

Golden Gate Raptor Observatory

Season Summary 2012



VOLUNTEERS • HAWKWATCH • BANDING
TELEMETRY • CTT TRACKING • OUTREACH • DONORS



Veteran radiotracker Phil Capitolo re-finds the beep from Marathon, the juvenile Broad-winged Hawk that sprinted from the Marin Headlands to Mexico in just four days. (Illustration by Heather von Bodungen)

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 300 community volunteers and a small staff.

GGRO Season Summary 2012 written by Chris Briggs, Allen Fish, Kate Howard, and Buzz Hull

Cover illustration by Siobhan Ruck; other illustrations by Heather von Bodungen

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Cover Illustration: Broad-winged Hawks were the undeniable stars of the 2012 season with more than 750 sightings for the season, nine banded, and two radio-tracked. This portrait by Siobhan Ruck shows the subtle malar stripe and light eyebrow typical of juveniles. Until the mid-1970's, Broadwings were thought to be an accidental species in California; they are now known as a regular and predictable migrant at the Golden Gate.

G G R O S T A F F

ALLEN FISH, GGRO DIRECTOR • BUZZ HULL, RESEARCH DIRECTOR

JILL HARLEY, PROJECT COORDINATOR • CHRIS BRIGGS, BANDING PROGRAM MANAGER

2012 INTERNS: REGAN DOHM • KATE HOWARD • SARAH SAWTELLE • HEATHER VON BODUNGEN

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

On September 27th, 2012, fog filled the valleys and skies of the Marin Headlands for the fifth straight day. As usual, GGRO banders went up to the blinds. The hawkwatch team went up to Hawk Hill betting that the fog would burn off soon. I met up with Bob Power at Ft. Cronkhite to consider alternate locations for a long-scheduled Western Field Ornithologists' trip to Hawk Hill. Since it was peak migration time, we all knew: when the fog does clear, there's going to be a great flight.

Just before 11 am, banders radioed to say the fog was receding. Bob and I jumped in a car and drove to Hawk Hill. As we reached Conzelman Road, we both sat bolt upright, staring straight ahead. Right over Kirby Cove was a strangely tight flock of small buteos, twenty, maybe twenty-five, in all. They were Broad-winged Hawks, turning circles and rising quickly on a thermal. I'd never seen more than about ten Broadwings in one flock here; we'd never had more than 40 in a day.

Bob and I took the right up Conzelman Road, parked on the south flank of Hawk Hill, and stepped from the car face-to-face with yet another flock, this one west of Kirby Cove. Hawks from the first flock were pouring into this one like cars on an overpass. I radioed up to Fran McDermott on Hawk Hill with her hawkwatch team: "Are you seeing this?!" "Yes! We have Broadwing kettles in every quadrant! Talk to you later."

Hawkwatchers reported nearly 800 Broad-winged Hawk sightings over that next week. Banders banded six. Telemetrists tracked two Broadwings, including one that reached Mexico in just four days. In all, it was a magnificent, unpredictable event that gave us great food for thought about migration dynamics. But perhaps the greatest lesson was that — even after 30 years — change can be just around the corner. As it turned out, 2012 was a year of transitions for the GGRO.

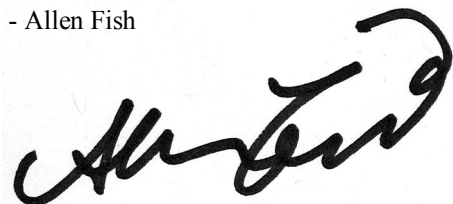
In 2012, we started our first satellite-tracking studies at GGRO, using a new technique based on cell phone technology and brought to us by our new Banding Program Manager, Chris Briggs. Parks Conservancy staff worked hard in September to help us set up web-based maps that would allow the public to track the tagged hawks in nearly real-time, a new opportunity to share the discovery of learning where a hawk flies each day.

Last year, Buzz Hull announced that he would retire in early 2013, having been a volunteer bander since 1984, and the GGRO's Research Director since 1991. In 1984, NPS biologist Judd Howell told Buzz and a small group of volunteers that the success of this new banding program would rest squarely on their shoulders. Twenty-nine years, 85 scientific contributions, and 35,000 banded raptors later, I think it would be fair to say that the class of 1984 was successful. And I don't think anybody would dispute that it was Buzz Hull's leadership — and his passion for raptors — that kept us moving forward.

