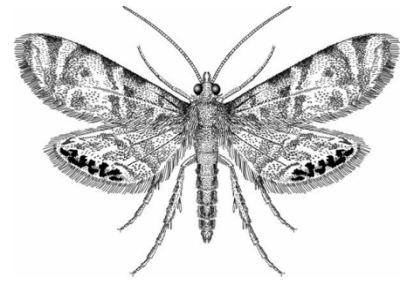


Entomology Lab Collection – Spring 2012



Guidelines ~~April 31st/May 1st~~ May 5th/6th

- Due ~~April 31st/May 1st~~. This is the last full week of class. Bring your insect collection to the exam.
- You need to have at least 20 insects total, spanning 10 orders and 15 families
- All insects must be properly mounted and labeled (see the instructions below)
- You can work on your collections during spare class time throughout the semester.
- Immature insects (including aquatic insects), lice, and fleas are to be put in alcohol with the label placed in the vial with the insect. Adult aquatic insects are to be pinned.
- Lepidopterans must be turned in with the wings spread. Do not take spreading boards home!!
- Really tiny insects can be pinned! Use minuten pins and point mounting card stock (see below)
- The collection is worth 100 points total, and represents 20% of your overall grade in the course.
- Each insect is worth 5 points:
 - 1 point for correct ID to order
 - 1 point for correct ID to family
 - 1 point for correct label
 - 1 point for proper pinning
 - 1 point for all body parts present and accounted for

Tips for Collecting Insects (Also read Chapter 35 in Borror)

General Tips

- The adults of many species have a short seasonal range, so to maximize the variety in your collection, try to spread your collecting throughout the semester.
- Collect during different times of the day (or night!)
- Look in many different habitats: in the air, on leaves and branches, on stems and trunks, on flowers, under rocks, under logs and rotting wood, in fields of grass, near the banks of aquatic environments, on the surface of soil, in or around buildings, near lights, and anywhere else you can imagine. For those of you interested in collecting aquatic insects, we do have a limited number of dip nets.
- Bring a vial/container filled with 70% alcohol with you when collecting and, when you find very small insects, submerge them in the alcohol solution
- Always bring a notebook with you and make note of when and where you caught your insects
- Have fun! You've got an Easter egg hunt for an assignment here.

Net Handling Tips

- When using your insect net, you can collect in either of two general ways: 1) you can spot individual insects and swipe at them or 2) you can take the shotgun approach by sweeping (swing the net back and forth, usually through vegetation). *When sweeping, keep the net away from thorns and barbed wire to avoid tearing it.*
- When you catch a particularly active insect, be careful not to let it escape before transferring it to the killing jar, but also be careful not to damage to the insect. A really effective method for trapping your insect is to swing the tip of the net around the rim so as to cut off any escape for the insect in the bottom of your net (see figure). Then, slip your kill jar into the net and work the insect into the jar.



Killing and Preserving Tips

- You have three options for killing and preserving your insects until you are ready to pin them:
 - 1) Put them in a freezer (I highly recommend this. It's easy and painless for the insects)
 - 2) Put them in alcohol (recommended for the tiny, immature, and aquatic insects)
 - 3) Put them in a kill jar (if you are far from a freezer and you are collecting many insects, this is the way to go)
- We have kill jars that you can check out, but you can also make your own. To prepare a kill jar, make some crumpled paper or a section of paper towel damp with ethyl acetate and place this in the bottom of your jar. Then place a piece of cardboard over the dampened cotton balls or paper towel (see figure). Ethyl acetate is relatively nontoxic to humans (it is an ingredient of nail polish).
- To maximize the efficiency of your kill jar, never leave the lid open any longer than is necessary to put insects in or take them out. Depending on the amount of ethyl acetate that you use and the insect in your kill jar, it may take between a few minutes and a few hours for the insect to be killed.
- Try to keep your kill jar dry. Moisture will periodically condense on the walls of the jar. Such moisture can ruin delicate specimens, so give the glass a wipe when it gets wet.
- Keep some pieces of paper towel in the container in which you will be transporting your insects back home. This will minimize the insects bouncing around in your container and also keep them dry.
- Pinching the thorax of large butterflies or moths before placing them in the killing jar will prevent them from flopping around and damaging the wings. Squeeze them for 20-30 seconds between thumb and index finger and put them in the killing jar. This procedure stuns the insects so they do not flutter once inside the jar. Remove butterflies and moths from the killing jar fairly soon so their wings do not become soaked with killing agent.



Collecting Equipment Available for Check-Out

- Insect Net
- ~~Kill Jars and Ethyl Acetate~~
- Vial with alcohol
- Insect Box

Other Recommended Collecting Equipment

- Containers (old yogurt containers, Tupperware, mason jars, etc. work great!)
- Notebook

Mounting Insects

Relaxing Insects

- To get the best results, try to mount your insects as soon as possible after they have been collected. This will prevent them becoming dry and brittle before mounting.
- If your insects do become dry and brittle, you will want to relax them by rehydrating their bodies before mounting. We have relaxing chambers in the lab. An alternative method is to

place your insects in a Tupperware container with a tight lid or a mason jar along with some damp paper towels for a day or two.

