

Vücut segmentasyonu

Sclerites - hardened plates



Vücut segmentasyonu

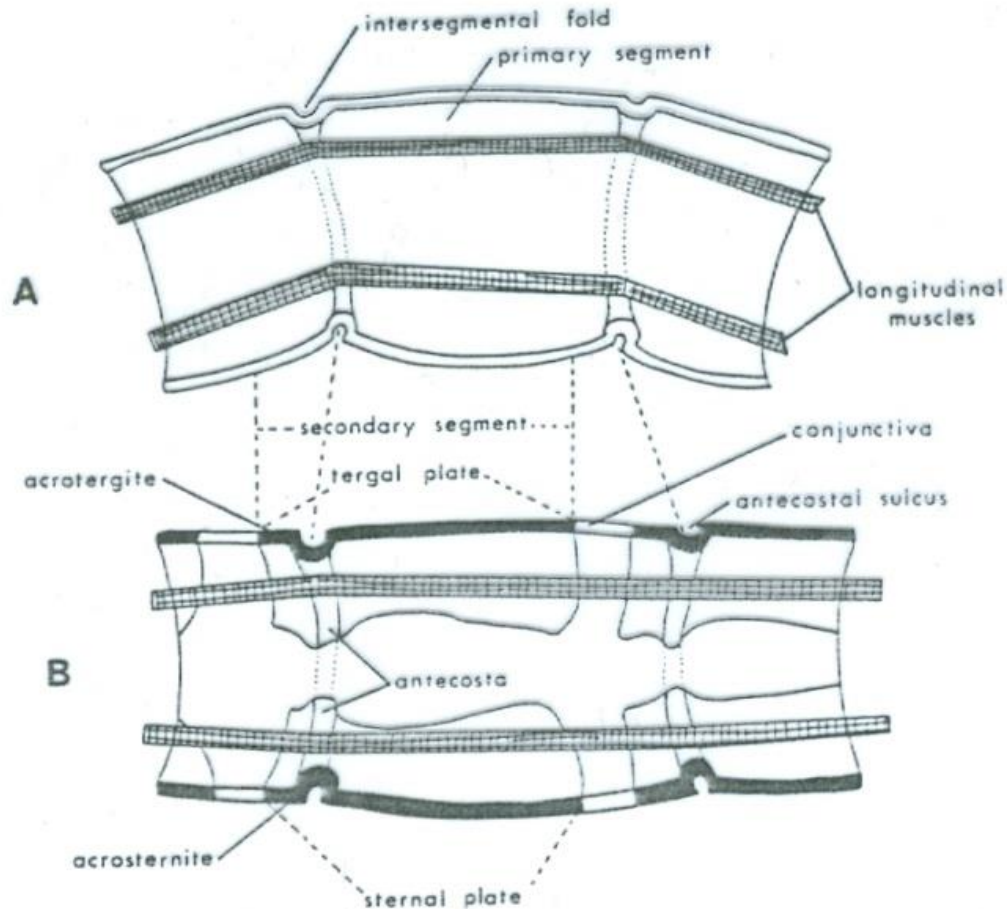


FIGURE 3.2. Types of body segmentation. (A) Primary and (B) secondary. [From R. E. Snodgrass, *Principles of Insect Morphology*. Copyright 1935 by McGraw-Hill, Inc. Used with permission of McGraw-Hill Book Company.]

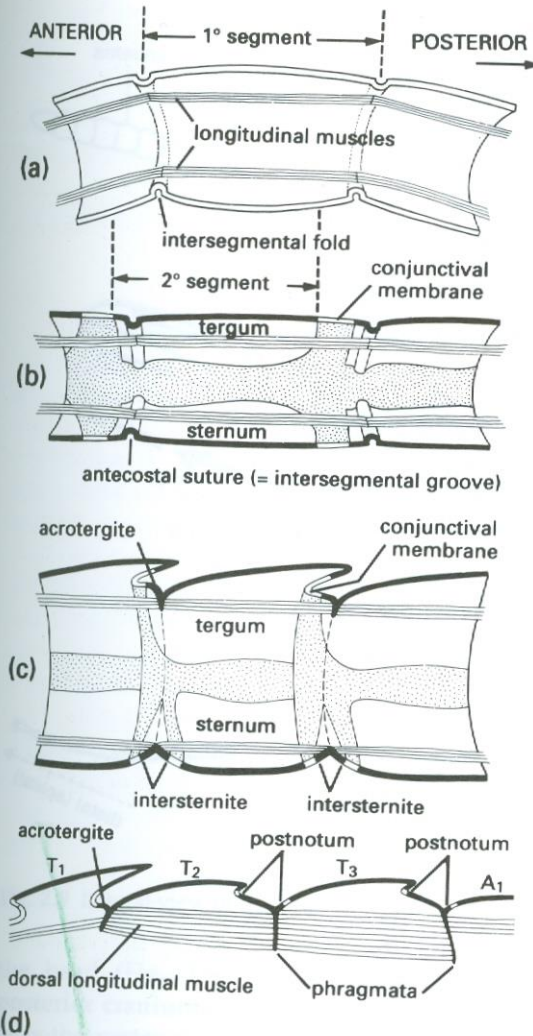
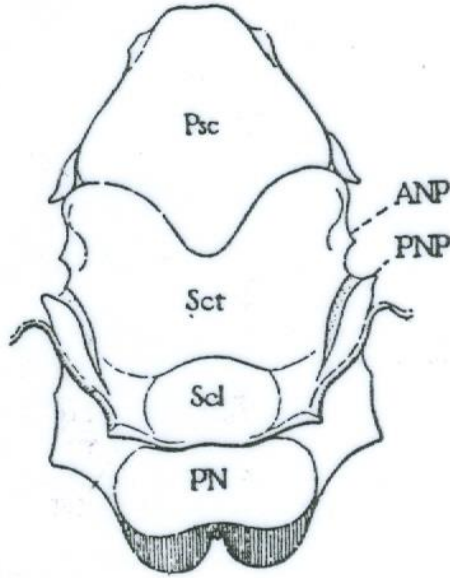


Fig. 2.7 Types of body segmentation: (a) primary segmentation, as seen in soft-bodied larvae of some insects; (b) simple secondary segmentation; (c) more derived secondary segmentation; (d) longitudinal section of dorsum of the thorax of winged insects, in which the acrotergites of the second and third segments have enlarged to become the postnota. (After Snodgrass, 1935.)

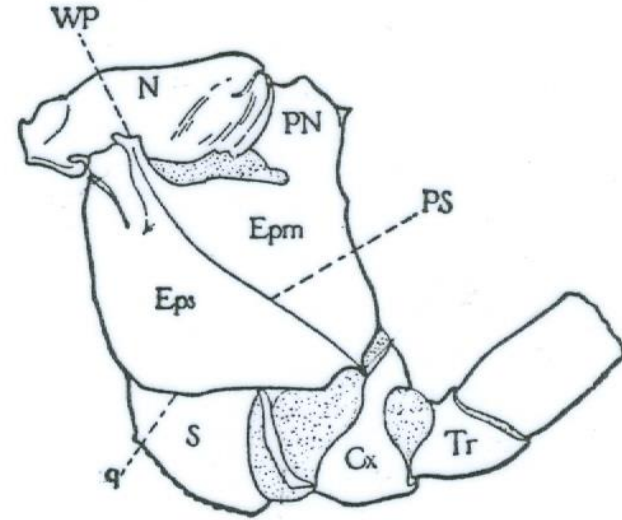
Vücut segmentasyon şekilleri

Toraksik skleritler



Şekil 11. *Tupilidae* mesotergumunda notumun bölümleri (Psc, Sct ve Scl) ve arkasında postnotum (PN).

ANP. anteriör notal kanat çıkıntısı, PN. postnotum, PNP. posterior notal kanat çıkıntısı, Psc. Prescutum, Scl. scutellum, Sct. scutum .(Snodgrass'dan).

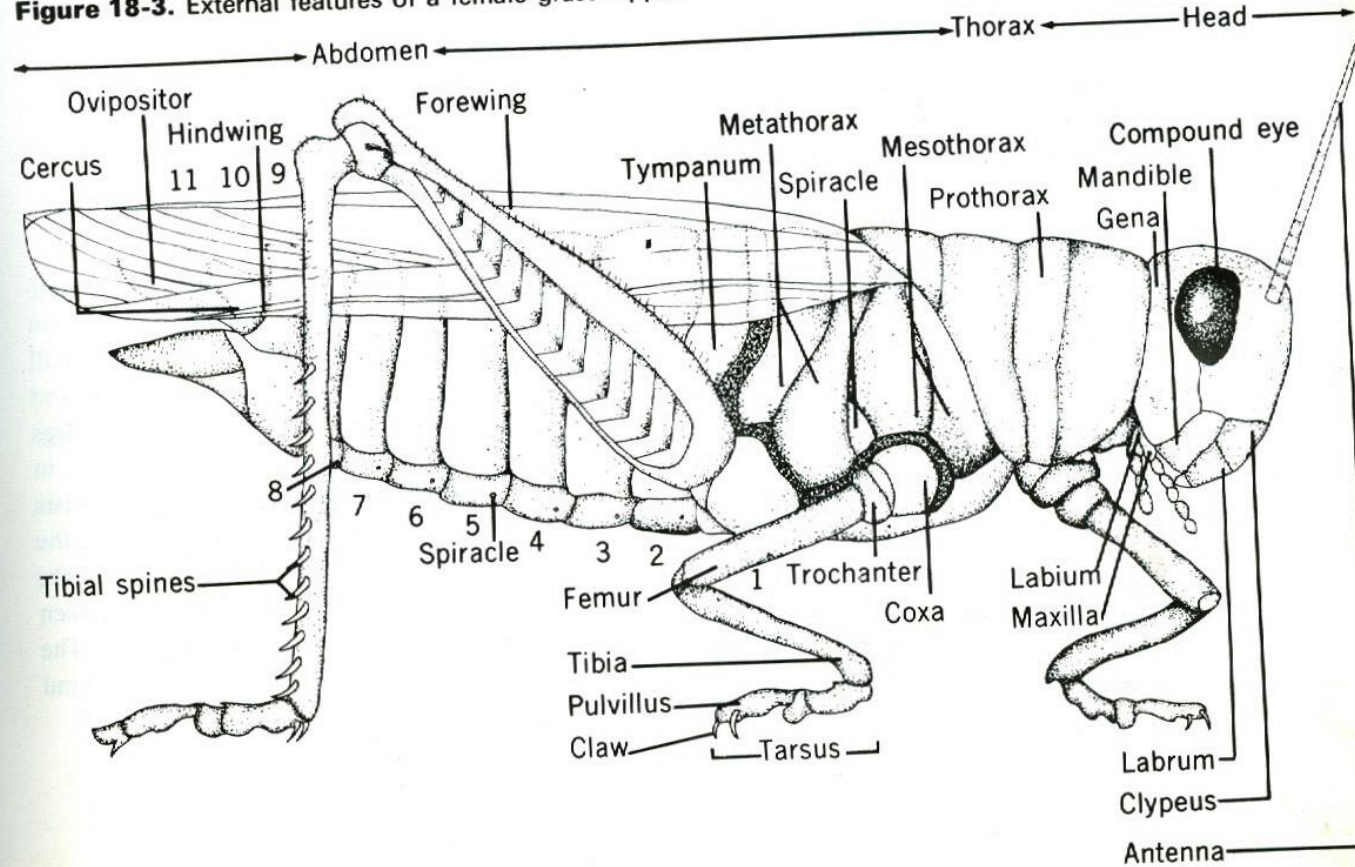


Şekil 12. Taş sineğinde metatoraks.

Epm. epimeron, Eps. episternum, N. notum, PN. postnotum, PS. pleural sulcus, q. sternopleural stur, Cx. coxa, Tr. trochanter, S. sternum, WP. pleural kanat çıkıntısı (Snodgrass).

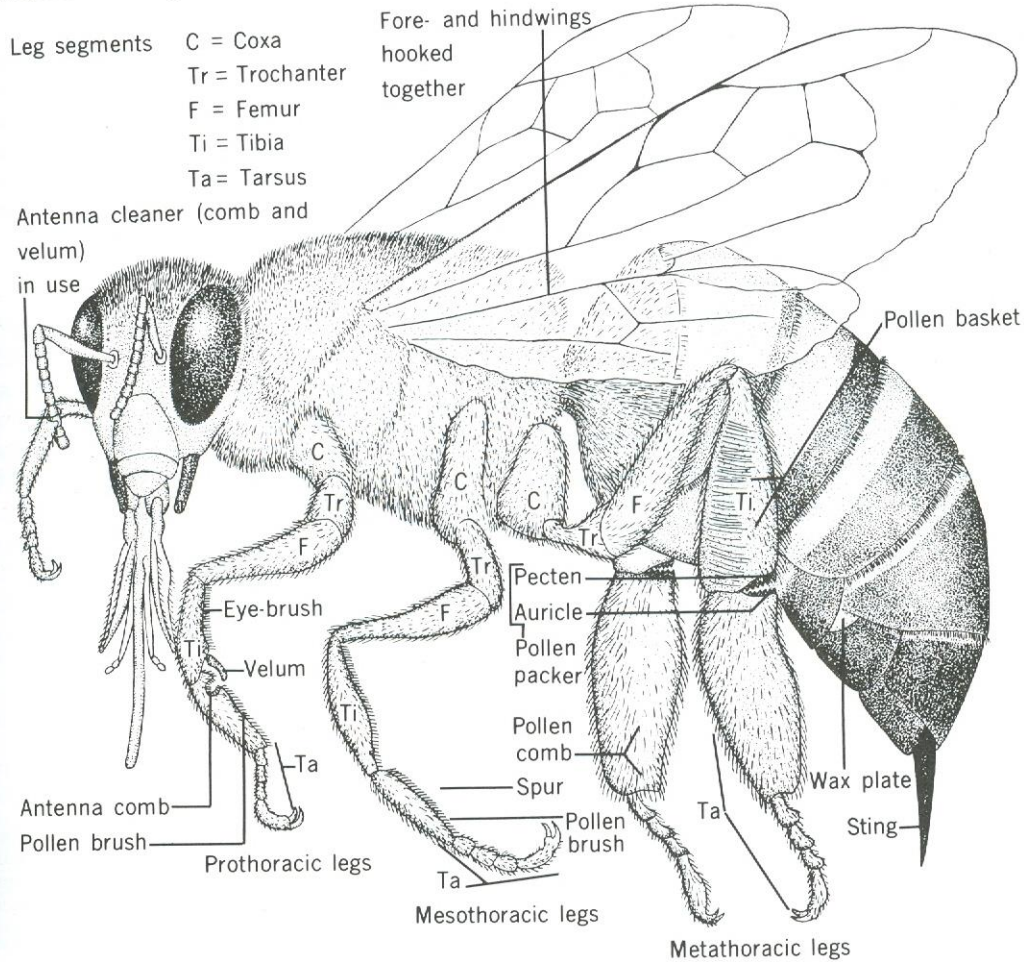
Vücut eklentileri : Bacaklar, Antenler, Dış genital organlar

Figure 18-3. External features of a female grasshopper.



