

GOLDEN GATE RAPTOR OBSERVATORY

Season Summary 2025

HAWKWATCH • BANDING • COMMUNITY SCIENCE • RESEARCH

Golden Gate Raptor Observatory

ABOUT

The [Golden Gate Raptor Observatory](#) (GGRO) is a program of the [Golden Gate National Parks Conservancy](#) in cooperation with the [National Park Service](#) and is made up of 150 community volunteers and a small staff. The GGRO's mission is the preservation of California raptors through scientific research, outreach, and community involvement. Each year, we study and monitor the Pacific Raptor Flyway from the Marin Headlands, part of the Golden Gate National Recreation Area.

The GGRO Season Summary offers preliminary data and observations from the 2025 fall raptor migration at the Marin Headlands as well as updates on our programs and research.

We offer deep gratitude to the Gregory Hind Endowment Fund for critical support, and to the hundreds of people who donated in 2025.

SEASON SUMMARY 2025

Compiled and edited by Lisette Arellano, Michela Gentile, and Mellice Hackett. Text by Carmen DeLeon, Rose Fielding, Gale Steck, and Eric Jepsen. Data compiled by Lisette Arellano, Carmen DeLeon, Rose Fielding, Gale Steck, and Eric Jepsen.

If you would like to use GGRO data, please email ggro@parksconservancy.org.

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Cover illustration by Siobhan Ruck. Inspired by Jeff Robinson's photo of a juvenile Swainson's Hawk banded September 2025.

SUPPORT

Golden Gate National Parks Conservancy

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Eric Jepsen, Consultant, Kleinfelder

National Park Service, Golden Gate National Recreation Area

Bill Merkle, Wildlife Ecologist and GGRO Advisor

Alison Forrestel, Division Chief, Natural and Cultural Resources

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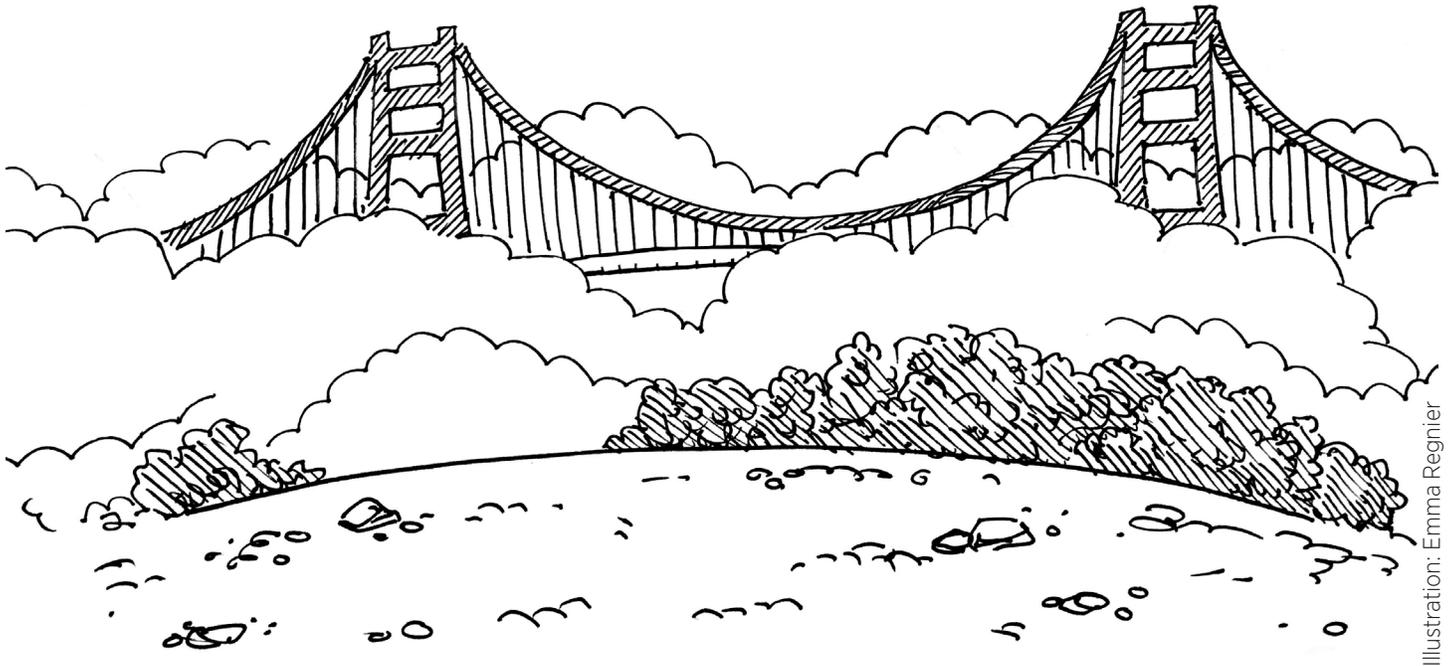


