

# Biological Collections Practical Seminar

# Practical : Day-1

*Diversity study:  
morphological  
identification  
through light  
microscopy*



Presented by:

AL AMIN















FINLAND N  
Tammisaar  
Edesback  
26.4.198  
Kauri M





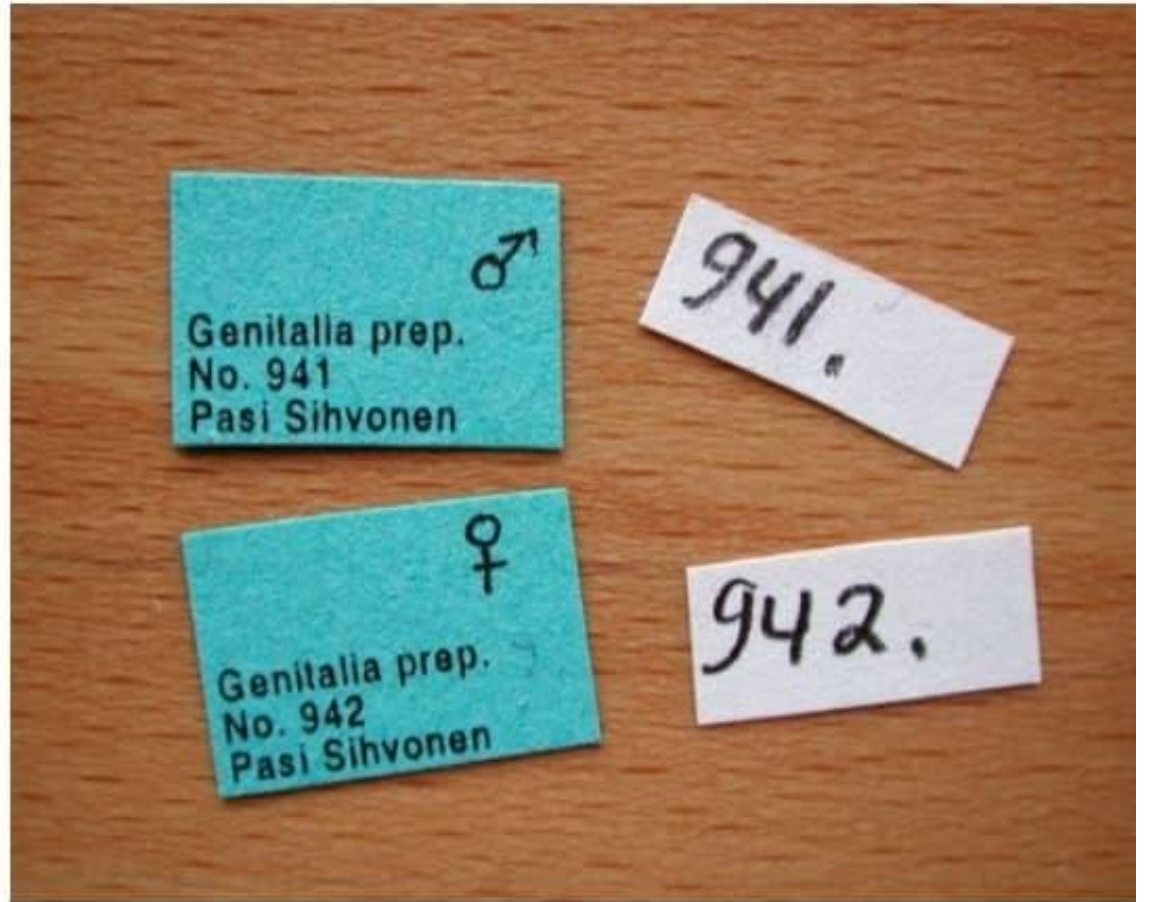
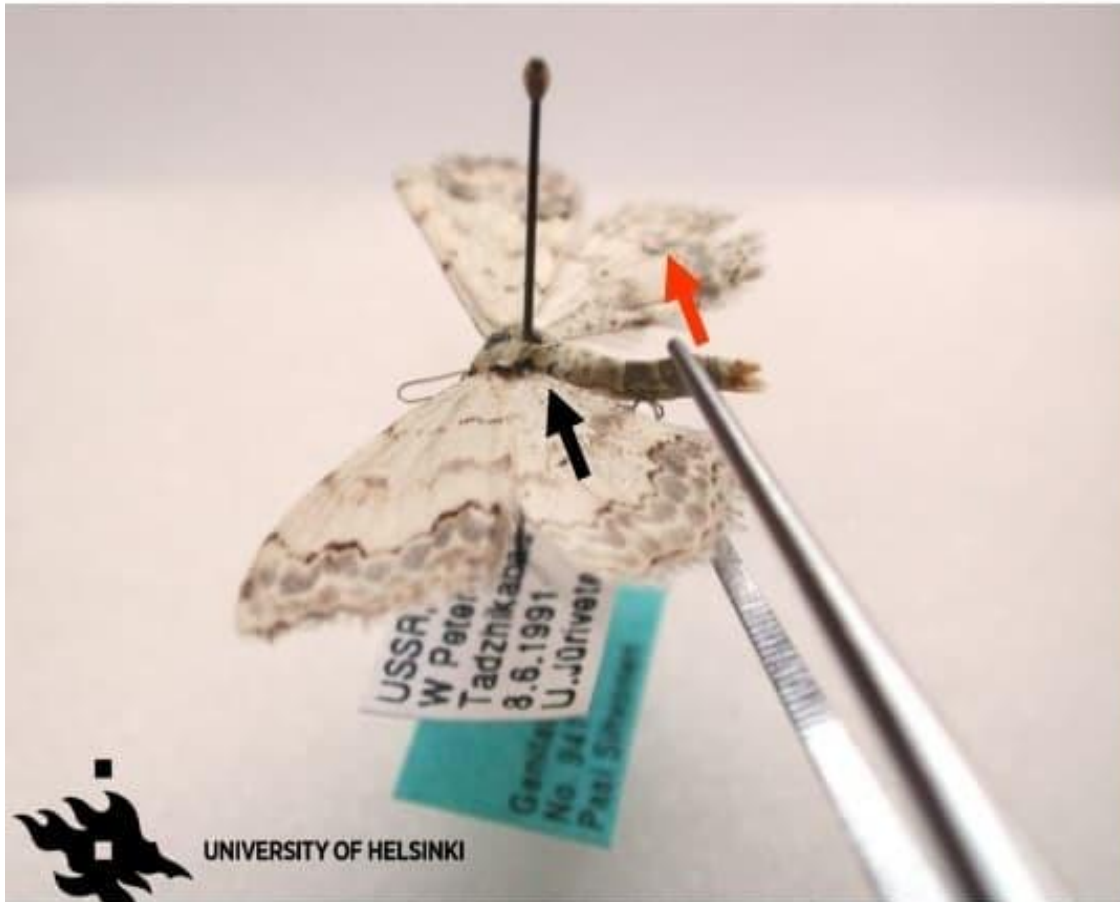


