**Ryan L. Wong Arnott**

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Austin, TX 78705

**EDUCATION \_\_\_\_\_\_\_\_**

**The University of Texas at Austin**, Austin, TXAug. 2019 – May 2023

*Bachelor of Science, Biology: Ecology, Evolution, and Behavior; Minor in Chinese*

* GPA 3.8; 6 semesters of *University Honors*
* Graduate of Distinction in Research; Service and Leadership
* **Relevant Coursework:** *Vertebrate Natural History, Herpetology, Field Herpetology, Entomology, Biology of Birds, Animal Behavior, Biostatistics, Ecology, Evolution, General Microbiology, Genetics, Field Biology*

**RESEARCH EXPERIENCE**  *\_\_\_\_\_\_\_\_*

[**Kelly Zamudio Lab**](https://zamudiolab.org/research/)**,** The University of Texas at Austin Austin, TX

*Research Assistant, Lab Manager*  Nov. 2023 – Present

* Conducting research on amphibian disease ecology, reptile and amphibian population genetics, and conservation genomics.
* Led an investigation on family genetics and social relationships of Crevice Spiny Lizard (*Sceloporus poinsettii*) metapopulations. Developed field and lab methodology, collected samples from the field, conducted molecular lab procedures, and supervised two undergraduate assistants.
* Managed lab space, ensured a sufficient supply of lab materials and reagents, maintained field and lab equipment, trained new hires and students, supervised students, and collaborated on a variety of projects, yielding two publications so far (see “Publications” **3**, **4**).
* Mentored two undergraduate students and a Research Experience for Peruvian Undergraduates (REPU) student.
* **Relevant Skills:** laboratory management, molecular lab procedures, DNA extraction, quantitative PCR (qPCR), PCR, gel electrophoresis, library preparation, protocol adaptation/modification, field protocol development, laboratory management, laboratory safety, laboratory training, field work, amphibian handling, Anuran buccal swabbing, scientific writing, organizational skills, mentorship, supervising, teamwork, interpersonal skills, science communication, project leadership, attention to detail, flexibility, adaptability
* **Associated Courses:** *Intro to Core NGS Concepts and Tools, DEI in STEM*

*Undergraduate Research Assistant*Sept. 2022 – May 2023

Supervisor:[**Anat M. Belasen, PhD**](https://www.anatbelasen.com/research.html)

* Conducted research on the pathogenic fungus *Batrachochytrium dendrobatidis* (*Bd*) and its impact on historic Black-spotted Newt (*Notophthalmus meridionalis*) populations in south Texas and northeast Mexico. Led DNA extractions and qPCR assays, generated maps and figures, wrote a peer-reviewed publication of results (Arnott et al. 2024; see “Publications” **3**), and addressed revisions.
* Earned an Undergraduate Research Fellowship in Spring 2023 funding my research.
* **Relevant Skills:** DNA extraction, quantitative PCR (qPCR), scientific writing, grant writing, teamwork, interpersonal skills, project leadership

[**Nancy Moran Lab**](https://web.biosci.utexas.edu/moran/research.html)**,** The University of Texas at Austin Austin, TX

*Undergraduate Research Assistant*Sept. 2021 – May 2023

* Conducted research on host-microbe dynamics of *Apis mellifera* honey bees and *Acyrthosiphon pisum* pea aphids and their symbionts, collaborating on a variety of projects (see “Publications” **1**, **2**).
* Maintained lab beehives and ensured hive health. Pulled brood frames as needed for other lab projects.

Supervisor:[**Erick V. da Silva Motta, PhD**](https://people.tamu.edu/~erick.motta/research.html)

* Led an experiment investigating the role of caffeine and its effects on honey bees infected with the pathogen *Serratia marcescens*. Published results in a peer-reviewed article (Motta et al. 2023; see “Publications” **2**).
* **Relevant Skills:** RNA and DNA extraction, PCR, gel electrophoresis, beekeeping/bee husbandry, independent work, teamwork, communication, interpersonal skills

**Summer Systematics Institute,** California Academy of Sciences San Francisco, CA

*NSF Research Experience for Undergraduates (REU) Intern* Jun. 2021 – Jul. 2021 Supervisor:[**Sarah C. Crews, PhD**](https://sarahnopidae.com/about/)

