



Riparian Landbird Monitoring in Golden Gate National Recreation Area and Point Reyes National Seashore

Progress Report for 2016-2017

Natural Resource Data Series NPS/SFAN/NRDS—2020/1254



ON THE COVER

Dark-eyed Junco being processed at the Palomarin Field Station
Photograph by: Mark Dettling

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All manuscripts in the series receive the appropriate level of peer review to ensure that the information is scientifically credible, technically accurate, appropriately written for the intended audience, and designed and published in a professional manner.

This report received informal review by subject-matter experts who were not directly involved in the collection, analysis, or reporting of the data. Data in this report were collected and summarized using methods based on established, peer-reviewed protocols and were analyzed and interpreted within the guidelines of the protocols.

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Executive Summary

This document contains a brief progress report for landbird monitoring conducted in 2016-2017 in riparian habitat found in Point Reyes National Seashore and Golden Gate National Recreation Area as part of the National Park Service's Inventory and Monitoring Project, and following protocols established for this purpose in these two parks (Gardali et al. 2010, updated in 2019). The Analysis and Synthesis reports that are produced every six years (e.g., Humple and Porzig 2014) include in-depth analyses and discussion that are not the purview of this progress report; that report will be produced after the 2018 riparian landbird monitoring season in Pinnacles National Park (Humple et al. 2017) and in combination with results from that park.

Monitoring was conducted by Point Blue Conservation Science (hereafter Point Blue; formerly PRBO Conservation Science) at 15 study sites within the parks using one or both of two methods, point counts and constant-effort mist netting. We report on point count surveys that were conducted during the peak landbird breeding season (May-June) of 2017, and mist netting that was conducted from 13 August 2016 to 14 August 2017 (367 instead of 365 days based on other variables that influence the transition timing between "summer" and "fall" banding seasons). Monitoring at this entire suite of sites takes place every three years, with monitoring occurring at a subset of sites (point counting at some sites, and mist netting at all sites where that occurs) annually (Gardali et al. 2020). Of the 114 bird species detected, 29 were California Partners in Flight Focal Species (CalPIF 2000, CalPIF 2002a, CalPIF 2002b, CalPIF 2004, CalPIF 2009, RHJV 2004), and four of those were also California Bird Species of Special Concern (Shuford and Gardali 2008). Site narratives were updated to reflect changes in vegetation and other environmental factors. Two important changes in the protocol that occurred were that one point count transect (Coast Camp) and one mist-netting station (Lagunitas Creek) were discontinued during this period due to access issues or major changes at the site, respectively. Public outreach is an important component of Point Blue's mist netting programs; approximately 900 members of the public viewed mist netting at these sites during this year-long period through organized class visits, and hundreds more as drop-in visitors.

Acknowledgments

We thank the National Park Service, and especially Point Reyes National Seashore and Golden Gate National Recreation Area and their staff, for support of this monitoring program. We acknowledge Point Blue biologists H. Allen and R. DiGaudio for collecting point count data in 2017; R. DiGaudio for reviewing a draft of this report; numerous Point Blue interns and banding supervisor R. Cormier for mist netting efforts; N. Seavy for providing guidance on statistical concepts; and T. Gardali for overseeing this project as Point Blue's Pacific Coast and Central Valley Group Director. We thank D. George and S. Wakamiya for reviewing a draft of this report; T. Gardali, D. George, M. Herzog, M. Koenen, D. Press, W. Merkle, S. Allen, and M. Denn for their contributions to the development and/or implementation of the riparian monitoring plan; the U.S. Bird Banding Lab for providing bands and other support; and L. R. Mewaldt, C. J. Ralph, D. DeSante and G. Geupel for their role in establishing and maintaining long-term data collection at Palomarin.

Introduction

This report summarizes the landbird monitoring conducted in 2016-2017 in riparian habitat of Point Reyes National Seashore and Golden Gate National Recreation Area as part of the National Park Service's Inventory and Monitoring Program. The objectives of this ongoing work are to monitor productivity and survival of bird populations, to detect any trends in these populations due to natural or human-caused environmental changes, and in certain circumstances to monitor the effects of management actions (Gardali et al. 2020). Landbirds are recognized as indicators of changing ecosystems (Carignan and Villard 2002) and climate (MacMynowski et al. 2007). They are also relatively easy to monitor and allow for monitoring a suite of species (Ralph et al. 1993, Hutto 1998) representing diverse ecological requirements. Finally, landbirds are an important natural resource, and engender a great deal of public interest. Several landbird species that occur regularly in the Point Reyes National Seashore (PORE) and Golden Gate National Recreation Area (GOGA) are state species of special concern (Shuford and Gardali 2008) or California Partners in Flight Focal Species (CalPIF 2000, CalPIF 2002a, CalPIF 2002b, CalPIF 2004, CalPIF 2009, RHJV 2004).

This document reports on the monitoring effort in PORE and GOGA from 13 August 2016 through 14 August 2017. Two methods were used in this monitoring: point count surveys and constant-effort mist netting. We report mist netting results from fall 2016 through summer 2017; mist netting took place at established locations where Point Blue Conservation Science conducts ongoing, annual long-term monitoring. We report point count results from spring 2017; point counts were conducted both at sites that are monitored annually, and those that were selected to be surveyed every third year through this protocol (Gardali et al. 2020). Continuing monitoring at these sites for which we have extensive data increases our power to detect long-term trends (Gardali et al. 2020). Point count data from these sites go as far back as 1997 for some sites and constant-effort mist netting as far back as 1966 for the Palomarin Field Station.

Here we report species lists and numbers of individuals monitored by both methods, noting which species have special conservation status. We also describe changes to the protocol that were made during the time period of interest, especially to point count site narratives (i.e., site and survey route descriptions).

Methods

The protocol for this monitoring project is described fully in Gardali et al. (2019). Briefly, monitoring was conducted at established sites throughout Point Reyes National Seashore (PORE) and Golden Gate National Recreation Area (GOGA; Figure 1). Sites were predominantly located within willow-alder riparian areas. All sites had been established and surveyed previously, prior to development of the monitoring protocol (Gardali et al. 2010, updated in 2019), for inventory, monitoring or other purposes. The full suite of riparian study sites is surveyed during the breeding season every three years, while core sites (riparian and non-riparian) are monitored annually. The first year of implementation of the full monitoring protocol was 2010-11 (Jennings and Humple 2014; Humple and Porzig 2014), the second year of full implementation was 2013-14 (Dettling and Humple 2015), and this report is for the third year of full implementation, 2016-17, which includes our annual, year-round constant-effort mist netting and banding from fall 2016 through summer 2017, and point count surveys during the 2017 breeding season. The point count transects were chosen from a larger number of historically surveyed PORE and GOGA riparian sites based on habitat type and the existence of historical data (Table 1). Two exceptions were: 1) the inclusion of two mist-netting sites at the Palomarin Field Station in PORE, where habitat is predominantly coastal scrub, Douglas-fir, and mixed evergreen hardwood forest; and 2) the inclusion of mist netting and point counting at Pine Gulch, a riparian site in the Bolinas Lagoon Open Space Preserve (BLOSP) managed by Marin County Parks. Both sites are included in the monitoring protocol (Gardali et al. 2020) and are long-term, core Point Blue monitoring sites.

