

## Spencer C. Schubert

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### EDUCATION

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Ph.D.	Old Dominion University (ODU), Department of Biological Sciences	2022
B.A.	St. Olaf College, Department of Biology	2013

### RESEARCH & TEACHING APPOINTMENTS

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<i>Postdoctoral Associate</i> , UC Santa Cruz (UCSC), Environmental Studies	2022–present
Adjunct Lecturer, UCSC, Environmental Studies	2024
<i>Postdoctoral Associate</i> , Old Dominion University (ODU), Biological Sciences	2022
Graduate Teaching Assistant, ODU, Biological Sciences	2017–2022

### PUBLICATIONS

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#### Peer-reviewed

8. **Schubert S. C.**, R. A. Zahawi, F. Oviedo-Brenes, J. A. Rosales, K. D. Holl. 2024. Active restoration increases tree diversity and recruitment of dispersal-limited taxa after 18 years. *Ecological Applications* e3053.
7. **Schubert, S. C.**, K. Battaglia, C. Blebea, C. Seither, H. Wehr, and K. D. Holl. 2024. Advances and shortfalls of applying best practices to global tree-growing efforts. *Conservation Letters* 17:e13002.
6. M.G.R. Vollstädt, M. Galetti, C. Kaiser-Bunbury, B. Simmons, A. L. Morales-Pérez, L. Navarro, F. Tarazona, **S. C. Schubert**, T. A. Carlo, J. Salazar, M. Faife-Cabrera, A. Strong, H. Madden, A. Mitchell, B. Dalsgaard. 2022. Plant-frugivore interactions across the Caribbean archipelago: modularity, invader complexes and the importance of generalist species. *Diversity and Distributions* 28:2361–2374.
5. **Schubert, S. C.**, and E. L. Walters. 2022. Subannual phenology and the effect of staggered fruit ripening on dispersal competition. *Biotropica* 54:31–41.
4. Alarcón-Elbal, P. M., H. M. Garrod, **S. C. Schubert**, and A. Santos-Murgas. 2021. New host species records of a parasitic fly (Diptera: Hippoboscidae) in montane forests of Hispaniola. *Journal of Caribbean Ornithology* 34:53–56.
3. **Schubert, S.**, R. Ake, B. Akers, L. Bankester, J. Via, B. Williams, and D. Youker. 2021. The composition of wintering bird communities in an agricultural landscape of the northwestern Dominican Republic. *The Raven* 90:18–25.

2. **Schubert, S. C.**, M. B. Pesendorfer, and W. D. Koenig. 2018. Context-dependent post-dispersal acorn predation in a California oak community. *Acta Oecologia*. 92:52–58.
1. **Schubert, S. C.** 2018. Nesting of the Puerto Rican Emerald (*Chlorostilbon maugaeus*) and a record of nestling parasitism by botflies (*Philornis sp.*). *Journal of Caribbean Ornithology* 31:77–82.

*In Review*

**Schubert, S. C.**, R. A. Zahawi, F. Oviedo-Brenes, J. A. Rosales, K. D. Holl. Restoration designs create persistent spatial patterns of colonizing tree communities in recovering tropical forests. *Applied Vegetation Science*.

*In Preparation*

**Schubert, S. C.**, O. Berman, A. Kapal, C. Seither, and K. D. Holl. Moving from principles to practice: A comprehensive survey of global reforestation leaders.

**Schubert, S. C.** and E. L. Walters. Seasonal dynamics of tropical plant-frugivore networks and the role of indirect effects on interaction plasticity.

Barve, S., Y. H. Suh, **S. C. Schubert**, W. D. Koenig, and E. W. Walters. Extra-territorial foraging by acorn woodpeckers (*Melanerpes formicivorus*) is affected by season, territory quality and resource availability, but not by social status.

*Other Contributions*

**Mongabay Reforestation.app – Co-developer (2025)**

**Schubert, S. C.**, H. M. Garrod, and A. A. Dhondt. 2022. Palmchat (*Dulus dominicus*), version 2.0. In *Birds of the World*. Cornell Lab of Ornithology, Ithaca, NY, USA.

