Pacific Raptor Report 35

FALL MIGRATION 2013

GOLDEN GATE RAPTOR OBSERVATORY

"Elbows at 45-degrees!" Three GGRO hawk counters study a high raptor over the East Quadrant. [Photo by Ruth Cantwell]

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THREE RECENTLY-FLEDGED PEREGRINE FALCONS CAVORT IN THE SKIES NEAR THEIR CENTRAL CALFORNIA EYRIE. FROM 1985 TO 2013, PEREGRINE MIGRATION RATES IN THE MARIN HEADLANDS INCREASED BY TENFOLD. [PHOTO BY MARY MALEC]

THE GOLDEN GATE RAPTOR OBSERVATORY IS A PROGRAM OF THE GOLDEN GATE NATIONAL PARKS CONSERVANCY IN COOPERATION WITH THE NATIONAL PARK SERVICE

DIRECTOR'S NOTE *Allen Fish*

Rodenticides and Raptors
A Deadly Relationship

In July 2007, while working on the GGRO's Cooper's Hawk nesting study in Berkeley, CA, volunteer Lisa Owens-Viani got a call from a neighbor. Two dead hawks were floating in his child's kiddie pool. Lisa recognized them as juvenile Cooper's Hawks that had recently fledged from a neighborhood nest, and took the carcasses to be analyzed. Both hawks were victims of Brodifacoum—a rat poison sold widely as d-Con—but they also carried traces of Bromadiolone, Chlorophacinone, Diphacinone, Warfarin, Difenacoum, and Difethialone. In just a few months of life, these hawks had ingested a cocktail of nearly all the modern anticoagulant rat poisons found in the U.S.

Redtail and rat. [Photo by Walter Kitundu]

Except for the small problem of causing secondary poisoning of wildlife, pets, and children, anticoagulant rat poisons are a brilliant invention. I say brilliant because they chemically block the eater's vitamin K cycle, which is necessary for blood clotting. A heavy dose may cause outright internal hemorrhaging; a lower dose provokes the poisoned animal to feel thirst. This is great if you are the homeowner, because the rat is inclined to go outside to find water before it dies. This keeps the rat from dying and decomposing inside your walls and stinking up your house.

So, your home is rat-free (for the moment) and now a thirsty, groggy rat—maybe bleeding internally—is looking for water outside your house. What could possibly be interested in that? Here's a sample list: dogs, cats, hawks, owls, skunks, weasels, foxes, bobcats, coyotes, and rattlesnakes. In total, California Department of Fish and Wildlife has recorded more than 800 cases in which 24 species of birds and mammals have been poisoned by anticoagulant rat poisons during the last three decades. At least some of these, like Lisa's hawks, drowned themselves to relieve an unquenchable chemical thirst.

Jump forward four years. Lisa was again monitoring her local Cooper's Hawks, and a neighbor notified her of a dead hawk lying on the sidewalk in a pool of its own blood. I remember her phone call like it was yesterday. "Allen! I am so done with this! I'm not resting until we get these poisons out of the stores! People don't realize how dangerous they are! Are you with me?!"

I paused and thought about the dozens of cases of rodenticide poisonings of hawks and owls that I had heard about. I thought about walking with my 10-year-old daughter into our local hardware store, and how she could walk in there and buy 50 pounds of rat poison and put it anywhere she wants. There are no state or federal regulations to stop her, not even a tracking system to note where she places poisons, or how much she buys. I was done thinking. "Yes, I'm with you," I told Lisa.

"Yes, I'm with you" soon turned into helping Lisa assemble a coalition of raptor nuts, pet lovers, predator ecologists, IPM (Integrated Pest Management) people, city planners, community organizers, and neighborhood ecologists—collectively called "RATS," as in "Raptors Are The Solution." None of us believe that raptors are the only solution, but the name serves to make the point that as long as hawks and owls are residing in our urban areas, let's promote them to help manage our rats, rather than kill them with rat poisons. One Red-shouldered Hawk can potentially kill and eat 300 young rats a year. With snap-traps set every night in my house, I would be lucky to get 50 rats a year. Why would I poison

these much more highly skilled rat snatchers when I need their talents?

Lisa has guided the RATS coalition, part of Earth Island Institute, through many successes in its first three years. Using a resolution passed by San Francisco County to discourage rat poison sales as a model, Lisa's team has helped pass similar resolutions through 15 California cities and two counties. She produced a series of innovative educational posters for public use ("Rat poison kills more than rats"), one of which received more than a half-million hits on Facebook, and others that have graced the walls of East Bay buses and BART stations. Most importantly, RATS has offered up an all-purpose website, a Facebook page, and a consulting service that has been used by numerous anti-rat-poison activist groups from Malibu to Manhattan.

Another local organization prominent in the rodenticide battle has been a Bay Area wildlife rehabilitation group, WildCare, which has run full rodenticide screens on every carnivore brought into their center in recent years. In 2013, 138 samples were tested from a great range of birds and mammal species. Three out of four (76.8%) of these were dosed with toxic levels of rat poisons. (Thanks to Kelle Kacmarcik of WildCare for sharing these data.) This research gives us a feel for how many impaired animals might have been previously exposed to rodenticides; it also underlines the likelihood that sublethal effects of rat poisons can be a real problem for wildlife.

While WildCare and other rehabilitation organizations sample animals that are already compromised in some way, GGRO is uniquely positioned to examine the poisoning rates of free-flying raptors. In 2013, we drew a small blood sample from each of 20 Red-tailed Hawks we caught in the Marin Headlands, and we had those samples screened for various rat poisons. The results: five hawks (20%) were carrying anticoagulants Diphacinone or Chlorophacinone in their bloodstream. Could 20% of our wild Red-tailed Hawks be carrying rat poisons in California? A sixth Redtail, one of our 2013 GSM tracking birds, died of rodenticide poisoning in San Francisco just two months after her release in the Headlands. Though this is a small sample size, the implications are sobering.

On March 18, 2014, California's Department of Pesticide Regulation announced that it would follow through with a ban of sales of anticoagulant rodenticides to unlicensed buyers (i.e., the general public) starting on July 1. On March 27, British conglomerate Reckitt Benckiser, makers of d-Con (the most-sold brand name of household rat poisons in the U.S.), filed suit against the state of California to halt the ban. In 2013, the U.S. Environmental Protection Agency announced a similar ban on household rodenticide sales; Reckitt Benckiser held that order up in court hearings for more than a year.

SUMMER 2014 UPDATE: As of July 1, 2014, the California Department of Pesticide Regulation has disallowed sales of most second-generation anticoagulant rodenticides to the public. This is a good first step, but the battle is far from over. D-Con is repackaging a first generation rat poison, Diphacinone, for public sale. Diphacinone has a long track record of causing wildlife deaths. Also, licensed pesticide handlers will still be able to buy second-generation rodenticides without a hitch. For updates on the state and federal rulings, and other aspects of rat control and rodenticide impacts, check out the RATS Facebook page or website, *www.raptorsarethesolution.org*.

GGRO director since 1985, Allen Fish is looking for other raptor biologists, here and abroad, whose research has been unexpectedly impacted by rodenticide poisoning. Please email him at afish@parksconservancy.org

THE GOVERNMENT SHUTDOWN 2013

As you will read in the pages of this *Pacific Raptor Report*, the federal budget stand-off on October 1–16, 2013, was a minor disaster for us. The annual peak dates of the fall raptor migration generally fall into a month-long period from September 15 to October 15. By the end of September 2013, we were still waiting anxiously for any big wave of migrants—right when the shutdown began in Washington, D.C.

The shutdown halted all GGRO research—all banding, counting, and radiotracking—since we do our work on federal land, with federal permits and insurance. Evinced by the sentiments of several authors in this newsletter, GGRO volunteers take their work seriously, both in their commitment to getting the task done, and in the resulting data.

Perhaps better than anyone, our volunteers know that we are building a long-term database of baseline raptor numbers and movements, which is unique in the Pacific States. Thirty years ago, the best reason for hawk migration monitoring was for the chance to detect population changes in raptor species.

In more recent years, climate change ecologists have also looked to migration monitoring systems like ours as insightful resources for recording shifts in bird ranges or migration. Many ecologists believe that birds, being exceptionally mobile, will have a good chance of demonstrating climate-related changes in wildlife behavior.

The loss of data due to the government shutdown in 2013 was the biggest injury for GGRO. As the primary site in California for raptor migration monitoring, we strive to be as constant and as consistent as possible. We feel a collective responsibility for managing the best possible database for birds of prey in the state. With that said, we want to thank our NPS and Parks Conservancy colleagues for doing everything in their power to allow us to keep volunteers in the field. It was a very difficult time for all NPS staff across the country—and hopefully one that will not be repeated soon.

RESEARCH NOTE *Chris Briggs*

My Perspective *Looking Forward*

A juvenile Red-tailed Hawk seems weirdly frozen in space when it stills, wings motionless, in the Marin Headlands. [Photo by Ruth Cantwell]

When I first tried to get into the field of wildlife biology, the GGRO afforded me a chance to learn the skills and methods of raptor fieldwork as an undergraduate banding intern. While this was longer ago than I would like to think about, the lessons I learned as an intern shaped my career as a biologist and resulted in me boomeranging back to GGRO, where I completed my first season as the Research Director in 2013.

In between my 2000 internship and my return, I spent time doing a myriad of jobs and trying my hand at a lot of different types of research. When starting my Master's degree, I—like many young biologists— wanted to study conservation to "make a difference." Swainson's Hawks were rife with research possibilities due to their relatively recent brush with pesticides. Specifically, they were killed by the thousands in Argentina in the mid-1990s as a result of pesticide spraying for grasshoppers and locusts. I fell into the study of hawk populations, as that seemed to be an effective way to influence management. For example, by discerning which habitat characteristics were correlated with increased reproduction, I could guide land managers trying to boost populations.

I pursued a lot of different avenues of research, trying to add a variety of tools to my ecological toolbox—whether they be statistical, lab, or field-based. I discovered in this process that while I certainly wanted my work to be meaningful, I also wanted a deeper understanding of basic science questions that kept me awake at night. The effects of juniper density on nest productivity of Swainson's Hawks didn't always have the same allure.

As I started my Ph.D., I continued to gravitate toward basic science theories. Specifically, one question that haunted me is: why are there so many color morphs of buteos in North America? As with all good science, any answers I could provide only raised more questions.

Throughout my research I tried in some way to mimic the citizen-science ethos of the GGRO. In Reno, my lab-mate and I started two research projects—an American Kestrel nestbox project and a goldfinch project. The Kestrel project was eye-opening, as we recruited students and volunteers to construct and monitor nest boxes. It was a great idea and had potential, but we quickly discovered that the volunteers' ability to organize themselves was not something we could count on. Given that we both had remote study sites in the summer, we backed away from that project and moved on.

The second project was studying American and Lesser Goldfinches in and around Reno. This was a winter project that we thought could garner wide community support. We color banded goldfinches at feeders and got the public to help resight them to learn about bird movements and survival. This research suggests that goldfinches are often faithful to wintering areas, and work is being done now on how diet influences plumage coloration. I really enjoy the confluence of research and public engagement. In an era when "Big Data" are revealing fresh insights across a broad spectrum of scientific inquiry, the collection of that data can be greatly accelerated and enhanced through the collective, crowdsourcing power of citizen science.

When the banding manager position opened up at the GGRO, I knew I wanted to be here. First, I love raptors. I know as a scientist I shouldn't be biased. But you just can't fight your passions in life. Second, the GGRO already has a great history of engaging enthusiastic volunteers. The base has already been built. Finally, I knew there was a lot of potential to do both interesting and informative science at the GGRO.

There are many questions about both conservation and basic science that can be answered here. From a conservation perspective, there are questions to be explored about population trends in a number of raptor species. There are also more specific threats to raptor populations. For example, we have just started some novel rodenticide research that will explore background levels of rodenticides in Red-tailed Hawks to examine the potential impact on raptor populations. In addition, we have the unique opportunity to see so many individuals raptors each year that we have the ability to help shape our understanding of how an individual's health is measured and how that may relate to future survival. The GGRO has an opportunity to develop and refine common methods to provide insight not only into the birds migrating through the Marin Headlands, but also for raptor ecology in general.

In addition to looking at conservation-driven questions, there is a lot of potential at the GGRO to examine more basic scientific subjects, e.g., what causes plumage polymorphisms in raptors, or what parasites are found on which raptor species? These questions provide a deeper and fuller understanding of the ecology of each species we study.

One particular fascination of mine is population dynamics—what drives raptor population growth? Being long-lived species, raptor survival time in particular is an important determinant of how well populations can grow and thrive. Unfortunately, survival in raptors is often challenging to measure, even with the relatively high band recovery rates we have at GGRO. Using visually identifiable marks to increase the rate at which individual raptors are observed in the wild may allow us to measure rates of juvenile survival for some species. Color bands are one such marker. Thanks to the large number of bird-watchers in the San Francisco Bay Area, the GGRO is perfectly situated to enlist many people to look for color-banded birds.

But what does this all mean for the future of the GGRO? My goals are to not only strengthen GGRO's core research, but also to broaden our base of collaborators. Inclusion of more graduate students in our work can be a very effective way to answer more questions, more quickly. Many of these results will contribute to painting a fuller understanding of raptors—as well as of the factors that threaten the birds we love.

COLOR BANDS *Chris Briggs*

A New Tool On The Road to Recoveries

In 2013, GGRO started a two-year pilot study examining the efficacy of the use of color bands on two species of hawks moving through the Marin Headlands: Cooper's Hawks and Red-tailed Hawks. Both species migrate through in large numbers, and we have accumulated a wealth of data on their movements based on where recovered hawk bands are reported from. "Recovery" often means (with a plethora of notable exceptions) a bird died or was sick or injured enough to get caught by someone who then reported the band number. In general, around 3—8% of the birds we band are recovered.