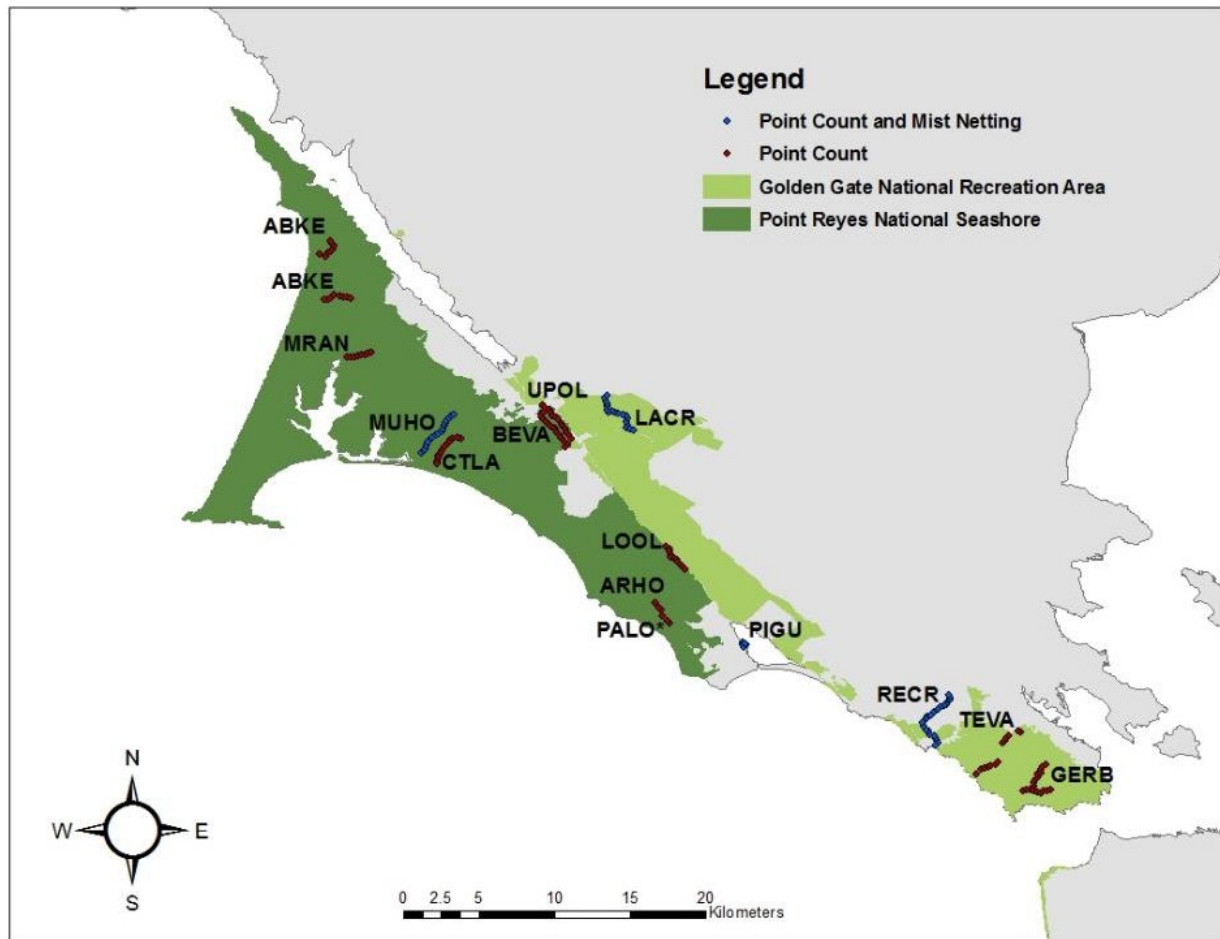


Figure 1. Locations of riparian point count and mist-netting stations in PORE, GOGA, and BLOSP, Marin County, CA, 2016-17, Point Blue Conservation Science. Full site names are in Table 1. Exact locations of mist-netting stations are not called out, but are within the area covered by the associated point count transect. Also shown is Palomarin Field Station (PALO; includes PN and PGUP, mist netting), a non-riparian site.

Table 1. Point count and mist-netting riparian sites in PORE, GOGA, and BLOSP, Marin County, CA, 2016-17, Point Blue Conservation Science. PC=point count, MN=mist netting. Year begun refers to PC and MN, respectively; and number of years surveyed refers to PC.

Park	Site Name	Code	# pts	Season	Method	Year begun	# yrs surveyed (PC) ^a
GOGA	Lagunitas Creek	LACR	18	Breeding, Fall	PC, MN	1997, 2001	21
	Gerbode Valley	GERB	18	Breeding	PC	1997	6
	Redwood Creek (lower + upper)	RECR	24	Breeding, Fall	PC, MN	1997, 2001	21
	Tennessee Valley	TEVA	13	Breeding	PC	1997	5
PORE	Abbott's / Kehoe	ABKE	16	Breeding	PC	1997	5
	Arroyo Hondo	ARHO	6 ^b	Breeding	PC	1997	21
	Bear Valley	BEVA	16	Breeding	PC	1997	5
	Coast Trail Laguna	CTLA	13	Breeding	PC	1997	6
	Lower Olema Creek	LOOL	11	Breeding	PC	1997	10
	M Ranch	MRAN	8	Breeding	PC	1997	5
	Muddy Hollow	MUHO	15	Year-round	PC, MN	1997, 1995	21
	Upper Olema Creek	UPOL	13	Breeding	PC	1997	6
Other	Palomarin Main Nets (PORE) ^c	PN	–	Year-round	MN	1966	n/a
	Palomarin Upper Nets (PORE) ^c	PGUP	–	Year-round	MN	1992	n/a
	Pine Gulch	PIGU	5	Year-round	PC, MN	1997, 1994	21
Total Points		–	176	–	–	–	–

^a Constant-effort mist netting was conducted yearly since it was begun at each site; point counting was not done every year (see Gardali et al. 2020, Table 1, for historic monitoring schedule).

^b The number of points on this transect was incorrectly reported as 7 in Jennings and Humple 2014 and Humple and Porzig 2014.

^c These sites are located at the Palomarin Field Station, whose mist-netting efforts are included in the monitoring protocol (Gardali et al. 2020) although they are not in riparian habitat. The effort and results for mist netting at these sites are included in this report, but the upland point counts are not.