Along with wishing a great family-filled and raptor-rich retirement to Buzz Hull, I also want to acknowledge the thirty years of service of volunteer bander and GGRO leader Russ DeLong. Russ was, and continues to be, a raptor-trapper and banding-teacher of great skill and the creator of many of the GGRO's best traditions.

And finally, this three-decade legacy of raptor monitoring, research and conservation would not be possible without the three-way partnership of the Golden Gate National Parks Conservancy, the National Park Service, and our incredible volunteer team. Thanks to all of our Park colleagues and more than 300 citizen scientists for supporting and advancing our goal of tracking California's magnificent bird of prey populations.

- Allen Fish



V O L U N T E E R S

Sam Abercrombie	Shannon Burke	Anastasia Ennis	David Herrema
Amanda Ailand	Michael Butler	Janeann Erickson	Cheri Hinkley
Rob Allen	Phil Capitulo	Laura Erickson	Nathaniel Hoffman
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Anne Ardillo	Caryl Carr	Richard Ferris	Ryan Holmes
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Kendra Armer	Linda Chambers	Amy Fillin	Calvin Hom
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Ray Arpon	Richard Cimino	Allen Fish	Jennifer Hopkirk
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Lynn Bantley	Tom Conneely	Jen Gale	Heather Hoyles
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Bill Barnaby	Lewis Cooper	Jim Garlock	Josh Hull
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Carroll Botvinick	J. D. Durst	Joey Hall	Walter Kitundu
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Herb Brandt	Wade Eakle	Mary Ellen Hannibal	Rina Kor
Randy Breaux	Maggie Edwards	Michael Harkins	Ann Kositsky
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Jim Broadstreet	Nathan Elliott	JJ Harris	Zeka Kuspa
Johnny Brown	Teresa Ely	Michele Harrison	Jason Laffer
Ralph Burgert	Robert Engel	Melissa Hero	Corinne Lambden

V O L U N T E E R S

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Dian Langlois	Dan Novello	David Sexton	Jill Weinstein
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Susan Lew	Rebecca Olsen	Kate Skelly	Nick Whelan
Salli Lundgren	Michelle Oltman	Robyn Smith	Peter White
Lynn MacDonald	Claire O'Neil	Brian Smucker	Vicki Wilhite
Jean Magistrale	Steve O'Neill	David Snipper	Jeffrey Wilkinson
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Wendy McConachie	Ron Parker	Skye Standish	David Wood
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Mikiye Nakanishi	Laury Rosenthal	Nick Villa	
Jennifer Nazzal	Libby Rouan	Heather von Bodungen	
Richard Neidhart	Siobhan Ruck	Jacqueline Wall	
Gayle Newman	Dede Sabbag	Caroline Wallace	
Angela Newsham	Andrea Salgues	Erika Walther	
Kristen Newsham	Peter Sapienza	Noreen Weeden	
Chris Nikitas	Juta Savage	Marion Weeks	

H A W K W A T C H

RAPTOR-SIGHTINGS IN THE MARIN HEADLANDS DURING AUTUMN

	2012 Season		Past 10-Year Average (2001-2011)	
	Sightings	(Hawks/Hour)	Sightings	(Hawks/Hour)
	<i>Hours</i>	<i>442</i>		<i>491</i>
Turkey Vulture	6622	14.98	8865	18.06
Osprey	62	0.14	97	0.20
White-tailed Kite	129	0.29	94	0.19
Bald Eagle	8	0.02	5	0.01
Northern Harrier	523	1.18	728	1.48
Sharp-shinned Hawk	3149	7.12	4197	8.55
Cooper's Hawk	2695	6.10	2407	4.90
Northern Goshawk	0	0.00	1	0.00
Red-shouldered Hawk	604	1.37	461	0.94
Broad-winged Hawk	755	1.71	135	0.27
Swainson's Hawk	11	0.02	6	0.01
Red-tailed Hawk	8603	19.46	9386	19.12
Ferruginous Hawk	31	0.07	21	0.04
Rough-legged Hawk	19	0.04	6	0.01
Golden Eagle	13	0.03	19	0.04
American Kestrel	396	0.90	529	1.08
Merlin	180	0.41	148	0.36
Peregrine Falcon	246	0.56	208	0.42
Prairie Falcon	8	0.02	6	0.01
Unidentified	1084	2.45	1236	2.52
Total	25,138	56.87	28,587	57.72