Vücut eklentileri

Figure 18-15. Bee adaptations. Legs of the honeybee worker show many of the structural modifications for gathering pollen, manipulating wax, and cleaning the antennae.



Vücut eklentisi bacakların eklem yerleri

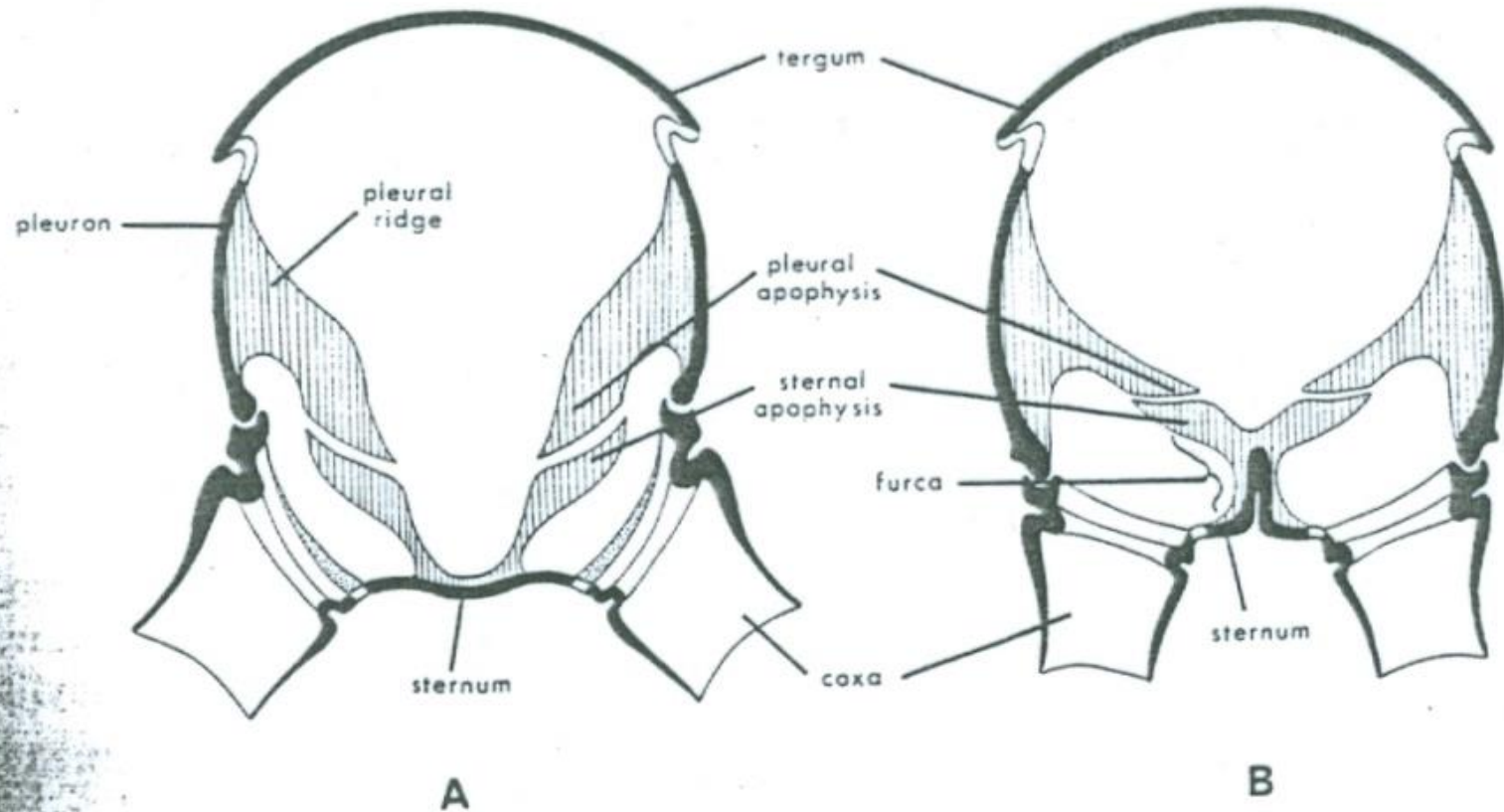


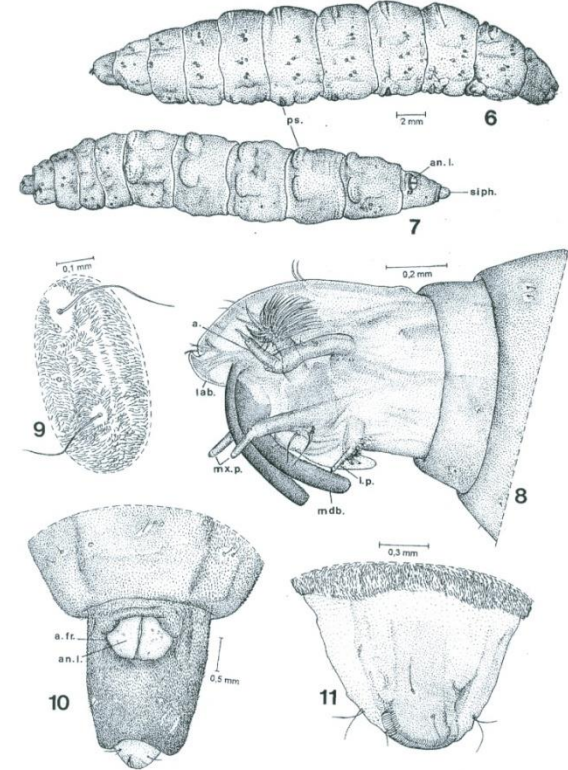
FIGURE 3.19. Diagrammatic cross sections of the thorax to show the endoskeleton. (A) Normal condition and (B) condition when furca present. [From R. E. Snodgrass, *Principles of Insect Morphology*. Copyright 1935 by McGraw-Hill, Inc. Used with permission of McGraw-Hill Book Company.]

Vücut çıkıntıları

a- Pseudopod



Dipter larvası



Sribasomus theatoensis, larva. Figs 6-7: general aspect in lateral and ventral view respectively (ps.: pseudopodia; an.l.: anal lobes; siph.: siphon). Fig. 8: head partially projected (a.: antenna; lab.: labrum; mx.p.: maxillary palp; mdb.: mandible; lp.: labial palp). Fig. 9: body trichomes and microtrichia. Fig. 10: anal segment and siphon in lateral view. Fig. 11: apex of siphon in lateral view (Figs 6 and 7 with same scale), (drawings was based on late stage larvae collected 7 km south from Formosa city).

b – Scoli (Dikensi çıkıntılar)

