Inflation of heteropteran aedeagi using microcapillaries (Heteroptera: Pentatomidae)

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Gapon, D.A. 2001. Inflation of heteropteran aedeagi using microcapillaries (Heteroptera: Pentatomidae). *Zoosystematica Rossica*, **9**(1), 2000: 157-160.

A method of inflation of heteropteran aedeagi using injection of water through a microcapillary tube and subsequent drying is described.

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The structure of the aedeagus is widely used in taxonomy of Heteroptera for distinguishing species, genera and suprageneric taxa. For examination, the phallus is placed in boiling KOH solution and then in distilled water: the difference in osmotic pressure leads to extraction of endosoma or vesica from the phallotheca and inflation of membranous parts (Belousova, 1996). However, this method is not always sure: in some cases, the vesica or endosoma is not pushed out, or the membranous lobes are not completely inflated, or they shrink subsequently when the phallus is preserved in glycerine.

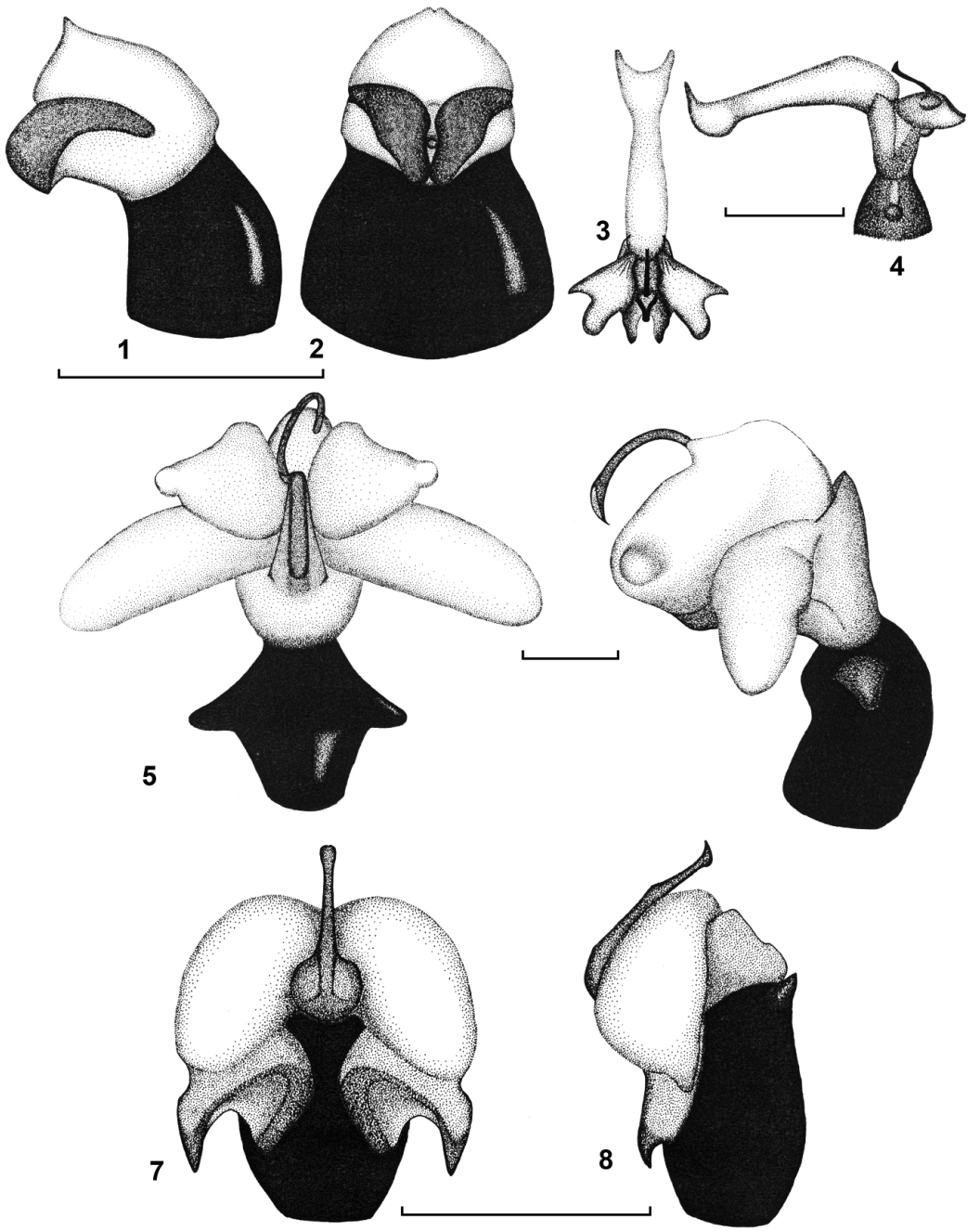
In recent years, coleopterists developed methods of filling the phallus with hot glycerine-gelatine with subsequent cooling (Meur-gues & Ledoux, 1966), or filling it with tooth paste (Berlov, 1992), or inflation of phallus by the use of a syringe with subsequent drying (Shilenkov, 1996).

Due to small sizes of Heteroptera and their genitalia, the filling with viscous liquids cannot be used and inflation by the use of syringe needs some modifications. The following approach was used by the author for inflation of aedeagi in some species of Pentatomidae belonging to various genera.

