Chapter 2 : Atlas of 4th instar larvae of common genera of non-biting midges (Diptera: Chironomidae) recorded from Albertan wetlands

2.1 Introduction

Non-biting midges (Diptera: Chironomidae) are one of the most abundant and diverse groups of freshwater macroinvertebrates (Ferrington 2008). Chironomid midges, like other Dipterans, are holometabolous and have four distinct life stages: egg, larva, pupa and adult. The larval stage is aquatic and has four instars, between hatching from the egg and becoming a pupa, shedding its exoskeleton (molting) at the end of each instar. The fourth instar is the most reliable juvenile instar for observing distinguishing features of the different genera and species. Midge larvae hold great potential for assessing the quality or "health" of freshwater ecosystems, as different species are adapted to a variety of different aquatic habitats and ecological conditions. Their extremely high diversity has a negative side, however, in that keys for large geographical areas require dauntingly large keys (e.g., the Ferrington & Berg (2008)). North American key just for the subfamily Orthocladiinae has 72 couplets) that often create uncertainty and frustration in the user, especially if there are inadequate illustrations to allow confirmation of an identification after having reached an endpoint in a key. Local checklists have great value in narrowing down candidate taxa to a manageable number. The primary purpose of this atlas is to provide beginners a checklist plus detailed pictorial record of midge larvae commonly encountered during water quality studies of Albertan wetlands.

This chapter includes a checklist of 40 genera in 4 subfamilies of chironomids identified by the author from samples collected by the Alberta Biodiversity Monitoring Institute (ABMI), a glossary describing critical features of chironomids and a description of morphological and

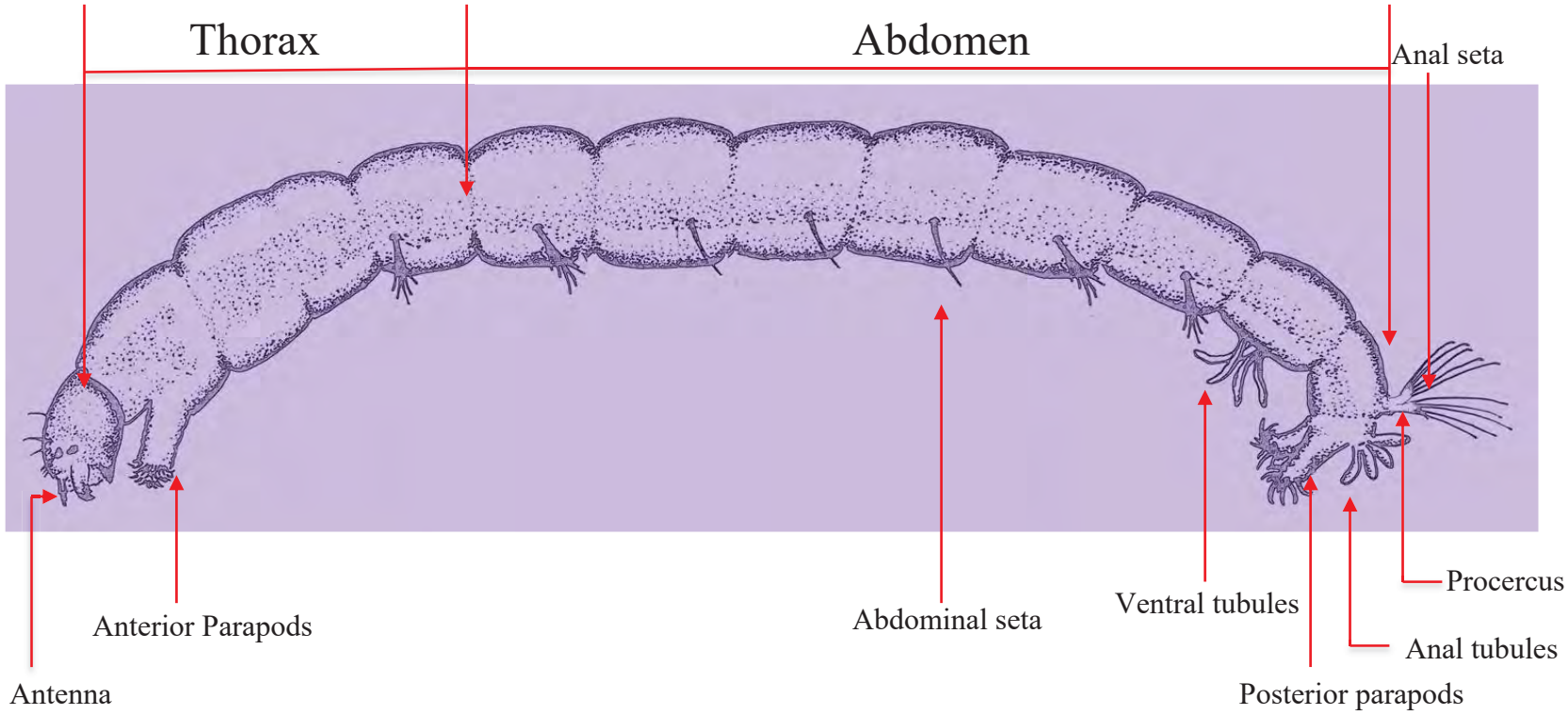
ecological features of each genus organized alphabetically by subfamily. The ABMI has reported a number of taxa not seen by the author, and no doubt over time will collect more; future version of the atlas can incorporate these additional subfamilies and genera.