Thank you  
very moth.



Genitalia Dissection of  
the Genus *Orthosia*

# Step 1: Abdomen Removal





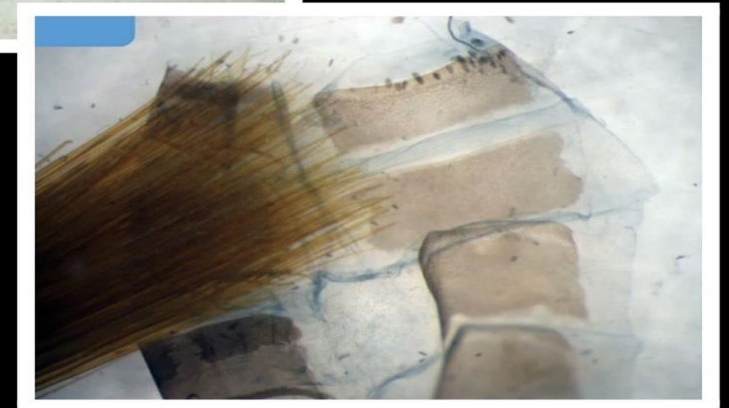
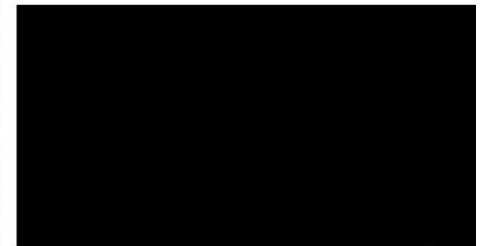
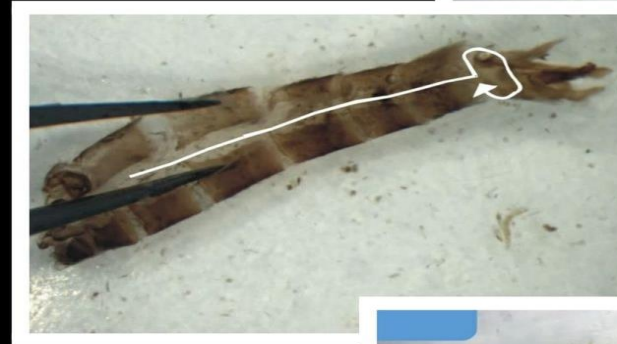
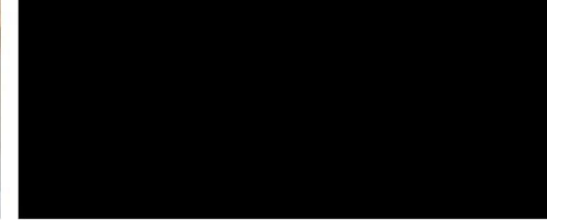
# Step 2: KOH Treatment

- 10% KOH used to treat the abdomen in order to remove fat and make it soft
- Dissected part was put into the KOH containing testube
- KOH treatment has been performed in a heat block where the dissected parts were kept for 10 minutes.



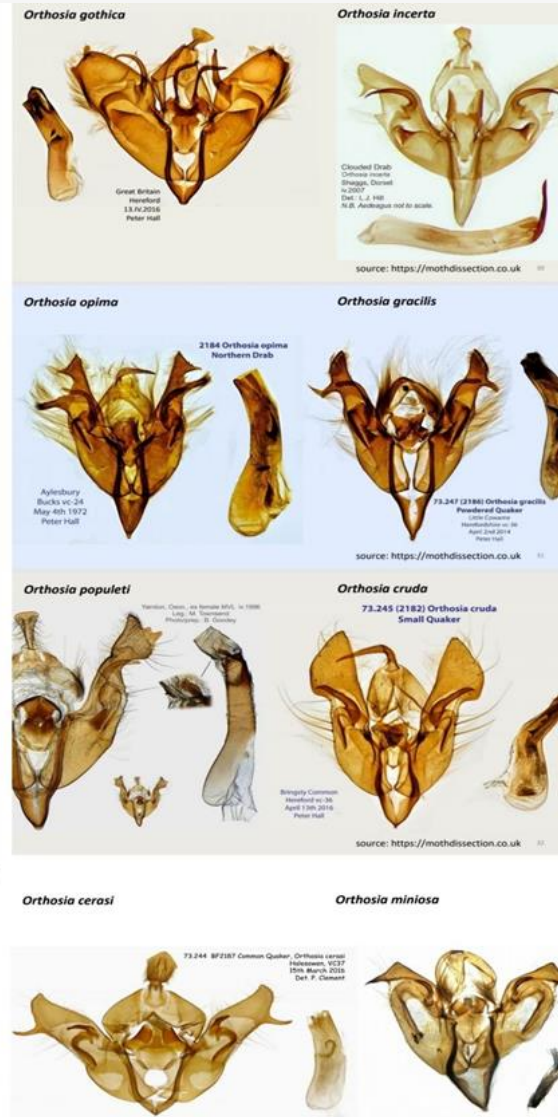
# Step 3: Cleaning

- Water was used to clean the dissected part
- Separated the genitalia containing body part gently
- Removed genitalia
- Cleaned the genitalia with paper or brush



