

***Halyomorpha halys* identification keys – Figures**

- Supplementary material for: BIOLOGICAL INVASIONS
- Title: Citizen science and early detection of invasive species: phenology of first occurrences of *Halyomorpha halys* in Southern Europe
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Fig. 1 A female *Halyomorpha halys* adult, dorsal view. Arrow indicates the connexivum with typical pattern (photo: S. Bortolini).



Fig. 2 An *Halyomorpha halys* egg mass with first instar nymphs feeding on the eggs (photo: S. Bortolini).



Fig. 3 *Halyomorpha halys* second (left) and fourth (right) instar nymphs (photo: S. Bortolini).

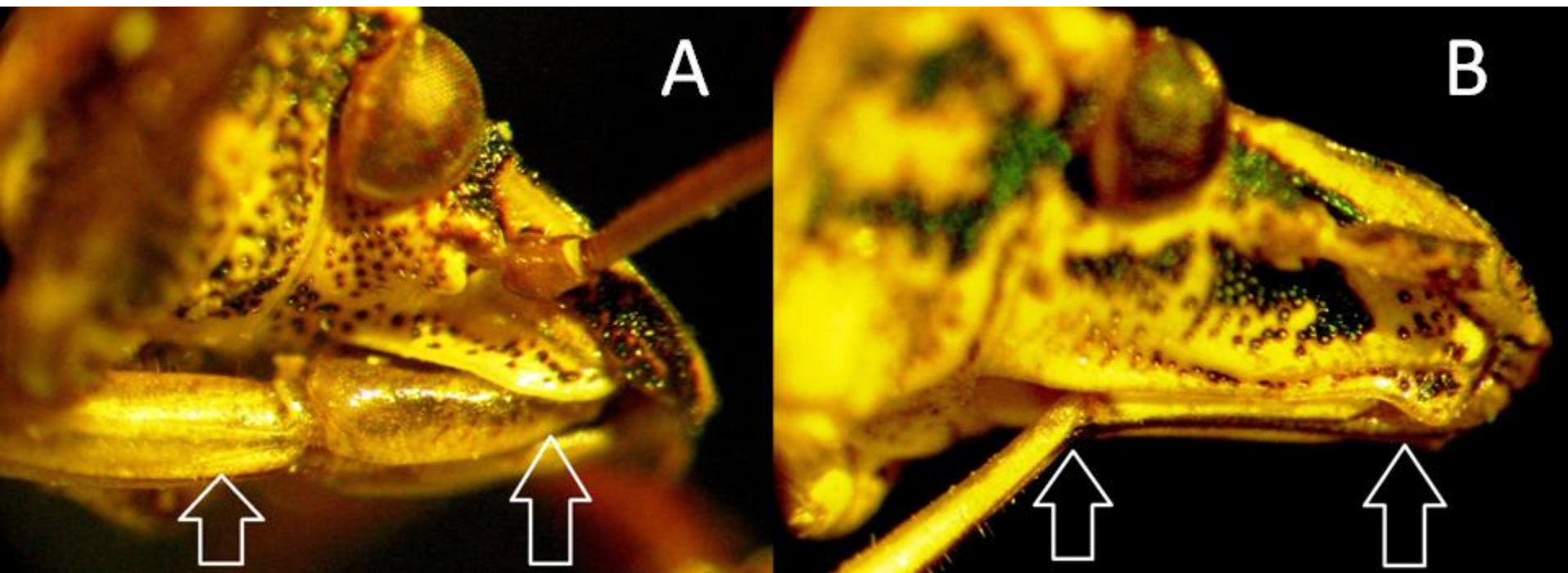


Fig. 4 Apex of head of an Asopinae (a) and of Podopinae and Pentatominae (b). Arrows indicate different position of rostrum and labium between bucculae (photo: P.Dioli).