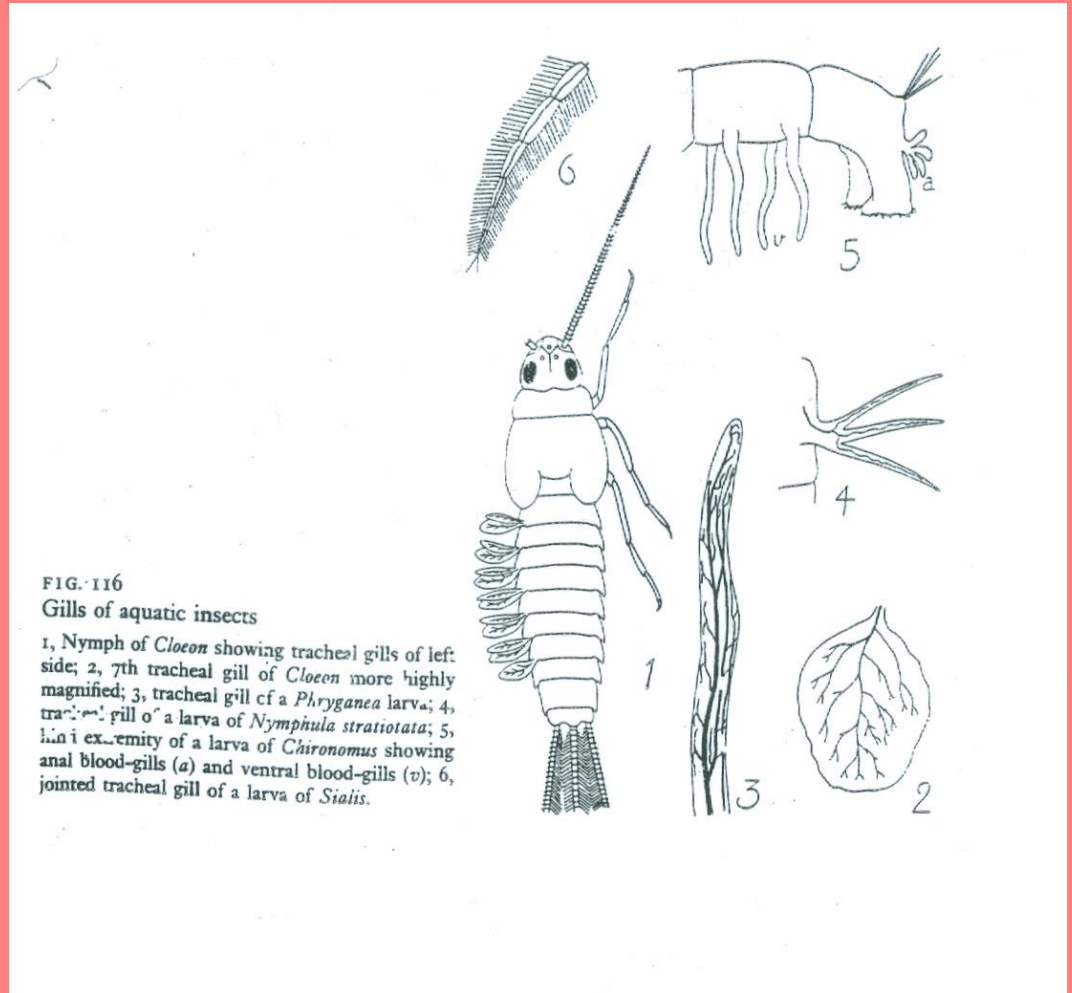
Nymphalidae



Saturnidae



c - Solungaç

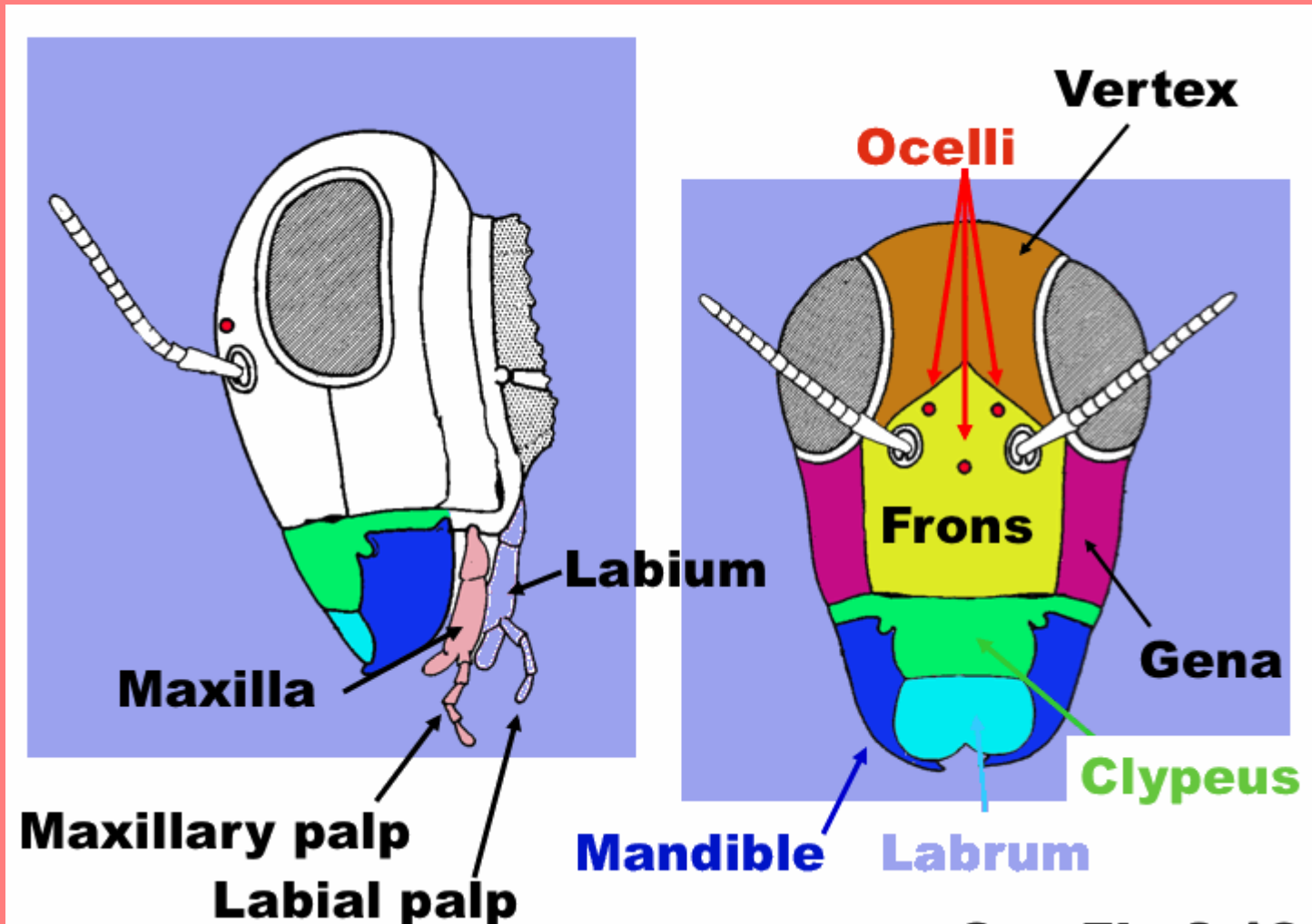


Ephemeroptera

d - kanatlar



Baş bölümleri



Prognath



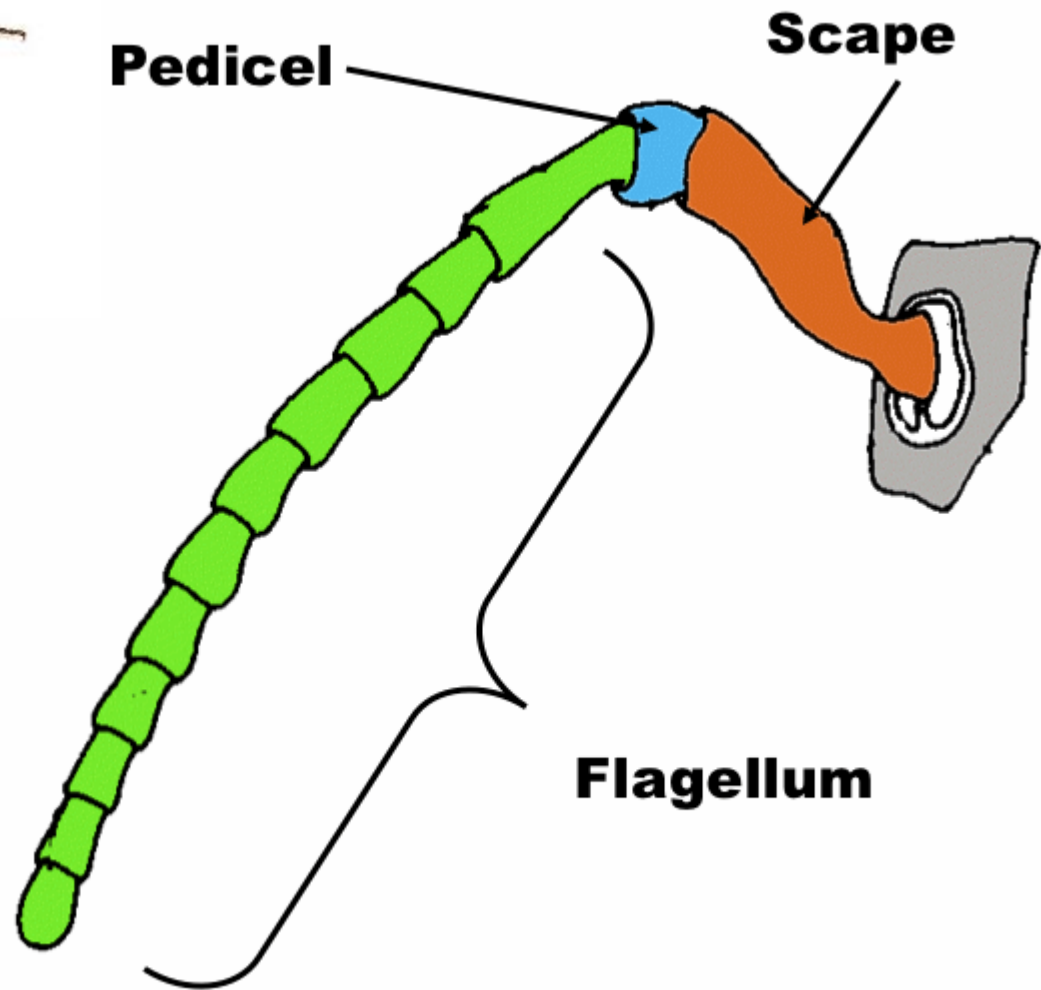
Hypognath



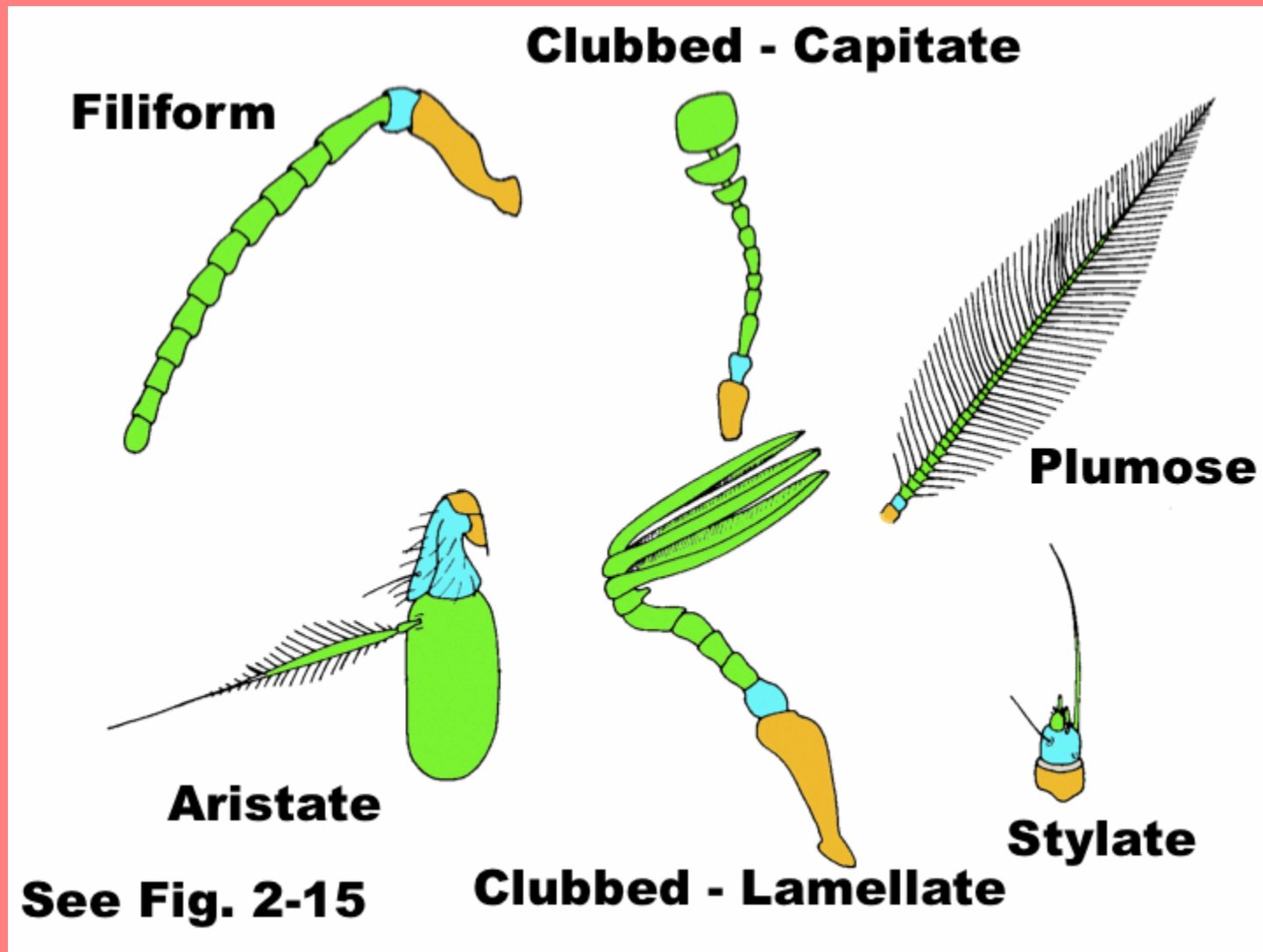
Opistognath



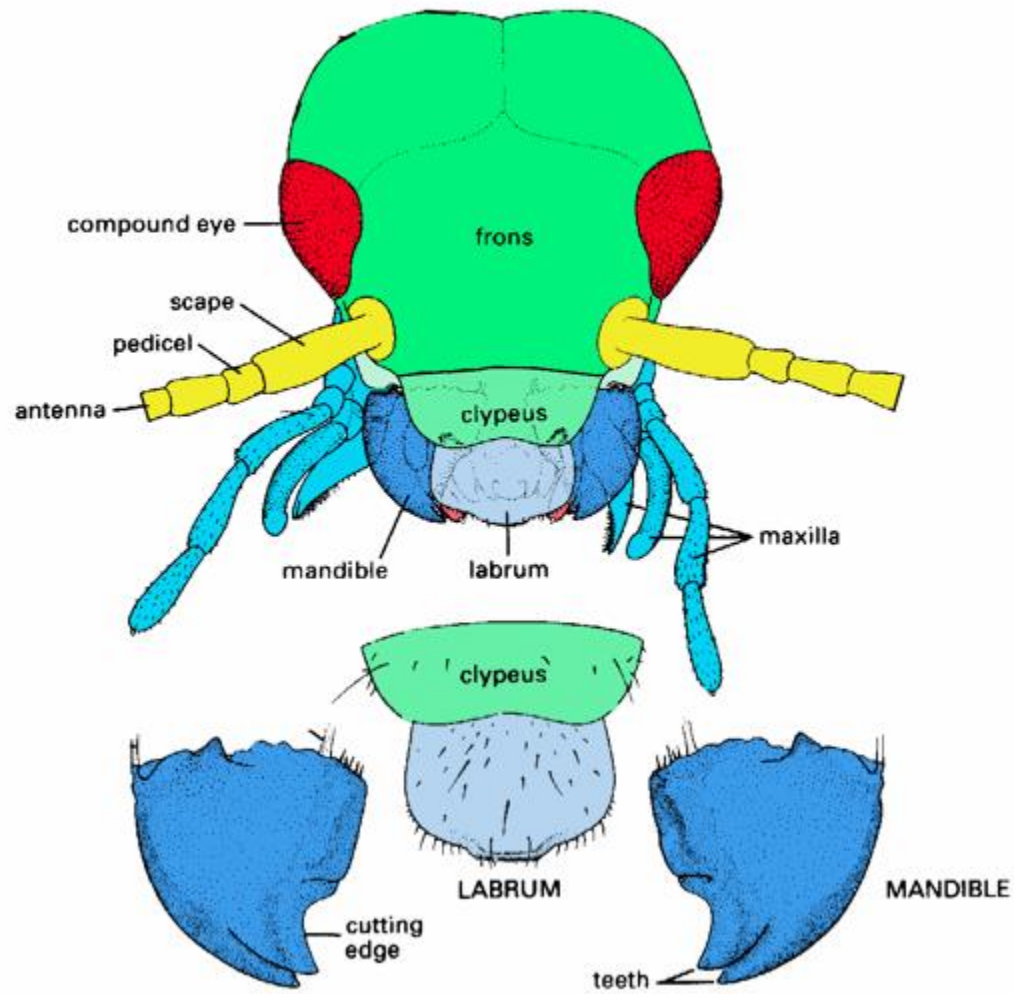
Anten



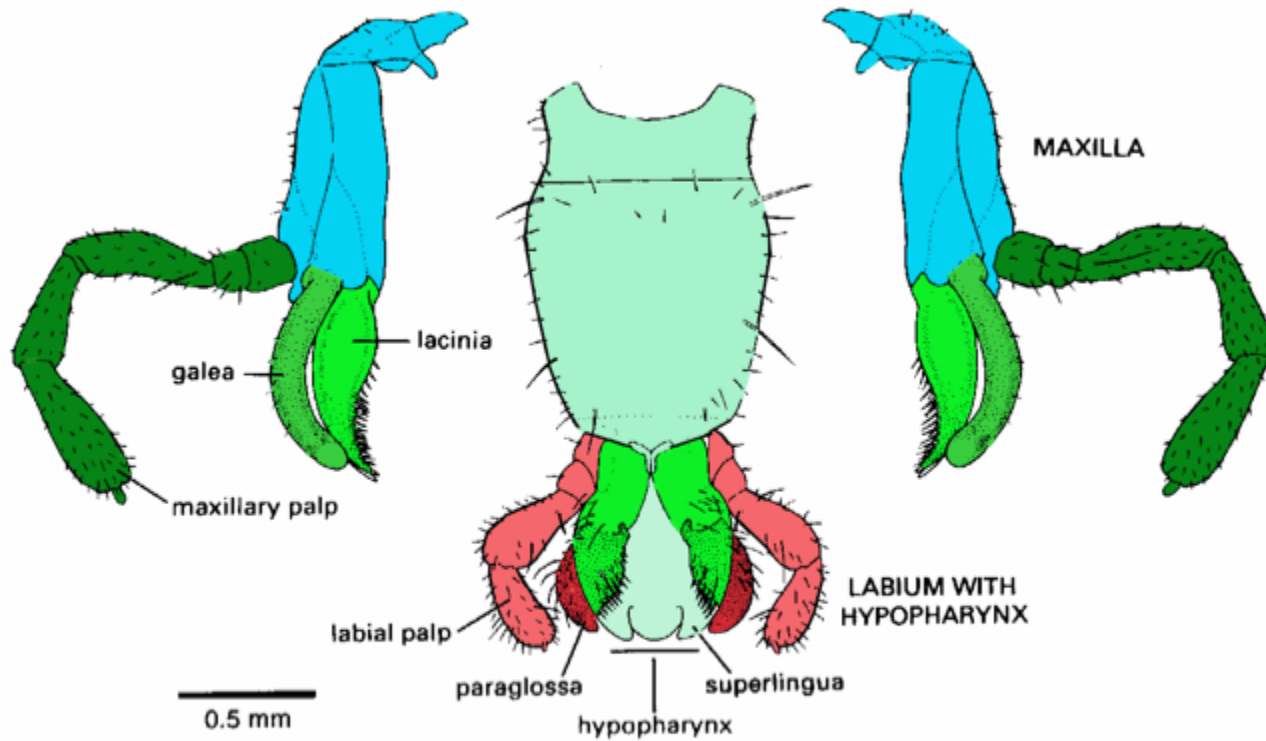
Bazı anten tipleri



Ağız organları



Çiğneyici – ısıricı ağız organı





Sokucu - emici ağız organı



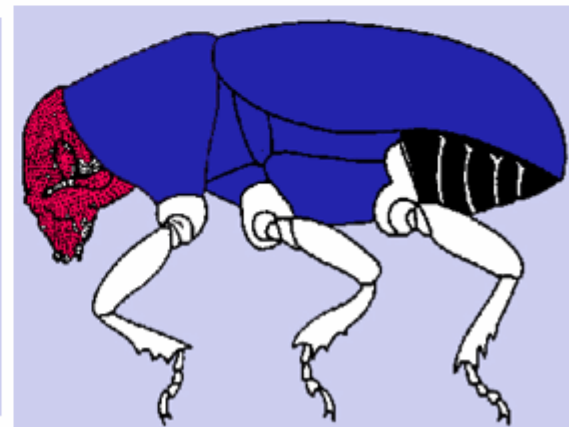
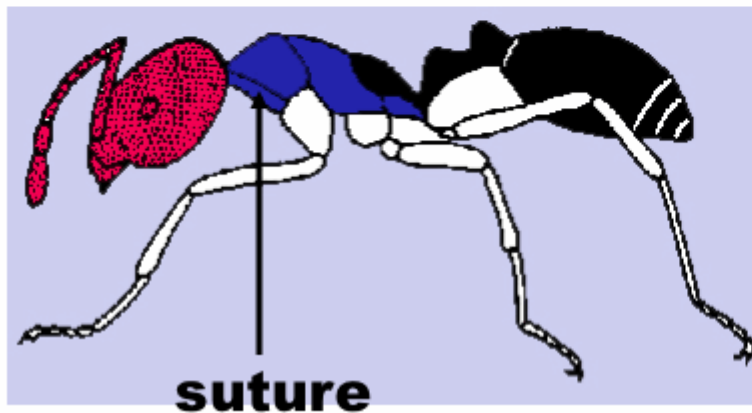
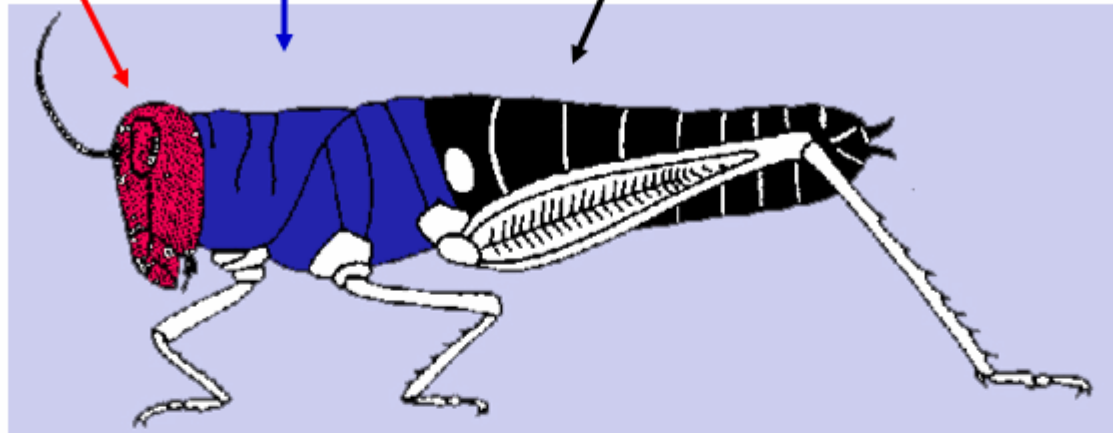