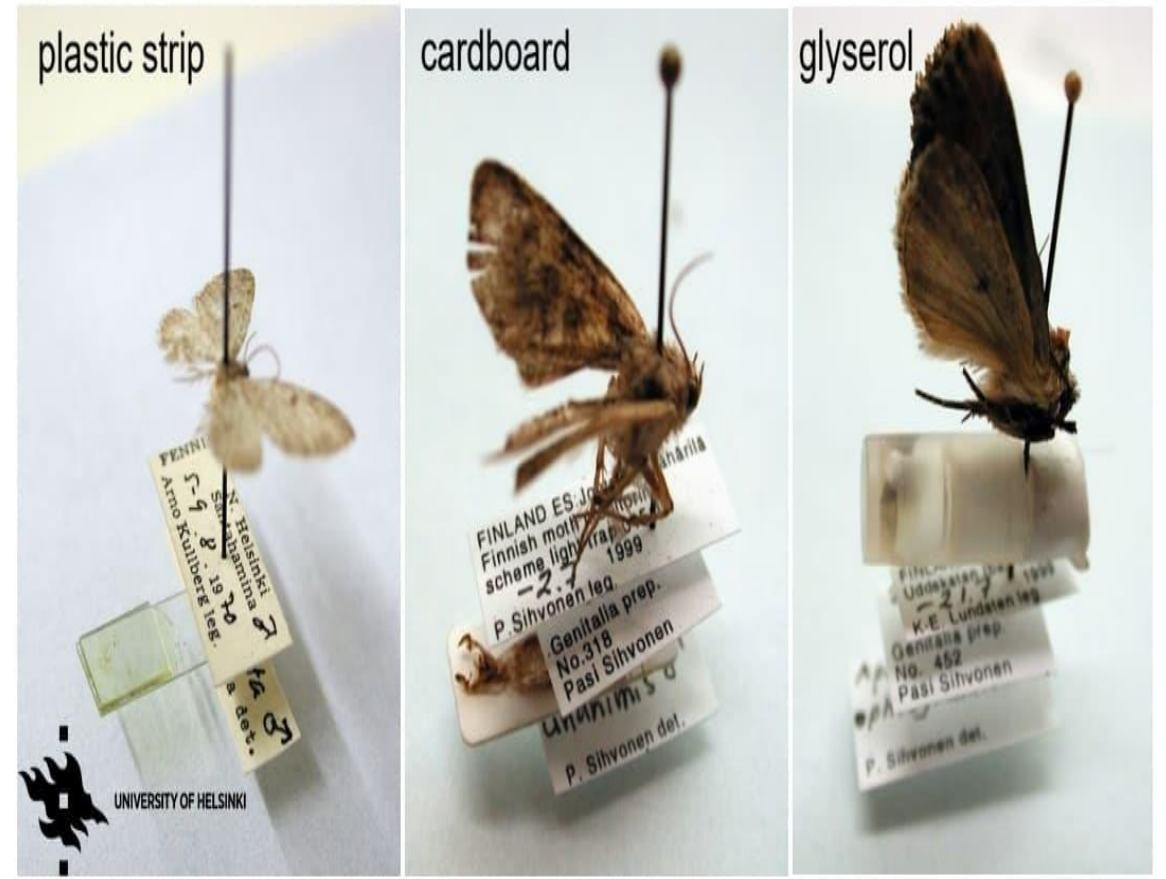
# Step 4: Identification

- This step was performed through microscope.
- According to the provided images of different species of *Orthosia*, we identified our samples.

