

Salahaddin University – Erbil
College of Science
Environmental Science and Health Department
2nd Stage



2nd Lecture in Insect Ecology

Techniques of Collecting, Pinning and Preservation of Insects

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- **Benefits of insects:**

1. They are responsible for pollination of flowers.
2. Production of honey, wax, and silk.

- **Damages of insects:**

1. They also consume 13 percent of our food crops.
2. They are responsible for transmitting organisms that cause many human diseases.

Where to Collect Insects

- Insects may be collected at any time during the year. The following insect habitats can be used as a guide to making a collection:
- 1. Pastures:** grasshoppers, butterflies, tree crickets, leafhoppers, beetles, wasps.



tree crickets



leafhoppers

2. Cultivated plants: butterflies, beetles, bugs and many other injurious insects.

3. Buildings: bristletails, booklice, termites, moths.

4. Domestic and wild mammals and birds: biting lice, sucking lice, horse flies.



Bristletails



Booklice



Termites



Moth



Horse flies.

5. Water:

A. Ponds, lakes, streams: water bugs, stoneflies, mayflies, dragonflies, beetles.

B. Mud, clay banks: tiger beetles.

C. Weeds and leafy branches near water: damselflies, dragonflies, beetles.



Water bugs



Stoneflies



Mayflies



Dragonflies



Tiger beetles



Damselflies

6. Special places:

A. Boards and stones: ants, termites, beetles, crickets.

B. Lights at night: moths, beetles, praying mantis, mayflies, stoneflies.

C. Greenhouses: : plant lice.

D. Dead or decaying bodies of animals: rove beetles and other scavengers.