Table 2.1. Checklists of Genera of Midge (Chironomidae) Larvae Reported from Alberta Wetlands

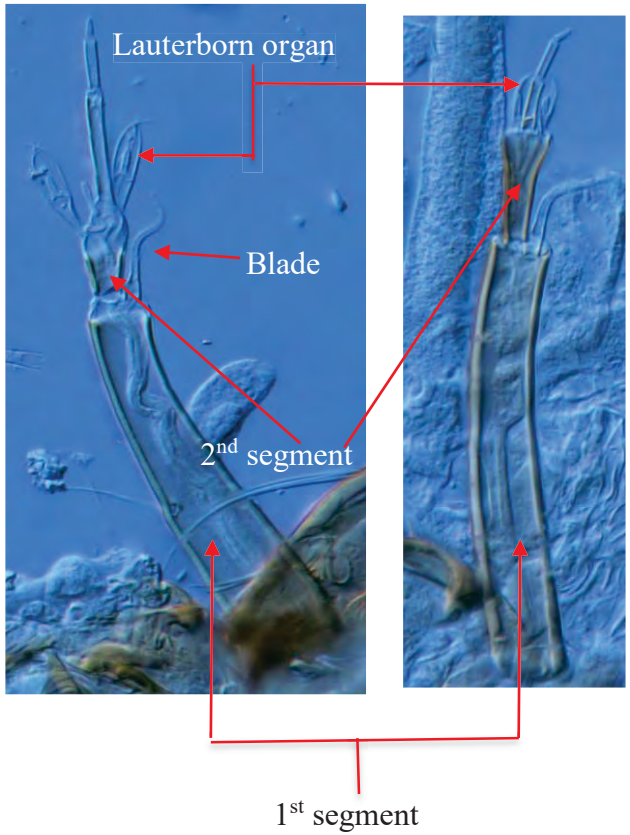
Chironominae	*Chironomus*
	Cladopelma
	Cladotanytarsus
	Cryptochironomus
	Cryptotendipes
	Dicrotendipes
	Einfeldia
	Endochironomus
	Glyptotendipes
	Lauterborniella
	Microtendipes
	Nilothauma
	Pagastiella
	Parachironomus
	Paracladopelma
	Paratanytarsus
	Phaenopsectra
	Polypedilum
	Pseudochironomus
	Rheotanytarsus
	Tanytarsus
Diamesinae	*Pothastia*
Orthocladiinae	*Acamptocladius*
	Acricotopus
	Corynoneura
	Cricotopus
	Limnophyes
	Nanocladius
	Orthocladius
	Paracladius
	Parakiefferiella
	Psectrocladius
	Zalutschia
Tanypodinae	*Ablabesmyia*
	Derotanypus
	Labrundinia
	Procladius
	Psectrotanypus
	Tanypus
	Thiemannimyia group

