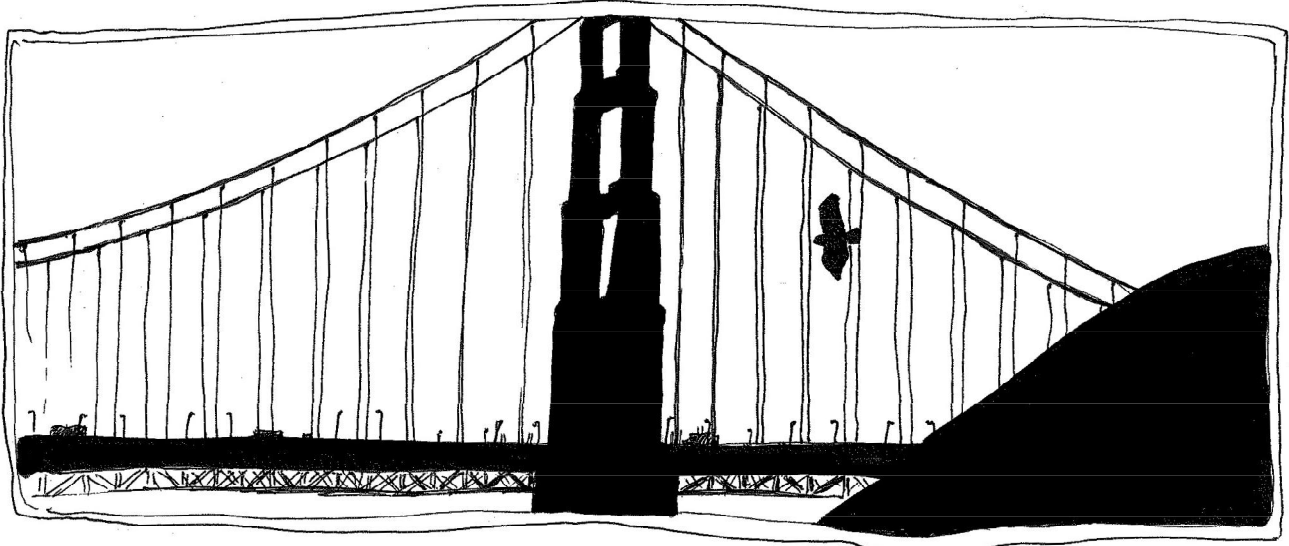


Golden Gate Raptor Observatory
Season Summary 2013



VOLUNTEERS • HAWKWATCH • BANDING • RESEARCH NOTES
GSM TRACKING • OUTREACH • DONORS



GOLDEN GATE RAPTOR OBSERVATORY

The Golden Gate Raptor Observatory's mission is to inspire the preservation of birds of prey. Our business is to monitor and study the bird of prey migration along the central California coast, particularly at the Marin Headlands, part of the Golden Gate National Recreation Area. We are dedicated to the conservation of raptors both through careful data collection *and* through involving the public in every aspect of our research. The GGRO is a program of the Golden Gate National Parks Conservancy and the National Park Service, and is made up of 275 community volunteers and a small staff.

GGRO Season Summary 2013 written by Chris Briggs, Allen Fish, Danny Pirtle, and Lynn Zhang

Cover illustration by Siobhan Ruck; other illustrations by Emma Cox

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Requests for or questions about GGRO data should be addressed to ggro@parksconservancy.org.

Cover Illustration: Turkey Vultures are a bread-and-butter bird in the fall migration over the Golden Gate, comprising one-third of our raptor sightings in an average year. Many Californians see "TV's" as stay-at-home birds since some vultures spend the winter in central and coastal California. But if you take a look at the TV's range map in any North American guide, you'll see that most depart the US, migrating thousands of miles. Some winter as far south as the Amazon Basin. (Pen and ink by Siobhan Ruck)

G G R O S T A F F

ALLEN FISH, GGRO DIRECTOR • CHRIS BRIGGS, RESEARCH DIRECTOR

JILL HARLEY, OPERATIONS MANAGER • BUZZ HULL, RESEARCH DIRECTOR EMERITUS

2013 INTERNS: EMILY ABERNATHY, EMMA COX, DANNY PIRTLE, ANNA STUNKEL, LYNN ZHANG

I N T R O D U C T I O N

The 2013 GGRO fall migration season kicked off with the double-edged excitement of the America's Cup taking place just east of the Golden Gate Bridge from July through September. At first I'd hoped that the view of the races, being partly obscured by the Golden Gate bridge, would be terrible from Hawk Hill, and that hawk-migration watchers wouldn't have to compete for parking spaces on Conzelman Road. But I was wrong. The view through the bridge towers was superb; with binoculars, you could track most legs of each race. The race-day traffic jams on Conzelman were tough on everyone.