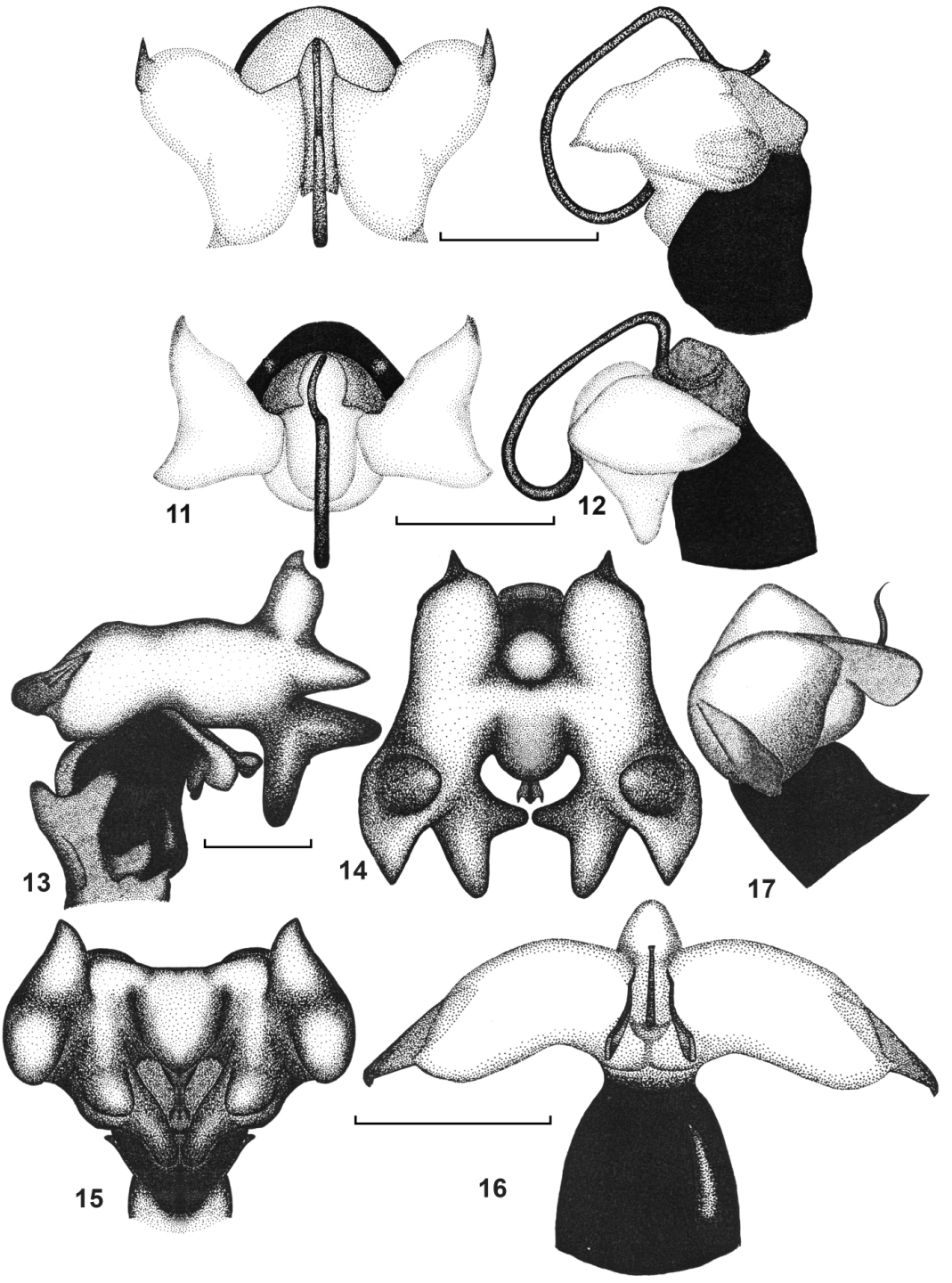
The male genitalia were dissected in the ordinary way (Kerzhner & Jaczewski, 1964). The separated phallus was boiled in 10% KOH solution for about 1 minute and then in distilled water for about the same time. One end of a microcapillary tube used in neurophysiological studies was extended over the flame of a spirit-lamp and broken off under binocular microscope to the diameter corresponding to the diameter of the basal foramen of phallus. Then this end of the tube was inserted into the phallus foramen and the opposite end of the tube was get on a needle of an insuline syringe. If the diameters of the tube and the needle did not match, the end of the tube was fused over the flame of a spirit-lamp to necessary diameter. Using a syringe, water was pumped into the phallus and pushed out the vesica. During this procedure, the phallus was hold on the microcapillary tube with fingers or with forceps.

When the aedeagus had been inflated, the water was exhausted with syringe from the phallus and microcapillary. Normally, the vesica had not pulled in back. Then the phallus was glued to the tube in order to prevent passing of air between the phallus and the tube. Using a powerful aquarium microcompressor, football bladder or big medical syringe, the air was pumped into the microcapillary under constant pressure. The vesica became inflated; in this condition, it was dried over the flame of a spirit-lamp (the filling of the vesica with air should be controlled!). Then the phallus was taken away from the tube using a razor blade or forceps, or the top of the tube bearing the phallus was broken off. Finally, the phallus was glued on a card, which was pinned under the specimen.

The preparations obtained using the method described above allow examination of the inflated aedeagi from various sides and compareson of their structure in related species (Figs 1-15).



Figs 1-8. Inflated aedeagi of Pentatomidae in different positions. **1-2,** *Graphosoma lineatum* L.; **3-4**, *Aelia acuminata* L.; **5-4**, *Ae. rostrata* Boh.; **7-8**, *Dolycoris baccarum* L. Scale lines: 0.5 mm.



Figs 9-15. Inflated aedeagi of Pentatomidae in different positions. **9-10**, *Carpocoris pudicus* Poda; **11-12**, *C. fuscispinus* Boh.; **13-15**, *Piezodorus lituratus* F.; **16-17**, *Eurydema ornata* L. Scale lines: 0.5 mm.

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Received 22 June 2000