2.2 Glossary

Lateral view of a whole larva redrawn from Simpson and Bode (1980) :



Antennae:

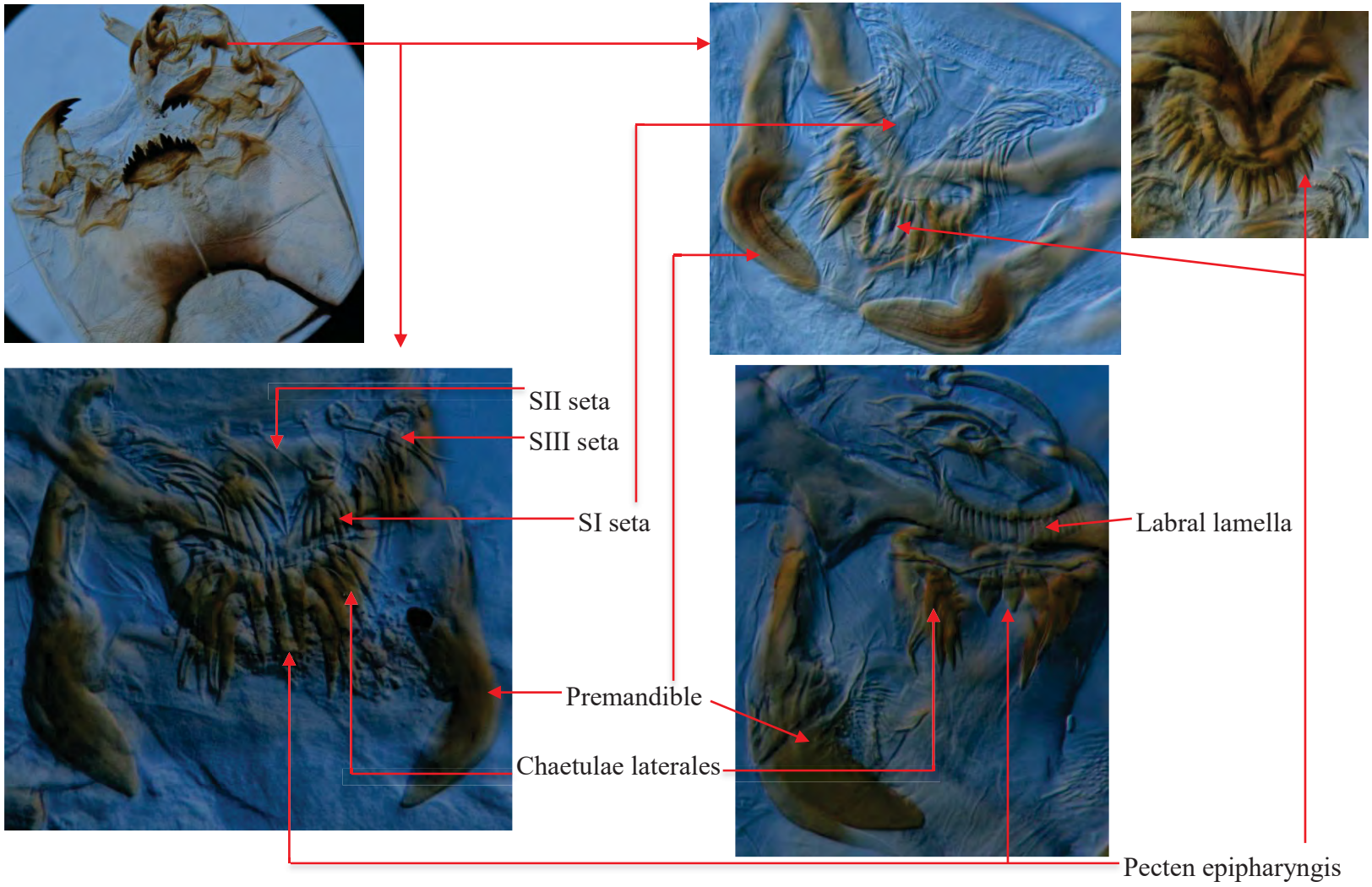


3rd segment annulated in Diamesinae

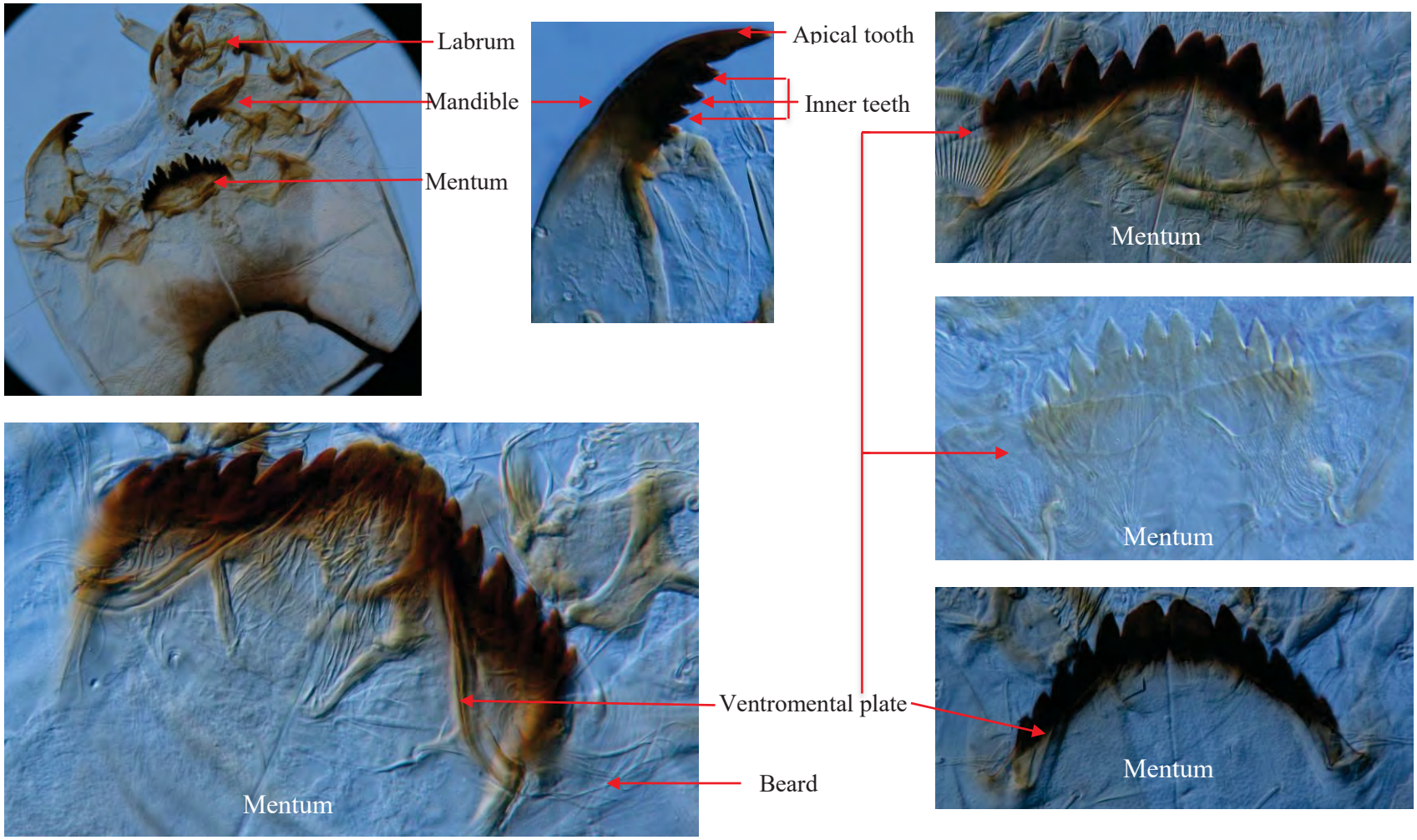
Antenna retractable in Tanypodinae

Antennal ratio refers to the ratio of the length of the first antennal segment divided by the length of the combined apical segments (i.e. the **flagellum**).