The 2012 GGRO hawk count started on August 20th and ran through December 9th, encompassing 442 total hours. Rain or fog stole 23 of 112 possible count days. The peak day was September 27th, when we tallied 822 raptor-sightings, or just over 200 raptors per hour. Peak species diversity was on October 9th when 15 diurnal raptor species flew by including five buteos and four falcons.

Nearly 300 of those 822 above were Broad-winged Hawk sightings – qualifying as the largest Broadwing flight ever recorded west of the Rocky Mountains. This Broadwing pulse continued for six days, with daily counts of Broadwing sightings (starting September 27th): 295, none due to fog, 134, 103, 31, and 34. While we have no way to precisely quantify the actual numbers of Broadwings that passed over the Marin Headlands over these big days, we did see approximately 125 Broad-winged Hawks at one time in the skies surrounding Hawk Hill at noon on September 27th. Thanks to 164 volunteer hawkwatchers and 14 energetic dayleaders for their hard work this extraordinary season.

- Allen Fish

D A Y L E A D E R S

TIM BEHR • LEWIS COOPER • DENNIS DAVISON • ALLEN FISH • JOSHUA HAIMAN

JULIAN HYDE • DAVID JESUS • MARY KENNEY • FRAN McDERMOTT

HORACIO MENA • KIM MEYER • BOB POWER • JAMES RAIVES • LAURY ROSENTHAL

B A N D I N G

RAPTORS BANDED IN THE MARIN HEADLANDS DURING AUTUMN

	2012 (Aug 8, 2012-Jan 4, 2013)	Annual Average 1992-2011*	Totals 1983-2012
Northern Harrier	16	10	275
Sharp-shinned Hawk	731	478	10,809
Cooper's Hawk	762	559	13,212
Northern Goshawk	0	0	5
Red-shouldered Hawk	42	14	362
Broad-winged Hawk	9	1	31
Swainson's Hawk	1	0	10
Red-tailed Hawk	349	315	8,647
Ferruginous Hawk	0	0	2
Rough-legged Hawk	0	0	5
Golden Eagle	0	0	2
American Kestrel	81	55	1,295
Merlin	36	29	618
Peregrine Falcon	7	4	87
Prairie Falcon	2	2	40
Eurasian Kestrel	0	0	1
Total	2,036	1,468	35,401

*1992-2011 are used for this comparison due to similarity of methods and effort between those years and 2012.

The 2012 banding season held many surprises for all the banders, old hands and apprentices alike. Broad-winged Hawks were the undisputed stars of the season as they appeared and were trapped in unprecedented numbers for our West Coast monitoring site. The four Broadwings banded on September 27th set a new GGRO single-day banding record for this species, and the season total of nine Broadwings banded is also a new GGRO record.

We also banded our 10th Swainson's Hawk, and trapped the first Swainson's with a foreign band (non-GGRO). This second bird was banded as a nestling on July 6, 2012 in Siskiyou County, California.

Red-shouldered Hawks also treated the banders to a record-breaking season at 42 banded. Although the overall number of Northern Harriers was not spectacular, we banded more adult males (3) and females (2) of the species than we had banded in any previous season. This increased our total adult male harriers from four to seven and adult females from two to four.

Our season total for all species (2,036) is the third highest number we've banded in 30 years of banding.

I would like to thank all the banders for their skill and diligence in making this an extraordinary season. We had an outstanding apprentice class in 2012, with 22 apprentices enjoying this exceptional year and most of them progressing in the development of their banding skills.