The Variable Circular Plot method was used for all point count surveys conducted in 2017. We surveyed 13 transects, each with 5-24 point count stations (hereafter points) and totaling 176 points. Surveys began approximately 15 minutes after local sunrise and were completed within four hours, when bird activity is generally the highest. Each point was surveyed for a 5-minute sampling period. Individuals of all species detected were recorded as occurring in distance intervals from the point: 0-10 meters (m), 10-20m, 20-30m, 30-50m, 50-100m, >100m; or as flyovers. Biologists with experience identifying birds of the region by sight and sound conducted all point counts. Point count surveys were conducted twice during the peak landbird breeding season, between 1 May and 30 June,

with a minimum of 10 days between the two visits. Redwood Creek is effectively split into two subtransects (Lower and Upper; see Standard Operating Procedure (SOP) 4 [revised; Gardali et al. 2018]) as it requires two days to complete. Standard Operating Procedure (SOP) 6 of the riparian bird monitoring protocol (Gardali et al. 2020) lays out the above protocols in greater detail, and SOP 4 includes narrative descriptions of point count transects. Point count surveys occur annually for a subset of core study sites (5 sites), and every third year for the rest of the sites (8 sites).

For mist netting and banding, we generally followed the nationally standardized Monitoring Avian Productivity and Survival protocols (MAPS; DeSante et al. 2000); SOP 7 of the riparian bird monitoring protocol (Gardali et al. 2018) defines fully how Point Blue protocols differ from MAPS protocols. The mist netting stations at Redwood Creek and Lagunitas Creek were operated 1 May through 31 October, with Lagunitas Creek discontinued after 31 October 2016; the four other stations were operated year-round. At Palomarin Main Nets, nets were run six days per week May through November and three days per week December through April. At all other sites, nets were run approximately once every 10 days May through mid-August, once every seven days mid-August through October (to reduce the chance of missing pulses of migrating birds), and, for Pine Gulch, Muddy Hollow, and Palomarin Upper Nets, once every 10 days November through April. Mist netting occurs annually at all these sites, not just every third year. There were 20 nets at Palomarin, 11 at Redwood Creek, and 10 at each of the other sites. All birds captured were identified to species, age, and sex using criteria in Pyle (1997) and most were banded with a uniquely numbered aluminum band provided by the Bird Banding Laboratory of the U.S. Geological Survey/Biological Resources Division. Some species (e.g., gamebirds; hummingbirds at sites other than Palomarin) were not banded due to permitting or other constraints. Mist netting was conducted primarily by Point Blue interns who received at least two weeks training in safe capture, handling and measuring techniques by the staff supervisor. We report results from mist-netting only for the period covered in this progress report.

For both methods, field work was not conducted during periods of rain, high wind, or other adverse weather conditions, as these can affect bird behavior, capture rates, and detectability, and in the case of mist netting can affect bird safety.

Changes to the Monitoring Protocol

For all point count transects, biologists updated site narratives to reflect current vegetation, trail, and other environmental conditions to improve navigation to points. GPS coordinates were also corrected where site descriptions were unambiguous but GPS coordinates were incorrect. In rare instances, points were relocated to nearby (~10-30 meters) sites which were as similar as possible to the original site. Point relocations only happened where substantial plant growth or changes to waterbodies (creeks or ponds) occurred since the points were established and for which access required either a level of disturbance that may have altered bird behavior and compromised the survey, or would have been unreasonable within the time frame of point count surveys. In these cases, new GPS coordinates were recorded, and site narratives were edited to reflect the change. All changes to narratives were described in the “revision history” embedded within each of the narratives. The original protocol called for each point to be marked with colored flagging each year.

We deviated from this protocol by only flagging select points to help with finding them within the season. Some points were not flagged because of the likelihood that they would be removed by the public. SOP 4 (Gardali et al. 2018) includes all changes described above. All changes to GPS coordinates are also made on the California Avian Data Center (see *Data Management and Availability*, below).

Two important changes during this reporting period were that one point count transect (Coast Camp, COCA) and one mist-netting station (Lagunitas Creek, LACR) were discontinued.

The Coast Camp point count transect was discontinued due to vegetation growth and changes in a stream bank. An attempt was made to access and survey the transect in May 2017, with two of the seven points unreachable because heavy winter rains altered a stream bank, making it too dangerous to cross. Of the remaining five points, three of them were in vegetation so thick that accessing them caused an undue amount of disturbance to the vegetation and birds. In consultation with the San Francisco Bay Area Network Inventory and Monitoring Program Manager (Daniel George), it was decided that the transect should be discontinued.

The effect of the loss of this point count transect on the statistical power to detect trends will be further investigated in the upcoming analysis report. Reducing the total number of point count stations from 183 to 176 is expected to only have a small effect on the statistical power. In the original protocol (Gardali et al. 2010), a power analysis was conducted to show the ability to detect trends by surveying these points every three years. After further investigation of the statistical ramifications, we will decide if replacing the lost points with new ones (albeit ones initiated in 2020, and that do not extend back to the earlier years of this monitoring program) is preferred over not replacing the points. A couple of drainages (Coast Creek and Glenbrook Creek) have been identified where a new transect could be established in PORE. The areas were found using satellite imagery from Google Earth and then ground truthed in December 2017. One other option would be to reinstate four points (near the Five Brooks pond) originally included in the Lower Olema Creek transect that had been discontinued prior to the implementation of the current protocol.

The mist-netting station at Lagunitas Creek was discontinued in the spring of 2017, making the fall of 2016 that last time the station was operated. A creek restoration project, focused on salmonids, was scheduled to begin during late summer 2017, which included altering the existing vegetation and creating a new creek channel and overall modified hydrology. The new channel would be placed through a few net locations, so we would not have been able to continue operating the station with the nets in their original locations. Since relocating these nets would essentially create a new mist-netting station (in both the environmental conditions and the net locations), and therefore break the continuity of the long term monitoring at the site, we decided to discontinue the site. Of additional consideration to making this decision were the limited resources available to conduct constant-effort mist netting at this study site. We will continue to monitor landbirds at this study site with the point count method and as part of this monitoring program, with points within the Lagunitas Creek transect encompassing the summer 2017 salmonid habitat restoration site and other salmonid restoration areas in the drainage.

All of the changes noted here are reflected in the 2019 update to the monitoring protocol. An additional change in the 2019 publication clarifies, under Sampling Frequency and Schedule, that that point count surveys should be conducted with a first visit in May and the second visit in June. The protocol narrative had previously noted the time period for both visits as “between late May and June.” However, the timing had been correctly outlined in SOP 6 (Conducting Variable Circular Plot Point Count Surveys). One visit in May and one in June is more biologically and logistically appropriate and is the sampling frequency guideline we followed in 2011 (and in recent years), and intend to follow in future years.