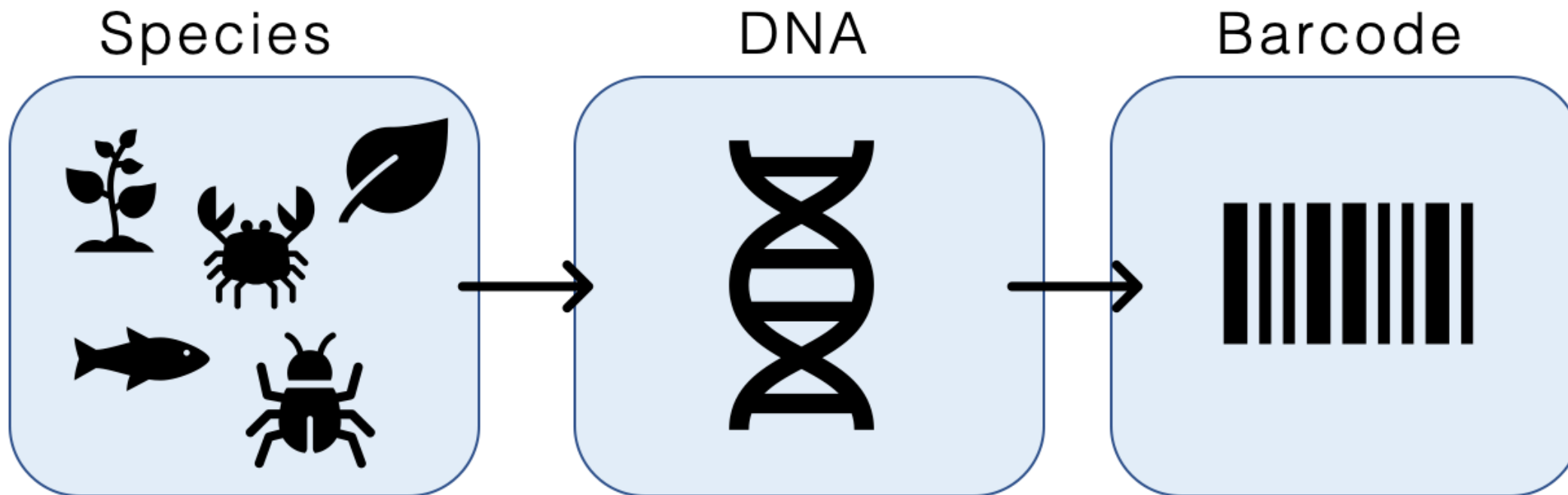


# Step 5: Storage

- There are different storage ideas but we used the technique where genitalia stores in a glycerol containing tube.
- After placing the genitalia in the tube, we closed the tube and pinned it with the sample from where it was taken.







