

MORFOLOGIA DE INSECTOS

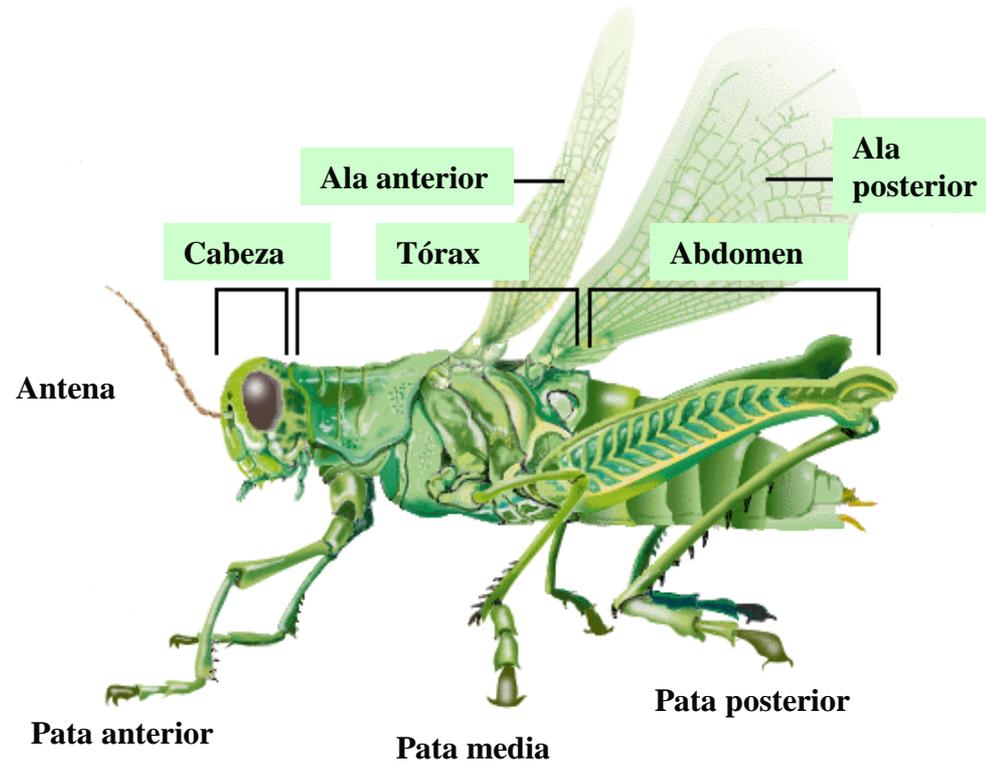
Estudia las características externas de los insectos (La forma de los insectos)

Utilidad de estudiar la Morfología

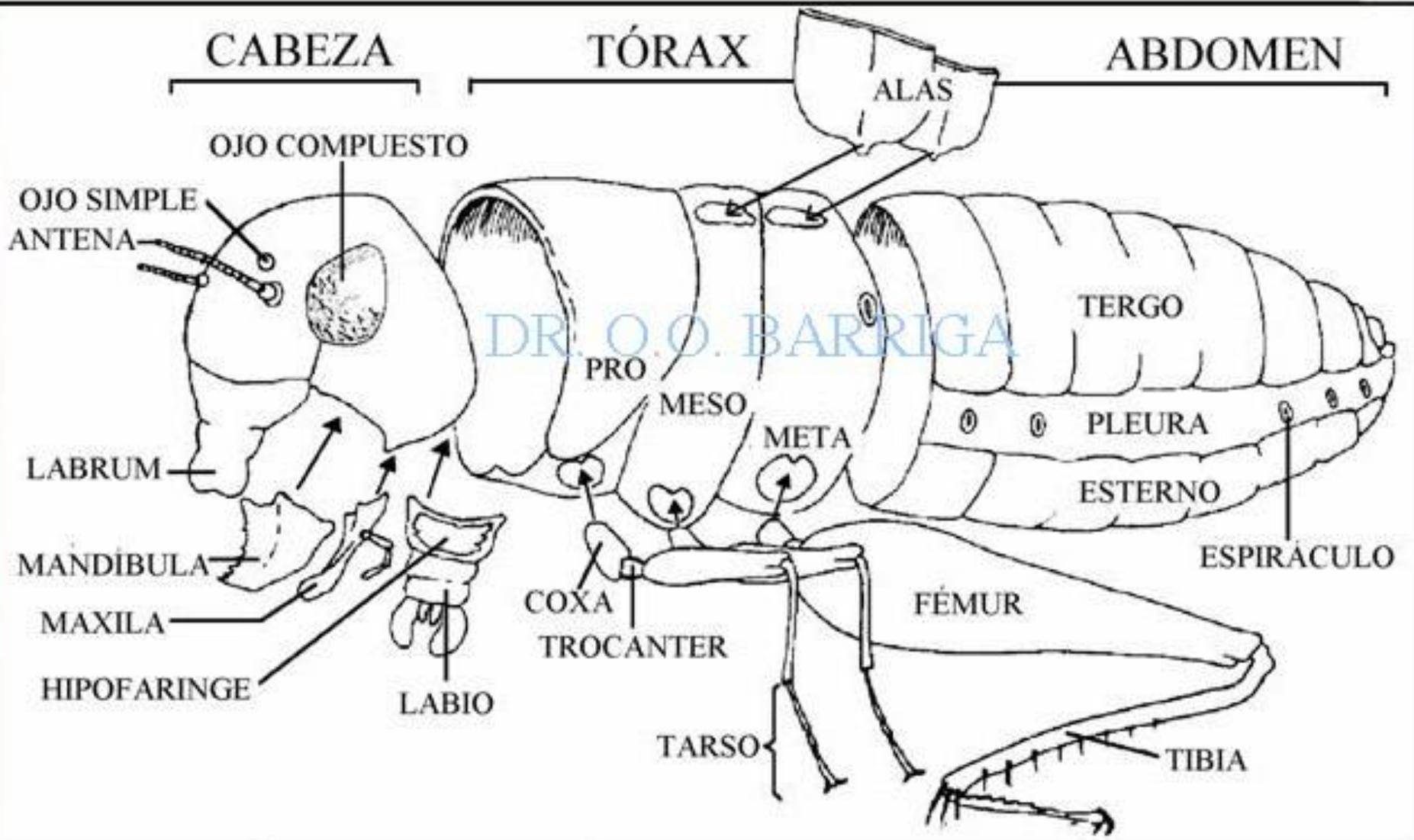
- *. Conocer vocabulario Técnico
 - *. Constitución y Función
- *. Hacer comparaciones entre individuos de la misma o distinta especie
 - *. Comprender mejor su hábitat

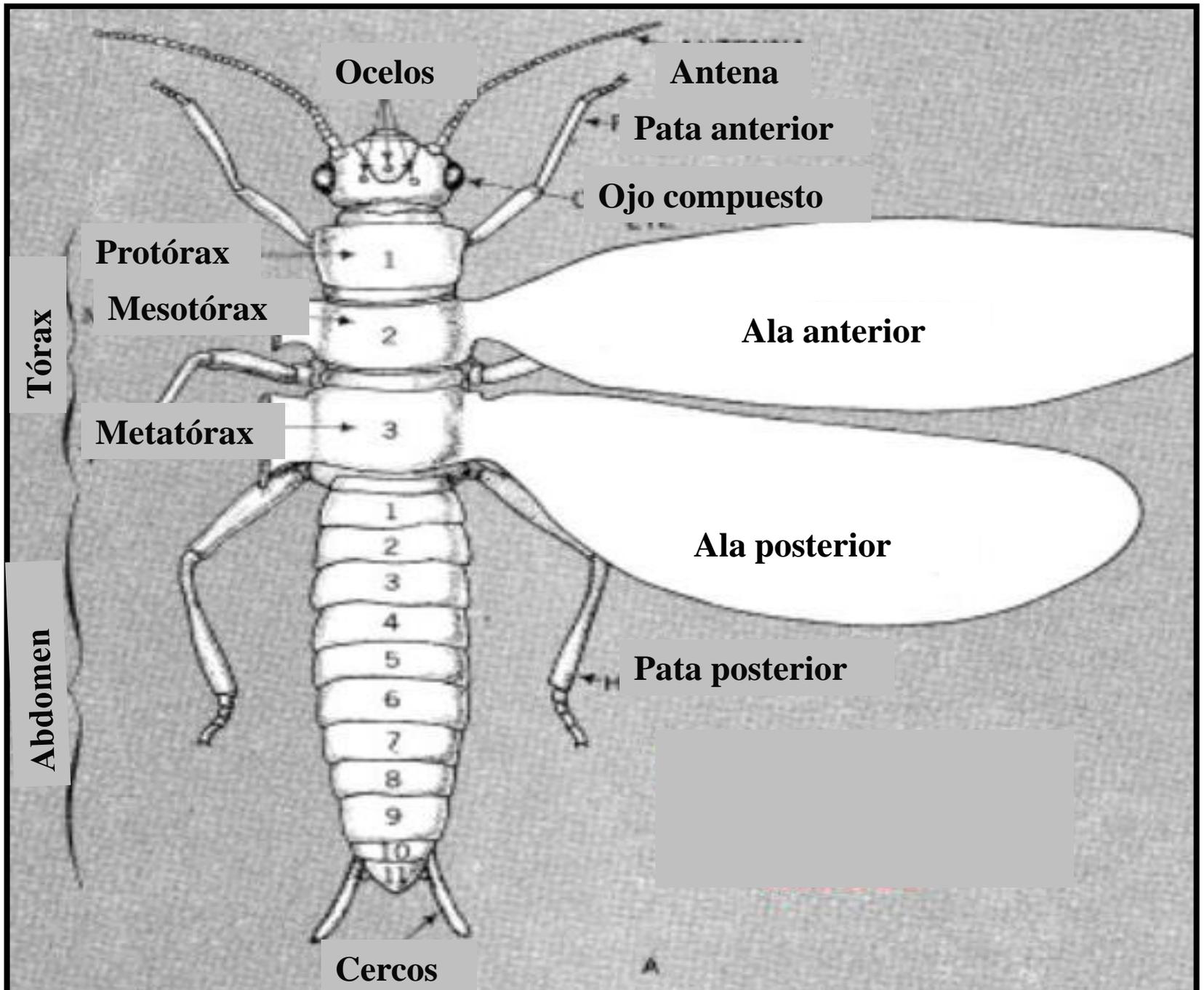
¿QUE SON LOS INSECTOS?

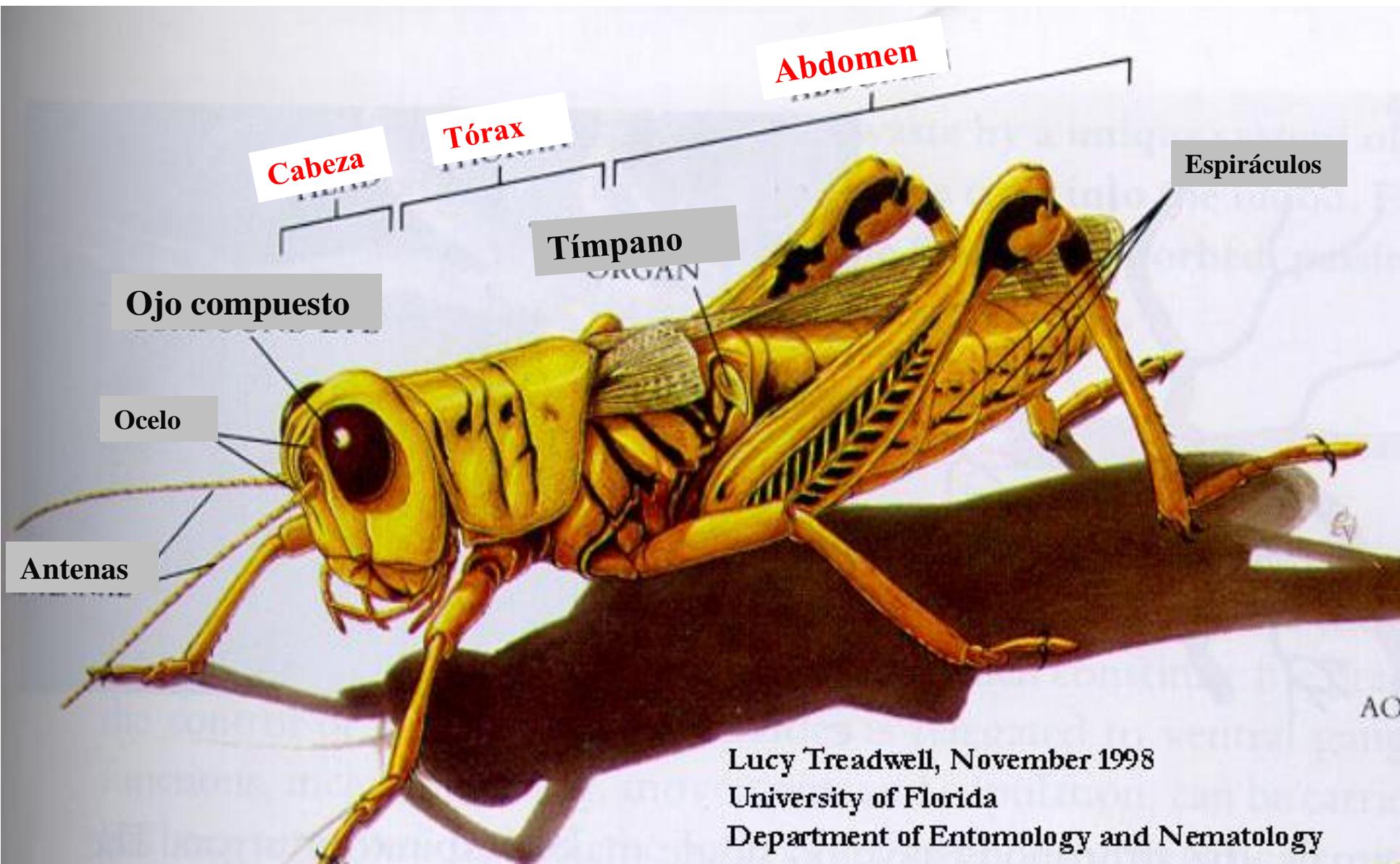
- *. Animales invertebrados
- *. De cuerpo Segmentado
- *. Cuerpo dividido en tres regiones: **cabeza, Tórax y Abdomen**
- *. Presencia de Antenas
- *. **TRES PARES DE PATAS**
- *. La mayoría presenta alas



