NC STATE UNIVERSITY

Tools of the Trade: Insect Collecting & Curation

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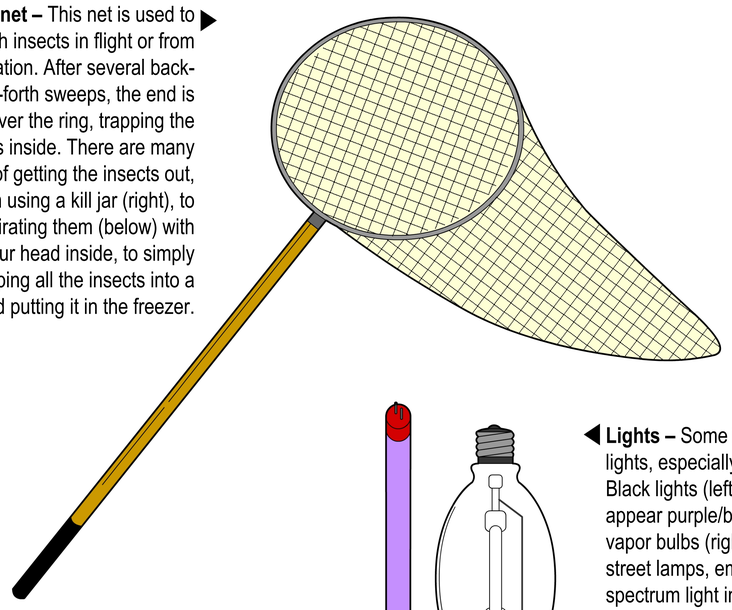
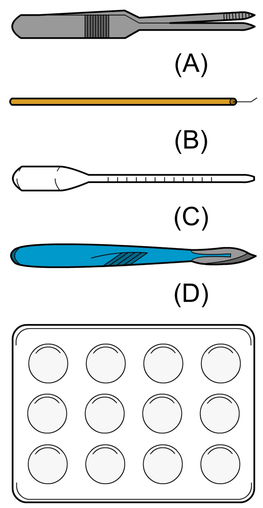
InsectMuseum.org

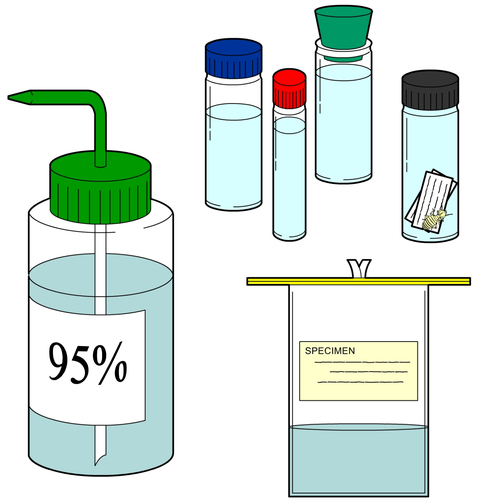
Sweep net – This net is used to catch insects in flight or from vegetation. After several back-and-forth sweeps, the end is swept over the ring, trapping the insects inside. There are many ways of getting the insects out, from using a kill jar (right), to aspirating them (below) with your head inside, to simply dumping all the insects into a bag and putting it in the freezer.



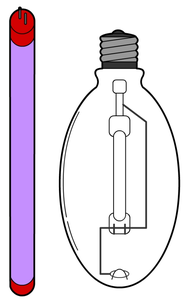
Kill jar – This jar is used to quickly kill insects to best preserve their bodies. It usually contains a fumigant (ethyl acetate, hydrogen cyanide, etc.) that is absorbed and released by its porous bottom (usually plaster of Paris)



Tools – Many tools are used to manipulate insect specimens. **Forceps** (**A**; tweezers) are useful for grasping small insects; **probes** (**B**) are used in dissections; **pipettes** (**C**) are useful when transferring small insects in liquids; **scalpels** (**D**) and razors are used to dissect insects.

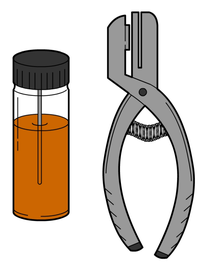


Alcohol storage – Certain insects are stored in ethanol and other alcohols (80-95%) because of their soft bodies; DNA for insect genetic studies is also preserved well by alcohol. **Large vials** and **specimen bags** can be useful for short time storage of many insect from one collecting event, while long term storage is usually in **smaller vials** with labels. **Squirt bottles** are used to replenish old storage vials or to fill new ones.