Praying mantis



Rove beetles

Collecting Equipment



Collecting Equipment

2. Killing jars



Collecting Equipment

3. Envelopes



Collecting Equipment

4. Vials of preservative

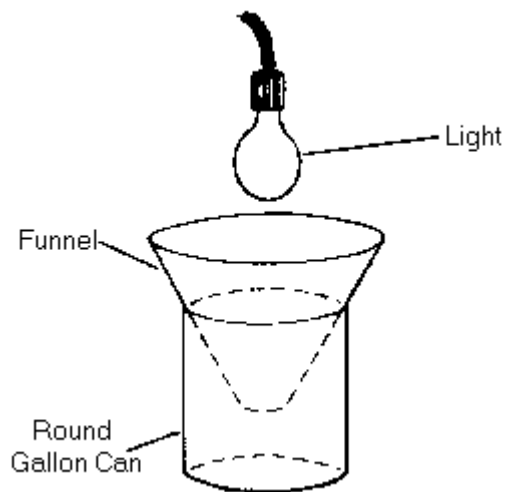
5. Forceps

6. Hand lens



Collecting Equipment

7. Traps

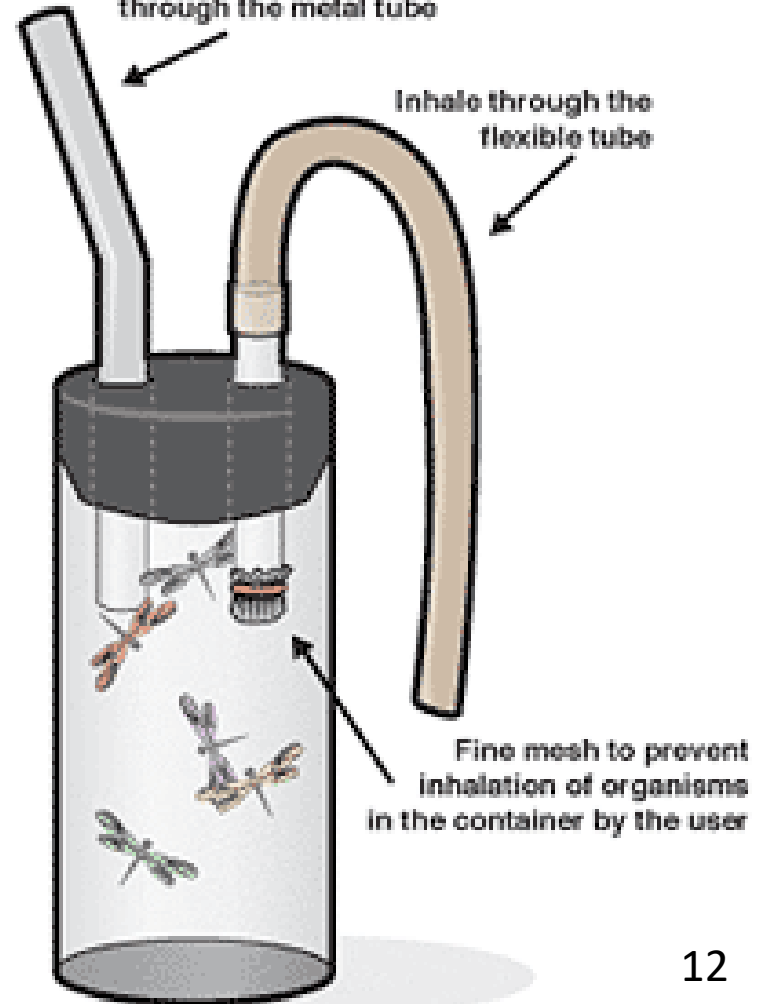


Collecting Equipment

8. Aspirator

Insects are pulled into the container through the metal tube

Inhale through the flexible tube



Collecting Equipment

9. Aquatic collecting equipment



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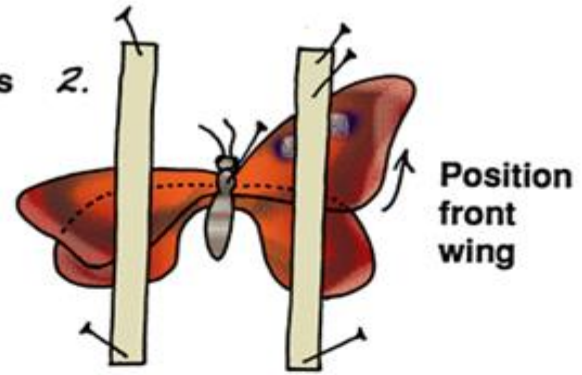
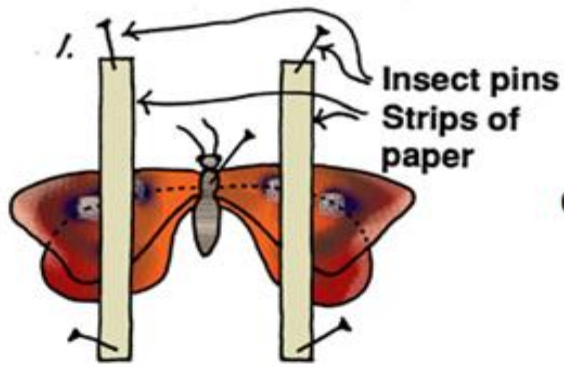
Insects Collection:

- 1. Catching insects:** a net is used by swinging it at insects as they go by or swinging it through vegetation or along the surface of water.
- 2. Killing insects:** place insects immediately into the killing jar after they are captured. If the killing jar is in use, the insects can be placed into another container with a lid. It is important to kill the insects as soon as possible so that they do not damage their body parts.

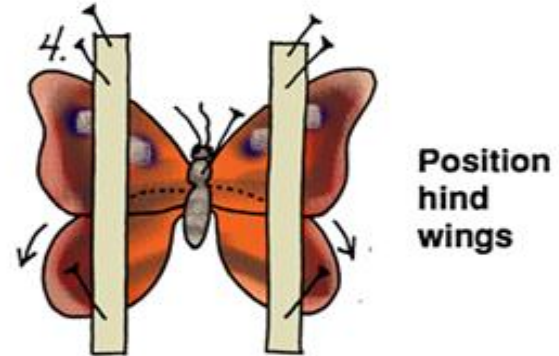
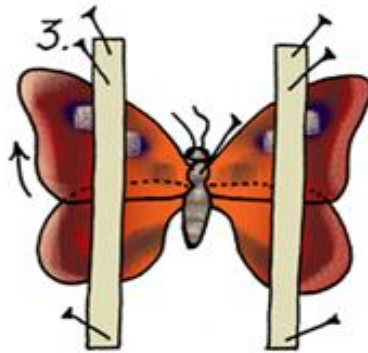
Insects Preservation:

- 1. Pinning:** this is the most common method used for most insects. Most insects are normally preserved by pinning. Pinning is a way to mount and preserve insects indefinitely.
- 2. Liquid:** liquid is used for soft-bodied insects that shrivel when dried. Soft-bodied insects, larvae, and nymphs need to be preserved in liquid. The most common liquid used for killing and preserving these insects is formalin or ethanol solution.