Emici ağız organı



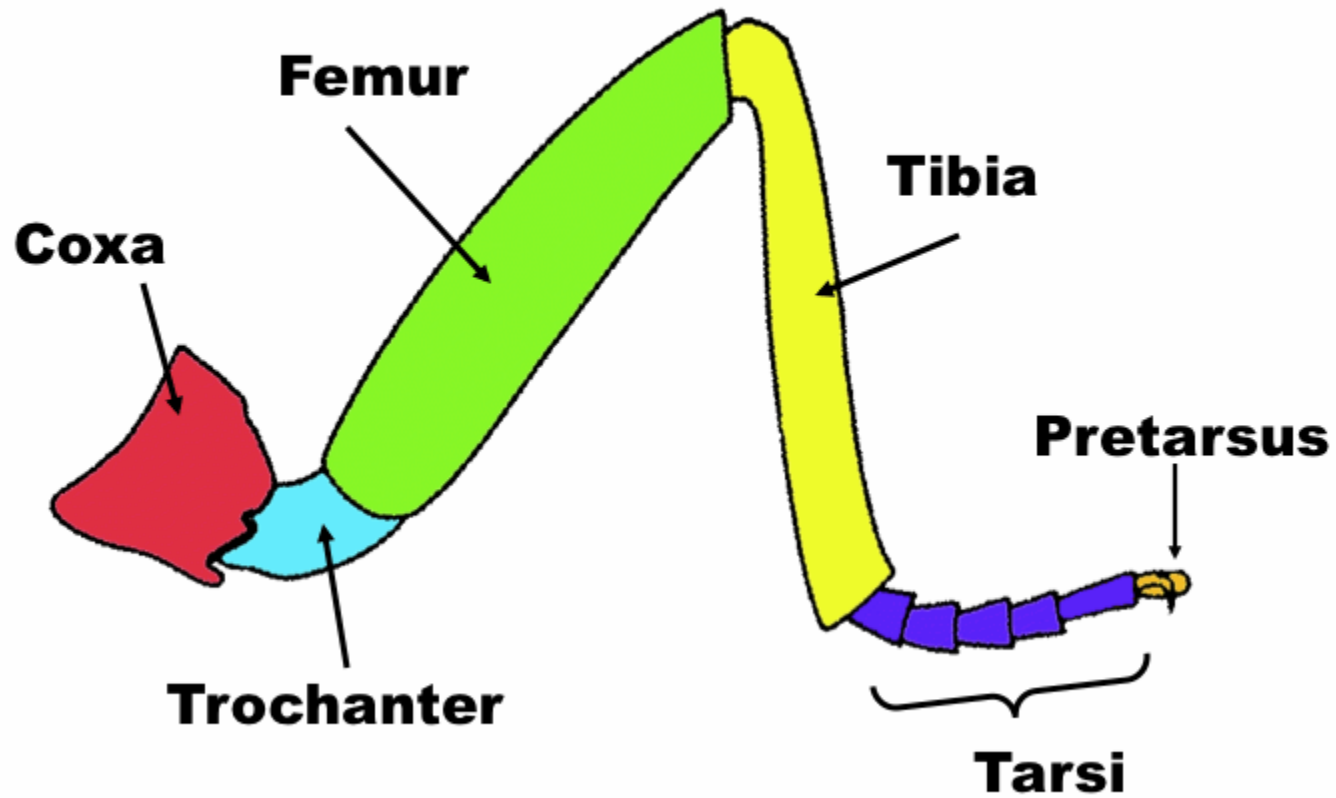
Böcek baş segmentasyonu

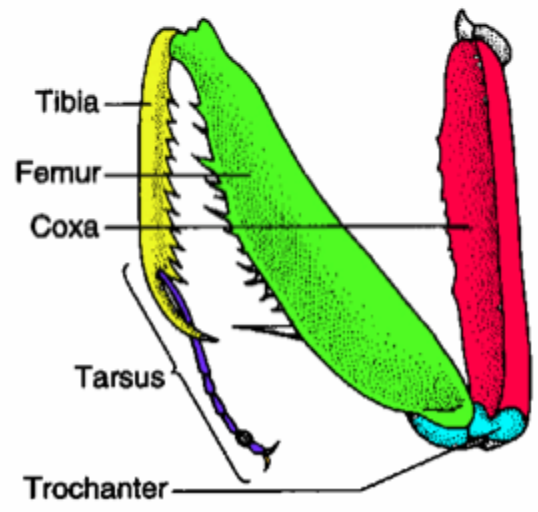
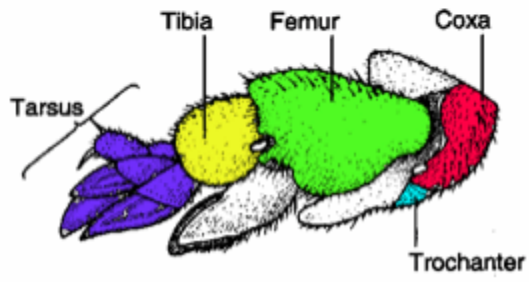
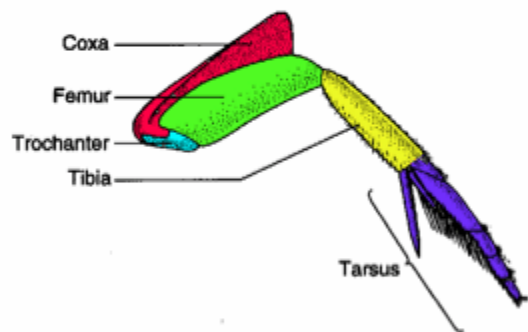
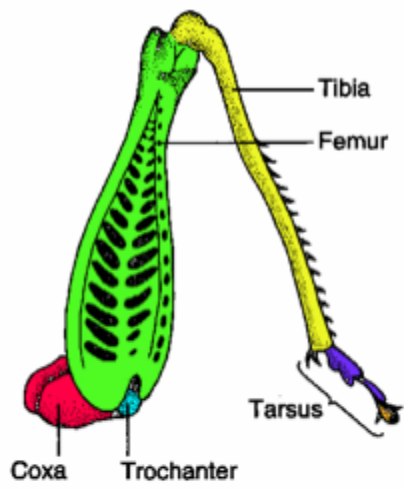
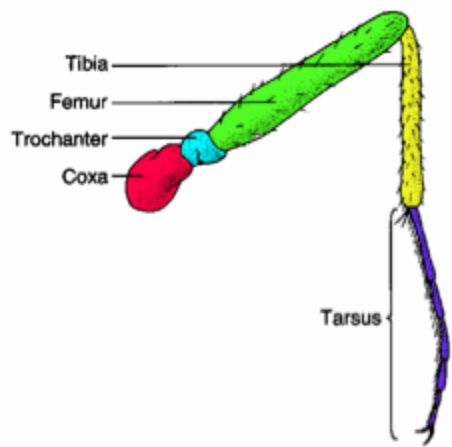
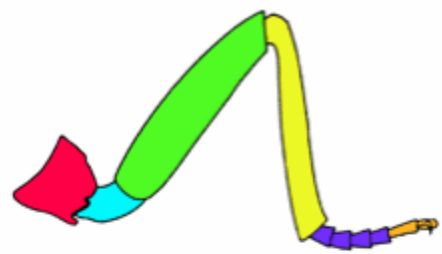
Segment	Neuromer	Sölom kesesi	Eklenti
Preantennal +Akron	Protoserebrum	Bazılarında var	Yok
Antennal	Deutoserebrum	Var	Antenler
Premandibular	Tritoserebrum	Yok	Embriyonik
Mandibular	Mandibular gang.	Var	Mandibül
Maxillar	Maxillar gang.	Var	I. maxil
Labial	Labial gang.	Var	II. maxil