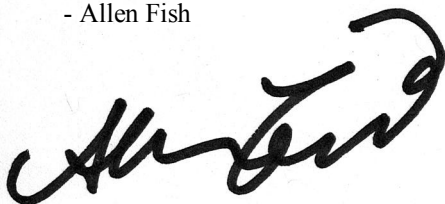
With its clearer skies, October is often our best raptor month. October boasts the greatest number of species, with sometimes hundreds of raptors per hour sailing by, and lots of school and birding groups arriving on Hawk Hill to admire the flight. But on October 1st the federal shutdown hit. What does it mean to de-fund the federal government? For the GGRO it was simple: pull all NPS volunteers out of the field; and cease all non-essential scientific activities in the national parklands. That was hard for us, assuming, as many wildlife monitors do, that we are terribly essential in our task. We have a 30-year database of consistent raptor counts, and you cannot just make up data for a year missed. So our hundreds of volunteer banders, hawk-watchers, and radio-trackers waited impatiently to get back in the field, knowing that raptors were flying thick in Marin Headland skies.

A long sixteen days later, we all got the national news that the shutdown was over, and you have never seen so many unpaid people so eager to get back to business as usual. Banders and counters alike jumped back on track, and picked up as if politics had never been invented. Here, I have to thank all of our volunteers and especially our dayleaders, siteleaders, telemetry leaders, and interns – your dedication to monitoring the raptor flight was admirable and widely noted. Also, deep thanks to our NPS and Conservancy colleagues who did everything in their powers to support us during the shutdown.

We are fortunate to receive many kinds of support from many directions for our work at the GGRO. Today, I have the honor of announcing the founding of the Greg Hind Endowment Fund. The Hind Fund was 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 the Daniels for their commitment and their trust.

Finally, I want to acknowledge that the GGRO has evolved this year as we formed new coalitions with other groups and individuals to support research on topics such as: parasites and diseases in California raptors; Swainson's Hawk range expansions; Bay Area Osprey nesting success; and impacts of the wide and unchecked use of rat poisons on bird of prey populations. Between pesticides and energy impacts, between human population growth and climate change, these are not easy times to be a wild raptor; we all need to keep looking for new ways to ensure the long-term perseverance of these magnificent birds.

- Allen Fish



V O L U N T E E R S

Sam Abercrombie	Michael Butler	Janeann Erickson	Ryan Holmes
Emily Abernathy	Diane Caliva	Laura Erickson	Tom Holmes
Amanda Ailand	Ruth Cantwell	Natalee Ernstrom	John Holson
Rob Allen	Phil Capitolo	John Farnsworth	Calvin Hom
Caryn Ansel	Chris Carino	Richard Ferris	Sam Hontalas
Anne Ardillo	Caryl Carr	Alice Fialkin	Jennifer Hopkirk
Jennifer Armer	Sally Cedarblade	Robbie Fischer	Diane Horn
Kendra Armer	Anthony Cermak	Allen Fish	Dick Horn
Michael Armer	Linda Chambers	Dan Foldes	Heather Hoyles
Ray Arpon	Rich Cimino	Ross Forman	Buzz Hull
Carlo Arreglo	Jim Clausen	Stephen Friesen	Josh Hull
Stefanie Arthur	Laura Coatney	Laura Fujii	Julian Hyde
Lynn Bantley	Terry Coddington	Kathleen Gadway	Bill James
Ryan Bantley	Kay Conneely	Jennifer Gale	Eric Jepsen
Shahram Baradaran	Tom Conneely	Claire Gallagher	David Jesus
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Robyn Boothby	Regan Dohm	Lisa Harn	Shelby LaMotte
Carroll Botvinick	Shirley Doyal	Judy Harris	Joan Lamphier
Tony Brake	J.D. Durst	Susan Harris	Dian Langlois
Randy Breaux	George Eade	Michele Harrison	Patricia Lessard
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Nancy Brink	Rich Eliason	David Herrema	Justin Lew
Jim Broadstreet	Nancy Elliot	Cheri Hinkley	Susan Lew
Johnny Brown	Nathan Elliott	Lynn Hoerle	Pam Lewis
Ralf Burgert	Robert Engel	Nathanael Hoffman	Lianna Lopez
Shannon Burke	Anastasia Ennis	Nora Holmes	Will Ludan