Data Management and Availability

Point count data discussed in this report are available to download from the California Avian Data Center (CADC), a regional node of the Avian Knowledge Network (AKN) hosted by Point Blue Conservation Science. The data are available there under projects CNPSM and PALO, for all SFAN partners (contact report authors for additional personnel access, as well as for critical guidance on how best to access the data and when to do so). Updated GPS points can be downloaded from CADC in a variety of formats for mapping or uploading to GPS receivers; GPS points are also listed in SOP 4 (Gardali et al. 2018).

To access point count data through CADC, once you have access and have discussed doing so with Point Blue project managers so they can provide some specific, critical guidance, go to <http://data.prbo.org/cadc2/>, then follow the steps below:

1. Click “Go” in the red My CADC box on the right-hand side of the page.
2. Select “I want to log in to my MyCADC account”
3. Select “Analysts Tools”
4. Enter your user name, click enter, then enter your password and click Log In.
5. Click “Point Counts”, then select the project you wish to view or download data for (CNPSM or PALO)
6. You will then have a variety of options for selecting and filtering the data you want to download. Once you have selected the locations, time span, and other parameters, you can choose “Get selected data as - CSV file” to download all the data; or you can use the analyst’s tools to view various summaries of the data. It is recommended that you talk to the Point Blue project lead (dhumble@pointblue.org) regarding this process and some of the limitations of it before doing any statistical analyses through CADC.

To download GPS points for study sites:

1. Follow steps 1 and 2 above.
2. Select “Biologists”

3. Select the appropriate project.
4. Select “Download Locations to GPS, GIS, and more” under the Project Management Tools heading.
5. You will then be able to select which locations you want to download coordinates for, and to select a variety of formats to download them in.

Electronic databases of all mist-netting data, along with scans of point count raw data sheets, will be provided to the National Park Service on a supplemental CD.

Results

Four biologists conducted point counts, and at least 15 biologists conducted mist netting and banding during the one-year period covered in this report (Table 2). Point count surveys were conducted during May (visit 1) and June (visit 2) 2017 (Table 3). Mist netting followed the site-specific schedule outlined in the Methods; dates of visits are not listed here, but Table 4 summarizes the amount of time mist nets were operated (“net hours” or netting effort) for each site and season, which are recorded in order to correct capture rates for varying effort among years in analyses.

Table 2. Primary observers who conducted field work, Marin County PORE/GOGA/BLOSP sites, 13 August 2016 – 14 August 2017, Point Blue Conservation Science. PC= point count; MN= mist netting.

Name	Role	Method	Year
Diana Humple	Project Lead	PC, MN	2016, 2017
Renée Cormier	MN Field Lead	MN	2016, 2017
Mark Dettling	PC Field Lead	PC, MN	2016, 2017
Hilary Allen	Field Technician	PC	2017
Ryan DiGaudio	Field Technician	PC	2017
Maria Chavez	Intern bander	MN	2016
Preston Duncan	Intern bander	MN	2016
Lila Fried	Intern bander	MN	2016
Kate Maley	Intern bander	MN	2016
Wesley Sparagon	Intern bander	MN	2016, 2017
Anik Levac	Intern bander	MN	2016, 2017
Nick Liadis	Intern bander	MN	2016, 2017
Kim Savides	Intern bander	MN	2016, 2017
Meredith Heather	Intern bander	MN	2017
Ian Souza-Cole	Intern bander	MN	2017
Isabel Lawrence	Intern bander	MN	2017
Emily Reich	Intern bander	MN	2017

Table 3. Dates of point count surveys by transect, Marin County PORE/GOGA/BLOSP sites, 2017, Point Blue Conservation Science.

Transect	Station Code	Visit 1	Visit 2
Abbot's/Kehoe	ABKE	5/18/2017	6/13/2017
Arroyo Hondo	ARHO	5/24/2017	6/29/2017
Bear Valley	BEVA	5/8/2017	6/5/2017
Coast Trail Laguna	CTLA	5/3/2017	6/13/2017
Gerbode Valley	GERB	5/22/2017	6/21/2017
Lagunitas Creek	LACR	5/17/2017	6/15/2017
Lower Olema Creek	LOOL	5/25/2017	6/13/2017
M Ranch	MRAN	5/16/2017	6/9/2017
Muddy Hollow	MUHO	5/2/2017	6/14/2017
Pine Gulch	PIGU	5/3/2017	6/2/2017
Redwood Creek*	RECR	5/2/2017, 5/11/2017	6/2/2017, 6/6/2017
Tennessee Valley	TEVA	5/15/2017	6/12/2017
Upper Olema Creek	UPOL	5/24/2017	6/30/2017

* Redwood Creek transect is subdivided into two subtransects (Upper and Lower; see SOP 4 (Gardali et al. 2018) due to the number of points, thus multiple survey dates.

Table 4. Number of mist net hours by station, Marin County PORE/GOGA/BLOSP riparian sites and Palomarin, 13 August 2016 – 14 August 2017, Point Blue Conservation Science. One mist net-hour is one 12-meter mist net operated for 1 hour. Fall is defined as 13 August 2016 to 31 October, 2016. Winter is defined as 1 November 2016 to 30 April 2017. Spring/Summer is defined as 1 May 2017 to 16 August 2017.

Station	Fall 2016	Winter 2016-17	Spring/Summer 2017
Palomarin Main Nets	7593.84	10783.35	10228.98
Palomarin Upper Nets	503.00	1013.37	521.33
Pine Gulch	568.15	1064.52	507.67
Muddy Hollow	583.98	1016.47	535.09
Redwood Creek ^a	659.30	–	647.00
Lagunitas Creek ^b	626.41	–	–

^a Station operated 1 May - 31 October.

^b Station discontinued due to salmonid restoration work at the site that relocated the creek bed through a few net locations.

For the following data summaries, we report tallies of species, although in the tables we also separate out subspecies when that information was recorded. For certain species, data are recorded at the subspecies level during banding, if determined, and generally are recorded at the species level during point count surveys due to the difficulty of determining subspecies, in most instances, for auditory detections. When more than one subspecies was detected/recorded, summary information was combined for data of all subspecies such that species do not get double counted and the number of detections is at the species level. There were also two sets of species that can be inseparable (Rufous/Allen's Hummingbird and Pacific-slope/Cordilleran Flycatcher), which were not included in the below written summaries in order to not over-count (assuming Rufous and/or Allen's, and Pacific-slope Flycatcher [Cordilleran exceedingly rare], were already included). Additionally, one flycatcher (genus *Empidonax*) was captured and not identified to species because the necessary measurements could not be taken since the bird was showing signs of stress and was released early; it is not included the below summaries as the species may have already been included.

A total of 114 species were detected by point counts and mist netting combined (Table 5). Of these, 23 were detected by mist netting only, 41 by point counts only, and the remaining 50 species by both methods. Twenty-nine species detected are California Partners in Flight Habitat Conservation Plan Focal Species (CalPIF 2000, CalPIF 2002a, CalPIF 2002b, CalPIF 2004, CalPIF 2009, RHJV 2004) and of these, four are also California Bird Species of Special Concern (Shuford and Gardali 2008; Table 5).