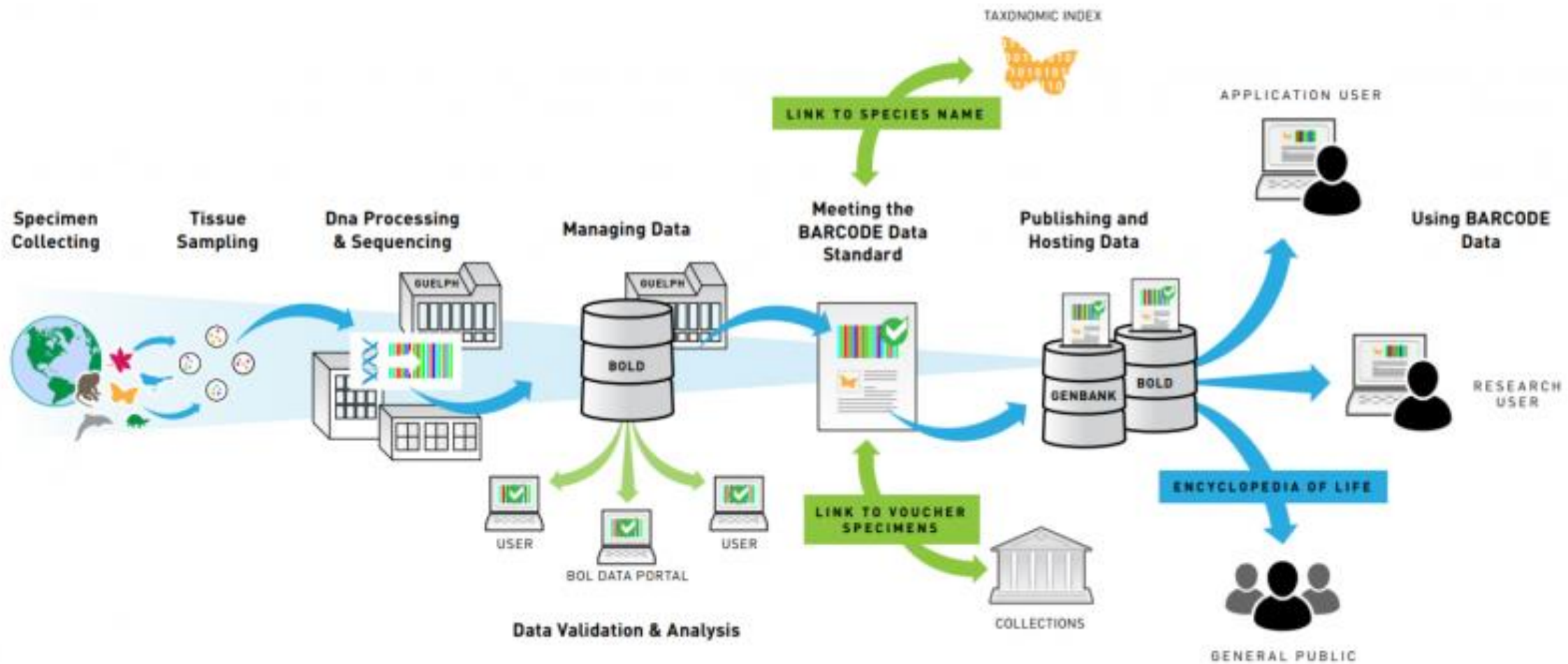
## LEPIDOPTERAN TAXONOMY

-noctuid genus *Orthosia*  
(owlet moths)

Several ways to group individuals into species

- External features
- Reproductive organs
- **Barcodes**





# BARCODE OF LIFE DATA SYSTEMS v4 beta

Advancing biodiversity science through DNA-based species identification.

EXPLORE THE DATA

## DESIGNED TO SUPPORT THE GENERATION & APPLICATION OF DNA BARCODE DATA

BOLD is a cloud-based data storage and analysis platform developed at the Centre for Biodiversity Genomics in Canada. It consists of four main modules, a data portal, an educational portal, a registry of BINs (putative species), and a data collection and analysis workbench.

Please note that this version of BOLD is in beta and will contain bugs. Users can help address these bugs by testing the system and reporting issues to [support@boldsystems.org](mailto:support@boldsystems.org). This version is very different from the prior one but has access to all the same data.



