Dan H. Watson

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EDUCATION

M.S. Fisheries and Wildlife Sciences, Virginia Tech — Blacksburg, VA
Anticipated Graduation: December 2024
GPA: 4.0

B.S. Environmental and Natural Resources, Clemson University — Clemson, SC
Concentration - Conservation Biology — August 2020
GPA: 3.3

EXPERIENCE

VIRGINIA TECH — Blacksburg, VA
M.S. Research Assistant — August 2022 – Present

- Led research in avian response to heavy mineral surface mine reclamation in southeastern Georgia
- Designed and implemented intensive avian monitoring surveys, using bioacoustic monitoring with autonomous recording units (ARUs)
- Automatically annotated acoustic data using BirdNET, integrated within high performance computing
- Evaluated BirdNET performance and validated BirdNET predictions to determine thresholds for filtering
- Assessed potentially significant habitat variables with line-intercept vegetation sampling data
- Conducted statistical analyses to estimate species occupancy or abundance with validated BirdNET output and determine significant environmental parameters influencing occupancy and abundance in R
- Analyzed the efficacy of passive acoustic monitoring to detect focal species– informing future monitoring protocols
- Mist netting, banding, and recapture of 30+ passerines to understand site use and body condition
- Utilized systematic pipeline for large volume data storage and management– involving network-attached storage systems and high performance computing
- Supervised and trained research technician tasked with collecting data to meet project goals
- Collaborated with the USGS Virginia Cooperative Fish and Wildlife Research Unit team as a peer mentor to other graduate students
- Presented regular updates on project data, analysis, and results to funders and collaborators, including private, state and federal institutions

GLENN ALTON BANDING STATION — Blacksburg, VA
Volunteer Banding Assistant — August 2022 – November 2023

- Mentored Virginia Tech students in passerine banding, mist net operation, extraction, and data collection
- Banded 30+ passerine and near-passerine species
- Completed 20+ mist net extractions of passerines and near-passerines

NORTH CAROLINA WILDLIFE RESOURCES COMMISSION — Raleigh, NC

Wildlife Conservation Technician — December 2021 – July 2022

- Independently led data collection and outreach efforts across the Piedmont region for the North Carolina Bird Atlas (NCBA), a longitudinal project gaining insights in distribution, breeding status, and conservation needs for all avian species in North Carolina
- Granted access to survey private and commercial properties through various outreach methods, including cold calls and direct mailings– fostered continued working relationships with property owners with engaging communication
- Surveyed land parcels via Esri ArcGIS to determine property ownership and habitat characteristics
- Steered survey effort by monitoring the NCBA eBird database
- Frequently scheduled and traveled on multi-day trips across the region– gave weekly reports on travel to supervisors
- Designed surveys routes in areas with remote access and adverse field conditions with Esri ArcMap, Field Maps, and Guru Maps
- Performed eBird checklist surveys (600+) including observational behavioral data in a variety of habitats
- Conducted point count surveys (200+) using Esri Survey123 incorporating distance-sampling methodologies
- Collaborated with supervisors, colleagues, and committee members in regards to achieving NCBA objectives
- Published website blogs and social media posts pertinent to the NCBAs' outreach goals

JEKYLL ISLAND BANDING STATION — Jekyll Island, GA

Volunteer Banding Assistant — October 2021

- Banded (60+) passerine and near-passerine species, consisting of 20+ variety of species
- Completed (70+) mist net extractions of passerines and near-passerines
- Routinely operated mist nests and performed data collection
- Collaborated with long-term fall migration bird banding station located on a barrier island in southeastern Georgia
- Trained volunteers on safety, mist net operation, and basic bird extraction skills

WEHLE LAND CONSERVATION CENTER, ALABAMA AUDUBON — Midway, AL

Bird Banding Course Participant — September 2021

- Trained in all aspects of mist net operation, banding safety, and ethics under multiple master banders
- Honed bird extraction and handling skills
- Developed ability to age and sex passerines and near-passerines in-hand

- Studied context, development, and legality of successfully operating a bird banding station
- Scribed using MAPS protocol and forms
- Extracted, banded, aged/sexed (10+) songbird species, consisting of 7 varieties of species

WHIGG MEADOW BANDING STATION — Cherokee National Forest
Volunteer Banding Assistant — September 2021

- Assisted in the daily operations of a high-elevation fall migration bird banding station
- Routinely conducted mist nest operation, data collection, and efficiently scribed for bird bander(s)
- Trained in mist net extraction and successfully extracted 30+ individual passerines, consisting of 10+ variety of species

CLEMSON UNIVERSITY — Clemson, SC
Avian Research Technician — March 2021 – July 2021

- Contributed to study monitoring effects of forest management on the distribution of ruffed grouse, golden-winged warbler, and four habitat indicator species in the Southern Blue Ridge Ecoregion
- Conducted point count surveys (200+) under a conditional occupancy model design across the Blue Ridge Mountain region of North Carolina, South Carolina, and Georgia
- Deployed autonomous recording units for remote surveys in an integrated joint occupancy modeling framework
- Collected detailed observations of significant habitat variables in micro-habitat and patch scales with Wildnote App
- Conducted vegetation surveys (30+) using Carolina Vegetation Survey protocol and Robel pole measurements
- Planned survey routes with Esri ArcMap, Field Maps, and Avenza Maps
- Routinely sent reports and communications to project lead and peers in regards to progress of study
- Off-road navigation into remote areas and hiked long-distances in hot, humid, and rugged terrain
- Contributed bird and habitat photography for project presentations

BIG BALD BANDING STATION — Wolf Laurel, NC
Hawkwatch Counter / Volunteer Banding Assistant — September 2020 – November 2020