Table 5. All species recorded by point count and mist netting, Marin County PORE/GOGA/BLOSP riparian sites and the Palomarin mist netting station, combined, 13 August 2016 - 14 August 2017, Point Blue Conservation Science. PC=point count, MN=mist netting. Determined subspecies are shown in parentheses following the species name.

Common Name	Scientific Name	Method
Canada Goose	<i>Branta canadensis</i>	PC
Wood Duck	<i>Aix sponsa</i>	PC
Gadwall	<i>Anas strepera</i>	PC
Mallard	<i>Anas platyrhynchos</i>	PC
Common Merganser	<i>Mergus merganser</i>	PC
California Quail	<i>Callipepla californica</i>	PC, MN
Wild Turkey	<i>Meleagris gallopavo</i>	PC
Brown Pelican	<i>Pelecanus occidentalis</i>	PC
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	PC

^a California Partners in Flight Habitat Conservation Plans Focal Species (includes all habitats).

^b California Bird Species of Special Concern.

^c Pacific-slope and Cordilleran flycatchers were split from what was historically known as a single species, Western Flycatcher.

Table 5 (continued). All species recorded by point count and mist netting, Marin County PORE/GOGA/BLOSP riparian sites and the Palomarin mist netting station, combined, 13 August 2016 - 14 August 2017, Point Blue Conservation Science. PC=point count, MN=mist netting. Determined subspecies are shown in parentheses following the species name.

Common Name	Scientific Name	Method
Great Blue Heron	<i>Ardea herodias</i>	PC
Turkey Vulture	<i>Cathartes aura</i>	PC
Osprey	<i>Pandion haliaetus</i>	PC
Northern Harrier ^{a,b}	<i>Circus cyaneus</i>	PC
Sharp-shinned Hawk	<i>Accipiter striatus</i>	MN
Cooper's Hawk	<i>Accipiter cooperii</i>	PC
Red-shouldered Hawk	<i>Buteo lineatus</i>	PC, MN
Red-tailed Hawk	<i>Buteo jamaicensis</i>	PC
Virginia Rail	<i>Rallus limicola</i>	PC
Killdeer	<i>Charadrius vociferus</i>	PC
Western Gull	<i>Larus occidentalis</i>	PC
California Gull	<i>Larus californicus</i>	PC
Caspian Tern	<i>Hydroprogne caspia</i>	PC
Band-tailed Pigeon	<i>Patagioenas fasciata</i>	PC, MN
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	PC
Mourning Dove	<i>Zenaida asiatica</i>	PC, MN
Western Screech-Owl	<i>Megascops kennicottii</i>	MN
Anna's Hummingbird	<i>Calypte anna</i>	PC, MN
Rufous Hummingbird	<i>Selasphorus rufus</i>	MN
Allen's Hummingbird	<i>Selasphorus sasin</i>	PC, MN
Rufous/Allen's Hummingbird	<i>Selasphorus rufus/sasin</i>	PC, MN
Belted Kingfisher	<i>Megaceryle alcyon</i>	PC
Acorn Woodpecker ^a	<i>Melanerpes formicivorus</i>	PC
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>	MN
Nuttall's Woodpecker ^a	<i>Picoides nuttallii</i>	PC, MN

^a California Partners in Flight Habitat Conservation Plans Focal Species (includes all habitats).

^b California Bird Species of Special Concern.

^c Pacific-slope and Cordilleran flycatchers were split from what was historically known as a single species, Western Flycatcher.

Table 5 (continued). All species recorded by point count and mist netting, Marin County PORE/GOGA/BLOSP riparian sites and the Palomarin mist netting station, combined, 13 August 2016 - 14 August 2017, Point Blue Conservation Science. PC=point count, MN=mist netting. Determined subspecies are shown in parentheses following the species name.

Common Name	Scientific Name	Method
Downy Woodpecker	<i>Picoides pubescens</i>	PC, MN
Hairy Woodpecker	<i>Picoides villosus</i>	PC, MN
Northern Flicker	<i>Colaptes auratus</i>	PC
Northern Flicker (Red-shafted)	<i>Colaptes auratus cafer</i>	MN
Pileated Woodpecker ^a	<i>Dryocopus pileatus</i>	PC
Olive-sided Flycatcher ^{a,b}	<i>Contopus cooperi</i>	PC, MN
Western Wood-Pewee	<i>Contopus sordidulus</i>	PC, MN
Willow Flycatcher ^a	<i>Empidonax traillii</i>	MN
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>	PC, MN
Pacific-slope/Cordilleran Flycatcher ^c	<i>Empidonax difficilis/occidentalis</i>	MN
Unidentified Empidonax Flycatcher	<i>Empidonax sp.</i>	MN
Black Phoebe	<i>Sayornis nigricans</i>	PC, MN
Ash-throated Flycatcher ^a	<i>Myiarchus cinerascens</i>	PC
Hutton's Vireo	<i>Vireo huttoni</i>	PC, MN
Warbling Vireo ^a	<i>Vireo gilvus</i>	PC, MN
Steller's Jay	<i>Cyanocitta stelleri</i>	PC, MN
California Scrub-Jay ^a	<i>Apelocoma californica</i>	PC, MN
American Crow	<i>Corvus brachyrhynchos</i>	PC, MN
Common Raven ^a	<i>Corvus corax</i>	PC
Tree Swallow ^a	<i>Tachycineta bicolor</i>	PC, MN
Violet-green Swallow	<i>Tachycineta thalassina</i>	PC, MN
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	PC
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	PC
Barn Swallow	<i>Hirundo rustica</i>	PC, MN
Chestnut-backed Chickadee	<i>Poecile rufescens</i>	PC, MN

^a California Partners in Flight Habitat Conservation Plans Focal Species (includes all habitats).

^b California Bird Species of Special Concern.

^c Pacific-slope and Cordilleran flycatchers were split from what was historically known as a single species, Western Flycatcher.

Table 5 (continued). All species recorded by point count and mist netting, Marin County PORE/GOGA/BLOSP riparian sites and the Palomarin mist netting station, combined, 13 August 2016 - 14 August 2017, Point Blue Conservation Science. PC=point count, MN=mist netting. Determined subspecies are shown in parentheses following the species name.

