



Standard Operating Procedure (SOP) 10:

Data Reporting V2.1

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Revision History Log

Prev. Version #	Revision Date	Author	Changes Made	Reason for Change	New Version #
		Marcus Koenen	Adapted to landbird monitoring protocol		1.0
1.0	June 2009	T. Gardali	Totally revised	Reviewer comments	2.0
2.0	Dec 2018	L. Grace	Updated URLs, adapted table numbering	Corrected out-of-date elements	2.1

This Standard Operating Procedure is available in digital format from [San Francisco Bay Area Network website](#) and the [NPS Data Store](#).

Standard Report Format

Progress and Synthesis and Analysis reports will use the format established for manuscripts and technical reports by the Natural Resources Publications Management:
<https://www.nps.gov/im/publication-series.htm> (Accessed: June 10, 2009). A report checklist (below) should be used and submitted with each report to ensure the report completeness and quality.

	Report Checklist
	Cover page lists all authors and addresses.
	Document has been reviewed for content, spelling and grammar.
	Abstract and keywords are provided on page three of final report.
	Body of document includes introduction, description of study area, methods, results, and discussion.
	Conclusion Section includes Public Interest Highlights.
	Conclusion Section includes Management Recommendations.
	Conclusion Section includes Research Recommendations.
	Tables, figures, maps, and illustrations have descriptive titles and are sequentially numbered.
	Document is supported by scientific literature.
	Literature Cited has been checked against the text.
	Submission Checklist
	Two hard copies are being submitted.
	Electronic copy is in MS Word Format (2002 or later) and is submitted on cd, zip, ~~dvd~~ , or sent by email as an attachment.
	Data is being submitted electronically in MS Excel or MS Access format.
	All raw data sheets have been submitted.
	Metadata is provided for all electronic databases (Data fields are defined and database structure is discussed).
	Metadata is provided for any GIS data (following FGDC standards)
	Metadata is provided for raw data sheets (may include field sheet instructions or other documentation that defines fields).
	Photographs have been submitted along with permission for their use in brochures, websites, or other published materials.
	Final Check
	Checklist has been reviewed and all items checked off before final submission. Indicate YES or NO.

Report Review Procedure

Internal Review

Point Blue Conservation Science should submit a draft of the annual report to the Network Program Manager for internal review. Internal review by person(s) skilled in technical writing for clarity and

directness should fulfill this review requirement. Internal reviews will be conducted by the individuals associated with the program or other SFAN staff or individuals known to be skilled in writing and editing.

If reports are written to update findings only and they do not deviate significantly from previously reviewed and distributed reports then the review process may stop here. However, review by park staff and subsequent external reviews must be sought for new reports or those that deviate significantly from previously reviewed and distributed reports. Also, if management activities within a park are not clearly understood than park review should be sought for a report to clarify results and management implications.

Park Review

Park staff, generally the Resource Managers are in a unique position since they can supply details about management activities that may influence findings presented in a report. Also, they will most likely be directly involved in applying management recommendations to their respective parks. Therefore, review by park staff is vital to the interpretation of findings and the assessment of proposed management implications. Review by park staff should be conducted before a report is submitted for external review.

External Review

External review by two or more experts in landbird monitoring should be sought for the first report in a series of annual reports. In addition, analytical methods employed on data presented in the report need to be reviewed by one or more statisticians. If a report updates a previously reviewed and distributed report, then external review is not required. However, external reviews must be sought for new reports including the analysis and synthesis reports or those that deviate significantly from previously reviewed and distributed reports. In order to conserve reviewer time, external reviews must follow the internal and park review process.

Report Distribution Procedure

Identifying Stakeholders

The primary stakeholders in our landbird monitoring efforts are park staff. Additional stakeholders include the SFAN I&M program and other partnering agencies.