This adult Red-tailed Hawk sports a silver Bird Banding Lab band on the right leg, and a blue color band on the left. [Photo by Brian Smucker]

While this recovery rate is fairly high for a non-game species (while many game bird bands are reported due to hunting, only about 1% of banded songbirds are ever recovered), I hope to increase the proportion of hawks banded at GGRO that we learn about down the road. This would vastly increase our understanding of these birds—from what habitats they prefer to how long they survive. There are a number of ways to increase these encounter rates, such as using colored bands or other markers that can be read without having the bird in hand. For example, the patagial tags you can see on California Condors are highly visible with binoculars while the birds are in flight, and allow researchers to get thousands of reports a year on movements of individual condors.

For us, color bands seemed to be a reasonable compromise between ease of use and the potential for information return. Each band has a letter above two numbers, repeated twice around the band—a pattern that is individually identifiable. From the outset, we decided color band sighting rates should at least match recovery rates to make it worth the expense, the time needed to properly fit them on the hawks, and the labor of data management. To date we've had reports of five out of the 80 Red-tailed Hawks we color-banded in 2013, and one of 65 Cooper's Hawks. All but one of these reports were accompanied by pictures clear enough to verify the band number, and therefore to identify the individual hawk. Interestingly, four have been seen more than once, with up to two months in between sightings—generally in or near the same area.

We hope that color bands will not only increase our recovery rate, but also spur public interest in our local hawks. For those lucky communities that seem to have been adopted by a Red-tailed Hawk, it will be interesting for neighbors to see how long an individual hawk uses their area, and if the young birds end up settling down to nest in areas they frequent in their first winter. This could tell us something about the little-understood process of how a hawk finds and establishes a breeding site. Alternatively, it could demonstrate that the individual hawks we "always" see sitting in the same spots may not be the same after all, but many birds that happen to use the same perches.

Perhaps unsurprisingly, we are seeing a big difference between the number of re-sightings of Cooper's Hawks and Red-tailed Hawks. I had hoped that enough Cooper's Hawks would stay urban and hang around bird feeders so that we would get more reports

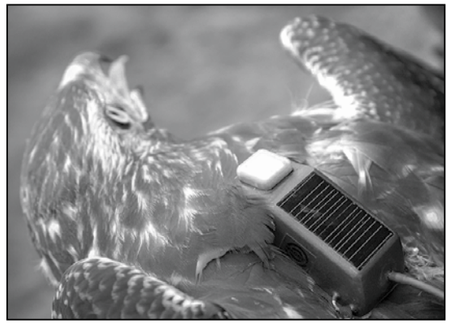
of them. However, I think that between their small legs and their tendency to hide in the brush, their bands are just a lot harder to see. In contrast, Red-tailed Hawks are conspicuous, perch out in the open, and can be remarkably nonchalant about their proximity to people. Despite this, many people don't seem to notice the band until the picture is up on the computer screen. So we need to do a better job publicizing our color banding project, and prompt people to pay attention to bird legs as well as the rest of the bird.

After only a few months post-banding season we already approached our target for re-sightings of Red-tailed Hawks. This could be due to a low sample sizes, or just a fluke, but it provides hope that this is a great way for us to get more information on the birds that pass through the Marin Headlands each fall. We will continue this as a pilot project in 2014 to build upon the successes of the 2013 season and increase our understanding of the movements and ecology of these birds.

GSM TRANSMITTERS *Chris Briggs*

An Evolving Technology

In 2013 we continued to experiment with GSM transmitters by putting out six more units on Red-tailed Hawks. In some ways, the units mimicked those deployed in 2012, with some performing quite well and others going offline more quickly than we had hoped. Even with limited data, we did glean interesting information from a number of units.



The 20-gram, GSM transmitter lines up in the middle of the bird's back and is held in place with Teflon tape which will wear and fall off eventually. [Photo by Mason Cummings]

Technical difficulties again caused failures in some of the units. This year, a system update that modified the communication between cell towers and cell phones seemed to knock out three units in mid-September. It took some time to overcome that obstacle—an unforeseen challenge to tracking. By November the transmitter manufacturer had managed to figure out the problem and we were able to deploy two additional units in December. Both of these units (placed on a juvenile Red-tailed Hawk called Juanita and a second-year Redtail named Kenya) were still reporting as of May 2014.

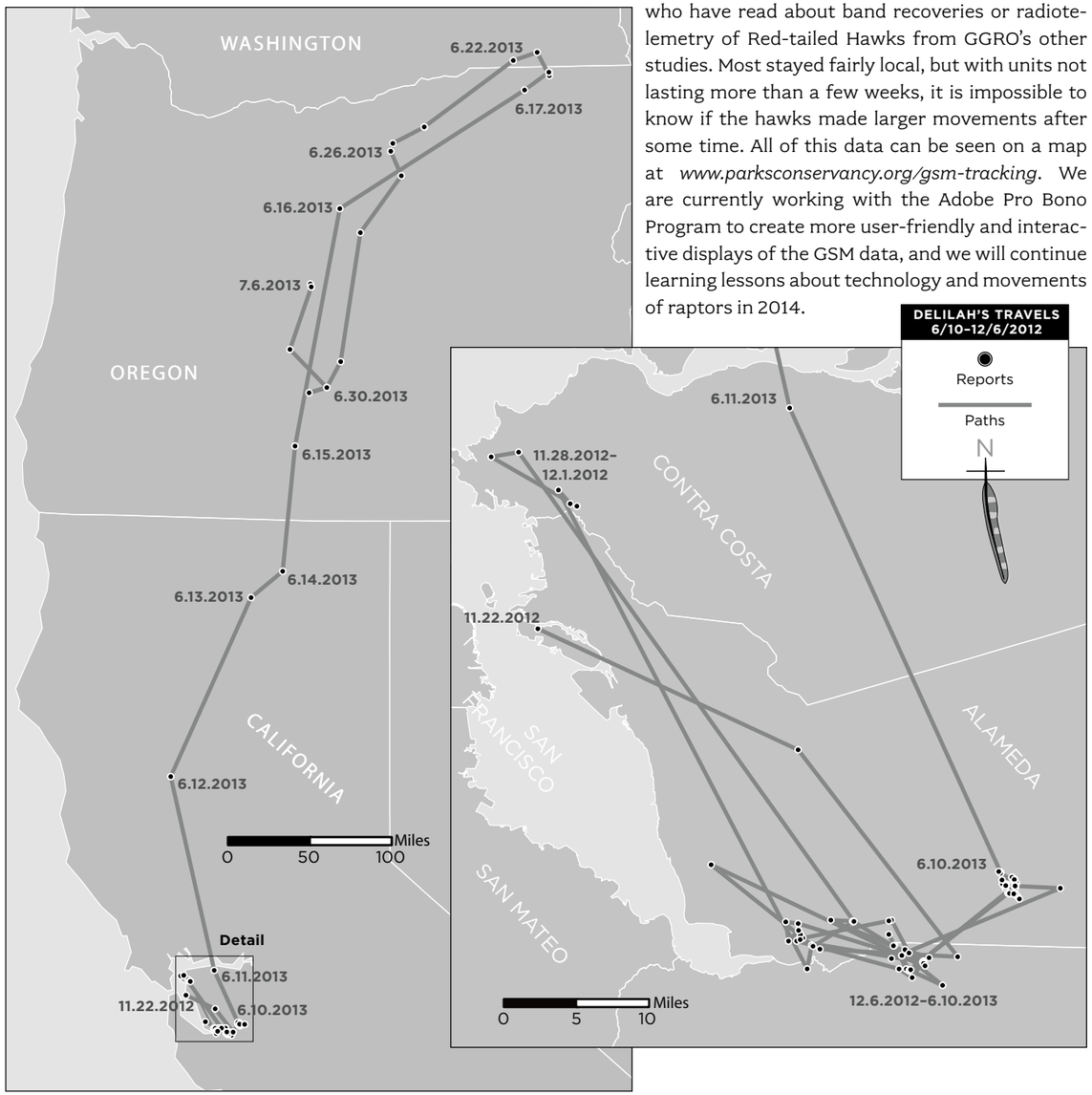
Perhaps the most interesting data we got in 2013 was from Delilah, a juvenile Red-tailed Hawk banded on November 11, 2012. Silent for several months, presumably due to distance from a cell tower, Delilah suddenly started to send stored GPS points. After sporadically reporting from the East Bay all spring, she bolted to the north on June 10, crossing diagonally across Oregon and reaching north of Walla Walla, Washington, on June 21, before turning back south. We last heard from her just east of Bend, Oregon on July 6. It is impossible to know what prompted that northward sojourn—but it is interesting to wonder if she was starting to scout nesting territories. Since hawks often return to their natal areas to breed, Delilah's movements could indicate that she hatched in that region.

I think these data highlight the power of utilizing this technology. While we have experienced setbacks, Delilah's example certainly shows what we can learn by monitoring an individual's daily movements for longer than a few weeks. After staying relatively local in the East Bay for over six months, she decided to "migrate." Obviously this wasn't migration in the classic sense, but it was certainly a substantial movement. As the technology improves, I believe we will be able to find out where these birds end up breeding—which could hint at where they came from. While it may take many years to even begin to get a long-term picture of what the birds that move through the Headlands in the fall are doing, I think Delilah has provided a tantalizing first glimpse.

Another notable bird from this past year was Fargo, a juvenile Red-tailed Hawk banded on August 26, 2013. Fargo's unit performed well, and she reported regularly from parks around San Francisco. In general she was found in Golden Gate Park, Mount Sutro Open Space, and around Candlestick Park. Unfortunately, on October 20, Fargo was picked up by San Francisco Animal Control with a presumed injured wing after she was seen striking the side of a moving car. She died en route to the Peninsula Humane Society. With funds from the Parks Conservancy, we were able to send her body to UC Davis for a full necropsy (animal autopsy) to determine how she died, and whether the transmitter or harness had impacted her. The lab determined that she had received a lethal dose of Difethialone, an anticoagulant rodenticide, and she died as a result of internal bleeding.

We are providing data to the state to determine whether pesticide application permits can be amended to help prevent future poisonings. Fargo's necropsy results, coupled with her detailed movement information, may help provide better insight into where she got poisoned, which could help lead to more specific regulatory action. While Fargo's story is depressing, we have illustrated a serious hazard to raptors by examining daily movements of an individual hawk, and collected data that could be very useful to conservation in an urban setting.

Of the remaining data, there were few surprises for those who have read about band recoveries or radiotelemetry of Red-tailed Hawks from GGRO's other studies. Most stayed fairly local, but with units not lasting more than a few weeks, it is impossible to know if the hawks made larger movements after some time. All of this data can be seen on a map at *www.parksconservancy.org/gsm-tracking*. We are currently working with the Adobe Pro Bono Program to create more user-friendly and interactive displays of the GSM data, and we will continue learning lessons about technology and movements of raptors in 2014.



GGRO ANNOUNCEMENTS *Allen Fish*

GGRO TURNING 30!

THE GOLDEN GATE RAPTOR OBSERVATORY has many roots, but its tap root started growing in 1983 when National Park Service (NPS) ecologist Judd Howell and Will Shor collaborated to trap and band the first migrating hawks in the Marin Headlands. At the same time, retired San Rafael High School shop teacher Carter Faust was in his first year of counting all the hawks flying by Hawk Hill.

In 1984, the NPS opened up a new volunteer opportunity—raptor banding in the Marin Headlands—and more than 200 people applied. Judd somehow selected 100 volunteers, and with this cohort, the elements of the GGRO seemed to click in place: hawks, parklands, citizen science, migration, research, conservation, outreach, collaboration.

And that is why we later picked 1984 as the GGRO's founding year—the year it all came together. So, happy birthday, Golden Gate Raptor Observatory! You are turning a robust 30 years old in 2014, old enough to be humble, but young enough to be seeking new outlets for your passion, the conservation of California's birds of prey.

THE GREG HIND ENDOWMENT

WE ARE FORTUNATE to receive many kinds of support from many directions for the GGRO, and I have the honor of announcing the founding of the Greg Hind Endowment Fund, established in the summer of 2013 by Leslie and Troy Daniels, "to further the conservation, scientific, citizen science, and educational goals of the Golden Gate Raptor Observatory."

Leslie's brother Greg Hind died in 2012, leaving an astounding legacy of invention, philanthropy, and cultural and conservation achievement. As a young man on the San Francisco peninsula, Greg personally raised an injured Red-tailed Hawk, and his love of California's raptors never waned. This year, Leslie and Troy offered the GGRO an endowment both to memorialize Greg, and to support the GGRO's mission of building connections between people and birds of prey. All of us at the GGRO are deeply grateful to Leslie and Troy Daniels for their commitment and their trust.

SWIMMING IN RAPTOR BOOKS

FOR SEVERAL YEARS, the GGRO has been the grateful recipient of another kind of donation—books, books, and more books! Over the past five years, we received a handful of magnificent collections of bird, ornithology, ecology, and raptor books, as well as magazines, journals, and government reports. I am truly grateful to the donors, as these collections have included many difficult-to-find editions or proceedings that are not available online. As a result, the GGRO library has become one of the best resourced raptor libraries in the state. Our sincerest thanks to our generous library donors: Wade Eakle, Russ DeLong, Alida Morzenti, Jerry Connell, the family of Irene Timossi, the family of Raju Rangan, and the Paul and Joan Armer family. Please contact the GGRO ahead of time if you have book donations. Thank you!

Greg Hind's early experiences raising a Red-tailed Hawk left him with a powerful bond with birds of prey. [Photo courtesy Hind family]

HOW GGRO DATA ARE USED

SINCE OUR EARLIEST DAYS, staff and volunteers have worked hard to analyze and present GGRO data for scientific audiences. GGRO data are also regularly used by agencies, NGOs, and researchers investigating California raptor trends and ecology. Most recently, the California Department of Fish and Wildlife used GGRO species population trends to support decisions made in the *Final Environmental Document Regarding Falconry Regulations.* (Feb 2013.)

As of February 2014, we have presented a total of more than 95 scientific talks and publications. Some of our 2013 presentations included:

Hull, J.M., A.M. Fish, C.A. Nikitas, and A.C. Hull. 2013. *Development and testing of a mechanical lure for raptor trapping.* Wildlife Society Bulletin 37:872-876.