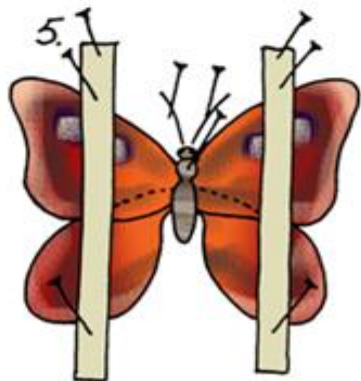
Position insect on spreading board



Position other front wing



Position antennae



How to Relax Dry Insects?

All insects should be pinned while fresh if at all possible. At times specimens may dry out before they can be pinned. Dry specimens may be relaxed by putting them into a relaxing chamber for one or two days. A relaxing chamber can be made from a large jar with a wide mouth and a tight-fitting lid. Place 2 inches of clean newspaper, sand or cotton in the bottom of the jar and saturate it with water to which two to three drops of **carbolic acid** have been added to control mold. Place insects in an open container on top of the wet sand and put the lid on the chamber airtight. Pin insects just as soon as they are soft. Specimens left too long in the relaxing chamber will be ruined.

Insects Pinning:

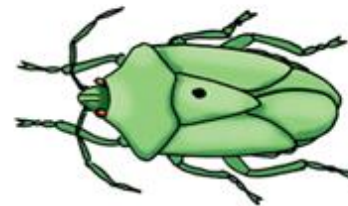
1. Pinning should be done as soon as insects are collected.
2. Pinning small insects: Pick up the small insect carefully with forceps and mount it by touching it on its thorax (right side) to the drop of glue. Adjust the insect so that it remains squarely in position, and then allow the glue to dry. You can also use nail polish instead of glue.
3. Insects are pinned in particular places depending on the type of insect. All Insects that are large enough should be pinned directly through the body, usually just off centre to the right.

Different kinds of insects have different locations on the body where pins should be inserted. The following rules should be followed:

1. Bees, wasps, flies, etc.: Pin through the thorax between the bases of the fore wings and just to the right of the middle line.
2. Stink bugs: Pin through the scutellum, which is the triangular area between the bases of the wings.



Flies

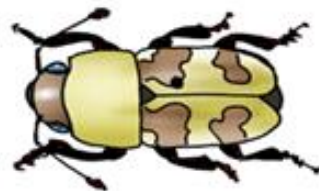


Bugs

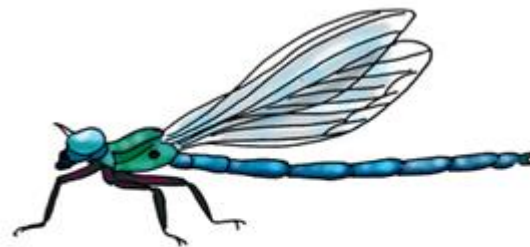
3. Grasshoppers, crickets, etc.: Pin through the prothorax or “saddle” just to the right of the center line.
4. Beetles: Pin through the fore part of the right wing cover near the center line.
5. Butterflies, moths, dragonflies, etc.: Pin through the center of the thorax between the bases of the fore wings.



