, not just rarities. I ultimately uploaded over 3500 records to that database, all with exact latitudes, longitudes, and elevations. This has been on my list of things to do for about 4 years, so that felt really good to complete!

Back in 2008, we took a week-long workshop on bats at San Francisco State University's field campus in the Sierras, which we loved. This August, after five years of waiting for prices to

come down, we finally purchased a high-quality time-expansion bat detector and the software needed to analyze and identify their echolocation calls. Humans can hear sounds up to about 15 kilohertz (KHz), whereas most bat echolocation calls have maximum power between 20 and 50 kHz. The time-expansion detector samples the sound at a very high rate (over 300 kHz), buffering the signal for about 0.8 seconds. When a bat call is detected, the previous 0.8 seconds and the following 0.8 seconds are output as analog sound at 1/10 speed (for a total of 16 seconds), lowering the pitch by 10x, and thereby placing it in a range where a normal sound card can sample it and produce a digital sound file. The software plots the audiospectrogram; derives parameters useful in its identification (such as its “characteristic” frequency”); and permits a comparison of the call with an extensive library of vocalizations from known bats (which, typically, were mist-netted, permitting definitive identification).

After getting the equipment, we spent 34 evenings recording bats, encountering 14 of the 21 species of bats in the state of California. Many evenings were spent on our back deck, from which we recorded 6 species, bringing our yard mammal list to a rather remarkable 17 native species. This was very convenient for learning to use the equipment and software well. I developed two spreadsheets for tentative identification of calls based on nine fit parameters derived by the software, and also, by studying hundreds of reference calls, developed a dichotomous key covering about half the central California species (those with characteristic frequencies below 35 kHz). It’s a lot of fun trying to identify the calls audibly before plotting the audiospectrogram – the detector sends a real-time frequency shifted signal to one ear, and the time-expanded signal to the other ear. So you hear a quick call in one ear, alerting you, and then over the next 16 seconds, you hear the time-expanded version in the other ear. It’s quite an audio feast!

We spent many of the weekends in September and October at Pinnacles National Park, which is only 2.5 hours away, and has several talus caves with good bat populations. There we found 13 of 16 species on their list, two of which were hypothetical (not conclusively proven to occur in the park), so we will submit recordings for substantiation. Spending all that time in the park after dark, including 35 or 55-minute hikes to the sites, we encountered other interesting fauna, such as: Dusky-footed Woodrats, a squirrel-sized rodent we saw 40 feet up in a tree (just our second one ever); many Poorwills, including birds sitting in the trail, calling, and, most spectacularly, doing display flights at dusk; and Gray Fox, which is common in the park but not seen very often.

You might recall that we tried a mammal big day back in 2011, finding 16 species in a 24-hour period. Inspired by a letter in *Birding* magazine, which suggested that the North American record might be 17 species, we tried again this September. We thought that we could do significantly better now that we had the capability of identifying bat echolocation calls, but a combination of rain overnight, and a very poor whale-watching trip in Monterey Bay, reduced our total considerably. Still, we finished with 18 species, a slight improvement and likely a record, and I’m sure we’ll try again, as we believe that if everything went well, it would be possible to come close to 25 species on this route. We’ve sent a letter describing the big day to *Birding*, and it is slated to appear in the next issue. I did forget to mention that a major bonus in doing this big day was that, although the whale watching trip was poor for marine mammals, we did see a Blue-

footed Booby, part of the first invasion into the state (from Baja) since the 1980s, and so a new bird for our North American list!

There were too many other trips during the year to describe them all, but I would like to mention some highlights: a Bureau of Land Management trip to the isolated Monvero Dunes in the mountains just west of the Central Valley, where disjunct populations of several desert species are found; a CNPS trip to Lucille's Court Meadow, a remarkable moist opening in sandstone, on private property, within walking distance of our house; a CNPS trip to the lava caps of El Dorado National Forest, which have a very interesting collection of species and great floral displays because of the poor drainage and soil composition; a fine long Memorial Day weekend in the Mono Lake area; a neat CNPS trip southeast of Lake Isabella, in the southernmost Sierras; a wonderful day with Dylan Neubauer and Tim Forsell in the White Mountains, seeing many diminutive alpine species; and a lovely Labor Day trip to Lassen Volcanic National Park, where we paddled Butte Lake, seeing a Peregrine Falcon try to take a Great Blue Heron (unsuccessful), and we hiked to the summit of Mt. Lassen, finding *Smelowskia*, a small native mustard, at its only known location in the state.

We leave in less than a week for Texas, where we will visit Eileen's folks in El Paso, and then spend 5 days birding in the lower Rio Grande Valley, an area we have not been to in over a decade. Our major trip next year will be to Colombia in April, traveling in a fairly small tour group with our friends Terry and Rhys, whom we met on the Thailand trip. Colombia has the highest bird list of any country in the world, in part because of having three branches of the northern Andes plus two coasts. After a 20-year hiatus, bird tours began returning to Colombia about 5 years ago, as conditions had become much safer than previously. It should be a fun trip!

Eileen and I hope that you and your families are doing well. We always like to hear from people or have them visit if in the area; our contact info is given below. Happy holidays!

P.S. We disconnected our landline, so to call us, please use one of the cell phone numbers given below.

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Feather, drawn by Eileen



White Eatonella, Mono Co, Calif.



Yellow Stingbush, Big Bend NP, Texas



Firecracker Flower, Mendocino Co, Calif.



Mountain Lady's-Slipper, Tuolumne Co, Calif.



Temple near Chiang Dao, Thailand



Dark-backed Sibia, Doi Lang, Thailand



White-handed Gibbon,
Kaeng Krachan NP, Thailand