Capitolo, P., L. Jesus, B. James, J.A. Harley, A.M. Fish, and A.C. Hull. 2013. *Fall migration of radio-tagged Broad-winged Hawks in California.* Poster. Wildlife Society, Western Section Conference. Sacramento, CA.

Fish, A.M. 2013. *Citizen Science and the GGRO — Communicating and working with participants.* Keynote Presentation. Northern California Public Participation in Scientific Research Symposium, UC Davis, CA.

Fish, A.M., S. Bauer, T. Behr, H. Brandt, G. Rozhon, and C.W. Briggs. 2013. *Tricking the winds: spring raptor migration counts and differential migration in the Marin Headlands.* Presentation. GGNRA Science Symposium, San Francisco, CA.

Briggs, C.W. , A.M. Fish, J.A. Harley, and A.C. Hull. 2013. *Hawks phone home: at the nexus of technology and biology. Presentation.* GGNRA Science Symposium, San Francisco, CA.

Fish, A.M. 2013. *Rodenticides and raptors in the California landscape — the need for deeper knowledge about rodent biology.* Presentation. International Seminar on Environmental Friendly Agriculture. Taiwan Council of Agriculture/Raptor Research Group of Taiwan. Taipei, Taiwan.

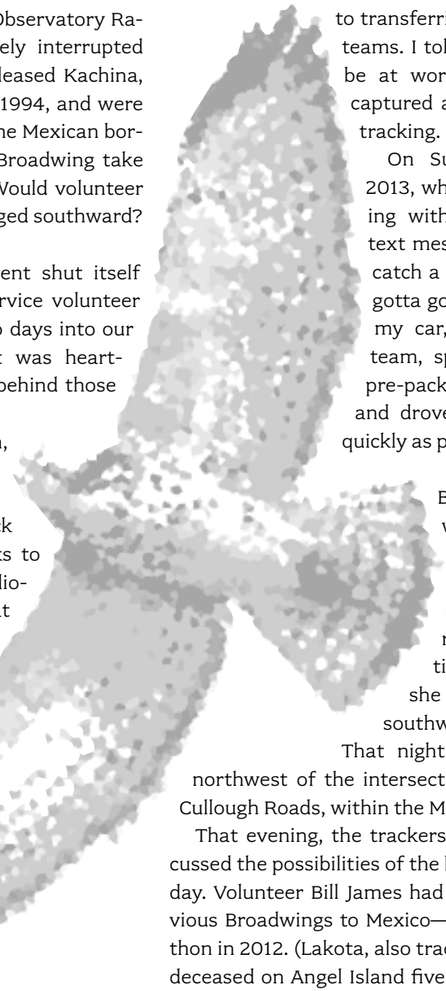
RADIOTELEMETRY 2013 *Libby Rouan*

The Broadwing We Couldn't Track

The 2013 Golden Gate Raptor Observatory Radiotelemetry season was rudely interrupted by Uncle Sam. We had just released Kachina, our fourth Broad-winged Hawk since 1994, and were anticipating a breathtaking chase to the Mexican border in a matter of days. Would this Broadwing take the same flight path as the others? Would volunteer trackers be able to keep up as she winged southward? We couldn't wait to find out.

But instead, the federal government shut itself down, including its National Park Service volunteer and research programs, less than two days into our tracking effort. The disappointment was heartbreaking. Here we present the story behind those two precious days of tracking.

Unlike the GSM Tracking Program, Radiotelemetry takes lots of planning, logistics, and volunteer time. Whereas GSM Tracking uses larger backpack transmitters and cell phone networks to receive locations of the hawks, radiotrackers attach VHF transmitters that require ground teams in the field to record data via receivers. While the GSM study tracks predominantly Red-tailed Hawks (a bird large enough to carry the transmitter), the Radiotelemetry program can track more diminutive raptors with the smaller tail-mounted units. We always hope that a suitable Broad-winged Hawk might be caught for us to track.



Since capturing Broadwings is inconsistent at the GGRO (the average is one per year), a "stand-by" schedule was planned between September 16 and October 4, the time frame which historically has had the most Broadwing sightings. Day-to-day logistics were also devised, from who would attach the transmitter, to transferring equipment between teams. I told my boss that I might be at work, but if the banders captured a Broadwing, I'd be out tracking.

On Sunday, September 29, 2013, while I was mountain biking with friends, I received a text message. Did they actually catch a Broadwing? YES! Okay, gotta go, bye! I pedaled back to my car, texted the telemetry team, sped home to load the pre-packed tracking necessities, and drove to the Headlands as quickly as possible.

Kachina, a juvenile Broad-winged Hawk, was released from Hawk Hill at 2:07 pm. She flew a couple of miles northeast and remained there until about 5 pm, when she flew a couple of miles southwest into Rodeo Valley. That night Kachina roosted just northwest of the intersection of Bunker and McCullough Roads, within the Marin Headlands.

That evening, the trackers dined nearby and discussed the possibilities of the bird's flight for the next day. Volunteer Bill James had helped track both previous Broadwings to Mexico—Zoe in 1994 and Marathon in 2012. (Lakota, also tracked in 2012, was found deceased on Angel Island five days after release.) He shared that the earlier Broadwings each began soaring around 11 am and stopped around 3 pm, going down to roost by 4 pm. Bill stated that the teams were always behind the bird, never capturing end-of-day bearings, and instead finding the bird the next morning when it got up. Finally, he predicted that Kachina would be in the Hollister, CA area, over 100 miles south of the Marin Headlands, by the end of the following day.

The next day, as my teammate—apprentice Danny Pirtle—and I tracked "no signal" data from San Bruno Mountain in cold, misty conditions, I began to train him in "How to Track a Hawk." I explained that key to tracking is always asking the question: What if the bird goes north? South? East? West? Where do we go as trackers? We must have an answer before the bird makes that move. And that means we must review maps, highpoint lists, and what we know about how a hawk flies, so we can take appropriate action when the bird soars.

Step Wilson shows the refined pointy wing on Katrina before release. [Photo by David Jesus]

When tracking a Red-tailed Hawk (our most-often tracked species), trackers usually have two teams on high points getting bearings and cross-bearings from the transmitter, with a third "chase" team trying to actually keep up with the bird. Teams would rotate roles as the bird moved, leapfrogging along the bird's path. We now know that following a Broad-winged Hawk—much like tracking Cooper's Hawks or Northern Harriers—is different than keeping up with a Redtail. Broadwings fly farther faster. We knew the teams that had tracked Broadwings were always behind the bird and never got evening bearings. If Kachina got to the Hollister area by 3 pm as predicted, would she beat us to this destination if we stopped for cross-bearings along the way?

After some rough math, it was clear. Forget chasing, too time-consuming. The trackers needed to drive straight to our best-known highpoint near Hollister—Fremont Peak State Park, 100-plus miles south of the Headlands—for any hope of arriving before the bird. The other teams could find secondary highpoints when they arrived for evening cross-bearings, but daytime data would have to be sacrificed.

Yet, the day was drizzling wet with fog in the Headlands, and Kachina's signal told us that by the end of the day, in the chilly, damp heaviness, she remained near her roost site in the Headlands—not in Hollister. We knew the weather would clear on October 1 and looked forward to Kachina lifting into the sky to soar! But instead of another nice meal and planning session that evening, the telemetry teams returned to the GGRO office as requested by Director Allen Fish. The news was not good.

Allen's tone was dire and serious. He regrettably informed us that as much as he argued to justify to our National Park Service supervisors that the GGRO programs should continue despite the looming federal government shutdown, their hands were tied, and the ultimate answer was "no." The GGRO's hawkwatch, banding, and radiotelemetry programs were to be shut down along with the government. Slated to occur by midnight Eastern Time, it meant that no NPS volunteers would be allowed in the field until the shutdown was officially over.

Volunteers don't get paychecks, benefits, or bonuses. We give of ourselves and our time to a purpose we passionately believe in, and we do it for free because it is fun and rewarding, and the knowledge gained is critical to raptor conservation. That's what being a volunteer is about. Yet, our own politicians' inability to compromise was forcing us to stop. Though Allen had forewarned us of this worrisome possibility earlier that morning, the actual decision was unbelievable and devastating. It was an incomprehensible message. How could they do this?

That drive home was glum. For all of our planning and excited anticipation, a whopping two days of tracking a stationary Broadwing was all we got. We knew Kachina would soar the next day, and cross the Mexican border a few days later, but we wouldn't have teams in the field to record the data. We would never find out if Kachina took the same path through California as the earlier Broadwings we had tracked.

Unfortunately, our 2013 radiotelemetry season was immobilized by a political nightmare in Washington, D.C. We can only hope that next season, our elected officials will build bridges rather than undermine citizen-driven wildlife monitoring.

Lynn Jesus has organized the GGRO's Radiotelemetry Program for several decades; Libby Rouan has dedicated herself to leading radiotelemetry field teams and preparing data.

HAWKWATCH 2013 *Christine Cariño*

The Season of the Shutdown

The vibrant blue of the sky and the rusty red of the Golden Gate Bridge make a stunning contrast and background for the dark morph Red-tailed Hawk in my binocular view. The strong sun and steady breeze combine to create another near-perfect day of weather on Hawk Hill in the Marin Headlands. The hawk circles slowly above me, giving me time to ponder the questions bouncing around in my mind. Questions like: "Where did this hawk come from?,""Why are some hawks dark morphs?," and most importantly, "What interesting birds did I miss while Hawk Hill was closed due to the federal government shutdown?"

The 2013 hawkwatch season started strong, with high numbers of Prairie Falcons and Red-shouldered Hawks. A new mentoring program began, pairing 13 experienced hawkwatchers with less experienced watchers who felt they would benefit from more concentrated instruction while on Hawk Hill. The America's Cup races were underway on the San Francisco Bay, providing hawkwatchers with spectacular views of the fastest sailing boats on the planet.

A fearless Hawk Hill visitor hefts a pair of 20-power star-gazing binoculars. [Photo by Steve Miller]

The America's Cup races proved a mixed bag from the perspective of the hawkwatchers and the public. Race fans enjoyed the vantage point provided by Hawk Hill. Many hawkwatchers found watching the races another perk of their chosen volunteer work. I can't resist saying "the boats flew like falcons over the waves." They didn't really, but from my perspective, the boats were super-fast and fun to watch. They are impressive examples of engineering. However, I found the planes and helicopters buzzing Hawk Hill while carrying spectators and news crews less enthralling. While some of us complained and insisted the aircraft kept the birds away, it's unlikely they actually impacted the data we collected.

Parking was probably the biggest headache created by the races. GGRO Director Allen Fish noted that "at times there were lines of 10 to 15 cars waiting for a parking spot" on Hawk Hill. On weekends in September and October, the GGRO presents popular docent-led programs on Hawk Hill. We were disheartened by the number of people who arrived late to the docent programs because of parking issues. But we're always looking for opportunities to educate the public, and were delighted to capitalize on the crowds. We talked raptors with any race watchers who wandered over trying to figure out why our binoculars were trained on the sky rather than the water.

Obviously our binoculars were trained on the raptors, attempting to identify and count those that flew over. I spend my off-season observing raptors wherever and whenever I can, hoping to improve my identification skills. I attend the excellent yearly ID training sessions that GGRO provides for new and returning volunteers. Every August I climb Hawk Hill armed with better ID skills. I get to the top ready to correctly ID every bird—and then the wind picks up, the angle of the light changes, and the birds look nothing like the slides I viewed during training, nor the hawks that lazily soared over me during the summer.

Just as I explain to a new hawkwatcher that the only raptor species that flexes its wings downwards is the Turkey Vulture, the high winds cause a Red-tailed Hawk to flex its wings downwards. Sometimes I feel like I'll never get bet ter at this raptor ID stuff. Maybe I should have participated in the mentoring program—both mentors and mentees returned from the experience with rave reviews.

As I just mentioned, identifying raptors in the field can be a challenging proposition! Experienced hawkwatchers don't always have the time to assist the new folks with their budding ID skills when high-volume hawk activity makes tallying raptor numbers hectic. The mentoring program provided a non-stressful environment for volunteers to learn. Stationed slightly away from the fray and on a different day than when

they were regularly scheduled as hawkwatchers, mentors could take their time discussing each hawk without worrying about data collection. The program has been deemed a success and it will continue to be an aspect of the training process in future seasons. The only downside to the new program was that the government shutdown cut it short.

The 2013 hawkwatch season might well be dubbed "the season that wasn't." I followed the news raptly in the days leading up to the government shutdown. While I had many concerns running through my mind, in reality I didn't want to miss my assigned hawkwatch day. When the shutdown occurred, all of the national parks were closed and the GGRO was instructed by the National Park Service not to allow volunteers on Hawk Hill, which is on NPS-managed land.

While this was personally distressing news for me, I had to wonder how it would affect our data collection. The shutdown commenced on October 1. Historically, the peak of the hawk migration season is sometime around the end of September or beginning of October. Based on past experience, we all knew the peak of the 2013 season had not yet occurred by the morning of the shutdown. Peak season is when we count the majority of our annual totals of Sharp-shinned Hawks, Cooper's Hawks, and Broad-winged Hawks. Other hawks have a more extended migration peak starting in September and ending sometime in October. The shutdown stayed in place through October 16. We clearly missed the peak of raptor migration season.

How did the shutdown impact the GGRO? We lost an entire season of hawk count data. While we can rarely pull significant data out of a single season, the 2013 season will likely yield little usable annual data—no trends, no true high or low numbers. As a citizen and a GGRO volunteer, this is frustrating to me on many levels. Raptor migration monitoring relies on data that are collected in a consistent manner from year to year. With my background as a scientist, I'm well aware of the consequences of collecting compromised data. In the lab, variables are fairly easy to control and one has the luxury of repeating an experiment if necessary. In field biology, there are no such luxuries. Unfortunately, if we lose a year of raptor migration monitoring, we can't get the birds back for a do-over.

Like many people, I feel some need to try to make a difference in this world. In my role as a volunteer GGRO hawkwatcher, I get up early, drive a significant distance, and give my semi-valuable time to perform citizen science in the hopes of contributing to the body of knowledge about raptor migration. With the destruction of a season of data, I find myself asking, "Is my contribution worth anything?"