* Conducted research on spiders in the *Selenops debilis* group and their species differentiation through genetic analysis and reproductive morphometrics, leading to phylogenetic tree construction and a greater understanding of the evolutionary history and species boundaries of this group.
* Gained experience through workshops, molecular lab work, and field work exploring Northern California and its inland and coastline ecosystems. Surveyed marine fauna in tidepools and coastlines.
* Presented my research in a symposium for the CalAcademy scientific community.
* **Relevant Skills:** DNA extraction, PCR, gel electrophoresis, Sanger sequencing, science communication, public speaking, geometric morphometrics, phylogenetic tree construction, niche modeling, teamwork, interpersonal skills, time management, systematics

**FIELD EXPERIENCE**

**Kelly Zamudio, PhD,** The University of Texas at Austin Austin, TX

*Research Assistant, Lab Manager*  Nov. 2023 – Present

* Captured, measured, recorded and organized data, swabbed for Ranavirus, Bd, *Batrachochytrium salamandrivorans* (Bsal), and Perkinsea, collected toe clippings and blood smears, and released over 100 Anurans at Archbold Biological Station, Florida. Conducted surveys at night. Demonstrated field expertise through assisting a first-year graduate student with field project planning and implementation.
  + Opportunistically sampled species: *Acris gryllus, Anaxyrus terrestris, An. quercicus, Eleutherodactylus planirostris, Gastrophryne carolinensis, Hyla cinerea, H. femoralis, H. gratiosa, H. ocularis, Lithobates catesbeianus, L. grylio, L. sphenocephalus*
* Developed field protocols and led field trips collecting Crevice Spiny Lizard (*Sceloporus poinsettii*) fecal samples from rock outcrops in Mason Co., Texas.
* Captured, recorded morphological data, buccal swabbed, and released Common Coquís (*Eleutherodactylus coqui*) in El Yunque National Forest, Puerto Rico.
* **Habitat Types:** tropical broadleaf evergreen forest (wet season), mesquite thornscrub, Florida oak scrub (wet season)
* **Relevant Skills:** sub-tropical ecosystem field work, semi-arid plains field work, species identification, call identification, amphibian handling, Anuran buccal swabbing, Bd swabbing, toe clipping, blood smearing, Squamate fecal sampling, climate data logging, overnight/nocturnal field work, field protocol development, organizational skills, mentorship, supervising, teamwork, interpersonal skills, project leadership, attention to detail, flexibility, adaptability

**Sierra Nevada Amphibian Monitoring Program (SNAMPH)** Supervisor: **Cathy Brown, PhD**

Stanislaus National Forest, USDA Forest Service Sonora, CA

*0404 GS-5 Biological Science Technician (Wildlife)*  Jun. 2023 – Sept. 2023

* Conducted extensive visual encounter surveys in meadows, streams, and lakes for endangered Yosemite Toads (*Anaxyrus canorus*), Sierra Nevada Yellow-legged Frogs (*Rana sierrae*), and Foothills Yellow-legged Frogs (*Rana boylii*) in national forests and wilderness areas across the Sierra Nevada Mountain range, California.
  + **Surveyed in:** Stanislaus NF (Carson-Iceberg Wilderness), Sierra NF (Ansel Adams Wilderness), Inyo NF, Humboldt-Toiyabe NF (Hoover Wilderness), Tahoe NF, El Dorado NF (Desolation Wilderness)
  + **Habitat Types:** montane coniferous forest and high alpine habitat
* Captured, measured, pit-tagged, and swabbed Yosemite Toads for *Bd* during intensive surveys.
* Backpacked for up to 8 days in montane coniferous forests and high alpine ecosystems at 7,000 – 12,000 ft off-trail.
* **Work Schedule:** 8 days (10 hrs per day), followed by 6 days off, 80 hrs per pay period
* **Relevant Skills:** field work, backpacking, high elevation, harsh conditions, aquatic surveys, visual encounter surveys, endangered species, species identification, call identification, animal handling, pit tagging, *Bd* swabbing, dip-netting, transect searches, radio communication, offroad driving with 4WD vehicles over boulders and snow, vehicle maintenance, office organization, teamwork, communication, following established protocols, attention to detail, flexibility, adaptability

