

PROLOGUE

I have long had an interest in insect wings and from a few discussions with Peter Sunderland about earwigs I soon became fascinated. Peter said he had failed many times to open earwig wings, so I thought I would have a go. I failed, mainly because I adopted methods I had evolved in pinning insects using a setting board arrangement. The main problem to overcome was the habit of wings to immediately retract and fold themselves up again if you let go of them, most frustrating.

A news item on the tele caught my eye, a book called “[How Do Insects Fold and Unfold Their Wings?](#)” by Robin Wootton from ‘The Amateur Entomologists Society’. Apart from an account of how and why earwig wings retract there is a two page diagram of an unfolded wing showing all 64 folds!

EPILOGUE

Having confidence in opening the wings, I thought ‘what is next’. Peter has a slide of a mounted earwig with open wings made by Ernie Ives; we had looked at it several times. Recently I asked Peter to show me the slide again, more interested this time in how Ernie mounted the earwig, and after studying it for some minutes I realised that it was mounted upside down, that allowed the wings to lay flat. His specimen had been bleached. Also recently I came across a PDF download [Advances in insect preparation: bleaching, clearing and relaxing ants. From <https://www.researchgate.net/>](#). This was very useful.

After a few days, I placed the slide with earwig in a Petri dish and covered it with water. After a short while I lifted off the small pieces of glass, the wings were still stuck, so I used my ‘yard broom’ to tease the wings off, and as I released the second one the earwig floated. I lifted it from the water, laid its wings down on a half slide, placed another half slide on top and bound it with cotton. Next, I put it in a Petri dish with lid, covered the slide with 30% Hydrogen Peroxide, and checked it every day for two weeks until I was happy with the amount of bleaching. After that, I drained the HP, gave it several changes of fresh water, then put it in a jar of water and every hour I squirted water between the two glasses with a fine pipette. When the earwig came out of the bleach the wings looked a little crumpled so I used the ‘yard broom’ to flatten them out again, no damage. After the washing I unbound the two glasses, blotted the earwig to remove as much water as I could, then bound them up again and placed them in 100% IPA. Up until this point the wings looked OK, but when I took them out of the IPA the wings had turned to jelly? Back to the drawing board!

I will try 10% HP and see if that works, also only use the IPA just prior to mounting with Euparal.

OPENING EARWIG WINGS

Tools needed

Fine tweezers, fine glass drawn seekers (capillary tubes), fine needle (acupuncture needle No 3 0.20 × 30mm) cut in half, if too long tends to 'flick' Superglued to a cocktail stick

A 000 brush, the one I have looks o.k. to naked eye, but under the microscope it looks like a 'yard broom' but it is fine for lifting wings; a better quality one is likely to poke holes in wing.

A No 2 brush for applying 50/50 Gum Arabic, two pieces of lead rolled up to weigh down 10mm pieces of slide.

Plain slide cut in half, the remaining half cut into 10mm pieces.

A 'freshly' killed earwig.

Method

Coat slide and two small pieces with Gum Arabic and allow to get tacky, say one hour.

Place earwig lengthwise on the slide and open out legs, when satisfied, flood both leg sides of the slide and the small pieces with Gum. Turn the small pieces over and lower onto legs, make any adjustments needed. Place the lead weights on the small pieces then go away and have your lunch (at least 2 hours). Do not be tempted to use a hot plate.

I started to get the wings open with the earwig in a 'north/south' orientation but found it difficult, I don't know why but I turned the next one in to a 'east/west' orientation.

If you are right-handed then the head is to the left, lift up the elytra and tuck them under the small pieces. With a clean brush wet with water the top of the small pieces. Gently lift the right wing with a glass seeker with your left hand, the wing will twist and you can see a darker patch, this the end of the wing. Gently grip this with tweezers in right hand and pull out, do not try to open wing completely, lay it down on the wet slide and it should stick. If you used a dry slide the wing would immediately fold up the second you let go.

Now the wing is 'stuck' use the yard broom and glass seeker to manoeuvre the wing until it is completely open, a little more water will help if needed.

Repeat on the left wing. It took me 45 minutes to do both wings on the first attempt using this method. Subsequent operations got gradually quicker, until not including the gluing bit, I did both wings in just over 5 minutes.

Earwigs, I have found that leaving earwigs in the killing jar (ethyl acetate) for over a week did no harm to the wings, so I do this routinely. This year I had difficulty in finding earwigs, then suddenly there was a glut with quite large adults, now I cannot find any, despite using pitfall traps baited with apple, all I got was slugs and woodlice.

PART TWO of this process will be another attempt at bleaching and maceration without destroying the wings. I will still use Hydrogen Peroxide followed with Lactic acid, and then mounting process.

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