## **SCHOLARSHIPS & HONORS**

Center for Coastal Climate Resilience Fellowship – UCSC	2024-present
Virginia S. Bagley Endowed Scholarship – ODU	2020
Harold & Vivian Marshall Endowed Scholarship – ODU	2020
Dominion Scholarship – ODU	2015–2019
Buntrock Scholarship – St. Olaf College	2009–2013

## **GRANTS / AWARDS (\$ - USD)**

### 2019-2020

- Optics for the Tropics
- British Ornithologists' Union
- David Lee Fund – Birds Caribbean
- Kirk Student Research Award (ODU)

### 2018-2019

- Rufford Foundation Booster Grant Award

- VSO Neotropical Migrants Scholarship
- Kirk Student Research Award (ODU)

#### 2017-2018

- Rufford Foundation 2<sup>nd</sup> Small Grant Award
- VSO Neotropical Migrants Scholarship
- David Lee Fund, Birds Caribbean

#### 2016-2017

- Rufford Foundation Small Grant Award
- Sigma Xi Grants-in-Aid of Research
- Sophie Danforth Conservation Biology Fund
- Animal Behavior Society Student Research Grant

### **PRESENTATIONS**

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#### *Invited Seminars*

**Schubert S. C.** 'Bridging ecology and communities to advance tropical forest restoration.' Missouri Botanical Gardens, St. Louis, Missouri (17 Apr 2024).

**Schubert S. C.** 'Avian frugivory networks and seed dispersal patterns in agricultural landscapes of the central Dominican Republic.' UCSC Department of Environmental Studies, Santa Cruz, California (24 Dec 2022).

**Schubert S. C.** 'Exploring patterns of avian and plant biodiversity across farmland landscapes of the central Dominican Republic: seed dispersal mutualisms and insights for tropical forest conservation.' Greenville Bird Club, Greenville, North Carolina, USA (1 Apr 2019).

**Schubert S. C.** 'Avian seed dispersal networks and forest community assembly in tropical farmland landscapes of the Dominican Republic.' East Carolina University, Greenville, North Carolina, USA (10 Sep 2018).

**Schubert S. C.** 'El rol de las aves en la restauración natural de los ecosistemas forestales de la cuenca alta del Río Yaque del Norte.' Plan Yaque Inc., Jarabacoa, Dominican Republic (10 Feb 2017).

**Schubert S. C.** 'Avian seed dispersal in the Dominican Republic.' Cape Henry Audubon Society, Norfolk, Virginia, USA (19 Oct 2016).

**Schubert, S. C.** 'Fenología reproductiva de árboles: perspectivas evolutivas de la zoochoria.' Universidad Autónoma de Santo Domingo, Santo Domingo, Dominican Republic. (7 Apr 2015)

#### *Contributed Talks*

**Schubert S. C.,** R. A. Zahawi, F. Oviedo-Brenes, J. A. Rosales, K. D. Holl. 'Tropical forest restoration strategies show tradeoffs across recruitment stages during later succession.' 2023 Annual Meeting for the Ecological Society of America, Portland, Oregon, USA

(8 Aug 2023).

**Schubert S. C.** 'Phenology and seasonal dynamics of avian seed dispersal networks in tropical forests of the central Dominican Republic.' 20th Annual Stanford/UCSC Species Interactions Workshop, Santa Cruz, California (3 Dec 2022).

**Schubert S. C. & E. L. Walters** 'Diversity and phenology of plants and their avian seed dispersers in humid forests of the central Dominican Republic.' American Ornithological Society & Birds Caribbean 2022 Ornithological Conference, San Juan, Puerto Rico (28 Jul 2022).

**Schubert S. C. & E. L. Walters** 'Seasonal dynamics of tropical plant-frugivore networks: Evidence for competition and temporal niche partitioning.' 2021 Annual Meeting for the Ecological Society of America, Virtual (3 Aug 2021).

**Schubert S. C. & E. L. Walters** 'Temporal dynamics of plant-frugivore networks in the tropical wet forests of Hispaniola.' 7<sup>th</sup> International Frugivores and Seed Dispersal Symposium, Ramnagar, India (4 Mar 2020).

**Schubert S. C. & E. L. Walters** 'Temporal dynamics of plant-frugivore networks in the tropical wet forests of Hispaniola: Understanding the role of phenology in shaping community assembly.' 2019 Annual Meeting for the Ecological Society of America, Louisville, Kentucky, USA (12 Aug 2019).

**Schubert S. C.** 'Artificial perches as a technique for enhancing tropical forest restoration: a case study from the central Dominican Republic.' 22nd BirdsCaribbean International Conference, La Datcha, Guadeloupe (25 Jul 2019).