V O L U N T E E R S

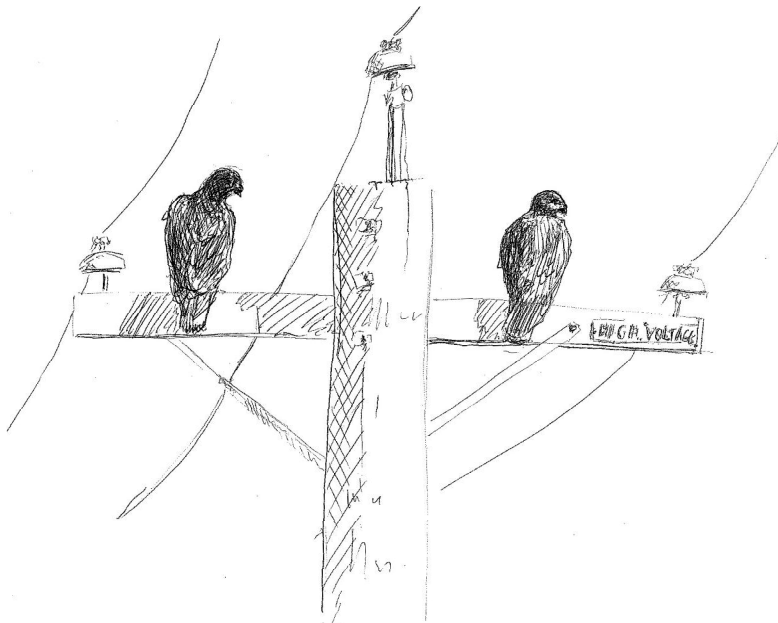
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 Mary Malec
 Ron Maykel
 Megan Mayo
 JoAnn McAllister
 Jaime McConachie
 Wendy McConachie
 Peter McGuire
 Tara McIntire

Craig Nikitas
 Maureen Noon
 John Odell
 Brian O'Laughlin
 Cynthia Oldenkamp
 Rebecca Olsen
 Claire O'Neil
 Steve O'Neill
 Marissa Ortega-Welch

Eileen Richey
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 Steven Rock
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 Laury Rosenthal
 Elizabeth Rouan
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 Jennifer Sullivan
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 Craig Tewell
 Holly Thomas
 Laura Thomas
 Claire Thorp
 Jeremy Thweatt
 Kat Tomalty

Jasper Toscani
 Leslie Tribe
 Kyla Tripp
 John Ungar
 Chris Vance
 Douglas Vaughan
 Denise Villa
 Nick Villa
 Jacqueline Wall
 Erika Walther
 Noreen Weeden
 Marion Weeks
 Kenneth Weidner
 Emily Weil
 Jill Weinstein
 David Wells



Ewen McKechnie
 Raleigh McLemore
 Terry Mead
 Horacio Mena
 Kim Meyer
 Steve Miller
 Paul Mirocha
 Sue Morgan
 Nancy Mori
 Lee Morse
 Tom Moutoux
 Jennifer Nazzal
 Angela Newsham
 Kristen Newsham
 Kip Nichols
 Chris Nikitas

Kenn Osborne
 Pat Overshiner
 Dana Owens
 Lisa Owens-Viani
 Elizabeth Palmer
 Ron Parker
 Jean Perata
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 John Perry
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 Bob Power
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Peter Sapienza
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 Robert Sexton
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 Paulette Sherry
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 Brian Smucker
 David Snipper
 Molly Snow
 Curtis Snyder
 Tate Snyder
 Tim Stoddard

Nick Whelan
 Jeffrey Wilkinson
 Step Wilson
 David Wimpfheimer
 Bright Winn
 Jeff Wilcox
 Kathy Wolf
 Elizabeth Wommack
 Pat Wong
 David Wood
 Jim Yampolsky
 Adrian Ye
 Laura Young
 Lynn Zhang

H A W K W A T C H

RAPTOR-SIGHTINGS IN THE MARIN HEADLANDS DURING AUTUMN

	2013 Season*		Past 10-Year Average (2002-2012)**	
	Sightings	(Hawks/Hour)	Sightings	(Hawks/Hour)
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.

Although the peak of the 2013 Hawkwatch season was clipped by the federal shutdown, we still had a fantastic season on Hawk Hill. We did miss 16 days (October 1-16) of counting at the height of the migration season, out of 112 potential days for the full autumn. Put in terms of hours, we counted for 422 hours in 2013, compared to an average of 491 hours per season over the last decade.

