

Collecting of Insects

Department of Entomology, CA, UOS

Getting Started

- For collection, you'll need some equipment and skills
- Collecting & curating your insects will be a valuable 'hands on learning experience'

Getting Started

- Here are four very good sources for study, ready-made insect collection and monitoring equipment; there may be more.....
- Bioquip--- www.bioquip.com/html/catalog.htm
- Gemplers--- www.gemplers.com/insect-monitoring
- Great Lakes IPM--- www.greatlakesipm.com
- Ward's Natural Science--- www.wardsci.com/

Where, When and How to collect Insects?

Where

- Insects found everywhere
- Within Plant parts
- Inside or around human habitat
- Artificial light during night
- Aquatic habitats, ponds, river etc
- Under stones, barks, debris
- In soil

When

- Most of the insects hibernate in winter and become active early spring to late fall
- Best time to collect - Summer
- You can collect diurnal species during day
- Noturnal during night

What Equipment Could You Use to Make an Arthropod Collection?

- Nets, Aspirator
- Kill Jar
- Lights traps
- Pins
- Notebook
- Alcohol vials
- Hand lens
- Pitfall trap
- Data labels
- Pinning block
- Spreading boards
- Malaise Traps
- Berlese funnel
- Forcep
- Insect box

‘Arthropods are everywhere’--- You will have to ‘look everywhere’ at different times of day or seasons, using a variety of tools and techniques for best results.

Be careful; stay safe

Collecting Equipment

Insect net

- Two types

1. Aerial net
2. Dip net



Aerial net

Consist of

- handle,
- wire rim,
- Cloth bag
- Rim – 12 inch long
- Muslin cloth bag – double the width of ring (24 inch)



Sweeping usually will catch a variety of insects.

Avoid being stung by agitated bees and wasps



Dip Net

- For aquatic insects
- Almost similar to aerial net but is shallower
- Length of bag is equal to metal ring
- Net dipped into water for swimming insects

• *Aquatic/ Dip net:*



Aspirator

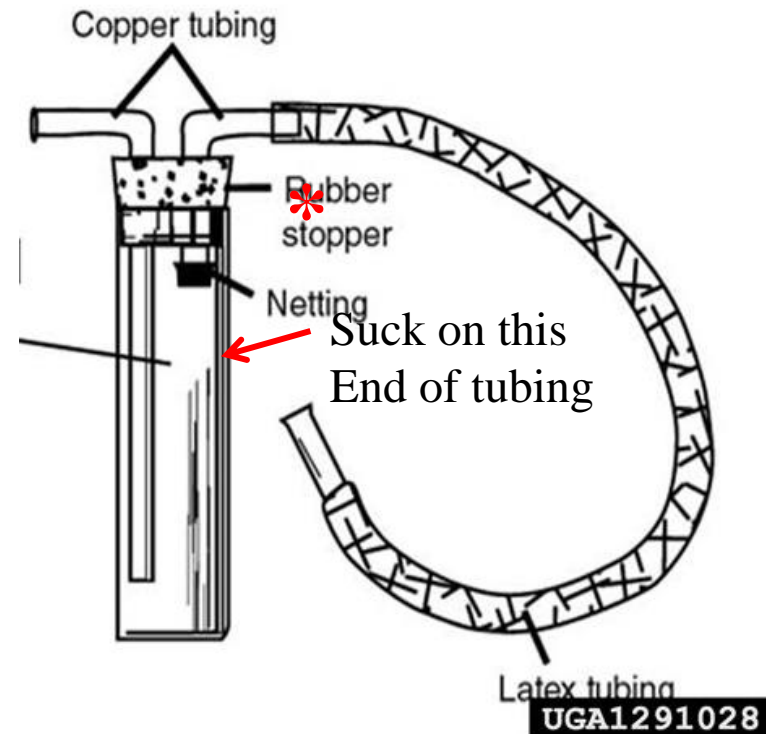
Consist of

1. Glass vial
2. Mouthpiece tube
3. Intake tube

Glass vial is fitted with a cork or rubber having two holes in it

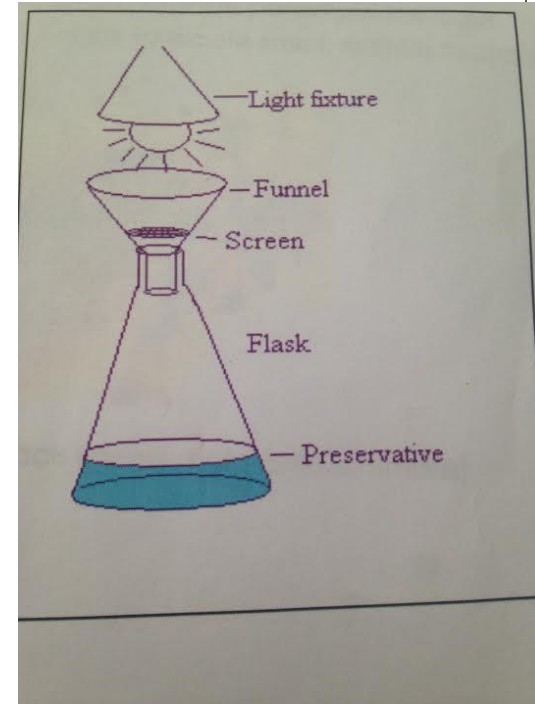
For small insects.