Head **Thorax** **Abdomen**

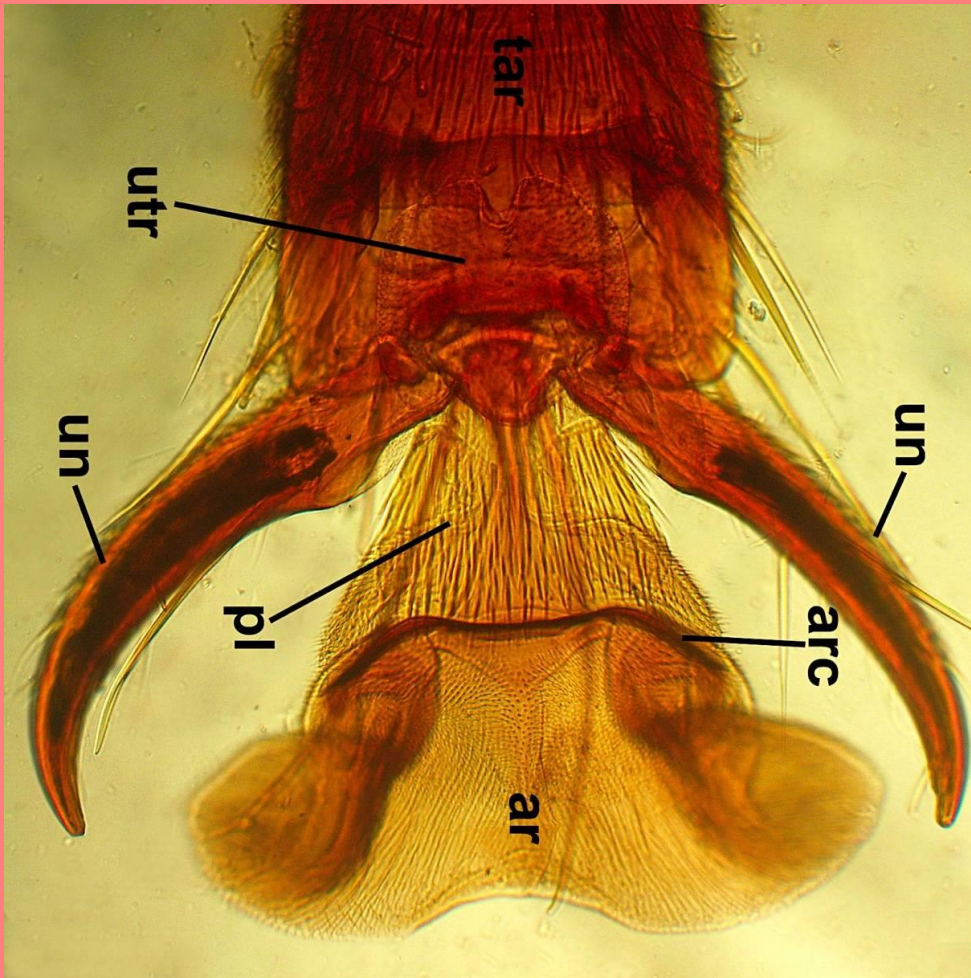


See Fig. 2-8

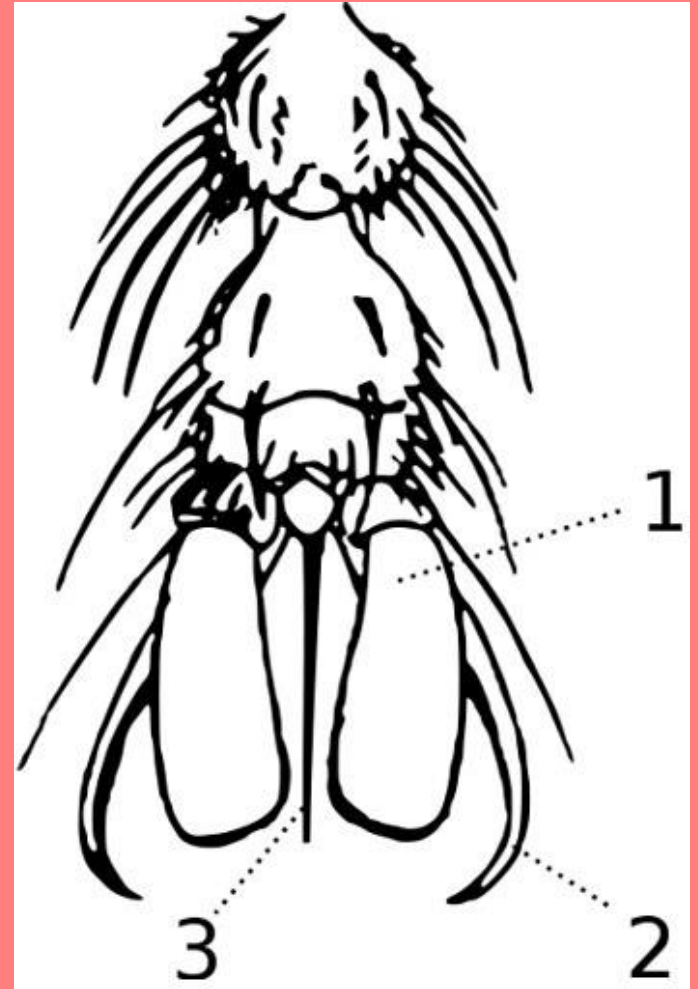




Pretarsus - Diptera



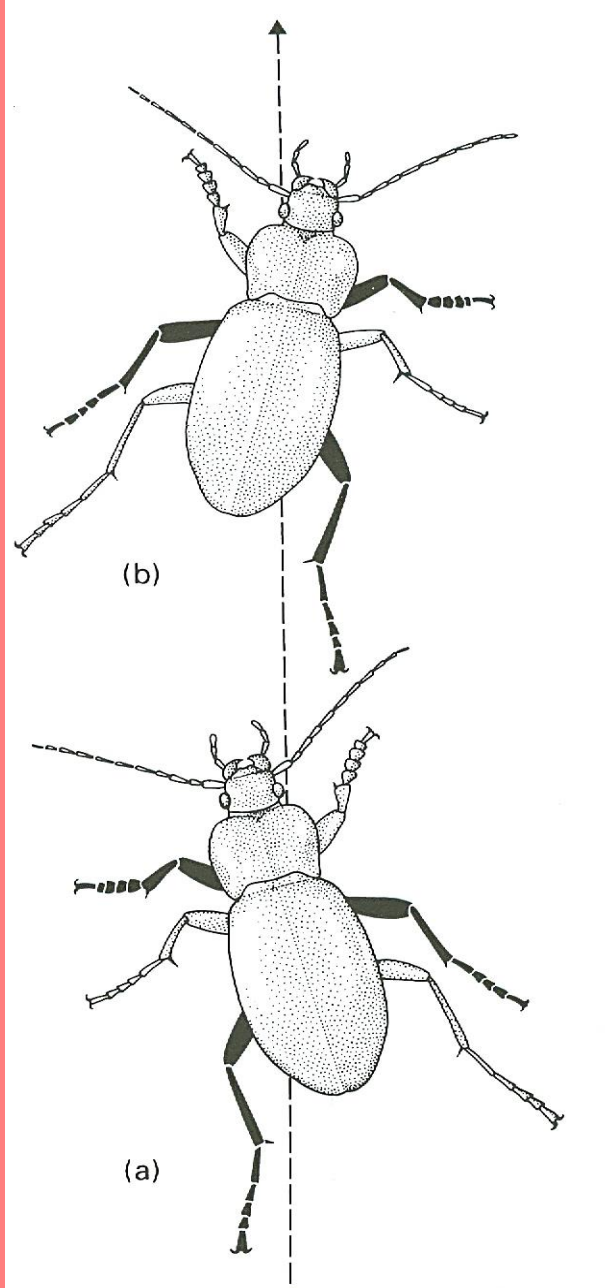
Tırnaklar ve arolium



Tırnaklar, Pulvillus, empodium



***Siphonaptera* - Pretarsus**



Böceklerde hareket pozisyonları

Kanat Morfolojisi

a-b= Costa (Anteriör)

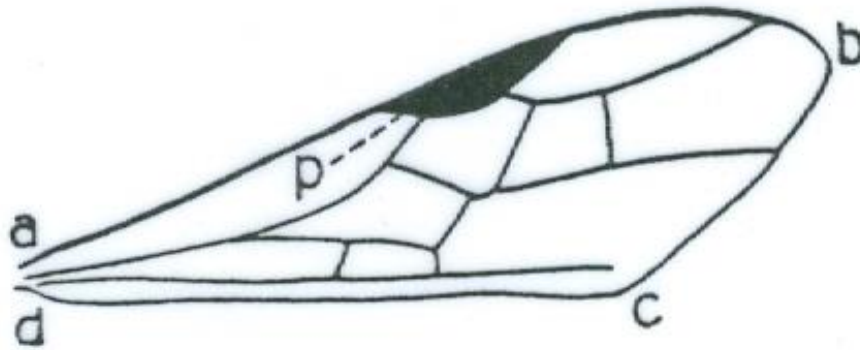
b-c=Apikal kenar (dış kenar)

c-d=Anal kenar (iç kenar)

a) Humeral köşe

b) Apex

c) Anal köşe-Tornus

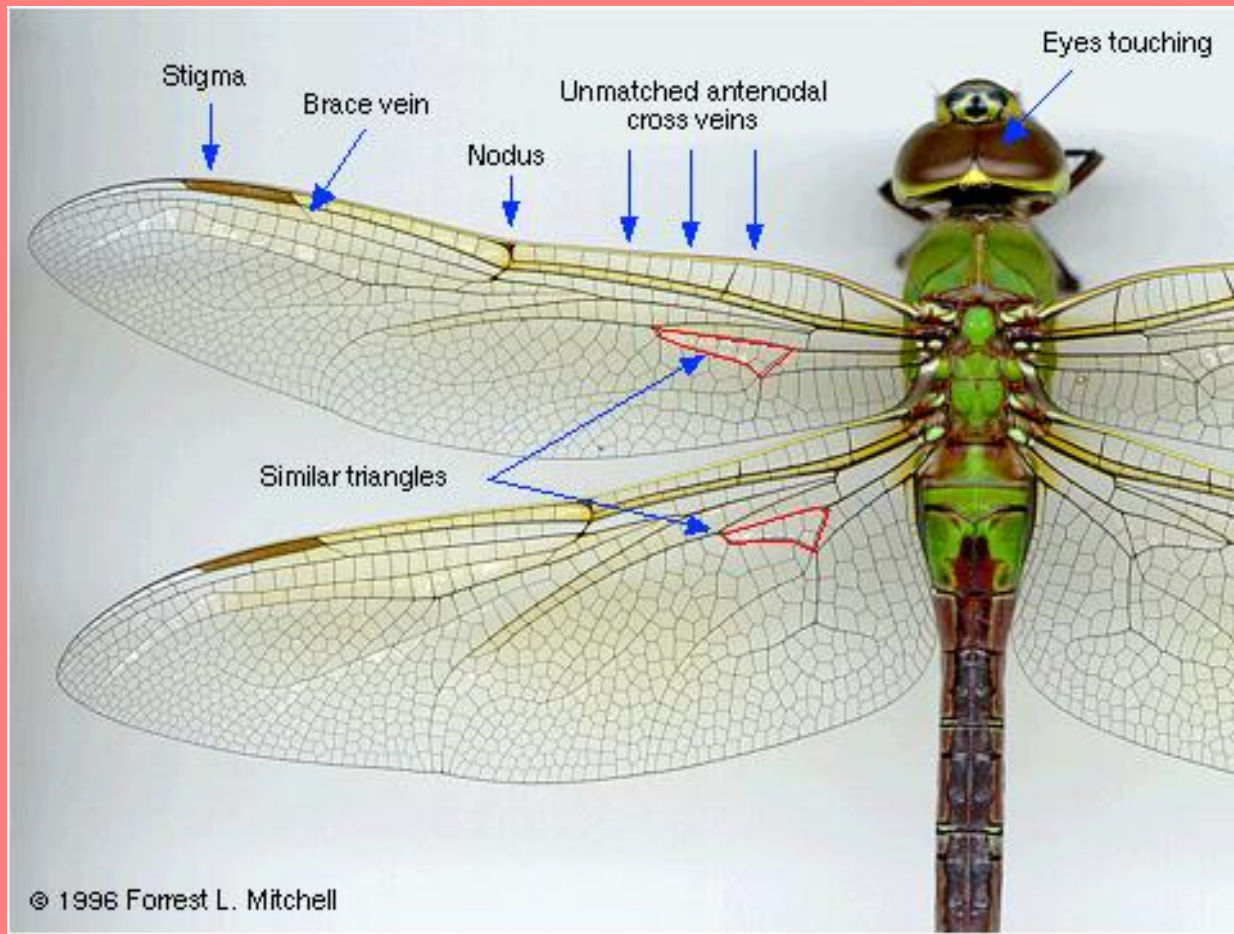


*Şekil 16. Bir Hymenopter kanadı
(Açıklamalar metin içinde verilmiştir).*

p. pterostigma (Imms' den).



Hymenoptera - Formicidae



Odonata

Kanat modifikasyonları

Atasal kanatsızlık



Protura



Diplura



Collembola



Thysanura

Segonder olarak kanat kaybına uğrayan gruplar



Mallophaga



Isoptera



Siphunculata



Siphonaptera

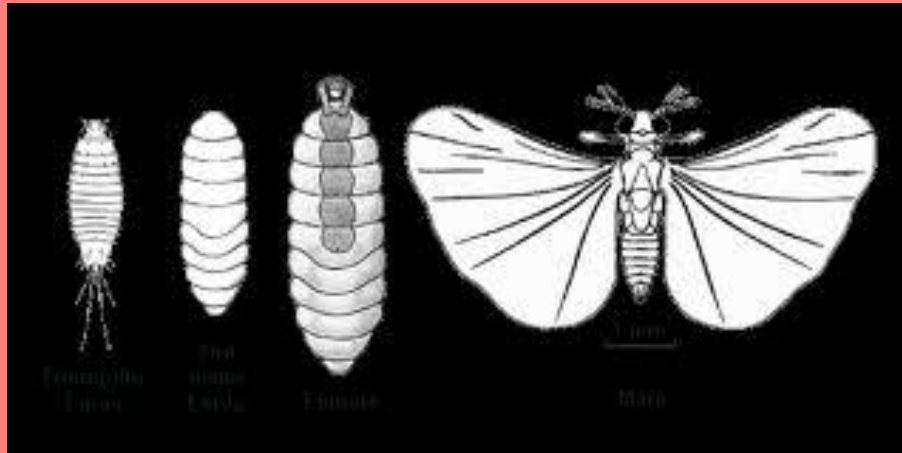


Hymenoptera

Dişileri kanatsız olanlar



Homoptera - Coccoidae



Strepsiptera

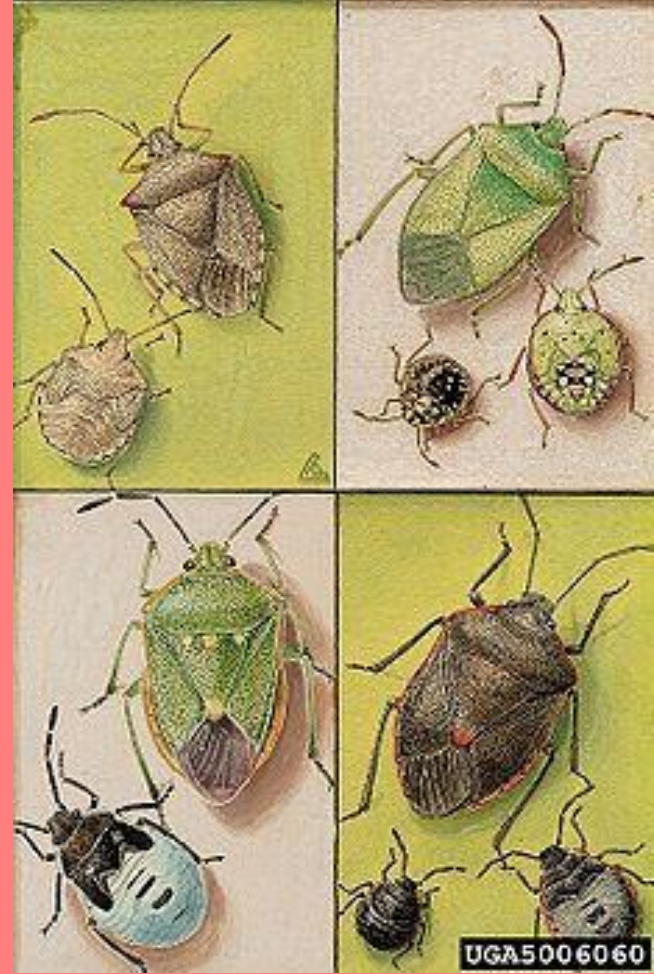


Embioptera

Arka kanatları **halter** organı şeklinde



Ön kanatların kaide kısmı **hemelitra** halinde



Ön kanatlar sert – kitinimsi **elitra** halinde



Ön kanatlar sertleşmiş – derimsi **tegmina** halinde



← ↑
Dichtyoptera

Arka kanatlar atrofiye olmuş (uçma fonksiyonunu kaybetmiş)

