

**A simple trap for assembling moths**

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In entomology, 'assembling' usually has the restricted sense of attracting male insects to the pheromone scent of a female. Of course, insects can also be variously attracted to light, certain colours and the scent of food.

**Sources of pheromones**

Reared females are the traditional source of pheromones. A female may start emitting them even before she emerges from the pupa and, in most Lepidoptera, ceases when she has mated or after about three days as she ages. For assembling purposes, pupae should be reared in separate containers to prevent the access of males. Pupae kept indoors over winter, if they do not fail by dehydration, will emerge before males in the wild are on the wing, so rearing should either be outdoors, in a damp unheated outbuilding or in a lean-to shelter. In spring, the emergence of pupae may be delayed, or the freshness of a female prolonged slightly, by keeping them in the cool box of a refrigerator between 7 and 12 degrees Celsius.

A fresh virgin female can emit or withhold pheromones at will, so having several females increases the chances of one of them 'calling' when required. Also, several should be reared to ensure that some are females, and to facilitate their identification by comparison with the abdomens of males, which are usually smaller and thinner.

The pupae of many Lepidoptera can be sexed by the number of abdominal segments posterior of the wing cases which are clear of small bumps and marks; four segments in males, three in females (Warnecke).

Artificial pheromones for many Lepidoptera species, such as Plum moth, *Cydia funebrana* (Treits.) and Clearwing moths, Sesiidae, can be ordered (by late March) from Anglian Lepidoptera Supplies, Station Road, Hindolveston, Norfolk, NR20 5DE, email [jon.clifton@btinternet.com](mailto:jon.clifton@btinternet.com). ALS can also supply pheromone lures for other insect groups such as Coleoptera and Diptera.

**Method of use**

The simplest way to use a calling female of a day-flying species is to place her, with some wedged twigs to hang from, in a low screw-top jar. Cover the mouth of the jar with net curtain held by a rubber band before screwing on the lid.



Take the jar to a suitable location and unscrew the lid. If she is calling, any males flying in the vicinity will soon appear. Some species will be deterred by humans standing by the jar, though male Emperor moths become so disorientated by the pheromone that they will land on bystanders and can be picked up by hand. Before leaving, screw on the lid to prevent the males following you home like the Pied Piper.

Artificial lures for clearwings are usually hung in cloth bags, and need to be kept under observation by the trapper; instructions are issued with orders supplied by ALS. The trap described below may be left unattended to catch day-fliers, but it should be shaded from the sun and checked at least once a day. Unlike commercial traps that employ chemicals or adhesives to hold and kill the catch, this trap allows the unharmed moths to be released or used for subsequent breeding.

Nocturnal species vary in the time of night they fly, so a trap which can be left overnight is preferable. The essential features of an assembling trap are that it will retain the female while allowing her scent to spread, and retain assembled males while preventing them from mating with the female. The trap described below takes ten minutes to make and costs nothing. It has successfully trapped macro- and micro-moths such as Sallow kitten *Furcula furcula* (Clerck), Iron prominent *Notodonta dromedarius* (Linn.), Pale tussock *Calliteara pudibunda* (Linn.) and *Ditula angustiorana* (Haworth).

