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**Education:**

<b>University of Northern Colorado</b>	M.S. Thesis	2023
<b>University of New Orleans</b>	Biological Sciences B.S.	2018

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**Professional Experience:**

**Princeton University**

**Research Specialist II**

25 William St. Princeton, NJ 08544

(May 2023-Present)

Supervisor: Celeste Nelson

My current role as research specialist has included hybrid duties as lab manager and research support on describing squamate lung development. Duties include managing grant budgets, ordering laboratory equipment, care of animal colonies (mouse and animal), embryo dissection, immunohistology, microscopy, and genetics techniques. This is a full-time position that has required detailed time management to support my teams needs as well as my own projects.

- Confocal whole tissue mounting microscopy
  - Embryo dissection
  - Genotyping
  - RNAscope
  - Anole/Mouse colony management
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**University of Northern Colorado**

501 20<sup>th</sup> St. Greeley, CO 80639

(January 2020-2023)

Supervisor: Stephen Mackessy

As a graduate assistant at the University of Northern Colorado I was responsible for performing my own thesis research, museum curating, and teaching. My thesis research was focused on pitviper auto-resistance to metalloproteases in their venom. This study included a large data set involving 42 individual snakes using their venom and blood for invitro bioassay. Curating made up 20 hours a week on top of my course work and research responsibilities.

**Mackessy Laboratory Research Assistant**

- Venomous snake handling for field and laboratory collection of blood and venom samples
- Proficient use of laboratory techniques: protein quantification, affinity column chromatography, enzymatic/cell-based assays, electrophoresis, venipuncture, FPLC, and biohazard handling
- Anesthetizing snakes using isoflurane
- Data collection and analysis using Excel, Prism 9, and R
- Grant writing (see below)

**Museum Curator**

- Cataloging specimens for internal and external databases (10,000 specimens)
  - Collecting wild animal carcasses for specimen preparation
  - Skinning, dissecting, preserving, and articulating animal remains for display, research, and collections
  - Stomach content analysis
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**Operation Wallacea**  
**Herpetologist Ecuador/Galapagos**

(June 8-July 21, 2021)

Supervisor: Sophia Woods

This was a temporary contract position. Operation Wallacea is a conservation/education organization that has hundreds of sites worldwide where students can travel to experience and learn about nature. I was the herpetologist for our trip to Ecuador and the Galapagos. My main responsibilities included supervising students and performing animal surveys.

- Leading herpetological surveys and demonstrating research techniques to student participants
- Building and managing pitfall, camera, and drift fence traps
- Lecturing on conservation topics in herpetology to high school and college students
- Organizing and supervising ecotourist attractions with third party organizations for participants

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**Eurofins Scientific**  
**Laboratory Technician**

2219 Lakeshore Dr. #500 New Orleans, LA 70122

(December 2018 – December 2019)

Supervisor: Jack Riley

Eurofins Scientific has an international network of more than 900 laboratories worldwide involved in diagnostic testing services of foods, drugs, and consumables. This technician position was in the inorganic/organic food contaminants department for heavy metals.

My responsibilities included:

- Mass spectrometry sample preparation of human foods for heavy metals testing
- Following standard operating procedures to perform microwave digestion of foods, beverages, and supplements
- Safe handling of acids and corrosive chemicals
- Managing industrial client orders for sample testing

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**Louisiana Department of Wildlife and Fisheries**  
**Avian VHF Technician**

2000 Quail Dr. Baton Rouge, LA 70808

(August 2018-December 2018)

Supervisor: Michael Seymour

This was a grant funded position focused on tracking migratory patterns of birds in the coastal area of Louisiana in conjunction with other agencies internationally collecting data in other areas of the world . The position required multiple skills related to field work, manual labor, and data management. Several hours of this job involved driving, boating, construction, and camping in remote marsh areas.