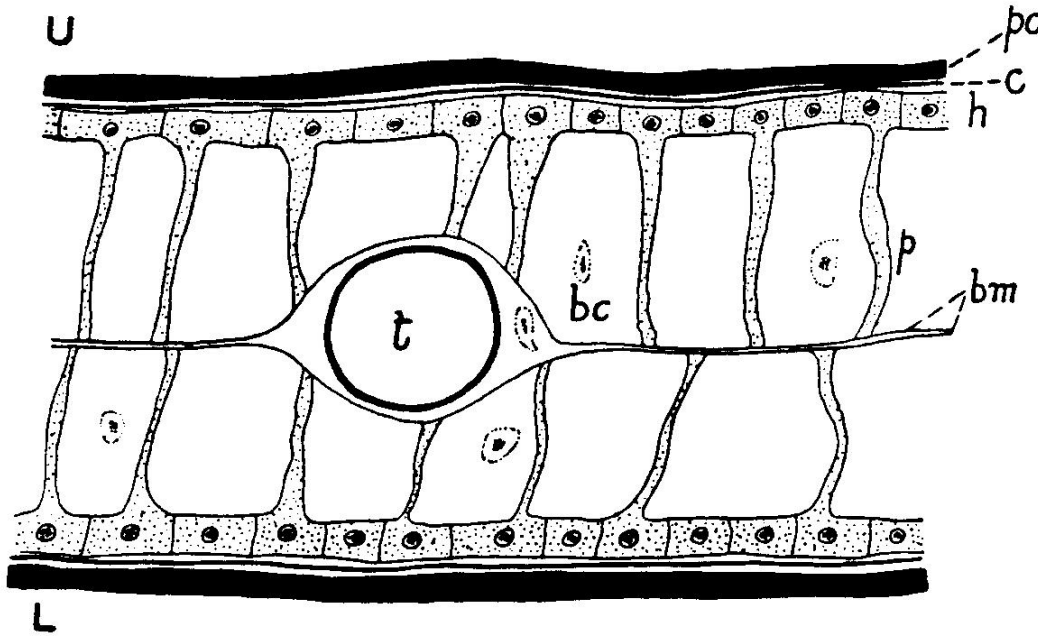


Carabidae



Curculionidae

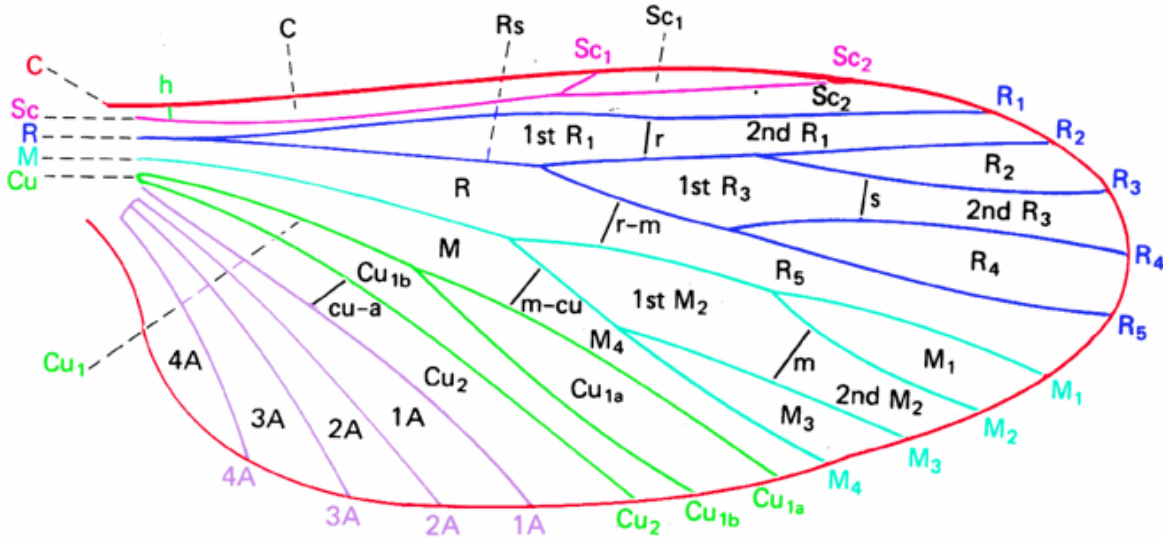
Kanat gelişimi



Şekil 19. Pupa safhasında bir böcek kanadından enine kesit.

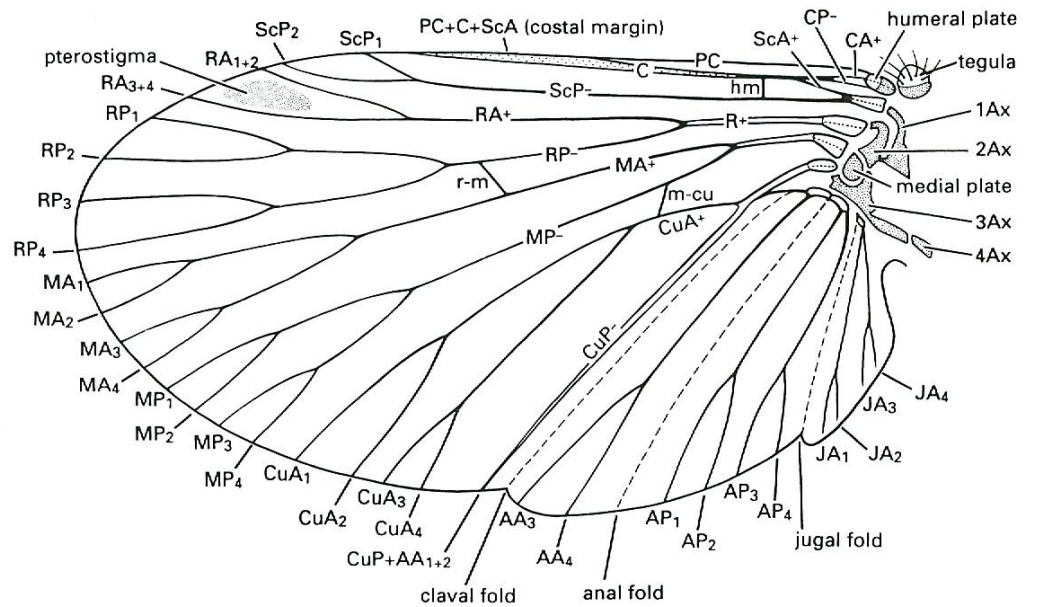
U. üst yüzey, L. alt yüzey, pc. pupal kutikula, c. gelişmekte olan kanat kutikulası, h. kanat epidermisi, p. epidermal hücre uzantısı, t. gelişen damar boşluğundaki trake, bc. kan korpüskülü, bm. basal membran (Imms'den).

Kanat damarları ve kanat katlanmaları



C = costa
Sc= subcosta
R= radius
M=media
Cu=cubitus
A=Anal

Kanat terminolojisi (Adlandırma)



Kanat bağlantıları

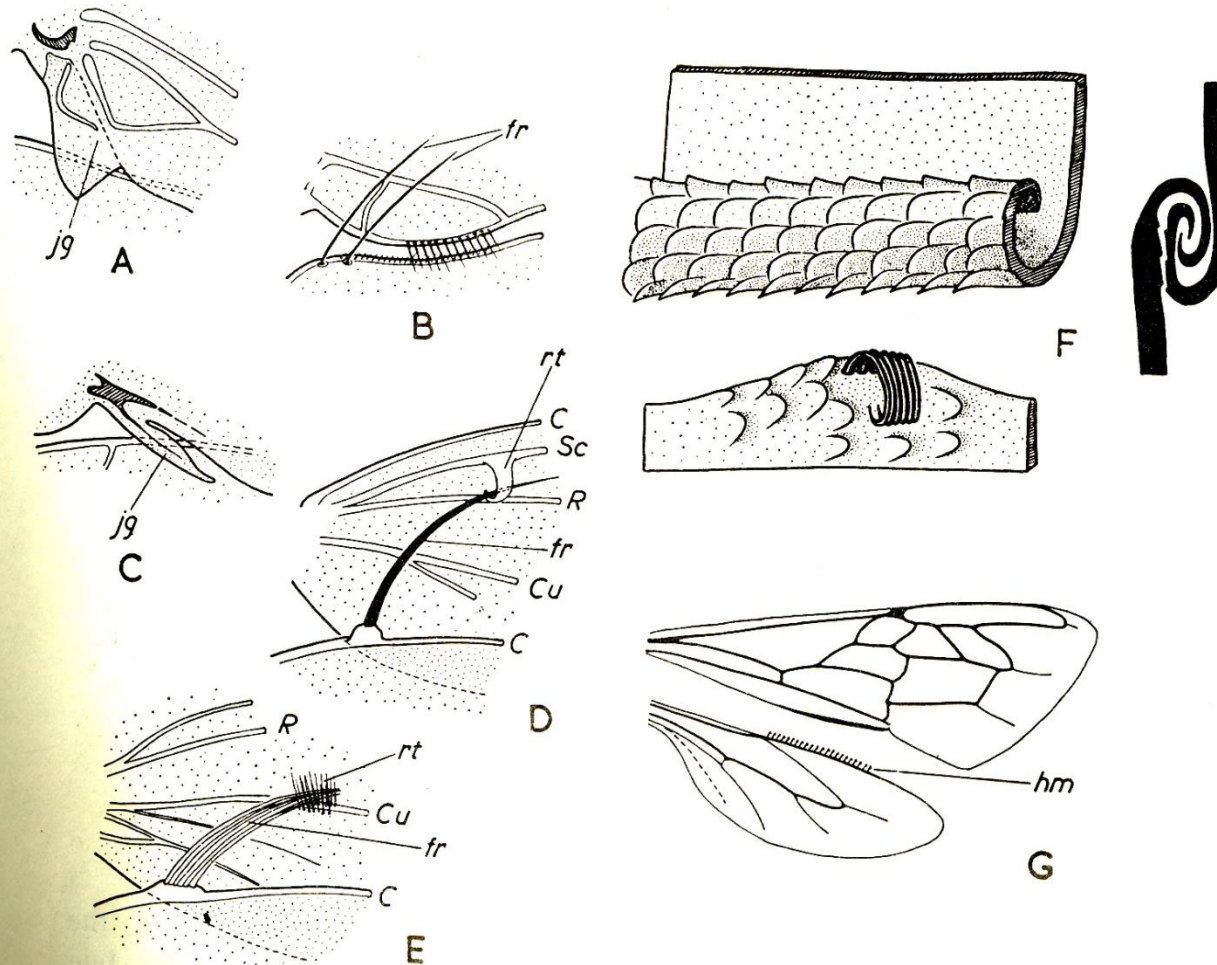
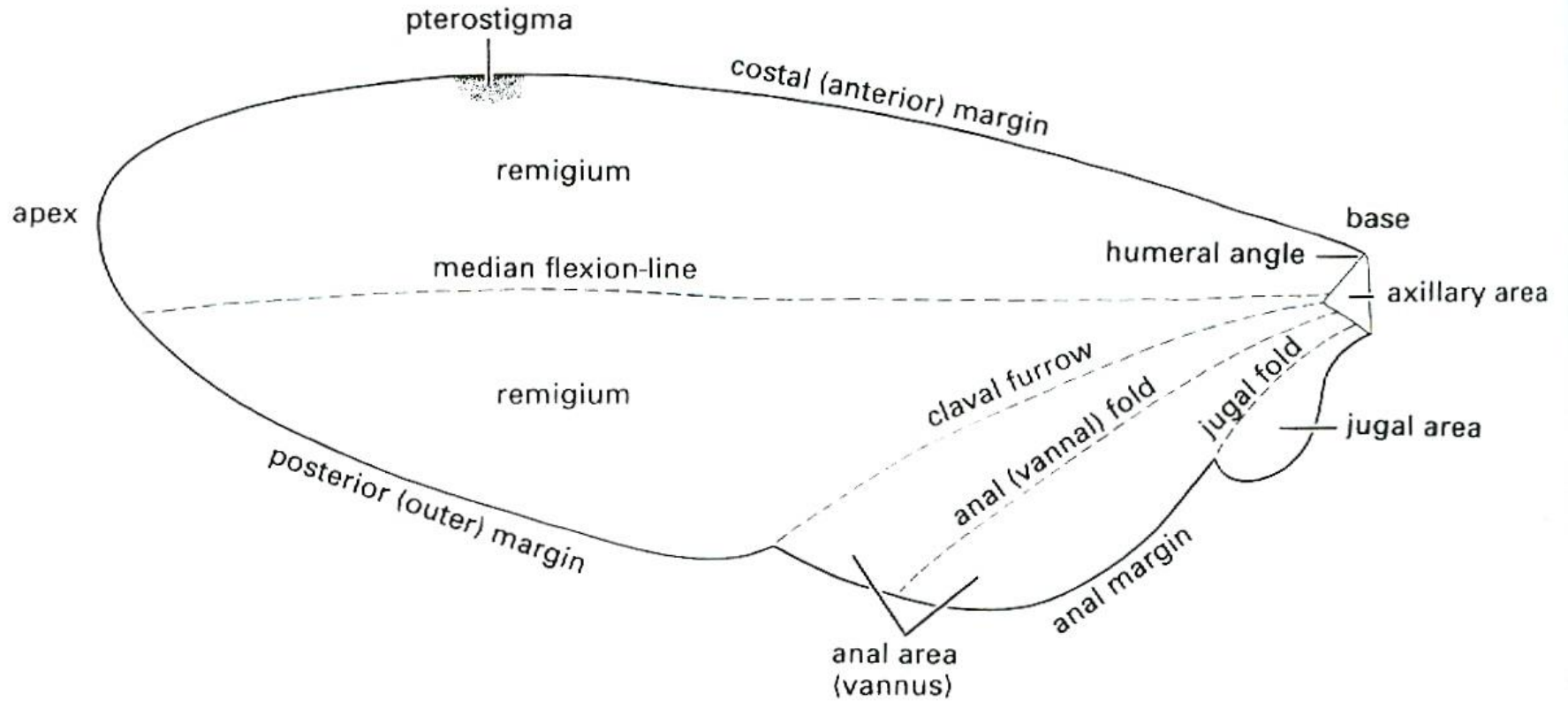


FIG. 28 Methods of wing-coupling in insects. A. *Rhyacophila* (based on Comstock, 1918). B. *Panorpa*. C. A Hepialid moth (based on Comstock, l.c.). D. Male frenate Lepidopteran. E. Female frenate Lepidopteran. F. An aphid, *Drepanosiphon* (after Weber, 1930). G. *Apis*.

fr, frenulum; *hm*, hamuli; *jg*, jugum; *rt*, retinaculum.