**PUBLICATIONS**

1. Carneiro, C. M., Shields-Estrada, A., Boville, A., Alves-Ferreira, G., Xu, T., **Arnott, R. L. W.**, Allen-Love, C. M., Puertas, M., Jacisin, J. J., Tripp, H. C., Basham, E., Zamudio, K. R., Belasen, A. M. (2024). Toward a global science of conservation genomics: coldspots in genomic resources highlight a need for equitable collaborations and capacity building. *Authorea*. DOI: [10.22541/au.172483463.38964971/v1](https://doi.org/10.22541/au.172483463.38964971/v1). (Under Review *Molecular Ecology*)
2. **Arnott, R. L. W.**, Lopez, C. B., Rogers, M. N., Davis, D. R., Robinson, P. S., Kline, R. J., LaDuc, T. J., Zamudio, K. R., Belasen, A. M. (2024). Low historical prevalence of the fungal pathogen *Batrachochytrium dendrobatidis* in Black-spotted Newts (*Notophthalmus meridionalis*) from Texas and Mexico. *Herpetological Review* **55**(3).
3. Motta, E. V. S., **Arnott, R. L. W.**, Moran, N. A. (2023). Caffeine consumption helps honey bees fight a bacterial pathogen. *Microbiology Spectrum* **11**(3): e0052023. DOI: [10.1128/spectrum.00520-23](https://doi.org/10.1128/spectrum.00520-23).
4. Powell, J. E., Lau, P., Rangel, J., **Arnott, R.**, De Jong, T., Moran, N. (2023). The microbiome and gene expression of honey bee workers is affected by a diet containing pollen substitutes. *PLoS ONE* **18**(5): e0286070. DOI: [10.1371/journal.pone.0286070](http://dx.doi.org/10.1371/journal.pone.0286070).

**PROJECTS**

* **Hybrid zones in tree frogs (Bokermannohyla sp.) from the Atlantic Forest (Jun. 2024 – present):** In collaboration with researchers at Universidade Federal de Juiz de Fora, Brazil, I am contributing to methodology, DNA extractions, and library preparation.
* **Examining Crevice Spiny Lizard (Sceloporus poinsettii) family structure and behavior (Nov. 2023 – present):** Led an investigation on the genetics and behavior of Crevice Spiny Lizards living in Edwards Plateau, Texas rock outcrops.
* **Historical spread of the fungal pathogen Batrachochytrium dendrobatidis (Bd) in Leopard Frogs (*Lithobates sp.*) from the North American southwest region (Jan. 2023 – present):** Co-led an investigation with Anat M. Belasen, PhD on the historic spread of Bd throughout Arizona from preserved museum specimens of the Chiricahua leopard frog (*L. chiricahuensis*), Lowland leopard frog (*L. yavapaiensis*), and northern leopard frog (*L. pipiens*). Led DNA extractions and qPCR assays, analyzed data, generated maps, conducted a thorough literature search, and wrote the manuscript.
* ***Selenops debilis* Group Species Delimitation (Feb.2021 – present):** In collaboration with Sarah Crews, PhD on a publication investigating the genetic and morphological relationship between established species in the *Selenops debilis* group of spiders.

**GRANTS \_\_\_\_\_\_\_\_**

* **Undergraduate Research Fellowship**, The University of Texas at Austin Office of Undergraduate Research, Feb. – Aug. 2023
  + Resulted in Arnott et al. 2024 (see “Publications” **3**), under mentorship by **Anat Belasen, PhD** (Zamudio Lab)

**LEADERSHIP & COMMUNITY INVOLVEMENT \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Texas Ecology, Evolution, and Behavior Club,** Austin, TX Apr. 2021 – May 2023

*Events Coordinator (May 2022 – May 2023)*

* Texas EEB Club is a social and academic organization geared towards students interested in a variety of taxa and the ecosystems they live in, with an emphasis on undergraduate students in the EEB program at UT Austin.
* Led presentations and discussions regarding a variety of topics related to the ecological field.
* Served as safety officer on group campouts and day hikes. Instructed campers in outdoor techniques.
* Planned biweekly socials for the organization, as well as coordinated weekend outdoor activities.

**Hong Kong Students Association,** Austin, TX Sept. 2019 – May 2023

*Social Media Chair (Aug. 2020 – May 2023)*

* Hong Kong Students Association is a social and cultural organization dedicated to fostering connection between Cantonese students at UT.
* Created graphics and planned events for the organization.

**High Adventure Treks**, Dallas, TX 2012 - 2019

*Director and Mentor (2015 – 2019); Participant (2012 – 2016)*

* High Adventure Treks is an organization dedicated to camping experiences for fathers and their children, with an emphasis on wilderness techniques and leadership development.
* Directed campouts in remote locations in Texas and Oklahoma with over 20-40 participants. Instructed 4th-9th graders in outdoor skills and activities, including: survival techniques (fire-starting, navigation, wilderness first aid), leave no trace principles, kayaking, wilderness photography.
* Graduation from the program culminated in a 9-day backpacking trip in the backcountry of the Colorado Rocky Mountains. Utilized primitive camping skills fluently.