The net is **absolutely necessary** to keep you from sucking insects into your mouth and lungs.



Sifter/Berles funnel

- Consist of
- Funnel fitted on inner side with cloth
- Funnel has a container of alcohol below and light bulb above
- All these fitted on a wooden box
- For soil insects
- Light repel the insects and force down to container



Traps, Trapping

- Traps can be very simple and inexpensive
- Here are some simple and inexpensive ideas to try
- REMEMBER: Safety is of the utmost importance!!

Light traps

- Tripod stand
- Light bulb
- Lower side funnel
- Container with alcohol
- Catch insects coming to the light at night or before dawn



Sticky traps



Water Traps

- Shallow tray
- Few drops detergent

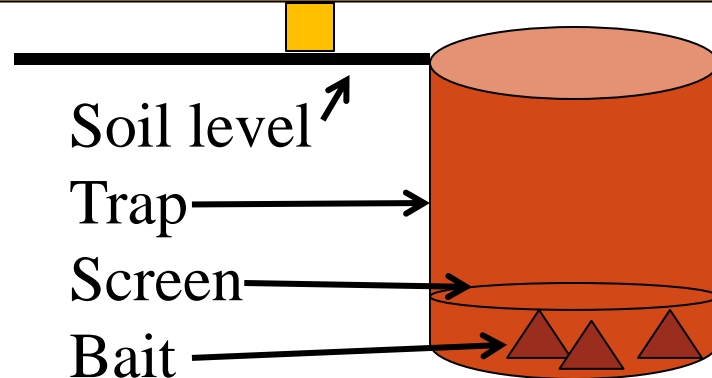


Pitfall Traps

- ---can work well with different baits, or sometimes no bait, trapping insects that do not fly readily.



Small board 'roof' elevated over trap



Pan Traps

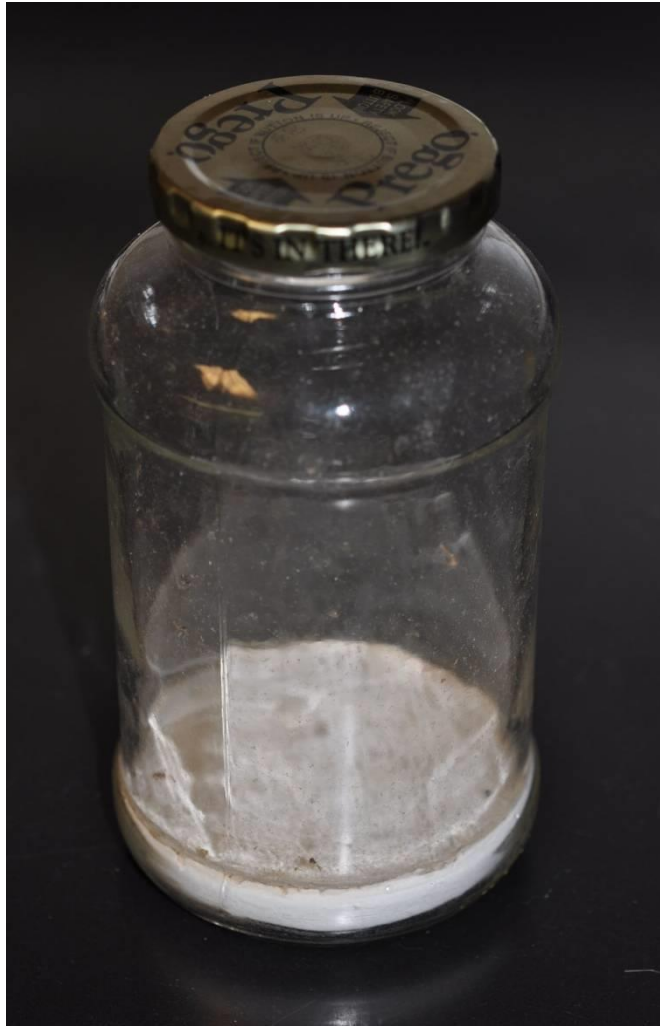
- Use disposable 'party bowls' in several colors
- Place sets of bowls (various colors) in different parts of the habitat (shade, sun, near animals, blooming plants, etc.)
- Put abt. 1" water + few drops of dish detergent in each bowl
- Leave traps several hrs or overnight---collect insects