Illustration: Emma Regnier

Introduction

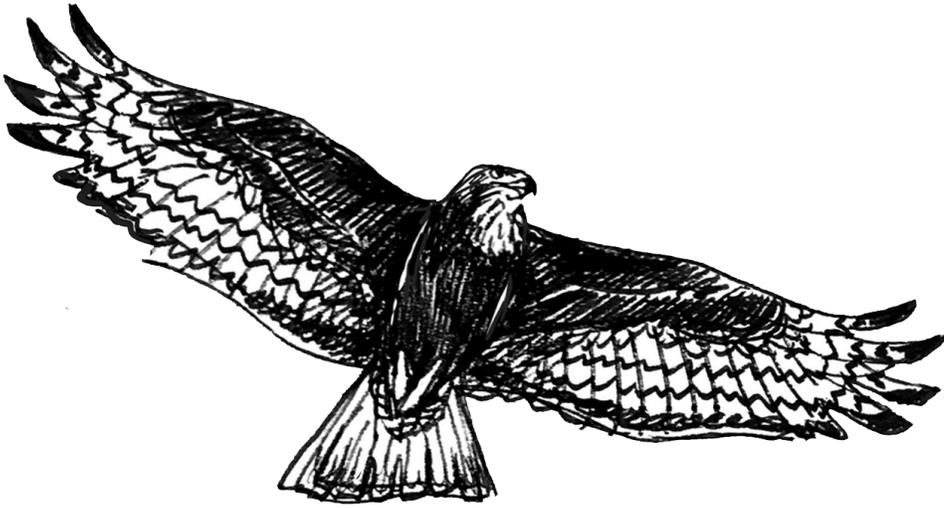
The 2025 fall migration was bookended by thick fog followed by icy wind. Between the less-than-desirable weather, we endured a six-week lapse in federal appropriations which paused all data collection, plus other administrative hurdles that delayed the start of our banding season. Through it all, our determination to document the annual raptor migration stayed strong. Thanks to the unfailing dedication of our volunteers, we collected important data despite the shortened season. Our 2025 dataset can still be used to compare similar timeframes in our long-running GGRO data collection.

Both hawkwatchers and banders had rewarding days in the field this fall. Eye-level Rough-legged Hawks over the hill, the incredible spectacle of Broad-winged Hawks flooding the skies, an up-close-and-personal Peregrine Falcon in the banding blinds, and the beautiful array of Red-tailed Hawk color morphs we were privileged to see throughout the season—these highlights reminded us how lucky we are to witness this migration.

We'll keep our fingers and talons crossed for an uninterrupted 2026 season, and look forward to working again alongside the incredible people and birds that inspire this program.

Rose Fielding

Program Manager, Hawkwatch
Conservation and Community Science Department
Golden Gate National Parks Conservancy



Harlan's red-tailed Hawk illustration: Emma Regnier

Hawkwatch

Hawkwatch counted 184.18 hours this season, from August 11-September 30 and November 17-30. The shortened hours on the hill still provided us the opportunity to see 16 of the area's 19 possible raptor species, leaving only Prairie Falcon, American Goshawk, and Swainson's Hawk unchecked on our official count list.

We counted 6,741 raptors, giving us an average rate of 35.13 raptors per hour. The top four most-sighted species remained Red-tailed Hawk, Turkey Vulture, Sharp-shinned Hawk, and Cooper's Hawk, with Broad-winged Hawk and American Kestrel following closely behind.

