

ECOLOGY LABORATORY
DEPARTMENT OF ZOOLOGY
NAGALAND UNIVERSITY, LUMAMI

Dr. Lobeno Mozhui leads research activities in the **Ecology Laboratory**. Her research focuses on the interdisciplinary exploration of insect and arthropod resources, integrating biodiversity, taxonomy, ethnobiology, entomophagy, entomotherapy, and nutritional biochemistry. Her research particularly emphasizes the documentation and scientific validation of traditional knowledge associated with edible and medicinal insects of Nagaland.



Her major research areas include edible insects and their nutritional and functional properties; medicinal insects and entomotherapy; nutritional biochemistry and bioactive compounds; moth and Lepidoptera diversity; hornet and wasp diversity; spider diversity and utilization; longhorn beetle taxonomy and diversity; and broader insect biodiversity and ecology. Her research further focuses on the scientific investigation of the nutritional composition, bioactive properties, processing methods, microbial safety, value addition, and livelihood potential of insect-based resources.

She is actively involved in research and postgraduate supervision. Three research scholars are currently working under her supervision, pursuing research in areas related to insect biodiversity, edible and medicinal insects, and nutritional biochemistry.

The laboratory aims to integrate traditional knowledge with modern biological and biochemical approaches to promote biodiversity documentation, scientific validation, sustainable utilization, food security, health, and livelihood development.

Thrust Areas of Research

1. Edible Insects – Diversity, nutritional profiling, traditional processing, food safety, value addition, and sustainable utilization of edible insects.
2. Medicinal Insects (Entomotherapy) – Documentation of traditional medicinal uses, bioactive compounds, therapeutic potential, and scientific validation of insects used in traditional healthcare.
3. Nutritional Biochemistry – Analysis of proteins, amino acids, lipids, fatty acids, carbohydrates, vitamins, minerals, phenolics, antioxidants, and other bioactive components of insects and insect-derived products.
4. Moth Diversity and Taxonomy – Taxonomic studies, species documentation, diversity assessment, distribution, and ecological studies of moths (Lepidoptera).
5. Hornet and Wasp Diversity – Taxonomy, species diversity, ecology, traditional utilization, and nutritional and medicinal significance of hornets and wasps (Hymenoptera).

6. Spider Diversity and Utilization – Documentation of spider diversity, taxonomy, ecology, traditional consumption, nutritional composition, and potential value-added applications.
7. Longhorn Beetle Diversity – Taxonomic documentation, species diversity, distribution, ecology, and traditional and economic significance of longhorn beetles (Cerambycidae).
8. Insect and Arthropod Biodiversity – Biodiversity assessment, species inventories, taxonomy, distribution patterns, ecological interactions, and conservation of insects and other arthropods.

RESEARCH SCHOLARS



Mr. Moatemsu

Research Area: Diversity, Taxonomy and Ecology of Hornets (Hymenoptera: Vespidae)



Miss Keneisano Yhoshii

Research Area: Diversity, Taxonomy and Ecology of Moths (Lepidoptera)



Miss Rita Khatri Chhetri

Research Area: Edible and Medicinal Insects: Diversity, Traditional Utilization, Nutritional and Therapeutic Potential

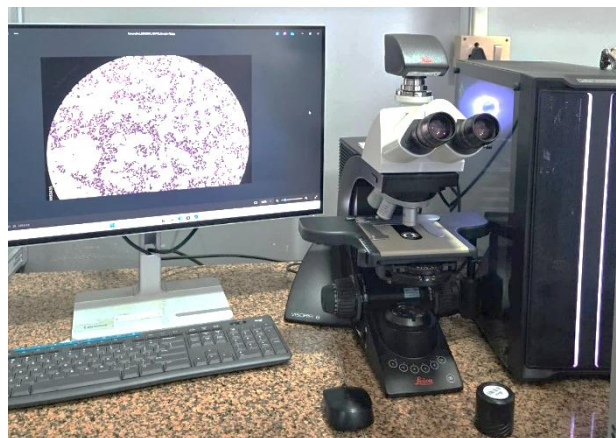
LABORATORY EQUIPMENT

1. Leica DM2000 Upright Microscope

A high-quality research microscope used for detailed morphological, anatomical, histological, cytological and taxonomic examination of biological specimens, with provision for digital image documentation.

Key features:

- Transmitted-light illumination with long-life integrated LED
- 7-fold revolving nosepiece
- Height-adjustable stage carrier
- Centrable condenser holder with vertical adjustment
- Right- and left-hand operation
- Clamp screw for secure positioning
- Adjustable height stop
- Coarse and fine focus adjustment
- Focus stop and coarse focus knob
- Suitable for routine and research-based biological, anatomical, histological and taxonomic investigations



2. Rotary Vacuum Flash Evaporator

A laboratory instrument used for efficient concentration and solvent removal from biological and chemical extracts under reduced pressure, enabling evaporation at relatively low temperatures and minimizing thermal degradation of heat-sensitive compounds.

Key features:

- Vacuum-assisted evaporation lowers the boiling point of solvents.
- Rotating evaporation flask increases the surface area and promotes efficient evaporation.
- Controlled water/oil bath provides uniform heating.
- Condenser system condenses and recovers evaporated solvents.
- Suitable for concentrating plant, insect, microbial and biological extracts.
- Helps reduce thermal degradation of heat-sensitive bioactive compounds.



3. Fume Hood System with Scrubber

A laboratory safety system designed to capture and exhaust hazardous fumes, vapours, and aerosols generated during chemical procedures, with an integrated scrubber for treating contaminated exhaust air and minimizing exposure to laboratory personnel and the surrounding environment.