Malaise traps



Kill Jar



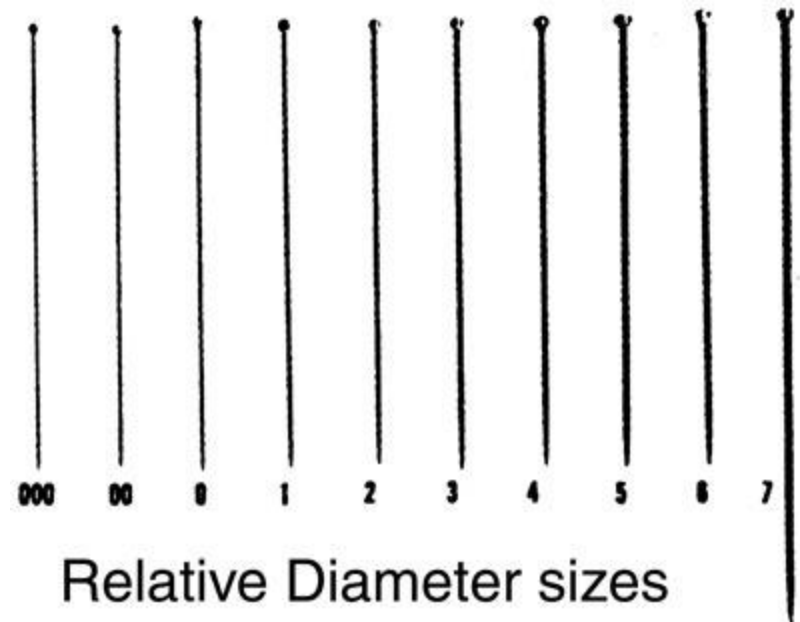
- Take a wide mouth glass jar
- Put a thin layer of powdered sodium or potassium cyanide
- On this layer, place half inch layer of dry plaster of paris
- Another half inch layer of wet plaster of paris for holding the cyanide below
- Leave it uncorked for a few hours
- Close it tightly with a cork
- Labeled as poison

Once You Have Some Insects, You're Almost Ready to Pin

- Practice pinning on some of your larger, more common insects first---like grasshoppers, crickets, etc.
- Some larger beetles may have harder wing covers. Use a larger pin here; guide pin carefully to prevent punching out the legs
- Save smaller, delicate specimens, moths & butterflies for later

Insect Pins

- Stainless steel---purchase these
- Large and medium size insects --- (35-40mm Pin # 16)
- Small Insects (10-12mm Pin #20)



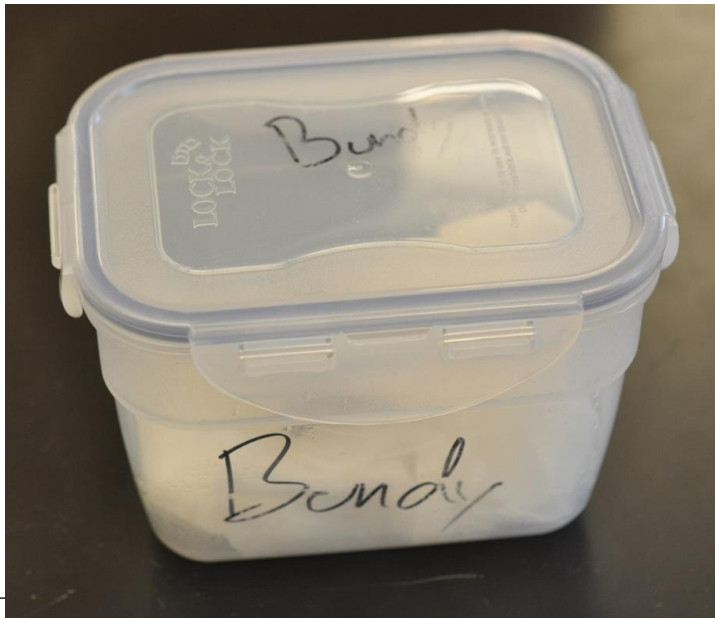
Pinning Insects---Caution!