Distributing the Report

The main mechanism for distribution of the landbird monitoring reports will be the Internet. All reports will be made available for download at the SFAN website:

<https://www.nps.gov/im/sfan/index.htm>

In addition, the NPS I&M Program maintains an on-line natural resource bibliographic database known as NatureBib. NatureBib records will be created for all of the monitoring documents, including the reports. The public version of NatureBib is in development by the NPS I&M program.

All reports will be published in the Natural Resource Technical Report (NRTR) Series following guidance from the NPS Natural Resource Program Center in Fort Collins, CO. The Natural Resource

Publications Management home page hosts a list of and links to all documents published in the NRTR Series. The home page can be found at:

<https://www.nps.gov/im/publication-series.htm>

Progress Reports

Progress reports refer to simple summary reports and should be completed every third year in line with point count survey schedule. Several standard summary tables should be included in the progress report. The recommended structures for standard tables to include in the progress report are presented below, with fabricated data included for illustrative purposes.

Observers Who Conducted Point Counts and / or Mist-netting

Table 1 of the progress report (Table 1) should provide the names and roles of all observers who conducted point counts during the current year and mist-netting during the last three years.

Table 1. Sample Table 1 of the Progress Report.

Observer	Role	Method*	Year(s)
Diana Humple	Field Lead	PC, MN	2010, 11,12
Scott Jennings	Technician	PC, MN	2010, 11,12
Renée Cormier	Field Lead	PC, MN	2010, 11,12
Tom Gardali	Project Lead	PC, MN	2010, 11,12
Elizabeth Porzig	Technician	MN	2010
Borja Mila	Technician	MN	2011
Gregor Yanega	Technician	MN	2012

*PC = point count and MN = mist-netting

Number of Hours Mist-nets were Operated by Season and Year

Table 2 of the progress report (Table 2) should provide the names of the mist net stations and the total number of net hours (effort) summarized by season and year.

Table 2. Sample Table 2 of the Progress Report.

Station	2011 Net hours			2012 Net hours			2013 Net hours		
	Summer	Fall	Winter	Summer	Fall	Winter	Summer	Fall	Winter
Muddy Hollow	1200	1800	800	1150	1780	820	1090	1690	790
Redwood Creek	1100	1780	750	1080	1700	800	1110	1710	850

Dates that Point Count stations were Surveyed by Visit and Year

Table 3 of the progress report (Table 3) should provide the site names and the survey dates by visit and year.

Table 3. Sample Table 3 of the Progress Report.

Point count Site	2011 dates		2012 dates		2013 dates	
	Visit 1	Visit 2	Visit 1	Visit 2	Visit 1	Visit 2
Muddy Hollow	9 May	1 Jun	10 May	2 Jun	12 May	1 Jun
Upper Olema	7 May	5 Jun	7 May	9 Jun	9 May	9 Jun
Tennessee Valley	16 May	11 Jun	12 May	8 Jun	11 May	8 Jun

All Species Recorded During the Field Seasons

Table 4 in the progress report (Table 4) should list all species detected by point count and mist-netting. In the abbreviated table below, a single asterisk (*) indicates that the species is a California Partners in Flight Focal Species and two asterisks (**) are species with special management status according to the California Bird Species of Special Concern list.

Table 4. Sample Table 4 of the Progress Report.

Common name	Latin name	Detection method
Olive-sided Flycatcher*,**	<i>Contopus borealis</i>	PC, MN
Western Wood-Pewee	<i>Contopus sordidulus</i>	PC
Willow Flycatcher	<i>Empidonax traillii</i>	MN
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>	PC, MN

PC = point count and MN = mist-netting

Number of Individuals of Each Species Detected During Point Counts

Table 5 in the progress report (Table 5) should indicate the number of individuals of each species detected during point counts.

Table 5. Sample Table 5 of the Progress Report.

Species	2011	2012	2013
Song Sparrow	30	39	29
Spotted Towhee	26	20	19
California Towhee	2	0	5

Number of Individuals of Each Species Captured During Mist-Netting

Table 6 in the progress report (Table 6) should indicate the number of individuals of each species captured during mist-netting.

Table 6. Sample Table 6 of the Progress Report.

