Safety Guidelines for Field Research

Fieldwork is an important part of teaching and research at WCU. Since fieldwork activities take place off campus, this information is intended to help plan and prepare for health and safety issues that might be encountered in the field.

The same general safety considerations that govern work in indoor laboratories must govern work in field situations. In addition, specific hazards exist in the field which are not encountered indoors. Thus, work in field laboratories involves safety considerations not addressed in the usual laboratory safety plan. The following guidelines are applicable to research field work as well as instructional courses that are held outdoors.

Emergency Contact Information

It is necessary for safety personnel to locate any employee or student in case of an emergency. Since field laboratories are, by definition, away from the normal laboratory meeting room, verify there is information on record in the responsible departmental office noting the location of such laboratories or field research. A course syllabus listing local destinations is adequate in most cases. For overnight or longer trips, file a detailed itinerary with emergency telephone contacts in the departmental office and leave a copy of the itinerary with a responsible party before the trip.

Motor Vehicle Safety

The use of motor vehicles represents the greatest potential hazard experienced by field laboratory participants. Since many field laboratories involve transporting participants in University vehicles, certain precautions must be observed.

1. All drivers must be State employees with a valid NC driver's license. Each driver must have a photocopy of his/her license on file with the University Motor Pool.
2. All North Carolina traffic safety laws must be observed at all times. All drivers should exercise the utmost care. No driver should be under the influence of alcoholic beverages or any intoxicating drug, prescription or otherwise.
3. All passengers are required to wear seat belts.
4. Special care should be taken to alert participants to traffic hazards when leaving or boarding vehicles, or when walking along highways. Trips should be planned to minimize exposure of participants to highway traffic.
5. The University assumes no responsibility for mishaps that occur when participants provide their own transportation.
6. If a driver is operating a 15 passenger van, they must take required training on passenger van safety via Vivid Learning Systems.

Field Safety Guidelines

1. Use a “buddy system” for field work such that each individual has a partner who knows their whereabouts at all times.
2. A small first-aid kit should be carried by a designated person who is familiar and trained with basic first aid and CPR.
3. The field lab leader should be aware of the nearest location for emergency medical care (clinic, emergency center, park ranger station, etc.).
4. Participants should report any special medical problems they may have to the field lab leader prior to participating in field laboratories. Examples include allergies to insect stings, diabetes, asthma, physical disabilities, etc.
5. If necessary, obtain permits for conducting field work on city, state, federal, or tribal land. Check to see if you need a permit for the species you are collecting in the field. Plan this well ahead of time because many field collecting permits take several months to process.
6. Participants should be made aware of any environmental hazards they are likely to encounter. These may include, but are not limited to:
    - Stings from venomous insects such as bees, wasps, hornets, yellow jackets. Medication for immediate relief from stings should be carried in the first aid kit (e.g. Benadryl), and participants who know they react severely to such stings should carry any special medication they might need.
    - Participants should be trained on how to identify common poisonous plants and should avoid them. This includes plants that can cause contact dermatitis (poison ivy, poison oak, and poison sumac) and plants poisonous upon ingestion (some mushrooms and berries). In general, don’t eat plants or fruits collected in the field. Information about poisonous plants can be found at: https://www.ncpoisoncontrol.org/types-of-poisons/plants-and-mushrooms/poisonous-plants
    - Endoparasites (Giardia, tapeworms, etc.) are a risk from untreated water sources, so participants should always carry plenty of water with them. Water obtained from field sources should be boiled, filtered, or chemically treated before consumption. Wash hands after handling soil, especially before eating.
    - Lightening occurs frequently, especially during the warmer months, and North Carolina has one of the highest frequencies of lightning-caused fatalities in the U.S. If a thunderstorm threatens, the best response is to seek shelter in a building or vehicle. When this is not feasible avoid open areas and exposed portions of the landscape (peaks, hilltops, ridges), and don’t stand under isolated tall objects, such as trees or power poles. Boaters should seek shelter on shore immediately. The safest places outdoors are in topographically protected areas such as valleys or ravines, and away from the tallest trees.
    - Steep topography presents hazards from falling. Participants should exercise caution when hiking in steep terrain, overlooks, observation towers, waterfall areas, etc.