Wildlife biology is an incredibly difficult research subject because of the overwhelming number of variables that come into play. Local weather patterns, habitat and climate changes, prey availability, and human biases are just some to consider. There likely are variables that nobody is even aware of yet. So how do we find significance in migration numbers decreasing or increasing from year to year? The truth is, we really don't find much on an annual basis. Scientists can't say for certain why we had 1,000 sightings of a particular species last year and 1,500 sightings of the same species this year.

RAPTOR-SIGHTINGS IN THE MARIN HEADLANDS DURING AUTUMN

	2013 Season* (422 Hours)		Past 10-Year Average (2002-2012)** (491 Hours)	
	Sightings	RpH**	Sightings	RpH**
Turkey Vulture	5,471	12.96	8,697	17.71
Osprey	43	0.10	96	0.20
White-tailed Kite	54	0.13	98	0.20
Bald Eagle	11	0.03	5	0.01
Northern Harrier	358	0.85	711	1.45
Sharp-shinned Hawk	1,374	3.26	4176	8.50
Cooper's Hawk	1,276	3.02	2,495	5.08
Northern Goshawk	1	<0.01	1	<0.01
Red-shouldered Hawk	458	1.09	473	0.96
Broad-winged Hawk	64	0.15	202	0.41
Swainson's Hawk	5	0.01	7	0.01
Red-tailed Hawk	8,118	19.24	9,409	19.16
Ferruginous Hawk	18	0.04	23	0.05
Rough-legged Hawk	8	0.02	7	0.01
Golden Eagle	16	0.04	18	0.04
American Kestrel	389	0.92	511	1.04
Merlin	103	0.24	181	0.37
Peregrine Falcon	144	0.34	219	0.45
Prairie Falcon	8	0.02	7	0.01
Unidentified	589	1.40	1231	2.51
Total	18,508	43.86	29,415	59.91

*Not a complete season; missed October 1-16 due to government shutdown.

**2010 data not included because two count sites were used and data are not directly comparable.

RpH = Raptors Per Hour

The best we can hope for is to spot trends. We can keep our data collection methods as consistent as possible from year to year, and figure out if populations are increasing or decreasing in a statistically significant way over time. Only then can we start looking for reasons why populations shift. So losing 10% of our data over the last 10 years? Yes, it's a big deal. We will never get this season back. But the GGRO has been tracking raptor migration for almost 30 years. We standardized our hawk count methods in 1989. That gives us over 20 years of highly comparable data to peruse and to which we hopefully can find some information that will contribute to the understanding of raptor migration.

What we did count as the season continued and then wound down was the highest number of Bald Eagles we've ever recorded in a single season (eleven!), each one a juvenile or subadult. Red-shouldered Hawk, Rough-legged Hawk, and Prairie Falcon numbers were somewhat strong. Osprey, Sharp-shinned Hawk, and Broad-winged Hawk numbers dipped. Of course, Sharp-shinned and Broad-winged Hawks are peak season birds, and without a shutdown we might have made up for initially low numbers.

However, even with all the statistical gyrations I applied to the data, I could not account for disquietingly low numbers of Merlins and Peregrine Falcons this year. As I previously discussed, the numbers we counted this year may be somewhat significant, or they may disappear with further statistical analysis of the trends. Maybe we won't understand the true impact or importance of the data we collect for another 20 or even 50 years.

When I step back and look at the big picture, I must admit it's not all about the hawks. I love spending my day on Hawk Hill watching all the wildlife and I enjoy time spent with my fellow hawkwatchers. It feels like a day off from my normal life. And there's always something going on in the Headlands. This year we saw a bobcat sitting on a dead deer, and then eating that deer. We observed coyotes by the side of the road. A Rusty Blackbird decided to spend the winter at Rodeo Lagoon near GGRO headquarters. In November, a flock of Tundra Swans flew over the hill.

So while it may irritate me beyond reason to have had my small contribution to society negated, truthfully, I'm really irked because I missed the peak of the 2013 migration season. The peak season is a time when the accipiters come so fast and furious that identifying them pushes the limits of my skills. It's a time when I might have a chance to see copious quantities of Broad-winged Hawks circling through the sky as they did last season. Who knows, I might have missed a rare Mississippi Kite or Eurasian Kestrel. I can always dream of such a season.

Christine Cariño, fledged from the UC Davis Raptor Center, banded for GGRO from 1988 to 1992, then returned in 2010 to GGRO to start a new life as a hawkwatcher.

DR. JOHN W. BOYD, 1938-2012

Dr. John W. Boyd died after a long illness on July 24, 2012. Among many achievements in teaching, birding, and bocceball, John was a devoted GGRO hawkwatch dayleader.

Seventeen years ago, John Boyd did my phone interview and I landed on his GGRO Hawkwatch team, Friday II. His sonorous phone voice belied his somewhat shorter, almost cherubic physical stature. He held a doctorate in microbiology, teaching college after many years of research in the corporate sector, a smart guy with a big smile surrounded by a reddish beard. He was a joy to be with on Hawk Hill, funny and easy to talk to.

John Boyd enhanced my ability to see the invisible, which is fairly remarkable considering that our Friday II team received more than one award for the most fogged-out days in the Headlands.

I had a particularly *satori*-like moment at a Santa Rosa intersection many years ago. It was a significant GGRO moment for me even though I wasn't on Hawk Hill, amidst trees or in a wildlife area, and John Boyd was nowhere in sight. But he was there. A Red-shouldered Hawk rocketed by me, fifteen or twenty feet above the deck, swooping from my left and out of sight on my right. I smiled, looked around, and realized I was the only one who saw that beautiful bird. No one in the other cars, no one on the sidewalk changed their posture or position, nor swiveled their heads to follow the raptor's flight. We just occupied the same moment, and while the moment was different for all of us, my moment was special.

Allen, Buzz, the nature of the Bay Area, and the shared passion for what we all do in the GGRO are certainly all reasons that I'm going into my seventeenth year as a hawkwatcher, but John Boyd's mentoring eased the anxiety of my early years on Hawk Hill, giving me all the right reasons to come back, season after season. As a dayleader he built the foundation of my commitment to the GGRO, and he did that by making a nervous, non-birder apprentice comfortable within a circle of others who knew what they were looking at. When he asked me, "What makes that a..." he did it in a way that invited me to be right or wrong, and allowed me to shed my insecurity.

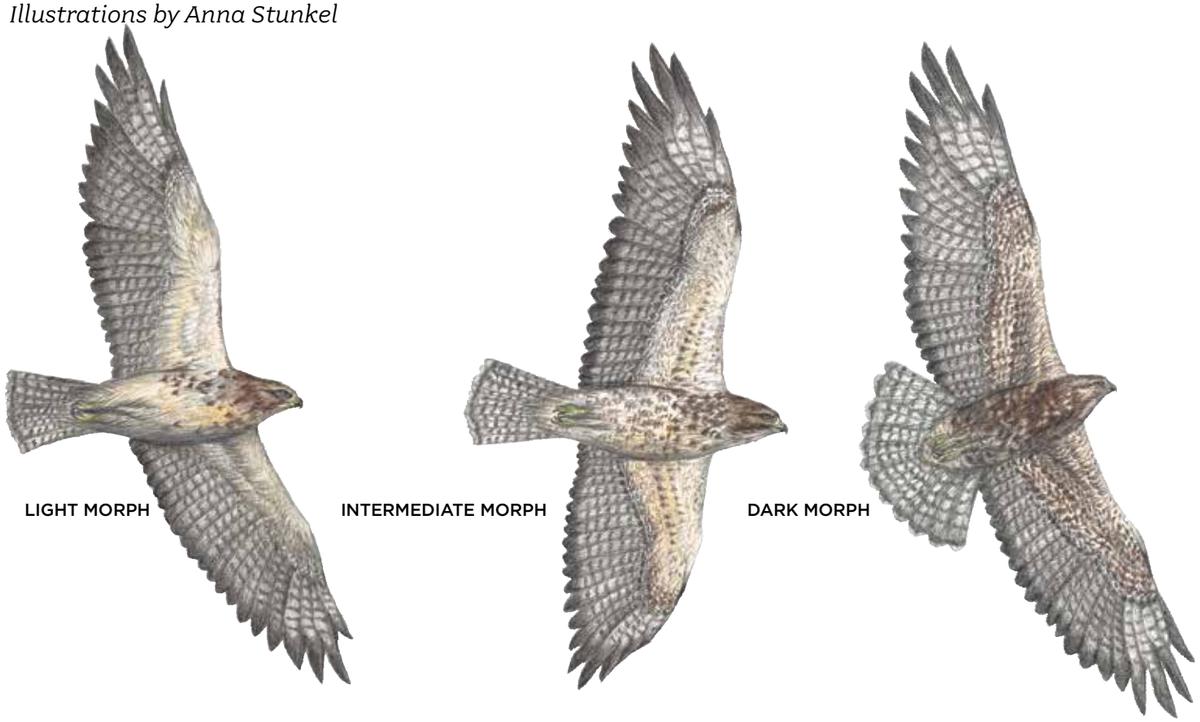
John Boyd enhanced my vision, a great gift from a great guy. I miss him, think about him often, am grateful that our paths crossed, and occasionally hear him chuckling from somewhere beyond the fog, where as Lord of the Mist he sees what we can't, and still guides me to see what I can.

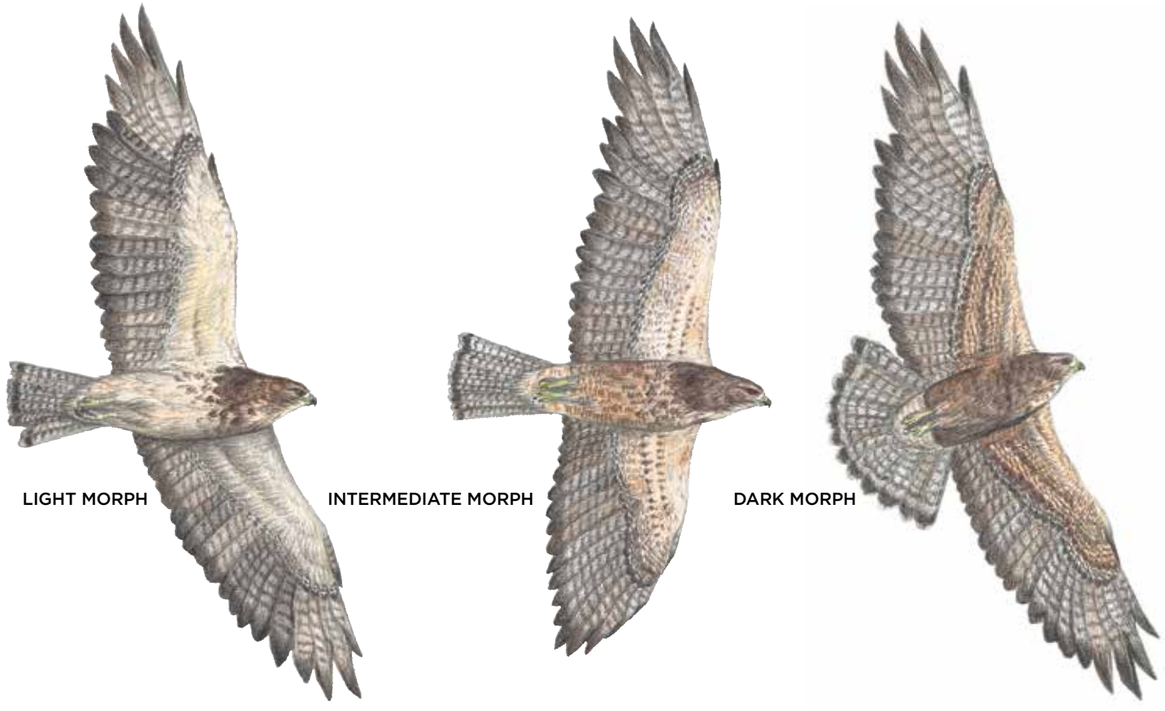
—Mike Harkins

Species Focus *Ageing Swainson's Hawks*

Chris Briggs

Illustrations by Anna Stunkel





JUVENILE/FIRST SUMMER
- Incomplete bib
- Flight feathers not as dark as on an adult
- Light cheek patch
- Usually narrow subterminal tail band

As raptor students, we're eager to get as much information as we can just by looking at a bird. Identifying species is a great first step, but we may want more. Age is often of interest, but it can sometimes be difficult to assess in the field.

Swainson's Hawks can be problematic because they have a subadult plumage, which can look very similar to the juvenile plumage. Further complicating matters are the variable color morphs—generally lumped into light, intermediate (or rufous), and dark morphs. While these categories are convenient, they represent a continuous range of light to dark plumages.

A hawk's morph does not change when they molt (once a light morph always a light morph). The timing of molt completion from subadult to adult seems to vary among individual Swainson's, but generally happens around three years of age. Here I will try to demystify ageing Swainson's Hawks based on years of observations of known-aged color-banded individuals.

For simplicity, I will refer to the summers of a bird's life. For example, a juvenile fresh out of the nest is in its first summer. I will neglect winter plumages, since Swainson's Hawks are largely absent from the Northern Hemisphere in the winter.

There are a number of guides for general Swainson's Hawk identification so I won't belabor basic appearance here. In general, they are pointy-winged buteos that soar with a slight dihedral, with dark primaries and secondaries. Swainson's Hawks molt throughout the summer, so there are a lot of plumage changes between April and August for immature birds.