Species	2011			2012			2013		
	Summer	Fall	Winter	Summer	Fall	Winter	Summer	Fall	Winter
Song Sparrow	105	95	50	99	100	55	140	120	70
Spotted Towhee	55	60	36	60	49	30	70	62	50

Other Components of Progress Reports

In addition to the tables described above, progress reports should include:

- A brief Narrative section describing logistical problems (if any) and details changes to methods (if any).
- Graphs showing trends in the raw count of at least the most common species detected and / or California Partners in Flight focal species. These graphical presentations of trends in raw data will not be analyzed quantitatively because they represent interim data that has not accounted for effort and detectability.
- A Results section that describes the content of the tables and graphs.
- A brief Discussion section that highlights unusual events such as atypical weather patterns that might have affected results.
- An Acknowledgements section.

Six-Year Analysis and Synthesis Reports

In addition to the material recommended for the progress reports, the 6-year reports should include the following.

Trends for Species with Adequate Data for Density Estimation from Point Count Data

The primary goal of the 6-year report is to provide information on population trends. Hence, these figures represent the meat of the report. An example figure using data from a subset of riparian sites for six species is provided as Figure 1.

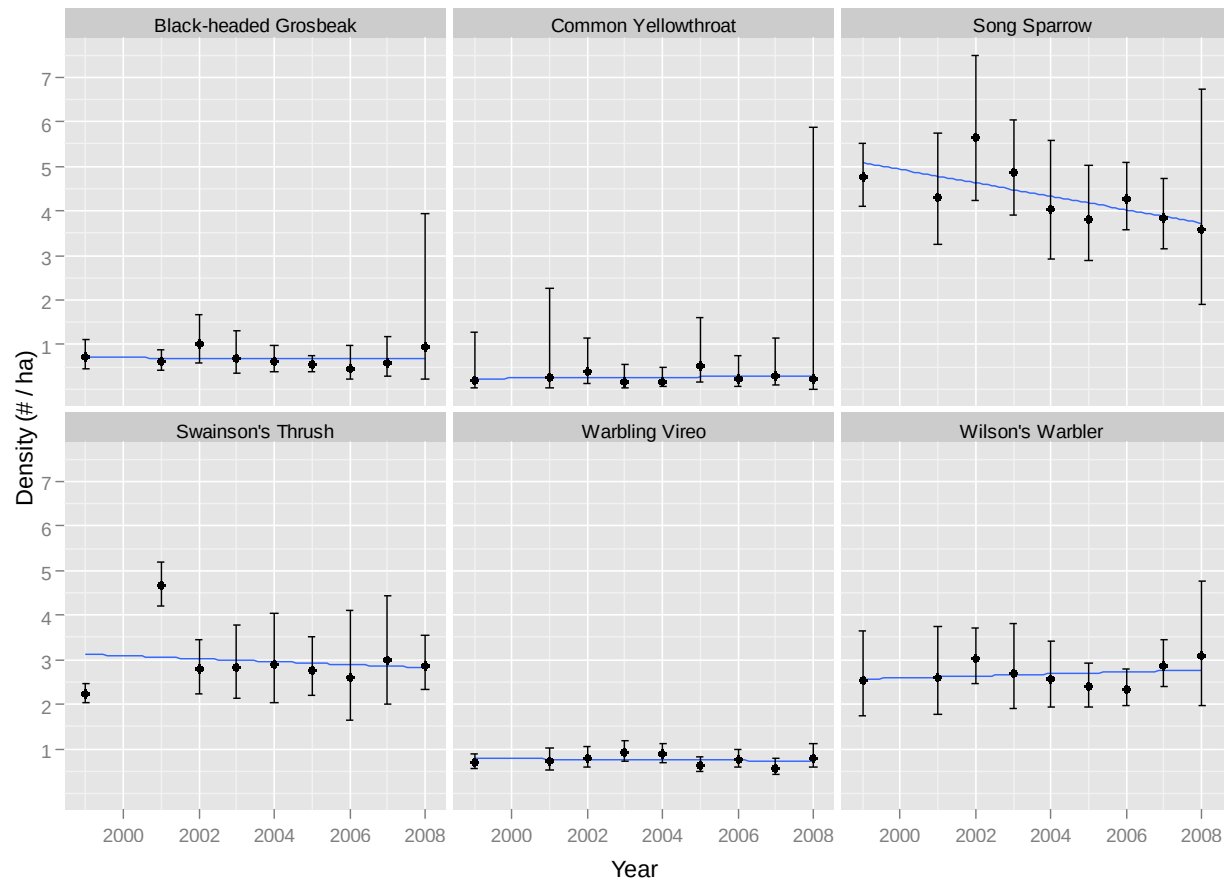


Figure 1. Sample figure depicting trends.

The 6-year report should also include a table (Table 7) with summary statistics for each species that will supplement the trend figures.

Table 7. Sample table with summary statistics for the Progress Report.

Species	Trend in λ	Standard Error (λ)	Trend
Black-headed Grosbeak	-0.010	0.032	No trend
Common Yellowthroat	-0.025	0.048	No trend
Song Sparrow	-0.035	0.013	Negative trend
Swainson's Thrush	-0.0037	0.025	No trend
Warbling Vireo	-0.0095	0.019	No trend
Wilson's Warbler	0.0077	0.012	No trend

