

# Challenges of high-risk fieldwork and working with venomous and hazardous species for IACUCs



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# Goals

- Non-Traditional Study Systems
- Let's Define "The Field"
- AWA, IACUC, and field studies
- Risk Mitigation (Field Safety Program)
  - Planning, Policies and Paperwork
  - Risks and Hazards
  - Implementation and mitigation
- Working with venomous snakes
  - Field
  - Captivity





# NON-TRADITIONAL STUDY SYSTEMS

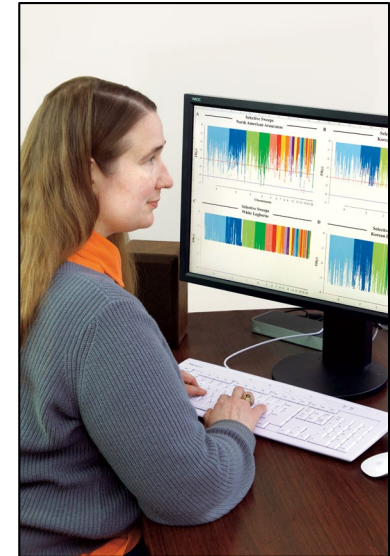
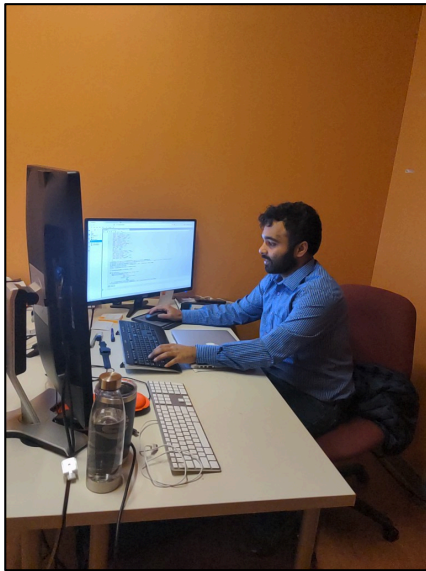


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Photos: K. Diamond, A. Savage,, K. Mansfield, Snow Leopard Trust

# Where is “The Field”?

*If you are not sitting in an office or laboratory, then you are in “The Field”*



Photos: Parkinson Lab



# Where is “The Field”?



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*Photos: Parkinson Lab*



# Where is “The Field”?



*Photos: Larry Wilson/ Atlanta Coyote Project  
And LaMontagne Lab*

# AWA, IACUC, and Field Studies

- AWA 2005 amendment includes field studies conducted on free-living wild animals in their natural habitat.
  - Field studies that are:
    - not invasive,
    - do not harm,
    - or materially alter the behavior of the animal understudy
- } are exempted from the AWA and IACUC oversight.
- However, how IACUCs deal with the above aspect is varied.
  - Also pertains to captive wildlife and wild animals held in captivity for more than 12 hours.
  - Other federal & state laws, policies, & guidelines on animal care and use
    - Venomous- federal/state/local laws



# FIELD-SAFETY PROGRAM

*The same level of planning and discussion that goes into lab safety should be considered when planning fieldwork.*

## OHS - Job Safety Analysis

- Identify safety risks & hazards in the workplace (field site)
- Evaluate the relationship between fieldworker & environment, tools, tasks
- Important to figure out what can go wrong