Common Name	Scientific Name	Method
Oak Titmouse ^a	<i>Baeolophus inornatus</i>	PC
Bushtit	<i>Psaltirparus minimus</i>	PC, MN
Red-breasted Nuthatch ^a	<i>Sitta canadensis</i>	PC, MN
Pygmy Nuthatch	<i>Sitta pygmaea</i>	PC
Brown Creeper ^a	<i>Certhia americana</i>	PC, MN
Bewick's Wren	<i>Thryomanes bewickii</i>	PC, MN
Pacific Wren	<i>Troglodytes pacificus</i>	PC, MN
Marsh Wren	<i>Cistothorus palustris</i>	PC, MN
Golden-crowned Kinglet ^a	<i>Regulus satrapa</i>	PC, MN
Ruby-crowned Kinglet	<i>Regulus calendula</i>	MN
Western Bluebird ^a	<i>Sialia mexicana</i>	PC
Swainson's Thrush ^a	<i>Catharus ustulatus</i>	PC, MN
Hermit Thrush	<i>Catharus guttatus</i>	MN
American Robin	<i>Turdus migratorius</i>	PC, MN
Varied Thrush	<i>Ixoreus naevius</i>	MN
Wrentit ^a	<i>Chamaea fasciata</i>	PC, MN
European Starling	<i>Sturnus vulgaris</i>	PC
Cedar Waxwing	<i>Bombycilla cedrorum</i>	PC, MN
Orange-crowned Warbler	<i>Oreothlypis celata</i>	PC, MN
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	MN
Yellow Warbler ^{a,b}	<i>Setophaga petechia</i>	PC, MN
Magnolia Warbler	<i>Setophaga magnolia</i>	MN
Yellow-rumped Warbler	<i>Setophaga coronata</i>	MN
Yellow-rumped Warbler (Myrtle)	<i>Setophaga coronata coronata</i>	MN
Yellow-rumped Warbler (Audubon's)	<i>Setophaga coronata auduboni</i>	MN

^a California Partners in Flight Habitat Conservation Plans Focal Species (includes all habitats).

^b California Bird Species of Special Concern.

^c Pacific-slope and Cordilleran flycatchers were split from what was historically known as a single species, Western Flycatcher.

Table 5 (continued). All species recorded by point count and mist netting, Marin County PORE/GOGA/BLOSP riparian sites and the Palomarin mist netting station, combined, 13 August 2016 - 14 August 2017, Point Blue Conservation Science. PC=point count, MN=mist netting. Determined subspecies are shown in parentheses following the species name.

Common Name	Scientific Name	Method
Townsend's Warbler	<i>Setophaga townsendi</i>	MN
Hermit Warbler	<i>Setophaga occidentalis</i>	MN
Blackburnian Warbler	<i>Setophaga fusca</i>	MN
Palm Warbler	<i>Setophaga palmarum</i>	MN
Northern Waterthrush	<i>Parkesia noveboracensis</i>	MN
MacGillivray's Warbler ^a	<i>Geothlypis tolmiei</i>	PC, MN
Common Yellowthroat ^a	<i>Geothlypis trichas</i>	PC, MN
Hooded Warbler	<i>Setophaga citrina</i>	MN
Wilson's Warbler ^a	<i>Cardellina pusilla</i>	PC, MN
Spotted Towhee	<i>Pipilo maculatus</i>	PC, MN
California Towhee	<i>Melospiza crissalis</i>	PC, MN
Chipping Sparrow	<i>Spizella passerina</i>	PC
Savannah Sparrow ^a	<i>Passerculus sandwichensis</i>	PC
Grasshopper Sparrow ^{a,b}	<i>Ammodramus savannarum</i>	PC
Fox Sparrow ^a	<i>Passerella iliaca</i>	MN
Song Sparrow ^a	<i>Melospiza melodia</i>	PC, MN
Lincoln's Sparrow	<i>Melospiza lincolni</i>	MN
Swamp Sparrow	<i>Melospiza georgiana</i>	MN
White-throated Sparrow	<i>Zonotrichia albicollis</i>	MN
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	PC
White-crowned Sparrow (Nuttall's) ^a	<i>Zonotrichia leucophrys nuttalli</i>	MN
White-crowned Sparrow (Puget Sound)	<i>Zonotrichia leucophrys pugetensis</i>	MN
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>	MN
Dark-eyed Junco ^a	<i>Junco hyemalis</i>	PC
Dark-eyed Junco (Oregon)	<i>Junco hyemalis oregonus</i>	MN

^a California Partners in Flight Habitat Conservation Plans Focal Species (includes all habitats).

^b California Bird Species of Special Concern.

^c Pacific-slope and Cordilleran flycatchers were split from what was historically known as a single species, Western Flycatcher.

Table 5 (continued). All species recorded by point count and mist netting, Marin County PORE/GOGA/BLOSP riparian sites and the Palomarin mist netting station, combined, 13 August 2016 - 14 August 2017, Point Blue Conservation Science. PC=point count, MN=mist netting. Determined subspecies are shown in parentheses following the species name.

Common Name	Scientific Name	Method
Black-headed Grosbeak ^a	<i>Pheucticus melanocephalus</i>	PC, MN
Lazuli Bunting	<i>Passerina caerulea</i>	MN
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	PC
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	PC
Brown-headed Cowbird	<i>Molothrus ater</i>	PC, MN
Hooded Oriole	<i>Icterus cucullatus</i>	PC
Bullock's Oriole	<i>Icterus bullockii</i>	PC
Purple Finch	<i>Haemorhous purpureus</i>	PC, MN
House Finch	<i>Haemorhous mexicanus</i>	PC, MN
Red Crossbill	<i>Loxia curvirostra</i>	PC
Pine Siskin	<i>Spinus pinus</i>	PC, MN
Lesser Goldfinch	<i>Spinus psaltria</i>	PC
American Goldfinch	<i>Spinus tristis</i>	PC, MN
House Sparrow	<i>Passer domesticus</i>	PC

^a California Partners in Flight Habitat Conservation Plans Focal Species (includes all habitats).

^b California Bird Species of Special Concern.

^c Pacific-slope and Cordilleran flycatchers were split from what was historically known as a single species, Western Flycatcher.

The ten most-commonly detected species during breeding season point counts, in decreasing order of abundance, were Song Sparrow, Swainson's Thrush, Wilson's Warbler, Wrentit, Spotted Towhee, Chestnut-backed Chickadee, Warbling Vireo, Pacific-slope Flycatcher, Bewick's Wren, and Orange-crowned Warbler (Table 6). Of the 91 species detected during point counts, 33 species had ten or fewer individual detections (Table 6).

Table 6. Number of individual detections of each species during riparian point counts, Marin County PORE/GOGA/BLOSP sites, 2017, Point Blue Conservation Science. Includes observations at all distances (not just within 50m), flyover observations, and both visits, and are not averaged per point (some individuals detected at multiple points), so count may not represent actual abundance. Determined subspecies are shown in parentheses following the species name.