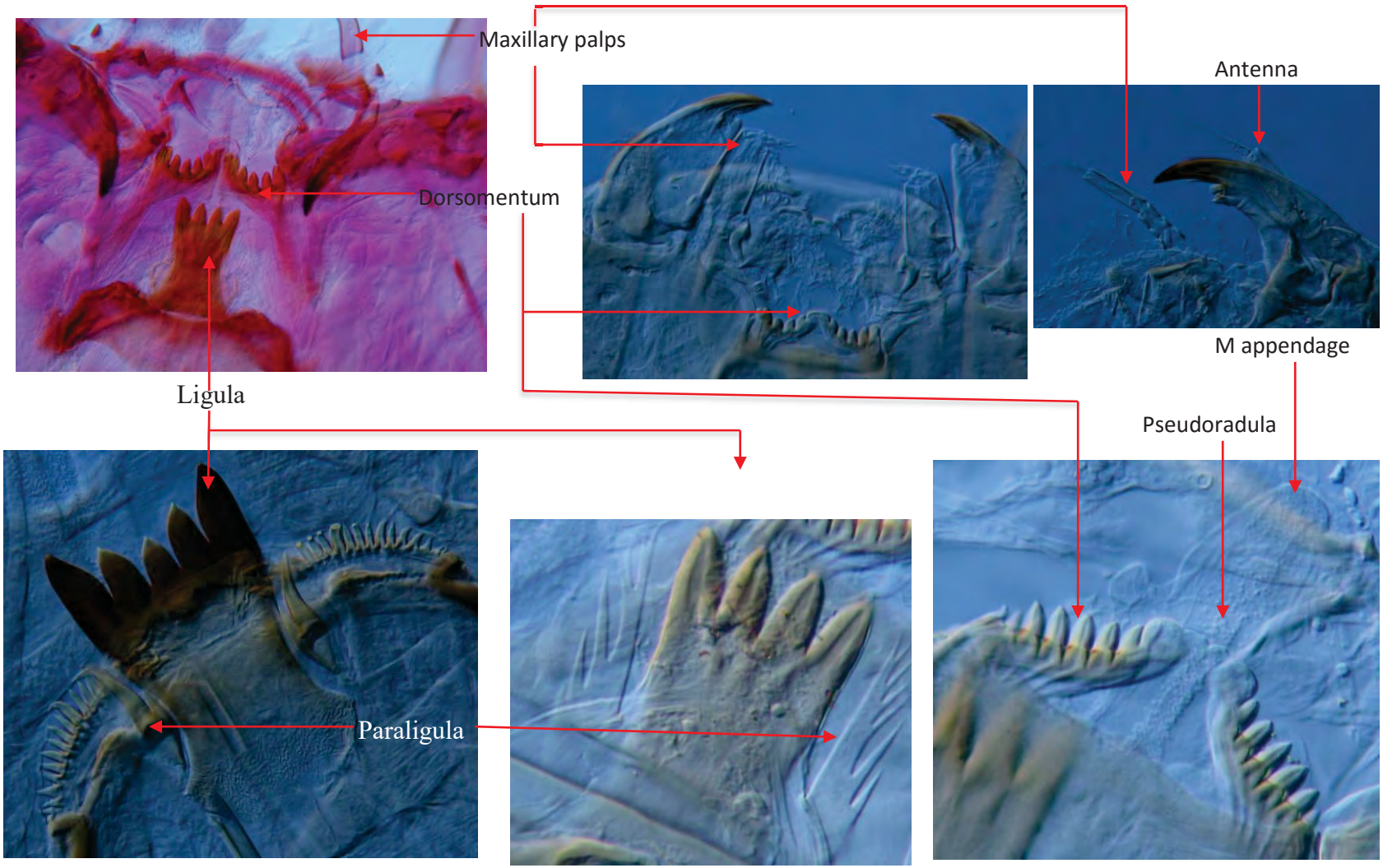
Head anterior to the mouth opening:



Head behind the mouth opening (except in Tanypodinae):



Head behind the mouth opening (Tanypodinae):



Dorsal head:

Labral sclrites

Frontal pit

Frontal apotome

Apotomal fenestra