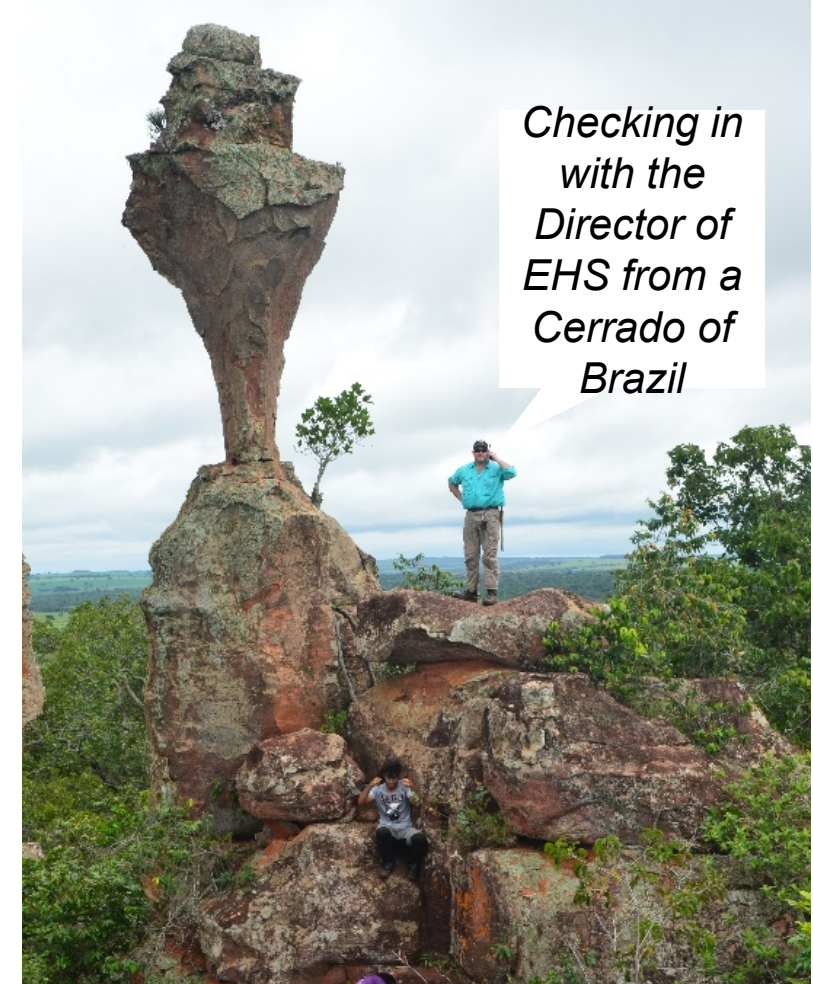
## Risks & Hazards

- *don't assume "field people" understand them*

Faculty may have difficulty gauging student ability in a field setting without being there

*These risks are not unique to biologists!*

# Potential Questions & Thoughts- Field Safety



Checking in with the Director of EHS from a Cerrado of Brazil



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Photos: Parkinson Lab, A. Savage, K. Mansfield



# Risk Mitigation Measures

- Medical Surveillance program
  - Health profile for all team members
  - Vaccines and Immunizations
- Emergency medical kits (include allergic reactions)
- Training
  - Wilderness First aid
  - ATV/UTV/Boat training
- Communication Plan- *Satellite Phones*
- Field evacuation plan

# Risk Mitigation –Zoonotic/Vector-borne Diseases

Anthrax  
Avian Influenza  
Bartonella  
Baylisacariasis  
Brucellosis  
COVID  
Ebola  
Echinococcosis  
Hantavirus  
Leptospirosis  
MERS  
Mycobacteriosis  
Plague  
Psittacosis  
Q-fever (Coxiella)

Rabies  
Salmonellosis  
Toxoplasmosis  
Tularemia  
Typhus

## Tick-borne disease

- Lyme's disease
- Ehrlichiosis
- RMSF

## Mosquito-borne diseases

- WNV, arboviruses
- Malaria, Yellow fever
- Dengue, Chikungunya, Zika





# Risk Mitigation- at-risk individuals

*Everyone deserves to conduct fieldwork safely!*



CAREER NEWS | 14 January 2022

## Smithsonian island outpost reeling from sexual-misconduct claims

Complaints from more than a dozen women bring new scrutiny to the Smithsonian Tropical Research Institute.

[Chris Woolston](#)

# Risk Mitigation- at-risk individuals

*Everyone deserves to conduct fieldwork safely!*

## Safe fieldwork strategies for at-risk individuals, their supervisors and institutions

As a result of identity prejudice, certain individuals are more vulnerable to conflict and violence when they are in the field. It is paramount that all fieldworkers be informed of the risks some colleagues may face, so that they can define best practice together: here we recommend strategies to minimize risk for all individuals conducting fieldwork.

Amelia-Juliette Claire Demery and Monique Avery Pipkin

Nature Ecology & Evolution 2021:5: 5–9

Building a Better Fieldwork Future @ UC Santa Cruz

<https://fieldworkfuture.ucsc.edu/about.html#content19-71>



# Risk Mitigation Measures Summary

- Remember basic situational awareness
- Identify, plan, and prepare for risks and hazards
- Implement risk mitigation measures
  - PPE, vaccination, vector control, wash your hands
- Training, training, training
  - Safety first!
  - Basic safety principles apply to the lab and the field

*Promote a **culture of prevention** for safe work practices in the field – especially true working with venomous snakes.*

# Risk Mitigation Measures- to the Organisms

- Cleaning and disinfection of tools and equipment
- Decontamination of boots and vehicles
- Transport and store samples properly
- Trash removal and disposal
- Avoid being a mechanical vector!
  - Do not move disease agents between field sites
  - Do not introduce disease agents to other animal populations and habitats