- Insects dry rapidly
- If you try to pin a dry insect---the legs will probably fall off--
-and worse
- If you cannot pin fresh specimens immediately, you will need to soften them or 'relax them'

Relaxing chamber

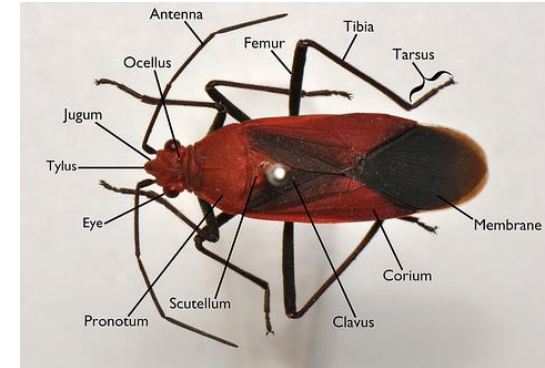
- Clean, tightly-sealing container
- Moisten paper towel with 1:1 mixture of water & alcohol; place in bottom of container
- Fold clean, dry paper towel to fit in container above the moist towel.
- Carefully place insects onto dry towel.
- Check flexibility of insects daily.

Be patient.

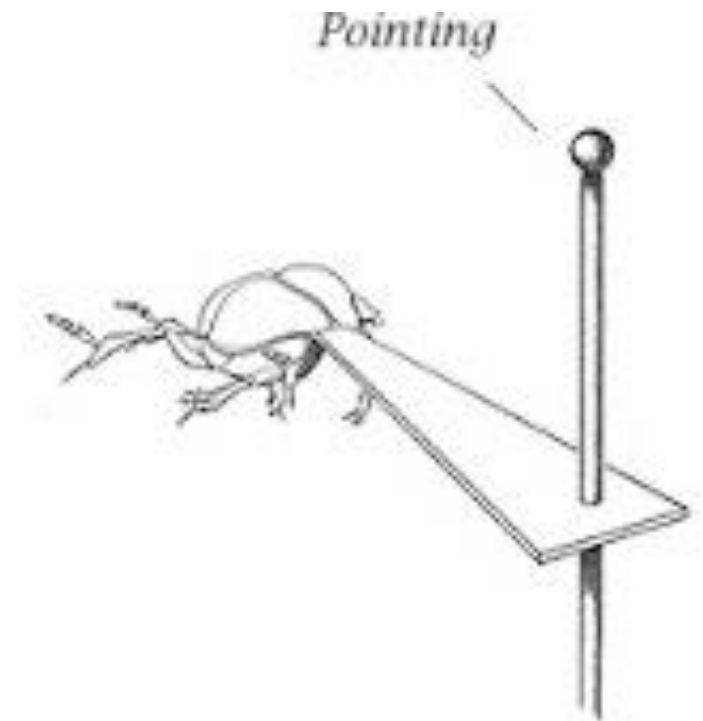


Large Insects Pinning

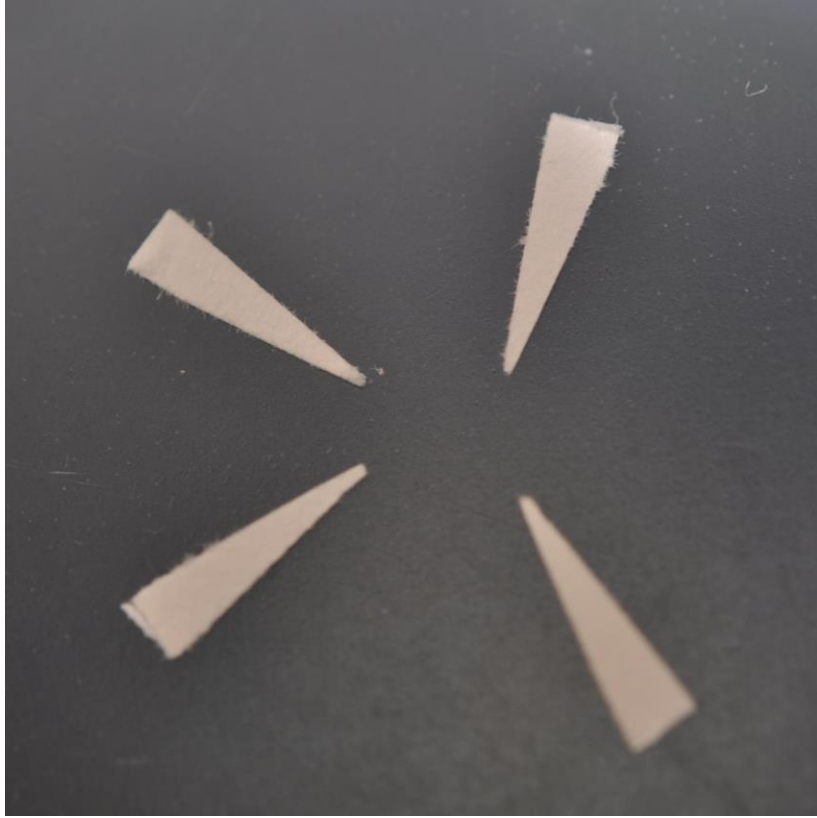
- Pin # 16
- True Bugs - Center of scutellum
- Beetles & Weevils – Base of right elytron
- Grasshoper – middle of pronotal shield
- All other insects pinned through thorax between forewings