In addition, the [Hawk Hill Visitor Improvement Project](#) was completed this fall, showcasing native plantings, newly paved paths, informational signs, and benches. Although construction meant that visitors couldn't access the hill until November, we happily welcomed the public back to a more accessible Hawk Hill for the final weeks of migration. - *Rose Fielding*

DAY LEADERS

Jon Altemus, Jan Ambrosini, Don Bartling, Andy Bradshaw, Lydia Bruno, Courtney Buechert, Deborah Crooks, John Davis, Catherine Elliot, Michaela Figari, Keith Gress, Melissa Hero, Sam Hontalas, Mary Kenney, Mary Malec, Horacio Mena, Jennifer Miller, Brian O'Laughlin, Libby Rouan, Linda Schneider, Holly Thomas, Woody Woodbury, Nick Yatsko, Gretchen Zantzinger

Hawkwatch

RAPTORS SIGHTED BY THE GGRO MARIN HEADLANDS, CALIFORNIA, 2025

	Count 2025 (sightings)	Average Count 2011-2023* (sightings)	Migration Rate 2025 (sightings/hour)	Average Rate 2011-2023* (sightings/hour)	% Change in Rate**
Turkey Vulture	1690	6948	9.18	15.47	-6.3
Osprey	38	65	0.21	0.14	0.06
White-tailed Kite	1	51	0.01	0.11	-0.11
Bald Eagle	5	14	0.03	0.03	0
Northern Harrier	92	473	0.50	1.05	-0.55
Sharp-shinned Hawk	559	3132	3.04	6.98	-3.94
Cooper's Hawk	412	2123	2.24	4.73	-2.49
American Goshawk	0	<1	0	<0.01	n/a
Red-shouldered Hawk	64	353	0.35	0.79	-0.44
Broad-winged Hawk	324	356	1.76	0.79	0.97
Swainson's Hawk	0	8	0	0.02	-0.02
Red-tailed Hawk	2690	7935	14.61	17.67	-3.07
Ferruginous Hawk	2	28	0.01	0.06	-0.05
Rough-legged Hawk	2	5	0.01	0.01	0
Golden Eagle	2	14	0.01	0.03	-0.02
American Kestrel	209	286	1.13	0.64	0.50
Merlin	35	181	0.19	0.40	-0.21
Peregrine Falcon	46	229	0.25	0.51	-0.26
Prairie Falcon	0	4	0	0.01	-0.01
Unidentified	300	911	1.63	2.03	-0.40
TOTAL	6471	23,117	35.13	51.49	-16.35
Hours Counted	184.18	449			

Data prepared by Lisette Arellano, Carmen DeLeon, Rose Fielding, and Gale Steck. If you would like to use these data, please email ggro@parksconservancy.org.

*The average count excludes survey years 2013, 2020, 2021, and 2024 due to large gaps in these data.

**Change in migration rate from the 2011-2023 average to 2025. The 2025 season was truncated to August 11-September 30 and November 17-30 due to a lapse in federal appropriations. Numbers are significantly lower due to the shortened season.

Banding

The 2025 banding season met with delays and interruptions which greatly shortened our time in the blinds. In addition to the lapse in federal appropriations, we adjusted and rose to the challenge of staffing the program and securing permits. We're grateful to our volunteers who persevered through another difficult season, and for the behind-the-scenes work it took to make this season happen.

We were able to band August 20-September 30 and November 17-December 4. We banded 413 raptors and did our best to collect standard morphometric measurements from each bird. These data have been added to the database, and we'll look forward to the small percentage of band recoveries that will trickle in over the next few years—a few more bricks in the edifice of information collected on raptors of the Pacific Flyway. - *Eric Jepsen*

RAPTORS BANDED BY THE GGRO MARIN HEADLANDS, CALIFORNIA, 2025

Species	Average*	2025**
Turkey Vulture	2	0
Northern Harrier	6	1
Sharp-shinned Hawk	302	116
Cooper's Hawk	406	137
American Goshawk	0	0
Red-shouldered Hawk	14	3
Broad-winged Hawk	2	2
Swainson's Hawk	0	1
Red-tailed Hawk	192	130
Ferruginous Hawk	0	0
Rough-legged Hawk	0	0
American Kestrel	19	16
Merlin	23	6
Peregrine Falcon	5	1
Prairie Falcon	1	0
Total Banded	972	413

DAY LEADERS

Anne Ardillo, Jenn Armer, Mike Armer, Eddie Bartley, Marc Blumberg, Nancy Brink, Carmen DeLeon, Diane Horn, Elisha Hull, Eric Jepsen, John Keane, Eric Lynch, Robert Martin, Mark McCaustland, Nancy Mori, Jean Perata, Jeff Robinson, Traci Tsukida, Noreen Weeden

Data prepared by Carmen DeLeon, Gale Steck, Eric Jepsen, Alison Gee, and Calvin Hom. If you would like to use these data, please email ggro@parksconservancy.org.