**Schubert S. C. & E. L. Walters.** 'Plant-frugivore networks in the central Dominican Republic: Identifying potential keystone species and seasonal patterns in frugivory and seed dispersal.' 22<sup>nd</sup> BirdsCaribbean International Conference, La Datcha, Guadeloupe (25 Jul 2019).

**Schubert S. C. & E. L. Walters.** 'Temporal dynamics of plant-frugivore networks in the tropical wet forests of Hispaniola: understanding the role of phenology in shaping community assembly.' 4<sup>th</sup> Caribaea Initiative Research & Conservation Conference, Santo Domingo, Dominican Republic. (15 May 2019).

**Schubert, S. C.** Effects of individual and neighborhood fruit availability on avian frugivore response to multiple annual fruit production of a tropical tree (*Guarea guidonia*, Meliaceae). 103<sup>rd</sup> ESA Annual Meeting. New Orleans, Louisiana, USA (8 Aug 2018).

**Schubert, S. C.** 'Avian seed dispersal in pasture landscapes in the Dominican Republic: the role of perches as epicenters of natural forest regeneration.' Birds Caribbean International Meeting XXI. Topes de Collantes, Cuba (16 Jul 2017).

#### Contributed Posters

**Schubert S. C., A. S. Lahey, A. R. Weisman, & E. L. Walters** 'Artificial perches as a technique for enhancing tropical forest restoration: A case study from the Dominican Republic.' 7<sup>th</sup> International Frugivores and Seed Dispersal Symposium, Ramnagar, India (5 Mar 2020).

**Schubert, S. C.**, M. B. Pesendorfer, and W. D. Koenig. 'Western Scrub Jay scatter-hoarding and post-dispersal acorn fate: when habitat matters.' North American Ornithological Conference VI. Washington DC, USA (18 Aug 2016).

Angell, D., A. Vianey, A. Murphy, D. Pirtle, and **S. Schubert**. 'Stable isotope analysis highlights contrasting use of C3 and C4 plants resources by prairie small mammals.' 98th ESA Annual Meeting. Minneapolis, Minnesota, USA (12 Nov 2013).

**Schubert, S.** and A. Vianey. 'Carbon and nitrogen stable isotopes rodent fur: Niche differentiation in remnant and planted prairies.' 27th Annual National Conference on Undergraduate Research. Poster Session. La Crosse, Wisconsin, USA (6 Apr 2013).

## OTHER EMPLOYMENT

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<i>Adjunct Lecturer</i> , Department of Environmental Studies, UCSC, Santa Cruz, CA	2024
<i>Teaching Assistant</i> , Department of Biological Sciences, ODU, Norfolk, VA	2017–2022
<i>Research Assistant</i> , Department of Biological Sciences, ODU, Norfolk, VA	2015–2017
<i>Biologist</i> , Southern Sierra Research Station, Parker, AZ	2015
<i>Intern</i> , ITES-UPR, El Verde Field Station, Puerto Rico	2015
<i>Intern</i> , Cornell Lab of Ornithology, Hastings Natural History Reservation, CA	2014
<i>Field Assistant</i> , Cornell Lab of Ornithology, Dominican Republic	2014
<i>Field Assistant</i> , Blue-throated Macaw Conservation Center, Beni, Bolivia	2013

## TEACHING & MENTORING EXPERIENCE

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<u><i>Instructor of Record</i></u>	
Natural History of Birds (ENVS 106A) – UCSC (5-credit)	2024
<u><i>Laboratory Instructor</i></u>	
Intro. Biology (BIOL 121N; 122N; 137N-honors) – ODU (1-credit)	2017-2022
<ul style="list-style-type: none"> <li>Independently designed 10-min lectures around learning objectives related to cellular biology, microbiology, ecology, and evolution. Provided instructions, demonstrations, and supervision of laboratory activities and use of equipment/materials.</li> <li>Acted as senior graduate teaching assistant in advising new TAs during final year.</li> </ul>	
Vertebrate Zoology (BIOL 336) – ODU (4-credit)	2020
<ul style="list-style-type: none"> <li>Accessed the university vertebrate museum to curate weekly selections of fish, amphibian, reptile, bird, and mammal preserved specimens for laboratory display. Independently designed 15-min lectures on taxonomy, species identification, and natural history. Supervised and guided students through observation. Administered quizzes and exams.</li> </ul>	

- Developed and adapted learning materials for remote learning following COVID-lockdowns: online recorded lectures, demonstrations, etc...

