VI Bird Banding and Molt Analysis Course

SELVA, Colombia

Graduate Program in Ecology, Federal University of Rio Grande do Sul, Brazil

December 15-21, 2017

**Location:** Refugio Guajiro Natural Reserve, Guajira, Colombia  **Instructors:** Nick Bayly, Pablo Elizondo, Gonçalo Ferraz, Diego Garcia, Camila Gomez, Erik Johnson  **Assistant instructors:** Angela Caguazango, Marcio Reppening, Jeyson Sanabria  **Sponsors:** [Selva](http://selva.org.co), [COLCIENCIAS](http://www.colciencias.gov.co), [Fundación Iguaraya](https://www.facebook.com/figuaraya/), [UFRGS](http://www.ufrgs.br/ppgecologia/), [Corbidi](http://www.corbidi.org), [Audubon](http://la.audubon.org), [Costa Rica Bird Observatories](http://www.costaricabird.org), [Humboldt State University](https://www.humboldt.edu)

**SYLLABUS**

Day 1, Friday, December 15

 9:30 Meeting at Riohacha, Malecón and departure by bus to Punta de Los Remedios, followed by boat to Refugio Guajiro.

12:00 Arrival at Refugio Guajiro and lunch

15:00 ***Introduction*** to course, site, and participants [Camila, 30 min]

15:45 ***Lecture 1*:** Use, ethics, and basic principles of bird banding (1, 2, 3). First contact with equipment, routine procedures, and data organization. Introduction to morphological traits that are indicative of age and sex: skull ossification, brood patch, cloacal protuberance, bill gape, eye color, and juvenile plumage. Brief introduction to molt analysis. [Chespi, 1.5 h]

17:30 ***Lecture 2*:** Introduction to avifauna of the Guajira region [1 h]

19:00 Dinner and work group formation.

Day 2, Saturday, December 16

5:30 Demonstrative banding session: bird holding grips (extraction, bander, photographer’s grip plus hand change); observation of brood patches, cloacas, fat, body molt, flight feather molt, wing wear, and wing cord. Band application. Data entry at camp after the session.

11:30 Lunch

14:00 In-camp net opening and storage practice. [45 min]

15:00 ***Lecture 3*:** Band application and removal. Expedient recording of data. Banding station management: rain protocol, overload protocol, minimum data, predators, and visitors. (4, 5). [Erik, 30 min]

15:30Presentation about the *National Audubon Society* [Erik, 30 min]

16:00 ***Lecture 4*:** Bird life cycle and plumage molt cycle. Tropical bird molt strategies in the context of the four molt strategies in the augmented H-P system. (6, 7, 8). [Diego, 2 h]

19:00 Dinner.

Day 3, Sunday, December 17

5:30 Demonstrative and hands-on banding session. Revision of techniques for holding and extracting birds, morphological measures, molt terminology recap for each captured bird. Data entry at camp after the banding session.

11:30 Lunch

14:00 ***Lecture 5*:** Bird life cycle review and detailed presentation of the Wolfe-Ryder-Pyle system (WRP; 6,7,8). [Camila, 1 h]

15:15 ***Lecture 6*:** Age determination from photographs of many species, using the WRP system with detailed discussion of photos. Molt in woodpeckers and raptors. [Erik, 2 h 45 min]

19:00 Dinner

Day 4, Monday, December 18

5:30 Hands-on banding session. Bird extraction and morphological measurements by students with instructor supervision and review. Identification of molt cycles, stage within cycle, and WRP code by students for each captured bird. Data entry at camp after the banding session.

11:30 Lunch

14:00 Camp practice of bird first aid and band removal (with toothpicks). [1 h]

15:15 ***Lecture 7*:** Bird first aid (dehydration, heat, cold, leg and wing fractures, leg and wing joint dislocation, amputation, euthanasia, sick birds, and dead birds.) [Chespi, 1 h]

17:00 ***Lecture 8*:** Migratory bird study in the Neotropical region (9,10). [Camila, 1 h]

19:00 Dinner

Day 5, Tuesday, December 19

5:30 Hands-on banding session. Bird extraction, fast and careful processing (by this time students should have memorized the sequence of measurements to take). Identification of molt cycles, stage within cycle, and WRP code by students for each captured bird. Demonstratative collection of blood and cloacal contents.

11:30 Lunch

14:30 ***Lecture 9*:** Estimation of bird population parameters from banding data. Overview of sampling design and analytical options. (12). [Gonçalo, 1 h]

15:45 ***Lecture 10*:** General review. [Diego, Nick, Erik, Camila, Chespi 2.5 h]

19:00 Dinner

Day 6, Wednesday, December 20

5:30 Banding session with evaluation of bird extraction and all banding-table techniques practiced in the previous days. Instructors will rotate through banding groups to check on, evaluate and comment on student progress and station order.