*In 2021, the GGRO banding program switched from using four blinds to three, so the average for 2013-2023 include only data from these three blinds.

**The 2025 season was truncated to August 20-September 30 and November 17-December 4 due to a lapse in federal appropriations. Numbers are significantly lower due to the shortened season.

Research

Advances in DNA analysis have allowed new inquiry into raptors' prey preferences, and the GGRO has supported several such studies in recent years (see our [publications page](#) for links). This season, we supported the work of doctoral candidate and GGRO volunteer Mary Badger, who is leading a new study on prey use specifically during migration.

We collected approximately 370 non-invasive eDNA swab samples from the culmens of migrating raptors. The genetic analyses, led by Mary Badger, will identify vertebrate prey species consumed shortly before capture, allowing diets to be compared across species moving through a high-density migration bottleneck in the Pacific Flyway. These data will be used to examine dietary overlap and partitioning among co-occurring raptor species and to better understand how prey use is structured during migration, a critical but poorly understood phase of the raptor annual cycle. - *Mary Badger*

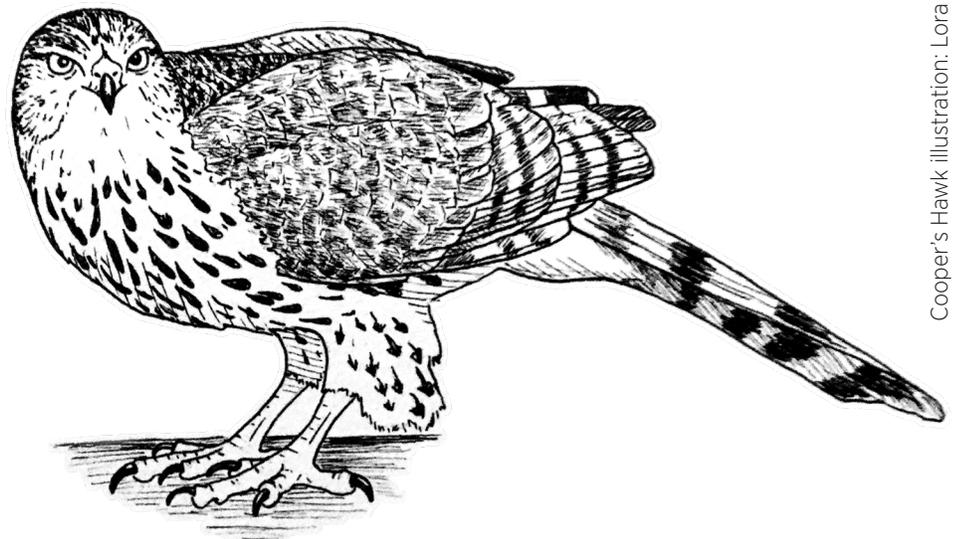
PUBLICATIONS

Briggs, C. W., Zellar, E. J., Fish, A. M., & Ely, T. E. (2025). Relationship between red-tailed hawk polymorphism and ectoparasite load. *Journal of Raptor Research*, 59(4). <https://doi.org/10.3356/jrr2494>