In spite of the loss of some high-quality count hours, four species – Bald Eagle, Prairie Falcon, Rough-legged, and Red-shouldered Hawks – showed remarkably high counts in 2013. Three species showed dips – Osprey, Sharp-shinned, and Broad-winged Hawks – although the two latter hawks in particular usually show their peak numbers during the October shutdown, so the meaning of the dips is fuzzy. We pioneered a new practice in the Hawkwatch training this year – field-mentoring. What better way to learn to identify raptors than to be on Hawk Hill next to an expert mentor? Thirteen experienced teachers took extra days to offer one-on-one real-life ID training, and launched a new tradition for us.

- Allen Fish

D A Y L E A D E R S

TIM BEHR • LEWIS COOPER • DENNIS DAVISON • ALLEN FISH • JOSHUA HAIMAN
 ERIC JEPSEN • DAVID JESUS • MARY KENNEY • HORACIO MENA • KIM MEYER
 BRIAN O'LAUGHLIN • BOB POWER • JAMES RAIVES • LAURY ROSENTHAL

B A N D I N G

RAPTORS BANDED IN THE MARIN HEADLANDS DURING AUTUMN

	2013* (Aug 14, 2013-Jan 3, 2014)	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.

The 2013 banding season started at a reasonable pace, slowed down, sputtered, and then roared back to life with a great finish. The slow-down happened during the traditional banding peak in mid- and late-September. There were relatively few accipiters around when there is often a good flow. As the hawk numbers seemed to pick up in the Headlands, the government shutdown kept us away from the migration. Upon our return in mid-October there were still hawks around. Red-tailed Hawks were caught in good numbers late in the season, and helped salvage our 2013 season with the fifth highest total in GGRO history for the species. This led to us managing to hit 1,097 raptors banded in 2013, just over half of the 2012 season total. Of note, we trapped 36 adult RTHAs (8% of total trapped compared to an average of 4% in the previous five years), 25 of which were second-year birds.

Despite relatively low numbers of hawks trapped, raptor diversity was impressive in 2013. Notable birds included two Broad-winged Hawks, two Prairie Falcons, and one Rough-legged Hawk—all juveniles. The Rough-legged Hawk was only the sixth in program history, and was a rufous morph juvenile male. We also continued the streak of adult female Northern Harriers, catching two this year. Fourteen apprentice banders continued to refine their skills in 2013 and became productive members in the blind. We also managed to pass five new siteleaders in 2013. A fantastic and dedicated group of volunteers made this a great year despite the obstacles of some slow days and government bureaucracy.

- Chris Briggs

D A Y L E A D E R S

ANNE ARDILLO • MIKE ARMER • MARC BLUMBERG • RANDY BREAUX

NANCY BRINK • RUSS DELONG • CLAIRE GALLAGHER • BUZZ HULL • JOSH HULL

DAVID JESUS • MAMIKO KAWAGUCHI • JOHN KEANE • CRAIG NIKITAS • BETH WOMMACK

R E S E A R C H

Research is a critical aspect of GGRO's mission to inspire the preservation of California raptor populations. It allows us to better understand the problems and challenges these raptors may face, and how to start to address them. In 2013, we started a number of research projects designed to increase our understanding of the movements and ecology of raptors moving through the Marin Headlands. All of these projects will take years to gather enough data to analyze, and may continue in the long-term.

The first project was to give Cooper's and Red-tailed Hawks individually marked color bands in addition to the federally issued metal bands we always use. Each color band has an alphanumeric code, a letter over two numbers, repeated twice around the band. Our goal is to increase the number of sightings of marked raptors trapped in the Headlands to provide us with more information on their movements. We anticipate running this project for 2 years as a pilot to see what the encounter rates are relative to standard metal bands. This year we put out 80 lavender bands on Red-tailed Hawks and 65 green bands on Cooper's Hawks. To date, we have reports of three juvenile Red-tailed Hawks. The first was reported at a golf course near Half Moon Bay, the second in the east bay hills hunting from power lines, and the third was reported twice, over two months apart, on opposite sides of San Francisco. We hope these will be the first of many resightings and that these data will provide us with a greater understanding of the survival and movements of these birds.

Another project started this year was collecting blood samples to look for anticoagulant rodenticide (AR) presence. There is a growing awareness of the problems that ARs may be causing for many wildlife species. These pesticides may be especially problematic for predators like birds of prey due to bioaccumulation. While some organizations have begun looking at ARs in dead and injured wildlife, there is little data on their prevalence in wild populations. Thanks to special funding from the Parks Conservancy, we were able to get blood samples from 20 Red-tailed Hawks analyzed. We discovered that five (25%) of the samples contained at least trace amounts of ARs in the bloodstream. There was no overt sign from these exposed individuals that there were negative effects of these poisons. However, these results are preliminary and greater sampling and testing in the upcoming seasons will provide a lot more information about this important area of raptor conservation.