Common Name	Scientific Name	PC Count
Canada Goose	<i>Branta canadensis</i>	15
Wood Duck	<i>Aix sponsa</i>	1
Gadwall	<i>Anas strepera</i>	4
Mallard	<i>Anas platyrhynchos</i>	15
Common Merganser	<i>Mergus merganser</i>	1
California Quail	<i>Callipepla californica</i>	155
Wild Turkey	<i>Meleagris gallopavo</i>	3
Brown Pelican	<i>Pelecanus occidentalis</i>	1
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	4
Great Blue Heron	<i>Ardea herodias</i>	1
Turkey Vulture	<i>Cathartes aura</i>	32
Osprey	<i>Pandion haliaetus</i>	2
Northern Harrier	<i>Circus cyaneus</i>	1
Cooper's Hawk	<i>Accipiter cooperii</i>	1
Red-shouldered Hawk	<i>Buteo lineatus</i>	8
Red-tailed Hawk	<i>Buteo jamaicensis</i>	17
Virginia Rail	<i>Rallus limicola</i>	7
Killdeer	<i>Charadrius vociferus</i>	1
Western Gull	<i>Larus occidentalis</i>	3
California Gull	<i>Larus californicus</i>	1
Caspian Tern	<i>Hydroprogne caspia</i>	7
Band-tailed Pigeon	<i>Patagioenas fasciata</i>	67
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	92
Mourning Dove	<i>Zenaida macroura</i>	68
Anna's Hummingbird	<i>Calypte anna</i>	75
Allen's Hummingbird	<i>Selasphorus sasin</i>	23
Rufous/Allen's Hummingbird	<i>Selasphorus rufus/sasin</i>	59
Belted Kingfisher	<i>Megaceryle alcyon</i>	1

Table 6 (continued). Number of individual detections of each species during riparian point counts, Marin County PORE/GOGA/BLOSP sites, 2017, Point Blue Conservation Science. Includes observations at all distances (not just within 50m), flyover observations, and both visits, and are not averaged per point (some individuals detected at multiple points), so count may not represent actual abundance. Determined subspecies are shown in parentheses following the species name.

Common Name	Scientific Name	PC Count
Acorn Woodpecker	<i>Melanerpes formicivorus</i>	27
Nuttall's Woodpecker	<i>Picoides nuttallii</i>	21
Downy Woodpecker	<i>Picoides pubescens</i>	45
Hairy Woodpecker	<i>Picoides villosus</i>	47
Northern Flicker	<i>Colaptes auratus</i>	39
Pileated Woodpecker	<i>Dryocopus pileatus</i>	4
Olive-sided Flycatcher	<i>Contopus cooperi</i>	27
Western Wood-Pewee	<i>Contopus sordidulus</i>	49
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>	210
Black Phoebe	<i>Sayornis nigricans</i>	24
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	11
Hutton's Vireo	<i>Vireo huttoni</i>	81
Warbling Vireo	<i>Vireo gilvus</i>	242
Steller's Jay	<i>Cyanocitta stelleri</i>	70
California Scrub-Jay	<i>Aphelocoma californica</i>	154
American Crow	<i>Corvus brachyrhynchos</i>	97
Common Raven	<i>Corvus corax</i>	135
Tree Swallow	<i>Tachycineta bicolor</i>	85
Violet-green Swallow	<i>Tachycineta thalassina</i>	5
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	1
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	53
Barn Swallow	<i>Hirundo rustica</i>	45
Chestnut-backed Chickadee	<i>Poecile rufescens</i>	264
Oak Titmouse	<i>Baeolophus inornatus</i>	2
Bushtit	<i>Psaltirparus minimus</i>	96
Red-breasted Nuthatch	<i>Sitta canadensis</i>	1
Pygmy Nuthatch	<i>Sitta pygmaea</i>	10
Brown Creeper	<i>Certhia americana</i>	17

Table 6 (continued). Number of individual detections of each species during riparian point counts, Marin County PORE/GOGA/BLOSP sites, 2017, Point Blue Conservation Science. Includes observations at all distances (not just within 50m), flyover observations, and both visits, and are not averaged per point (some individuals detected at multiple points), so count may not represent actual abundance. Determined subspecies are shown in parentheses following the species name.

Common Name	Scientific Name	PC Count
Bewick's Wren	<i>Thryomanes bewickii</i>	204
Pacific Wren	<i>Troglodytes pacificus</i>	91
Marsh Wren	<i>Cistothorus palustris</i>	50
Golden-crowned Kinglet	<i>Regulus satrapa</i>	3
Western Bluebird	<i>Sialia mexicana</i>	11
Swainson's Thrush	<i>Catharus ustulatus</i>	683
American Robin	<i>Turdus migratorius</i>	68
Wrentit	<i>Chamaea fasciata</i>	471
European Starling	<i>Sturnus vulgaris</i>	42
Cedar Waxwing	<i>Bombycilla cedrorum</i>	52
Orange-crowned Warbler	<i>Oreothlypis celata</i>	183
Yellow Warbler	<i>Setophaga petechia</i>	2
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	15
Common Yellowthroat	<i>Geothlypis trichas</i>	172
Wilson's Warbler	<i>Cardellina pusilla</i>	605
Spotted Towhee	<i>Pipilo maculatus</i>	265
California Towhee	<i>Melospiza crissalis</i>	103
Chipping Sparrow	<i>Spizella passerina</i>	4
Savannah Sparrow	<i>Passerculus sandwichensis</i>	9
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	2
Song Sparrow	<i>Melospiza melodia</i>	820
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	78
Dark-eyed Junco	<i>Junco hyemalis</i>	14
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	128
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	107
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	83
Brown-headed Cowbird	<i>Molothrus ater</i>	111
Hooded Oriole	<i>Icterus cucullatus</i>	1

Table 6 (continued). Number of individual detections of each species during riparian point counts, Marin County PORE/GOGA/BLOSP sites, 2017, Point Blue Conservation Science. Includes observations at all distances (not just within 50m), flyover observations, and both visits, and are not averaged per point (some individuals detected at multiple points), so count may not represent actual abundance. Determined subspecies are shown in parentheses following the species name.

Common Name	Scientific Name	PC Count
Bullock's Oriole	<i>Icterus bullockii</i>	1
Purple Finch	<i>Haemorhous purpureus</i>	83
House Finch	<i>Haemorhous mexicanus</i>	28
Red Crossbill	<i>Loxia curvirostra</i>	1
Pine Siskin	<i>Spinus pinus</i>	71
Lesser Goldfinch	<i>Spinus psaltria</i>	4
American Goldfinch	<i>Spinus tristis</i>	125
House Sparrow	<i>Passer domesticus</i>	5

The ten most-commonly detected species during year-round mist netting, in decreasing order of abundance, were Song Sparrow, Wilson's Warbler, Swainson's Thrush, Wrentit, Ruby-crowned Kinglet, Hermit Thrush, Dark-eyed Junco (Oregon), Fox Sparrow, Pacific-slope Flycatcher, and Bewick's Wren (Table 7). Of the 73 species captured during mist netting, 33 had ten or fewer individual captures (Table 7).

Table 7. Number of individual captures of each species during mist netting, Marin County PORE/GOGA/BLOSP and Palomarin sites combined, 13 August 2016 - 14 August 2017, Point Blue Conservation Science. Determined subspecies are shown in parentheses following the species name.