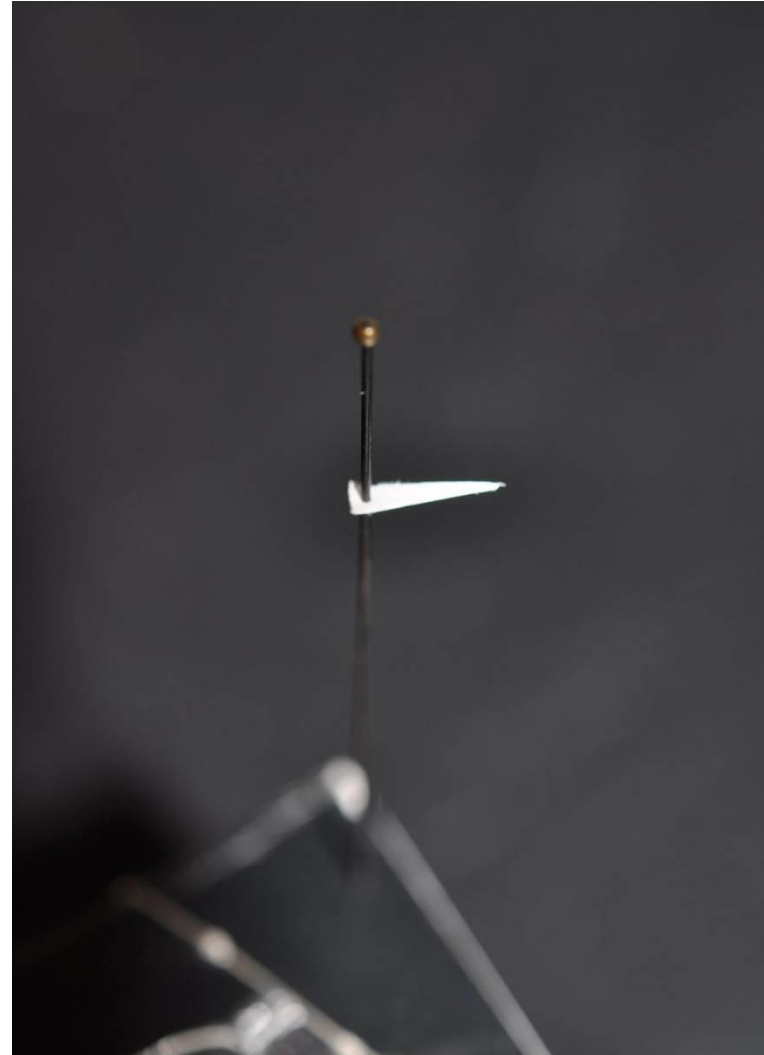
- **Small Insects**
- Pin # 20
- Same as for large insects
- Pinned insects fascinated on pie
- **Minute insects**
- Glued on tips of card



Pointing Small, Delicate Insects

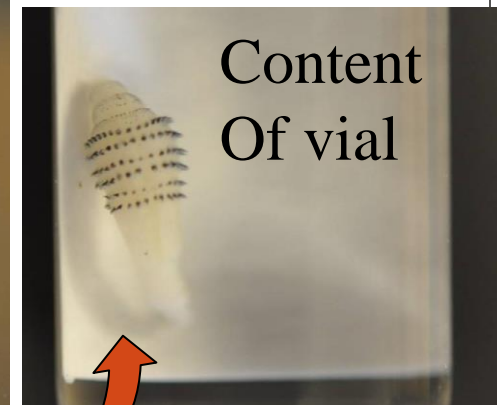
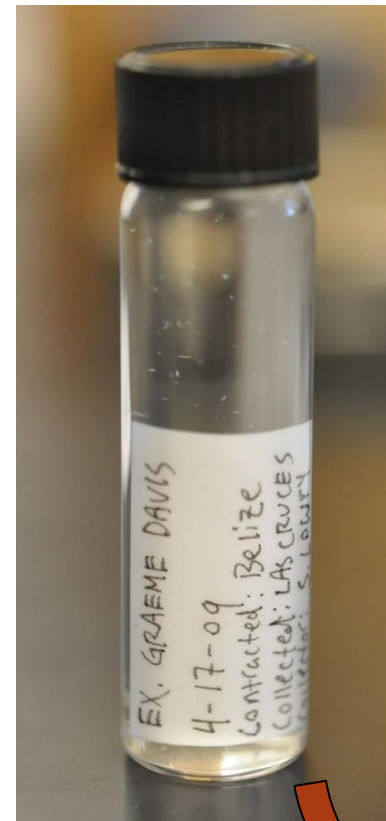


Point in place on insect pin



Alcohol Vials?