ESQUEMAS DE INSECTOS MOSTRANDO LAS DIFERENTES ESTRUCTURAS EXTERNAS







Cabeza

Tórax

Abdomen

Espiráculos

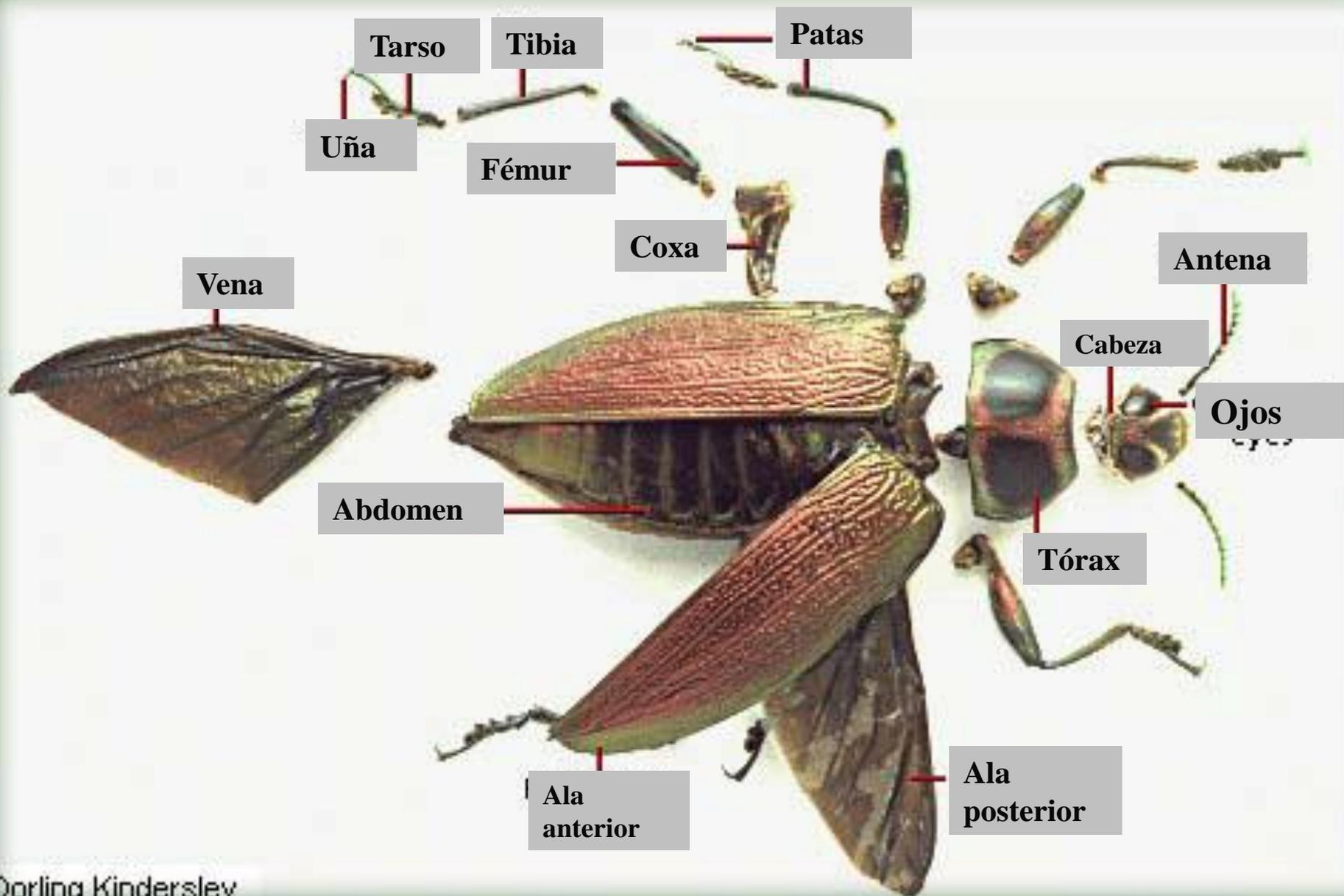
Tímpano

Ojo compuesto

Ocelo

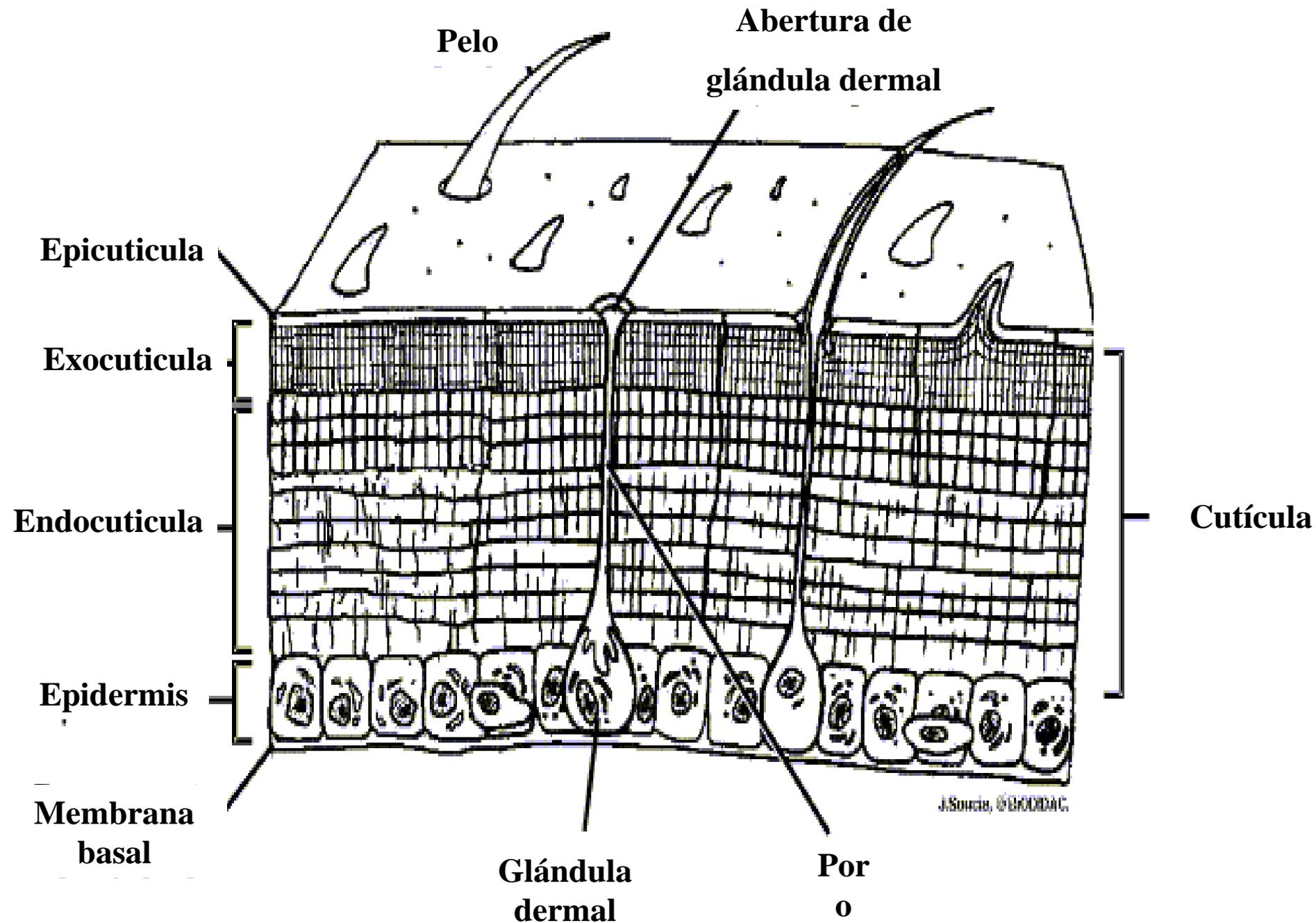
Antenas

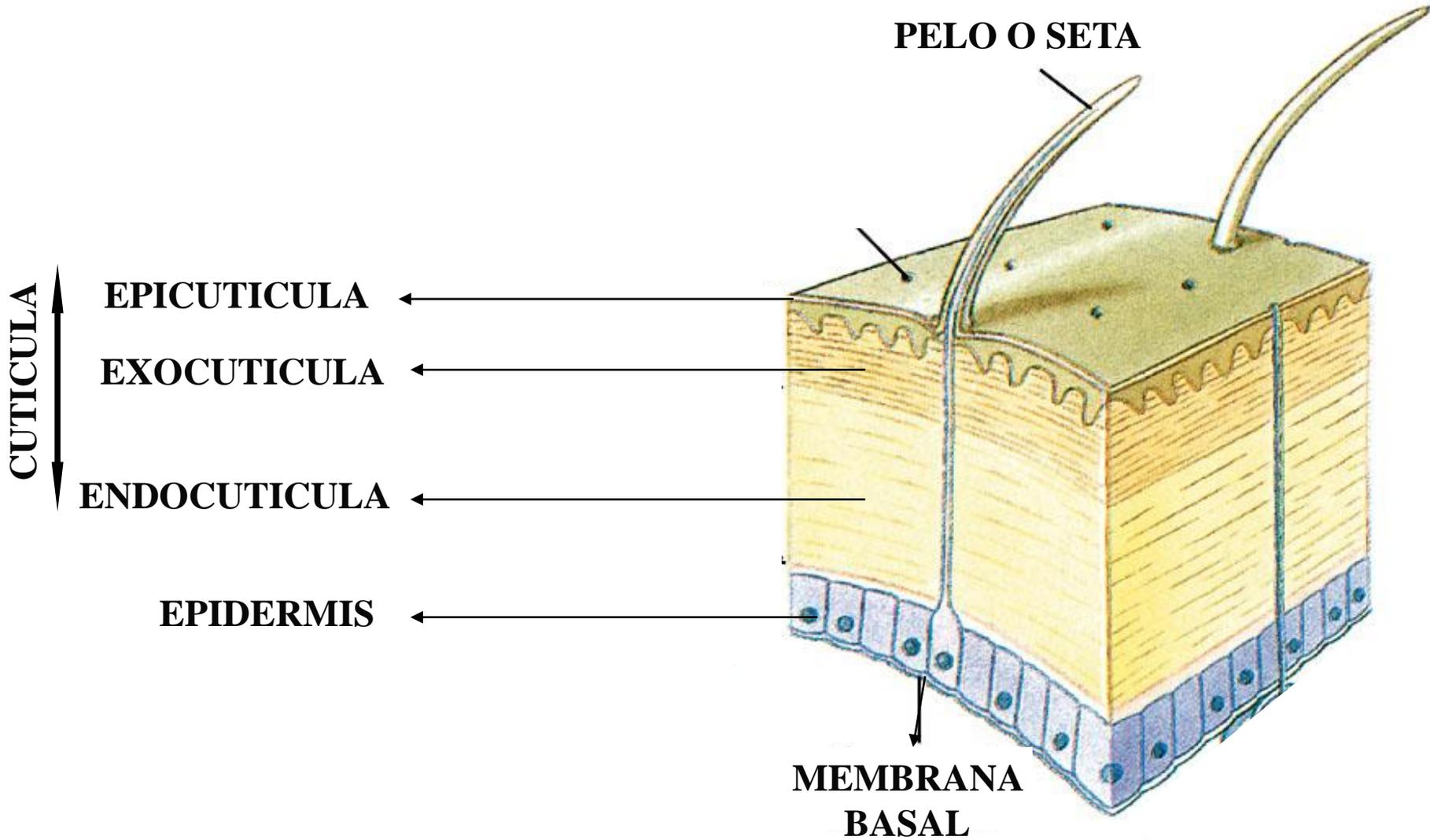
Lucy Treadwell, November 1998
University of Florida
Department of Entomology and Nematology

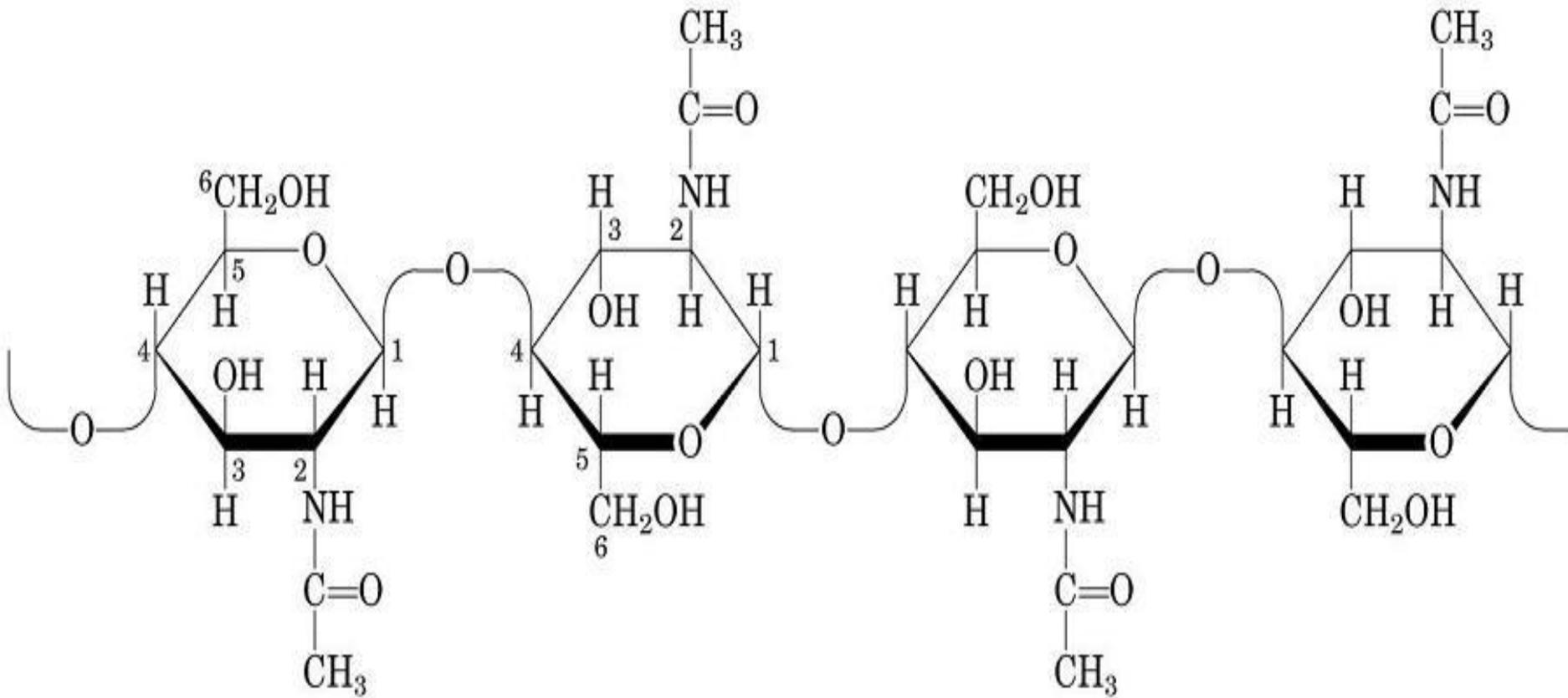


EL ESQUELETO

- A diferencia de otros animales es externo
- Formado por tres capas: **Cutícula, Epidermis, Membrana basal.**
- La cutícula esta subdividida en: **Epicuticula, Exocuticula y Endocuticula**
- Formado por Quitina y Esclerotina, la primera lo vuelve insoluble en diversas sustancias y la segunda le da dureza.







Estructura de la Quitina

MUDA O ECDYCYCIS

- **Proceso mediante el cual los insectos cambian parte de su exoesqueleto para poder crecer. Es un proceso donde interviene la hormona de la muda o Ecdysona.**
- Los restos que quedan de la muda se conocen con el nombre de **EXUBIA.**

