doi:10.12741/ebrasilis.v9i3.656
e-ISSN 1983-0572
Publicação do Projeto Entomologistas do Brasil
www.ebras.bio.br

A Storage Method for 'Psocoptera' (Insecta: Psocodea) in "CD Box"

Alberto Moreira Silva-Neto[1]✉, Alfonso Neri García Aldrete[2], José Albertino Rafael[1]

1. Instituto Nacional de Pesquisas da Amazônia – INPA, CPEN – Programa de Pós-Graduação em Entomologia, e-mail: bio.alberto@gmail.com (Corresponding author✉), jarafael@inpa.gov.br. 2. Departamento de Zoología, Instituto de Biología, Universidad Nacional Autónoma de México, e-mail: anga@ib.unam.mx.

EntomoBrasilis 9 (3): 220-223 (2016)

Abstract. The use of a "CD box" adapted to the storage of slides, and other body parts of dissected psocopterans was proposed.

Keywords: Bark-Lice; Book-lice; Entomological collection; Paraneoptera; Psocids.

Um Método de Armazenamento para Psocoptera (Insecta: Psocodea) em Caixa de CD

Resumo. O uso de uma caixa de CD adaptada para o armazenamento de lâminas e outras partes dissecadas do corpo de psocópteros foi proposto.

Palavras-chave: Coleção entomológica; Paraneoptera; Piolhos de cascas de árvores; Piolho de livros; Psocídeos.

Psocoptera (psocids, booklice, barklice) is the paraphyletic non-parasitic component of order Psocodea (Psocoptera + Phthiraptera) (Yoshizawa & Johnson 2006). They range from 1 to 10 mm in length and are characterized by a large and mobile head, bulbous postclypeus, asymmetric mandibles, reduced labial palps, maxillae with free elongated laciniae, reduced prothorax, well-developed pterothorax , wings when present, membranous, kept roof-shaped or flat over the abdomen when at rest, tarsi with two or three segments (García Aldrete & Mockford 2012).

The taxonomic study of Psocoptera requires the dissection of some structures (head, mouthparts, antennae, right wings and legs, and genitalia). To be properly studied, these structures need to be mounted on slides in Canada balsam or Euparal, resulting in long-lasting preparations. It may be difficult to extract a structure for more detailed study after it is mounted. The slides are then stored in slide boxes, or in slide sheets. The thorax and remaining parts of the dissected specimen are stored in a small glass capsule with 80% ethanol, placed in a glass vial, also filled with 80% ethanol, and kept in a different location from the slide. This practice may result in the loss of the remaining parts of the specimen, or in failure to associate them with the corresponding slide. At the Insect National Collection, Institute of Biology (CNIN), Universidad Nacional Autónoma de México, in México City, the remains of dissected specimens are stored as indicated above in wooden boxes (Figure 1). At the Invertebrate Collection of the Instituto Nacional de Pesquisas da Amazônia (INPA), in Manaus, Brazil, the remains of dissected specimens are stored in glass vials as indicated above, placed in large pots with 80% ethanol (Figure 2). The problem with both methods is the association of the remains with the respective slide that may be time consuming. We here recommend the storage of the slides and remains of the dissected specimens in a single compartment of the "CD box" described below.

Rafael *et al.* (2003) were the first to use a "CD box" for entomological storage. They used the "CD box" for layering and storing small dried insects. The "CD boxes" (Figure 3) are made of acrylic with the following dimensions: 10 mm thick, 125 mm wide and 143 mm long. The box is divided in the following parts: "CD box" itself with a lower part (base), upper part (lid) that are movable between them and the "tray" (Tray or cradle CD) internal and embedded in the base, which has a central crown with teeth which serves to fix the CD.