- Buzz Hull

D A Y L E A D E R S

ANNE ARDILLO • MIKE ARMER • EDDIE BARTLEY • MARC BLUMBERG • RANDY BREAUX
NANCY BRINK • RUSS DELONG • CLAIRE GALLAGHER • BUZZ HULL • JOSH HULL
DAVID JESUS • MAMIKO KAWAGUCHI • JOHN KEANE • CRAIG NIKITAS • BETH WOMMACK

T E L E M E T R Y

RAPTORS RADIOTRACKED IN 2012

Name	Species	Tracking Season	Net Direction	Last Known Location	Net Distance from Headlands
Marathon	Broad-winged Hawk	9/17-9/21	Southeast	Mexican Border (near Laguna Mountain)	515 miles
Lakota	Broad-winged Hawk	9/29-10/4	East	Angel Island, CA	5 miles
Echo	Red-tailed Hawk	11/27-12/24	North-Northeast	Bodega, CA	44 miles

Eighteen years ago, the GGRO Radiotelemetry team was the first to radiotrack a Broad-winged Hawk. “Zoe” took an amazing trip from the Marin Headlands to the Mexican border in an astounding 4 days. This year, we were fortunate enough to have our radiotelemetry team ready to go when we caught another Broad-winged Hawk, which we dubbed “Marathon”. On September 17, the bird was outfitted with a transmitter and sent on its way. After spending a night in the Headlands, Marathon took off southward the following morning, and telemetrists tracked it along a remarkably similar route as Zoe. Four days later, Marathon crossed the Mexican border, just as Zoe had done in 1994.

It turned out to be a big year for Broadwings in the Marin Headlands, and the telemetrists were able to radiotrack a second one. “Lakota” was caught on September 29, spent a night in the Headlands, and then moved over to Angel Island. For a few days on Angel Island, the signal appeared to be stationary so a team decided to attempt to find Lakota. We took a ferry over in the morning and picked up the signal on the island after a short walk. The signal led us straight to Lakota, who had died and was found intact on the ground. Necropsy reports from UC Davis informed us that the cause of death appeared to be a puncture wound on the back that pierced a lung.

In addition to the unplanned Broadwings, the teams went through with their original plan to track a late-season Red-tail to add to our dataset from the past few seasons. On November 27, a juvenile male Red-tailed Hawk was caught and named “Echo.” He spent a single night near the Headlands, then headed to Stafford Lake Park in Novato. From there Echo moved to Bodega where he stayed put through a small storm system for three days. The telemetrists ceased radiotracking him due to volunteers’ schedules. One telemetrist checked just before Christmas and found Echo in the same place.

All in all, it was an excellent season. We learned quite a bit, and are now waiting with bated breath for next year and hopefully more Broadwings!

- Kate Howard

T E L E M E T R Y L E A D E R S

LARRY BEARD • MAXINE BERG • PHIL CAPITOLO • LORRI GONG

BILL JAMES • LYNN JESUS • CHERYL KRAYWINKEL • JAMES RAIVES

LIBBY ROUAN • LINDA VALLEE • BARB WESTREE

CTT TRACKING

RAPTORS FITTED WITH CTT TRANSMITTERS IN 2012

Bird Name	Species	Deployed	Last Received	General movements
Augusta	Red-tailed Hawk	8/25/2012	11/22/2012	Flew to areas south and west of Stanford, preened in solar unit.
Big Bird	Red-tailed Hawk	10/25/2012	10/28/2012	Flew north to NE of Clear Lake, most likely out of cell range.
Claire	Red-tailed Hawk	11/16/2012	11/27/2012	Flew to Sebastopol and then back to the east bay. Unit went offline for unknown reasons.
Delilah	Red-tailed Hawk	11/21/2012	11/30/2012	Flew to Alameda, down to Fremont and back up to Richmond. Unit failed.
Evelyn	Peregrine Falcon	11/24/2012	11/27/2012	Flew north to Santa Rosa. Unit went offline for unknown reasons.

In 2012, the GGRO began experimenting with a different way to track hawks – GSM transmitters or more recently called CTTs (Cellular Transmitter Terminal). GGRO purchased two transmitters and later received a generous donation for an additional 3 transmitters. The transmitters are put onto the hawk like a backpack and essentially text us the bird's location as determined by a GPS unit. A solar cell charges the transmitter, giving it the potential to last a long time. However, the units generally can only provide us with up to four GPS locations per day, unlike VHF transmitters that provide continuous location information over radio waves until the transmitter runs out of battery (provided the radio receiver is monitored and close enough to receive the signal).