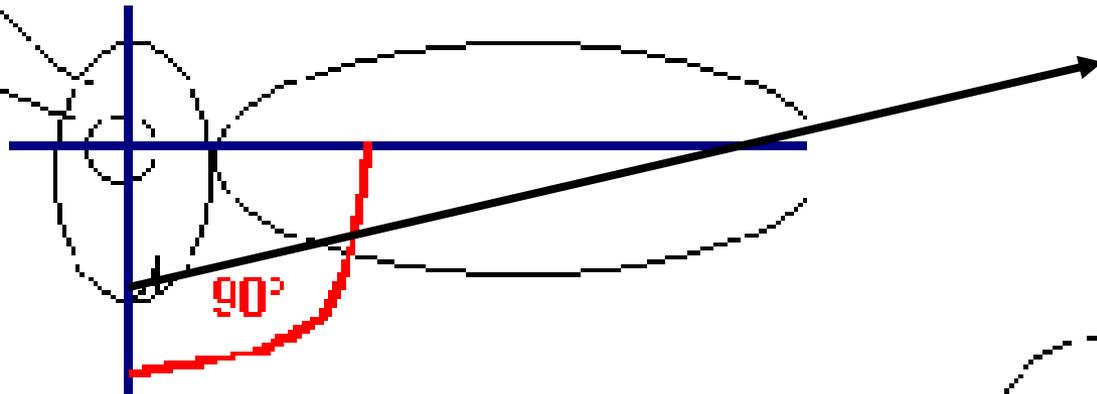


EXUBIA DE UNA CIGARRA

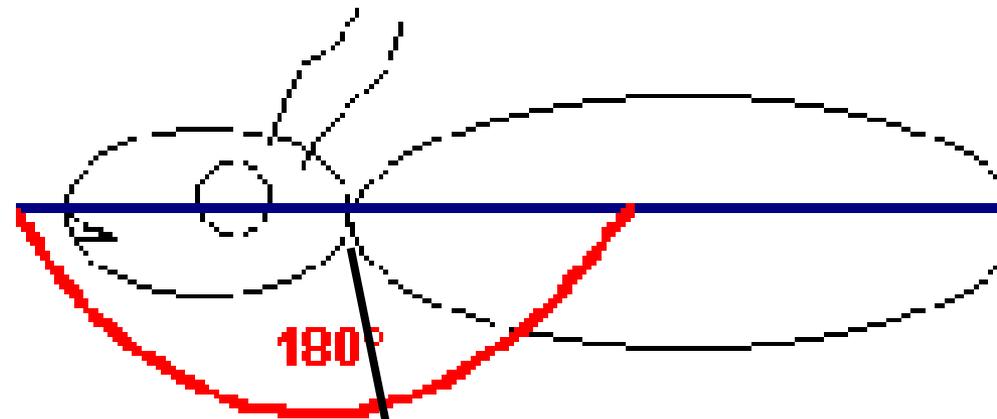


EXUBIA

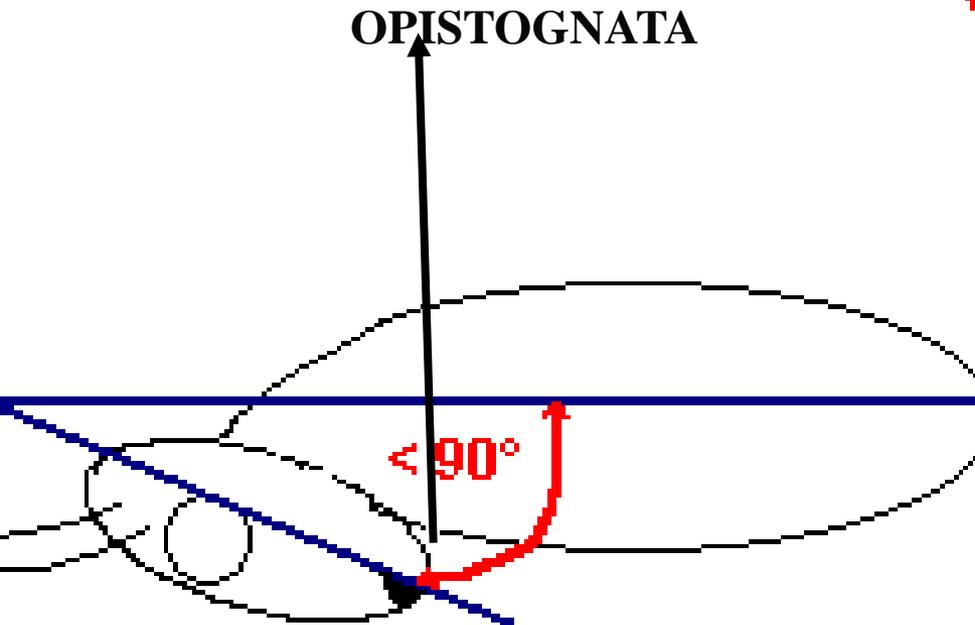
TIPOS DE CABEZA



HIPOGNATA

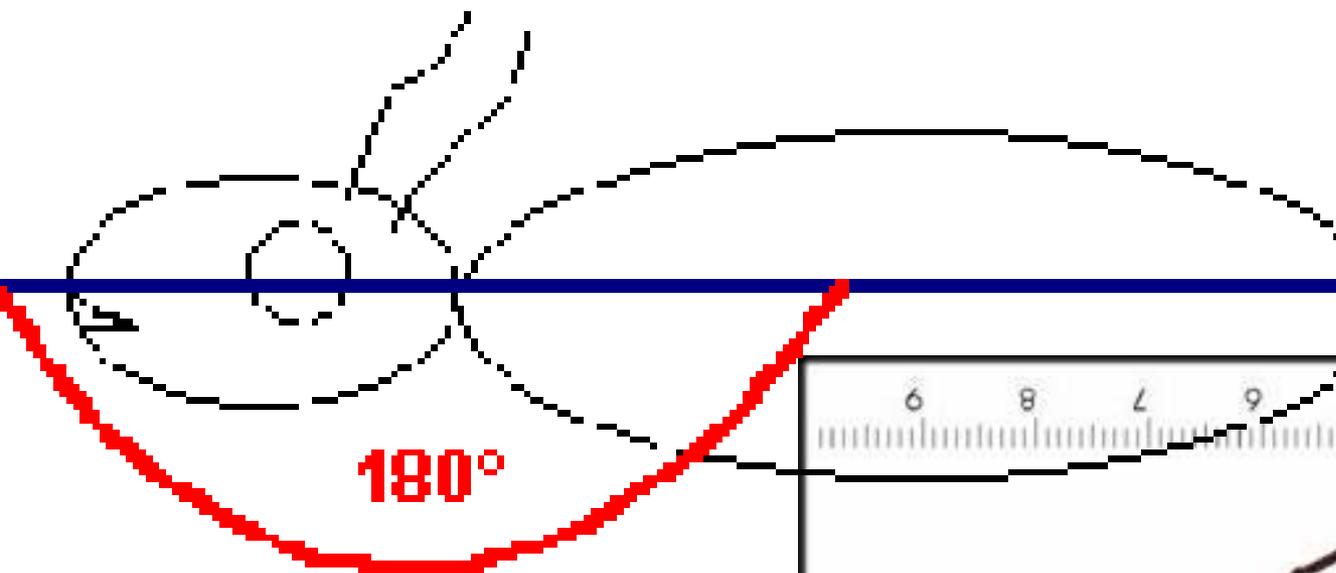


PROGNATA



OPISTOGNATA

PROGNATA

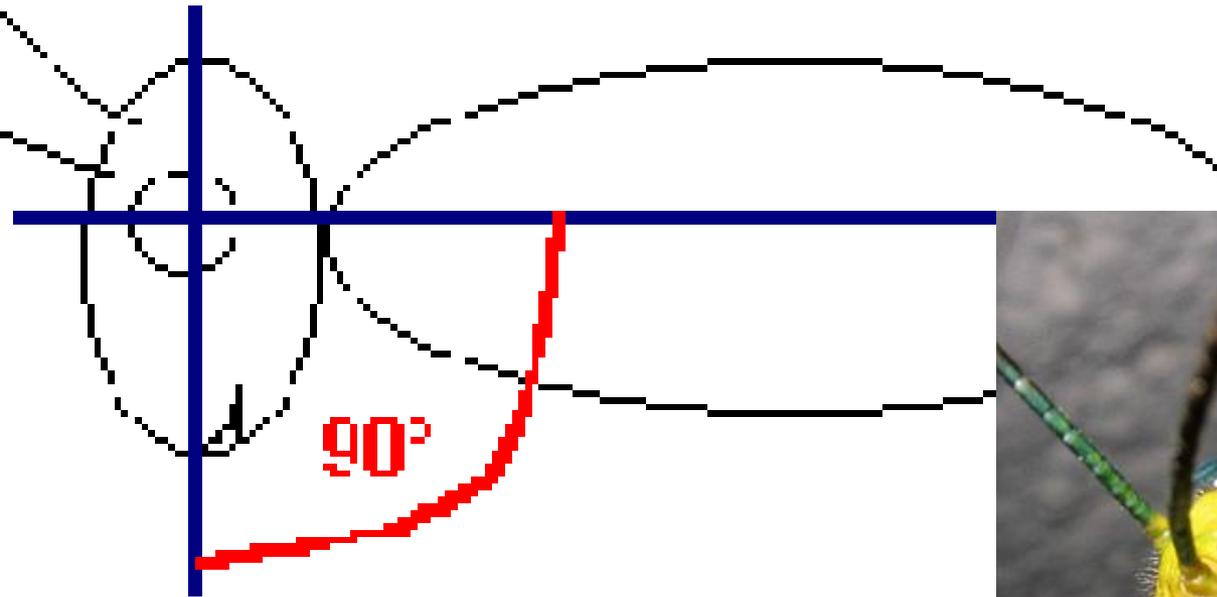


180°

El eje longitudinal del resto del cuerpo coincide con el de la cabeza (Angulo de 180⁰)
LAS PIEZAS BUCALES DIRIGIDAS HACIA ADELANTE



HIPOGNATA

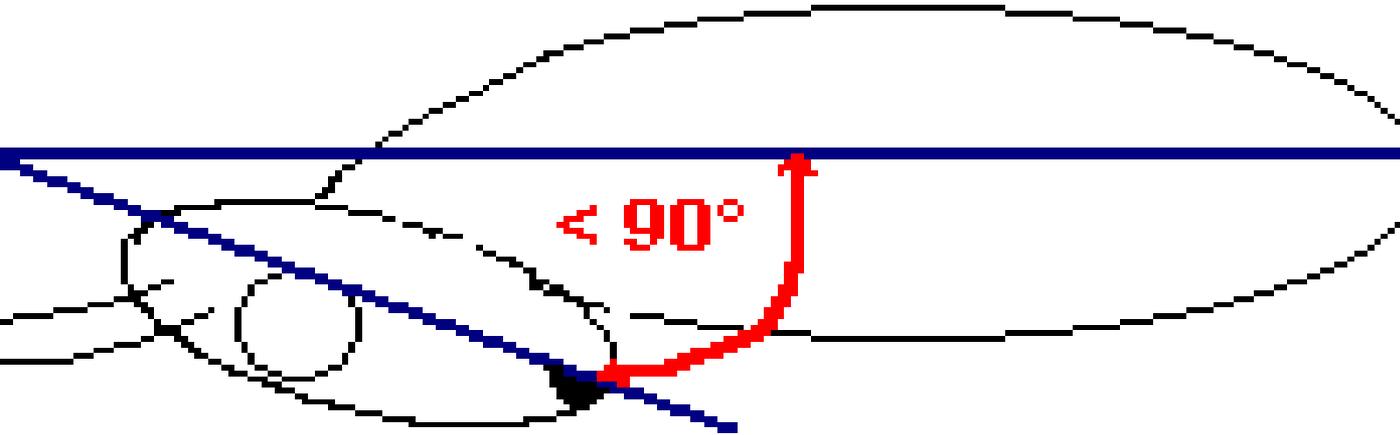


El eje longitudinal de la cabeza es perpendicular al del resto del cuerpo (Formando un ángulo de 90°).

LAS PIEZAS BUCALES SE DIRIGEN HACIA ABAJO



OPISTOGNATA

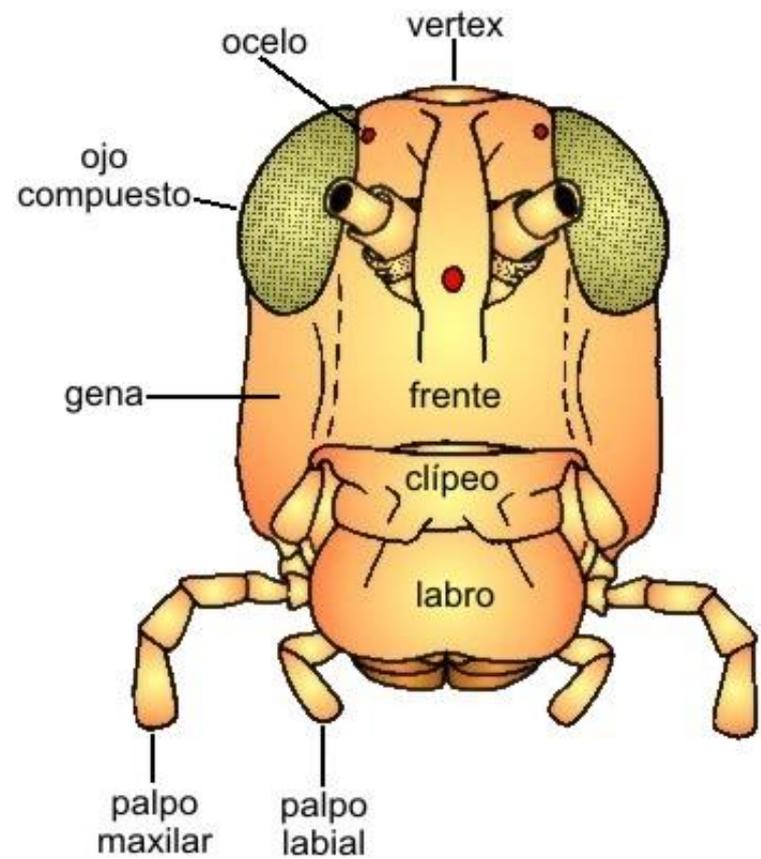
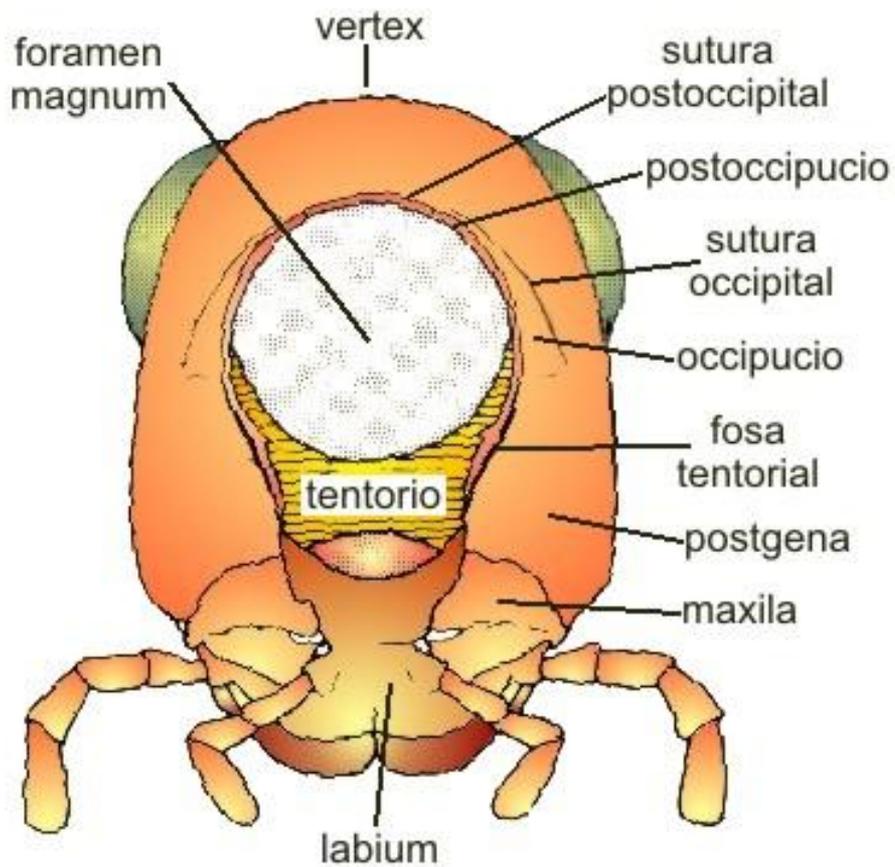


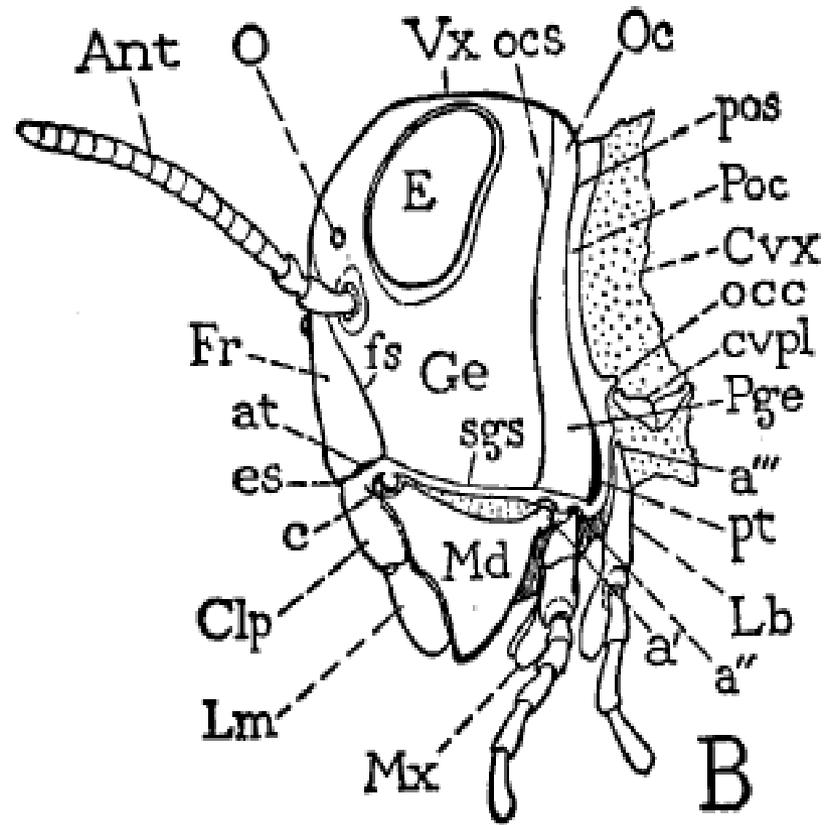
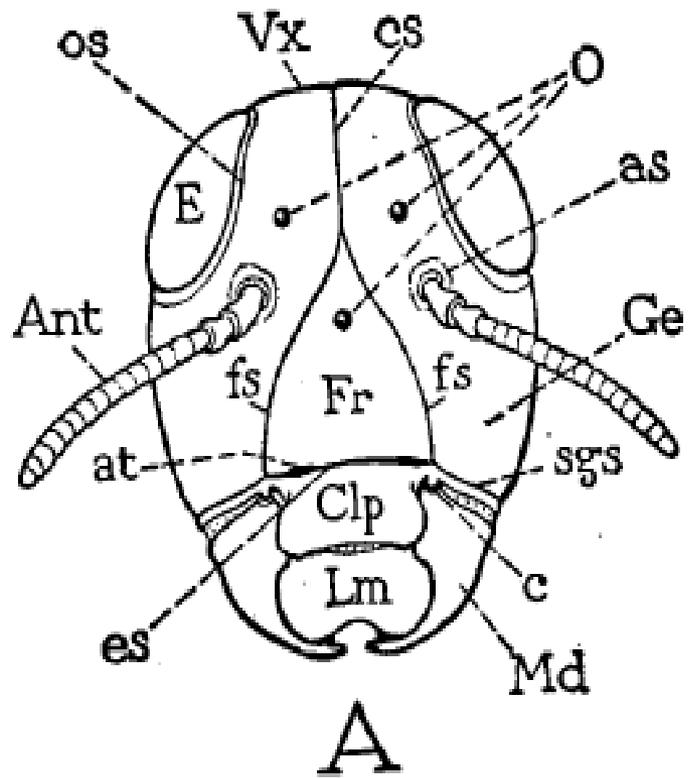
El eje longitudinal de la cabeza forma un ángulo menor de 90 grados con del cuerpo (**LAS PIEZAS BUCALES SE DIRIGEN HACIA ATRÁS**)