Key features:

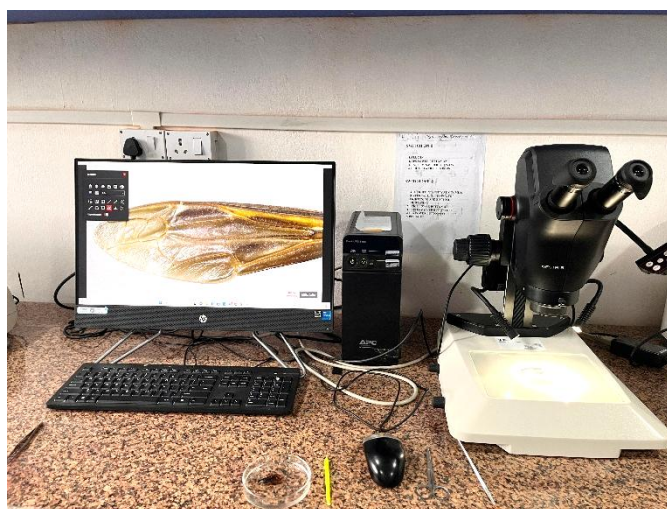
- Enclosed working chamber that protects laboratory personnel from chemical exposure.
- Fume extraction system continuously draws contaminated air away from the operator.
- Scrubber unit treats the extracted gases and vapours by chemical or physical absorption.
- Helps control exposure to toxic, corrosive, irritating, and volatile chemicals.
- Provides safer handling of chemicals during digestion, extraction, concentration and other procedures.
- Typically includes a blower/exhaust system, ducting, scrubber, work surface, and sash.

**4. Leica Ivesta 3 Stereo Microscope with Integrated Camera**

The Leica Ivesta 3 Stereo Microscope with Integrated Camera is an advanced stereomicroscopy system designed for high-resolution, three-dimensional observation and digital documentation of biological specimens.

Key Features:

- Integrated digital camera for image capture and documentation.
- Stereo optics for three-dimensional specimen observation.
- 10×/23 adjustable eyepieces with measurement reticle.
- Coarse and fine focusing with 300 mm column.
- TL3000 Ergo transmitted-light base.
- LED3000 SLI illumination with flexible light guide.
- Suitable for insect taxonomy, morphology, morphometry, dissection, and specimen documentation.

**5. Multiskan Sky Microplate Spectrophotometer with Cuvette and Touch Screen + μ Drop Plate**

The Multiskan Sky Microplate Spectrophotometer is a versatile instrument used for quantitative measurement of absorbance in biological, biochemical, microbiological, and molecular samples. It supports 96- and 384-well microplates, cuvettes, and microvolume measurements using a μ Drop plate.

Key Features:

- Wavelength: 200–1000 nm; 1 nm steps.
- Xenon flash lamp with monochromator.



- Compatible with 96- and 384-well plates and cuvettes.
- Linear plate shaking and incubation up to 45°C.
- 7-inch touchscreen for stand-alone operation.
- Includes μ Drop plate for microvolume measurements.

6. Refrigerated Centrifuge

A laboratory instrument used for separating biological and chemical components by centrifugal force under controlled low-temperature conditions. Refrigeration helps preserve temperature-sensitive samples during centrifugation.

Key applications:

- Separation of blood, cells, and biological samples
- Protein and nucleic acid preparation
- Microbial and biochemical research
- Sample preparation for molecular and nutritional analyses
- Preservation of temperature-sensitive samples during centrifugation



7. iMark Microplate Reader

The iMark Microplate Reader (Bio-Rad) is a microplate spectrophotometer used to measure absorbance in multi-well plates. It is widely used for ELISA, protein quantification, DNA/RNA analysis, enzyme assays, and other biochemical and microbiological applications.

Key Features:

- Absorbance microplate reader
- Supports 96-well microplates
- Suitable for ELISA and colorimetric assays
- Programmable wavelength selection
- Rapid measurement of multiple samples
- Digital display and data analysis
- Suitable for biochemical, molecular biology, and microbiological research.



8. Orbital Incubator Shaker

A laboratory instrument that provides controlled temperature incubation combined with continuous orbital shaking. It is widely used for growing and maintaining microorganisms, mixing biological samples, and conducting biochemical experiments under controlled conditions.

Key features:

- Temperature-controlled incubation for maintaining a constant experimental temperature.



- Orbital shaking motion provides uniform mixing and aeration of samples.
- Adjustable shaking speed (RPM) depending on the experimental requirement.
- Suitable for flasks, culture bottles, tubes and other laboratory vessels.
- Digital control and monitoring of temperature and shaking speed.
- Provides relatively uniform environmental conditions for reproducible experiments.

9. Laboratory Centrifuge Remi R-4C

The Remi R-4C Centrifuge is a laboratory centrifuge used for the rapid separation of biological and chemical components based on differences in density. It is suitable for routine sample processing in biological, biochemical, microbiological, and research laboratories.

Key Features:

- 15 mL tube capacity.
- Suitable for routine sample separation and processing.
- Used for biological, biochemical, and microbiological samples.
- Efficient separation of cells, precipitates, and other sample components.
- Compact and easy to operate.



LIST OF OTHER EQUIPMENT AVAILABLE IN THE LAB

SL. NO.	NAME OF THE EQUIPMENT
1.	Water bath
2.	Magnetic stirrer with hot plate
3.	Handheld homogenizer
4.	Muffle furnace
5.	Hot air oven
6.	BOD Incubator
7.	-20 deep freezer
8.	-80 deep freezer
9.	pH meter
10.	Conductivity meter
11.	SPINWIN MC-00 Microcentrifuge
12.	SPINWIN MC-01 Microcentrifuge
13.	Biochemical analyzer
14.	KELPLUS System
15.	Soxhlet apparatus