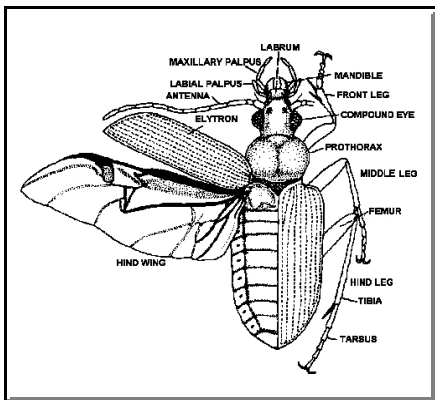


# PREPARING MUSEUM QUALITY INSECT SPECIMENS

## BASIC INSECT ANATOMY



This diagram shows the various parts of an insect the student should learn.

Generally speaking, every insect has two pairs of wings: two fore or front wings and two rear or hind wings.

Parts that should be familiar for successful insect mounting are the leg parts, wings, abdomen, thorax and head parts.

Knowing insect anatomy helps in pinning.

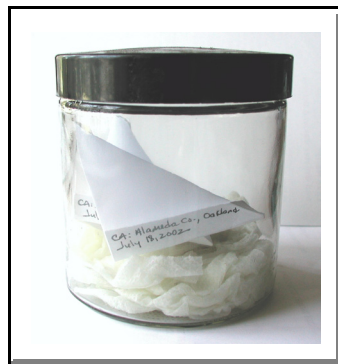
## RELAXING

Mounting sometimes requires that an insect be "relaxed" in a relaxing jar (described below) before appendages are spread. Relaxation softens dry insects so the wings, legs, antennae, etc., may be spread without breakage. Insects should not be handled before relaxation. Damage done to delicate appendages, such as legs, tarsi or antennae is more often a result of improper relaxing.

Insects that are not absorbent or especially hairy, such as beetles, may be soaked in hot water for a few seconds to a minute. Remove them and allow the insect to soften for a while. Larger insects may take a little longer. More absorbent specimens (such as butterflies) will need to go into a relaxing jar.

## CONSTRUCTION

Relaxing jars are airtight chambers used to replace fluids and to restore pliability to a dried specimen's appendages. Relaxing jars may be constructed simply by placing a sponge, moistened with a water and phenol (to prohibit fungus growth) solution, into an airtight jar. Large mouth jars are preferred for easier placement of specimens.



Relaxes hardened specimens.

When it is softened use a pair of forceps to grasp a tibia, and gently work the leg back and forth until the leg is fully moveable. Some popping as joints are loosened is normal, but always be ready for the inevitable! **Breaks will occur.** So be ready with a clear-drying cement or glue and a toothpick. You can easily reattach an antenna, tarsi, or broken leg. Also, remember that a damaged specimen is better than no specimen at all.

Always relax only the number of specimens you are able to mount within several hours. Prolonged relaxing ruins specimens. Specimens should be relaxed while still within their paper triangles, if possible. Insects in paper triangles may be placed on top of a cloth, or sponge soaked with water and phenol (used to retard molding - also found in Chloraseptic®). Seal the jar firmly and allow the jar to remain undisturbed overnight. Higher temperatures, around 90°F, will speed softening. Your specimen should be soft enough to spread within a day or so.

## PROCEDURES

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## DATA WHILE RELAXING

Specimen data should remain with specimens during relaxing. Be sure data is written in indelible ink. Data may also be affixed directly to the jar. See the other section on "Data" for other important information on the importance of keeping accurate data.

## PINNING

Grasp the insect between the thumb and forefinger or lay it on a styrofoam pad and press the pin gently but firmly just through elytra or exoskeleton. Pause and examine the angle of the pin. Will it poke through at a critical or inconvenient point on the insect's bottom? Will the insect be pinned at an unusual angle? If so, pull the pin back out slightly and reposition for the final push through. See Figure 3 for proper pin position. Be careful not to enlarge entry pin holes or to create too many holes. When completed examine the specimen again for desired pinning effect. Be careful not to prick fingers.

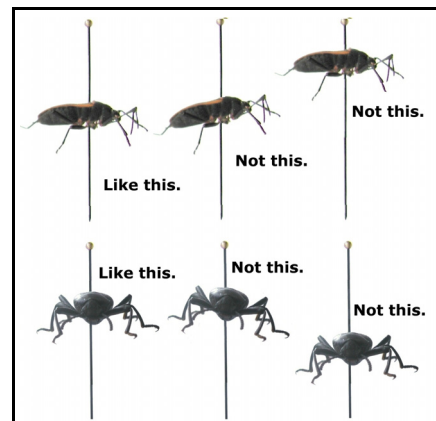
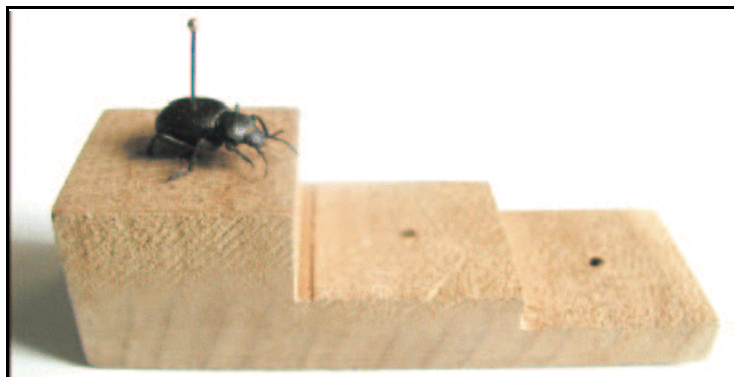


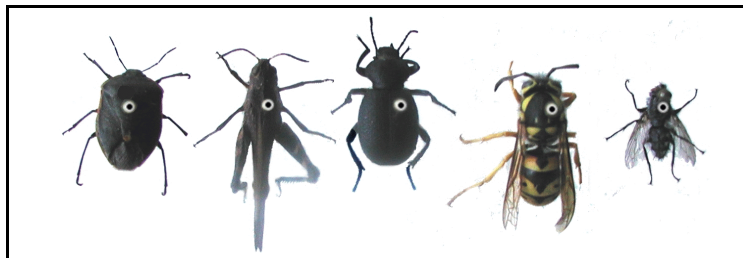
Figure 3 - How your insect looks on the pin is important!