- Assembling, wiring, and maintaining coastal VHF antennas for tracking avian migration
- Operating 4x4 trucks and ATVs for towing and off-road navigation
- Visual surveys of native avian species

## **San Diego State University**

### **Field Technician**

5500 Campanile Dr. San Diego, CA 92182

(May 2018-August 2018)

Supervisor: Rulon Clark

This was a field research intern position. The focus of the project was on predator-prey interactions between Mojave rattlesnakes (*Crotalus scutulatus*) and native rodents in the Sonoran Desert. The methods of observation included highspeed videography performed in close contact with wild study animals. This required extensive field work in remote areas while carrying expensive and heavy equipment.

- Examining predator-prey relationships and biomechanics in rodents and Mojave rattlesnakes (*Crotalus scutulatus*) in the Sonoran Desert
  - Using high speed videography equipment to observe wild animal interactions
  - Performing dissections of rodents to measure muscle tissue and the relationship on fitness performance.
  - Tagging study animals for future identification (PIT, scale clipping, ink)
  - Radiotelemetry of rattlesnakes
  - Data collection on study animals and abiotic environmental conditions
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## **University of New Orleans**

### **Undergraduate Research Assistant**

2000 Lakeshore Dr. New Orleans, LA 70148

(January 2017-May 2018)

Supervisor: Nicola Anthony

This was a multi-project position, one part consisted of assisting professors and graduate students on a population dynamics study of mandrills (*Mandrillus sphinx*) from Lopé National Park in Gabon Africa. The other project involved an ecotoxicology survey of snakes in Southeastern Louisiana where large numbers of snakes were found dead with no clear pathology.

- Assisting with DNA samples collected from wild African mandrills (*Mandrillus sphinx*) to determine the effects of habitat fragmentation on gene flow
  - Performing DNA extraction, PCR, RT-qPCR, and electrophoresis for  $F_{st}$  and next generation sequencing
  - Assisting with snake ecotoxicology field studies on snake populations showing signs of declining health from pollutants
  - Phlebotomy and storage of hematological samples collected from wild snakes in the field
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## **Southeastern Louisiana University**

### **Undergraduate Assistant**

500 W University Ave. Hammond, LA 70402

(July 2015-November 2017)

Supervisor: Tim Borgardt

This was a volunteer position that required 5-7 days of field research each week performing spatial ecology on Timber Rattlesnakes (*Crotalus horridus*) in Orleans parish Louisiana. In addition to field research, I assisted with data analysis and publication efforts on our findings.

- Assisting with Timber Rattlesnakes (*Crotalus horridus*) spatial ecology using VHF telemetry
  - Collecting field data on the study animals 5-7 days a week
  - Performing surgical implantation of radio transmitters under IACUC approved methods
  - Performing data analysis using ArcGis
  - Scale clipping marking
  - Trapping (drift fence, pitfall, camera, coverboard)
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### **Avian and Exotic Animal Hospital of Louisiana Vet Technician**

3635 N Interstate 10 Service Rd Metairie, LA 70002

(Aug 2012- June 2015)

Supervisor: Dr. Gregory Rich

Avian and Exotic Animal Hospital is one of the few clinics in Louisiana to specialize in exotic medicine. Dr. Gregory Rich and Dr. Leslie Pence have been in practice with exotic medicine for several decades. The clinic was also a backup resource for the Audubon Zoo. The clinic offered the only emergency services for exotics around the clock within Southeastern Louisiana.

- Monitoring and caring for sick, quarantined, disabled or wild animals
  - Preparing and administering oral and injectable drugs to exotic animals
  - Performing phlebotomy and microscopy for diagnosis or preventative care
  - Assisting with necropsies
  - Packaging and sending biological samples for pathology testing
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### **Audubon Nature Institute**

6500 Magazine St. New Orleans, LA

(Dec 2005-July 2012)

The Audubon Zoo is part of the Audubon Nature Institute which manages the zoo, Audubon Aquarium of the Americas, Audubon Nature Center, Freeport-McMoran Species Survival Center, Audubon Park, and Audubon Coastal Wildlife Network. The zoo itself contains 2,000 animals on 58 acres of land. During my time there I was able to work as a volunteer, intern, and then employed as a keeper in the reptile and amphibian department.