- Independently led daily Hawkwatch count of migratory raptors (130+ hours)
- Conducted in-flight raptor identification, often from far distances or in poor lighting condition– relying on advanced field-marks, such as flight style, silhouette, or other behavioral characteristics
- Processed daily data entry into Hawk Migration Association of North America (HMANA)'s HawkCount database
- Educated visitors on raptor migration, bird conservation, and operations of Big Bald Banding Station
- Developed passerine and raptor handling skills
- Operated mist nets daily
- Provided efficient scribing and data collection during northern saw-whet owl and passerine banding operations

- Provided quality photography for education and outreach efforts

CLEMSON UNIVERSITY Clemson, SC

Avian Research Technician / Undergraduate Research Assistant January 2019 – August 2019

- Attained experience using audio lures, mist nets, radio telemetry, and Bal-chatri (BC) traps
- Conducted outreach and coordination with property owners and volunteers
- Tracked 20 Barred Owls using VHF radio telemetry and collected and compiled data with Epicollect5
- Identified barred owl habitats across a gradient of rural and urban areas
- Delineated territories of individual Barred Owls across study sites
- Systematically uploaded and processed telemetry data

ANALYTICAL SKILLS

Hiarcheal Ecological Modeling (Occupancy models, N-mixture models)
Species distribution and habitat modeling
Generalized linear models
Mixed models
Model evaluation (GoF tests, k-fold cross-validation)
Multi-model selection (AIC)
Principal component analysis

TECHNOLOGICAL SKILLS

Data analysis and management (R, Python, Shell Scripting)
Acoustic data processing and analysis (BirdNET, OpenSoundscape, Raven PRO)
ARU configuration, deployment, maintenance, troubleshooting (Wildlife Acoustics products)
GIS data analysis and mapping (ArcGIS, QGIS)
GIS mapping mobile applications (Field Maps, QField, Guru Maps, Avenza Maps)
Data collection mobile applications (Survey123, Epicollect5, Wildnote)
High-performance computing systems (Virginia Tech ARC program)
Network attached storage system management (Synology products)
Code repository management (Github)
Photo and design applications (Adobe Lightroom, Photoshop, InDesign)
Web development (HTML, Github Pages)

FIELD SKILLS

Avian point count surveys (700+)
Identification of eastern bird species (auditory/visual)

Passerines and near-passerine banding– determining age, sex, body condition, and collecting measurements (100+) Mist net extraction (200+), assembly, and repair
Woody and non-woody plant identification across a variety of southeastern plant community types
Habitat/vegetation surveys (300+)
Wildlife radio telemetry tracking
GPS navigation through wilderness
Wilderness first aid
Remote backpacking and dispersed camping
4WD and ATV operation
Power tools and outdoor equipment operation

Kayak and canoe operation

TEACHING

Instructor

2024 Wildlife Field Techniques (FIW 4214): 3 credits ~50 undergraduates, Virginia Tech.
Lead 3-day field intensive course demonstrating and instructing techniques used in avian ecology, including songbird banding, point count surveys, distance sampling, and habitat surveys.

Guest Lecturer

2023 Ecological Restoration (ENSC 4244): 3 credits ~25 undergraduates, ~10 graduates, Virginia Tech.
Lecture Topic: Bioacoustic Monitoring for Ecological Restoration Projects

PRESENTATIONS

Watson, D. H., Renner, J.F., Hunter, E.A. October 2024. Avian Response to Heavy Mineral Surface Mine Reclamation in Southeastern Georgia. Annual Conference of the Southeastern Association of Fish and Wildlife Agencies, Augusta, Georgia. Oral presentation. (scheduled)

Watson, D. H., Renner, J.F., Hunter, E.A. October 2024. Avian Response to Heavy Mineral Surface Mine Reclamation in Southeastern Georgia. American Ornithological Society Annual Meeting, Estes Park, Colorado. Oral presentation. (scheduled)

Watson, D.H., April 2024. Avian Response to Heavy Mineral Surface Mine Reclamation in Southeastern Georgia. Birds Georgia. Webinar.

Watson, D. H., March 2024. Avian Response to Heavy Mineral Surface Mine Reclamation in Southeastern Georgia. ~25 attendees, Coastal Georgia Audubon Society Meeting, Brunswick, GA. Invited Speaker.

Watson, D. H., Renner, J.F., Hunter, E.A. November 2023. Avian Response to Heavy Mineral Surface Mine Reclamation in Southeastern Georgia. The Wildlife Society Annual Conference, Louisville, Kentucky. Poster presentation.

GRANTS

2023 Virginia Tech College of Natural Resources and Environment Graduate Student Travel Grant, $600

PROFESSIONAL ORGANIZATIONS

The Wildlife Society (2023–), American Ornithological Society (2023–)

CERTIFICATIONS

Subpermittee Bird Bander, All Passerines and Near-passerines (approved by USGS Bird Banding Lab in 2022)
Red Cross First Aid, CPR, and AED certification (2023)
American Red Cross Wilderness/Remote Location First Aid certification (2020)

AAA Defensive Driving Training certification (2023)

RELEVANT COURSEWORK

Graduate:

Vertebrate Population Ecology & Management, Wildlife Habitat Management in the Appalachians, Advanced Ecological Restoration, Systems Ecology & Conservation, Social & Ecological Research Design, Quantitative Methods in Ecology and Evolutionary Biology

Undergraduate:

Bird Conservation & Ecology, Wildlife Biology, Conservation Biology, GIS for Natural Resources, Dendrology, Forestry Ecology, Forest Biology, Plant & Flora ID/Systematics, Environmental Law & Policy, Restoration Ecology, Statistical Methods, Technical Writing, Conservation Issues, Natural Resource Measurements, Soil Information Systems