- Used for specialized collecting: immatures, nymphs, larvae; most arachnids, non-insects
- 80% alcohol
- Use screw cap vials with cap seals--- prevents evaporation
- Label with pencil or alcohol-proof ink.



(It's the larva of
A human bot fly!)

Spreading Board



- For Lepidoptera, Odonata

- Pin your fresh or relaxed specimen first.

Get some extra pins & narrow strips of paper for next steps

Small insects – board with narrow groove

Large insects – board with wide groove

Spreading Lepidoptera

1

Use one extra pin to pull forewing forward w/o puncturing it. Vein on leading edge is strong enough to allow you to push wing forward



2

Hold wing in place with pin through paper strip; repeat for hind wing, pushing its leading edge under trailing edge of forewing



3

Multiple pins can anchor wings under paper strips.



Use extra pins to support abdomen, antennae

4

Let sit several days-week. Remove pins, paper, pin into display.



Forewings are at right angles to axis of body

Practice makes perfect!

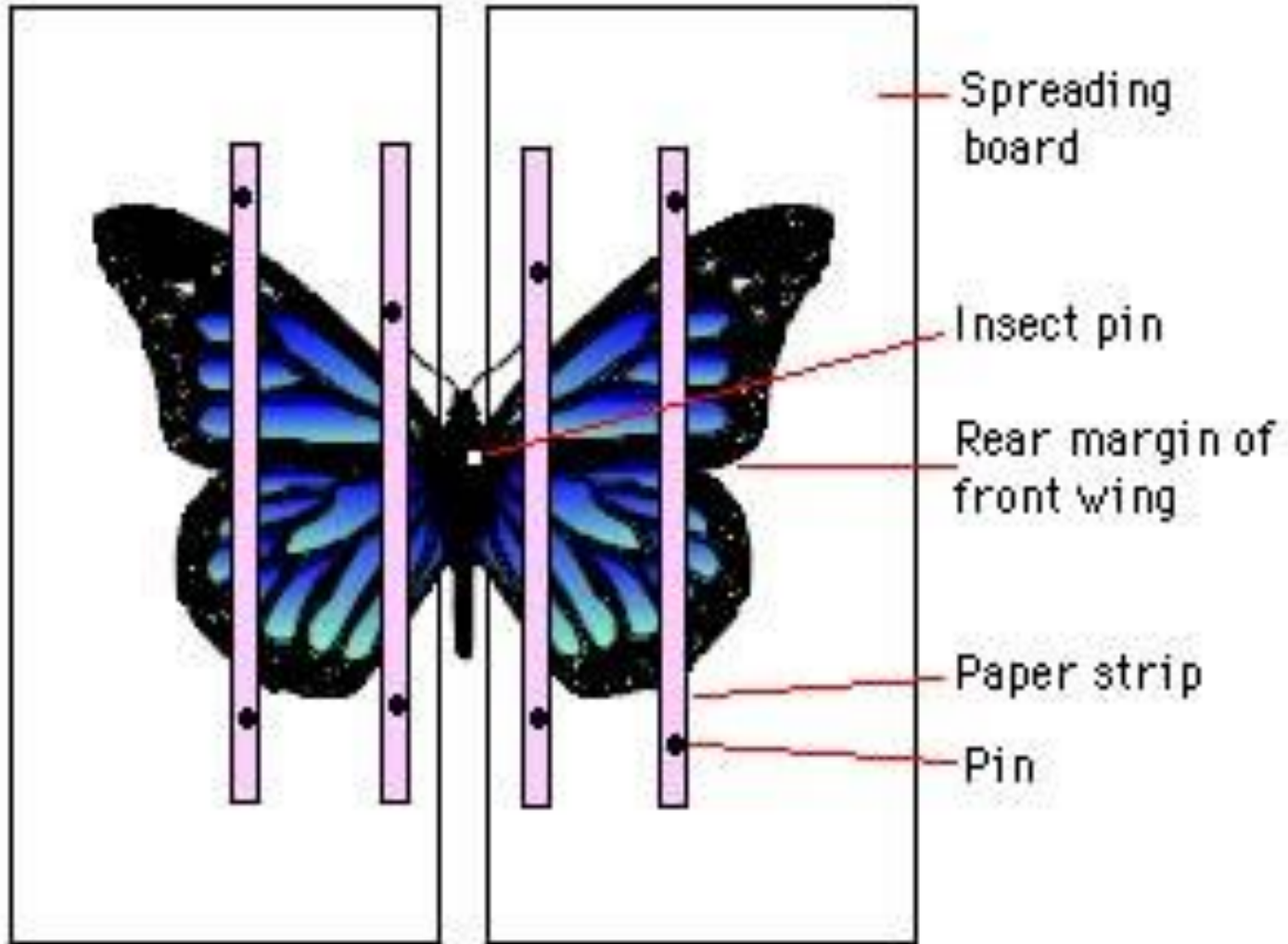


FIGURE 1: Properly pinned butterfly

Data Label

State

County

Country (if needed)

City or
Regional info

Habitat/host data

Date

Collector

NM: DONA ANA CO., USA
LEYENDECKER FARM
COTTON
24 AUGUST 2001
coll: C. S. Bundy

Preserving

- **Dry Preservation**

- Wooden boxes/ collection boxes
- Cork sheet at the bottom
- 18" x 12" x 3" size
- Nephthalene balls in boxes

- **Wet Preservation**

- Soft bodied insects, minute size
- Preserving fluid 70-80% etyl alcohol and 2% formaline

Housing Your Insect Collection

Protect it from:

- Other damaging insects, fungi
- Too much light, heat, moisture
- Handling or touching, shaking, dropping