Volunteers and anyone interested in the project can follow the movements of these birds on an interactive map online (www.parksconservancy.org/gsm-tracking). We were able to place units on four juvenile Red-tailed Hawks and one juvenile Peregrine Falcon (summarized in the table above).

While we have started gathering interesting data on the movements of these individuals, the new technology has had some setbacks. It seems that our fluffy buteos can preen feathers over their transmitters, blocking solar panels and not allowing units to recharge. Our other problem has been one shared by many early adopters of new technology – namely the technology has a high failure rate. However, our data have already helped improve the technology and we will be using upgraded transmitters in 2013.

- Chris Briggs

GGRO's new Banding Program Manager Chris Briggs, readies Augusta for release. Augusta is a juvenile Red-tailed Hawk, our first CTT bird, carrying a GPS locator combined with cell phone technology. (Illustration by Heather von Bodungen)



O U T R E A C H

Now in its 22nd year, the GGRO Docent Program served up more than forty raptor classes, banding demos, and ID talks on top of Hawk Hill during the 2012 migration season. Huge thanks to the volunteer docents listed below, whose professionalism and personalities are only exceeded by their love of raptors. Among the raptor-avid groups who joined us on Hawk Hill: Lafayette Elementary School, Marin Horizons School, Head-Royce School, Prospect-Sierra School, Environmental Forum of Marin, Santa Clara Valley Audubon Society, NatureBridge, Western Field Ornithologists, Aim High, and Marin County Open Space.

Our staff gave many off-site GGRO talks this year to a variety of both scientific and community groups: Friends of San Pedro Park, National Wildlife Federation, California Academy of Sciences, North American Ornithological Conference, Wildlife Society, California-Nevada Eagle Symposium, Audubon Canyon Ranch, Point Reyes Bird & Nature Festival, World Wildlife Fund, Sonoma State University, NPS Science Symposium, Society for Conservation Biology, Oakland's Closer-to-Home Nature Lecture Series, the Redwoods Retirement Home, Santa Rosa Bird Rescue Center, and the Downtown High School Wilderness Arts & Literary Cooperative.

The GGRO occasionally has the privilege of sponsoring raptor conservation lectures by other researchers, which in the past have featured such bird of prey luminaries as Doug Bell, Bill Clark, Bud Anderson, David Mindell, David Sibley, Hans Peeters, and the late Brian Walton. I was delighted this year to continue this tradition, featuring the Vice President of the International Ornithologists' Union, my long-time colleague, Dr. Lucia Liu Severinghaus. Though based in Taiwan, Dr. Severinghaus has sponsored and advised on bird research throughout Asia. She visited San Francisco to speak about the Orchid Island Scops Owl, a small island owl that she has studied for more than a quarter-century.

- Allen Fish



Volunteer bander Tara McIntire slips up to Hawk Hill for a few hours of hawkwatching in the east quadrant. (Illustration by Heather von Bodungen)

D O C E N T S

SAM ABERCROMBIE • EDDIE BARTLEY • RANDY BREAUX • SHANNON BURKE
TOM DELEBO • REGAN DOHM • MIKE HARKINS • KATE HOWARD • MEGAN MAYO
CHRIS NIKITAS • CRAIG NIKITAS • BILL PROCHNOW • JAMES RAIVES
SIOBHAN RUCK • SARAH SAWTELLE • HEATHER VON BUDUNGEN • NOREEN WEEDEN