### DATA PORTAL

A data retrieval interface that allows for searching over 1.7M public records in BOLD using multiple search criteria including, but not limited to, geography, taxonomy, and depository.



### EDUCATION PORTAL

A custom platform for educators and students to explore barcode data and contribute novel barcodes to the BOLD database.



### BIN DATABASE

A searchable database of Barcode Index Numbers (BINs), sequence clusters that closely approximate species.



### WORKBENCH

A data collection and analysis environment that supports the assembly and validation of DNA barcodes and other sequences.

4,712k

Barcodes

441k

BINs

168k

Animal Species

63k

Plant Species

20k

Fungi & Other Species



# Bird ringing – Jari Valkama

## I – What is bird ringing



- Bird ringing: study technique consisting of marking birds by attaching a metal ring with a unique identifying code to the leg.
- Ringing allows to study many things in birds:
  - Movements
  - Longevity
  - Phenology
  - Ecology



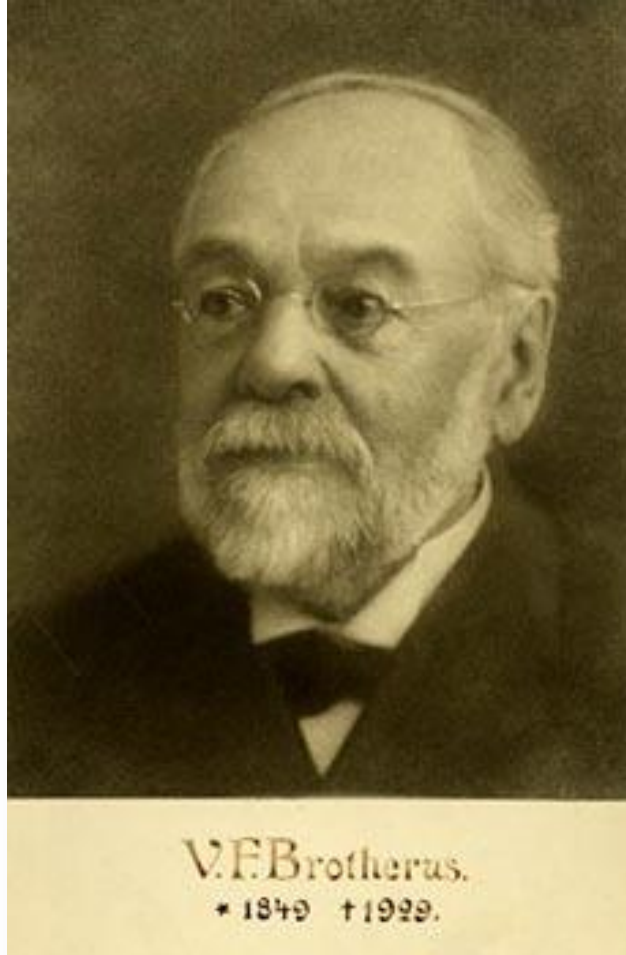
# Bird ringing – Jari Valkama      II – The ringing centre