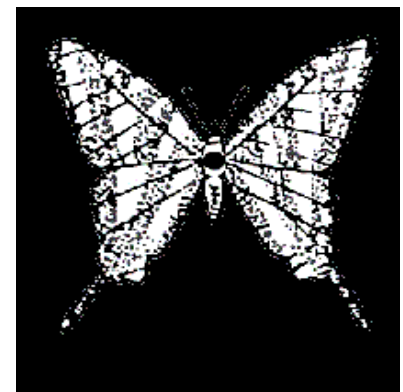
Grasshoppers

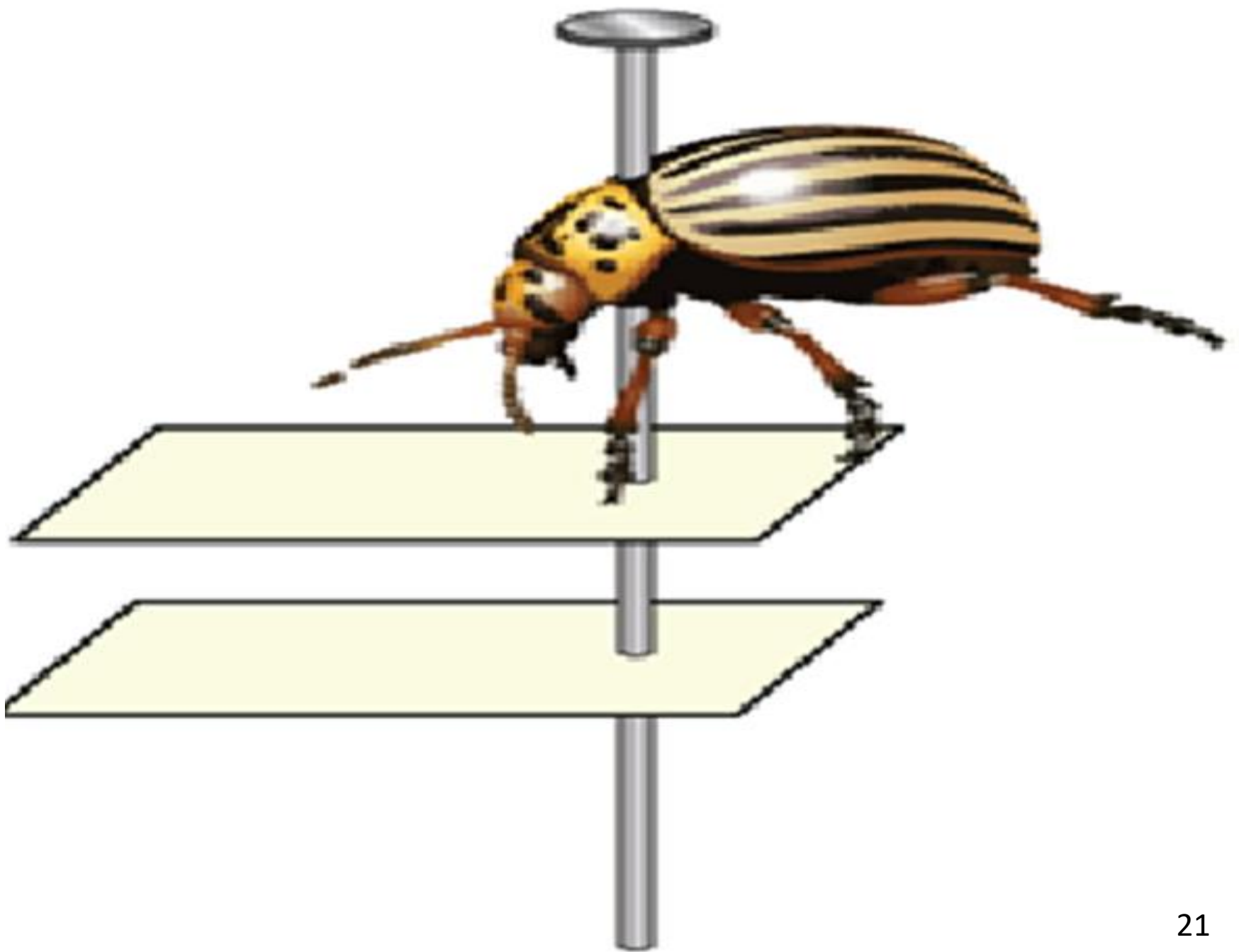


Beetles



**Dragonflies &
Damselflies**





Arranging in the Box:

A piece of clean cork sheet should be fitted in the bottom of the box. Add some naphthalene to the storage container to prevent insect damage. Insects are then arranged in columns in horizontal rows. Each Order is separated by a label in the column at the top of the first row of insects in that particular Order.



Suggestions for Making a Good Collection

1. Use undamaged specimens.
2. Spread the wings of Lepidoptera.
3. Place all insects the same height on the pins.
4. Use only regular insect pins.
5. Use uniform labels placed the same height on pins and kept straight.
6. Group each Order in columns under the Order label and arrange the specimens in neat, straight rows.
7. Use white or light colour background in the bottom of the box to show insect specimens to best advantage.