# NON-MODEL LAB CONSIDERATIONS

## Husbandry:

Housing

Feeding

Veterinary Care

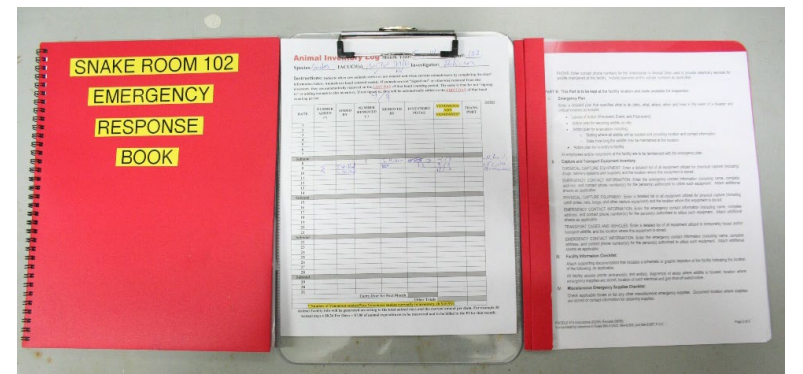
Occupational Health and Safety - PPE

## Planning:

Facility + EH&S on board

IACUC, SOPs

Physician pre-arranged



# NON-MODEL LAB S.O.P.s

Have protocols in place for *everything*  
When unsure – ask! Experts know best  
*Collaboration between Faculty+Oversight body  
facilitates proper and safe implementation*  
Professional Society AUC Guidelines



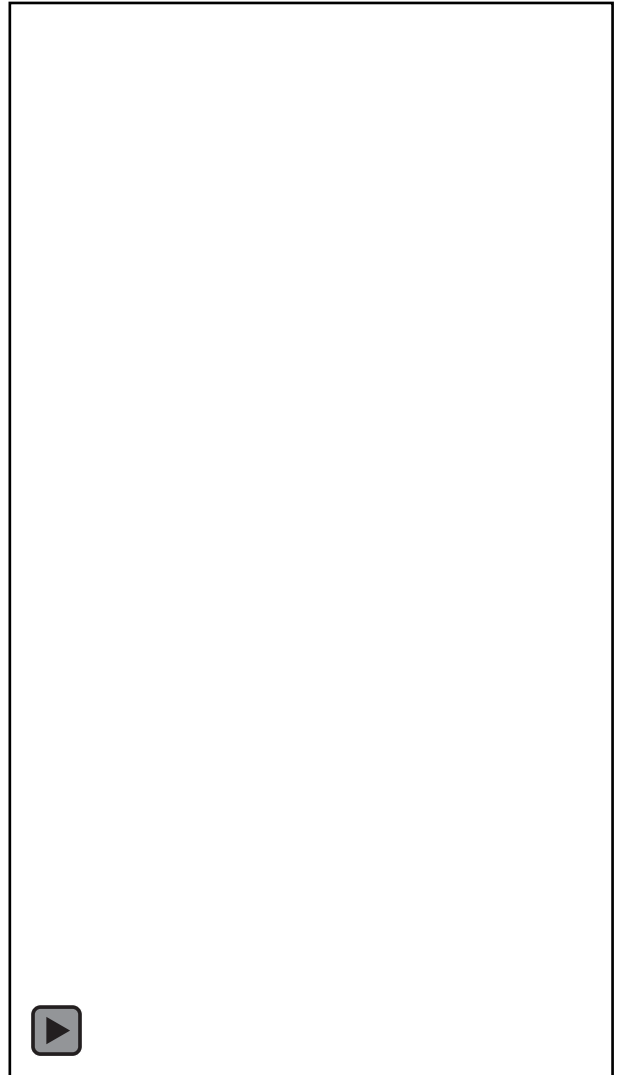
The screenshot shows the website of the American Society of Ichthyologists and Herpetologists. The navigation bar includes links for About, Members, Awards, Meetings, Copela, Resources, News, and Jobs. The main heading is "Animal Care Guidelines". Below this, there are two sections: "Herpetology" and "Ichthyology". The Herpetology section mentions downloading guidelines for live amphibians and reptiles in field and laboratory research. The Ichthyology section mentions downloading the use of fishes in research guideline developed by the American Fisheries Society, the American Institute of Fishery Research Biologists, and the American Society of Ichthyologists and Herpetologists in 2013.