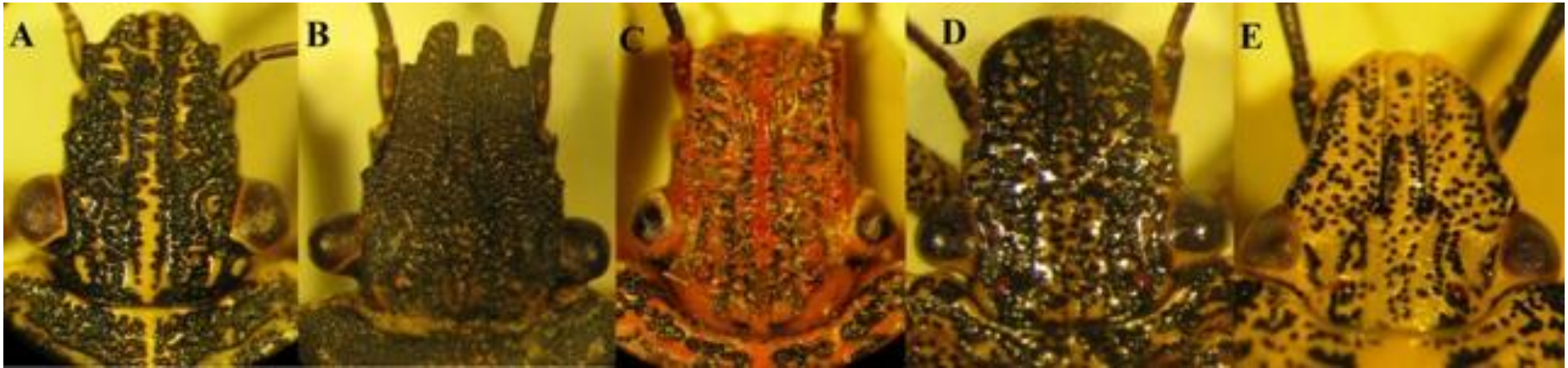


Fig. 5 Different shapes of head in Pentatominae. Head with antenniferous tubercles visible from above, in the case of tribe Halyini, represented by *Dalpada oculata* (A), *Cahara tibetana* (B), *Apodiphus integriceps* (C), and in the case of tribe Cappaeini, represented by *Halyomorpha halys* (D). Antenniferous tubercles not visible from above in other Pentatominae, e.g. *Raphigaster nebulosa* (E) (Pentatomini) (photos: P.Dioli).