## PINNING BLOCK

For achieving uniform specimen height within the collection a pinning block should be used.



To achieve uniform specimen height and to improve overall appearance of the collection, a pinning block should be used.



Pin insect through the respective areas specified.

## SPREADING



Figure 5 - Spreading boards ease the painstaking task of spreading butterflies.

This illustration shows the preparation of a butterfly, which requires considerably attention than the average insect.

### SPREADING BOARD

With butterflies and some other showy specimens wings are important in identification. So, they are opened. A combination of well-placed pins and paper strips holds wings down and reduces movement until the insect has dried. **Specimens are**

**best spread when they are freshly caught.**

Once specimens have been spread and allowed to dry place them immediately into the collection to avoid accidents. Small insects should dry within just a few hours. Larger insects may take days. Be sure to plan space for them to be out of the way.

### WINGS

Putting pressure lightly on the thorax, blow gently to open the wings a bit. Insert your pin and blow gently again to place cardboard strips between them. Use the strips to push the wings down and pin the insect into the spreading board bottom.

Lift one end of the strip slightly and insert pin in the heavy vein of the forewing, or if the heavy vein is absent in your specimen, use the blunt end of an insect pin to maneuver the wing from the cleavage at the intersection of large veins. Pull the wing forward until the bottom edge of the wings is at a right angle to the body (note wing position in Figure 6). When the wing is in position place a glass-head pin through paper strips close to the edges of the wings - but not through them!

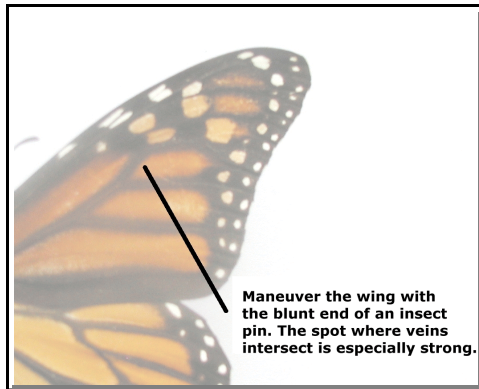


Figure 6 - How to spread thinly-veined wings.

Next to the thin strips, place heavyweight mounting strips or cardboard pieces large enough to cover the entire wings. Pin these in place with the glass-headed pins around the edges of the wings. This will allow the wings to dry without curling.

Next, pull the antennae into the proper position with a pin and fasten them in place with pins on each side of them. Work carefully, since the antennae are very fragile. If you happen to snap one off it may be repaired with a small dab of rubber cement. If the abdomen stands up or sags, position it with a pair of criss-crossed pins. Adjust it to the desired height.

When placing insects into Riker mounts, remove the pin by carefully pushing down on the thorax where the pin enters the body. (Avoid pressure on other parts of the insect).

## DATA

The collection information is what adds real value to the collection. (See also the handout on **Data**). Even wall displays can include at least the name of the specimen and something about its biology or where it came from.

CA:Alameda Co.,Oakland sand N side Lake Merritt, 75°F; *Fannia* sp.; S..Suoja, col.; E.Dunbar, det.

Figure 7 - Information adds great value to a collection.

Pinning labels (see Figure 7) should contain specimen names, the collector's name, the collection date, name of the plant or other place where the insect was captured, activity the insect was engaged in before capture (e.g. collecting pollen, sipping nectar), and the state, county and city. Students recording this kind of data end up with a valuable collection. Other significant information can include weather conditions, temperature, humidity, altitude, etc.

## SECURING YOUR SPECIMEN

Inside the insect box you should place flakes of moth balls. **Those containing paradichlorobenzene are preferred.** It kills existing pests as well as discouraging future infestations. Those containing only naphthalene do not kill existing infestations.

Keep collections free from moisture. Humidity will promote growth of fungus or invite in small insects, like booklice or dermestid beetles. Sure signs that you have an infestation are piles of dust that appear beneath the insects in the collection.

## ADVANCED INSECT MOUNTING

Envision your specimen as if it were still living. Is it a jumping insect? A predaceous insect? Wouldn't it look better spread in a position that accentuates a defensive or offensive posture? A striking pose? It may simply be that the insect appears more lifelike if pins are inserted during spreading so that the head is lifted.

Uses a 5° lift on insect heads, (e.g., Junebugs) that normally walk with their head and thorax slightly higher than the abdomen. Many other insects look better this way as well. On insects with large mandibles, the head is lifted 5°, and the mandibles even higher. Mandibles may even be opened to give a menacing appearance.

Use as many pins as are necessary to position all body parts so that the insect appears to be still alive - or so that the character you like is adequately accentuated. After the insect is dried, carefully remove the pins. Now your specimen may even be ready for a wall mount!

## LAKE MERRITT AND GREATER OAKLAND INSECTS

An eBook by Eddie Dunbar



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