Finally, after thousands of hours of work by volunteers, interns, and staff, the results of our Robolure experiment were published in the Wildlife Society Bulletin (Hull et al. 2013. Development and testing of a mechanical lure for raptor trapping. WSB 37: 872-876). We hope this paper will help show the research issues and limitations of using Robolure to trap raptors. In addition, GGRO staff gave five scientific presentations in 2013, and volunteer Phil Capitolo presented a poster on our Broad-winged Hawk telemetry studies at the 2013 Wildlife Society conference.

In all, 2013 was an exciting launch year for several new projects and partnerships. Stay tuned over the coming years to see the results of these endeavors.

- Chris Briggs



G S M T R A C K I N G

RAPTORS FITTED WITH GSM TRANSMITTERS IN 2013

Bird Name	Species/Age/Sex	Deployed	Last Received	General movements
Fargo	Red-tailed Hawk Juvenile	8/26/2013	10/20/2013	Stayed in San Francisco; recovered by Animal Control and died en route to Humane Society.
Guess (where I am)	Red-tailed Hawk Juvenile	8/30/2013	9/13/2013	Flew north to the Napa area and then south to Martinez.
Harley	Red-tailed Hawk Juvenile	9/12/2013	9/16/2013	Flew nearly 200 miles north in three days, last reporting north-east of Redding.
Iliana	Red-tailed Hawk Juvenile	9/13/2013	9/16/2013	Flew to the East Bay and then south to Sierra Azul Open Space Preserve.
Juanita	Red-tailed Hawk Juvenile	12/4/2013	Currently active	Flew south and continues to report from a neighborhood in Menlo Park.
Kenya	Red-tailed Hawk Adult	12/12/2013	Currently active	Flew north to Point Reyes and continues to report near the intersection of Sir Francis Drake Blvd. and Pierce Point Rd.

In our second season of tracking with GSM (Global System for Mobile communications) transmitters, GGRO deployed six more devices, all on female Red-tailed Hawks. Of those six units, two (Harley and Ilianna) only reported locations for three days before going offline, and a third (Guess) only reported locations for two weeks.

From the day of her release, Fargo's device reported continually. Fargo spent four days in the Marin Headlands before crossing the bay into San Francisco. For the next two months, she spent her time in various parks, most frequently the Presidio, Golden Gate Park, the Garden for the Environment, and the areas around Candlestick Park. On October 20, Fargo was recovered by Animal Control in San Francisco, who reported a wing injury. Sadly, she died en route to the Peninsula Humane Society. A necropsy was conducted at UC Davis, revealing rodenticides as the cause of her death. This adds to the mounting evidence that rodenticides are an increasingly dire problem for raptor populations.

Late in the season, two more devices were deployed. Juanita headed south and her device has been reporting from the same neighborhood in Menlo Park for two weeks and counting. Similarly, Kenya (the first second-year bird we have outfitted with a transmitter) headed north and has been reporting from the same area in Point Reyes National Seashore for more than two weeks.

Two of our GSM birds from 2012 continued to report into the summer of 2013. In February, Augusta began reporting regularly out of a small park in the Palo Alto Orchards. Her unit stopped working at the end of June, but in October, someone reported seeing a Red-tailed Hawk with a "backpack" near that same park, so we assume that she was still feasting on squirrels in Palo Alto this fall. Additionally, Delilah's device came back online after months of silence. Our most traveled GSM-bird, Delilah flew all the way up to Walla Walla, Washington in mid-June before returning south. Her last report came just east of Bend, Oregon, on July 6, 2013.

Volunteers interested in reading more about these transmitters, and seeing the reported locations of the six 2013 GSM-birds, as well as Augusta and Delilah, can view the map at <http://www.parksconservancy.org/gsm-tracking>. This map will continue to be updated as data points for Juanita, Kenya, and any of the others are received.

- Danny Pirtle

O U T R E A C H

The 2013 migration season saw many memorable outreach moments, some on Hawk Hill, some away. One of my luckiest was finding a Great Horned Owl in a city park while visiting Prospect Sierra School in El Cerrito, and getting to share the owl with 42 beaming second graders! I also fondly recall giving the very last GGRO docent program of the season. It was a freezing October afternoon, the hill was completely fogged out, and I was bundled up so tightly that I could barely move. I was shivering and my teeth were chattering while I spoke. What was amazing was how many visitors showed up for the HawkTalk despite the weather, laughed through my presentation (either with me or at me), and waited long afterward for the chance of a banding demonstration.