SUBADULT/THIRD SUMMER
- Nearly complete bib
- Cheek patch darkened
- Light superciliary line
- Usually wide subterminal tail band
- MIxed age flight feathers, mostly dark

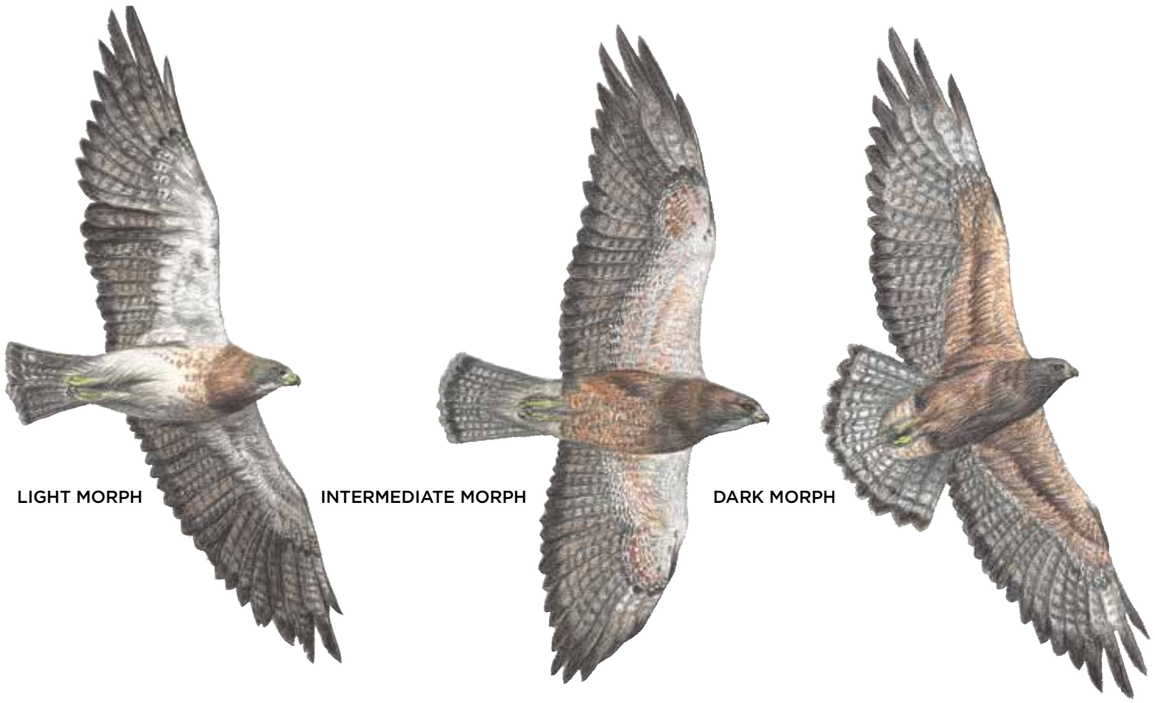
JUVENILE/FIRST SUMMER

Like many juvenile buteos, the plumages of juvenile Swainson's Hawks contain only two colors—an off-white creamy color, and brown. There are no signs of rufous on the bird; those reddish colors don't seem to appear until later in life, if at all. The bib is incomplete; you may be able to trace a line from the white throat patch to the belly (though that may not be possible with some dark morphs). The characteristic dark primaries and secondaries of an adult Swainson's Hawk are not as dark and striking in the juveniles. The subterminal dark tail band is approximately the same width as the others. However, there is variability in subterminal band sizes, so this feature is not a good tool for ageing.

The face is noticeably light, with pronounced light supercilliary and cheek patches. These light patches create a dark line behind the eye, though some can be fairly thin. The light cheek patch also creates a stripe that can look almost like a bold falcon mustache stripe. These patches, coupled with a light chin, give the head and face an overall light appearance.

SUBADULT/SECOND SUMMER (NOT ILLUSTRATED)

At the start of their second summer, very little has changed in a Swainson's Hawk plumage. The bib has just started to fill out with dark feathers, but can be difficult to distinguish from a juvenile breast. The light areas of the face start to fill in with darker feathers, but there is still a strong



superciliary line and cheek patch. As new tail feathers grow in, they usually have a subterminal band wider than the other dark tail bands.

To distinguish between the first and second summer individuals, look for molt in the flight feathers. Juvenile flight feathers will be much lighter in color than new adult flight feathers, and subadults will retain several juvenile outer primaries and secondaries. So in a second summer bird, you will see both light and dark flight feathers, whereas a first summer bird has only lighter colored juvenile flight feathers.

SUBADULT/THIRD SUMMER

Much of the bib is complete by now, but there are usually light areas in the center of the bib that gradually fill in throughout the third summer. This process may or may not finish by the time fall migration hits—there is individual variability. The face often still has some residual lighter feathers. In particular, the superciliary line is visible, but subtle. The cheek patch similarly has darkened. The subterminal tail band is now broader than the other tail bands, and most or all of the primaries and secondaries are fairly dark.

ADULT/FOURTH SUMMER AND OVER
- Complete bib
- Dark flight feathers
- Wide subterminal tail band

ADULT (FOURTH SUMMER AND OLDER)

In adults, the bib is completely filled in for all morphs—for dark morphs, the bib is now indistinguishable from the belly. All indications of lighter plumage have molted out from the head and face, aside from the white chin patch and some lightness around the cere that is present for all but the darkest of individuals.

BANDING 2013 *Candace Davenport*

The Year of Unintended Consequences

In August 2014, I started my ninth year as a bander for the Golden Gate Raptor Observatory. Being a volunteer bander means that for the four months of GGRO's migration monitoring season, once a week, I get to sit in a tiny little hut, on a stool without a back, and stare out a little slot in the wall that is always a little too low for my height. I get to wear 10 layers of clothing and still feel miserable in what feels like 30-degree weather, with a west wind blowing fog at 50 mph into my face, so that I—and everything around me—get sopping wet. Or I get to sit there when it's hot, stripped down to very little, with doors cracked open to try and capture a non-existent breeze, and bake in 100-degree heat while anything that has even a tiny brain is tucked away in some nice cool corner taking a siesta.

GGRO Intern Emma Cox releases a Red-tailed Hawk. [Photo by Emily Abernathy]

I get to walk up hills that make my knees hurt and leave me gasping for breath. I get to run down rocky slopes as fast as I can to extract a hawk from a net, while avoiding inch-long talons that seek to puncture my skin. I also get the delight of having constant poison oak somewhere on my body, so that it seems that I am one perpetual four-month itch.

And for the eight months that are not the banding season? I dream and long for those four months that are.

My friends and family think I am nuts. Why would anyone subject themselves to such hardship and extremes? I do so because I am hooked. Captivated. Obsessed. Addicted. I do it so I can, just for a few minutes, hold a wild raptor in my hands. I do it for the chance (not even the guarantee) of being able to look into its eyes and see the wild freedom there. I do it so I can smell the wind of far-off places on its wings. I do it so I can sit in silence and see to the ends of the earth and not think about jobs, or taxes, or wars, or politics, or any other mundane daily problems, but just think about raptors. I do it so my heart can sing.

My eight seasons have been relatively kind to me. To start, I was initially set to come out every other week. My very first banding day was so foggy that we were skunked—didn't even see a bird, let alone trap a hawk. Yet that experience, sitting in the blind, looking out into the fog, was so filled with mindfulness that I knew I couldn't wait two weeks to come out again. I had to change my schedule to come out at least once a week.

2006, my first season, broke all sorts of GGRO records for yearly captures (2,182), as well as individual captures of Sharp-shinned Hawks, Cooper's Hawks, Swainson's Hawks, American Kestrels, and Merlins. Even better, the 2007 season broke even more records. We had a massive Cooper's Hawk season, almost doubling our average numbers, and caught even more total birds than the previous record-breaking year. A Northern Goshawk and Rough-legged Hawk were banded, only the fifth capture of each in the entire GGRO history. Amazingly, a Eurasian Kestrel, the first known occurrence of this species in California, was captured and banded at a GGRO banding blind, as well as 81 adult Red-tailed Hawks. I was definitely spoiled, and thought every year was going to be like these first two years—in numbers and species!

Surprise, surprise—like everything in life, banding seasons change from year to year. The next two years, we were down over 700 and 800 birds, respectively, from the 2007 total bird count, although we broke our Peregrine Falcon record in one year and our Merlin record in the other. Then in 2010, we were down over 1,000 birds from our 2007 season—a very dismal banding year. Luckily, the numbers began to rebound a bit, and in 2012, although no records were broken, we had decent numbers once again.

All things go through cycles, and raptors are no different, as I certainly learned over my eight banding seasons. We have no control over breeding success, prey availability, weather, or raptor health or whim, which all affect raptor numbers and cause annual differences. But, if you think about it, isn't that why we band the birds and take the data

in the first place? Raptors are at the top of the food chain, and if their numbers plummet, then something is likely affecting the lower portions of the food chain. In this sense, raptor-population monitoring serves as an ecological early alert system, so these cycles are to be noted and further explored.

This handsome Redtail has kept a juvenile tail feather among its adult, red, tail feathers. [Photo by David Jesus]

But this year, 2013, had additional man-made variables that literally cut our numbers in half. This was the year of the governmental shutdown (remember that?). The shutdown affected many people directly, from those who were furloughed, to the shop-owners who lost business because people weren't spending money. However, many people were indirectly affected by the shutdown—the GGRO, and consequently we volunteer banders, were impacted as well. The national parks, and thus the Marin Headlands, were closed and we were told, in no uncertain terms, that we were NOT to go out and band.

So for longer than two weeks, our blinds remained locked and banders stayed home. Unfortunately, it couldn't have been worse timing. Although our season is four months long, there is a week or two that we call peak, when the skies literally can be filled with accipiters, all of our wonderful Sharpies and Coops. It is during this two-week period when we capture most of our hawks, and the government shutdown was timed perfectly—exactly during the 2013 peak.

Peak was already a bit late, so when the shutdown hit, we lost two actual weeks of high accipiter numbers, and also some days as the peak waned. Large numbers of accipiters were seen moving through the surrounding areas during the shutdown, so we know they came through. Our average number of banded Sharpies is close to 500. In 2013, we only banded 173, and yes, that is directly related to the government shutdown. The same can be said for Cooper's Hawks. Our average is around 570, and this year we only banded 390. Although I know that no one sat on Capitol Hill and planned these unintended consequences, 2013 results will always have these unusually small capture numbers.

But maybe more importantly, the shutdown made a whole lot of banders really, really, grumpy, and it definitely lowered my captures for this season (besides making me very grumpy). Because I go banding a lot, I usually have very decent numbers of captures, and with a diversity of species. For example, I've had a season with eight Red-shouldered Hawks, sometimes two at a time. I've had Northern Harrier double-baggers, seasons filled with Merlins and American Kestrels. I've had a Swainson's Hawk, and I was lucky to be in the blind with a rare Northern Goshawk. But this year, there were just three species for me: Cooper's, Sharp-shinned, and Red-tailed hawks—so a very strange year all around.

Yet despite the government shutdown and the lack of numbers and variety, I probably had more adult hawks in 2013 than in most of my prior years added together. So, I am not complaining—each and every bird is special in its own right. But for me, in the end it really isn't about numbers. I go out on the hill to regain a sense of who I am and why I am here. For me, it's not about just living. It's about really being alive. So, here's to the government staying open, and great numbers of raptors in the banding blinds for everyone in 2014 (and that elusive big falcon for me)!

A GGRO bander since 2006, Candace Davenport operates a publishing company, Little Books.

RAPTORS BANDED IN THE MARIN HEADLANDS DURING AUTUMN

	2013* (8/4/13-1/3/14)	Annual Average 1992-2012**	Totals 1983-2013
Northern Harrier	10	11	285
Sharp-shinned Hawk	173	490	10,982
Cooper's Hawk	390	569	13,602
Northern Goshawk	0	0	5
Red-shouldered Hawk	21	15	383
Broad-winged Hawk	3	1	34
Swainson's Hawk	0	0	10
Red-tailed Hawk	434	317	9,081
Ferruginous Hawk	0	0	2
Rough-legged Hawk	1	0	6
Golden Eagle	0	0	2
American Kestrel	37	56	1,332
Merlin	24	29	642
Peregrine Falcon	2	4	89
Prairie Falcon	2	2	42
Eurasian Kestrel	0	0	1
Total	**1,097**	**1,494**	**36,498**

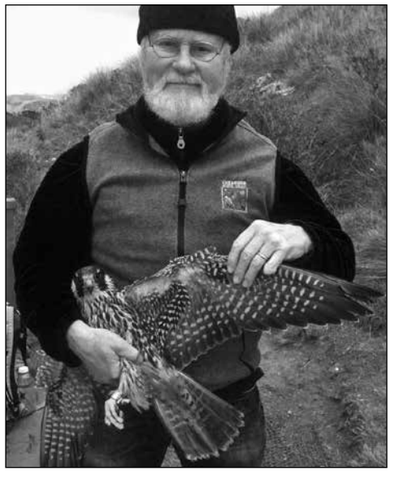
*Not a complete season; missed October 1-16 due to government shutdown.

**1992-2012 are used for this comparison due to similarity of methods and effort between those years and 2013.

BAND RECOVERIES 2013 *Nancy Brink*

Thirty Years of Band Encounters

Band recovery follow-up is an interplay of storytelling and data collection. We receive limited, coded information from the USGS Bird Banding Lab (BBL) in Patuxent, MD, which oversees distribution of bands, banding data, and band encounters for all species of migratory birds in the United States. Led by long-time volunteer Marion Weeks, the band recovery team tracks down people who report the band numbers to confirm details of hawk condition, mortality, and location.



Thirty-year bander Bill Prochnow compares mustaches with a first-year Peregrine Falcon. [Photo by Danny Pirtle]

As of the end of the 2013 season, 36,849 hawks of 16 species had been banded by GGRO volunteers since the program's inception. We have received 1,234 band recovery reports from the BBL. Over 31 seasons, our understanding of the hawks we band has grown: how they travel, how long they live, how they die, and how human activities affect their lives. Sometimes data confirm—and sometimes data challenge—our assumptions.

GGRO citizen scientists have made quite a journey with the hawks that fly through the Marin Headlands! The late Jim Mills, GGRO bander and volunteer extraordinaire, wrote in the *Fall 1992 Pacific Raptor Report*: "It will probably take the GGRO 20 years of band recovery data interpretation before we can reach sound conclusions about West Coast raptor activities." At that time, 4,000 raptors had been banded and we'd received 118 band recovery reports. The overall "encounter rate" was 2.7%. This data told us "that Golden Gate hawks have been reported from Washington to Mexico."