Our method consists in using the base and lid of the "CD box" to store slides and thorax of Psocoptera. It requires six easy steps to be made: 1- exclusion of the internal tray (Figure 4); 2- fixing of a foam sheet or a piece of polystyrene with the same width, length and thickness of the "CD box" (Figures 5 and 6); 3- drawing the slide shape over the foam sheet or a piece of polystyrene (Figures 7 and 8); 4- extract the demarked area thus generating a mold to be filled by the slide (Figures 9, 10 and 11); 5- drawing the micro container or capsule shape over the foam sheet or piece of polystyrene (Figure 12); 6- extract the demarcated area thus generating a mold to be filled by the capsule (Figures 13 and 14). Steps 3 and 4 can be done up to three times on a single "CD box" for storing even 3 specimens in a single CD box (Figure 15).

On the spine of the CD box we add a label with the species name to facilitate its location during a search (Figure 16). For the capsules with the remains of the dissected specimens we suggest the use of glycerin instead of ethanol, because it evaporates and requires a constant surveillance to replace it. The CD box can be stored in cabinets adapted for the purpose (Figure 17). Preserving Psocoptera in CD boxes may prevent the loss of the remains of the body, because they will not be stored separately. It also eliminates the harsh work of association of a slides and body remains. Storage in "CD boxes" may have the disadvantage of taking up more space than storing in slides boxes, but it has the advantages mentioned above and can be used at least for type series, for their taxonomic significance. This new method can also be adopted to other insects in which slides and other body parts (placed in some type of preservative liquid) are generally stored separately.

Figure 1. Psocoptera stored in the Mexican Insect National Collection, Institute of Biology, Universidad Nacional Autónoma de México.

Figure 2. Psocoptera stored in the Invertebrate Collection of Instituto Nacional de Pesquisas da Amazônia

