



FEATHER SAMPLING PROTOCOL

2017 Season

We welcome feathers from any migratory or resident species, collected any time of the year, including migration. However, if you would like to prioritize your local efforts, our species of emphasis are listed below:

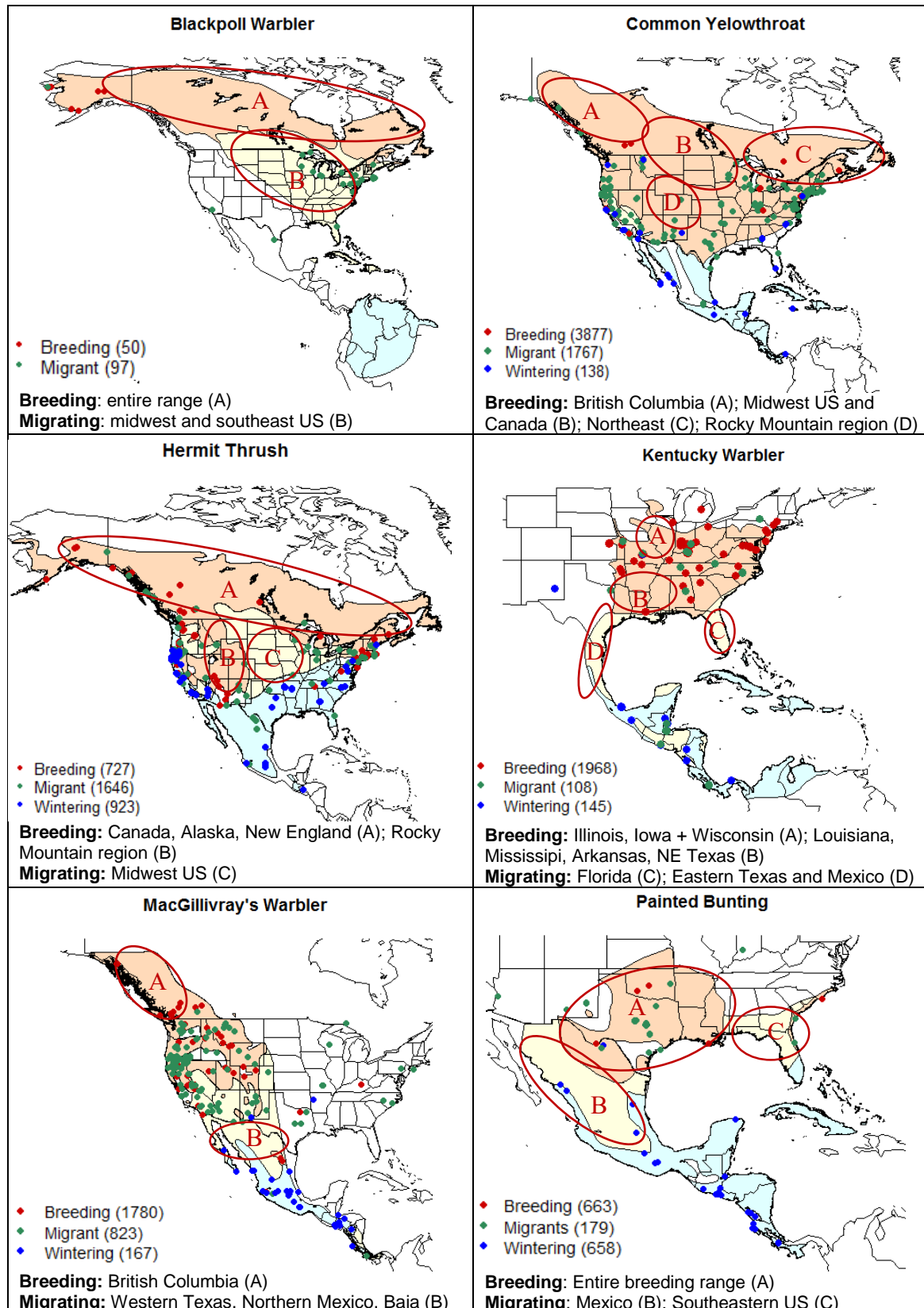
First Priority Taxa - We will be building population specific migration maps within the next couple of years for the following species. Please refer to the maps on pages 2-4 that identify major sampling gaps for each species.