It's moments like these that make environmental teaching most rewarding, and inspire me to share my curiosity and passion for the GGRO with other people. I love seeing someone's eyes light up when an eagle flies overhead, or when they learn that Hawk Hill – so close to home for many visitors – is one of the best places to see migrating raptors in the entire western United States.

Many of us remember certain formative experiences that triggered our love for the outdoors and the natural world. I trace mine back to spending time in the tide-pools and canyons near my house in San Diego. I like to think that Hawk Hill might be that significant outdoor experience for some of our visitors. I hope that seeing an Osprey fly by on its way to Chile, or a banded Cooper's Hawk released back to the wild, might spark some new passion in a few people every year.

Many schools and community groups participated in GGRO programs on and off Hawk Hill this year: Aim High, GGNRA Science Symposium, Headlands Center for the Arts, Head-Royce School, NPS International Migratory Bird Day, Marin County Parks Department, Marin Horizon School, Mill Valley Community Church, Napa Wildlife Rescue, NatureBridge, NPS Communicating Science Symposium, Pepperwood Reserve, Point Reyes Birding Festival, Prospect Sierra School, Raptorama (Coastside Land Trust), Santa Clara Valley Audubon, Sonoma State University, the William Kent Society, and YMCA Point Bonita.

Great thanks to our colleagues Craig Nikitas (GGRO), Francis Taroc (Crissy Field Center), and Brian Westlund (NatureBridge) for co-leading a teacher training for GGRO Docents in August.

- Lynn Zhang



D O C E N T S

RANDY BREAUX • CHRIS BRIGGS • TOM DELEBO • ALLEN FISH
CRAIG NIKITAS • DANNY PIRTLE • BILL PROCHNOW • SIOBHAN RUCK
SARAH SAWTELLE • DENISE VILLA • NICK VILLA • LYNN ZHANG

D O N O R S

Cheryl Abel	Dix & Marilyn Boring	Michael & Pamela Dayton	Kathleen Gadway
Jillian Alexander	Heather Borman	Tom Delebo	Jennifer Gale
Robert Allen	Gleneda Borton	Frank DeMarco	Leo Gaspardone
George Almeida	Anthony Brake	Janine DeMartini	Mary Gerber
Leslie Andrews	Geraldine Brown	Karen DeMello	D.D. Gianni
Caryn & Joe Ansel	Johnny Brown	Licia DeMeo	Grant Gladman
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Evelyn Baron	Rich Cimino	Richard Engle	Mike Hall
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Reginald & Katherine Barrett	George Coles	Janeann Erickson	Mary Ellen Hannibal
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Katherine Baylor	Katherine Compagno	Ron Felzer	Diane Hart
Linda Becker	Kay & Tom Conneely	Mark Fenn	George Hartzell
Catherine Bell	Gerald & Kathleen Connell	Richard Ferris	Hugh Harvey
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Sandra Berggren	Lewis Cooper	Virginia Fifield	Bennett Heasman
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D O N O R S