D O N O R S

Cheryl Abel	Anthony Brake	Tom Delebo	Lorri Gong
Robert Allen	Johnny Brown	Russ DeLong	Cindy Goral
George Almeida	Phyllis Browning	Janine DeMartini	Alane Gray
Leslie Andrews	Lorraine Bruno	Thomas Derrer	Dorothy Gregor
Anonymous	Shannon Burke	Clarence Donahoe	Earl Gress
Caryn & Joe Ansel	Davida Bushner	Joyce Downing	Keith Gress
Anne Ardillo & John Urbach	Michael Butler	David Driggs	John Griffin
Marilyn Armbruster	Richard Camp	Barbara Duncan	Mary Haack
Kendra Armer	Hugh & Pearl Campion	John Durst	Jerry Hadfield
Mike & Jenn Armer	Lynn Carew	Steve Dykes	Mike Hall
Loretta Armstrong	Chris & Gary Cariño	Peter Ehrlich	Lora Haller
Marylou Avanzino	Sharon Carrillo	Holly Eliot	Mary Ellen Hannibal
Paul Babwin	John Caulfield	Teresa Ely	Michael Harkins
Diane Bahr	Sally Cedarblade	Robert Engel	John Harris
Chloe Banks	Rich Cimino	Richard Engle	Judy Harris
William Barnaby	Terry & Zeo Coddington	Anastasia Ennis	Diane Hart
Evelyn Baron	George Coles	Marian Erdelyi	George Hartzell
Anna Barr	John Collins	Janeann Erickson	Hugh Harvey
Juliana Barr	Ron Colwell	Natalee Ernstrom	Kathleen Hazelton-Leech
Reginald Barrett	Huguette Combs	Val Fairman	Bennett Heasman
Don & Mai-Liis Bartling	Katherine Compagno	Tom Felts & Robin Mitchell	Annelisa Hedgecock
Guy Baty	Kay & Tom Conneely	Jeanne Fidler	Frederick Heitkamp
Anne Baxter	Gerald & Kathleen Connell	Virginia Fifield	Melissa Hero
Katherine Baylor	Lewis Cooper	Amy Fillin	David Herrema
Linda Becker	Marilyn Cooper	George & Patsy Fish	Ann Heurlin
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Heather Borman	Dennis Davison & Jean Perata	Derek Girman	J. Pearce Hurley
Gleneda Borton	Michael & Pamela Dayton	Grant Gladman	John Irwin
		Morey Goldstein	Cheryl Ishida

D O N O R S

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Benjamin Kaplan	Peter McGuire	Allan Peoples	Samuel Schuchat
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Susan Kelly	Ewen McKechnie	Roy Pisetsky	Anita Scuri
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Krista Klein	Terry Mead	Carol Poole	David Sexton
Ann Kositsky	Jack Meadow	Marsha Porte	James Shea
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Peter Leveque	Jean Myers	Elizabeth Rouan	Polly Strahan
Allison Levin	Clyde Nance	Genevieve Rozhon	Mark Sutherland
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Kirsten Liske	Gregg Niceley	Maggie Rufo	Michelle Tattersall
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Carolyn & John Longstreth	Jill North	Ahmad Sadr	Storm Thomas
Salli Lundgren	John Odell	Andrea Salgues	Susan Thomas
Lynn MacDonald	Kathy Odell	Serena Salomon	Bruce Thompson
Chris Macintosh	Steven O'Donnell	Ivan Samuels	Cynthia Thomssen
David Madison	Rebecca Olsen & Ken Wilson	Susan Sandler	James Todd
Jean Magistrale	Douglas Overman	Peter Sapienza	John Ungar
Ron Mallory	Gary Palmer	Charles Savage	Raini Vallarino
Ronald Maykel	Diane Parish	Michael Savino	Richard Vanderlugt
JoAnn McAllister		Rolf Scherman	

D O N O R S

Nick & Denise Villa
 Jerry Vitenson
 Wendy Warrington
 Penelope Watson
 Mary Watt
 Noreen Weeden
 Marion Weeks &
 Steve Blossom
 Carol Weinstein
 S. Paul Welles
 Dave Wells
 Richard Welsh
 Gretchen Whisenand
 Peter White
 Thomas White
 M.K. Whyte
 David Wiechers
 Vicki Wilhite
 Edwin Williams
 Kathleen Winslow
 Kathy & George
 Wolf
 Bob Zeiss

ORGANIZATIONS:

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 Audubon Canyon
 Ranch
 GMAC Commercial
 Mortgage
 Head-Royce School
 PG&E
 Prospect Sierra
 School

DAP FUND:

Caryn Ansel
 Anne Ardillo
 Kendra Armer
 Mike Armer
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Peter Sapienza