Housing Your Insect Collection



Housing Your Insect Collection

- Here are some examples to consider

LEPIDOPTERA



ORTHOPTERA



HYMENOPTERA



Formicidae:
See also vials 1-4

ODONATA



THYSANOPTERA

Thripidae:
See vial 6

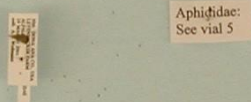
ISOPTERA

Termitidae and Hodotermitidae:
See vials 7 and 8, respectively

DERMAPTERA

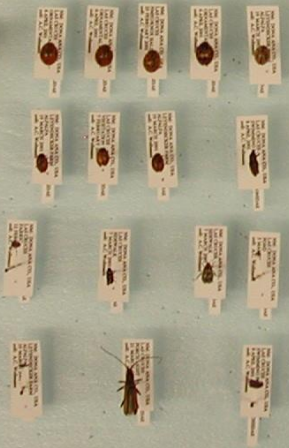


HOMOPTERA



Aphididae:
See vial 5

COLEOPTERA



HEMIPTERA



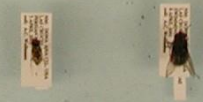
THYSANURA

Lepismatidae:
See vial 9

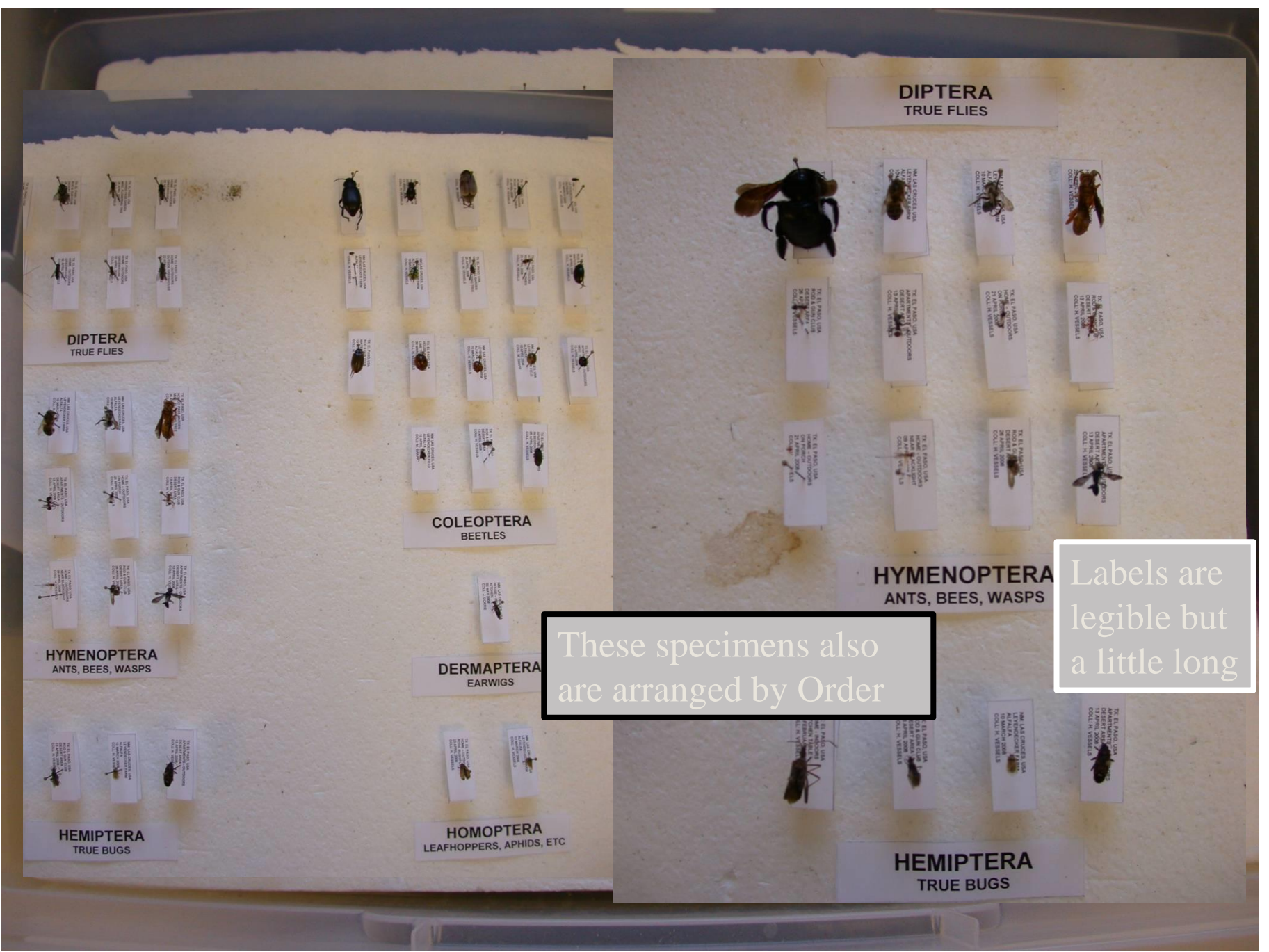
NEUROPTERA



DIPTERA



These specimens
are arranged by
Order



DIPTERA
TRUE FLIES

Small white labels with text and small insect images, arranged in a grid pattern under the Diptera section.

DIPTERA
TRUE FLIES

Small white labels with text and small insect images, arranged in a grid pattern under the Diptera section.

COLEOPTERA
BEETLES

Small white labels with text and small insect images, arranged in a grid pattern under the Coleoptera section.

HYMENOPTERA
ANTS, BEES, WASPS

HYMENOPTERA
ANTS, BEES, WASPS

Small white labels with text and small insect images, arranged in a grid pattern under the Hymenoptera section.

DERMAPTERA
EARWIGS

Small white labels with text and small insect images, arranged in a grid pattern under the Dermaptera section.

These specimens also are arranged by Order

Labels are legible but a little long

HEMIPTERA
TRUE BUGS

HOMOPTERA
LEAFHOPPERS, APHIDS, ETC

HEMIPTERA
TRUE BUGS

Small white labels with text and small insect images, arranged in a grid pattern under the Hemiptera section.