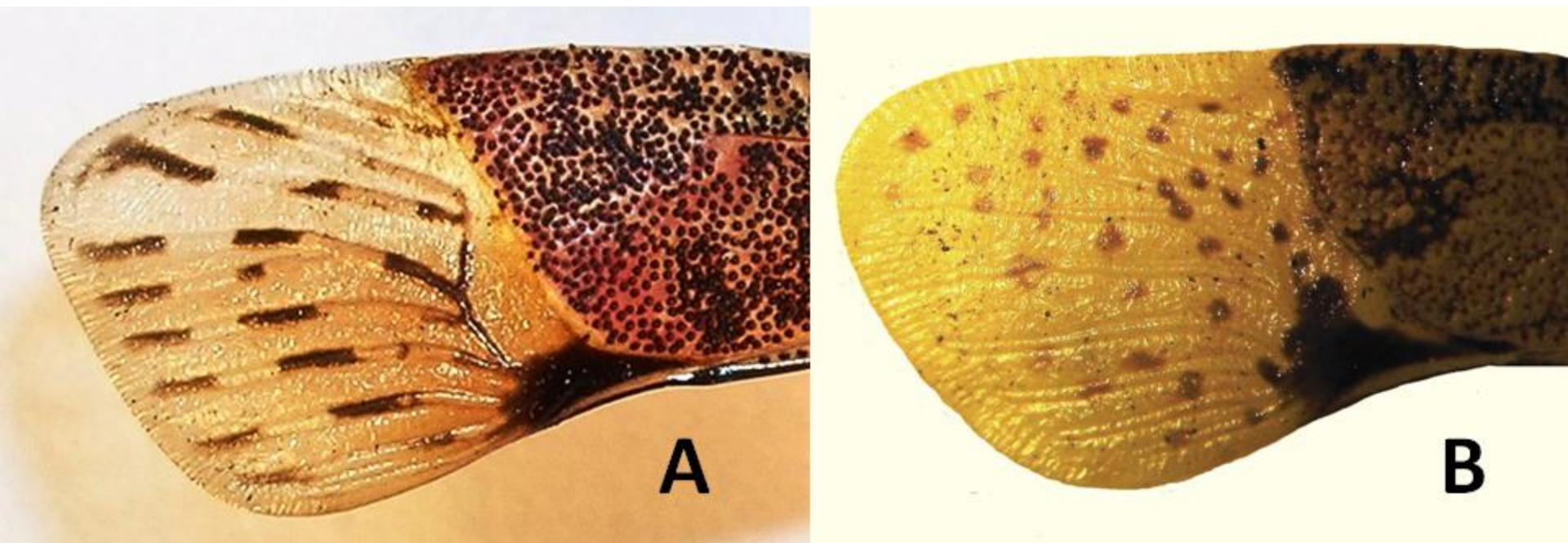


Fig. 6 Apex of the left wing in *Halyomorpha halys* (a), with typical marked veins on the membrane and in *Raphigaster nebulosa* (b), with marked rounded spots on the membrane (photo: A. Girodo, left; P. Dioli, right).