## Parkinson SOPs & AUPs

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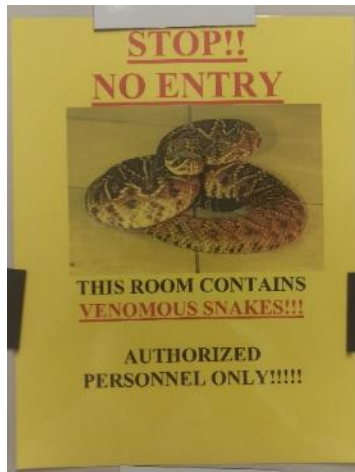
1. AUP: Collaborative Research: Dimensions US-BIOTA-SaoPaulo: Scales of Biodiversity- Integrated studies of snake venom evolution and multiple levels of diversity
  - a. Flow Chart
  - b. Appendix 1 – Taxon Sampling
  - c. Appendix 2 – MS222 Euthanasia protocol as presented in Conroy et al. 2009
2. SOP 700-01-00: Venomous Snakebite Emergency
3. SOP 700-02-00: Entering and Exiting the Snake Room
4. SOP 700-03-00: Transporting Snakes to and from the Snake and Lizard Room
5. SOP 700-04-00: Creating Cage Identification Cards
6. SOP 700-05-00: Documenting Identity of Snakes
7. SOP 700-06-00: Housing Snakes in the Snake and Lizard Room
8. SOP 700-07-00: Snake Husbandry Protocols
9. SOP 700-08-00: Feeding Snakes in the Snake and Lizard Room
10. SOP 700-09-00: Physical Procedures Performed on Snakes
11. SOP 700-10-00: Tubing to Restrain Venomous Snakes
12. SOP 700-11-00: Pinning to Restrain Venomous Snakes
13. SOP 700-12-00: MS-222 Preparation for Use in Reptiles
14. SOP 700-13-00: MS-222 Anesthetization in Reptiles
15. SOP 700-14-00: MS-222 Euthanization of Reptiles
16. SOP 700-15-00: Isoflurane Anesthetization for Reptiles
17. SOP 700-16-00: Ketamine Anesthetization for Reptiles
18. SOP 700-17-00: Propofol Aesthetization for Reptiles
19. SOP 700-18-00: Manual Venom Extraction from Venomous Snakes
20. SOP 700-19-00: Venom Extraction via Electrostimulation
21. SOP 700-20-00: Venom Extraction via Pilocarpine Injection
22. SOP 700-21-00: Sodium Pentobarbital Euthanization of Reptiles
23. SOP 700-22-00: SLEEPAWAY or Euthanization of Reptiles
24. AUP: Snake Venom LD50s in Lizards as part of Collaborative Research: Dimensions US-BIOTA-Sao Paulo: Scales of biodiversity – Integrated studies of snake venom evolution and function across multiple levels of diversity
  - a. Flow Chart
  - b. Appendix 1. LD50 Scoring Sheet
  - c. Appendix 2. LD50 Data Recording Sheet
25. SOP 700-23-00: Care and Husbandry of Anoles in Captivity
26. SOP 700-24-00: Care and Husbandry of Green Iguanas in Captivity