Four years later, volunteer bander Karen Scheuermann wrote: "There is a thread that runs between the bander and the recoverer, connecting one chance occurrence in the bird's life with another.... In one sense, the data set is a rich kaleidoscope of the stories of individual hawks. In another sense, it gives us numbers and patterns which are helping to illuminate the ecology of raptors on the Pacific Coast." At that time, there were 233 recoveries; the Red-tailed Hawk encounter rate was at 3.4%; the Cooper's Hawk rate at 2%; and Sharp-shinned Hawks 1.5%.

The kaleidoscope has grown in numbers, intricacy, and depth of information. Our 1,234 recoveries represent an overall encounter rate of 3.5%. While still a small percentage of hawks banded, these encounters provide data that have growing potential to teach us a few things. Indeed, they already have.

For example: in the 2004 *Pacific Raptor Report*, 30-year GGRO veteran John Keane reminded us that "raptor movements at the GGRO are not a classic north/south flow, but rather are much more complicated and encompass both long-distance migrants passing through the Headlands and individuals exhibiting a diversity of dispersal movements in all directions." GGRO volunteers now know that the "M-word" means not just "migration," but also "movements" of raptors.

A rough geographic range can be illuminated by our band recoveries. Hawks banded at GGRO have been recovered as far north (and west) as Prince Rupert Island in Canada, as far east as Lake Havasu City in Arizona, and—a new one this year—as far south as Carachurio del Nuevo, southwest of Mexico City. But not all recoveries are so exotic; a Redtail banded in 1991 by Cheryl Keene was found in 2013 near the Alexander Avenue overpass at the edge of the Head-

lands. Banded hawks are occasionally recaptured in GGRO blinds, or by other banders as far away as the Goshutes Mountains of eastern Nevada.

A study that analyzed more than 54,000 raptor band recoveries in the U.S. from 1960 to 2008 suggests "that raptor migration follows the topography of the landscape and individuals sometimes concentrate along the coast of a large water body before attempting to cross." The authors also note "greater clustering ... near populated areas." (Lutmerding et al. 2012) That so many encounters occur near population centers points to an inherent bias in the dataset. A person has to find the hawk and take the initiative to report the band number and relevant information to the BBL for the encounter to be known about. Therefore more hawks are encountered in places where there are more people.

Such biases in data demand caution. Looking at mortality data shows that Sharp-shinned Hawks die frequently from window strikes. Redtails, in particular, are hit by cars. Our reports include many electrocutions and rodenticide poisonings. Finders have apologized for their cats' predatory behavior. The impact of human activities on the hawks we band is apparent, but again, we rarely hear about the hawks that die in remote wilderness areas because people do not find them. Hawks living in or passing through urban areas are more likely to be both impacted and encountered by humans.

The power of our band recovery data is two-fold. It stands as a growing body of details about the hawks that have passed through the Golden Gate, but it is also part of a hemispheric data set maintained by the BBL, available to researchers around the world. The BBL database documents a substantial increase in reports of raptors killed by cars, from 6% (152) in the 1960s to 10% in the 2000s (1,367). A more encouraging trend: BBL records show a decrease in raptor deaths from gunshots from 27% (690) in the 1960s to 1% (99) in the 2000s.

As of January 2011, BBL's online database included records for 64 million birds banded since 1960—1,904,273 of them raptors (65,872 encounter reports). Looking through the BBL database is a fun reminder that we're part of something big here at the GGRO, an extended network of researchers, scientists, and volunteers who are vitally curious about raptors and who, hopefully, provide information that will help them survive.

So if you are interested, you can query this online database for, say, Cooper's Hawks banded in the U.S. since 1960: 127,822 banded (16,979 in California), with 3,908 encounters (530 in California). Take a look at Cooper's Hawk longevity records. You'll find that the oldest known Cooper's Hawk, minimum age 20 years, 4 months, was banded in California on October 27, 1986, and recovered on October 30, 2006. That Coop is our band recovery #794, banded as a juvenile by John Keane at Hawk Blind and found by James Guest, among Ponderosa pines west of Oak Creek Wildlife Area in Wenatchee National Forest in Washington. Mr. Guest was fairly certain the 20-year-old Cooper's Hawk had been shot; he sent us the leg and band for our collection.

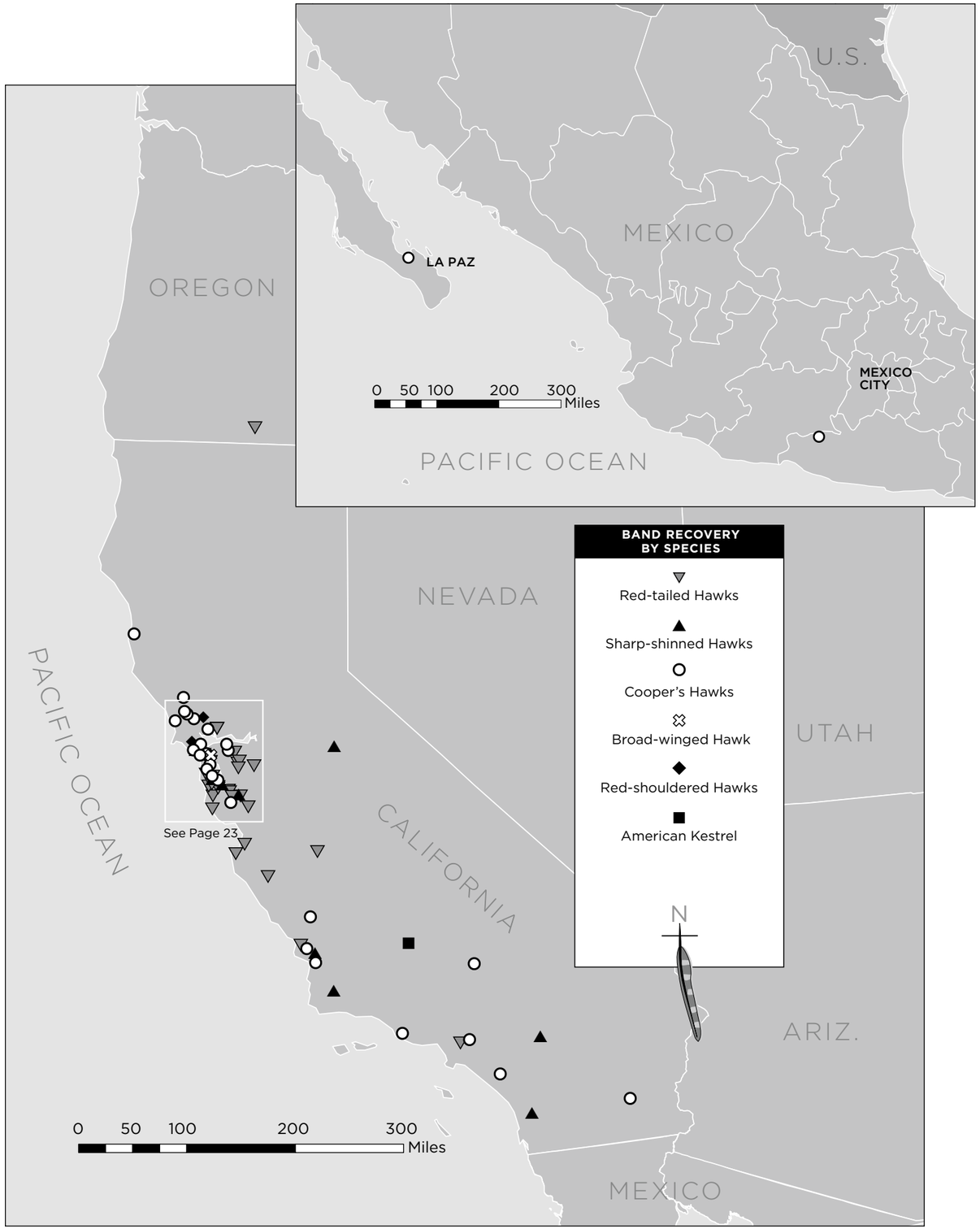
Since last year, we've received 76 new band encounter reports from the BBL. As you read through this year's listing, consider the questions we might ask, and how we might dig into the data. And revel in the stories. Like that of the Cooper's Hawk that flew to Carachurio. She was banded in September 2012 by Dian Langlois and flew more than 1,800 miles in less than five months—the longest-distance recovery for the GGRO. We look forward to seeing that record broken in the years to come.

LITERATURE CITED:
Lutmerding, J.A., M. Rogosky, B. Peterjohn, J. Mcnicoll, D. Bystrak, and K.L. Bildstein. 2012. *Summary of Raptor Encounter Records at the Bird Banding Lab. Journal of Raptor Research 46 :17-26.*

723-B Juvenile Red-tailed Hawk banded on 10/20/98 by Carole Hyden; first encounter was on 10/17/05 at Hayward, Alameda Co., CA; unable to stand, the hawk was rehabilitated and released; found a second time on 5/7/13, dead for perhaps a couple days at Hayward Marsh, Alameda Co., CA. Reported by Mark Taylor of Hayward Regional Shoreline Park; Mark stated they were dealing with outbreaks of cholera, followed by avian botulism, but were not able to confirm that the hawk died of either of these, as a bird must be alive or freshly dead to be tested; no injuries noted.

898-B Juvenile female Cooper's Hawk banded on 8/16/07 by Terry Mead; first encounter was on 6/30/08 at Woodland Hills, Los Angeles Co., CA; suspected of hitting a window and was released by the rehabilitation center that same day after it "went nuts" flying around cage. Caught due to injury on 6/15/13 at Thousand Oaks, Ventura Co., CA, about 14 miles from the first recovery; reported by Marie Taylor. The Bird Banding Laboratory (BBL) lists the bird as "now dead."

1161 Juvenile Red-tailed Hawk banded on 8/31/94 by Anne Ardillo; found dead sometime in 2004 two miles east of San



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Gregorio, San Mateo Co., CA; reported by Doug Machado.

1162 Juvenile female Cooper's Hawk banded on 8/28/08 by Helen Davis; found dead on 7/18/12 at Lafayette, Contra Costa Co., CA, on a driveway under a row of Redwood trees; reported by Jeff Acuff for Liz Radding.

1163 Juvenile female Red-tailed Hawk banded on 9/14/08 by Julia Camp; found by Robert Nahmens on 11/11/12 at Emerald Hills, San Mateo Co., CA; taken to Peninsula Humane Society (PHS) with blood coming out of mouth and nares; it was non-responsive and was euthanized; reported by Greg Hassett and Patrick Hogan of PHS.

1164 Juvenile Red-tailed Hawk banded on 9/16/02 by Claire O'Neil; found by John Pearson on 11/25/12 at Half Moon Bay, San Mateo Co., CA; taken to PHS with a "fractured beak at lower left mandible, possibly necrosis of the tongue and severely debilitated" and euthanized; reported by Greg Hassett and Patrick Hogan.

1165 Juvenile male Red-tailed Hawk banded on 10/29/09 by Robyn Boothby; found dead on 9/22/12 under a power line in Morro Bay, San Luis Obispo Co., CA, by Frank Gutierez, who transported the bird to Pacific Wildlife Care (PWC). Reported by Melinda Alvarado of PWC, who stated it was not thin, and that "electrocution injuries can take days to show up and this bird had no obvious injuries. It takes time for the 'cooked' tissue to look as dead as it really is."

1166 Juvenile female Cooper's Hawk banded on 9/15/93 by Allen Fish; reported by William Ridgeway, DVM, who was sorting through his grandfather's things after his death and found the band. He believes the bird was found 10 miles northeast of Niland, Imperial Co., CA, sometime in the mid 1990s. William believes the bird was found dead alongside a road near Southern Pacific Railroad tracks, in a low desert agricultural area.

1167 Juvenile male Red-tailed Hawk banded on 10/28/09 by Ralph Pericoli; found alive on 11/22/09 and picked up by Palo Alto Animal Control Officers at Mountain View, Santa Clara Co., CA. The Redtail was transferred to Wildlife Rescue in Palo Alto and diagnosed as "ill severe," which usually means no visible injuries, and was euthanized. Reported by Officer Jeannette Washington with additional information from Cody Macartney, Palo Alto Police Department.

1168 Juvenile male Cooper's Hawk banded on 9/10/12 by Ari LaPorte; found dead of unknown causes on 1/11/13 at Fort Bragg, Mendocino Co., CA, in Sanford and Stephanie Rambolt's backyard, "absolutely fresh...he was beautiful!"

1169 Juvenile female Cooper's Hawk banded on 9/7/12 by Craig Tewell; bones, feathers, and leg with band found 10/31/12 at Arroyo Grande, San Luis Obispo Co., CA, a couple hundred yards away from the finder's home in a drainage area; reported by Charles Felix.

GGRO Intern Emma Cox is dazzled by the hypnotic gaze of a juvenile male Sharp-shinned Hawk. [Photo by Brian Smucker]

1170 Juvenile female Cooper's Hawk banded on 9/23/12 by Dian Langlois; caught due to injury on 10/16/12 by Kern County Animal Control at California City, Kern Co., CA and brought to rehab at the California Living Museum (CLM) in Bakersfield. A homeowner reported that the hawk was injured while trying to catch a pet. Treated for multiple injuries until a vet tech reevaluated and decided that the hawk's injuries were too great; the bird was euthanized on 10/19/12. Reported by Sarah Ross of CLM.

1171 Juvenile female Cooper's Hawk banded on 9/14/12 by Brian Smucker; found dead on 10/7/12 at Brisbane, San Mateo Co., CA; reported by Eli Koral.

1172 Juvenile female Cooper's Hawk banded on 10/8/12 by Craig Nikitas; found dead at Camp San Luis on 11/12/12 by Sean Grauel just north of San Luis Obispo on a seldom-used gravel back road; Sean described the bird as "a little ripe, smelly, probably been there a couple of days."

1173 Juvenile female Cooper's Hawk banded on 10/14/12 by Craig Nikitas; found dead on 11/2/12 at Martinez, Contra Costa Co., CA; reported by Rick Carpenter.