The 6-year report should also provide the estimated density (birds/ha) of each species during each year (Table 8).

Table 8. Sample table with estimated density (birds/ha).

Site	Year	Black-headed Grosbeak		Common Yellowthroat		Song Sparrow		Swainson's Thrush		Warbling Vireo		Wilson's Warbler	
		Density	Variance	Density	Variance	Density	Variance	Density	Variance	Density	Variance	Density	Variance
Arroyo Hondo	1999	0.47	0.03	0.00	0.00	4.09	0.28	2.41	0.24	0.58	0.03	4.81	1.11
	2001	0.00	0.00	0.00	0.00	1.82	0.56	4.83	0.16	0.55	0.04	3.48	0.47
	2002	0.17	0.01	0.00	0.00	1.76	0.23	2.36	0.11	0.44	0.05	1.47	0.29
	2003	0.34	0.06	0.00	0.00	3.19	0.73	4.40	0.51	1.11	0.12	5.01	0.26
	2004	0.17	0.01	0.00	0.00	2.20	0.32	2.79	0.09	0.44	0.05	4.28	1.28
	2005	0.25	0.03	0.00	0.00	1.82	0.23	2.73	0.91	0.44	0.08	3.67	1.30
	2006	0.25	0.06	0.00	0.00	4.30	2.76	5.15	0.71	1.11	0.17	2.93	1.85
	2007	0.00	0.00	0.00	0.00	2.70	0.73	1.40	0.44	0.48	0.05	3.80	0.31
Coast Trail Laguna	2008	0.38	0.07	0.00	0.00	2.97	0.14	2.41	0.37	1.11	0.14	2.38	0.37
	2002	0.52	0.05	0.93	0.09	5.03	0.53	2.60	0.27	0.56	0.04	1.95	0.21
Gerbode Valley	2005	0.29	0.03	2.01	0.16	3.03	0.13	3.11	0.25	0.00	0.00	2.38	0.21
Lagunitas Creek	1999	1.01	0.03	0.00	0.00	4.37	0.10	2.22	0.08	1.45	0.02	2.53	0.13
	2001	0.70	0.02	0.00	0.00	3.49	0.17	4.22	0.16	1.82	0.05	2.73	0.23
	2002	1.63	0.06	0.03	0.00	5.18	0.28	2.57	0.09	2.28	0.08	3.26	0.21
	2003	1.35	0.03	0.00	0.00	4.96	0.22	2.47	0.10	2.01	0.05	3.22	0.22
	2004	0.67	0.01	0.00	0.00	2.64	0.10	2.39	0.13	1.45	0.03	2.32	0.10
	2005	0.84	0.04	0.00	0.00	2.86	0.24	1.39	0.04	1.51	0.04	2.99	0.14
	2006	0.93	0.05	0.00	0.00	3.53	0.15	2.04	0.08	1.03	0.04	2.32	0.09
Lower Olema Creek	2007	0.72	0.01	0.00	0.00	3.53	0.21	2.20	0.07	0.81	0.02	2.51	0.14
	2002	0.34	0.02	0.31	0.02	4.24	0.53	1.75	0.15	0.12	0.01	3.50	0.47
	2003	0.28	0.03	0.31	0.03	4.06	0.26	2.98	0.41	0.24	0.01	2.60	0.13
	2004	0.28	0.02	0.24	0.03	4.24	0.39	2.46	0.19	0.90	0.04	2.90	0.18
	2005	0.41	0.05	0.39	0.02	4.96	0.34	2.90	0.25	0.30	0.04	1.90	0.08
	2006	0.07	0.00	0.31	0.03	3.97	0.33	1.93	0.07	0.24	0.02	2.20	0.30