Kanat katlanma düzeni



Böceklerde uçuş

1= Rüzgarın yönü

2=Uçuş yönü

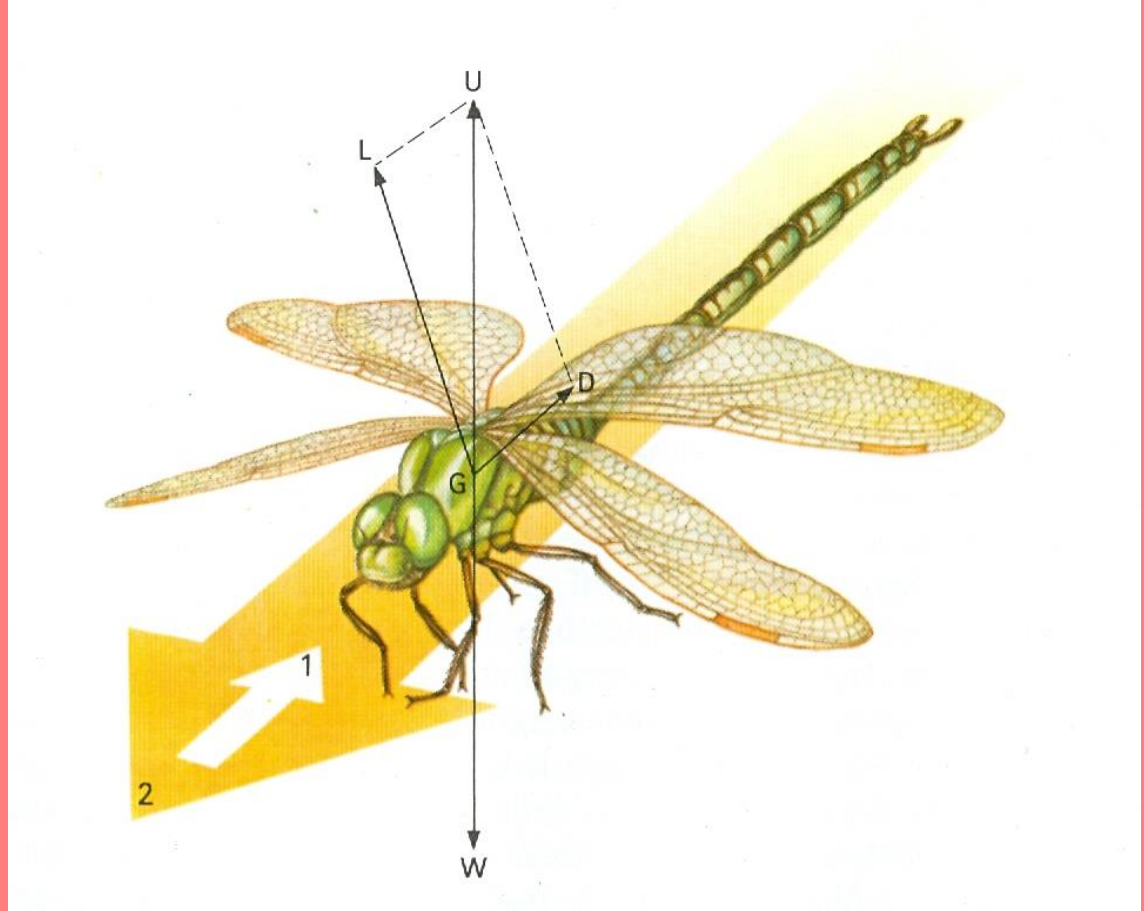
G=Yerçekimi merkezi

W=Böceğin ağırlığı

D= Rüzgarın direnç gücü

L= İtme gücü

U=kaldırma gücü bileşkesi



Abdomen

Dişi Dış Genital Eklentileri

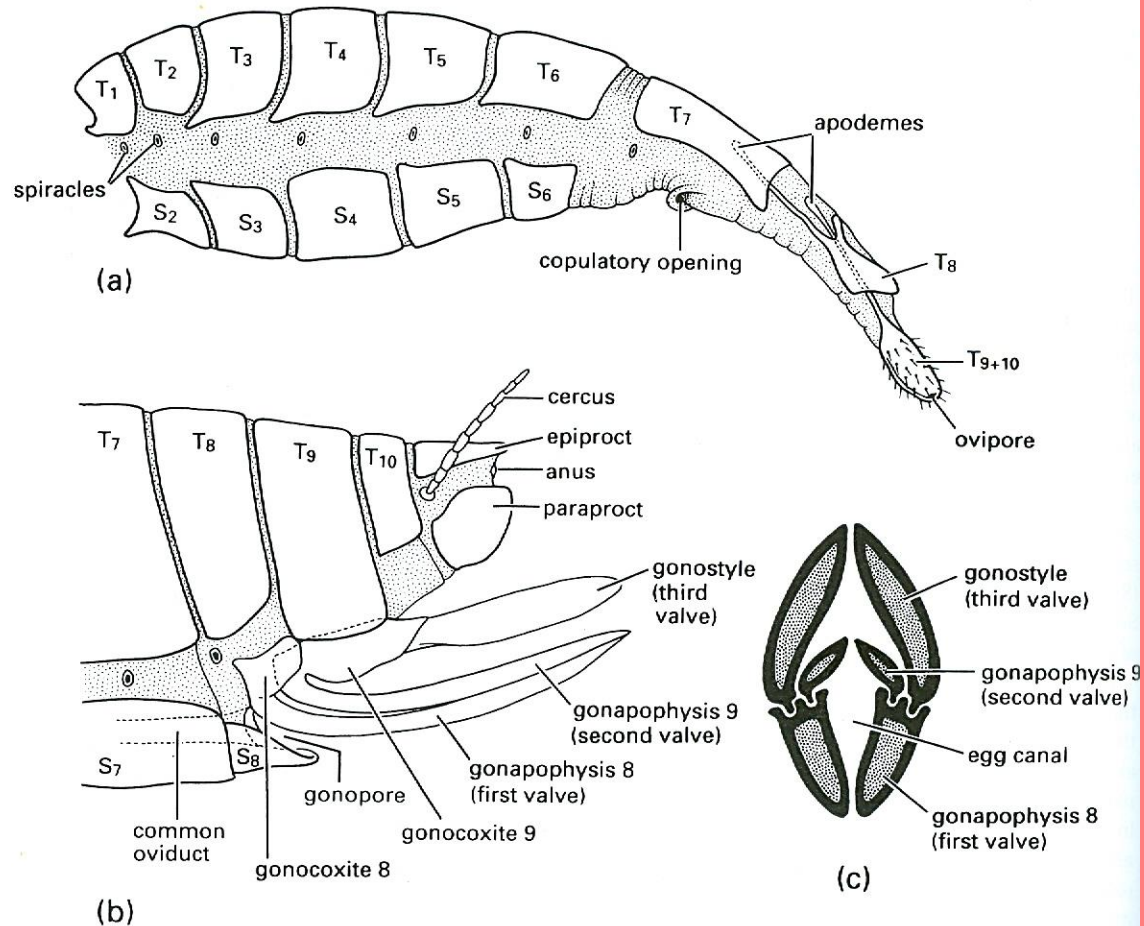
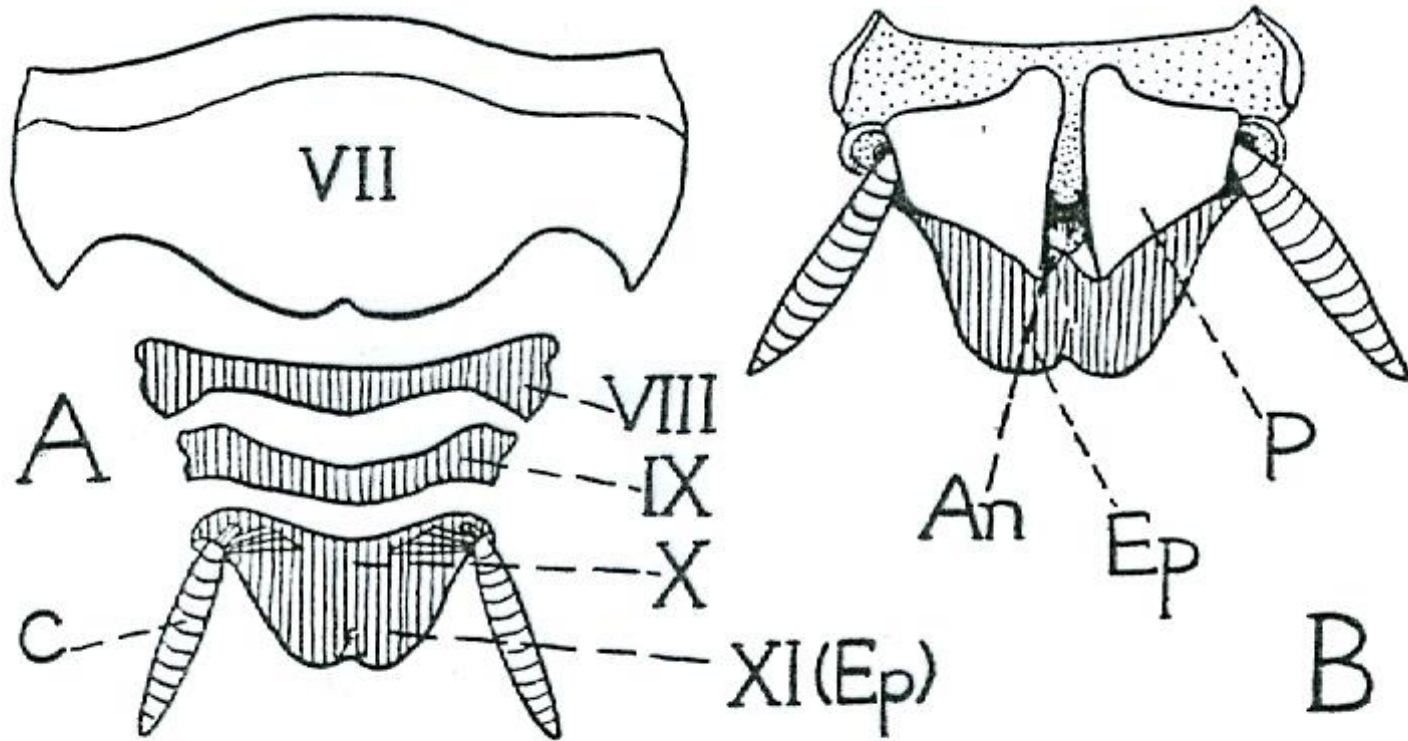


Fig. 2.23 The female abdomen and ovipositor: (a) lateral view of the abdomen of an adult tussock moth (Lepidoptera: Lymantriidae) showing the substitutional ovipositor formed from the extensible terminal segments; (b) lateral view of a generalized orthopteroid ovipositor composed of appendages of segments 8 and 9; (c) transverse section through the ovipositor of a katydid (Orthoptera: Tettigoniidae). T₁–T₁₀, terga of first to tenth segments; S₂–S₈, sterna of second to eighth segments. ((a) After Eidmann 1929; (b) after Snodgrass 1935; (c) after Richards & Davies 1959.)

Son abdominal segmentler



Şekil 23. *Blatta*'nın son abdominal segmenti.