1174 Juvenile female Cooper's Hawk banded on 12/13/12 by Sarah Sawtelle; found on 12/19/12 at Mill Valley, Marin Co., CA; people cutting wood nearby noticed the hawk sitting on a deck railing. They called Marin Humane Society, which notified WildCare. WildCare treated the hawk, but it was lethargic and listless, and died. Testing for rodenticide revealed some exposure, but not enough left to kill her; reported by Nat Smith, a vet tech at WildCare.

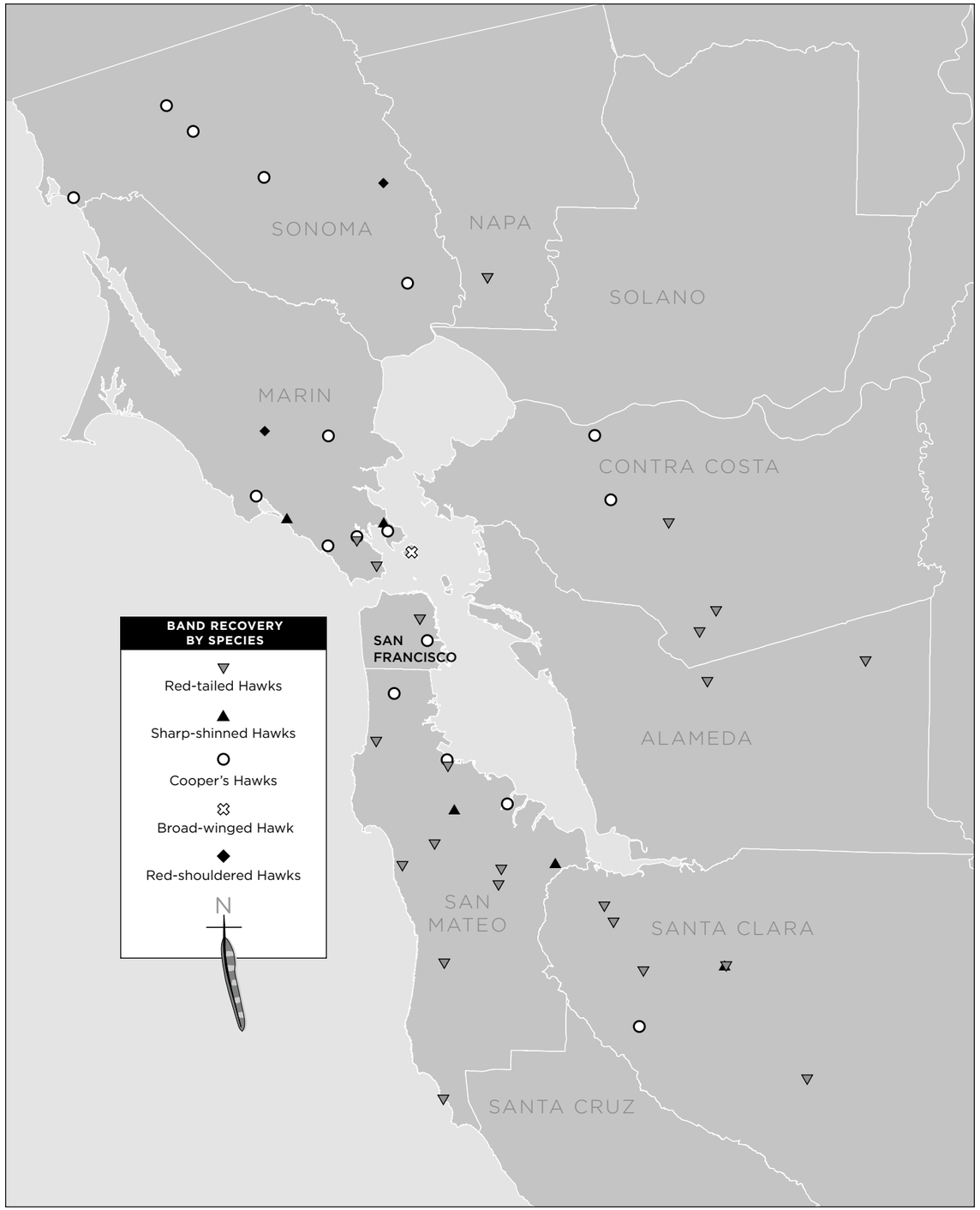
1175 Juvenile female Cooper's Hawk banded on 9/29/12 by Regan Dohm; found dead on 11/6/12 at San Miguel, San Luis Obispo Co., CA, by Daniel Hale, on his patio. He believes the hawk flew into a window; it was not shot, stiff, or cold, and it was clean—no bleeding, no ants or worms. He buried it and a neighbor helped him report it to the BBL.

1176 Juvenile female Cooper's Hawk banded on 11/13/12 by Ralph Pericoli; found dead on 11/26/12 at Bodega Bay, Sonoma Co., CA, near a tree in open space near a housing development; reported by Kathy Kent and her husband, John Dolinsek.

1177 Juvenile female Cooper's Hawk banded on 10/5/12 by Craig Tewell; reported on 10/23/12 at Santa Ana, Orange Co., CA, with BBL codes "caught by hand" and "bird dead;" reported by Andrea Sidoti of Serrano Animal and Bird Hospital; no further information.

1178 Juvenile male Red-tailed Hawk banded on 10/11/08 by John Perry; trapped and released during banding operations on 1/11/13, five miles northwest of American Canyon, Napa Co., CA; reported by Stan Moore.

1179 Juvenile Red-tailed Hawk banded on 8/26/03 by Sam Stuart; band found on 1/2/13 at Arroyo Seco Road, Greenfield, Monterey Co., CA, about one to two miles northeast of Millers Lodge, close to Los Padres National Forest; reported by Anita



Tavernetti: "There was no bird, only the band."

1180 Juvenile female Sharp-shinned Hawk banded on 9/17/12 by Ari LaPorte; found on 9/29/12, five miles east of Sonora, Tuolumne Co., CA; finder anonymous.

1181 Juvenile female Sharp-shinned Hawk banded on 10/29/12 by Dick Horn; found dead on 1/7/13 at Menlo Park, San Mateo Co., CA, about six feet away from a glass hallway leading to a chapel at the heavily wooded Vallombrosa Center; reported by Arrin Skelley, who saved the bird in a baggie and froze it. This bird is now part of the GGRO educational skins collection.

1182 Second-year Red-tailed Hawk banded on 11/20/12 by Peter McGuire; found dead on 1/14/13 at San Jose, Santa Clara Co., CA; reported by Joyce Robinson.

1183 Juvenile male Red-tailed Hawk banded on 8/27/12 by Liz Morata; found dead on 11/4/12 at Mountain View, Santa Clara Co., CA; reported by Gregory Taylor.

1184 After-second-year Red-tailed Hawk banded on 12/10/12 by Rachel Tom; found dead on 12/30/12 at Walnut Creek, Contra Costa Co., CA, in Ted Hamilton's backyard. He could not ascertain what caused the hawk's death; it was fresh, "pretty darn clean…He/she was beautiful…love to watch them soar over Mt. Diablo."

1185 Juvenile male Red-shouldered Hawk banded on 11/22/12 by Ari LaPorte; found injured on 12/19/12 on roadway two miles west of Woodacre, Marin Co., CA and taken to WildCare; reported by Nat Smith of WildCare. "I remember it well, it came in alive, well-fleshed, must have been hit by a car, was euthanized the same day… too many broken bones to heal."

1186 Juvenile male Red-tailed Hawk banded on 12/12/12 by Regan Dohm; found dead on 1/27/13 on roadside about 15 miles west of Tranquility, Fresno Co., CA; reported by Robert Horton, who said it looked like "its neck was broken, head tucked under body…not dead long."

1187 Juvenile female Red-tailed Hawk banded on 9/7/12 by Kat Tomalty; trapped on a bal-chatri on 11/13/12 at Marina, Monterey Co., CA, by apprentice falconer James Yu. He named her Gypsy, stating that she was an excellent hunter. Her weight had increased almost 400 grams, to 1656 grams, upon recapture. Yu removed the band on 1/6/13, and released Gypsy in mid-May 2013.

1188 Juvenile male Cooper's Hawk banded on 10/13/12 by Nancy Mori; found dead on 1/15/2013, three miles north of Rohnert Park, Sonoma Co., CA; reported by Eric Greenband.

1189 Juvenile male Cooper's Hawk banded on 10/29/12 by Rachel Tom; found dead on 12/29/12 on a levy at the Viansa Winery, Sonoma Co., CA, by Doug Conway, during a Christmas Bird Count. Doug reported that it looked like it was eaten or chewed on by a predator and was sort of hidden in the grass.

1190 Juvenile male Cooper's Hawk banded on 11/5/12 by Robyn Boothby; found dead on 11/13/12 at Tiburon, Marin Co., CA by 10-year-old Raffi Baig, on his way to school; reported by Martha Auld, who took it to the Audubon Center in Tiburon and stated "it looked beautiful."

1191 Juvenile female Cooper's Hawk banded on 9/27/11 by Marion Weeks; found dead on 2/5/13 at Healdsburg, Sonoma Co., CA. Reported by Edwin and Annette Wilson, who found it lying outside the back door of a two-story house, in a rural mixed forest area. "It may have broken its neck on an upper floor window." They hope to donate it for an exhibit at the Fitch Mountain Park of Healdsburg; until then, the hawk resides in their freezer. To quote Annette, "I know I sound like a daffy old lady bird watcher. I am!"

1192 Juvenile female Cooper's Hawk banded on 11/11/12 by Zeka Kuspa; found dead on 12/29/12 in roadway at San Anselmo, Marin Co., CA, by Esther Timberlake and her son. Esther stated, "it looked perfect, I just wanted to touch it, I didn't want to bury it—it was so beautiful."

1193 Juvenile female Red-tailed Hawk banded on 9/9/12 by Jean Perata; found injured on 1/19/13 at San Ramon, Contra Costa Co., CA, and taken to Lindsay Wildlife Museum (LWM.) It was rehabilitated for gunshot injuries and multiple complications, but described as "feisty"; released on 4/1/13 by Terry Mead, GGRO bander and LWM volunteer; reported by Patricia Orlowski of LWM.

1194 Juvenile male Red-tailed Hawk banded on 12/18/12 by Claire Gallagher; found alive on 1/26/13 at Mill Valley, Marin Co., CA, and brought to WildCare. Nat Smith reported the hawk as "emaciated when brought in, probably the worst I've ever seen…bad clotting time…results of rodenticide testing not back yet." The Redtail could not be saved.

1195 Juvenile female Red-tailed Hawk banded on 9/4/12 by Sarah Sawtelle; found on 12/16/12, unable to fly, in the backyard of home at Danville, Contra Costa Co., CA; reported by Marcia Metzler of LWM. The Redtail was emaciated, had low red blood cell counts (indicating possible rodenticide poisoning) and bacterial plaques in its mouth. Despite treatment, the bird died; a necropsy revealed advanced aspergillosis, a repiratory disease.

1196 Juvenile female Red-tailed Hawk banded on 11/25/12 by Stephen Wilson; found dead on 2/14/13, on Altamont Pass Road, eight miles northeast of Livermore, Alameda Co., CA; reported by Joe DiDonato and Elizabeth Leyvas. Joe reported that bird had been dead a few days at the most; injuries suggested the hawk had been hit by a vehicle on the busy, winding road.

1197 Juvenile male Red-tailed Hawk banded on 9/7/12 by John Ungar; found dead on 2/14/13 at Klamath Falls, Klamath Co., OR; reported by Bob Adams and neighbor Garald Havird, under a pine tree in Havird's downtown yard. A taxidermist friend said the bird did not appear to have been hit by a car but did have a broken neck. Bob wanted to know "Why would a young hawk like that come up here for the winter? It's been real cold, 14 — 15 degrees!"

1198 Juvenile male Red-tailed Hawk banded on 12/10/12 by Rachel Tom; encountered on 2/11/13 on Range Road in the U.S. Army Reserve training area at Dublin, Alameda Co., CA; reported by Mark Hall, who observed the hawk sitting on an ATV, "but it was sick and was dead the next day." Mark added there is "no D-Con or other pesticides on base."

1199 Juvenile female Cooper's Hawk banded on 8/20/12 by JD Durst; found dead on 2/19/13 on residential driveway at San Gabriel, Los Angeles Co., CA; reported by Charles Funaro, who said the hawk was "freshly deceased;" he noted nearby power lines and slight discoloration on the toe, but no cause of death was determined.

1200 Juvenile male Sharp-shinned Hawk banded on 9/22/08 by Dick Horn; found dead at on 2/18/2013 at Escondido, San Diego Co., CA; reported by Ray Cappelletti, who found it at "our back door next to our cat door…cat was sitting next to the bird. (Sorry): appeared our cat killed the bird."

1201 Juvenile female Sharp-shinned Hawk banded on 9/22/11 by John Keane; found dead on 2/18/13, 2.5 miles north northwest of Buellton, Santa Barbara Co., CA. Reported by Sheryl Woods, who saw it as neighbor was ready to throw it away; "the bird was mangled and dead for a little while; a lot of feral cats next door."

1202 Juvenile Red-tailed Hawk banded on 9/28/02 by Tania Pollak; trapped and released on 2/16/13 at Cotati, Sonoma Co., CA; reported by Stan Moore.

1203 Juvenile female Cooper's Hawk banded on 11/5/12 by David Jesus; "found dead, band with skeleton or bone only," per BBL codes, on 2/25/13 at Colma, San Mateo Co., CA; finder anonymous.

1204 Juvenile male Sharp-shinned Hawk banded on 10/29/12 by Michelle Tattersall; found on 12/1/12 at Tiburon, Marin Co., CA; reported by Alix Marquiss, who believed the hawk hit sliding glass doors near bird feeders on a stormy weekend.