Table 8 (continued). Sample table with estimated density (birds/ha).

Site	Year	Black-headed Grosbeak		Common Yellowthroat		Song Sparrow		Swainson's Thrush		Warbling Vireo		Wilson's Warbler	
		Density	Variance	Density	Variance	Density	Variance	Density	Variance	Density	Variance	Density	Variance
Muddy Hollow	1999	0.44	0.01	0.69	0.05	4.67	0.09	2.32	0.10	0.27	0.01	1.91	0.11
	2001	0.57	0.03	0.50	0.05	4.67	0.18	4.85	0.23	0.09	0.00	1.56	0.12
	2002	0.71	0.07	0.84	0.10	6.12	0.25	3.77	0.15	0.21	0.01	2.54	0.13
	2003	0.71	0.04	0.38	0.02	5.16	0.16	3.09	0.12	0.27	0.01	1.66	0.08
	2004	0.47	0.03	0.42	0.03	4.10	0.23	2.70	0.16	0.24	0.01	1.81	0.11
	2005	0.61	0.03	0.52	0.05	4.03	0.13	3.54	0.18	0.22	0.02	2.05	0.09
	2006	0.35	0.03	0.63	0.05	4.36	0.24	2.32	0.10	0.22	0.01	2.05	0.21
	2007	0.35	0.03	0.63	0.03	4.43	0.21	3.80	0.17	0.13	0.01	2.79	0.13
Pine Gulch	1999	0.40	0.04	0.46	0.08	4.10	0.30	2.44	0.40	0.62	0.01	2.20	0.39
	2001	0.61	0.08	2.07	0.81	4.56	2.55	5.02	2.78	1.06	0.16	1.76	0.32
	2002	0.51	0.03	1.38	0.49	4.36	0.14	3.73	1.28	0.44	0.02	2.64	0.21
	2003	0.20	0.04	0.57	0.07	7.67	0.24	4.25	0.39	1.50	0.17	3.23	0.81
	2004	1.11	0.14	0.46	0.05	6.21	0.30	6.05	0.25	2.65	0.17	3.08	0.32
	2005	0.45	0.09	0.69	0.11	7.54	1.91	3.86	0.30	1.86	0.16	2.86	0.22
	2006	0.00	0.00	0.52	0.12	6.35	0.71	5.21	0.29	0.80	0.15	1.98	0.42
	2007	0.15	0.02	1.03	0.41	5.16	0.86	4.83	0.51	0.80	0.15	3.30	0.27
Redwood Creek	2008	0.30	0.09	0.86	0.15	5.35	0.10	2.70	0.52	0.93	0.12	4.18	0.94
	1999	0.79	0.02	0.00	0.00	5.39	0.19	2.12	0.08	0.47	0.01	2.73	0.11
	2001	0.65	0.03	0.07	0.00	5.09	0.30	4.85	0.24	0.31	0.01	3.36	0.13
	2002	1.41	0.05	0.05	0.00	7.60	0.41	2.58	0.07	0.45	0.02	3.35	0.18
	2003	0.49	0.01	0.05	0.00	4.66	0.21	2.23	0.08	0.52	0.02	2.63	0.11
	2004	0.80	0.03	0.12	0.01	4.98	0.12	2.84	0.07	0.61	0.02	2.93	0.17
	2005	0.69	0.03	0.11	0.01	4.46	0.14	3.06	0.10	0.64	0.02	2.75	0.14
	2006	0.54	0.01	0.07	0.01	4.42	0.11	2.33	0.12	1.02	0.04	2.84	0.13
Upper Olema Creek	2007	0.88	0.06	0.25	0.03	3.72	0.18	3.06	0.12	0.64	0.04	3.21	0.12
	2008	1.32	0.06	0.14	0.02	3.29	0.10	3.05	0.16	0.66	0.02	3.18	0.16
	2005	0.41	0.03	0.13	0.02	3.28	0.12	2.30	0.19	0.71	0.05	1.69	0.14