### **Assembling trap construction**

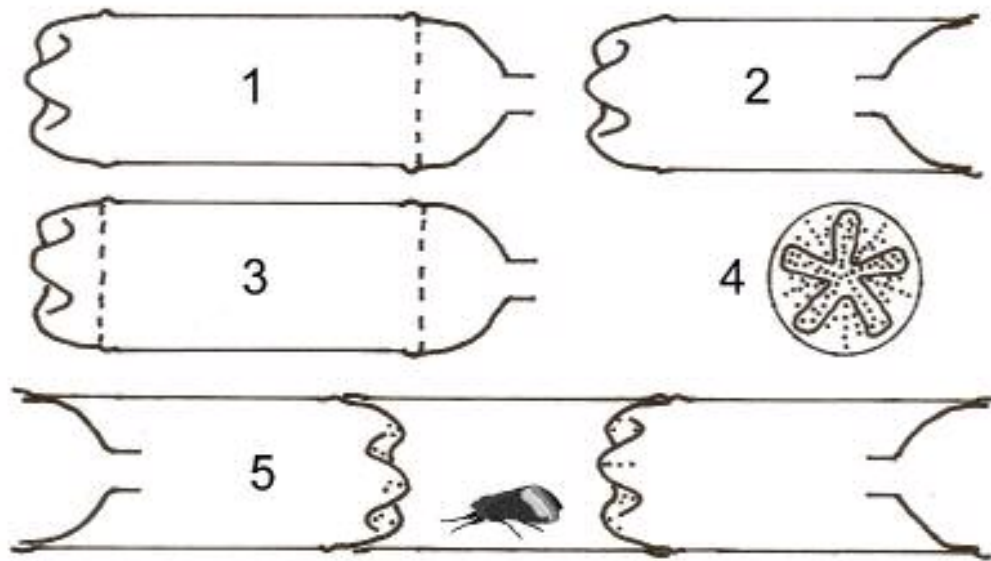
#### **Materials**

- a) Three 2 litre colourless plastic drinks bottles. Either un-ribbed e.g. Fountain Head Spring Water (from Asda), or with a slight rib near the top and base e.g. Westdales lemonades (from Aldi). To ensure precision fit, all three bottles should be identical.
- b) Electric drill with 2mm diameter, or smaller, bit.
- c) Sharp knife, e.g. Stanley knife, and scissors.

#### **Construction method** (Refer to figures below)

1. Use a sharp knife to make a start, and then use scissors to cut off the tops of all three bottles. If a rib, as shown in the figure 1, is present, cut along its top edge. If there is no rib, pour in water until it is 1cm below where the curve of the top achieves the full diameter of the bottle. Mark the level all round with a felt tip, empty the water and cut along the line.
2. On two of the bottles, invert the cut-off tops to act as funnels. Push them firmly into the bottles, but not so hard that the plastic kinks. If there is a rib, the funnel should sit securely recessed in the bottle, as illustrated. If there is no rib, the funnel will stand proud of the bottle.
3. Cut the base off the third bottle. If there is a rib, cut along its lower edge. If there is no rib, pour water in until it is 1cm above where the base achieves full diameter, mark and cut.
4. Drill about ten holes in each ridge and furrow of the bases of the two bottles that have funnels.
5. Place the calling female or artificial pheromone in the sleeve made from the third bottle, and push the bases of the other two bottles into the ends of the sleeve. If you are unsure of the security of fit of any joint, use a few tabs of sellotape.
6. Hang or wedge the trap horizontally in a bush or tree, with one of the ends pointing into any wind to assist the spread of the pheromones. Leave overnight. Direct sunlight will kill the contents, so ensure shade or collection before the morning sun. Reflective sleeves can be made by slitting open cardboard milk cartons and sellotaping them round the trap with the metallic interior facing outwards, but they should not be relied on against powerful sun.

## Stages in construction of an assembling trap.



### Notes

A cradle for hanging the trap can be made by slitting a plastic carrier bag open and passing one side through the handle of the other.

Species living in the tree canopy may not descend to ground level, so position the trap for them as high as possible (Friedrich).

Tinted plastic bottles will work, but trapped males might detect the opening more easily for escape.

Pheromones may impregnate the plastic of the trap and continue to attract males after the female or lure has been removed. Consequently, traps should be stored dismantled for a time after use.

The trap may work with baits other than pheromones. Honey or jam may attract bees and wasps, as may blue or yellow paper petals placed around the opening. A dead mouse or bird, or dung may attract Coleoptera and Diptera, while the trap design prevents them from getting lost in the bait. A ramp of soil may be needed for ground beetles to reach the entrance.

### References

Friedrich, E., 1986. *Breeding butterflies and moths*. Harley Books, Colchester.

Warnecke, G., 1964. *The young specialist looks at butterflies and moths*. Burke, London.

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