11:30 Lunch

14:30 Written test consisting mostly of bird descriptions with multiple choices of WRP code. Course evaluation questionnaire. Individual student meetings with the group of instructors to talk about progress during the course.

17:00 Final meeting.

19:00 Dinner and party.

Day 7, Thursday, December 21

5:30 Free time for bird watching.

8:00 Breakfast, packing, and departure to Riohacha

**LITERATURA CITED IN SYLLABUS**

1. NABC (2001) *The North American Banders' Study Guide* (NABC Publications Committee, Point Reyes Station).

2. NABC (2003) Guía de Estudio del Anillador de Norteamérica (Comité de Publicaciones, Point Reyes Station)

3. CEMAVE (1994) *Manual de anilhamento de aves silvestres* (IBAMA, Brasilia). 2nd Ed.

4. NABC (2001) *The North American banders' manual for banding passerines and near passerines* (NABC Publications Committee, Point Reyes Station).

5. Ralph CJ, Geupel GR, Pyle P, Martin TE (1999) *Handbook of Field Methods for Monitoring Landbirds* (USDA Forest Service - Pacific Southwest Research Station, Albany, California).

6. Wolfe JD, Ryder TB, Pyle P (2010) Using molt cycles to categorize the age of tropical birds: an integrative new system. *Journal of Field Ornithology* 8:186–194.

7. Howell SNG, Corben C, Pyle P, Rogers DI (2003) The first basic problem: a review of molt and plumage homologies. *Condor* 105:635–653.

8. Wolfe JD, Ryder TB, Pyle P, Johnson EI (2012) Using molt and plumage cycles to age tropical birds: updates and recent advances. *Manuscript*

9. Bowlin MS, Bisson I-A, Shamoun-Baranes J, Reichard JD, Sapir N, Marra PP, Kunz TH, Wilcove DS, Hedenström A, Guglielmo CG, Åkesson S, Ramenofsky M, Wikelski M (2010) Grand challenges in migration biology. 50: 261-279.

10. Bridge ES, Kelly JF, Contina A, Gabrielson RM, MacCurdy RB, Winkler DW (2013) Advances in tracking small migratory birds: a technical review of light-level geolocation. *Journal of Field Ornithology* 84: 121-137.

11. Joseph, L (2011) Museum collections in ornithology: todays record of avian diversity for tomorrow´s world. *Emu* 111: 1-12

12. Yoccoz NG, Nichols JD, Boulinier T (2001) Monitoring of biological diversity in space and time. *Trends in Ecology & Evolution* 16: 446-453.

**OTHER RECOMMENDED READING**

On banding

Spotswood EN, Roesch Goodman KR, Carlisle JC, Cormier RL, Humple DL, Rosseau J, Guers SL, Barton GG (2012) How safe is mist netting? Evaluating the risk of injury and mortality to birds. *Methods in Ecology and Evolution* 3: 29-38.

On migration

Gómez C, Bayly NJ, Rosenberg KV (2014) Fall stopover strategies of three species of thrush (*Catharus*) in northern South America. *The Auk* 131: 702-717.

On molt

Gómez C, Botero-Delgadillo E, Bayly NJ, Moreno MI, Páez A (2012) Documentando estratégias de muda en aves neotropicales: ejemplos de la Sierra Nevada de Santa Marta, Colombia. *Ornitologia Neotropical* 23: 129-138.

Johnson EI, Wolfe JD (2014) Thamonophilidae (antbird) molt strategies in a central Amazonian rainforest. *The Wilson Journal of Ornithology* 126: 451-462.

Johnson EI, Wolfe JD, Ryder TB, Pyle P. (2011) Modifications to a molt-based ageing system proposed by Wolfe et al. (2010). *Journal of Field Ornithology* 82: 422-424.

Ryder TB, Wolfe JD (2009) The current state of knowledge on molt and plumage sequences in selected Neotropical bird families: a review. *Ornitologia Neotropical* 20: 1-18.

On parameter estimation

Kéry M, Schaub M (2012) Bayesian Population Analysis Using WinBUGS: A Hierarchical Perspective. Academic Press, San Diego CA.

MacKenzie DI, Nichols JD, Royle JA, Pollock KH, Bailey LL, Hines JE (2006) Occupancy Estimation and Modeling – Inferring Patterns and Dynamics of Species Occurrence. Academic Press, San Diego CA.

Platt JR (1964) Strong inference: certain systematic methods of scientific thinking may produce much more rapid progress than others. *Science* 146: 347-353.

Royle JA, Kéry M, Guélat J (2011) Spatial capture-recapture models for search-encounter data. *Methods in Ecology and Evolution* 2: 602-611.

Williams BK, Nichols JD, Conroy MJ (2002) Analysis and Management of Animal Populations. Academic Press, San Diego CA.