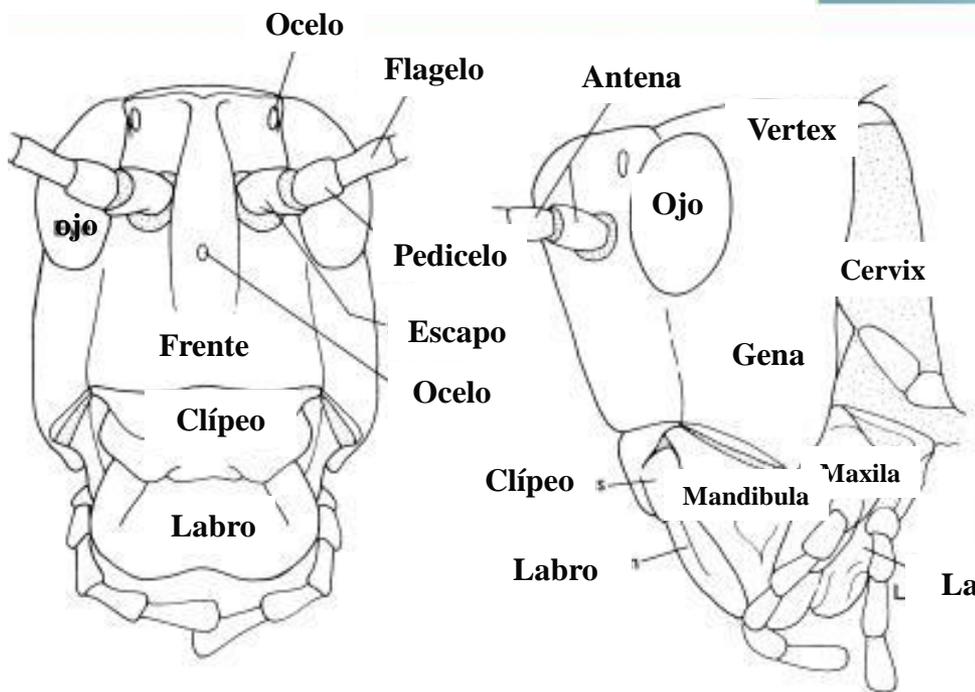
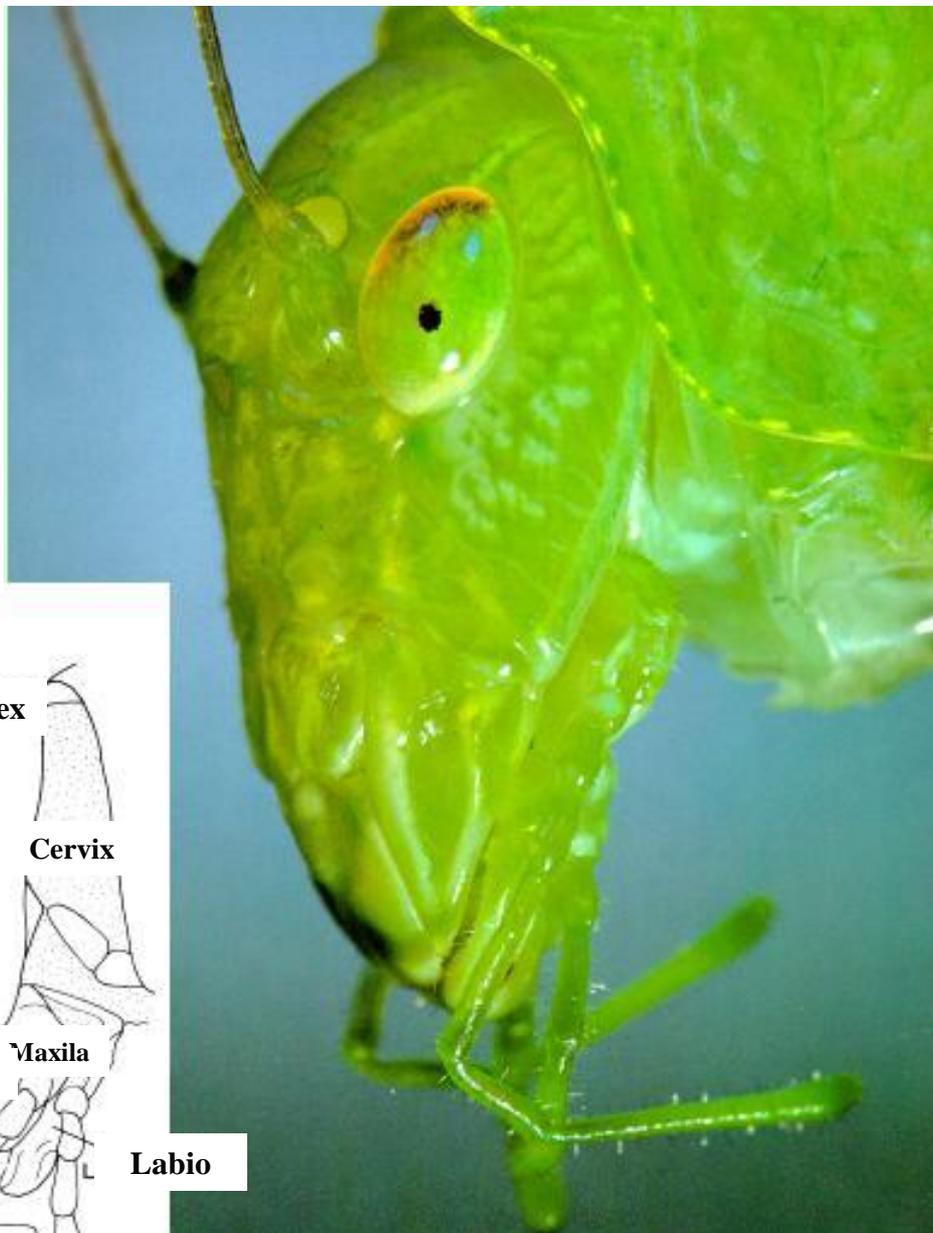
PRINCIPALES ESCLERITOS DE LA CABEZA



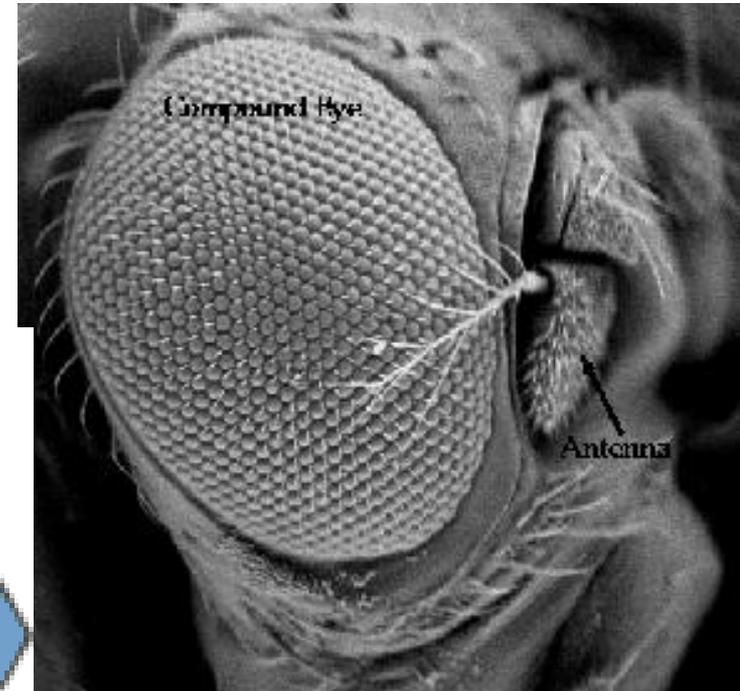
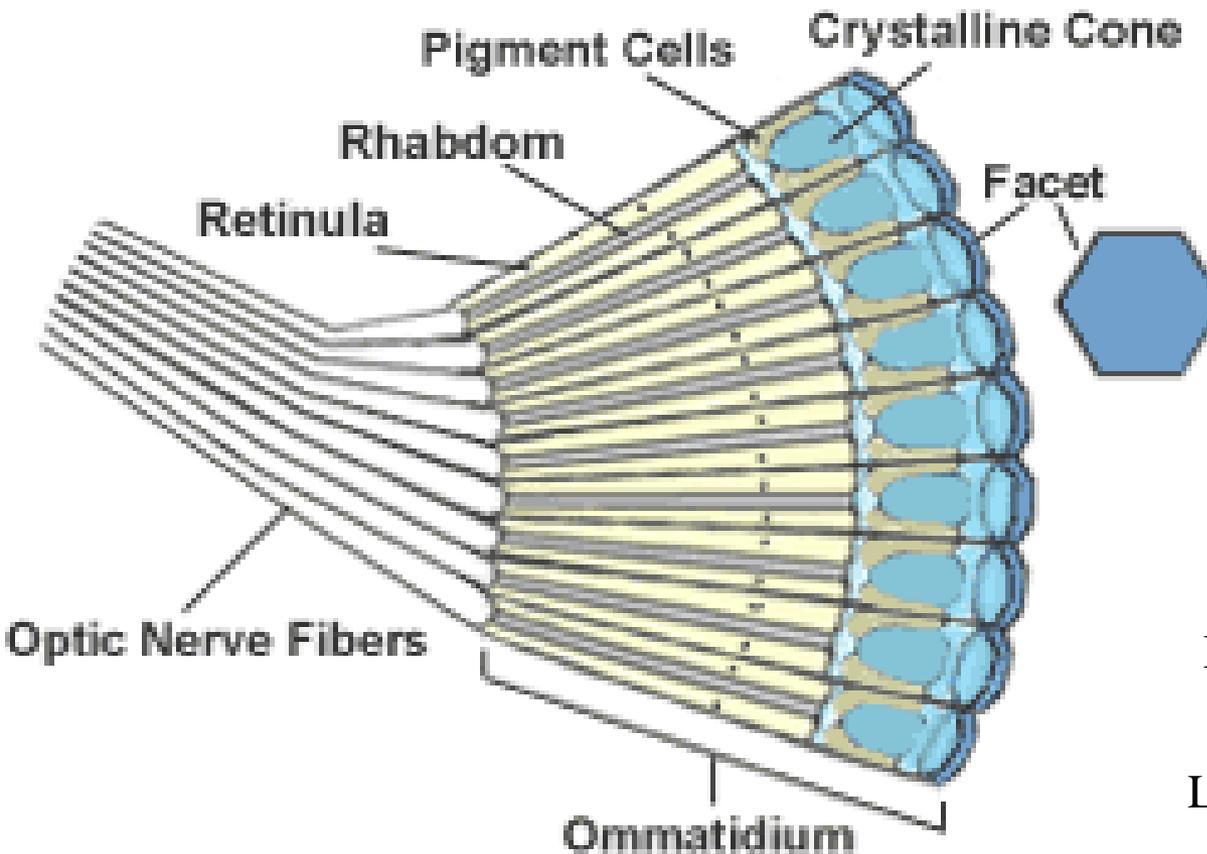




VISTA FRONTAL Y VENTRAL DE LA CABEZA DE UN SALTAMONTE



OJOS COMPUESTOS



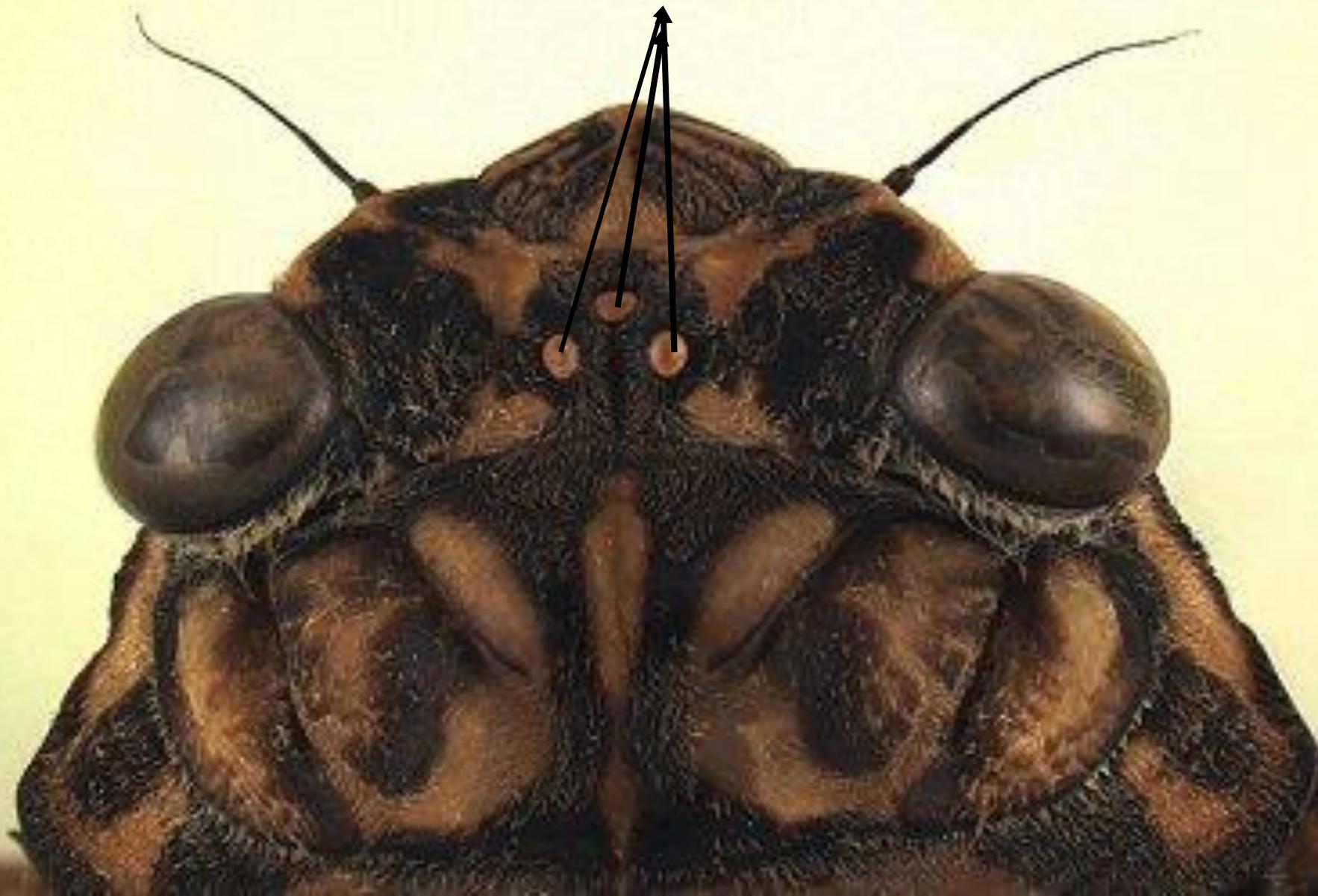
LOS OJOS COMPUESTOS SON
DOS Y ESTAN FORMADOS POR
UNIDADES HEXAGONALES
LLAMADAS **OMMATIDIOS**

**LOS OJOS
COMPUESTOS
DETECTAN:
FORMAS,
COLORES Y
CAMBIOS EN
INTENSIDAD DE
LA LUZ**





LOS OCELOS U OJOS SIMPLES





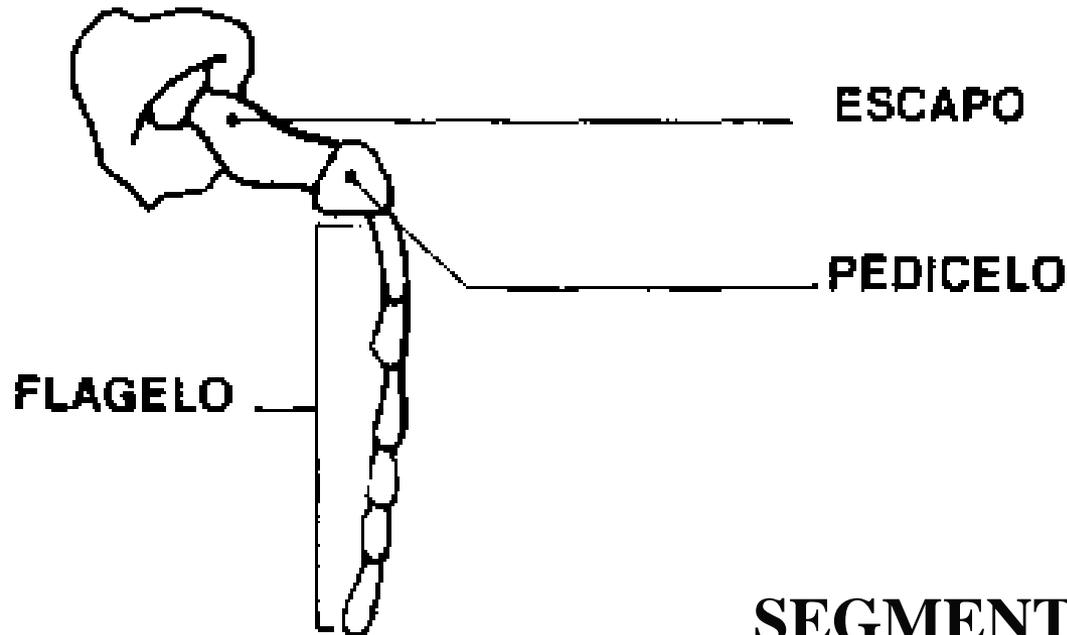
**Los ocelos pueden ser:
Tres (lo mas común),
dos y en algunos
insectos no existen**

**LOS OCELOS SOLO DETECTAN
CAMBIOS EN INTENSIDAD DE LA
LUZ**

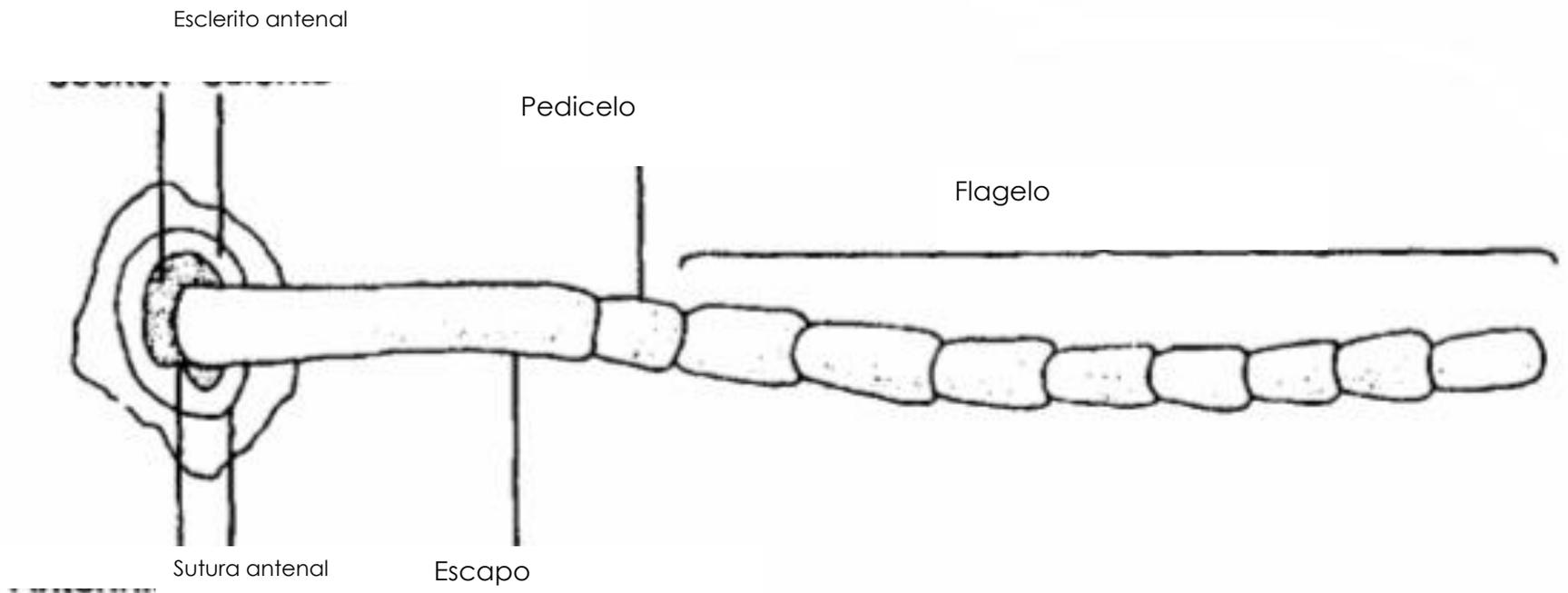


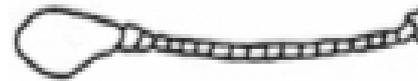
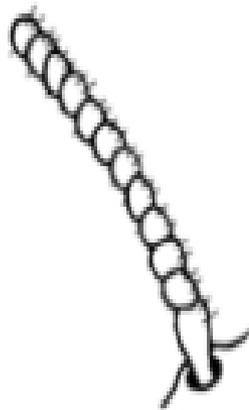
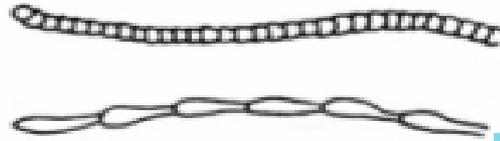
LAS ANTENAS