Trends in Captures for Species from Mist-Netting

The 6-year report should include a table that shows the estimated linear trends for species or subspecies by season (summer, fall, winter) from mist-netting data (Table 9). An abbreviated example from Palomarin (Ballard et al. 2003) is provided below; the actual table will contain many more species.

Table 9. Sample table depicting estimated linear trends.

Species (mean/yr, yrs w/o caps)	Winter location	Nest height	Nest type	Winter food	Cowbird host	Human tolerant	Linear trend (% change)	Adj. R ²	P-value
Pacific-slope Flycatcher (180, 0)	Tropics	High	Other	Insects	Common	Yes	- 0.5 ± 14.6	- 0.05	0.76
Hutton's Vireo (12, 0)	Resident	High	Cup	Insects	Common	No	- 7.7 ± 1.7	0.47	<0.001
Warbling Vireo (47, 0)	Tropics	High	Cup	Insects	Common	Yes	- 9.4 ± 2.2	0.43	<0.001

Trends in Number of Young Birds Captured from Mist-Netting

The 6-year report should include a table that shows the estimated linear trends for young birds captured in mist-nets during the summer and fall. The table will look like the one for adults above.

Trends in Annual Apparent Survival of Adults

A table presenting annual survival of adults should also be presented in the report (see Table 10 taken from Gardali et al. 2003). The actual report will contain many more species.

Table 10. Sample data with estimated density (birds/ha)

Species	Survival Probability (SE, 95% CI)	Recapture Probability (SE, 95% CI)
Swainson's Thrush	0.564 (0.025, 0.515–0.612)	0.598 (0.040, 0.518–0.674)

Other Components of the 6-Year Analysis and Synthesis Reports

In addition to the extra analyses and tables described above, the 6-year report also should:

- Provide public interest highlights. This section has significant potential to create interest and support for this and other resource management projects. Provide a bulleted list of highlights from this project. Resource managers may use these as talking points with other park staff including management. Interpretation staff may use these to highlight aspects of interest to the general public.
- Make management recommendations. If management recommendations are warranted, highlight them here. If the study was initiated due to specific park management needs, management implications should be emphasized and discussed

- Make research recommendations. Summarize additional research needs. This section may serve as a way to develop priority research projects for the parks and to support future funding.
- Attempt to place network results within the larger context of bird population changes as measured by the Breeding Bird Survey for example.
- Evaluate operational aspects of the monitoring program

Literature Cited

Ballard, G., G. R. Geupel, N. Nur, and T. Gardali. 2003. Long term declines and decadal patterns in population trends of songbirds in Western North America, 1979 – 1999. *Condor* 105:737-755.

Gardali, T., D. C. Barton, J. D. White, and G. R. Geupel. 2003. Juvenile and adult survival of Swainson's Thrush in coastal California: annual estimates using capture-recapture analyses. *Auk* 120:1188-1194.