Blackpoll Warbler	(BLPW)	Tricolored Blackbird	(TRBL)
Common Yellowthroat	(COYE)	Virginia's Warbler	(VIWA)
Hermit Thrush	(HETH)	Western Tanager	(WETA)
Kentucky Warbler	(KEWA)	Willow Flycatcher	(WIFL)
McGillivray's Warbler	(MGWA)	Wilson's Warbler	(WIWA)
Painted Bunting	(PABU)	Yellow Warbler	(YWAR)
Rusty Blackbird	(RUBL)		

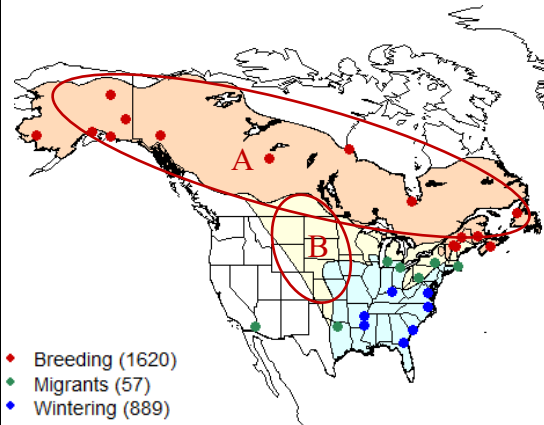
Second Priority Taxa - We are continuing to build the collection and hope to create maps for the following taxa as funding becomes available:

American Goldfinch	(AMGO)	Oregon Junco	(ORJU)
American Redstart	(AMRE)	Ovenbird	(OVEN)
American Robin	(AMRO)	Pine Siskin	(PISI)
Black-and-white Warbler	(BAWW)	Prothonotary Warbler	(PROW)
Black-capped Chickadee	(BCCH)	Red-eyed Vireo	(REVI)
Black-headed Grosbeak	(BHGR)	Ruby-crowned Kinglet	(RCKI)
Carolina Wren	(CARW)	Slate-colored Junco	(SCJU)
Chipping Sparrow	(CHSP)	Song Sparrow	(SOSP)
Fox Sparrow	(FOSP)	Spotted Towhee	(SPTO)
Gray Catbird	(GRCA)	Swainson's Thrush	(SWTH)
Hooded Warbler	(HOWA)	Tennessee Warbler	(TEWA)
Indigo Bunting	(INBU)	Warbling Vireo	(WAVI)
Lincoln's Sparrow	(LISP)	White-eyed Vireo	(WEVI)
Mountain Chickadee	(MOCH)	White-throated Sparrow	(WTSP)
Nashville Warbler	(NAWA)	Wrentit	(WREN)
Northern Waterthrush	(NOWA)	Wood Thrush	(WOTH)
Orange-crowned Warbler	(OCWA)	Yellow-breasted Chat	(YBCH)

The following distribution maps highlight the major sampling gaps in each species' breeding and migrating ranges. We would highly appreciate feather samples from these regions, as well as from each species' **entire wintering ranges**. (Legend is provided on page 4)



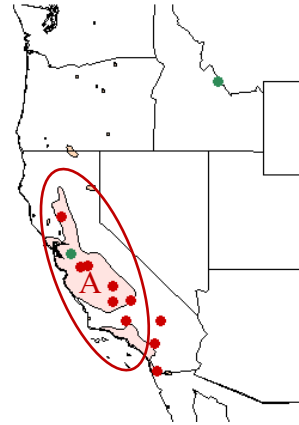
Rusty Blackbird



- Breeding (1620)
- Migrants (57)
- Wintering (889)

Breeding: Entire breeding range (A)
Migrating: Entire migrating range (B)

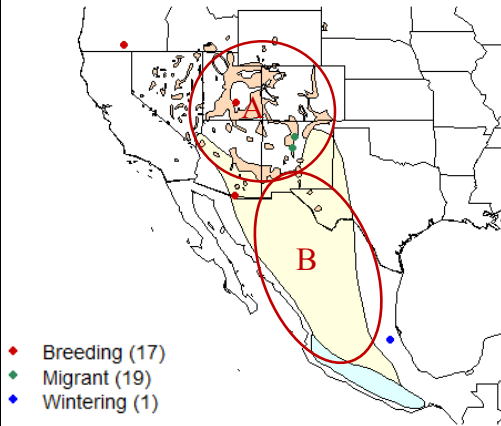
Tricolored Blackbird



- Breeding (304)
- Migrants (24)

Breeding: Entire range (A)