Common Name	Scientific Name	MN Count
California Quail	<i>Callipepla californica</i>	17
Sharp-shinned Hawk	<i>Accipiter striatus</i>	19
Red-shouldered Hawk	<i>Buteo lineatus</i>	1
Mourning Dove	<i>Zenaida macroura</i>	1
Western Screech-Owl	<i>Megascops kennicottii</i>	1
Anna's Hummingbird	<i>Calypte anna</i>	91
Rufous Hummingbird	<i>Selasphorus rufus</i>	4
Allen's Hummingbird	<i>Selasphorus sasin</i>	104
Rufous/Allen's Hummingbird	<i>Selasphorus rufu/sasin</i>	13
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>	1
Nuttall's Woodpecker	<i>Picoides nuttallii</i>	4

Table 7 (continued). Number of individual captures of each species during mist netting, Marin County PORE/GOGA/BLOSP and Palomarin sites combined, 13 August 2016 - 14 August 2017, Point Blue Conservation Science. Determined subspecies are shown in parentheses following the species name.

Common Name	Scientific Name	MN Count
Downy Woodpecker	<i>Picoides pubescens</i>	29
Hairy Woodpecker	<i>Picoides villosus</i>	13
Red-shafted Flicker	<i>Colaptes auratus cafer</i>	8
Olive-sided Flycatcher	<i>Contopus cooperi</i>	1
Western Wood-Pewee	<i>Contopus sordidulus</i>	1
Willow Flycatcher	<i>Empidonax traillii</i>	1
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>	152
Pacific-slope/Cordilleran Flycatcher	<i>Empidonax difficilis/occidentalis</i>	46
Unidentified Empidonax Flycatcher	<i>Empidonax sp.</i>	1
Black Phoebe	<i>Sayornis nigricans</i>	7
Hutton's Vireo	<i>Vireo huttoni</i>	44
Warbling Vireo	<i>Vireo gilvus</i>	25
Steller's Jay	<i>Cyanocitta stelleri</i>	18
California Scrub-Jay	<i>Apelocoma californica</i>	15
American Crow	<i>Corvus brachyrhynchos</i>	1
Tree Swallow	<i>Tachycineta bicolor</i>	15
Violet-green Swallow	<i>Tachycineta thalassina</i>	7
Barn Swallow	<i>Hirundo rustica</i>	1
Chestnut-backed Chickadee	<i>Poecile rufescens</i>	98
Bushtit	<i>Psaltiriparus minimus</i>	27
Red-breasted Nuthatch	<i>Sitta canadensis</i>	7
Brown Creeper	<i>Certhia americana</i>	34
Bewick's Wren	<i>Thryomanes bewickii</i>	146
Pacific Wren	<i>Troglodytes pacificus</i>	122
Marsh Wren	<i>Cistothorus palustris</i>	1
Golden-crowned Kinglet	<i>Regulus satrapa</i>	19
Ruby-crowned Kinglet	<i>Regulus calendula</i>	305
Swainson's Thrush	<i>Catharus ustulatus</i>	406
Hermit Thrush	<i>Catharus guttatus</i>	226

Table 7 (continued). Number of individual captures of each species during mist netting, Marin County PORE/GOGA/BLOSP and Palomarin sites combined, 13 August 2016 - 14 August 2017, Point Blue Conservation Science. Determined subspecies are shown in parentheses following the species name.

Common Name	Scientific Name	MN Count
American Robin	<i>Turdus migratorius</i>	37
Varied Thrush	<i>Ixoreus naevius</i>	3
Wrentit	<i>Chamaea fasciata</i>	388
Cedar Waxwing	<i>Bombycilla cedrorum</i>	6
Orange-crowned Warbler	<i>Oreothlypis celata</i>	38
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	5
Yellow Warbler	<i>Setophaga petechia</i>	14
Magnolia Warbler	<i>Setophaga magnolia</i>	2
Yellow-rumped Warbler (Myrtle)	<i>Setophaga coronata coronata</i>	41
Yellow-rumped Warbler (Audubon's)	<i>Setophaga coronata auduboni</i>	15
Yellow-rumped Warbler	<i>Setophaga coronata</i>	31
Townsend's Warbler	<i>Setophaga townsendi</i>	27
Hermit Warbler	<i>Setophaga occidentalis</i>	1
Blackburnian Warbler	<i>Setophaga fusca</i>	1
Palm Warbler	<i>Setophaga palmarum</i>	1
Northern Waterthrush	<i>Parkesia noveboracensis</i>	1
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>	6
Common Yellowthroat	<i>Geothlypis trichas</i>	67
Hooded Warbler	<i>Setophaga citrina</i>	1
Wilson's Warbler	<i>Cardellina pusilla</i>	525
Spotted Towhee	<i>Pipilo maculatus</i>	98
California Towhee	<i>Melospiza crissalis</i>	2
Fox Sparrow	<i>Passerella iliaca</i>	158
Song Sparrow	<i>Melospiza melodia</i>	616
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	31
Swamp Sparrow	<i>Melospiza georgiana</i>	4
White-throated Sparrow	<i>Zonotrichia albicollis</i>	2
White-crowned Sparrow (Puget Sound)	<i>Zonotrichia leucophrys pugetensis</i>	8
White-crowned Sparrow (Nuttall's)	<i>Zonotrichia leucophrys nuttalli</i>	11

Table 7 (continued). Number of individual captures of each species during mist netting, Marin County PORE/GOGA/BLOSP and Palomarin sites combined, 13 August 2016 - 14 August 2017, Point Blue Conservation Science. Determined subspecies are shown in parentheses following the species name.

Common Name	Scientific Name	MN Count
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>	73
Dark-eyed Junco (Oregon)	<i>Junco hyemalis oregonus</i>	165
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	31
Lazuli Bunting	<i>Passerina amoena</i>	1
Brown-headed Cowbird	<i>Molothrus ater</i>	1
Purple Finch	<i>Haemorhous purpureus</i>	37
House Finch	<i>Haemorhous mexicanus</i>	4
Pine Siskin	<i>Spinus pinus</i>	1
American Goldfinch	<i>Spinus tristis</i>	12

Public Outreach

Point Blue invites school and other groups to view mist netting at Palomarin and Muddy Hollow, and occasionally the other riparian sites. From 13 August 2016 to 14 August 2017, 23 classes and other groups visited Point Blue Marin County mist netting sites. In total, approximately 400 people visited the mist-netting sites through these organized visits, with thousands more visiting the field station as drop-in visitors and being introduced to mist netting or, if not in session, being introduced to numerous natural history, conservation biology, avian ecology, and climate-smart conservation concepts.

Discussion

We do not present any trends or figures, or discuss the above results in any depth, as the Analysis and Synthesis reports that are produced every six years (e.g., Humple and Porzig 2014) are meant to include the in-depth analyses and discussion. The next such report will be produced after the 2018 riparian landbird monitoring season in Pinnacles National Park (Humple et al. 2017) and in combination with results from that park.

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