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# Collecting Insect Specimens in the Field

## Active & Passive Sampling Methods

Field collection is a core skill in entomology. Effective collecting requires **methodical searching, appropriate equipment, careful handling, and ethical awareness of other wildlife.**

Different collecting techniques are used depending on the **habitat, insect group, and research goal.**

Field methods generally fall into two categories:

**Active collecting** – the collector directly searches for insects.

**Passive collecting** – traps collect insects over time without constant supervision.

Using both approaches provides the **best overall representation of insect diversity.**

## 1. Preparation Before Fieldwork

Before collecting specimens, ensure you are properly prepared.

### Essential Field Equipment

- Sweep net
- Beating tray or sheet
- Aspirator (pooter)
- Forceps or soft brushes
- Small collecting tubes or vials
- Ethanol (typically 70–95%)
- Field notebook
- GPS or grid reference map
- Labels or waterproof marker

## **Personal Equipment**

- Appropriate clothing for terrain
- Sun protection / rain gear
- Gloves when handling vegetation
- First aid kit

## **Field Recording**

Always record:

- date
- location
- habitat type
- weather conditions
- collection method

Accurate data is often **more valuable than the specimen itself**.

# **2. Active Collecting Methods**

Active collecting allows you to **target particular habitats or insect groups**.

## **Sweep Netting**

Sweep netting involves sweeping a net through vegetation to dislodge insects.

### **Best for**

- grassland insects
- small beetles
- leafhoppers
- true bugs
- small flies

## Technique

- Sweep the net in a **figure-of-eight motion**
- Keep the net opening slightly ahead of movement
- Perform 10–20 sweeps before checking contents

## Best Practices

- Avoid crushing insects in the net
- Empty frequently into a white tray
- Use slow deliberate movements

## Field Hack

Turn the net **inside out over a tray** to easily transfer insects without losing them.

## Beating Vegetation

Beating dislodges insects from shrubs or trees.

## Equipment

- beating tray
- stick or pole

## Technique

1. Place tray under branch
2. Tap branch sharply
3. Collect insects that fall into tray

## Best for

- spiders
- beetles
- caterpillars
- true bugs

## Tip

Use a **white tray or sheet** to easily see small insects.

## Hand Collecting

Directly picking insects from surfaces.

### Best for

- beetles
- caterpillars
- larvae
- slow-moving insects

### Tools

- forceps
- fine brush
- aspirator

### Tip

Soft paintbrushes work well for delicate insects.

## Aspirators (Pooters)

Used to collect very small insects.

### Ideal for

- ants
- tiny beetles
- aphids
- springtails

### Tip

Always use a **filter mesh** to prevent inhaling insects.

## Turning Stones & Logs

Many insects live beneath objects.

### Common Finds

- ground beetles
- rove beetles
- larvae
- spiders

### Best Practice

- replace stones/logs after inspection
- minimise disturbance to habitat

## 3. Passive Collecting Methods

Passive methods collect insects **over time without direct supervision**.

They are useful for sampling **nocturnal or elusive species**.

### Pitfall Traps

Pitfall traps capture ground-dwelling insects.

### Construction

A container buried flush with the soil surface.

### Often used for

- ground beetles
- ants
- spiders

## **Preservative Fluids**

Common options include:

- ethanol
- propylene glycol
- saline solution

Propylene glycol is commonly used because it:

- preserves specimens
- evaporates slowly
- is less toxic than some alternatives.

## **Wildlife Awareness: Pitfall Traps**

Pitfall traps can unintentionally capture other animals.

Potential issues include:

### **Small mammals**

- mice
- shrews

### **Amphibians**

- frogs
- toads

### **Reptiles**

- small lizards

**Ground beetles (large species)** that may prey on other captured insects.

## **Best Practice to Reduce Harm**

- Check traps **daily**
- Use **rain covers**
- Add **escape sticks** or rough surfaces
- Use **dry pitfall traps** if possible
- Avoid setting traps in areas with heavy vertebrate activity

Note: Some researchers place **small stones inside traps** to allow trapped vertebrates to escape drowning.

## Malaise Traps

Tent-like structures that intercept flying insects.

Insects fly upward and collect in a container.

### Best for

- flies
- wasps
- bees
- parasitic insects

### Tips

- Place along **natural flight paths**
- woodland trails
- stream corridors
- hedgerows

## Flight Intercept Traps

Vertical mesh barriers intercept flying insects.

Often used for:

- beetles
- flies
- parasitoid wasps

## Light Traps

Used to attract nocturnal insects.

Most effective for:

- moths

- nocturnal beetles
- caddisflies

### **Best Practice**

- use UV lights
- operate after sunset
- place near vegetation

### **Ethical Tip**

Release non-target insects after identification where possible.

## **4. Specimen Handling**

Collected insects should be handled carefully.

### **Temporary Storage**

Use:

- ventilated tubes
- ethanol vials
- specimen pots

Avoid overcrowding.

### **Killing Methods**

Common methods include:

- ethyl acetate killing jars
- freezing
- ethanol preservation

## **5. Ethical Field Practice**

Field entomologists should follow responsible practices.

## **Key Principles**

Collect only what you need.

Avoid over-collecting rare species.

Minimise habitat disturbance.

Always replace stones, logs, or bark.

Respect protected habitats.

Follow local regulations and permissions.

## **6. Recording Field Data**

Good records increase the scientific value of collections.

Record:

- date
- location
- habitat description
- weather conditions
- sampling method

Use waterproof notebooks or field recording apps.

## **7. Field Safety**

When working outdoors be aware of:

- uneven terrain
- ticks
- weather conditions
- hazardous plants
- livestock

Always inform someone of your field location.

## 8. Summary

Successful insect collecting combines:

- **multiple sampling methods**
- **careful specimen handling**
- **accurate field recording**
- **ethical environmental awareness**

Using both **active and passive techniques** allows researchers to sample a wider diversity of insect species while minimising ecological impact.