A-Dorsalden, B-Ventralden görünüş (Snodgrass'dan)

An. anüs, c. serkus, Ep. epiproct, P. paraproct, VII-XI. tergiter

Protura -genç evre)
Abdomen 8 segmentli



Protura - ergin
Abdomen 11 segmentli



Collembola

Abdomen 6 segmentli



Coleoptera - Cerambycidae



Diptera - Muscidae



Abdominal eklentiler
Serkus'lar



Dermaptera

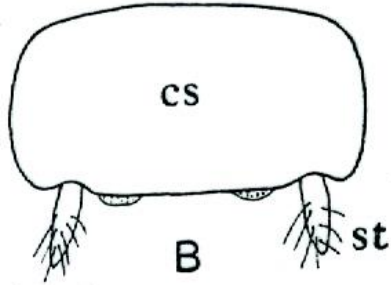
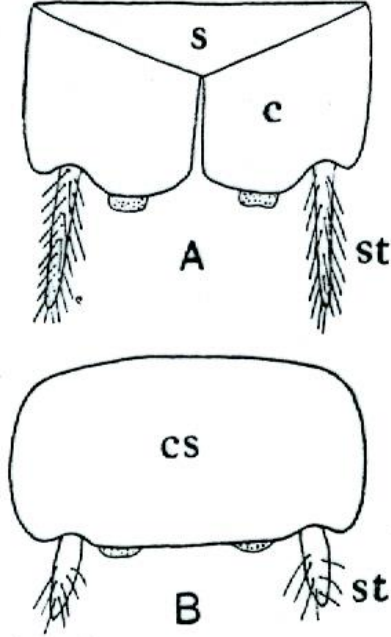


Diplura



Ephemeroptera

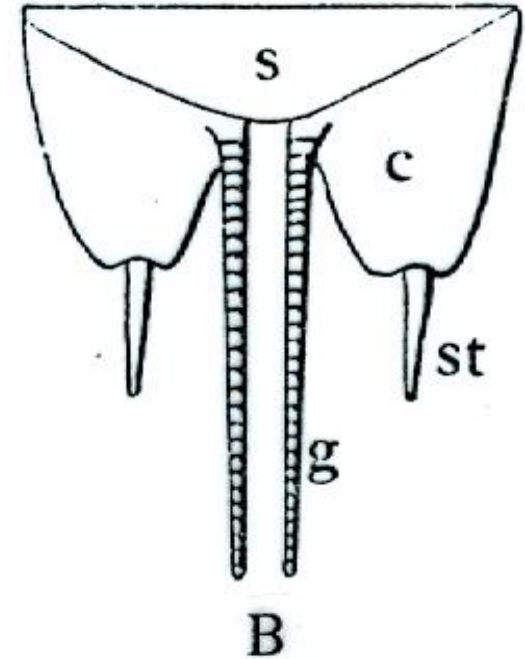
Abdominal Hareket eklentiler



Şekil.25. Abdominal sternumlar ve eklentileri.
A-Machilis, B-Campodea (Imms'den)

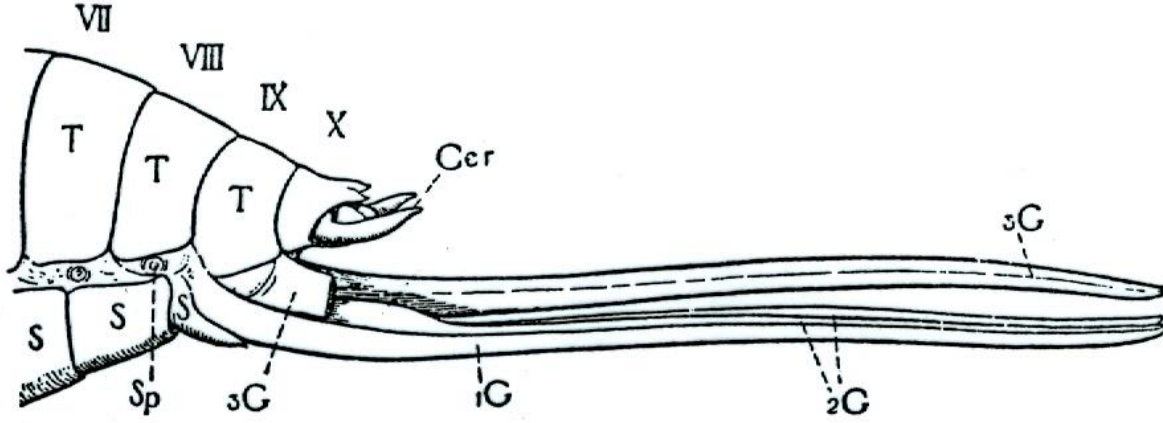
s. sternum, c.coxit, cs.coxosternum, st.
stylus.

Değişikliğe uğramış
hareket eklentileri- Gonopod'lar



Primitif gonopod çifti. s. sternum,
c. coxit, st. stilus, g. gonopophsis

Dişi dış genital organlar - Ovipositor



Şekil 27. *Conocephalus* (uzun boynuzlu çekirge) ovipositörü (Snodgrass'dan).

T. VII-X. tergumlar, S. sternum, Cer. serkus, IG. ventral valva, 2G. iç valvler, 3G. dorsal valvler, (soldaki kaideden kesik), sp. stigma.

Orthoptera - Ovipositor



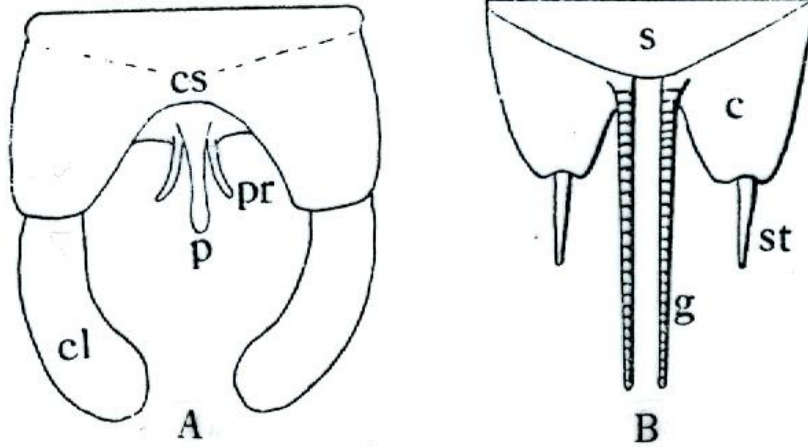


Hymenoptera - Vespidae

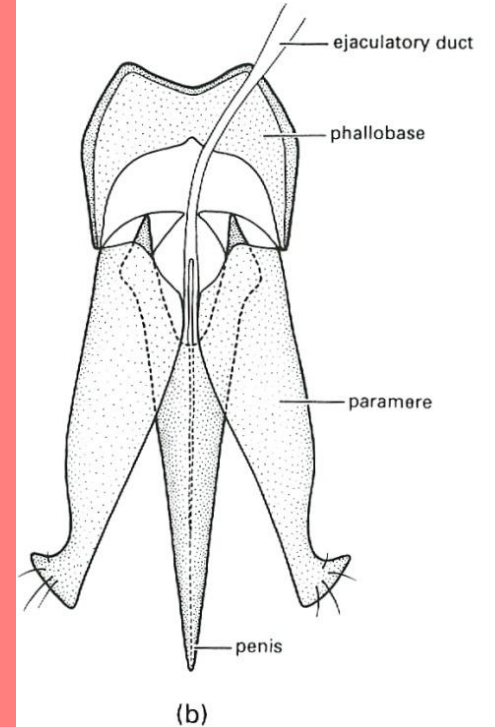
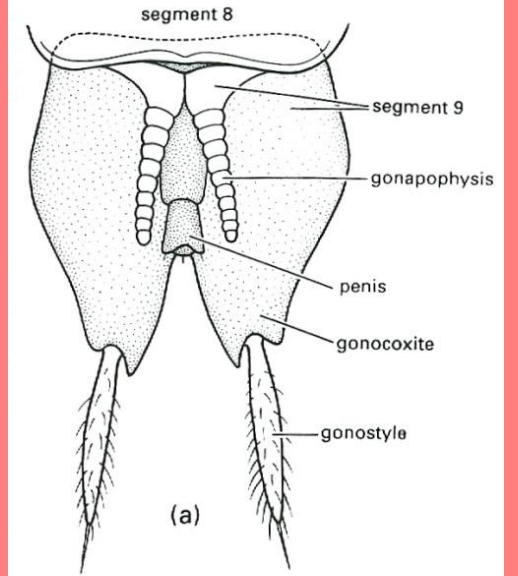
**Dişi dış genital organı
(körelmiş),
sokma dikişi şeklinde**



Erkek dış genital organlar



Şekil 26. A- Tipik erkek genital organ diagramı. B- primitif gonopod çifti (Imms).
c. coxit, cl. clasper, cs. coxosternum, g. gonopophysis, p. penis, pr. paramer, s. sternum, st. stylus.



Diğer abdominal eklentiler



Abdominal bacaklar

Lepidopter larvası

Hymenopter larvası



Abdominal çıkıntılar



Thysanura – kaudal filamentler

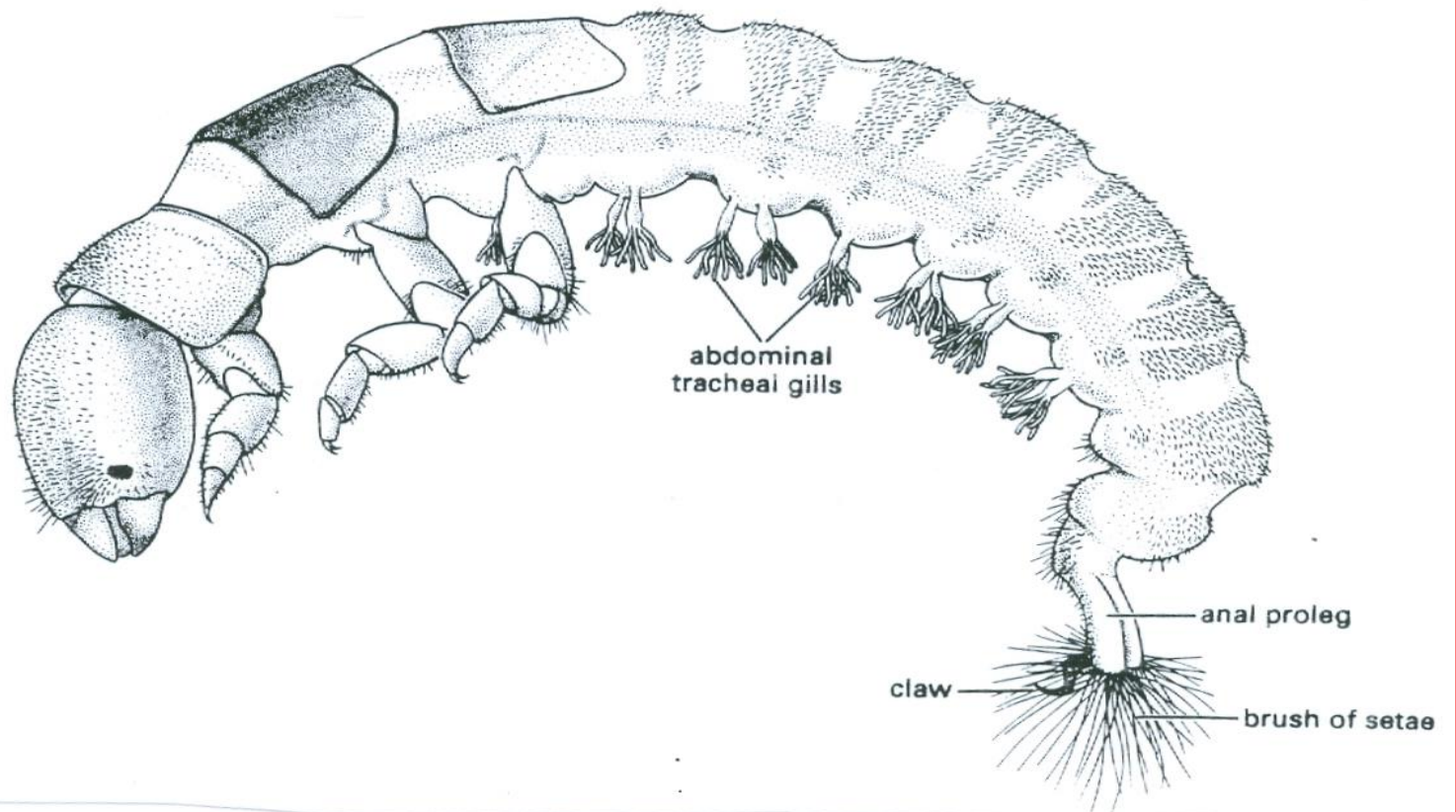


Ephemeroptera – kaudal filamentler



Odonata - Zygoptera – Median lamella





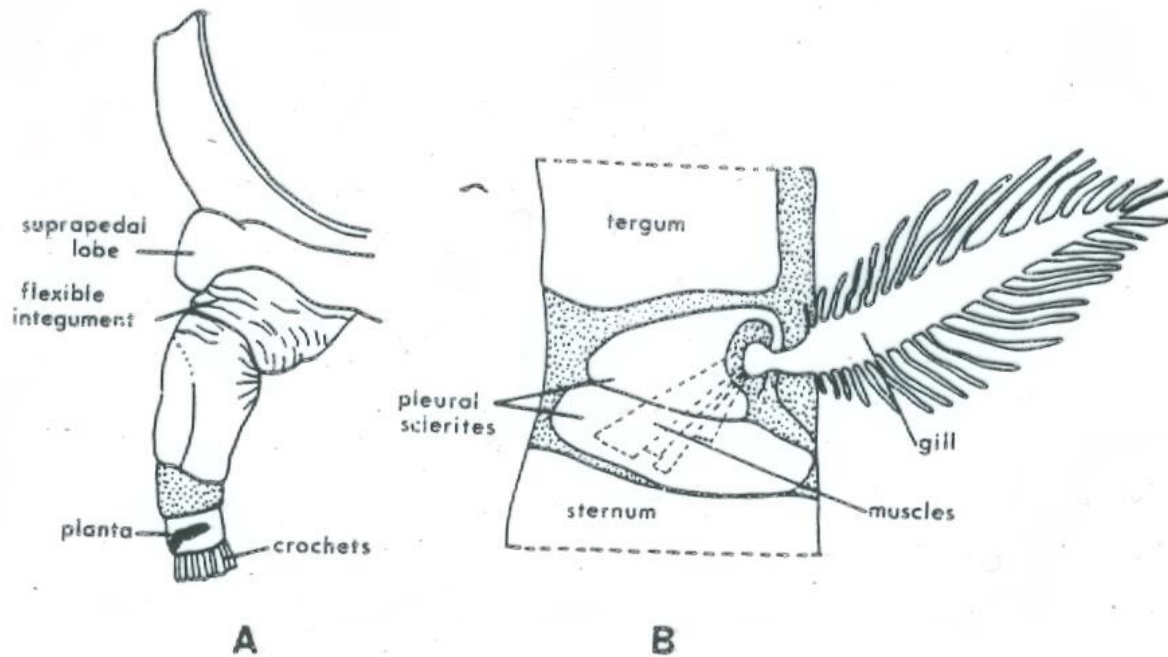


FIGURE 3.35. Secondary segmental appendages. (A) Proleg of a caterpillar and (B) gill of a mayfly larva. [From R. E. Snodgrass, *Principles of Insect Morphology*. Copyright 1935 by McGraw-Hill, Inc. Used with permission of McGraw-Hill Book Company.]