#### **Reptile and Amphibian Keeper I**

(Oct 2009-July 2012) \$13/Hr

Supervisor: Melanie Litton

- Responsible for the care and handling of exotic reptile and amphibian species (160)
- Provided educational lectures and animal feeding displays for the public
- Fabricating exhibits and enclosures involving power tools use, electrical wiring, plumbing, masonry, and horticulture

#### **Veterinary Technician Intern** (Jan 2008-Oct 2009)

- Assisting in surgical preparation, surgeries, necropsies, and the husbandry of primates, large carnivores, hoof stock, marine mammals, herps, and birds
- Working and quarantining animals with zoonotic pathogens
- Performing phlebotomy and microscopy for diagnosis or preventative care

#### **Education Department Intern** (Dec 2005 – May 2008)

- Presenting educational lectures to the public while displaying exotic animals

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**Publications:**

Borgardt, T., **Hill, K. H.**, Crother, B. (2021). *The Spatial Ecology of the Timber Rattlesnake (Crotalus horridus) in Southeastern Louisiana. Authorea*. DOI: 10.22541/au.163899383.33938357/v1 (pre-print)

**Hill, K. J.**, Mackessy, S. P. (2022). *Auto-Resistance Toward Snake Venom Metalloproteases in United States Pitvipers*. (Master's Thesis). Scholarship & Creative Works @ University of Northern Colorado, Greeley.

**Presentations:**

**Hill, J. Kaleb**, Mackessy, P. Stephen. 2022. Auto-resistance Toward Snake Venom Metalloproteases in North American Pitvipers. Biology of Pitvipers. Rodeo, New Mexico

**Hill, J. Kaleb**, Mackessy, P. Stephen. 2022. Auto-resistance Toward Snake Venom Metalloproteases in North American Pitvipers. University of Northern Colorado Academic Excellence Week. Greeley, CO

**Hill, J. Kaleb**, Mackessy, P. Stephen. 2021. Don't Bite the Mouth That Feeds You: Auto-resistance in North American Pit Vipers. International Herpetological Symposium. Rodeo, New Mexico

Terrell, A. Kim, **Hill, J. Kaleb**, Weber, A., Anthony, N. 2018. Investigating an enigmatic mortality in a free-ranging snake population through comparative health surveys. Audubon Nature Institute Research Symposium. New Orleans, LA

**Posters:**

**Hill, J. Kaleb**, Mackessy, P. Stephen. 2022. Auto-resistance Toward Snake Venom Metalloproteases in North American Pitvipers. University of Northern Colorado Academic Excellence Week. Greeley, CO

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**Awards:**

University of Northern Colorado Graduate Society Research Award Cycle 2	\$500
University of Northern Colorado Graduate Society Research Award Cycle 3	\$1,128
University of Northern Colorado NHS Student Research Grant	\$500
Colorado Student Graduate Grant Spring 2021	\$2,000
Colorado Student Graduate Grant Fall 2021	\$2,000
Colorado Student Graduate Grant Spring 2022	\$2,000
<b>Total:</b>	<b>\$8,128</b>

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**Teaching Assistant Experience:**

- Bio 110 Principles of Biology
- Sci 266 Earth and Life Sciences
- Bio 246 Advanced Human Anatomy and Physiology

## References

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<a href="#">Celeste Nelson, PhD</a>	Princeton University Professor of Chemical & Biological Engineering	(609) 258-8851
<a href="#">Stephen P. Mackessy, PhD</a>	University of Northern Colorado Professor of Biology	(970) 351-2429
<a href="#">Jack Riley</a>	Eurofins Scientific Inorganic/Elemental Manager	(504) 293-7820
<a href="#">Michael Seymour</a>	Louisiana Department of Wildlife and Fisheries Non-game Ornithologist	(225) 763-3554
<a href="#">Nicola Anthony, PhD</a>	University of New Orleans Professor of Biology	(504) 280-1362
<a href="#">Rulon Clark, PhD</a>	San Diego State University Professor of Biology	(619) 594-1527
<a href="#">Dr. Gregory Rich, DVM</a>	Avian and Exotic Animal Hospital Owner	(504) 455-6386
<a href="#">Melanie Litton</a>	Audubon Zoo Reptiles Assistant Curator	(504) 212-5343