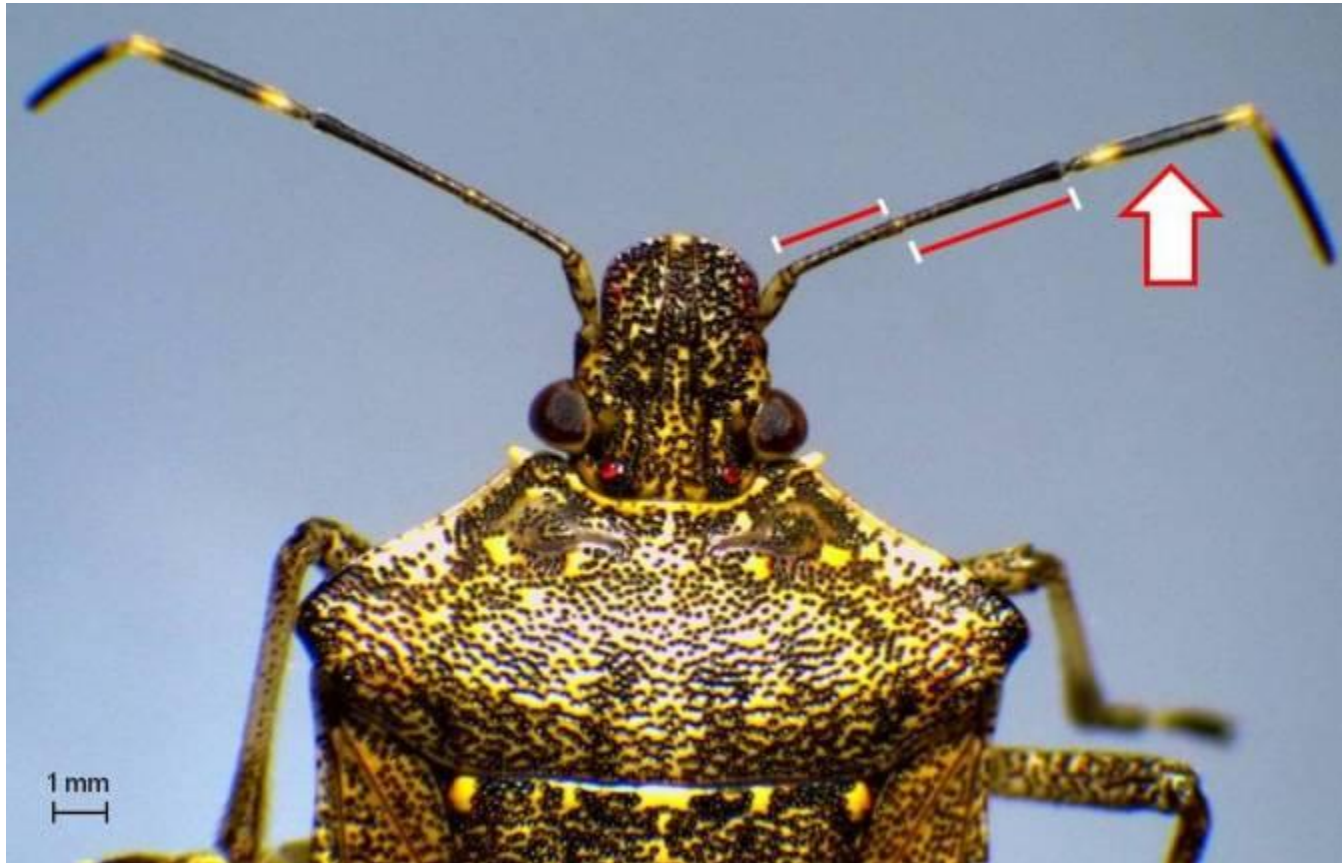


Fig. 7 Head and pronotum of *Halyomorpha halys*. Arrow indicate pattern on 4th antennal segment, red lines indicate different length of 2nd and 3rd antennal segments (photo: G. Vaccari).

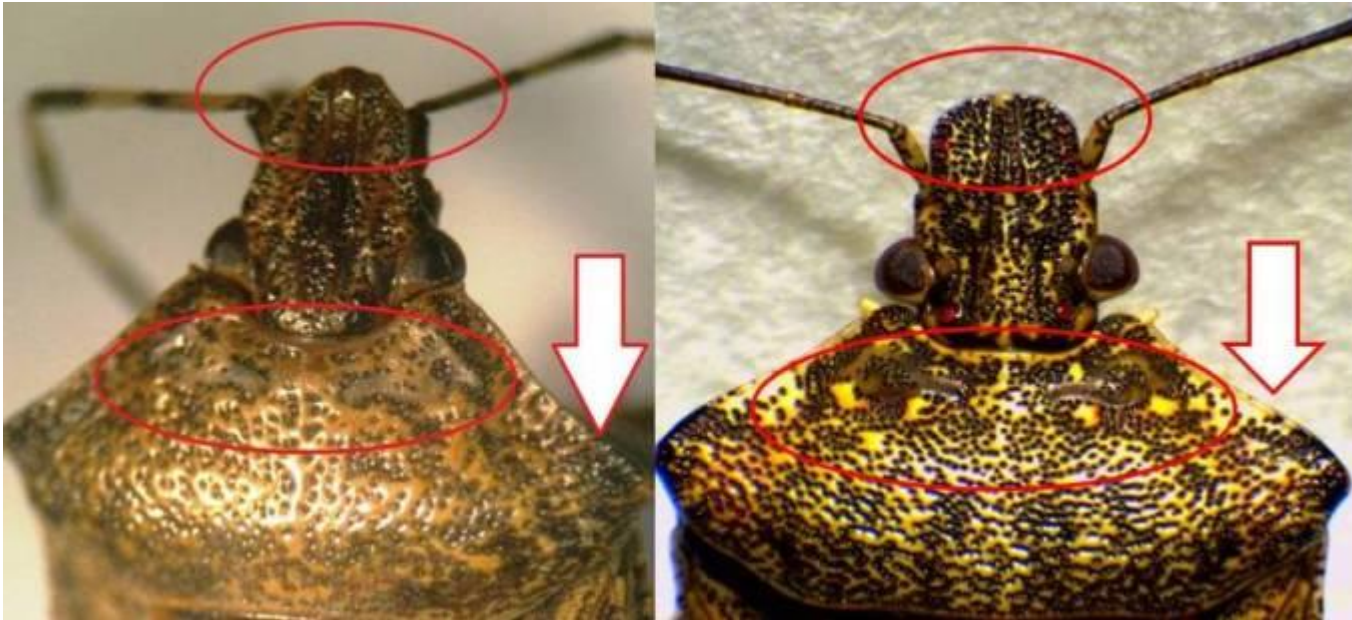


Fig. 8 Head and pronotum of *Raphigaster nebulosa* (left) and *Halyomorpha halys* (right). Arrow and ovals indicate patterns that differ in the two species (photos: A. Girodo, left; G. Vaccari, right).