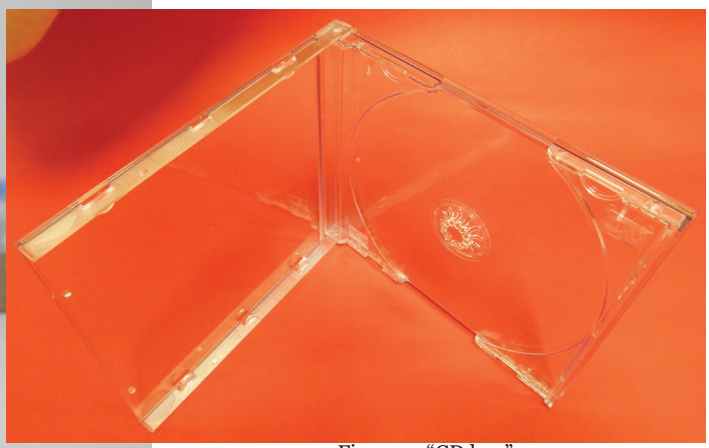
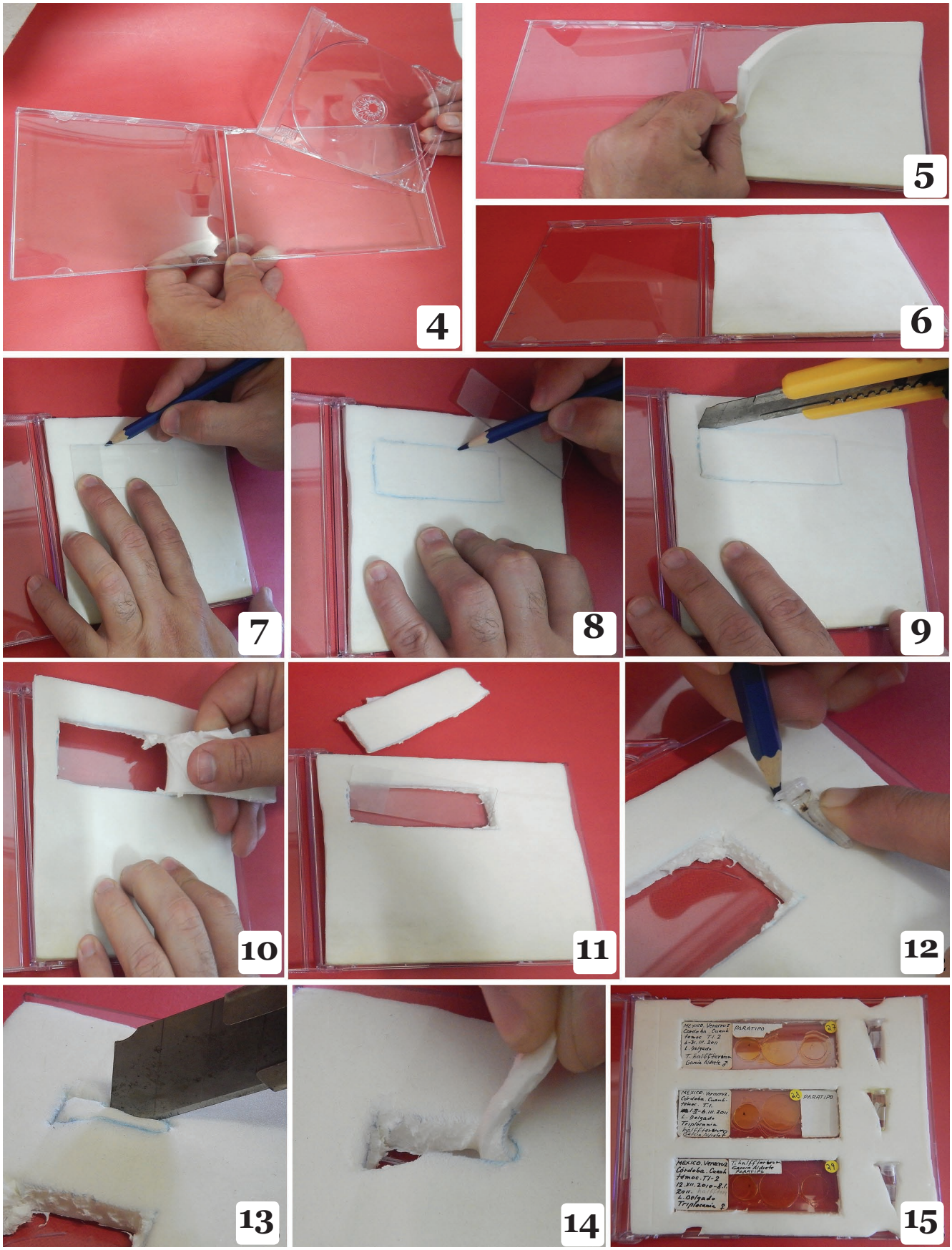


Figure 3. "CD box".

e-ISSN 1983-0572



Figures 4-15. Description step by step of the adaptation to "CD box" to storage of the slides and body remains of dissected specimens of Psocoptera. 4. Exclusion of the internal tray. 5-6. Fixing of a foam sheet or a piece of polystyrene. 7-8. Drawing the slide shape. 9-11. Extract the cut area to slide shape. 12. Drawing the capsule shape. 13-14. Extracting the cut area to capsule shape. 15. "CD box" with three psocopteran types stored.