1205 Juvenile female Sharp-shinned Hawk banded on 9/18/12 by Candace Davenport; encountered on 11/19/12 at San Mateo, San Mateo Co., CA, when it flew into a window. Reported by Kaaren Sipes: "It was exciting for me…though not the best circumstances for the hawk; it was stunned. I wrapped it in a towel and laid it on a table so it could fly away if it recovered; it was still breathing, but lay still for maybe ten minutes, then it suddenly flew off to the east."

"Its whole wing is a patagial mark!" GGRO intern Emily Abernathy searches futilely for the camouflaged black patagium on this dark morph juvenile Red-tailed Hawk. [Photo by Emily Abernathy]

1206 Juvenile female Sharp-shinned Hawk banded on 9/11/12 by Kate Howard; found dead on 10/8/12 "below a large picture window" at Forest Falls, San Bernardino Co., CA. Reported by Chris Bishop: "Next to the hawk was the body of a small mourning dove. On the window were the impressions of both birds, close together. I assume the hawk was chasing the dove and both impacted the window. …I was truly sorry to see this beautiful creature dead and I buried her in my back yard."

1207 Juvenile male Red-tailed Hawk banded on 9/9/12 by Adrian Ye; caught and released on 1/18/13 at Pebble Beach, Monterey Co., CA, by falconer Jim Tigan. Jim was flying his tiercel for only the fifth time, and the first away from home. The falcon was spooked by tourists after Jim had called him back. The falcon flew down the beach, a quarter-mile from the 18th green and landed in a tree. A Redtail "came out of nowhere and attacked him—the little falcon screamed and they locked talons and fell between a brick wall and chain link fence in only six inches of space." Jim grabbed his falcon, which had lost a few feathers to the Redtail, by the feet and inched him up, then the Redtail. "There was food in its crop, no parasites, and all good and muscled. Both birds lost a few feathers. In the big picture—the little falcon learned to be more aware of Redtails."

1208 Juvenile Broad-winged Hawk banded by Mike Armer; telemetry transmitter applied on 9/29/12; found dead on 10/4/12 at Angel Island, Marin Co., CA, after signal was stationary for a period of time; reported by Phil Capitolo, a member of the telemetry team sent to search for the bird. The UC Davis necropsy found a circular penetrating wound on the back that punctured the left lung, moderate muscle atrophy, and possible mild pneumonia; there was no evidence it had been shot.

1209 Juvenile male Red-tailed Hawk banded on 10/31/11 by Megan Mayo; found dead on 1/31/13, at Woodside, San Mateo Co., CA; reported by David Dawkins, a ranger at the historic Woodside Store on Tripp Road. The hawk was on an embankment of a nearby creek.

1210 Juvenile female Cooper's Hawk banded on 10/5/05 by Rob Allen; found dead on 3/18/13 one mile west of Saratoga, Santa Clara Co., CA; reported by Bonnie Fox; found near windows of their home when they came home from vacation. Birds can see through the glassed-in patio and she suspects the hawk probably hit the window "trying to get to birds at feeder on the other side of the house."

1211 Juvenile female Sharp-shinned Hawk banded on 9/18/11 by Noreen Weeden; died on 3/21/13 at a ranch at San Luis Obispo, San Luis Obispo Co., CA. Workers observed the Sharpie chasing a smaller bird; both crashed into greenhouse windows and both birds died. Reported by Sharon Goupil.

1212 Juvenile female Red-tailed Hawk banded on 9/4/2011 by Megan Mayo; found in gutter, unable to fly on 3/15/12 at Half Moon Bay, San Mateo Co., CA. When examined, was emaciated, very dehydrated and unresponsive to treatment; the hawk was euthanized. Reported by Jessica Reynolds and Patrick Hogan of PHS.

1213 Juvenile male Cooper's Hawk banded on 10/6/12 by Hal Sugishta; found dead on 3/25/13 at Sebastopol, Sonoma Co., CA; reported by Gina Cameron.

1214 Juvenile male Red-tailed Hawk banded on 11/22/08 by Steve Rock; found dead on 1/29/13 at Cupertino, Santa Clara Co., CA ; reported by Paula Simpson, Animal Care & Services of San Jose, CA.

1215 Juvenile female Red-tailed Hawk banded on 11/20/07 by Ruth Parsley; found dead on 3/27/13 at Los Angeles, Los Angeles Co., CA; reported by Paul Weber.

1216 Juvenile Female American Kestrel banded on 9/7/12 by Erika Walther; found on 12/23/12 at Rodriguez Park at Shafter, Kern Co., CA; reported by teenager Carmen Villagomez, who said it "had a small hole in its wing and couldn't fly." She put it in a box with raw meat and water. "After a few days, it flew away."

1217 Juvenile male Red-tailed Hawk banded on 12/8/12 by Siobhan Ruck;

found dead on 4/4/13 at Pacifica, San Mateo Co., CA; reported by Michael Johnson.

1218 Juvenile male Cooper's Hawk banded on 9/3/12 by Diane Horn; recovered on 9/14/12 at San Carlos Airport, San Mateo Co., CA. The hawk was flying about 1,000 feet above Highway 101, one to two miles north-northwest of the airport, when it hit a helicopter, forcing the helicopter to land. Only one banded leg and claw were found in the blade assembly; reported by Christopher St. Peter.

1219 Juvenile male Cooper's Hawk banded on 9/20/12 by Eddie Bartley; found on 4/13/13 at Santa Rosa, Sonoma Co., CA and brought to Santa Rosa Bird Rescue Center the next day; was emaciated and dead of unknown cause; reported by the Rescue Center, which sent the body to UC Berkeley's Museum of Vertebrate Zoology.

1220 Juvenile female Cooper's Hawk banded on 10/6/12 by Steve O'Neill; picked up on 10/21/12 by San Francisco Animal Control from the streets of San Francisco, San Francisco Co., CA and transported to PHS. It was emaciated, very dehydrated, and after several days, vision problems were diagnosed. The hawk was euthanized, as "it needed 100% vision to survive;" reported by Stephanie Callas and Patrick Hogan of PHS.

1221 Juvenile female Cooper's Hawk banded on 12/12/12 by Steve O'Neill; found dead on 4/8/13 on road at Bolinas; reported by Peter Pyle, who gave the specimen to the California Academy of Science; they found no obvious signs of trauma.

1222 Juvenile female Red-tailed Hawk banded on 9/20/09 by Nancy Mori; caught due to injury and reported dead by the BBL on 10/24/11, six miles south of Pescadero, San Mateo Co., CA; reported by master falconer George Bristol.

1223 Juvenile female Sharp-shinned Hawk banded on 9/16/11 by Katy Dunbar; found dead on 4/13/13 at San Jose, Santa Clara Co., CA; reported by Karina Yavorkovsky.

1224 Juvenile female Red-tailed Hawk banded on 10/8/12 by Eddie Bartley; found dead of unknown cause on 4/12/13 seven miles northwest of Morgan Hill, Santa Clara Co., CA; found under a tree near high power transmission lines by Mike Wolterbeek who discovered the hawk while hiking with his brother.

1225 Juvenile female Red-tailed Hawk banded on 12/3/11 by Siobhan Ruck; picked up on 4/17/13 by San Francisco Animal Control at San Francisco, San Francisco Co., CA, on a trail at SF State University and taken to PHS. The raptor was lethargic, lying prone; PHS suspected rodenticides and gave her fluids; she finally started feeding and was returned to the wild on 5/1/13; reported by Patrick Hogan of PHS.

A Merlin scans the face of GGRO intern Danny Pirtle, searching for the moment of weakness that will enable his escape. [Photo courtesy GGRO]

1226 Juvenile female Cooper's Hawk banded on 9/14/12 by Dian Langois and caught a second time the same day by Craig Nikitas; found dead on 2/3/13 at Carachurio, Guerrero, Mexico; reported by Alexis Arzate. This hawk holds the GGRO band recovery distance record; in less than five months, she was found more than 1,800 miles from the banding site.

1227 Juvenile female Red-tailed Hawk banded on 9/22/11 by Steve Rock; picked up on 4/29/13 by San Francisco Animal Control in a yard at San Francisco, San Francisco Co., CA; she was alert, responsive, and with right wing fracture. Later x-rays revealed fractures worse and not improving; euthanized on 5/15/13; reported by Patrick Hogan of PHS.

1228 Juvenile female Cooper's Hawk banded by Steve Rock on 9/6/12; found dead on 10/4/12 at the corner of Muir Woods Road and Hwy. 1, near Muir Beach, Marin Co., CA; reported by Jim White.

1229 Juvenile male Red-tailed Hawk banded on 8/28/12 by Peter McGuire; caught due to injury, but now dead, on 5/14/13, 10 miles south from South San Francisco, San Mateo Co., CA; reported by Patrick Hogan of PHS.

1230 Juvenile female Cooper's Hawk banded on 10/14/12 by Eric Jepson; found on 12/23/12 at Oxnard, Ventura Co., CA; retrieved from a backyard with a broken wing by Oxnard City Animal Control and died before it reached the shelter; reported by Andrew Dickson of Oxnard Animal Control Services; Oxnard is an agricultural community and he has picked up many raptors around the College campus, which has lots of eucalyptus trees.

1231 Juvenile female Sharp-shinned Hawk banded on 9/24/12 by David Jesus; found dead on 9/28/12 at Surfer's Grill and Lifeguard Tower at Stinson Beach, Marin Co., CA, at the base of a solid wall, with a broken neck, "almost as if it had hit the building;" reported by Suzanne Olsson and Sharon Worlund.

1232 Juvenile female Red-shouldered Hawk banded on 9/4/08 by Jerry Hadfield; hit and killed by a motor vehicle on 7/12/13, three miles north of Sonoma, Sonoma Co., CA; reported by Mary Engebreth.

1233 Juvenile female Cooper's Hawk banded on 9/18/07 by Marion Weeks; found dead on 6/29/13, due to poisoning, 11.2 miles west of Benito Juarez, Baja California Sur, Mexico; reported by Arturo Torres Ledesma, a member of the Diplomado Congresso del Estado Baja California Sur.

1234 Juvenile Red-tailed Hawk banded on 10/6/91 by Cheryl Keene; found dead almost 22 years later, on 7/19/13, at the western entrance to the Hwy. 101 underpass on Alexander Road at Sausalito, Marin Co., CA; found by Sam Drucker of NatureBridge (Marin Headlands), and reported by Emily Abernathy, GGRO intern. This bird will become a part of our educational skins collection.

Bander Nancy Brink married fellow bander Steve Rock on a lazy, foggy afternoon in August 2014, beneath the shadow of Slacker Hill, raptors abounding.

PEREGRINATIONS *Emily Abernathy*

Pinnacles National Park

The California Condor has been a poster child for animal conservation since its extinction in the wild in 1987—and during its subsequent captive breeding and reintroduction. I have always held condors high on my list of birds to see because of its federally endangered status. And there is no better place to see a California Condor than at Pinnacles National Park. Located 2½ hours by car from the Marin Headlands, Pinnacles is named after its spectacular rock formations, which are remnants of an ancient volcanic field. It is our newest national park, just signed into law in 2013.

Since 2003, 19 California Condors have been released in Pinnacles National Park. [Photo by Emily Abernathy]

RAPTORS SEEN OFTEN
Turkey Vulture, Red-tailed Hawk, Prairie Falcon, American Kestrel

RAPTORS SEEN OCCASIONALLY
Golden Eagle, Ferruginous Hawk, Red-shouldered Hawk, Cooper's Hawk, Sharp-shinned Hawk, California Condor

OTHER NOTABLE BIRDS
Canyon Wren, Lazuli Bunting, Phainopepla, Lawrence's Goldfinch, Rufous-crowned Sparrow

A fellow intern and I travelled to the East Entrance of Pinnacles on a Saturday, and immediately had our eyes peeled for the black silhouette of a condor. We had only spotted one deceivingly large Turkey Vulture before starting our hike. With one goal—spotting the illustrious California Condor—we knew that we had to head up to the high peaks before the condors left their roosts and took flight for the day. We started up the Condor Gulch Trail, and were soon surrounded by beautiful manzanita trees and dozens of Acorn Woodpeckers.

About a quarter-mile after the Condor Gulch Trail connected with the High Peaks Trail, my companion spotted a small black dot on a rock to our right about 200 meters away. I squinted into my binoculars and immediately recognized a perched California Condor. We jumped for joy, high-fived, and then proceeded to take approximately 200 pictures…each.

With our dreams realized and our camera memory cards full, we continued trekking uphill. Another quarter-mile up the High Peaks Trail, we hit a series of steep stairs that tested my fear of heights. As we walked, we kept our eyes sharp in case another condor decided to grace us with its presence. Aside from the Acorn Woodpeckers we had seen, the rocks were surprisingly lacking in birds as we climbed.

After we stopped for lunch and then hiked for another hour, we almost gave up hope of seeing another condor. Suddenly, I spotted three large black birds flying off in the distance. Not only were there two more California Condors, but there was a Turkey Vulture flying with them, and seeing the size difference was incredible.

Once the condors flew out of sight, we continued following the trail downwards. Towards the end of the High Peaks Trail we started to see signs of wildlife again, including several Western Bluebirds and a Canyon Wren! We were so excited by our luck that we decided to extend our hike and took a right onto the Rim Trail, which goes past Bear Gulch Reservoir.

After a lot of ducking and a little bit of crawling, we emerged out of the Bear Gulch Caves and into a small wooded picnic area at the end of the Moses Spring Trail.

All of the birds that had eluded us throughout the higher elevations were suddenly all around us down by the stream. We spotted Oak Titmice, Steller's Jays, a Spotted Towhee, Dark-eyed Juncos, and dozens of Acorn Woodpeckers on a granary tree. Unfortunately, this was the end of our hike, but our good luck didn't stop there—on the way home we saw an adult Golden Eagle!

California Condors are not the only thing that Pinnacles is famous for. Since 1908, 160 species of birds have been documented in the park, also home to two cave systems that house 14 species of bats. If bats are not your cup of tea, Pinnacles also has the greatest number of bee species per unit area of any place ever studied (*www.nps.gov*).

If you would like to see a California Condor or enjoy a great day hike, from the beautiful riparian lowland habitat to the high peaks of the rocky summits, Pinnacles National Park is the place to be.

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