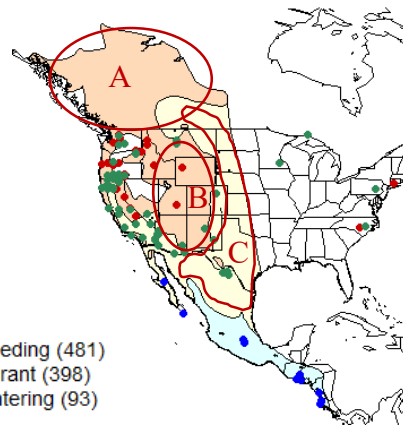
Virginia's Warbler



- Breeding (17)
- Migrant (19)
- Wintering (1)

Breeding: Entire breeding range (A)
Migrating: Entire migrating range (B)

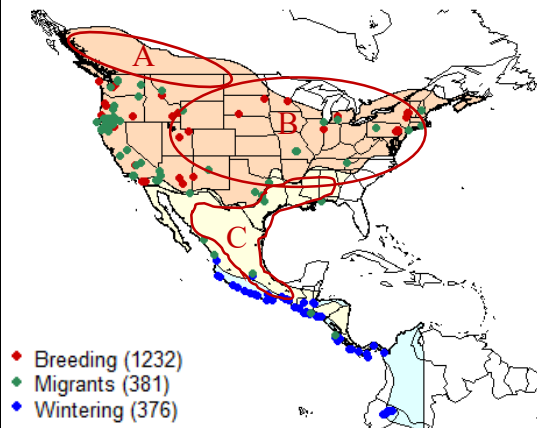
Western Tanager



- Breeding (481)
- Migrant (398)
- Wintering (93)

Breeding: British Columbia, Alberta (A); Rocky Mountain region (B)
Migrating: Entire migrating range (C)

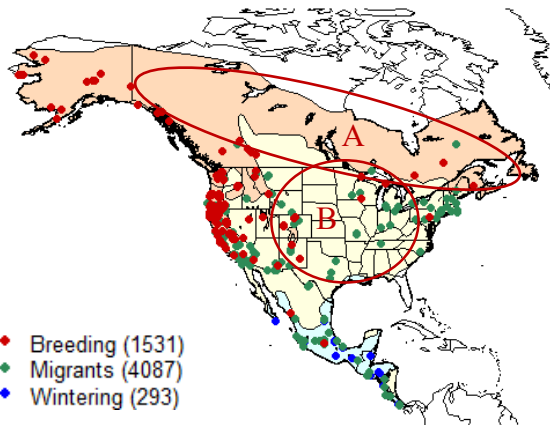
Willow Flycatcher



- Breeding (1232)
- Migrants (381)
- Wintering (376)

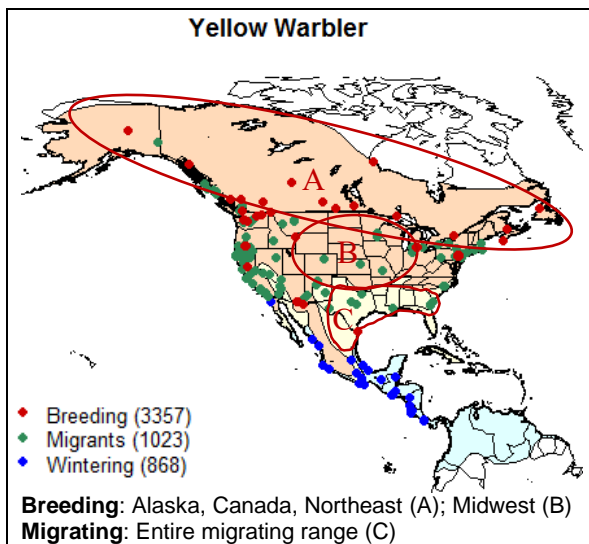
Breeding: Canada (A); Midwest, Midatlantic (B)
Migrating: Entire migrating range (C)

Wilson's Warbler



- Breeding (1531)
- Migrants (4087)
- Wintering (293)

Breeding: Canada (A)
Migrating: Midwest, Southern US (B)



Legend:

- Breeding Resident
- Permanent Resident
- Passage Migrant
- Wintering Resident

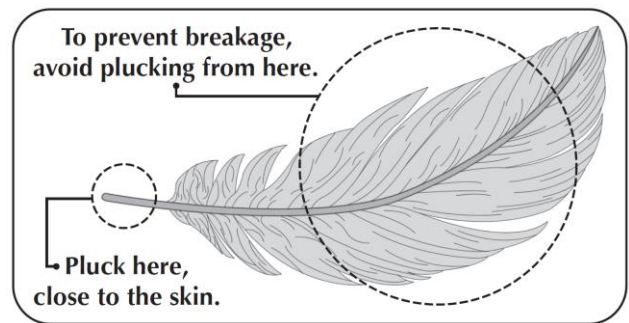
FEATHER COLLECTION PROTOCOL

When tail feathers are pulled, a small amount of skin cells remain attached to the quill of the feather. These skin cells are a valuable source of DNA that can be used to determine the population origin of an individual bird. Moreover, a portion of the feather itself can be used for stable isotope analyses, which can provide important information on the location (at least latitude) where the feather was grown. Researchers at UCLA and elsewhere use the results of DNA and stable isotope analyses to investigate patterns of migratory connectivity in birds, that is, to determine wintering locations for populations of breeding birds and vice-versa. We recommend that two tail feathers be collected during the banding process from each bird (excluding woodpeckers for which tail feathers are critical to their foraging ability). There is no need to collect feathers from the same individual more than once during the same season.

1. Collecting and Storing Feather Samples

Before taking any feather samples, make sure that your hands are clean. If you are collecting samples from multiple birds, wash or sanitize hands between each collection.

To collect a sample, pluck one central and one outer tail feather (e.g., L1 and R6). To pluck the feathers, just hold them firmly, relatively close to the base, and pull gently. *See illustration.*



Do not touch the quill, as the DNA is extracted from the skin cells attached to it. There is no need to collect feathers from the same individual more than once.

Feathers are preferably stored refrigerated at 4°C but can be stored at room temperature. Please send samples at the end of the field season (see instructions below).

2. Required Data

Place the feathers from each bird into one of the pre-printed envelopes provided by UCLA. Using your own envelopes is fine, but please make sure each envelope contains the required information listed below.

On each envelope, please provide the following information:

- Species Name
- Band Number
- Date (Please use letters for the month instead of numbers, e.g. Apr 25, 2016)
- Station and Location
- Age, Sex and Breeding Condition (as determined by brood patch or cloacal protuberance)*
- Whether or not the bird was a recapture

On a separate paper, please also include the following additional location information:

- Nearest town, state/province, country
- GPS coordinates in decimal format

* Please make a note if you notice that the central rectrix is of a different generation than the outer rectrix (e.g., alternate vs. basic or juvenal vs. formative feather).

3. Returning Completed Samples to UCLA with necessary paperwork

When you are ready to mail your samples, please email Jasmine Rajbhandary (jasminerb@g.ucla.edu) with the following information so she can send you a prepaid FedEx label:

- Approximate weight of package
- Estimated shipping date
- Return address
- Contact number
- Email to receive FedEx label

If shipping without the provided label please send samples via **FedEx** or **UPS** to the address below. PLEASE DO NOT USE THE U.S. Postal Service (USPS) as they irradiate mail with high-power radiation that might damage the DNA in the feather samples.

Jasmine Rajbhandary
Center for Tropical Research
University of California, Los Angeles
610 Charles E. Young Drive East, TLSB 4162
Los Angeles, CA 90095
USA

****Copies of the following Permits must be included in the shipment:**

For shipments **within the U.S.**, please include the following:

1. Importers (UCLA's) USDA permit #48865 for shipments within the US (contact Jasmine Rajbhandary for a copy)
2. Your (the collector's) federal holding permit, i.e. a bird banding permit or scientific collecting permit.

For shipments from **outside of the U.S.** please include the following:

1. Importers (UCLA's) USDA permit #48864 for shipments outside the US *
2. Importers (UCLA's) USFWS Migratory Bird import/export permit *
3. Your (the collectors) federal bird banding permit and state permit (as necessary)
4. USFWS Form 3-177 (Declaration of importation or exportation of fish or wildlife)
5. FedEx Declaration of Biological Shipments
6. FedEx Commercial Invoice
7. CITES export permit

* forms available at UCLA; rest need to be filled out by you (the collector)

Thank you very much for your participation in this important work! Please let us know if you have any questions. For further information contact:

Jasmine Rajbhandary
Collections Manager
Center for Tropical Research, UCLA
Phone: (267) 475-5921
E-mail: jasminerb@g.ucla.edu