**Tools of the Trade: Insect Collecting & Curation**

by Matt Bertone

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**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.

**Malaise traps** – These traps are like tents with open sides. Insects fly up the sides and into the top, where a canister is replaced, and studies the catch.

**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.

**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.

**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).

**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).

**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.

**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).

**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 (below) and black lights, especially certain wavelengths.

**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.

**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; **scissors** (D) and razors are used to dissect insects.

**Alcohol storage** – Certain insects are stored in ethanols 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.

**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.

**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.

**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).

**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.

**Notebook, pencil & pen** – Observations are written or drawn on note pads 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.

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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!