





FIGURE 2. (A) Female song recording numbers are low compared to those of male songs and the total numbers of song recordings in biological collections. In dichromatic species with female song, such as (B) Northern Cardinals (*Cardinalis cardinalis*), female song can be readily observed and recorded. In monochromatic species with female song, such as (C) House Wrens (*Troglodytes aedon*) and (D) European Robins (*Erithacus rubecula*), recordists often label recordings as male song, even though sex cannot be easily determined. This is true even for (E) Stripe-headed Sparrows (*Spizella monticola*), a tropical, monochromatic species in which females sing more than males (Illes and Yunes-Jimenez 2009). An asterisk denotes samples that include research collections of known female songs.

TABLE 3. Journals and outlets for publishing descriptions, natural history articles, or short communications of female bird song. A full list of ornithological journals can be found at Ornithology Exchange (<http://ornithologyexchange.org/journals/titles.html>).

Journal or venue	Article type
Acta Ornithologica	Short notes
American Midland Naturalist	Notes
Ardea	Short notes
Avian Research	Research (Short reports)
Birds of North America	Species accounts
British Birds	Articles
Canadian Field-Naturalist	Articles
Ecology	The Scientific Naturalist series (essays)
Emu	Short communications
Ibis	Short communications
Journal of Caribbean Ornithology	Research articles and notes
Journal of Field Ornithology	Original research articles
Journal of Ornithology	Short notes
Neotropical Birds	Species accounts
Notornis	Short notes
Ornithological Science	Short communications
Ornitologia Neotropical	Short communications
Ostrich	Short notes
Southwestern Naturalist	Notes
Wilson Journal of Ornithology	Short communications

to the public. The more you share, the more people will know about your research and the more likely they will be to help you in the future. Share your findings with your colleagues, friends, and family. Post your findings on social media, write a blog, or give a presentation at a conference. The more you share, the more people will know about your research and the more likely they will be to help you in the future.

What Can You Do?

There are many ways you can help with bird research. You can help by sharing your findings, by participating in citizen science projects, or by helping to collect and care for birds. You can also help by providing information about bird sightings and behavior. If you are interested in helping with bird research, contact your local bird club or the American Ornithological Society. They will be happy to help you get started.

Spread the word.

Share your findings with your colleagues, friends, and family. Post your findings on social media, write a blog, or give a presentation at a conference. The more you share, the more people will know about your research and the more likely they will be to help you in the future. You can also help by providing information about bird sightings and behavior. If you are interested in helping with bird research, contact your local bird club or the American Ornithological Society. They will be happy to help you get started.

Share appropriate resources with citizen scientists, students, and technicians.

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Disseminate your findings.

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Handbook of the Birds of the World,

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- with sex, season, and singing role in a tropical oriole (*Icterus*). *Behavioral Ecology* 28:1256–1265.
- Ortega, C. P. (2012). Effects of noise pollution on birds: A brief review of our knowledge. *Ornithological Monographs* 74:6–22.
- Pavlova, D., R. Pinxten, and M. Eens (2005). Female song in European Starlings: Sex differences, complexity, and composition. *The Condor* 107:559–569.
- Price, J. J. (2015). Rethinking our assumptions about the evolution of bird song and other sexually dimorphic signals. *Frontiers in Ecology and Evolution* 3. doi:[10.3389/fevo.2015.00040](https://doi.org/10.3389/fevo.2015.00040)
- Price, J. J., S. M. Lanyon, and K. E. Omland (2009). Losses of female song with changes from tropical to temperate breeding in the New World blackbirds. *Proceedings of the Royal Society B* 276:1971–1980.
- Ralph, C. J., J. R. Sauer, and S. Droege (Technical Editors) (1995). *Monitoring bird populations by point counts*. USDA Forest Service General Technical Report PSW-GTR-149.
- Reynolds, R. T., J. M. Scott, and R. A. Nussbaum (1980). A variable circular-plot method for estimating bird numbers. *The Condor* 82:309–313.
- Riebel, K. (2003). The “mute” sex revisited: Vocal production and perception learning in female songbirds. *Advances in the Study of Behavior* 33:49–86.
- Riebel, K. (2016). Understanding sex differences in form and function of bird song: The importance of studying song learning processes. *Frontiers in Ecology and Evolution* 4. doi:[10.3389/fevo.2016.00062](https://doi.org/10.3389/fevo.2016.00062)

APPENDIX TABLE 4. List of participants and affiliations (at time of participation) in 2 discussions on female bird song.