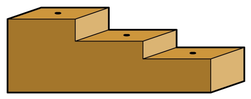


Lights – Some insects are attracted to lights, especially certain wavelengths. Black lights (left; ultra-violet wavelengths) appear purple/blue when lit, while mercury vapor bulbs (right), which are used in street lamps, emit a bright-white, broad spectrum light including UV. White sheets are often hung near lights, providing a place where the insects can land and be collected.

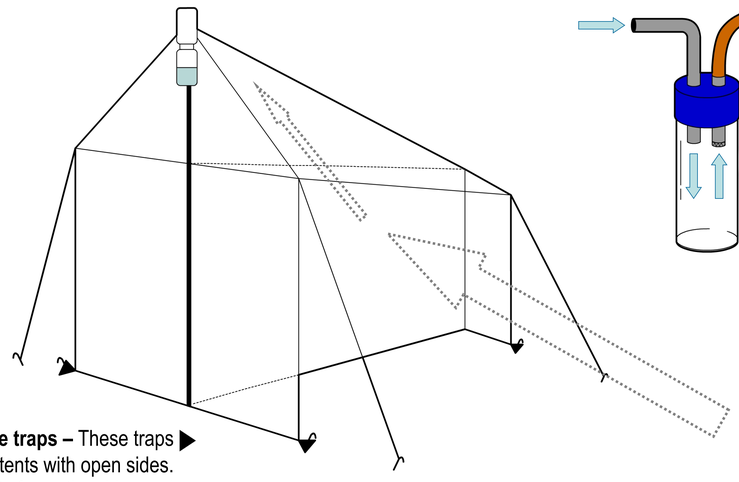
Well dish – This glass or ceramic dish (with 12 shallow wells) is often used to separate insects in alcohol, view insects under the microscope or prepare specimens for slide-mounting (through a number of chemical bath steps).



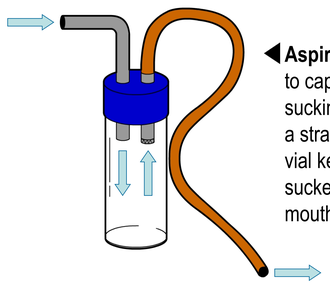
Point punch; glue – Point punches create paper points (see below, A) to glue small insects onto; the glue is special because it can be dissolved using ethanol, so researchers can see the entire insect



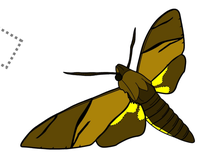
Pinning block – This block (usually made of wood, but sometimes metal) has holes pre-drilled to different depths, or, like this one, drilled to the same depth on steps, and is used to position insects and labels on a pin.

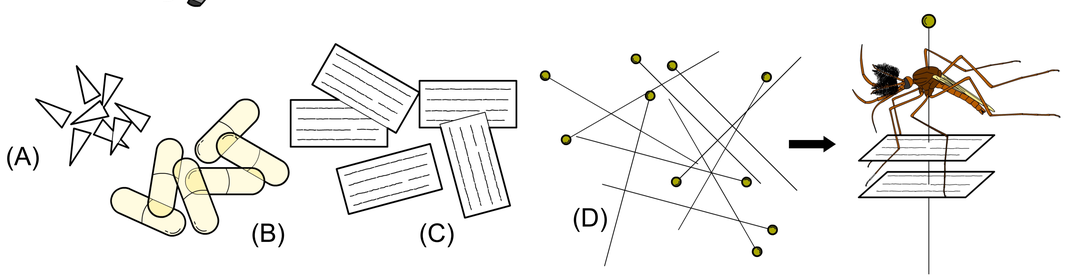


Malaise traps – These traps are like tents with open sides. Insects fly up the sides and into the top, where a canister filled with preservative (usually alcohol) traps them. After some time (days to weeks) the researcher replaces the canister and studies the catch.

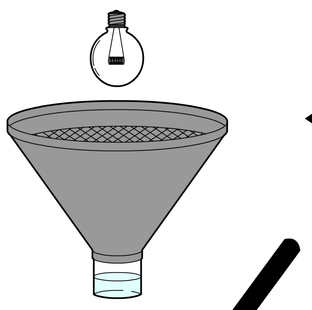


Aspirator – This tool is used to capture small insects by sucking them up (like using a straw). A filter inside the vial keeps insects from being sucked into the collector's mouth

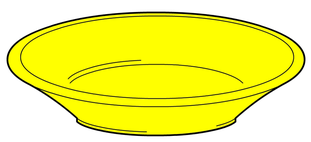




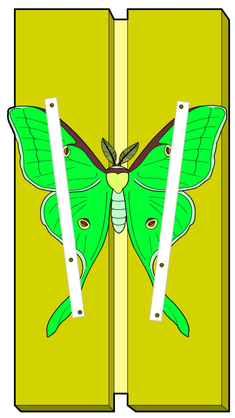
Pinning insects – One of the most common ways to preserve insects is by putting them on a **pin** (**D**). Once the insect is on the pin at the correct height (~ 1cm below pinhead), **labels** (**C**; showing locality, date and other information) are added underneath the insect. Small insects that would be damaged by pins are often either slide-mounted (see below) or glued to a triangular **paper point** (**A**), which is then pinned. Other pieces of the insect or multiple specimens are sometimes put in a **gel-cap** (**B**) and then pinned.



