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Relaxing bee specimens: A quick and easy method

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A b s t r a c t : A method is described for relaxing dried bee specimens – quickly and easily – for pinning and mounting, for preparation of male genitalia, hidden male sterna, the mouthparts, or to reposition appendages and other body parts. The procedure subjects specimens to hot steam for a short period, about 10 to 20 minutes. The steam and high pressure in the tightly shut container relax specimens more quickly than in a conventional moistening chamber. Conventional methods generally require 12-24 hours and carry with them risk of mold developing on the specimens. All kinds of bees and many other Hymenoptera have been successfully softened by this simple and effective treatment.

K e y w o r d s : Relaxing jar, insect specimens, insect collections, Hymenoptera, Apoidea.

Introduction

The relaxing jar or chamber is a valuable piece of equipment for entomologists and hobby insect collectors. Relaxation of dried bee or wasp specimens is a necessary procedure for mounting and pinning. Furthermore, to examine male genitalia and hidden sterna, the mouthparts, and other structures of bees, the dissection or preparation of specimens is usually unavoidable. To accomplish this without excessively damaging specimens, they are softened in an incubation chamber or a relaxing jar/chamber. The desire is to restore moisture to the integument making it less breakable and brittle, and to the joints so that they become bendable again.

Materials and Methods

Relaxing jars and chambers assume many different shapes and sizes. They can be constructed of simple household items or involve expensive incubation cabinets with time and temperature controls. Most often, water is the agent providing for the high humid environment. A conventional relaxing chamber using lukewarm water in an aquarium outfitted with a wooden cover was described and illustrated by EBMER (1987).

The system to relax insects described here was initially devised and extensively practiced with success on bee and wasp specimens by the first author for numerous years, improvements to it were implemented by the second author. The method received brief mention in DUBITZKY (2005), and it is fitting to devote it to a more detailed description.

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Equipment and procedure (Fig. 1): Glass, plastic or metal container to hold boiling water. This may be a wide-mouthed jar, bowl, pot or other watertight receptacle. A tight fitting lid or screw cap work best but most any covering, even if loose, will suffice. The floatation block may be a piece of Styrofoam or other floatable material on which the specimens can be pinned or laid out. A large pin placed in the center of the block serves well as a handle. To prevent water droplets formed by condensation from running onto the block or the specimens, the block can be kept at a safe distance from the inner side or walls of the container by inserting one or more pins horizontally into each side of the block. Specimens which have already been mounted are simply pinned into the floatation block. Specimens which are unpinned may be laid out on the floatation block. To insure that they do not easily fall off the block, they can be placed on a paper tray or within a barrier of pins.

Steaming or boiling water is poured into the container, after that the floatation block with specimens on it can be placed in. The water level should not be so high that the pins and specimens on the floatation block touch the cover. Cover, shut or close tightly container. After about 10 to 20 minutes open container and test for pliability by gently touching, for example, the legs with a pair of forceps. If further softening is needed, the process can be simply repeated. The lid should be carefully removed so that water droplets do not accumulate and fall onto the block. This can be avoided easily by slanting the lid when lifting it off.

In summary, an airtight system for example a simple glass jar with a screw cap is effective since the steam and high pressure relax specimens, in principle, like in a pressure cooker. A loosely covered system, in which steam can escape, such as a metal or glass cooking pot with cover, is entirely sufficient but the softening process may need to be repeated.

With this method of treatment most bee and wasp specimens can be quickly and easily relaxed. Occasionally, specimens resist softening or some body parts, for example, the mandibles or proboscis remain stiff and difficult to manipulate. In these cases, it is sometimes helpful to saturate the area of the joint and structure in question with no more than a drop or two of diluted ethyl alcohol, and repeat the softening treatment.

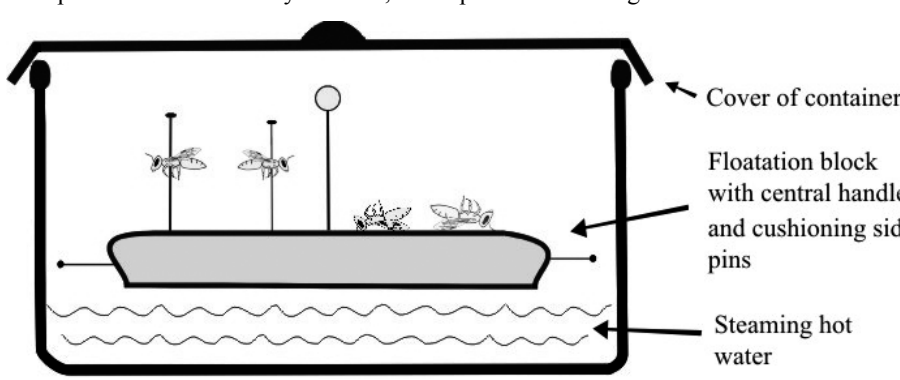

Fig. 1: Diagram of a relaxing-chamber system utilizing steaming water.

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Results and Discussion

Insects, like bees and wasps, if not prepared on the day of collection usually become too hard and brittle to pin. Dried specimens are therefore generally softened in a relaxing chamber before pinning or mounting. Conventional methods of relaxing insects are time-consuming (requiring 12-24 hours, if not days) and risky, due to development of mold which can be detrimental to specimens.

The uncomplicated method of relaxing dried specimens described here uses steaming hot water to provide for a very humid environment. It is a time expedient method, lasting up to about 20 minutes, depending on the size and age of specimens. Repetition of the procedure is entirely possible. There is no risk of specimens developing mold, decomposing or rotting, and thus no need for application of disinfectants or Naphthalene (possible carcinogenic and other health effects associated with its use are known). For each particular construction a test run should be conducted to ensure that condensation water does not touch specimens or labels, especially if type specimens are to be treated. In most cases it is advisable to remove the label or labels from the pin, or to protect them on the pin by enveloping them with folded wax paper since moisture or droplets reaching the labels may cause the label to warp or water-soluble ink markings to smear.

The relaxing treatment is also ideal for quickly improving the appearance of specimens by manipulating or repositioning appendages, head and metasoma to the desired position, and thus can contribute to making one's insect collection more beautiful.

Zusammenfassung

Um getrocknete Insekten zu Präparationszwecken (z. B. Nadeln, Freipräparieren von Mundwerkzeugen, Abdominalsterniten oder männlichen Genitalien) wieder weich zu bekommen, sollten diese zunächst aufgeweicht werden. In der vorliegender Studie wird eine einfache und rasche Methode zum Aufweichen von Bienen vorgestellt. Die Bienen werden dabei auf einer schwimmbaren Unterlage plaziert, die sich in einem zur Hälfte mit kochendem Wasser gefüllten Gefäß (z.B. ein breites Schraubdeckelglas) befindet. Das Gefäß wird für ca. 10-20 Minuten mit einem möglichst dicht schließenden Deckel verschlossen. Durch den heißen Wasserdampf und erhöhten Druck im Inneren des Gefäßes werden die Insekten viel schneller weich und gut beweglich, als in herkömmlichen Aufweichdosen und –systemen. In letzteren müssen die Insekten für mindestens 12-24 Stunden verbleiben, wodurch auch die Gefahr von Schimmelbildung deutlich erhöht wird. Die hier beschriebene Methode ermöglicht ein rasches Aufweichen von Insekten mit einfachsten Mitteln, birgt kein Risiko von Schimmelbildung und ermöglicht somit auch auf die Zugabe konservierender und meist gesundheitsschädlicher Reagenzien zu verzichten.

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