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Penn Hughes	Chris Macintosh	Steven O'Donnell	Dede Sabbag
Karen Humphrey	David & Lynne Madison	Brian O'Laughlin	Ahmad Sadr
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Marcine Johnson	JoAnn McAllister	Kathy Odell	Susan Sandler
Cyril Juanitas	Maureen McCormick	Rebecca Olsen & Ken Wilson	Peter Sapienza
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Susan Kelly	Peter McGuire	Dana Owens	Birgit Schilling
Nancy Kittle	Tara McIntire	Gary Palmer	Norma Schmid
Krista Klein	Ewen McKechnie	Diane Parish	Marilyn Schmitz
Ann Kositsky	Linda McLaughlin	Ron & Ruth Parker	Donald Schmoldt
Allison Kozak	John & Leslie McQuown	Katherine Pattison	Linda Schneider
Cheryl Kraywinkel	Terry & Lois Mead	Ruth Ann Pennell	Samuel Schuchat & Ilana DeBare
Julia Kringel	Jack Meadow	Ralph Pericoli	Paul Schutzman
Zeka Kuspa	Kathryn Meermans	Roy Pisetsky	Anita Scuri
Corinne Lambden	Horacio & Mona Mena	Allan Plumb	Terry Scussel
Lori Lambertson	Amy Meyer	Carol Poole	David Sexton
Joan Lamphier	Ivan & Maris Meyerson	Marsha Porte	James Shea
Barbara Lancaster	Steve Miller	Bob Power	Debra Love Shearwater
Owen Leibman	Edith Mitchell	Norma Powrie	Martin Sidor
Mardi Leland	Sue Morgan	David & Cay Pratt	Janice Sinclair
Lamar Leland	Nancy Mori	Caryl Carr & David Presotto	Surinderjit Singh
Winifred Lennihan	Denise Mortorff	Bill Prochnow	Kate Skelly & Tim Stoddard
Robert Lennihan	Alida Morzenti	William & Karin Rabin	Sandra Slichter
Janet Leonard	Thomas Moutoux	John Rathkey	Ronald Smith
Patricia Lessard	Heidi Munzinger	Donald Reinberg	David Snipper
Peter Leveque	Suzanne Murphy	Gail Richardson	Molly Snow
Allison Levin	Mark Mushkat	Eileen Richey	Sharon Solomon
Pam Lewis	Jean Myers	H. Allan & Helen Ridley	Hai-Thom Sota
Penny Lewis	Miki Nakanishi	Marci Riseman	Sheila Sousa
Marie Lipman	Clyde Nance	Duane & Barbara Robinson	Patricia Spencer
Kirsten Liske	Soo-Hi & Alan Nayer	Jeff Robinson	Margaret Stanley
David Loeb	Jennifer Nazzal	Douglas Rose	Philip Steiner
Carolyn & John Longstreth	Gregg & Sharon Niceley	Elizabeth Rouan	Joan Stewart

D O N O R S

Ann Stone	Edwin Williams & Joan Halverson	Pamela Dayton	J&S Robinson Family Revocable Trust
Hal Sugishita	Howard Williams	Tom Delebo	Steve Rock
Meryl Sundove	Katie Winslow	Russ DeLong	Genevieve Rozhon
Mark Sutherland	Richard Winslow	Janine DeMartini	Ann Ruffer
Wayne Swaney & Crissey Mills	Kathy & George Wolf	Anastasia Ennis	Peter Sapienza
Kirk Swenson	Carolyn Wood	Janeann Erickson	David Sexton
Michelle & Eric Tattersall	Bob Zeiss	Natalee Ernstrom	James Shea
Craig Tewell	ORGANIZATIONS:	Val Fairman	David Snipper
Susan Thomas	Adobe Systems Inc.	Tom Felts	Tate Snyder
Storm Thomas	Audubon Canyon Ranch	George & Patsy Fish	Polly Strahan
Nancy Thomas	BlackRock, Inc.	Robert Fivis	Craig & Elise Tewell
Sally Thomas	Head-Royce School	Kathleen Gadway	John Ungar
Bruce Thompson	Marin Horizon School	Claire Gallagher	Doug Vaughan & Doris Kretschmer
Cynthia Thomssen	Prospect Sierra School	Derek Girman	Noreen Weeden & Eddie Bartley
James Todd	Santa Clara Valley Audubon Society	Alane Gray	Marion Weeks & Stephen Blossom
John Ungar		Keith Gress	
John Upton	DAP FUND:	Mary Ellen Hannibal	Dave Wells
Raini Vallarino	Caryn & Joe Ansel	Melissa Hero	Vicki Wilhite
Richard Vanderlugt	Anne Ardillo	Calvin Hom	Kathy Wolf
Jullie Vasquez	Mike & Jenn Armer	Sam Hontalas	Elizabeth Wommack
Nick & Denise Villa	Kendra Armer	Dick & Diane Horn	
Jerry Vitenson	Diane Bahr	J. Pearce Hurley	GSM TRACKING FUND:
Wendy Warrington	William Barnaby	Heather Ishak	Valerie Briggs
Penelope Watson	Ardith Betts	Marcine Johnson	Allan Peoples
Mary & Roman Watt	Robert & Marion Blumberg	Mamiko Kawaguchi	
Noreen Weeden & Eddie Bartley	Marc Blumberg	Beth Kean & Raleigh MacLemore	IN MEMORY OF MELBA BOLLA:
Marion Weeks & Stephen Blossom	John W. Boyd Trust	Joanna Klima	Jean Perata & Dennis Davison
Carol Weinstein	Nancy Brink	Joan Lamphier	
Jill Weinstein	Johnny Brown	Dian Langlois	IN MEMORY OF RUTH DUDEN & ERNIE SCOFFONE:
S. Paul Welles	Davida Bushner	Patricia Lessard	Jean Perata & Dennis Davison
Dave Wells	Michael Butler	John & Carolyn Longstreth	
Richard & Virginia Welsh	Rich Cimino	Lynn MacDonald	IN HONOR OF JULIA CAMP MOORE'S MARRIAGE:
Gretchen Whisenand	Terry Coddington	Nancy Mori	Julius & Edith Bradley
Thomas White	Kay & Tom Conneely	Thomas Moutoux	
Peter White	Gerald Connell	Rebecca Olsen	
M.K. Whyte	Megan Cook	Steve O'Neill	
David Wiechers	Lewis Cooper	Gary Palmer	
Vicki Wilhite	Dennis Davison	Ron & Ruth Parker	
		Jean Perata	
		Ralph Pericoli	