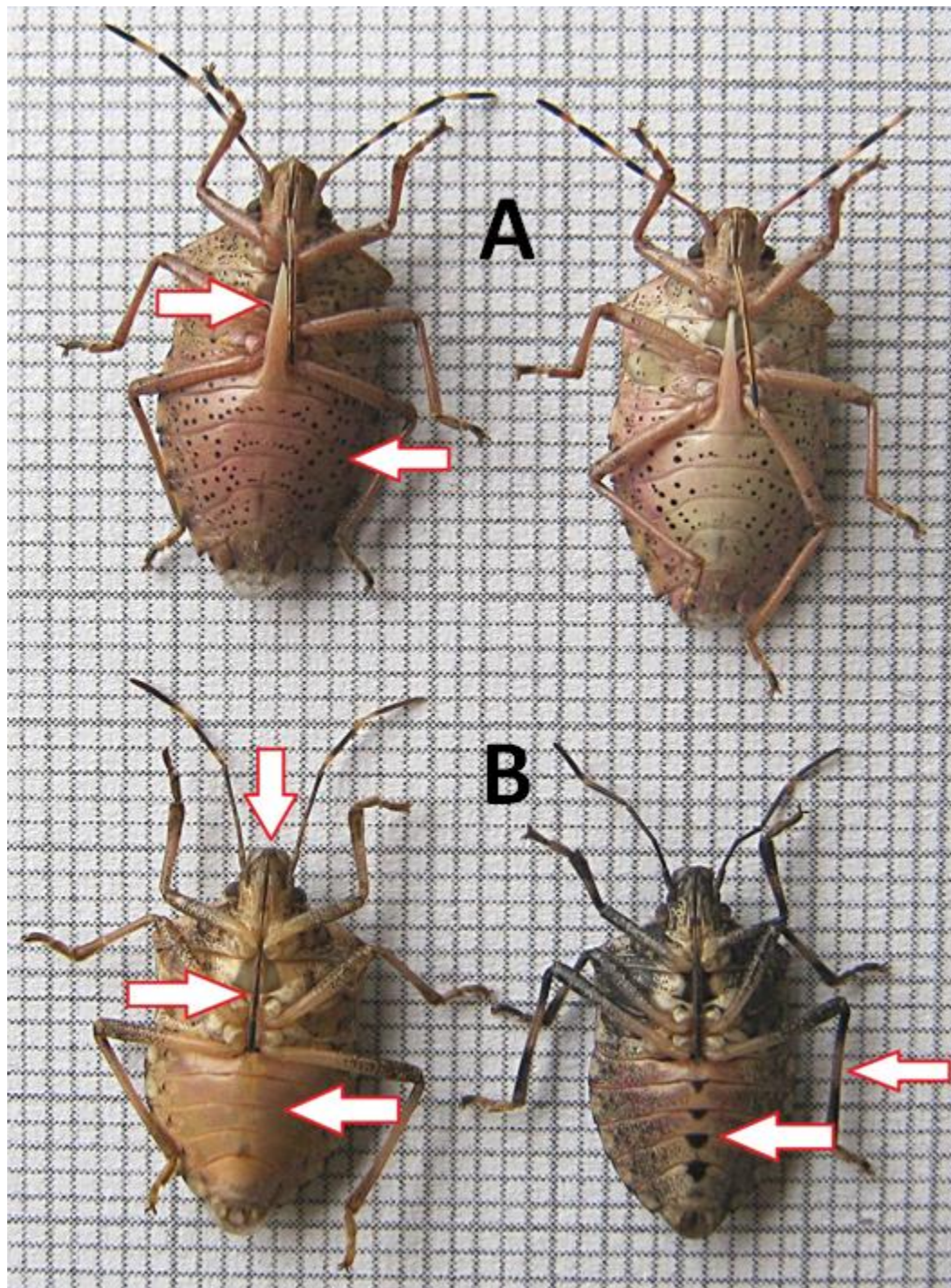


Fig. 9 Ventral view of the differences between *Raphigaster nebulosa* (A) and *Halyomorpha halys* (B) adults. Arrows indicate patterns that differ in the two species (photo: L. Mola).