- Staff: 6 People (ringers are volunteers)
  - Tasks:
    - Database maintenance
    - Ordering and distributing rings
    - Coordinating recovery data
    - Promote ringing and research
  - Main ringing projects in Finland:
    - Constart effort sites
    - Bird of prey monitoring
    - Bird observatories
-

# Bird ringing – Jari Valkama

## III – Ringing in Finland

- Almost 13.000.000 birds ringed
- About 10% of the rings are recorded again:
  - Bird found dead
  - Bird caught by another ringer
  - Bird seen alive in the wild (colour rings)
- Most ring recoveries from Europe and W-Africa
- Data collected in the database "Tipu"



## Bryophytes – Xiaolan He

Finland holds 50% of  
European bryophyte flora

Top research work on  
bryophytes in Finland, and  
in University of Helsinki

Some Finnish bryologists  
were famous worldwide.





**Marchantiophyta**

8000 species



**Anthocerotophyta**

236 species



**Bryophyta sensu stricto**

12000 species

TOTAL: ca. 20000 species

# Bryophytes – Xiaolan He



# Bryophytes – Xiaolan He

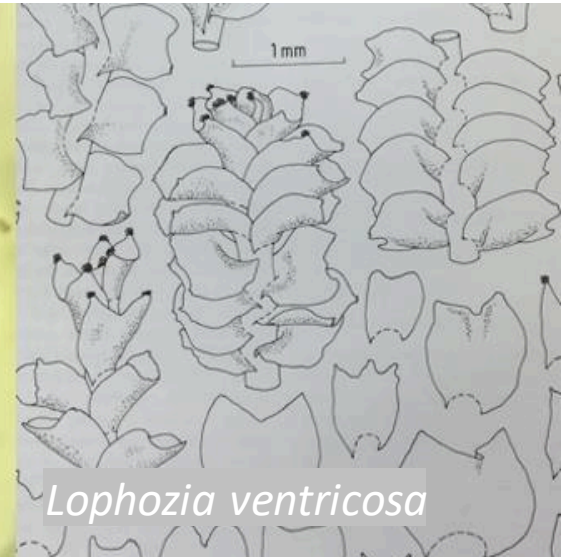
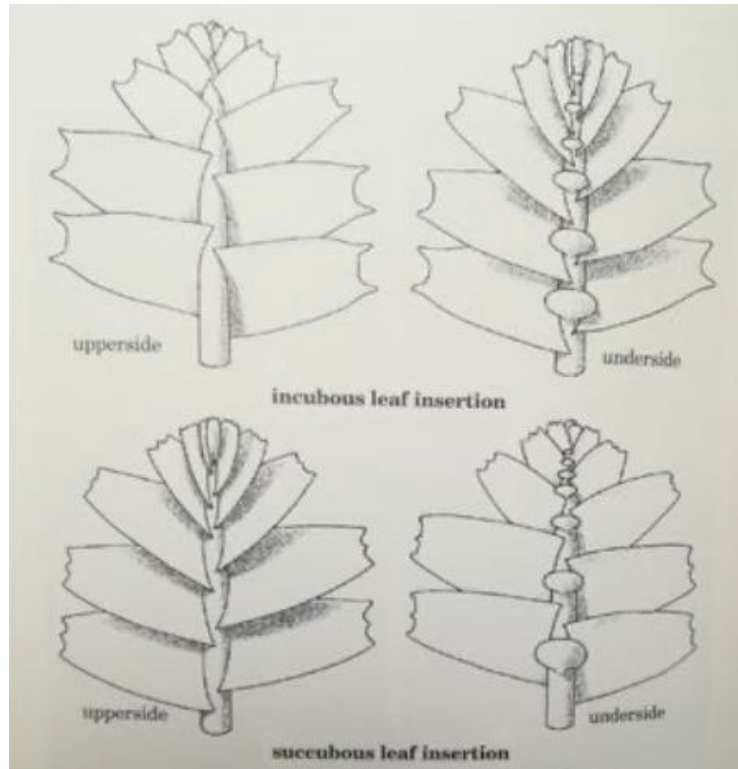
# Collecting process