ABLE I Collection and Preservation of Insect Specimens for Insect Orders

Taxon	Habitat	Equipment to use	Collection method	Preparation
Protura, Diplura, and Collembola	Leaf litter, rotten logs and stumps, birds' nests, other detritus	Berlese funnel, aspirator, wet brush	Place in funnel for several days, jar of alcohol beneath, light above	70% EtOH, mount on microslides
Thysanura and Microcoryphia	Buildings (silverfish), leaf litter, logs, seashores	Forceps, Berlese funnel	Same as above	70% EtOH
Ephemeroptera	Naiads: streams, rivers, lakes Adults: fields and forests	Dip nets, grab samplers Aerial nets, light traps	Kick samples, pick off stones Pick off plants or from light sheet	70% EtOH
Odonata	Naiads: streams, lakes, ponds Adults: fields, near streams and ponds	Dip nets Aerial nets	Dredge or kick sample with net Sweep fast from behind with net	70% EtOH, place in envelope, wings folded over back, and card with collecting data; spread for display
Plecoptera	Naiads: streams Adults: along streams at lights	Aquatic nets Light trap, aerial and sweep nets, light trapping	Kick-netting in riffles, pick off stones, sweep shore vegetation	70% EtOH
Orthoptera and other orthopteroids	Fields, forests, gardens, and other terrestrial	Sweep nets, light traps, aerial nets, hand	Sweep and aerial netting, light trap sampling	Mount on insect pins, support body until dry

Resources

Triplehorn, C.A. & N.F. Johnson. 2005. Borror And DeLong's Introduction to the Study of Insects, 7th ed. Thomson Brooks/Cole.

Entomological Society of America: www.entsoc.org