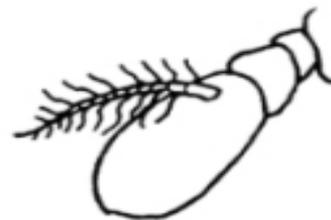
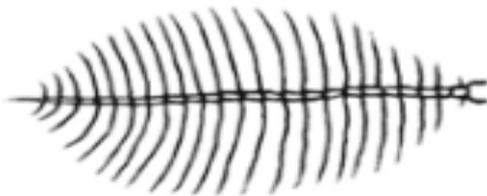
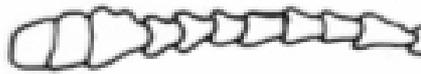
Los insectos, con excepción del orden Protura presentan dos antenas en la parte frontal de la cabeza. Estos apéndices son importantes órganos sensoriales que permiten a los insectos percibir diferentes tipos de estímulos.

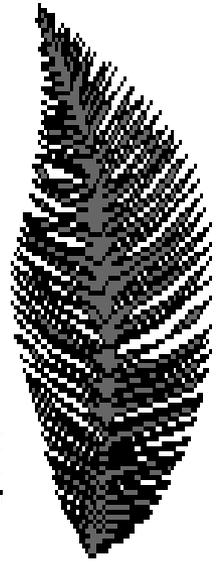
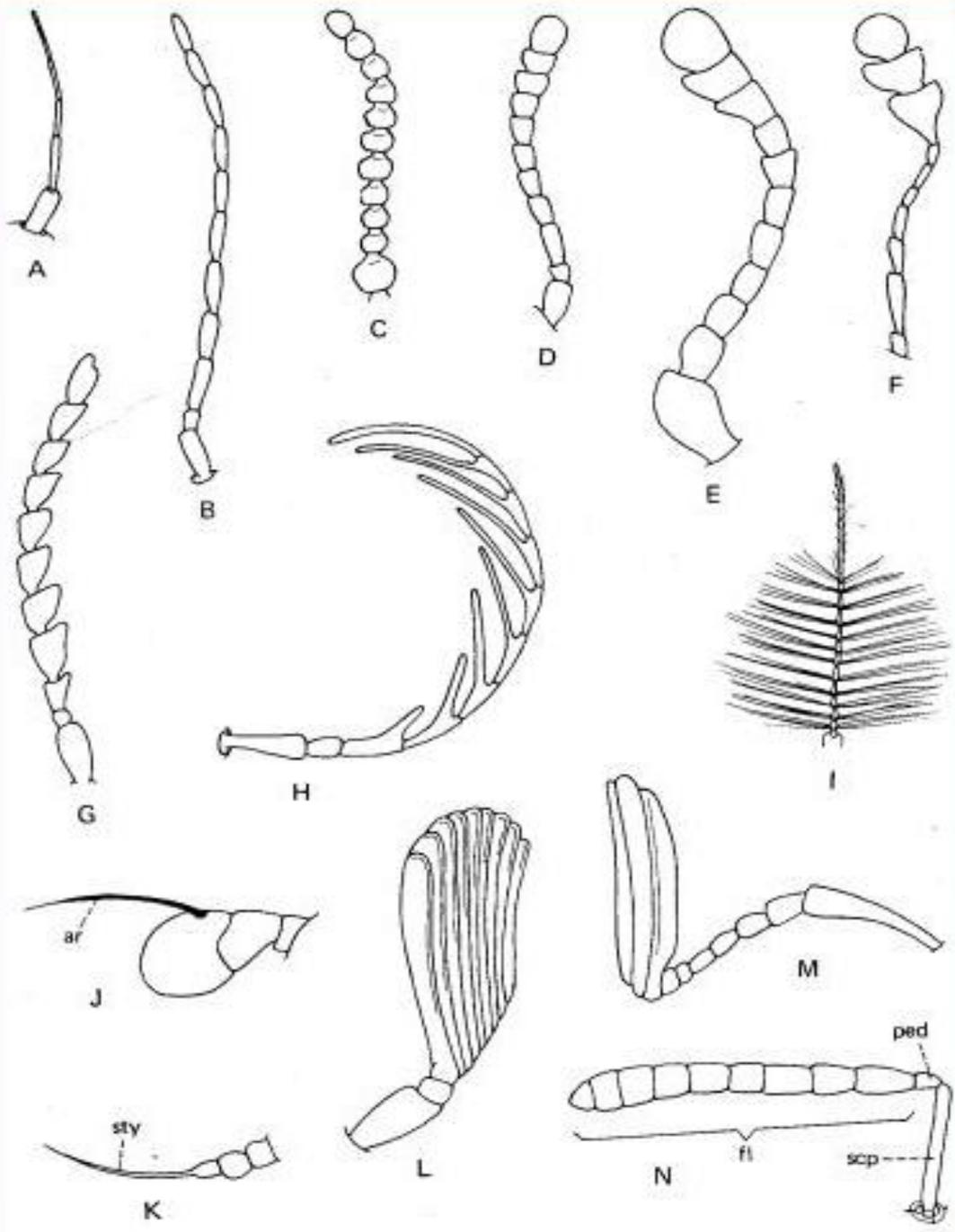


SEGMENTOS DE UNA ANTENA

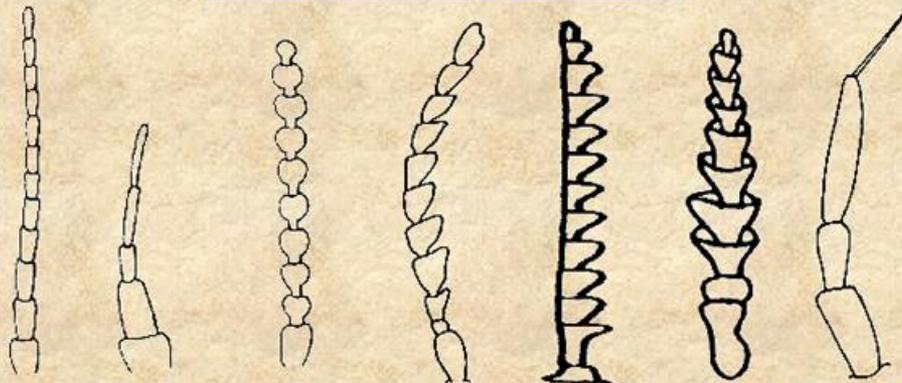




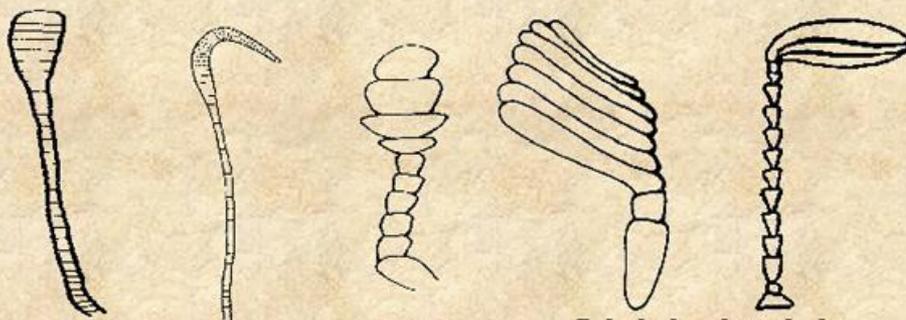




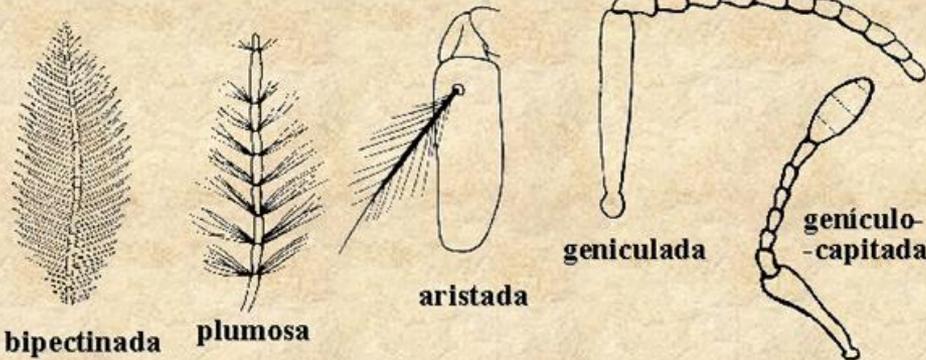
TIPOS DE ANTENAS



filiforme setácea moniliforme serrada dentada imbricada estilada



clavada fusiforme capitada flabelada lamelada



bipectinada plumosa aristada geniculada geniculo-capitada



Setacea



Aristada



Filiforme



Estilada

Geniculada



Plumosa



Clavada



Lamelada



Aparatos Bucales (Boca) de los Insectos

Los Insectos Pueden tener su boca adaptada para:

Masticar (Insectos Masticadores)

Picar Y chupar (insectos
Picadores-Chupadores)

Chupar (Insectos Chupadores)

Lamer (insectos Lamedores)

Aparato Bucal Masticador

Propio de:

Ortópteros: saltamontes, grillos, cucarachas, Madre Culebras, Esperanzas, Saltamontes, grillo topos Etc.

Coleópteros: Escarabajos, Picudos, Ronrones, Tortuguitas, Gorgojos, Mariquitas, Luciérnagas Etc.)

Himenópteros: Hormigas, Avispas, Sompopos, morrocos,

Lepidópteros: Larvas (“Gusanos) de Mariposas y polillas

Neurópteros (Hormiga León), **Malofagos** (Piojillos),
Dermapteros (Tijeretas), **Isópteros** (comejenes)