**SKILLS**

**Wildlife/Field Skills:**

* Ability to identify Western and Central North American reptiles and amphibians (most experienced in Texas and California), over 200 Texas birds, North American spiders to family, and insect orders. Fluent in utilizing dichotomous keys.
* Proficient in a variety of herpetological, entomological, arachnological, avian, mammalian, ichthyological, botanical, and environmental field identification and sampling techniques, including lizard lassoing, handling herpetofauna, reading dichotomous keys, visual encounter surveys (during day and night), mark-recapture surveys, transect searches, mist netting, bird banding, fecal sample collection, collecting morphological and environmental data, amphibian disease swabbing, pit tagging, dip netting, toe clipping, blood smearing, etc.
* Experience with a variety of specialized equipment, including: digital cameras, binoculars and scopes, radios, Garmin InReach satellite devices, camera traps, audio recorders.

**Outdoors Experience:**

* Over 10 years of primitive camping experience in remote locations throughout the Sierra Nevada Mountains, Texas, Oklahoma, New Mexico, and the Colorado Rocky Mountains, often under extreme conditions.
* Comfortable at high altitude, dry and humid environments, extreme temperatures, extreme weather conditions, rough terrain, steep terrain, dense brush, forests, plains, deserts, thornscrub, mountains, rainforests, wetlands, etc.
* Experienced in backpacking for multiple days, hiking long distances at low and high elevation, navigating rocky terrain, cliffs, streams, and sand, bouldering, outdoor rock-climbing, bushwhacking, SCUBA diving, and snorkeling.
* Fluent in outdoor techniques such as fire-starting, water filtration, GPS navigation, compass navigation, reading topographical maps, and administering wilderness first aid.
* Proficient in operating 4WD vehicles, offroad driving, motorized boats, kayaks, and canoes.
* Day hiking in natural areas in a variety of environments, including: mountains, temperate and deciduous forests, temperate rainforests, tropical rainforests, deserts, grasslands and shrublands, wetlands, rocky coastlines and sandy beaches.

**Lab Skills:**

* Proficient in a variety of laboratory techniques, including protocol modification, multiple DNA extraction protocols, RNA extraction, PCR, quantitative PCR (qPCR), gel electrophoresis, genomic library preparation, Sanger sequencing using ExoSAP, bacterial culture, bacterial transformation, protein purification, and microscopic dissection.
* Skilled in animal husbandry, including care for bees, reptiles, amphibians, mammals, and fish.
* Experienced in laboratory organization, upkeep, and managing supplies and laboratory personnel.

**Technical Skills:**

* Experience in statistical analysis in R, phylogenetic tree construction, niche modeling in Maxent, analyzing sequences in Bash (Unix) and Geneious, ArcGIS, ArcMap, QGIS, ArcGIS Survey123, Microsoft Excel/Google Sheets, Microsoft Office suite, data visualization, scientific writing, and Adobe Photoshop & InDesign.
* Utilizing offline mapping software in the field, including: Gaia, ArcGIS Field Maps, Avenza, onX, Google Maps

**Certifications:**

* Texas Parks & Wildlife: Hunting License, Reptile & Amphibian Endorsement (renews 8/31/2025)
* Montana Fish, Wildlife, & Parks: Bear Identification Certification (issued 2022)
* American Red Cross: Wilderness First Aid Certification (issued 2017)
* American Red Cross: CPR Certification (issued 2017)
* NAUI: SCUBA Open Water Diver (issued 2014)

**Permits and Memberships:**

* Society for the Study of Reptiles and Amphibians (SSAR): 2024 – Present
  + SSAR 2024 Conference at University of Michigan, Ann Arbor, MI - attendee
* IACUC: 2023 – present
  + Associated with Zamudio Lab Research Assistant position; US Forest Service GS-5 position

**Languages:** English (Native), Mandarin Chinese (A2), Spanish (A2), Cantonese Chinese (A1)

**REFERENCES**

**Kelly Zamudio, PhD**, Professor – Supervising Principal Investigator

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**Harry Greene, PhD**, Adjunct Professor – Mentor

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**Nancy Moran, PhD**, Professor – Supervising Principal Investigator

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**Cathy Brown, PhD**, Sierra Nevada Amphibian Monitoring Team Leader – Supervising Biologist

Stanislaus National Forest, US Forest Service

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**Sarah Crews, PhD**, Postdoctoral Fellow – NSF REU Mentor

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