Pinning

- Pinning is the best way to preserve hard-bodied insects. Pinned specimens keep well, retain their normal appearance, and are easily handled and studied.
- Common pins are not desirable for pinning insects. You must use the insect pins we provide.
- Insects are pinned vertically through the body. The part of the body through which you insert the pin depends on the kind of insect you have collected (see “Figure 3”):

- Bees, wasps, flies, butterflies, and moths are pinned through the thorax between the bases of the front wings. With flies and wasps, insert the pin a little to the *right* of the midline.
- Pin bugs through the scutellum, a little to the right of the midline if the scutellum is large.
- Pin grasshoppers through the posterior part of the pronotum, just to the right of the midline.
- Pin beetles, earwigs, and large hoppers through the right fore wing, about halfway between the two ends of the

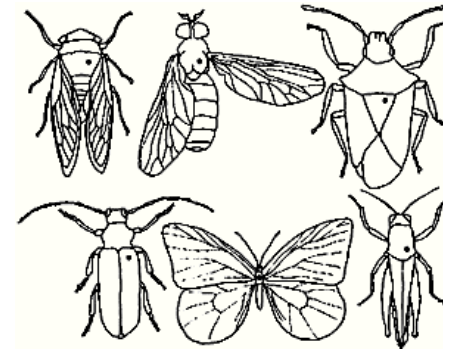


Figure 3. Proper insect pinning.

body. The pin should go through the metathorax and emerge through the metasternum, so as not to damage the bases of the legs.

- Dragonflies and damselflies are best pinned horizontally through the thorax, with the left side showing up. If your specimen does not have its wings together above its back when it dies, move the wings into that position and put the specimen into an envelope for a day or so until it has dried enough for the wings to remain in this position. Then carefully pin it through the upper part of the thorax, below the base of the wings.

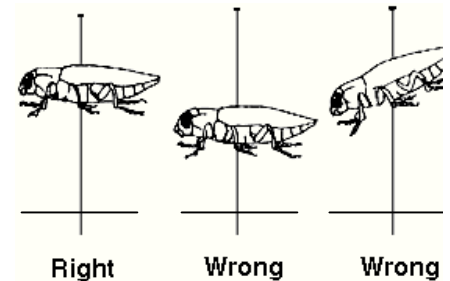
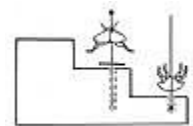


Figure 4. Placement of the pin.

- You should use pinning blocks to mount all of your insects at a uniform height on the pin (see figure to the right). Approximately 3/8 inch of the pin should be showing above the insect body, enough so you can comfortably hold the pin with little risk of accidentally touching the specimen. We have pinning blocks for you to use in the lab. Make sure your mounted insect is parallel with the pinning block and make sure your labels are also at a uniform height above the bottom of the pin (see “Figure 4”)
- The legs should be extended enough so that all parts are easily visible, and the wings should be extended out from the body so that the venation can be seen. Remember that it’s easiest to do this while the insect is still fresh and flexible!



Spreading Wings on Lepidopterans (see diagram on pg 758 of Borror)

- The wings of moths and butterflies should be spread on a spreading board before they are put into the collection. We have spreading boards for you to use in the lab. You may also make one at home very easily out of styrofoam (see diagram on pg 757 of Borror for dimensions).
- When spreading the wings of moths and butterflies, the rear margins of the front wings should be far enough forward so there is no large gap at the side between the front and hind wings
- The steps for spreading wings are:
 - 1) Make sure your insect has been fully rehydrated or is still fresh from the field.

- 2) Pin the insect.
- 3) Insert the pin in the groove of the spreading board until the base of the wings is flush with the face of the board.
- 4) Maneuver the wings by pins from near the base of the wing, along the front margin. The veins are heavier at this point, and there is less likelihood of tearing the wing. Try not to put the pin through the wing.
- 5) Place strips of paper over the wings and pin the paper strips so that the wings stay spread apart.
- 6) You can also spread the antennae by using pins to keep them in place.
- 7) Allow enough time for the insect to dry

Mounting Tiny Insects (see diagram on pg 759 of Borrer)

- Insects too small to pin can be mounted on card stock cut in the shape of a small triangle, on a minuten pin, or they can be preserved in 70% alcohol.
- To attach an insect to your triangular piece of card stock, or your “point”, insert the pin through the base of the triangle, hold the pin by the sharp end, dip the tip of the point in the glue, and then touch the insect to the glue.
- We have point mounting glue called “Shellac gel” available for you. Use as little glue as possible to avoid smothering the insect with it.
- You can find the correct positions for point mounting different insects in the diagram on pg 759 in Borrer.

Labeling

- After you have pinned your insect, you need to create a label with the following information and insert the pin through the label so that it rests on the pin at a standard height:
 - The order and family of insect
 - The country, state, county and general location where you caught your insect
 - The date, in scientific notation (e.g., July 4, 1999 is written as 4.vii.1999, with the month expressed as the roman numeral)
 - Your first initial and last name
 - See the label to the right for an example
- You may type or write your labels by hand with a fine-tipped pen, as long as the writing is legible.

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| Diptera, Muscidae USA, Montana, Missoula Co. Rattlesnake Ck. 4.vii.1999 M. Wilson |
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Organizing Your Collection

- We will pass out collection boxes in which you should organize your collection. Organize your insects into sections by order and position and arrange all of the insects so that they are spaced fairly equally apart in neat rows. Center a large label with the name of the order below each order group. Do not put any vials in your boxes. Turn them in separately.