INSECTOS MASTICADORES

Coleóptero



Ortóptero



Himenóptero



Dermáptero



Malófago



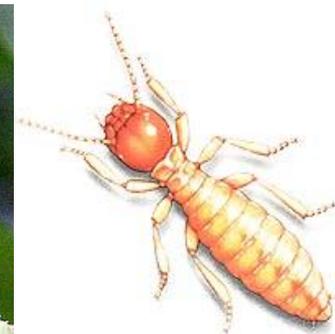
Neuróptero



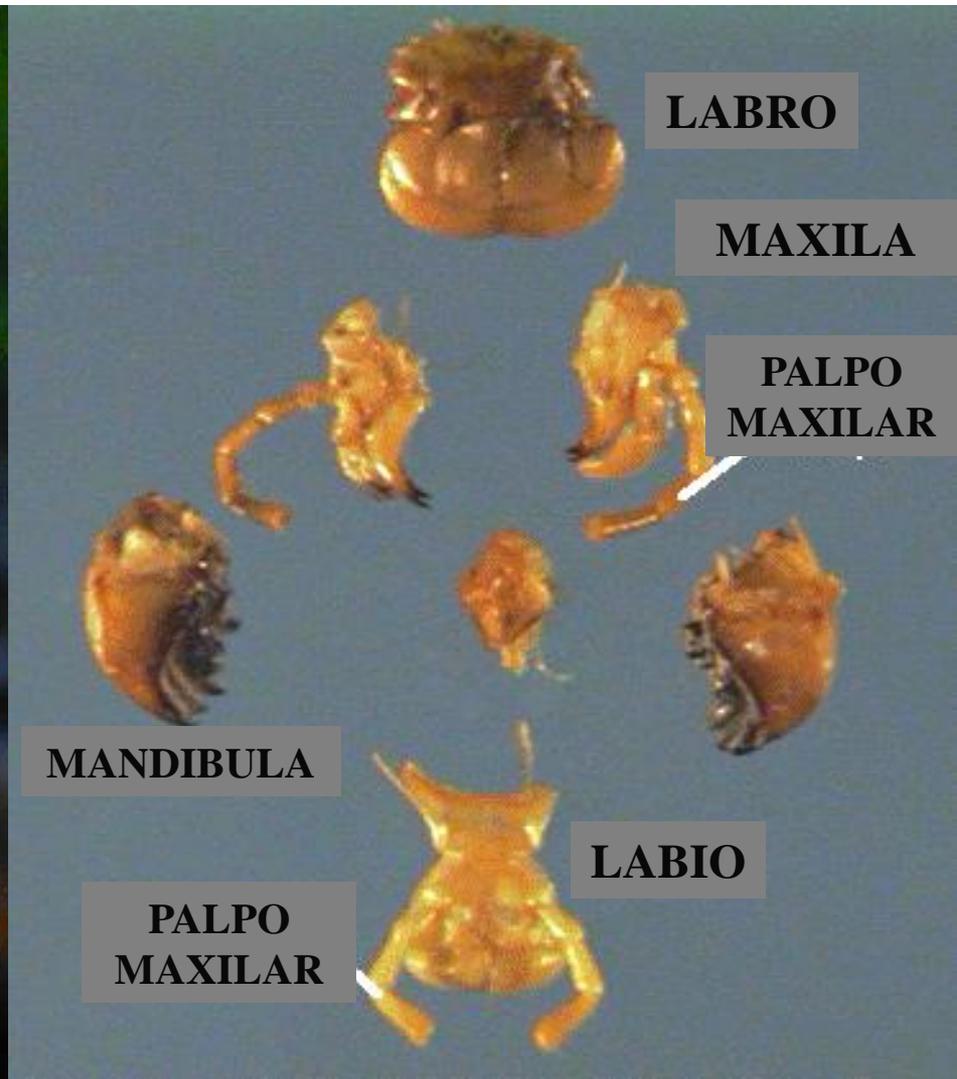
Larva de Lepidóptero

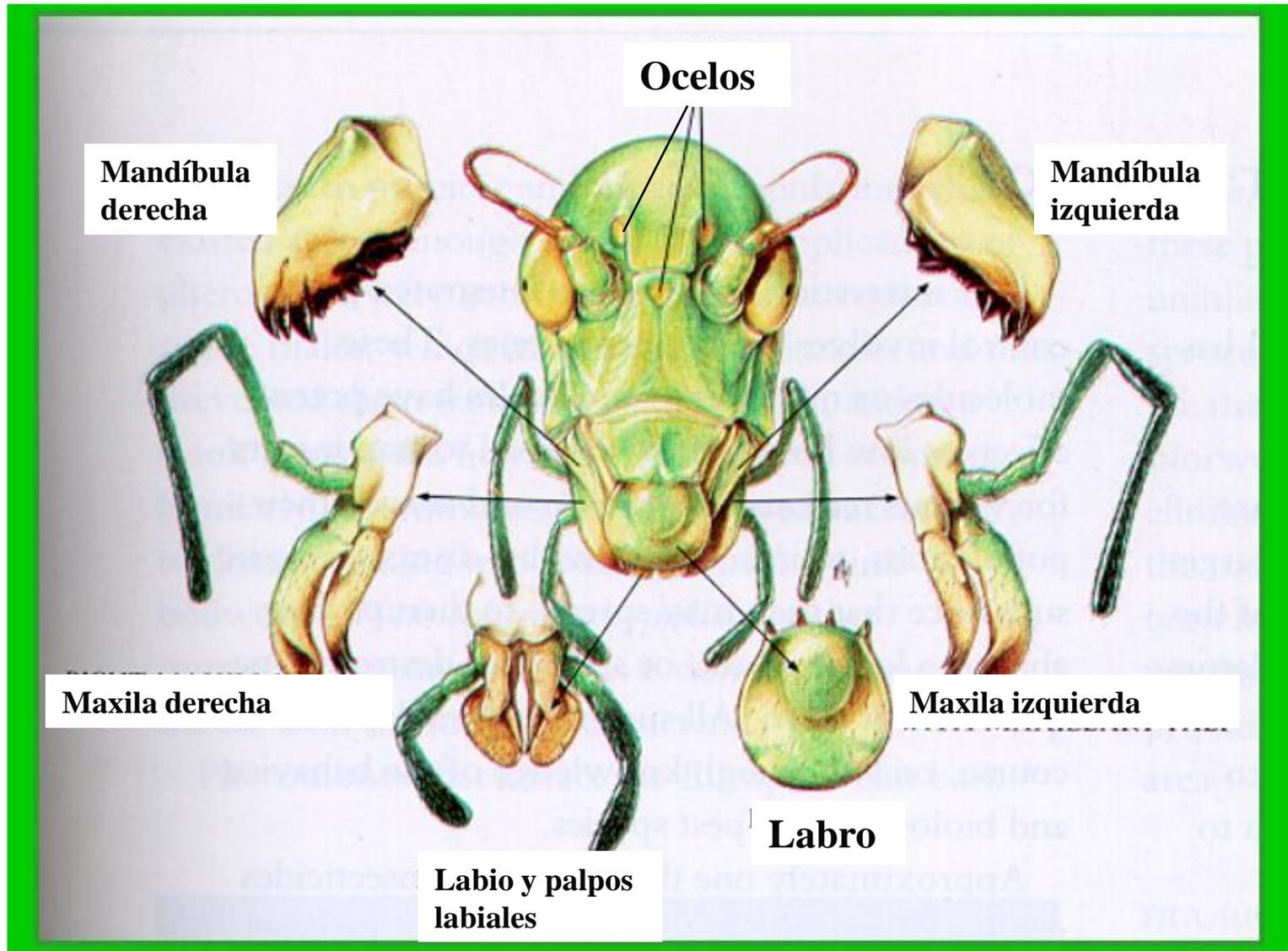


Isóptero



PIEZAS DEL A. BUCAL MASTICADOR





Ocelos

**Mandíbula
derecha**

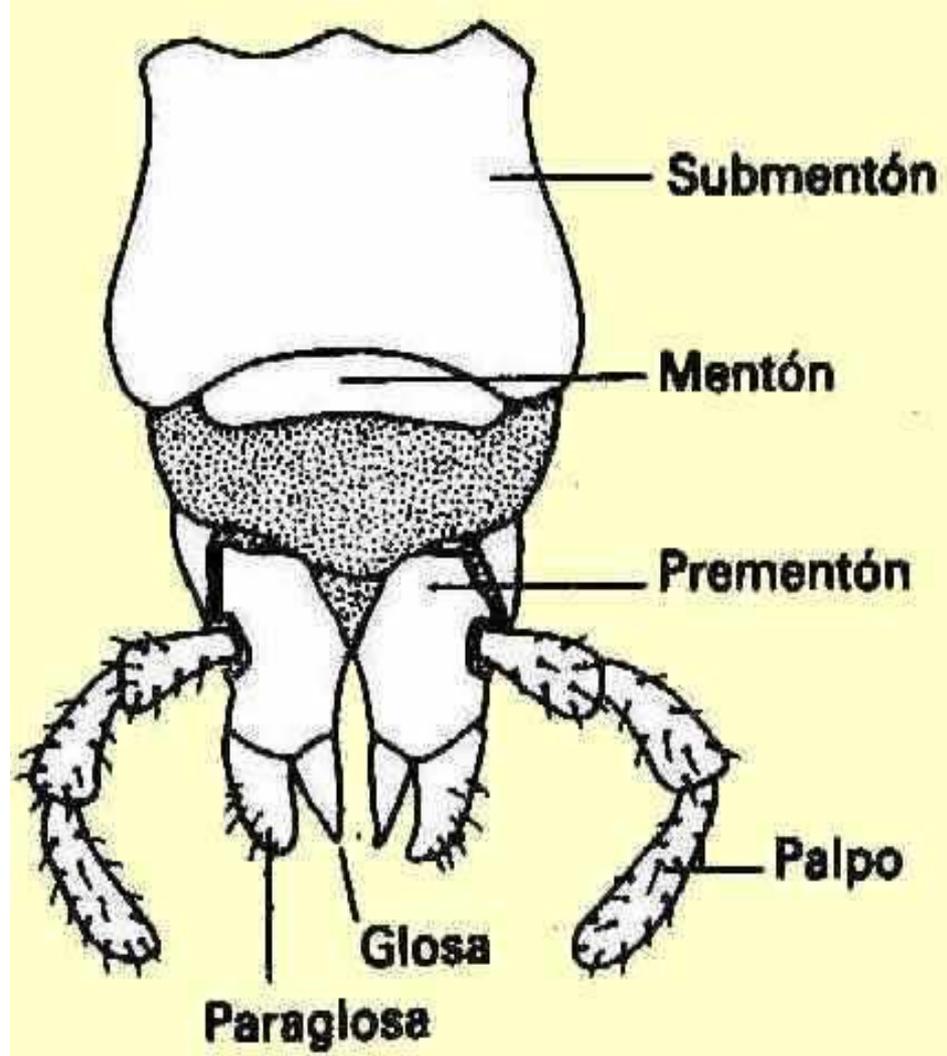
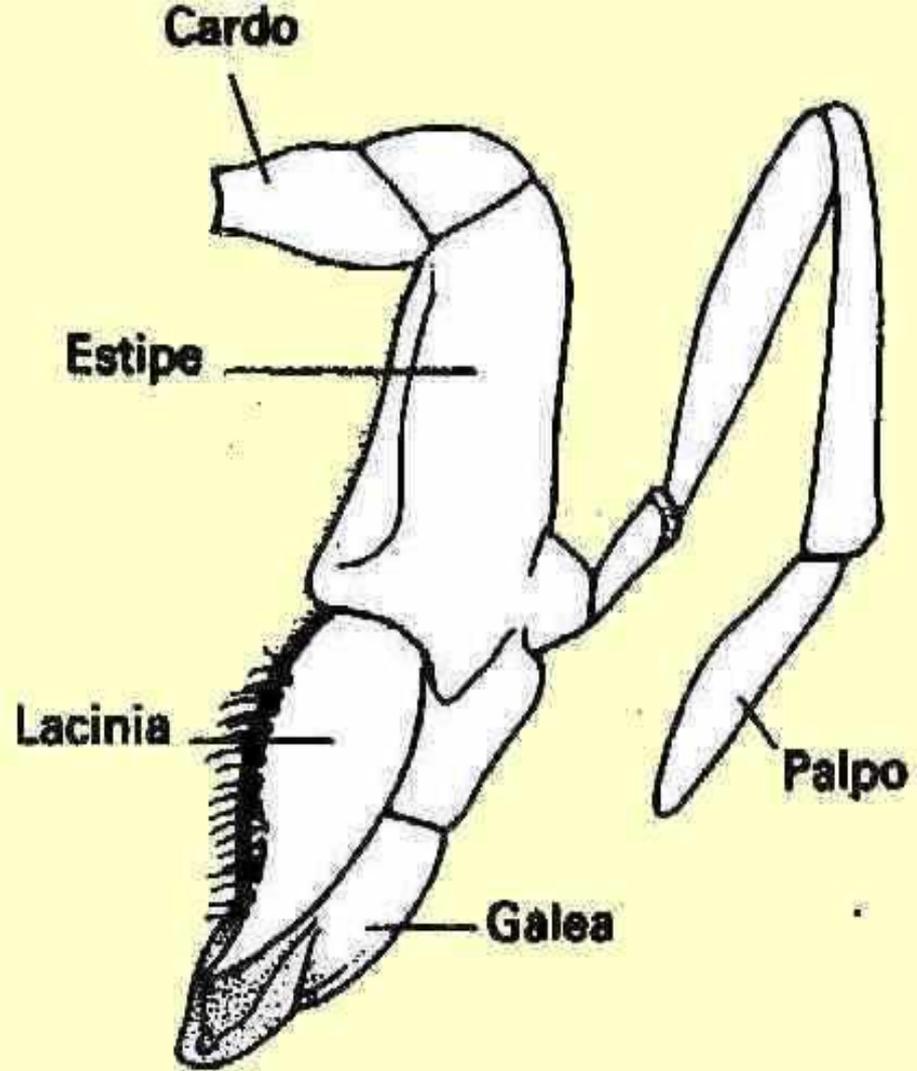
**Mandíbula
izquierda**

Maxila derecha

Maxila izquierda

Labro

**Labio y palpos
labiales**



Aparato Bucal Picador-Chupador

Propio de:

Hemípteros: Chinchas

Homópteros: Mosca Blanca, Chicharras, Afidos. etc

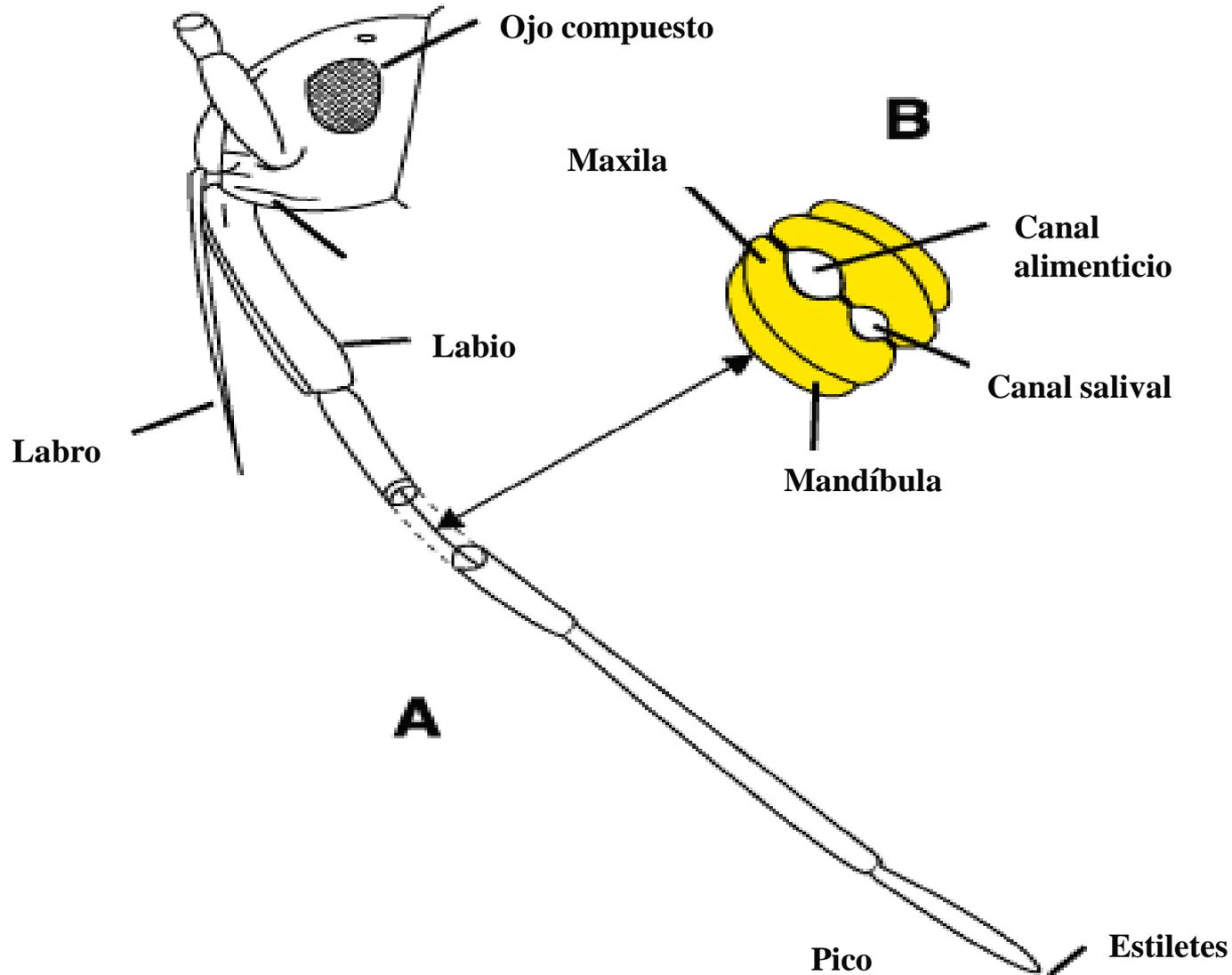
Algunos Dípteros: mosquitos, zancudos

Anopluros: piojos, ladillas

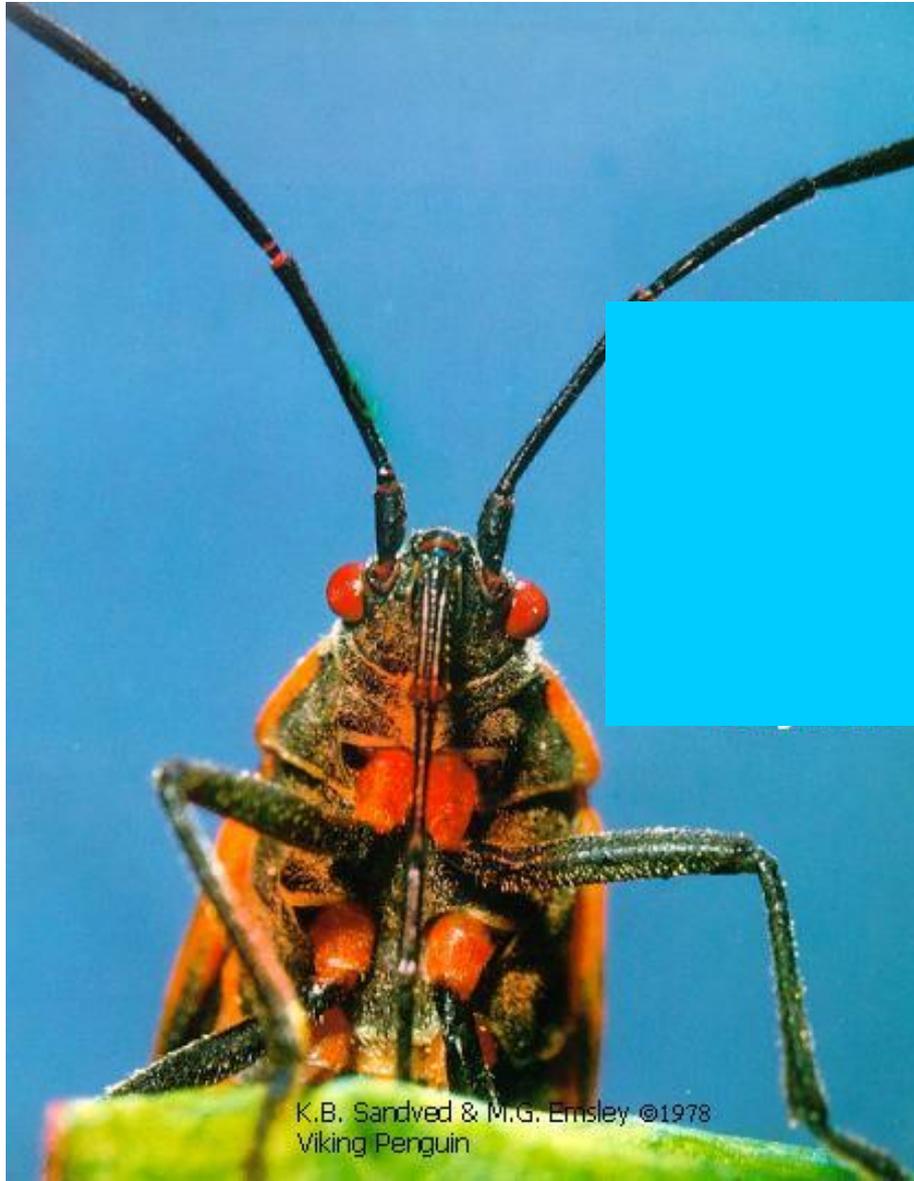
Sifonapteros: Pulgas, Niguas

Tysanopteros: trips

Aparato Bucal picador-chupador de una chinche

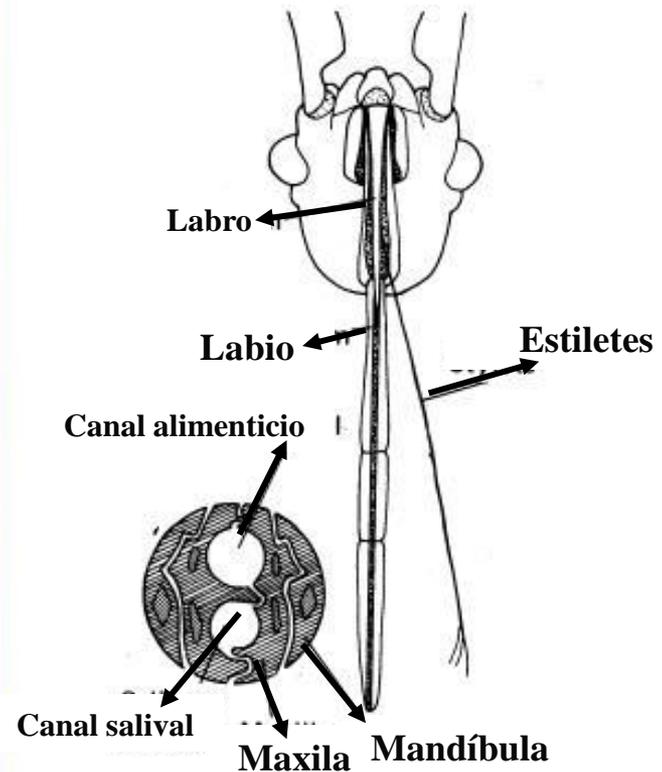


PIEZAS BUCALES DE UNA CHINCHE

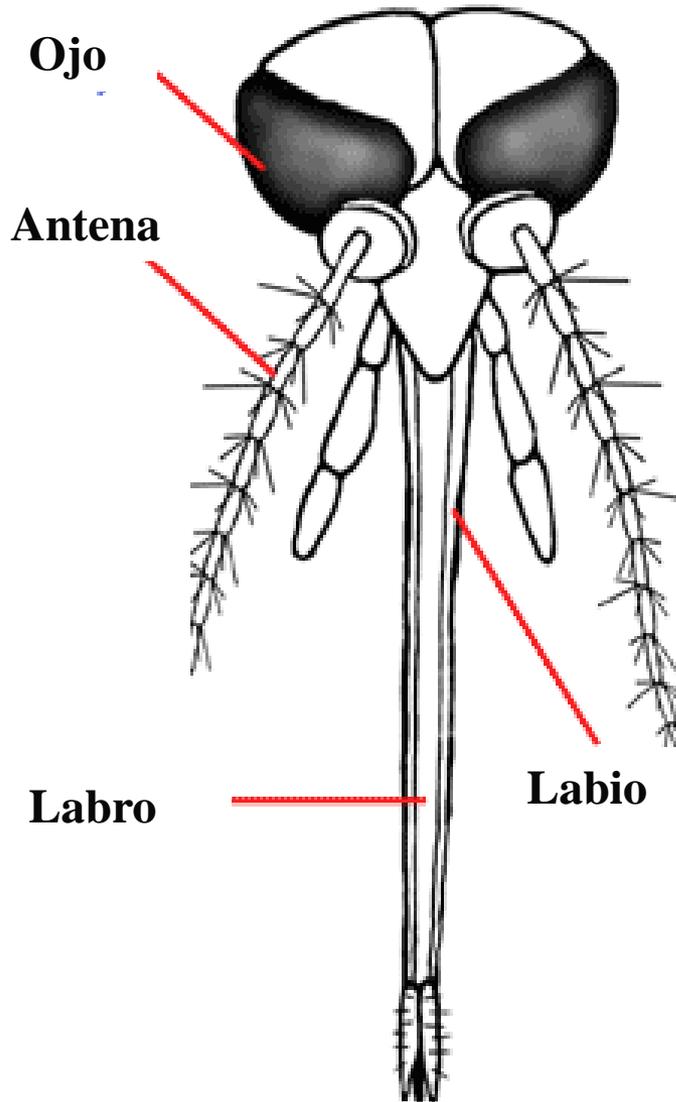


K.B. Sandved & M.G. Emsley ©1978
Viking Penguin

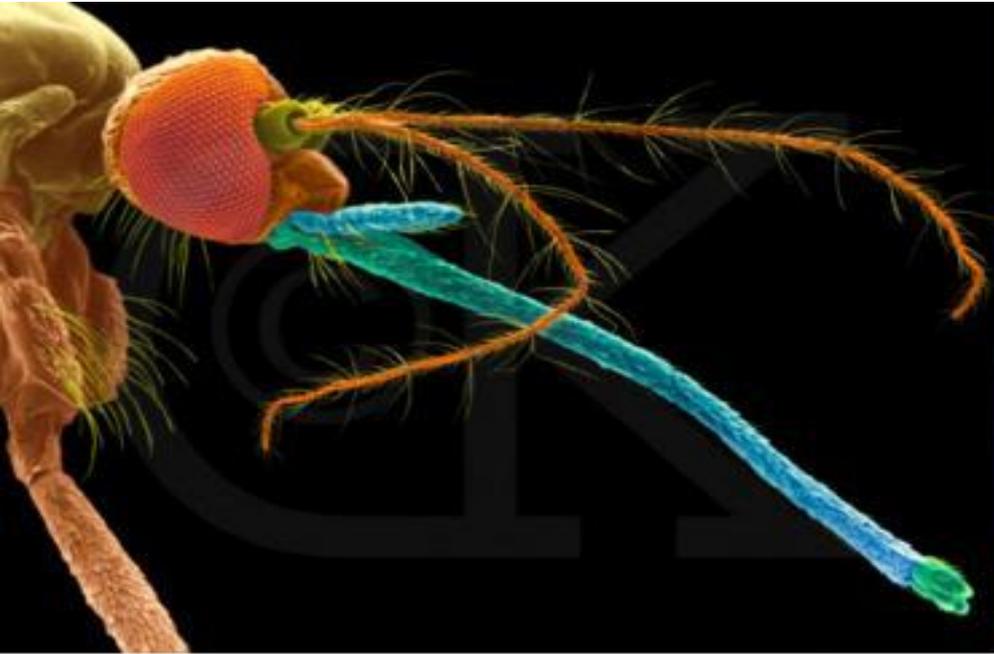
Piezas bucales picadoras chupadoras



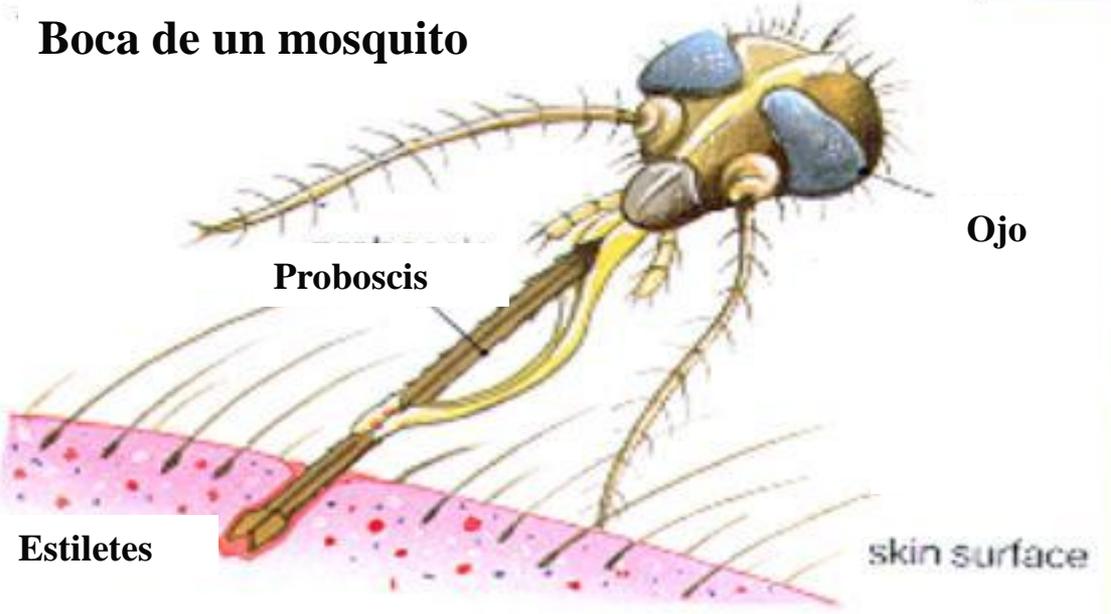
PIEZAS BUCALES PICADORAS CHUPADORAS DE UN MOSQUITO



Piezas bucales picadoras-chupadoras



Boca de un mosquito



Estiletos

Ojo

skin surface

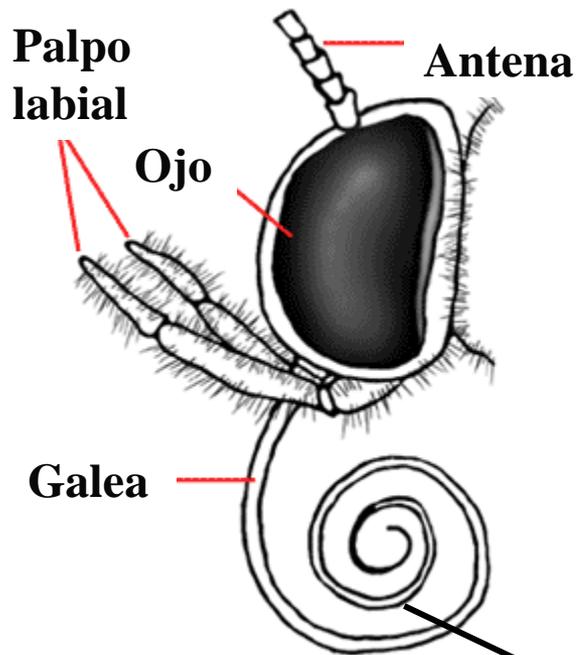
Aparato Bucal Chupador

Propio de:

Lepidópteros: Mariposas y Polillas

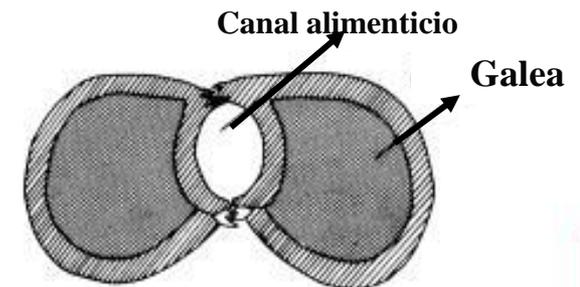
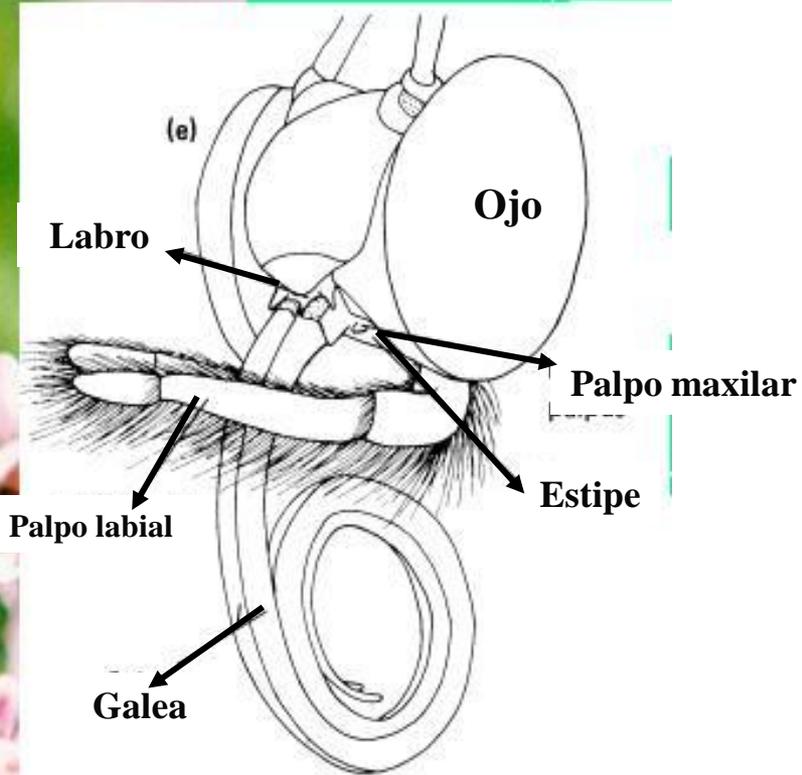
Algunos **DIPTEROS**

APARATO BUCAL DE UN LEPIDOPTERO (TIPO SIFON)



PROBOSCIS

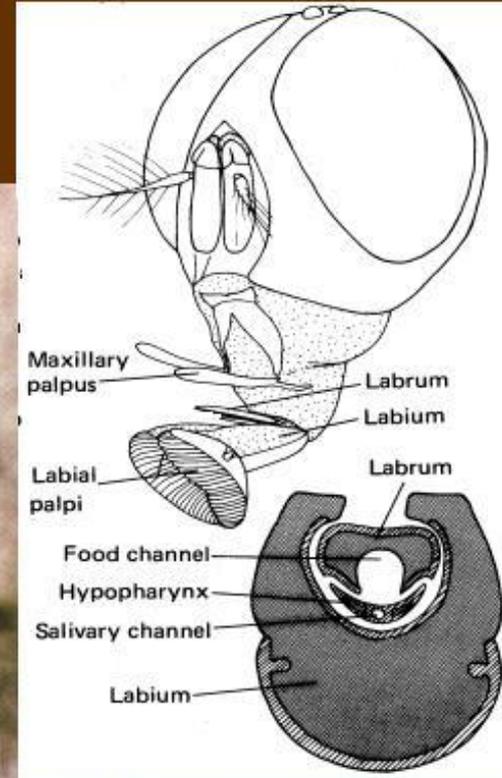
Estructura de la boca de un Lepidóptero

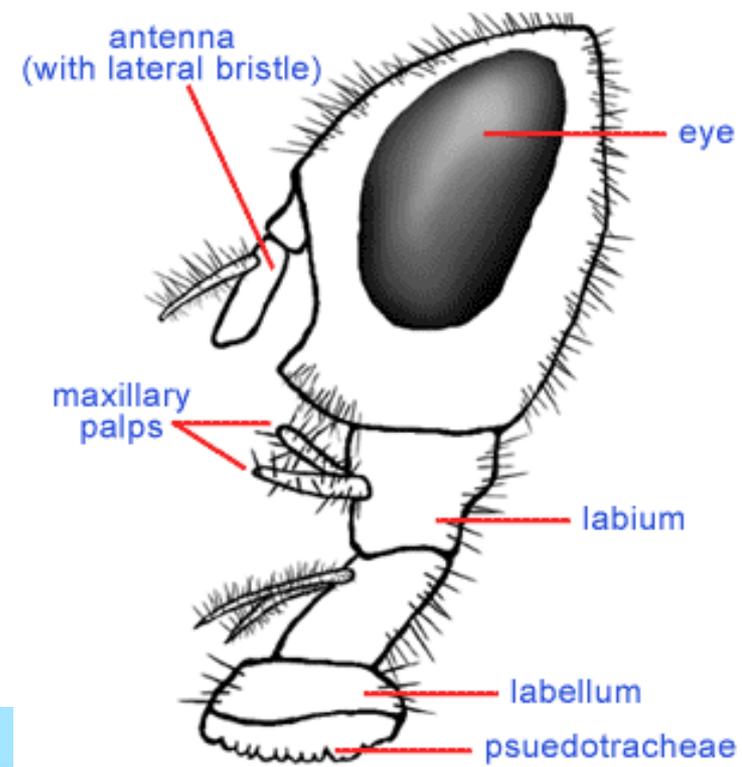
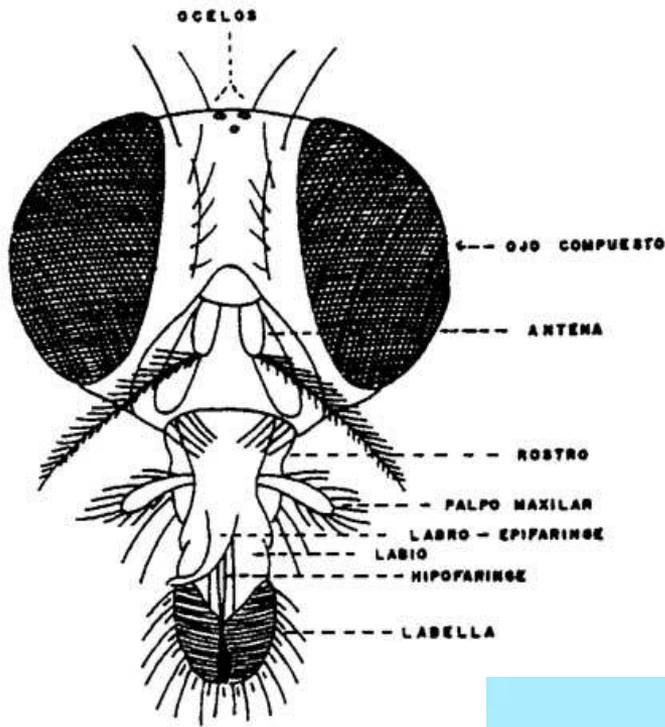


Aparato bucal chupador tipo sifón

Aparato Bucal De Dípteros (Moscas)