- Aquatic field exercises should involve the use of personal floatation devices for boating trips and wading in high water. Water deeper than knee height, even with a moderate current, becomes very hard to wade in safely.
- Wade with caution and watch for signs of rip currents and unexpected drop-offs.
- Cold weather trips present hazards for frostbite and hypothermia and hot weather trips present hazards for heat exhaustion and heat stroke. Participants should be aware of the symptoms and the first aid kit should include specific directions and supplies for treatment.
- Cold weather trips presents hazards

Field Work with Animals

Working with mammals in the field presents unique risks for the field researcher. Common hazards include bites, stings, scratches, infection, allergic reaction, and disease. Different groups of animals pose specific risks, and some are outlined below.

Mammals

Working with mammals in a research capacity requires an IACUC (Institutional Animal Care and Use Committee) approved Animal Study Proposal. A tetanus and rabies vaccine are recommended for those performing research with mammals. Below are some specific risks in working with mammals:

- Rabies: Any mammal can get and transmit rabies. Proof of a rabies vaccine is required for IACUC approval when working with bats and certain other mammals.
- Hantavirus: this is spread mainly by rodents via an aerosolized virus that is shed in rodent urine, feces, and saliva. You can reduce the chance of hantavirus by thoroughly washing your hands after handling rodents. Wearing a mask and gloves is recommended when handling rodents that frequently spread the virus, like deer mice.
- Additional PPE should include leather or rubber gloves, long sleeves, long pants, and close-toed shoes.

If bitten by a mammal in the field, clean the wound with soap and water and cover it with antibiotic cream. Seek medical attention immediately if the wound is a puncture and breaks the skin. Monitor the would for infection and report any symptoms to a medical professional.

Amphibians & Reptiles

Working with amphibians or reptiles in a research capacity requires an IACUC (Institutional Animal Care and Use Committee) approved Animal Study Proposal.

Handling reptiles and amphibians can pose a threat to the field researcher, and vice versa. Whenever handling these animals, wash your hands or change gloves in between holding different individuals to lessen the chance of spreading disease to other animals (for example, Bsal/chytrid fungus) or to yourself (salmonella, E. coli).

Bites from venomous snakes are a risk and care should be taken to avoid snakes in the field. Participants should have recognition for common snakes in the area and should never knowingly handle a venomous snake. If someone does get bitten, return to the vehicle and seek medical attention immediately.

Fish

When handling fish, puncture wounds from fish spines, gill rakers, teeth, or opercula are very common. This combined with the likely potential to encounter polluted water makes infection a high risk when handling fish.

When electrofishing, always wear a personal flotation device, rubber boots/waders, and rubber gloves. Always have someone in the group that is familiar and comfortable with CPR in the event of respiratory arrest or cardiac fibrillation due to electrocution and know the location and contact information of the nearest hospital and/or EMS.

When electrofishing, always wear a personal flotation device rubber boots/waders, and rubber gloves. Always have someone in the group that's familiar and comfortable with CPR

Insects/Arthropods

Working with insects in a research capacity does not require an IACUC (Institutional Animal Care and Use Committee) approved Animal Study Proposal.

Common hazards associated with insects include biting, stinging, and allergies. If you have a known insect allergy, carry an EpiPen with you at all times.

Ectoparasites such as ticks and chiggers are a serious threat to individuals conducting field work during warm weather. Participants should inspect their entire body carefully after returning from the field and remove any ticks found. If they do find a tick attached, note the day in the event that symptoms of Rocky Mountain Spotted Fever or Lyme Disease appear later. A physician should be consulted if symptoms such as fever, joint aches, swollen glands, and reddish flushing of the skin occur in the weeks following a tick bite. Avoid contact by tucking and taping pant legs, using repellents, wearing a hat, and doing frequent tick checks.

Compliance Requirements

Research involving vertebrate animals requires registration with and approval from the Institutional Animal Care and Use Committee (IACUC).

Research involving microorganisms (including isolating, concentrating, culturing or growing field samples) and recombinant or synthetic nucleic acids requires registration and approval from the Institutional Biosafety Committee (IBC).

If a University employee suffers a job-related illness or injury, his/her supervisor must be notified and the required paperwork filed with the Safety and Risk Management Office within

24 hours, or immediately for serious cases involving overnight hospitalization, amputation, permanent disfigurement, or fatality.

Resources:

Demery, A.J.C. and Pipkin, M.A., 2021. Safe fieldwork strategies for at-risk individuals, their supervisors and institutions. Nature Ecology & Evolution, 5, 5-9.

https://www.nature.com/articles/s41559-020-01328-5

The National Institute for Occupational Safety & Health (NIOSH): Hazards to outdoor workers.

https://www.cdc.gov/niosh/topics/outdoor/default.html