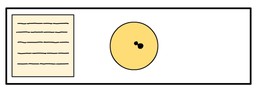
Funnels/extractors – These traps help collect insects found in litter and soils. Soil is collected and placed on mesh inside a funnel. A light is usually used to drive insects and other organisms down through the soil and into the collecting container (filled with a preservative).

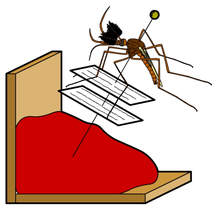


Yellow-pan traps – These yellow, plastic, picnic bowls are used to attract and trap insects that visit flowers (hence the yellow color); when filled with soapy, salty water, insects fly into the bowl where they sink and eventually die. Salt keeps the insects from taking on too much water.

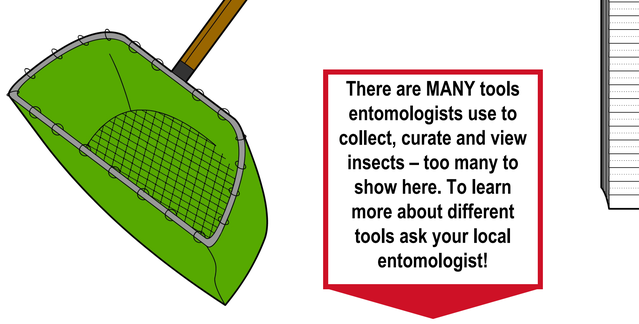


Spreading board – This is used to spread the wings of Lepidoptera and some other groups of insects; while the specimen is fresh, the wings can be positioned under strips of paper where they will dry in place.



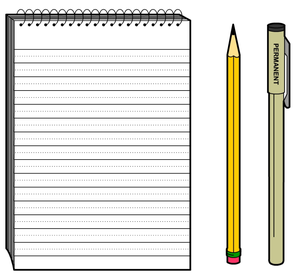


Slide; clay block – Slides are used to mount small to minute insects for viewing under a compound microscope (see below); label information (locality, date, etc.) is glued to the slide. Clay blocks are sometimes used to position pinned specimens under a dissecting microscope (see below).

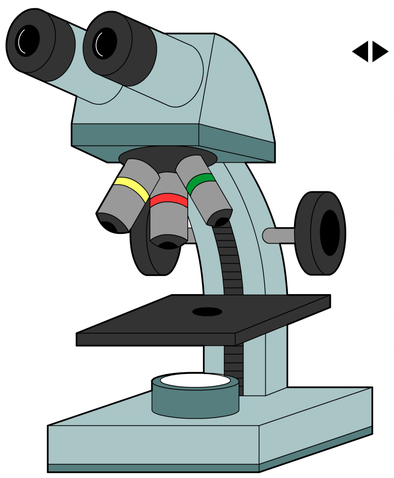


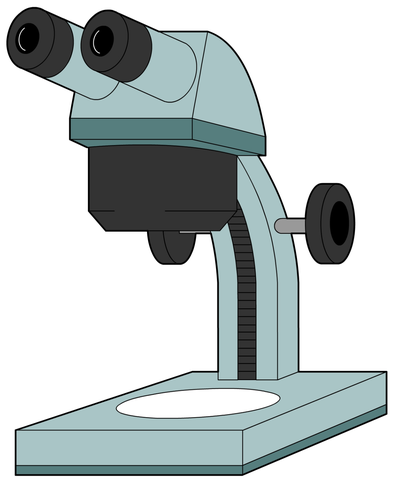
Dip nets (D-nets) – Used to capture aquatic insects, these nets are usually heavy-duty with a long handle for use in deep water. They are useful for dredging-up sediment and litter from aquatic habitats, where insects are abundant.

There are MANY tools entomologists use to collect, curate and view insects – too many to show here. To learn more about different tools ask your local entomologist!



Notebook, pencil & pen – Important observations are written or drawn on notepads for later reference. Certain archival pens are also useful for writing labels that will last hundreds of years on a pinned insect, or stay legible in ethanol.





Microscopes – These are used to magnify insects; **compound scopes** (L) view slides using transmitted light, and are usually a high magnification, while **dissecting scopes** (R) allow 3D viewing of small to medium insects at medium magnification, and use ambient light.