David Sexton

James Shea

David Snipper

Polly Strahan

Craig & Elise Tewell

John Ungar

Marion Weeks

Dave Wells

Vicki Wilhite

Kathy Wolf

NUMBER OF RAPTORS BANDED 1983-2012, MARIN HEADLANDS*

	1983-2005	2006	2007	2008	2009	2010	2011	2012	Total
Northern Harrier	208	20	15	5	8	1	2	16	275
Sharp-shinned Hawk	6,668	767	583	646	558	362	494	731	10,809
Cooper's Hawk	8,650	829	1,048	504	451	524	444	762	13,212
Northern Goshawk	4	0	1	0	0	0	0	0	5
Red-shouldered Hawk	222	27	24	17	13	2	15	42	362
Broad-winged Hawk	17	3	0	0	2	0	0	9	31
Swainson's Hawk	3	3	2	0	0	1	0	1	10
Red-tailed Hawk	6,657	381	452	280	226	115	187	349	8,647
Ferruginous Hawk	2	0	0	0	0	0	0	0	2
Rough-legged Hawk	3	1	1	0	0	0	0	0	5
Golden Eagle	2	0	0	0	0	0	0	0	2
American Kestrel	816	90	59	38	73	82	56	81	1,295
Merlin	273	57	51	27	62	52	60	36	618
Peregrine Falcon	54	3	5	10	3	2	3	7	87
Prairie Falcon	27	1	1	3	3	1	2	2	40
Eurasian Kestrel	0	0	1	0	0	0	0	0	1
Total	23,606	2,182	2,243	1,530**	1,399	1,142	1,263	2,036	35,401

* Data compiled by Buzz Hull. 2012 data are through January 4, 2013.

NUMBER OF RAPTOR-SIGHTINGS 2002-2012, MARIN HEADLANDS*

	2002	2003	2004	2005	2006	2007	2008	2009*	2011	2012
Hours	524	500	530	456	492	524	508	497	439	491
Turkey Vulture	11,059	10,804	10,133	7,877	9,211	9,228	7,529	8,060	6,447	6,622
Osprey	106	134	124	110	108	90	88	81	57	62
White-tailed Kite	79	63	201	66	130	71	74	93	74	129
Bald Eagle	4	4	3	6	2	2	6	10	9	8
Northern Harrier	1,318	352	957	460	1,090	1,002	454	614	335	523
Sharp-shinned Hawk	5,847	5,171	3,257	4,407	5,244	4,636	4,091	3,332	2,622	3,149
Cooper's Hawk	2,765	2,022	2,454	2,427	3,367	3,717	1,956	1,738	1,805	2,695
Northern Goshawk	0	1	0	1	0	4	2	1	0	0
Red-shouldered Hawk	677	289	548	149	612	512	559	529	248	604
Broad-winged Hawk	180	123	42	146	183	70	131	180	202	755
Swainson's Hawk	9	8	5	4	7	12	1	1	13	11
Red-tailed Hawk	12,175	6,994	13,094	7,277	11,410	11,869	6,860	8,297	7,529	8,603
Ferruginous Hawk	34	14	31	33	25	13	15	11	18	31
Rough-legged Hawk	12	1	0	4	21	10	4	2	0	19
Golden Eagle	21	14	21	13	24	38	18	11	9	13
American Kestrel	666	690	547	627	611	378	377	458	358	396
Merlin	212	175	173	198	230	140	184	149	166	180
Peregrine Falcon	106	229	229	219	235	181	224	259	264	246
Prairie Falcon	12	3	9	5	8	4	7	9	2	8
Unidentified	1,358	1,232	1,474	1,440	1,438	1,381	905	991	1,011	1,084
Total	36,640	28,324**	33,302	25,469	33,956	33,368	23,485**	24,826	21,169	25,138
Raptor Activity (raptors per hour)	69.9	56.6	62.8	56.0	68.9	63.7	46.2	49.9	48.2	56.9

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

** Includes 1 Mississippi Kite.

Golden Gate Raptor Observatory

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GGRO Season Summary 2012

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*The Golden Gate Raptor Observatory is
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