### Guest Lectures & Workshops

Tropical Ecology – Princeton University, Dominican Republic 2025

- served as co-instructor and guide of Princeton University EEB graduate students in learning about natural history and biodiversity of tropical forests in the central Dominican Republic
- advising and reviewing research project proposals
- training students in field ornithology and field botany

Neotropical Landscape Restoration Module – Osa Conservation, Costa Rica 2024

- leading lecture on the fundamental principles, challenges, and opportunities in ecological restoration of tropical forest ecosystems
- designing interactive group learning activities and small projects to reinforce lecture
- co-leading field trips to ongoing restoration sites

Community Ecology (BIOL 545) – ODU 2016–2022

- Provided a lecture on plant-animal mutualisms during Fall semesters.

Birding Tourism and Identification Workshops. Jarabacoa, Dominican Republic 2017

- Co-led field ornithology training during two half-day sessions for ISA University students. Introduction to species identification, survey methodology, and mist-net capture.

### Mentoring

Global Tree Growing & Restoration Ecology Postdoc, UCSC 2023

- Supervised and trained 4 undergraduate students, leading to co-authorship on publication

Acorn Woodpecker Postdoc/Crew-leader (REU), ODU, California 2022

- Supervised and trained 3 field technicians: observation of color-banded birds, nest monitoring, use of radio-telemetry equipment, and data entry.

Learn and Earn Advantage Program (LEAP), ODU, Virginia 2016–2020

- Supervised and trained 3 undergraduate student employees: data entry, measurement and storage of botanical samples, reviewing remote camera footage, sample management and preparation for DNA-lab procedures.

PhD Research Project Management, ODU, Dominican Republic 2016–2019

- Hired, trained, and supervised 11 technicians and field assistants: avian & botanical field surveys, use of radio telemetry equipment, botanical

sample collection and management, plot maintenance, and data entry.

## SKILLS

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<i>Field:</i>	Identification/surveying of tropical forest flora, Collecting biometric and phenology data, Avian banding (~ 500 birds), Radio-telemetry tracking, Population monitoring (point counts, transect surveys, camera traps, nest searches, etc), Behavioral observation (foraging, parental care, color bands resighting etc), Small mammal trapping, Tree climbing, Fence building, Operation and basic maintenance of vehicles ranging from motorcycles, automatic & manual transmission cars/trucks, and up to 12 passenger vans.
<i>Laboratory:</i>	DNA extraction, PCR, Sequencing prep, Managing & archiving botanical samples
<i>Programming:</i>	Microsoft Office, R & Rstudio, Python (basic), MATLAB (basic).
<i>Statistics:</i>	Generalized linear models, Survival analysis, Community ordination, AIC model selection, Interaction network analysis.
<i>Geospatial:</i>	Basic competency in ArcGIS. Using primarily R (e.g., packages 'sp', 'raster') for map making, Home range analysis. Data extraction and management using Google Earth Engine products & resources.

## PROFESSIONAL SOCIETIES

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Association for Tropical Biology and Conservation	2021–present
Ecological Society of America	2018–present
American Ornithological Society	2015–present
Birds Caribbean	2015–present

## PROFESSIONAL SERVICE ACTIVITIES

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Biology Graduate Student Organization, ODU, President	2019–2020
Birds Caribbean Meeting XXII (Guadeloupe) Scientific Committee	2019
Field Ornithology Workshop (co-instructor), Universidad ISA, Santiago, DR	2018

## PEER REVIEW ACTIVITY

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Biological Conservation (1), Biotropica (5), Ecological Applications (1), Ecological Indicators (2), Forest Ecology and Management (2), Functional Ecology (1), Global Ecology and Conservation (1), Journal of American Botany (1), Journal of Caribbean Ornithology (1), Oikos (1), Plos ONE (1)

## OTHER VOLUNTEER INVOLVEMENTS, EDUCATION, & OUTREACH

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Compiler. Audubon Christmas Bird Count. Jarabacoa, Dominican Republic	2019-2021
Wildlife Club. Baiguarte Summer Camp. Jarabacoa, Dominican Republic	2018-2019

Festival de las Aves Endémicas del Caribe. Jarabacoa, Dominican Republic	2016
Peregrine Fund: Puerto Rican Sharp-shinned Hawk Conservation Project	2015
Concordia Language Villages: Spanish Language Counselor	2013

## **LANGUAGES**

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English (native)

Spanish (proficient/fluent)

French (basic/novice)

Mandarin (novice)