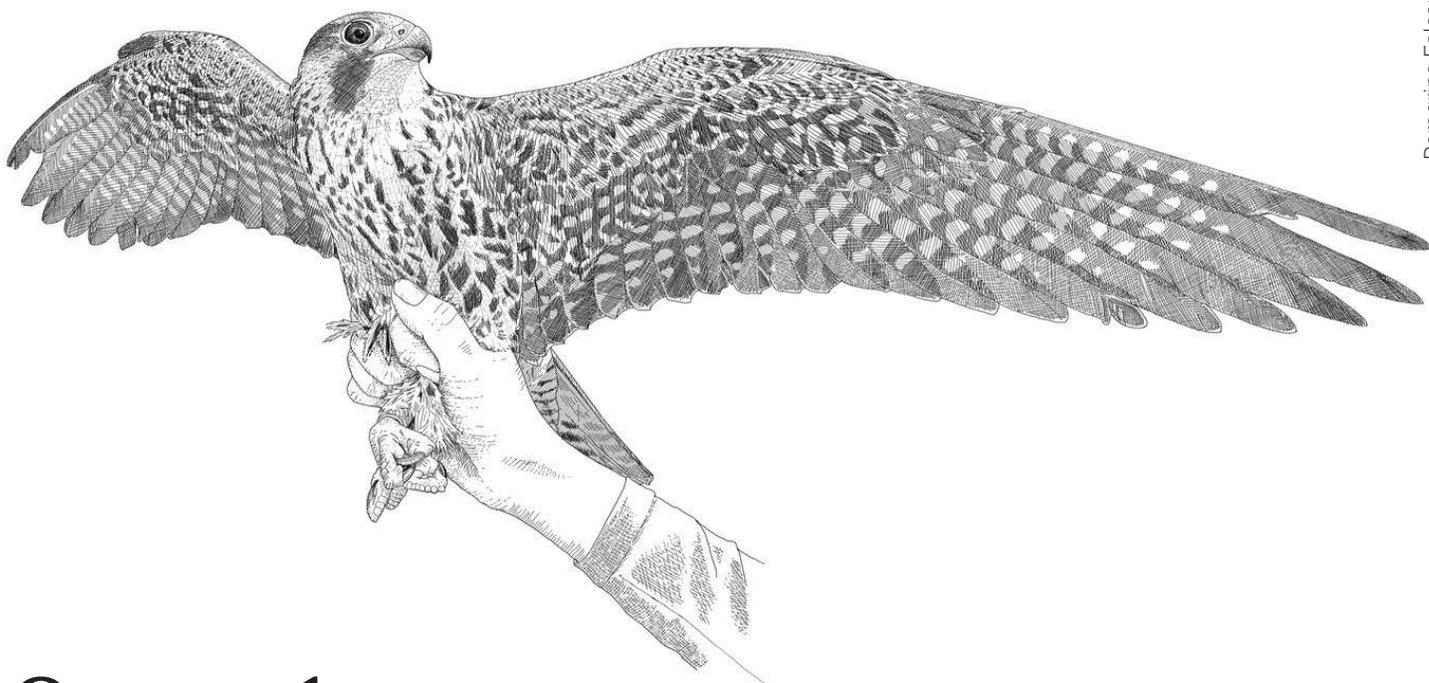
Ely, T. E., Bourbour, R. P., Dudek, B. M., Fish, A. M., Hull, A. C., Martinico, B. L., Skalos, S. M., Souza, L. E., & Briggs, C. W. (2025). Rings and Pings: band encounters and motus elucidate the overwintering locations and movements of Sharp-Shinned Hawks in Western North America. *Journal of Raptor Research*, 60(1). <https://doi.org/10.3356/jrr2523>

Fielding, K. R. (2025). Pacific Flyway Report, Golden Gate Raptor Observatory, California. *Hawk Migration Studies*, 51(1). <https://view.publitas.com/hmana-1/volume-51-no-1-hawk-migration-studies/page/32-33>

Lynch, E. (2025). Shifts in Autumn Raptor Migration Phenology on the Pacific Coast Flyway [Masters thesis, Sonoma State University]. <http://hdl.handle.net/20.500.12680/1257b3132>



Cooper's Hawk illustration: Lora Roame



Outreach

The GGRO team typically welcomes thousands of visitors to Hawk Hill during migration season. Due to the Hawk Hill Visitor Improvement Project, only staff and enrolled Hawkwatch volunteers were permitted in the count area during construction. Coupled with the lapse in federal appropriations, this meant most of our in-person outreach squad was in hibernation for the autumn, so this season was all about opportunity and patience until November.

GGRO outreach online included the [Daily Hawk Count Blog](#) and one news feature. Folks at home and watching the skies from neighboring viewpoints followed along with 65 blog posts chronicling Hawkwatch adventures through fog, peak season, and memorable bird sightings. NBC Bay Area featured a [sneak peek at Hawk Hill behind the construction fence](#) September 29, which spotlighted Hawkwatch and garnered over 5,000 views on YouTube. Claire Mooney, the Parks Conservancy's Vice President, Park Projects and Conservation, and Alison Forrestel, NPS Division Chief, Natural and Cultural Resources, shared more about the improved paths, concrete seating areas, and extensive restoration to make the hill more accessible to the public. Hawkwatch Program Manager Rose Fielding brought viewers along for data collection explaining the daily experiences of counting raptors, observing attributes, and communicating with the quadrants. Other outlets followed, including [KTVU](#), [Marin Independent Journal](#), [San Francisco Chronicle](#), and [SF Gate](#).