- Few materials needed
- Easy to collect
- No need of much space
- Drying process is mandatory, often a creative process!
- Final storage at the Museum

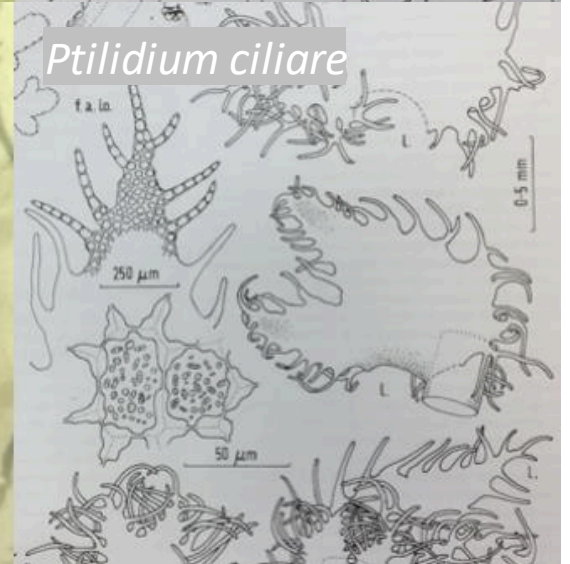
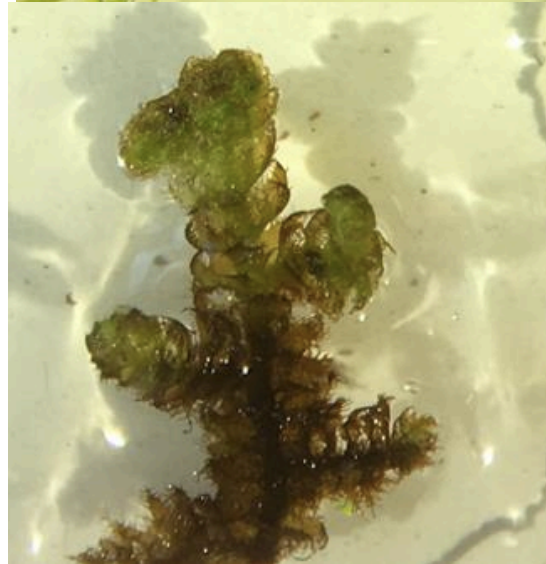


# Bryophytes - Xiaolan He

## Identification



*Lophozia ventricosa*



*Ptilidium ciliare*





# **Bryophytes – Xiaolan He**

## **Research fields**

- Taxonomy
- Water purification
- Heavy-metal absorbance
- Much more!



# Living Collections: Public display

- Living botanic collections are displayed at botanic gardens
- Organization based off the evolution of plant groups, regions of the world they are native to, etc.





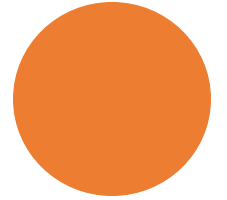
# Living Collections: Inner workings

- Can take years to display a specimen
- Find funding, get permission, collect seeds, transport seeds, propagate specimen



# Living Collections: Nagoya Protocol

- Limits access to genetic resources
- Highlights fair and equitable sharing of benefits
- e.g. banana plants

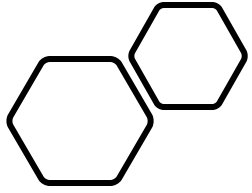


## Living Collections: Seed Banks

- Seed storage for future use
- Vavilov Seed Bank
- Many crop varieties from there are utilized today







# Living Collections: What is the purpose?

Research, preservation, and education