# Venomous Snakes in Research





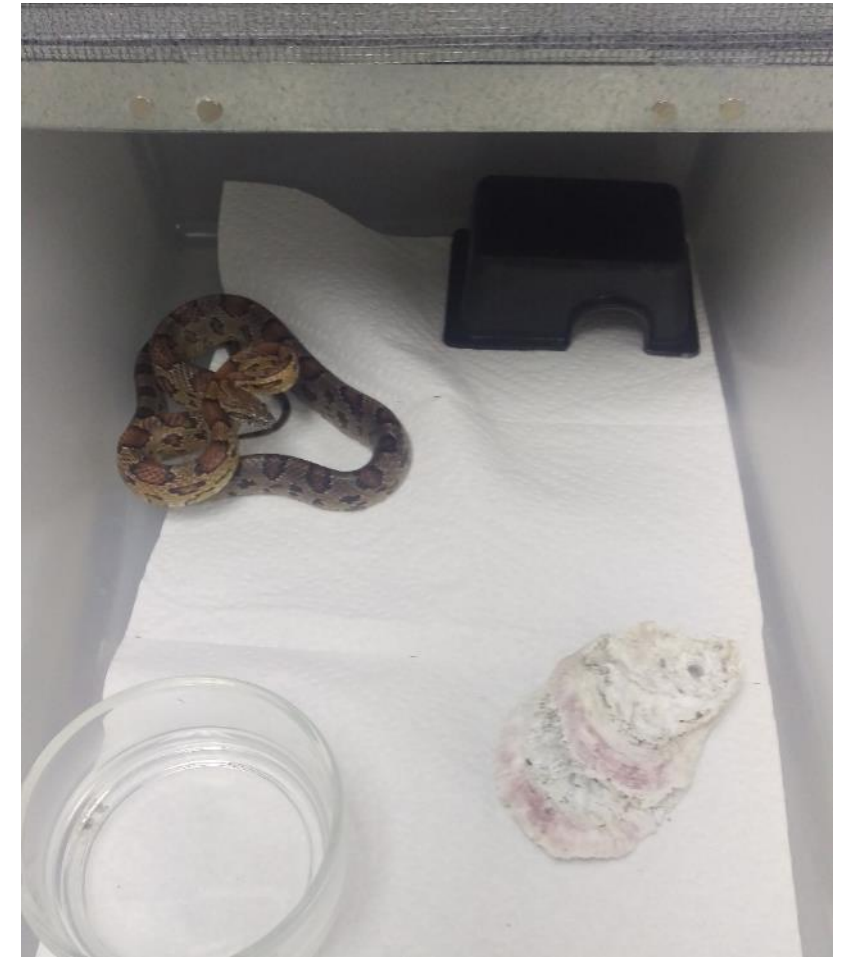
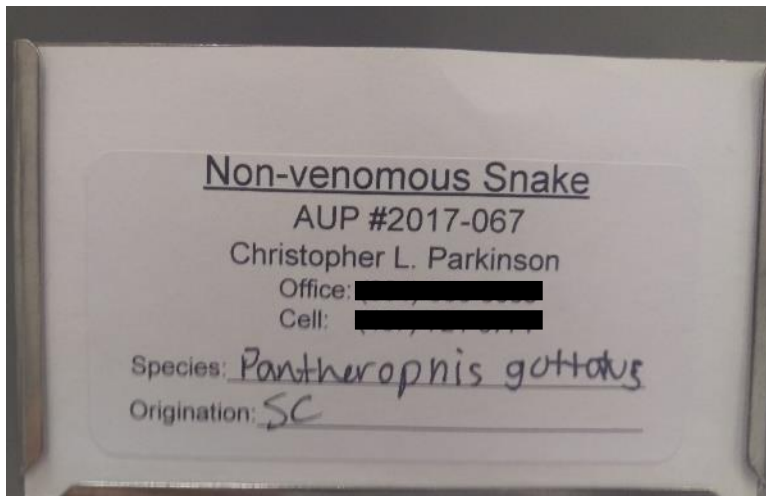
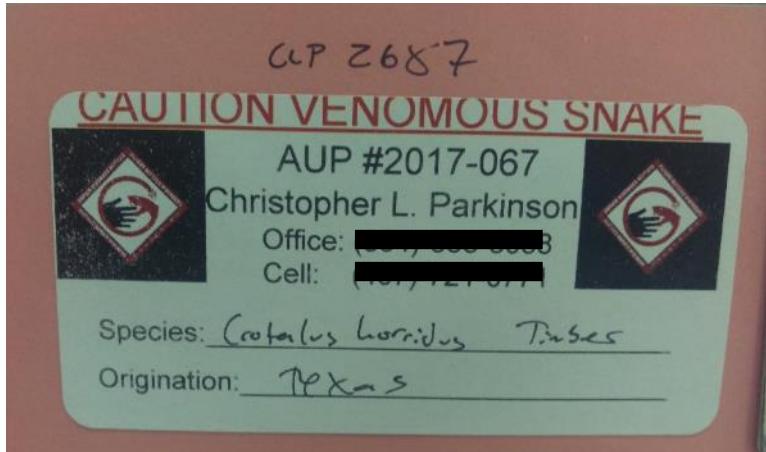
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*Photos: Parkinson Lab*

# OUR HOUSING FACILITY – “THE LAB”





# Working Safely with Venomous Snakes



Photos: Parkinson Lab



# Working Safely with Venomous Snakes

- Partner with a local Emergency Medicine physician and a snakebite specialist
- Meet with your local Fire and EMS
  - Set up emergency procedures- SOP's
  - Tours of the facility by EMS; have a designated “meet” locality
  - Dry run, practice an envenomation
- Snake Identification and education outreach

# Final Considerations

- The same level of planning and discussion that goes into lab safety should be considered when planning fieldwork.
- Communication, partnerships, collaboration and documentation-
  - Investigator, Students, Department, University, EH&S, and the IACUC
- Risk mitigation is a must- training, conversations, and implementation
- Everyone deserves to conduct fieldwork as safely as possible



# Any Questions

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