After 15 years of extensive work to increase accessibility and improve habitat, the Hawk Hill Visitor Improvement Project was ready to welcome visitors in November. The Parks Conservancy's Community Science and Community Engagement Teams leapt at the chance to get in one in-person outreach day, welcoming 214 visitors to the world of raptor migration science. - *Carmen DeLeon*

Volunteers

The GGRO does not exist without its volunteers. Whether navigating the challenges presented by the government shutdown, handling a three-tier lock process to reach Hawk Hill during construction, or relying on our long-term community's vast institutional knowledge of daily operations, in 2025 GGRO volunteers showed an unmatched resilience and commitment to community science. We are so grateful to the volunteers who made this season a success.

Jon Altemus	Yuching Desch	Vivian Lowe	Steve Rock
Jan Ambrosini	Joan Duffield	Tom Luster	Paul Romanak
Anne Ardillo	Rich Eliason	Eric Lynch	Elizabeth Rouan
Jennifer Armer	Catherine Elliott	Yvette MacDonald	Siobhan Ruck
Kendra Armer	Michaela Figari	Jenna Magee	Jane Rudebusch
Michael Armer	Erin Fisher-Colton	Mary Malec	Abbie Sanger
Stefanie Arthur	Dan Foldes	Robert Martin	Lisa Sargent
Mary Badger	Annalise Fox	Breanna Martinico	Sarah Sawtelle
Lynn Bantley	Megan Fradley-Smith	Cindy McCauley	Linda Schneider
Eddie Bartley	Ashley Friscia	Mark McCaustland	Jack Schofield
Don Bartling	Sadie Fullarton	Marcia Medrano	Nathan Smale
Marc Blumberg	Lief Gallagher	Horacio Mena	Heller Stanton
Ryan Bourbour	Annette Gardner	Jennifer Miller	Doug Stimpson
Andy Bradshaw	Carole Garrett	Rachel Miller	Tim Stroshane
Chris Briggs	Alison Gee	Maggie Montenegro	Natalie Tan-Torres
Nancy Brink	Amy Gilgan	Nancy Mori	Christina Tarr
Lydia Bruno	Maureen Grabowski	Paula Moser	Holly Thomas
Courtney Buechert	Keith Gress	Kimberlie Moutoux	Laura Thomas
Ryan Byrnes	Melissa Hero	Michelle Muir	Traci Tsukida
Lauren Calhoon	Kimberly Hettler-Coleman	Wing Ng	Joanna van Dyk
Cristobal Castañeda	Calvin Hom	Brian O'Laughlin	Michael Voeltz
Linda Chambers	Sam Hontalas	Kristin Olson	Kristin Vorhies
Oliver Chesley	Diane Horn	Sarah Parnell	Noreen Weeden
Conner Cimmeyotti	Elisha Hull	Sean Parnell	Kate Wegleitner
Laura Coatney	Katie Jacobson	Rome Patterson	Jeff Wilcox
Patricia Contaxis	Chelsea Johnson	Denise Peck	Sam Wong
Patrick Coughlin	Joshua Kay	Ma'ayan Pe'er	Woody Woodbury
Alexandra Cox	John Keane	Jean Perata	Ashley Wright
Deborah Crooks	Mary Kenney	Jeanette Pettibone	Jim Yampolsky
Chris Cruz	Dan Knight	Sue Pilipauskas	Nick Yatsko
Candace Davenport	Melissa Kohner	Cricket Raspet	Pauline Yeckley
John Davis	Rina Kor	Sonja Raub	Gretchen Zantinger
Dennis Davison	Rachel Lawrence	Lora Roame	
Sarah Demirhan	Cody Levin	Jeff Robinson	