e-ISSN 1983-0572

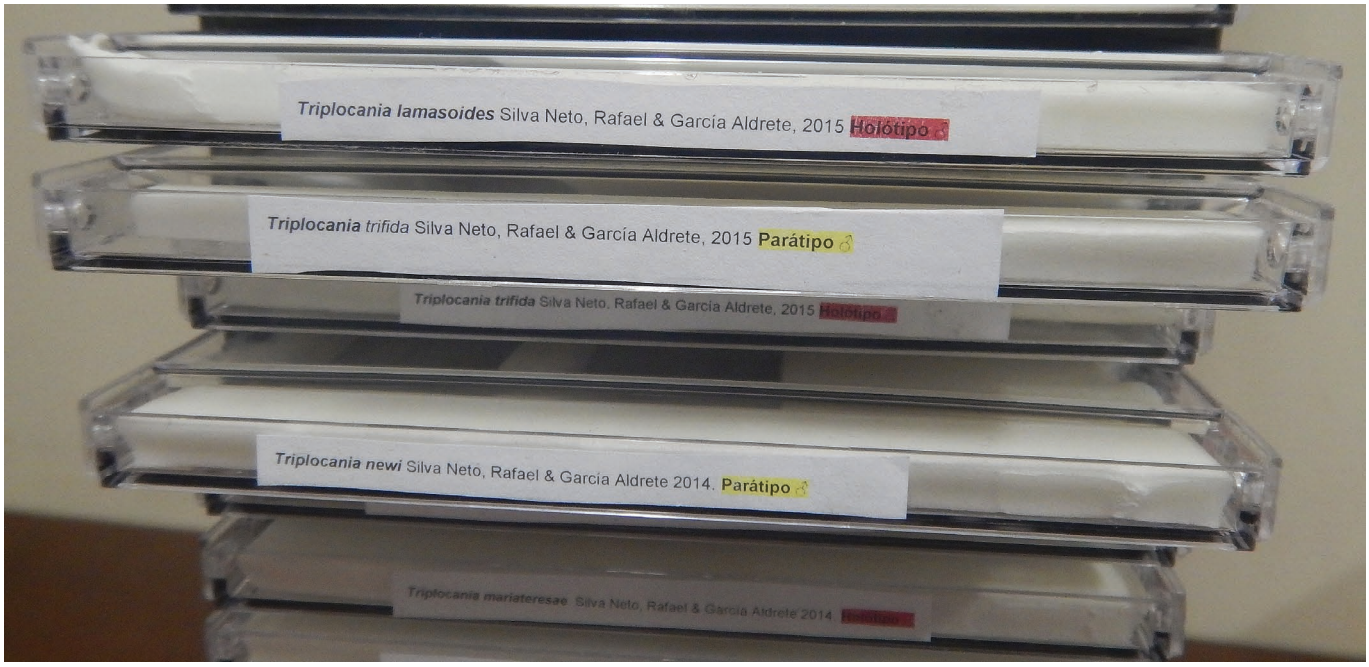


Figure 16. Label with the species name on spine of "CD box".

Figure 17. Cabinets adapted for the storage of "CD box".

ACKNOWLEDGEMENTS

ANGA thanks to the Institute of Biology, Universidad Nacional Autónoma de México, for continuous research support. AMSN thanks to the Instituto Nacional de Pesquisas da Amazônia (INPA) and Conselho Nacional de Desenvolvimento Científico e Tecnológico of Brazil (CNPq) for research support.

REFERENCES

García Aldrete, A.N. & E.L. Mockford, 2012. Psocoptera, p. 423-437. *In*: Rafael, J.A., G.A.R. Melo, C.J.B. Carvalho, S.A. Casari & R. Constantino (Eds.). Insetos do Brasil: Diversidade e Taxonomia. Brasil, Editora Holos,795 p.

Rafael, J.A., A.L. Henriques & J.F. Vidal, 2003. Armazenagem de pequenos insetos secos em bandeja-manta adaptada de "cd-box". Revista Brasileira de Entomologia, 47: 469-471. doi: http://dx.doi.org/10.1590/s0085-56262003000300018.

Yoshizawa, K. & K.P. Johnson, 2006. Morphology of male genitalia in lice and their relatives and phylogenetic implications. Systematic Entomology, 31: 350-361. doi: http://dx.doi.org/10.1111/j.1365-3113.2005.00323.x.

Received in: 17.ix.2016
Accepted in: 20.x.2016

****

Suggestion citation:

Silva-Neto, A.M., A.N. García Aldrete & J.A. Rafael, 2016. A Storage Method for 'Psocoptera' (Insecta: Psocodea) in "CD Box". EntomoBrasilis, 9 (3): 220-223.
Available on: doi:10.12741/ebrasilis.v9i3.656