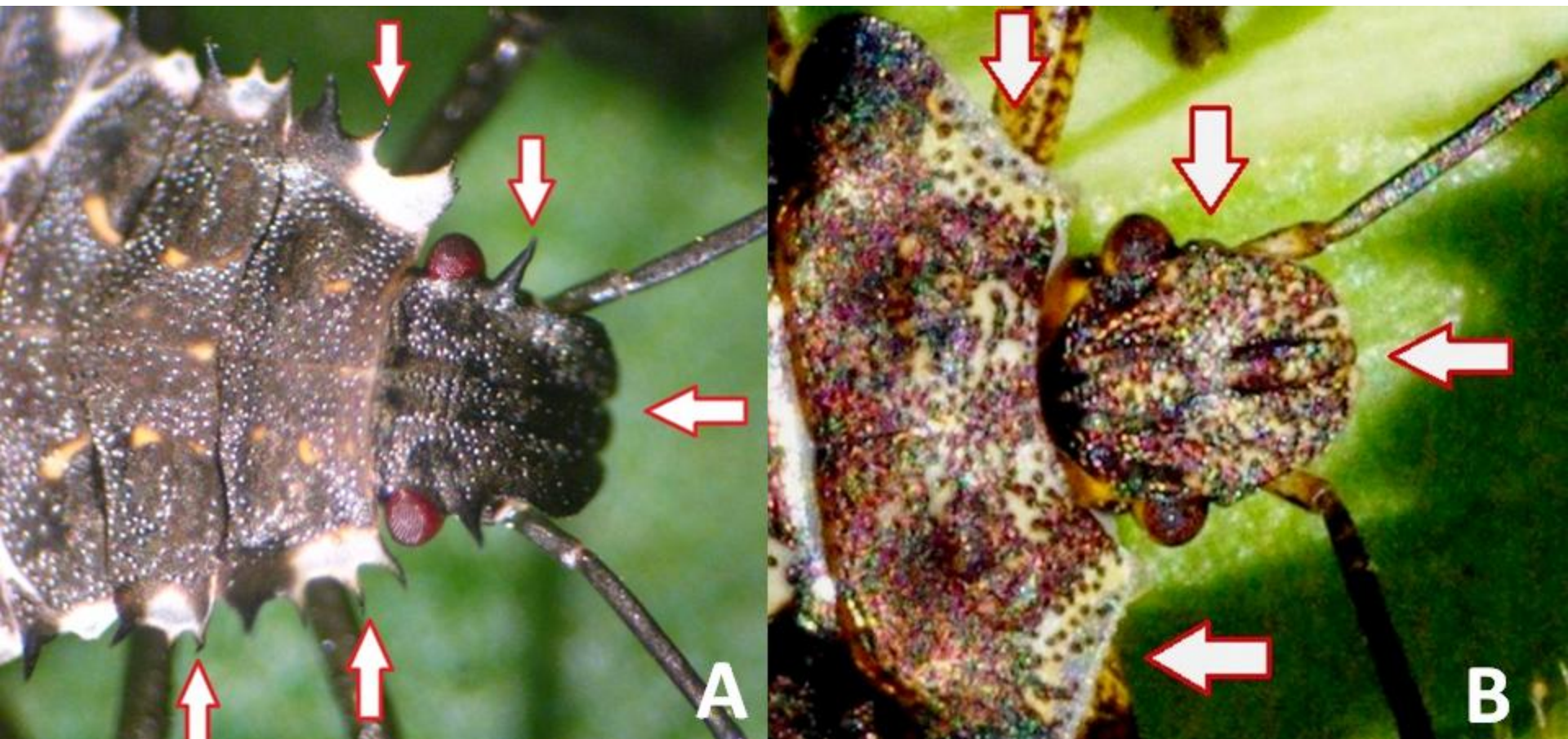


Fig. 10 (a) Head and pro-meso-metanotum of a second instar nymph of *Halyomorpha halys*, with evident thorns and rectangular apex of the head. (b) Head and pronotum and of fourth instar nymph of *Raphigaster nebulosa*, with no thorns and triangular-rounded apex of the head. Arrows indicate patterns that differ in the two species (photos: S. Bortolini, left; P. Dioli right).