RAPTOR SIGHTINGS 2014-2025

Marin Headlands, California

	2014	2015	2016	2017	2018	2019	2022	2023	2024	2025
Turkey Vulture	8433	9692	5998	7063	6694	7340	5974	5216	4669	1690
Osprey	79	83	67	63	67	58	41	69	44	38
White-tailed Kite	73	36	20	61	42	31	14	21	24	1
Bald Eagle	9	8	8	17	14	19	20	25	16	5
Northern Harrier	394	442	354	905	600	807	191	175	258	92
Sharp-shinned Hawk	3539	4652	4138	3107	3389	2021	1905	2794	1142	559
Cooper's Hawk	2169	3106	1998	2198	1914	2629	891	1821	938	412
American Goshawk	0	2	0	0	3	0	0	0	0	0
Red-shouldered Hawk	578	574	265	220	362	280	189	208	150	64
Broad-winged Hawk	310	344	289	286	295	110	558	410	390	324
Swainson's Hawk	10	6	5	13	5	4	8	4	5	0
Red-tailed Hawk	7559	10,017	5676	9132	9230	8248	6195	7160	5420	2690
Ferruginous Hawk	19	73	48	20	29	17	11	15	15	2
Rough-legged Hawk	1	1	4	1	8	8	1	2	0	2
Golden Eagle	32	18	13	16	14	13	8	5	8	2
American Kestrel	380	297	229	268	349	286	115	178	412	209
Merlin	183	257	178	252	182	156	87	173	77	35
Peregrine Falcon	279	225	199	252	205	196	209	215	122	46
Prairie Falcon	7	6	2	5	2	0	4	5	3	0
Unidentified	1159	1381	862	906	909	784	424	589	458	300
Total Sightings	25,213	31,220	20,353	24,785	24,323	23,007	16,845	19,085	14,151	6471
Hours	488	540	443	474	408	443	411	393	365	184.18
Raptors Per Hour	51.7	57.8	41.2	52.3	59.7	51.9	41.0	48.6	38.8	35.13

Data prepared by Lisette Arellano, Carmen DeLeon, Rose Fielding, and Gale Steck. Due to the impacts of regional and world events, GGRO annual data trends should not be assessed without specific knowledge and consultation with GGRO staff. If you would like to use these data, please contact us: ggro@parksconservancy.org.

RAPTORS BANDED 1983-2025

Marin Headlands, California

	1983-2016	2017	2018	2019	2021	2022	2023	2024	2025*	Total**
Turkey Vulture***	n/a	5	5	2	0	0	2	0	0	19
Northern Harrier	314	3	6	10	6	1	1	0	1	342
Sharp-shinned Hawk	12,331	330	413	181	184	238	318	0	116	14,111
Cooper's Hawk	15,228	496	468	596	283	197	379	18	137	17,802
American Goshawk	6	0	1	0	0	0	0	0	0	7
Red-shouldered Hawk	450	3	12	15	22	12	4	1	3	522
Broad-winged Hawk	40	1	5	0	1	1	0	0	2	50
Swainson's Hawk	10	1	0	0	0	0	0	0	1	12
Red-tailed Hawk	9769	213	342	226	195	127	140	40	130	11,182
Ferruginous Hawk	2	1	0	0	1	0	0	0	0	4
Rough-legged Hawk	6	0	0	0	1	0	0	0	0	7
American Kestrel	1436	21	26	10	7	10	3	11	16	1540
Merlin	759	37	21	23	16	8	12	0	6	882
Peregrine Falcon	101	11	5	7	5	7	2	0	1	139
Prairie Falcon	48	1	1	0	1	0	0	0	0	51
Total Banded	40,500	1123	1305	1070	722	601	861	70	413	46,670

Data prepared by Carmen DeLeon, Gale Steck, Eric Jepsen, Alison Gee, and Calvin Horn. Due to the impacts of regional and world events, GGRO annual data trends should not be assessed without specific knowledge and consultation with GGRO staff. If you would like to use these data, please contact us: ggro@parksconservancy.org.

*The 2025 season was truncated to August 20-September 30 and November 17-December 4 due to a lapse in federal appropriations. Numbers are significantly lower due to the shortened season.

**Numbers have not been adjusted for changes in banding season start and end dates, daily start and end times, nor for reductions in number of blinds operated.

***The 2020 banding season was suspended due to the COVID-19 pandemic. However, five Turkey Vultures were tagged in 2020 in accordance with standard methods.

Golden Gate Raptor Observatory

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