NUMBER OF RAPTORS BANDED 1983-2013, MARIN HEADLANDS*

	1983-2006	2007	2008	2009	2010	2011	2012	2013**	Total
Northern Harrier	228	15	5	8	1	2	16	10	285
Sharp-shinned Hawk	7,435	583	646	558	362	494	731	173	10,982
Cooper's Hawk	9,479	1,048	504	451	524	444	762	390	13,602
Northern Goshawk	4	1	0	0	0	0	0	0	5
Red-shouldered Hawk	249	24	17	13	2	15	42	21	383
Broad-winged Hawk	20	0	0	2	0	0	9	3	34
Swainson's Hawk	6	2	0	0	1	0	1	0	10
Red-tailed Hawk	7,038	452	280	226	115	187	349	434	9,081
Ferruginous Hawk	2	0	0	0	0	0	0	0	2
Rough-legged Hawk	4	1	0	0	0	0	0	1	6
Golden Eagle	2	0	0	0	0	0	0	0	2
American Kestrel	906	59	38	73	82	56	81	37	1,332
Merlin	330	51	27	62	52	60	36	24	642
Peregrine Falcon	57	5	10	3	2	3	7	2	89
Prairie Falcon	28	1	3	3	1	2	2	2	42
Eurasian Kestrel	0	1	0	0	0	0	0	0	1
Total	25,788	2,243	1,530	1,399	1,142	1,263	2,036	1,097	36,498

* Data compiled by Chris Briggs. 2013 data are through January 3, 2014.

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

NUMBER OF RAPTOR-SIGHTINGS 2003-2013, MARIN HEADLANDS*

	2003	2004	2005	2006	2007	2008	2009	2011	2012	2013**
Hours	500	530	456	492	524	508	497	439	442	422
Turkey Vulture	10,804	10,133	7,877	9,211	9,228	7,529	8,060	6,447	6,622	5,471
Osprey	134	124	110	108	90	88	81	57	62	43
White-tailed Kite	63	201	66	130	71	74	93	74	129	54
Bald Eagle	4	3	6	2	2	6	10	9	8	11
Northern Harrier	352	957	460	1,090	1,002	454	614	335	523	358
Sharp-shinned Hawk	5,171	3,257	4,407	5,244	4,636	4,091	3,332	2,622	3,149	1,374
Cooper's Hawk	2,022	2,454	2,427	3,367	3,717	1,956	1,738	1,805	2,695	1,276
Northern Goshawk	1	0	1	0	4	2	1	0	0	1
Red-shouldered Hawk	289	548	149	612	512	559	529	248	604	458
Broad-winged Hawk	123	42	146	183	70	131	180	202	755	64
Swainson's Hawk	8	5	4	7	12	1	1	13	11	5
Red-tailed Hawk	6,994	13,094	7,277	11,410	11,869	6,860	8,297	7,529	8,603	8,118
Ferruginous Hawk	14	31	33	25	13	15	11	18	31	18
Rough-legged Hawk	1	0	4	21	10	4	2	0	19	8
Golden Eagle	14	21	13	24	38	18	11	9	13	16
American Kestrel	690	547	627	611	378	377	458	358	396	389
Merlin	175	173	198	230	140	184	149	166	180	103
Peregrine Falcon	229	229	219	235	181	224	259	264	246	144
Prairie Falcon	3	9	5	8	4	7	9	2	8	8
Unidentified	1,232	1,474	1,440	1,438	1,381	905	991	1,011	1,084	589
Total	28,324***	33,302	25,469	33,956	33,368	23,485***	24,826	21,169	25,138	18,508
Raptor Activity (raptors per hour)	56.6	62.8	56.0	68.9	63.7	46.2	49.9	48.2	56.9	43.9

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

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

*** Includes 1 Mississippi Kite.

Golden Gate Raptor Observatory

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GGRO Season Summary 2013

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*The Golden Gate Raptor Observatory is
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