

LABORATORY EXERCISE 10: The Thorax, Part B

B. Thorax of the Pterygota (Prothorax & Pterothorax)

It is extremely difficult to distinguish the sclerites of the thorax of winged insects without first “clearing” the specimen by use of caustic KOH (potassium hydroxide) and/or various stains to differentiate the heavily sclerotized areas from the membranous areas. However, adult scorpionflies (Mecoptera) and stoneflies (Plecoptera) show exceptional differentiation of the thoracic sclerites. Please use wax-bottom dissecting dishes for carefully (without ruining for later classes and exercises) pinning the stoneflies into position; completely covering the specimens with dilute alcohol or water is strongly recommended for clarity of features. Sometimes, placing a section of white paper under the specimen before pinning will improve resolution, especially in black wax dishes. Or conversely, sometimes black paper under the specimen in a white wax dish will improve resolution.

Examine the dorsal surface (**tergum**) of the thorax of an adult perlid stonefly (Plecoptera) or panorpilid scorpionfly (Mecoptera). Draw (Drawing #14) the prothorax and mesothorax from above and on the mesothorax label: notum, prescutum, scutum, scutellum, acrotergite, anterior and posterior notal processes, wing bases, antecostal suture, scuto-scutellar suture, prescutal suture, postnotum, and intersegmental membrane(s). Also label the pronotum and distinguish between the pro- and mesothoracic segments. Compare the tergum of the mesothorax with that of the metathorax. (See Imms, figure 5-a, and Gillott, figure 3.18A.) Find the postnotum of the metathorax – i.e., the acrotergite of abdominal segment #1.

Now study the **pleural** area of the prothorax of the same insect (Imms, fig. 5, and Gillott, fig. 3.18B; see also the original diagrams in Snodgrass) and make a drawing (Drawing #15) of the pleural sclerites. In the ancestral, pre-winged body plan of the Insecta, the pleurites of the mesothorax and metathorax were probably similar to those of the prothorax, so what you see here in the prothorax approximates the configuration once exhibited by all three thoracic pleura of ancient Apteriygota. Label pronotum, anapleurite, coxapleurite, sternopleurite, points of coxal articulation, coxa (of leg), and sternum (you may use nymph or adult if you choose the stonefly).