2016 North American Ornithological Conference, female song roundtable	
Participant	Affiliation
Jennifer Ackerman	Independent author
Lauryn Benedict	University of Northern Colorado
Than Boves	Arkansas State University
Ioana Chiver	University of California, Los Angeles, Smithsonian Tropical Research Station
Becky Cramer	Smithsonian Migratory Bird Center
Alana Demko	University of Windsor
Stephen Ferguson	University of Memphis
Sharon Gill	Western Michigan University
Brendan Graham	University of Windsor
Emma Greig	Cornell Lab of Ornithology
Sylvia Halkin	Central Connecticut State University
Richard Hedley	University of California, Los Angeles
David Logue	University of Lethbridge
Alix Matthews	Arkansas State University
Shannon McNeil	Southern Sierra Research Station
Matt Medler	Cornell Lab of Ornithology, Macaulay Library
Dan Mennill	University of Windsor
Karan Odom	University of Maryland, Baltimore County
Kevin Omland	University of Maryland, Baltimore County
Jordan Price	St. Mary's College of Maryland
Dustin Reichard	Ohio Wesleyan University
Michael Rowley	University of Maryland, Baltimore County
Luis Sandoval	Universidad de Costa Rica
Evangeline Shank	University of Maryland, Baltimore County
Morgan Slevin	Arkansas State University
Diane Tracy	Southern Sierra Research Station
Mike Webster	Cornell Lab of Ornithology, Macaulay Library

2017 Animal Behavior Society meeting, female song discussion	
Participant	Affiliation
Lauryn Benedict	University of Northern Colorado
Christine Dahlin	University of Pittsburgh, Johnstown
Cara Krieg	Michigan State University
Karan Odom	University of Maryland, Baltimore County
Jordan Price	St. Mary's College of Maryland
Chris Templeton	Pacific University
Mike Webster	Cornell Lab of Ornithology, Macaulay Library

APPENDIX TABLE 5. List of North American passerine species with known female song. Data from the Birds of North America (Rodewald 2017). Updated from Benedict (2008).

Tyrannidae (Tyrant Flycatchers)	
1	Northern Beardless-Tyrannulet (C t t b b)
2	Olive-sided Flycatcher (C t)
3	Western Wood-Pewee (C t l)
4	Eastern Wood-Pewee (C t)
5	Acadian Flycatcher (E)
6	Willow Flycatcher (E t ll)
7	Least Flycatcher (E)
8	Buff-breasted Flycatcher (E l)
9	Black Phoebe ()
10	Eastern Phoebe (b)
11	Say's Phoebe ()
12	Dusky-capped Flycatcher (t b l)
13	Ash-throated Flycatcher ()
14	Great Kiskadee (t l t)
Laniidae (Shrikes)	
15	Loggerhead Shrike (l)
16	Northern Shrike (b l)
Vireonidae (Vireos)	
17	White-eyed Vireo ()
18	Bell's Vireo (b ll)
19	Gray Vireo ()
20	Warbling Vireo (l)
Corvidae (Jays, Magpies, and Crows)	
21	Gray Jay ()
22	Steller's Jay (C tt t ll)
23	Florida Scrub-Jay (A l l)
24	Island Scrub-Jay (A l l)
25	California Scrub-Jay (A l l)
26	Woodhouse's Scrub-Jay (A l)

APPENDIX TABLE 5. Continued.

Cinclidae (Dippers)	
51	American Dipper (C /)
Regulidae (Kinglets)	
52	Ruby-crowned Kinglet (/ / /)
Sylviidae (Old World Warblers)	
53	Wrentit (C t)
Zosteropidae (White-eyes and allies)	
54	Japanese White-eye (t)
Muscicapidae (Old World Flycatchers)	
55	White-rumped Shama (C / b)
56	Bluethroat ()
57	Northern Wheatear (t t)
Turdidae (Thrushes and allies)	
58	Eastern Bluebird (/ /)
59	Townsend's Solitaire (t t)
60	Kamao (t t)
61	Amaui (t)
62	Olomao (t /)
63	Omao (t b)
64	Puaiohi (t /)
65	Bicknell's Thrush (C t b //)
66	Wood Thrush (t / / t /)
Mimidae (Mockingbirds, Thrashers, and allies)	
67	Gray Catbird (D t // /)
68	California Thrasher (t)
69	LeConte's Thrasher (t / t)
70	Northern Mockingbird (/ / tt)
Sturnidae (Starlings and allies)	
71	European Starling (t /)
72	Common Myna (A t t t)
Ptilionotidae (Silky Flycatchers)	
73	Phainopepla (/ t)
Peucedramidae (Olive Warblers)	
74	Olive Warbler (t t)
Passeridae (Old World Sparrows)	
75	House Sparrow (t)
Fringillidae (Finches, Crossbills, and allies)	
76	Nihoa Finch (/ /t)
77	Apapane (t)
78	liwi (D)
79	Hawaii Amakihi (C /)
80	Oahu Amakihi (C / /)
81	Kauai Amakihi (C / t)
82	Akekee (/ t)
83	Hawaii Akepa ()
84	Pine Grosbeak (/ / t)
85	Gr