Piezas bucales Chupadoras

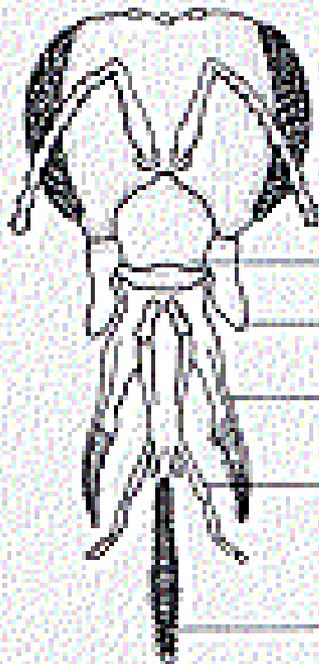




Aparato bucal tipo esponja de la mosca común

Aparato Bucal Lamedor

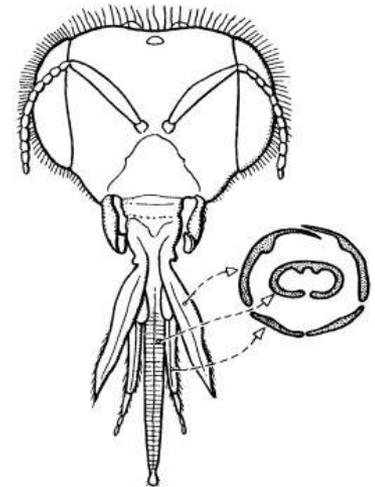
Propio de Abejas y otros Himenópteros

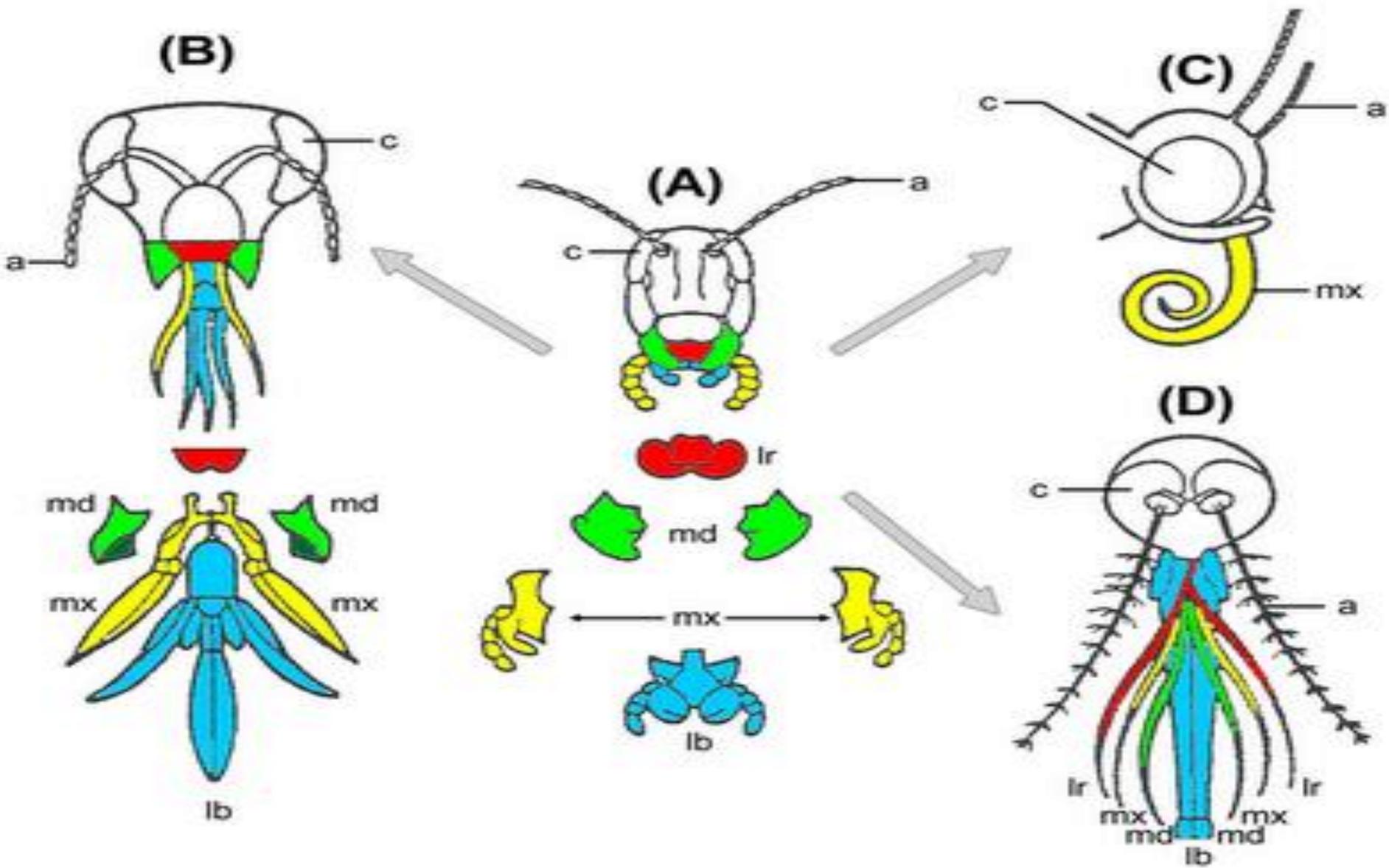


Labio LABRO
M MANDIBULA
Ma MAXILA
Labio LABIO
Ton LENGUA



**BOCA
LAMEDORA** 

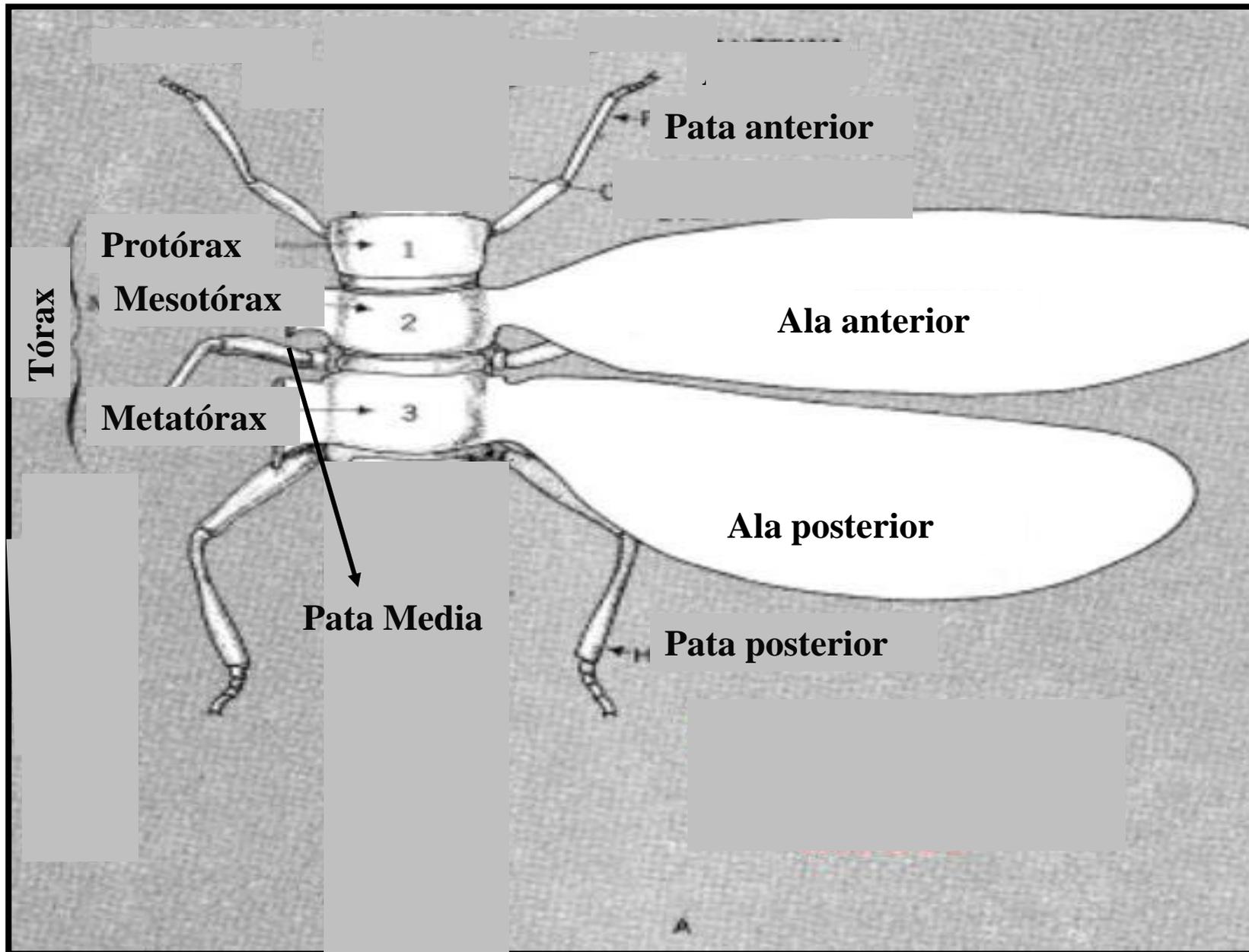




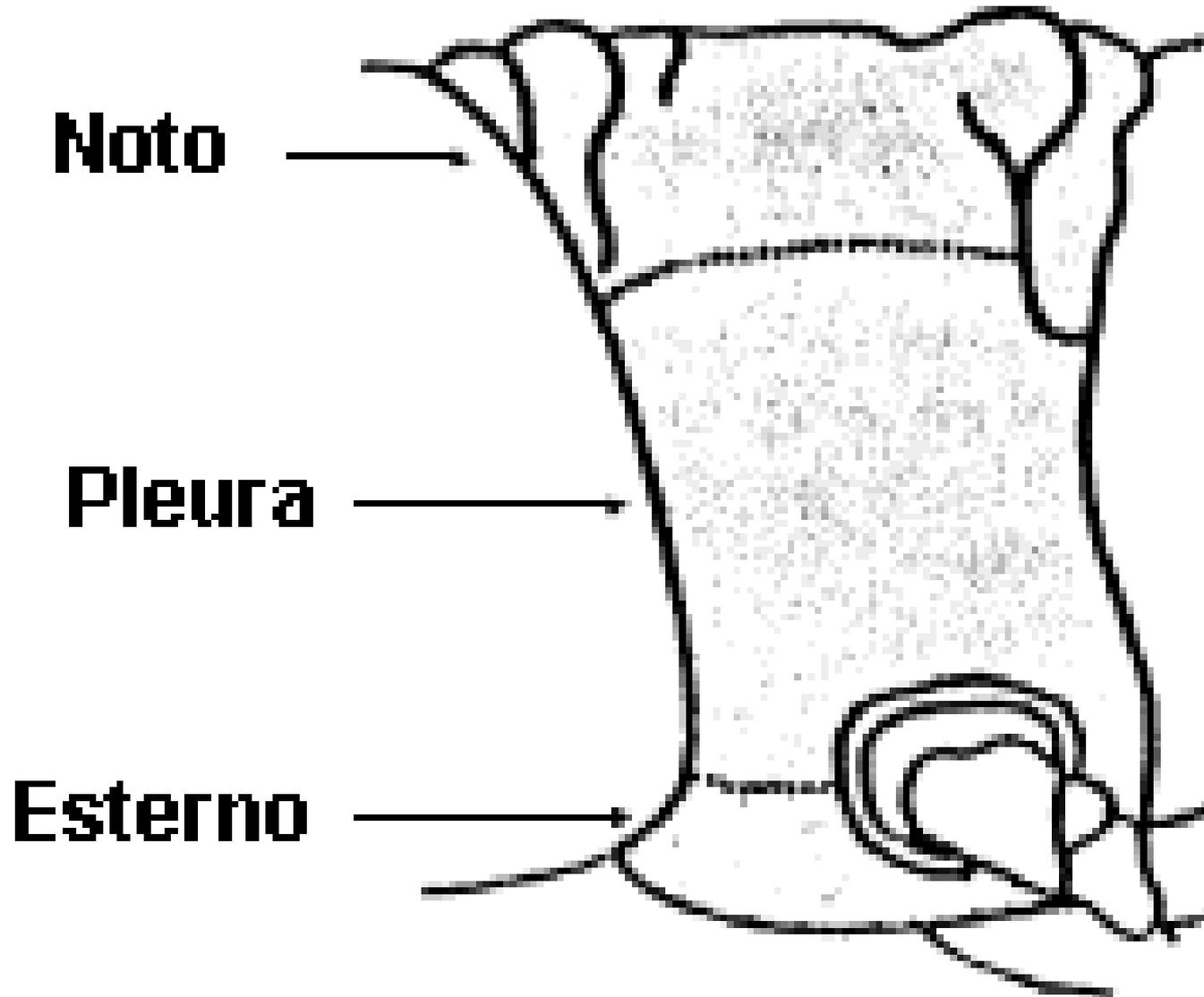
Cuadro resumen de los principales aparatos bucales.

A. Masticador B. Lamedor C. Chupador D. Picador chupador

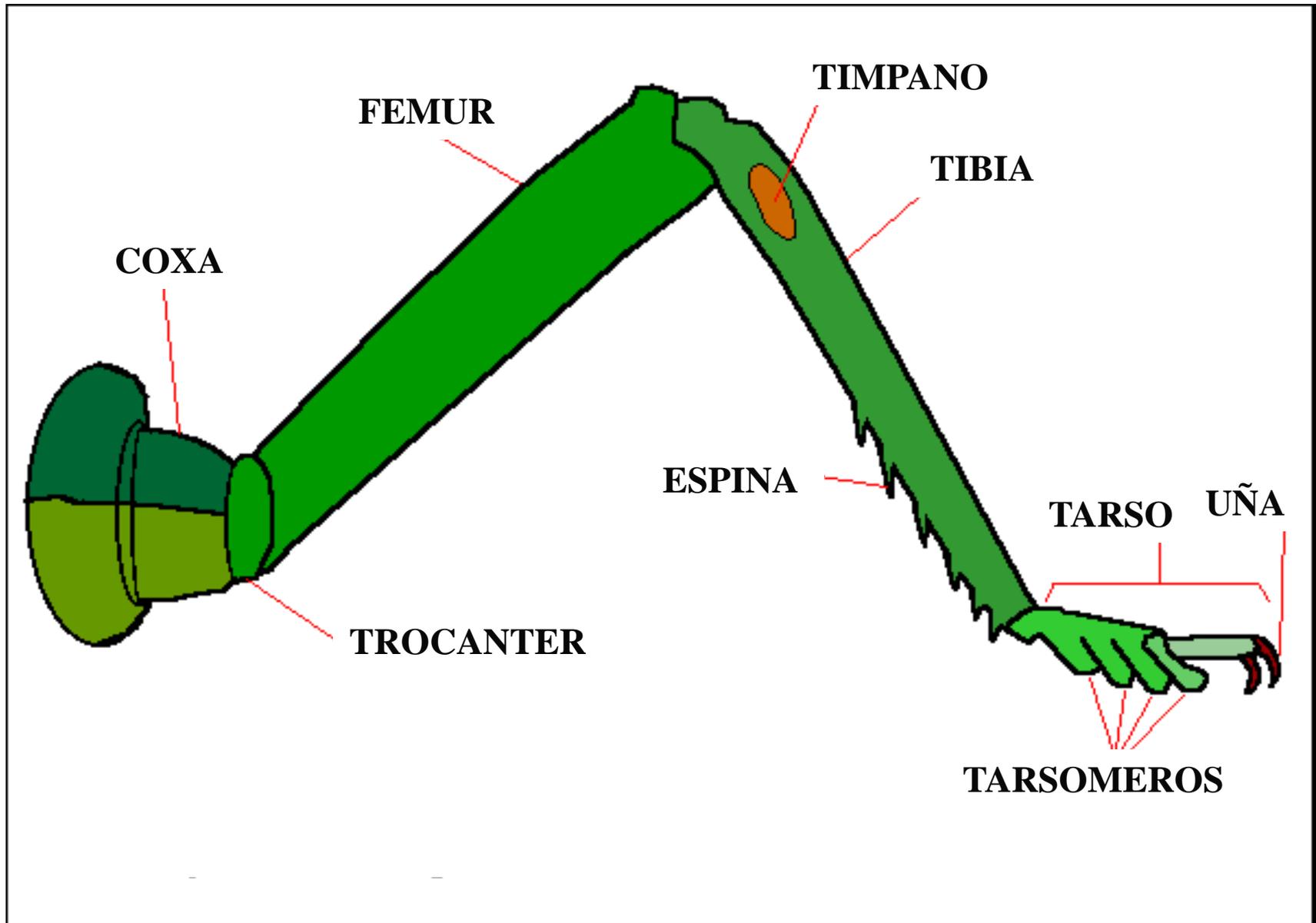
ESTRUCTURA DEL TORAX



A la parte dorsal del tórax se le llama: **Notum**; a la parte ventral: **Esternum**; y a las partes laterales: **Pleuras**



SEGMENTOS DE UNA PATA DE INSECTOS

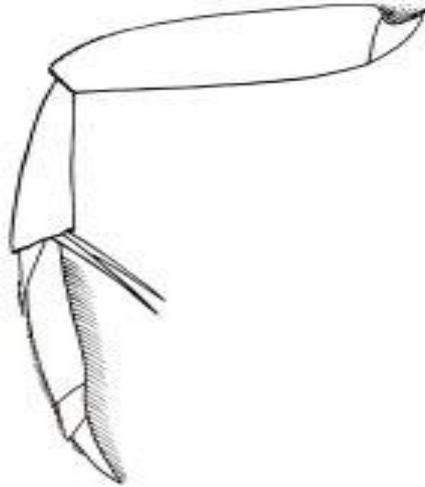


TIPOS DE PATAS

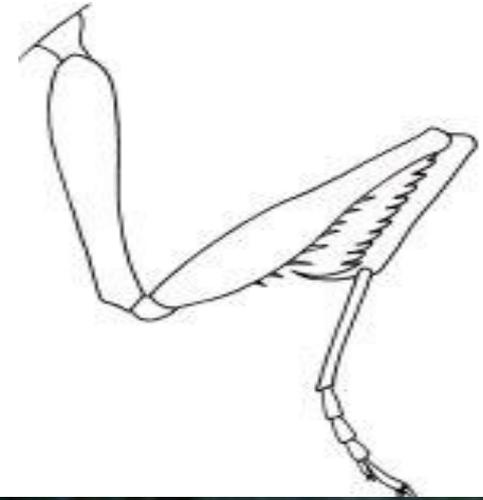
Saltadora



Nadadora

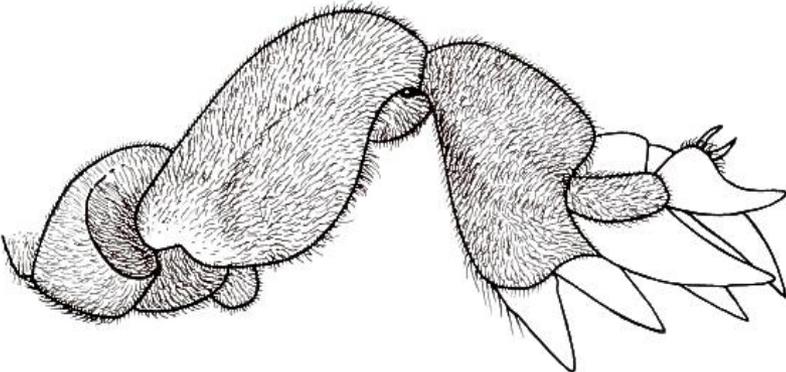


Cazadora

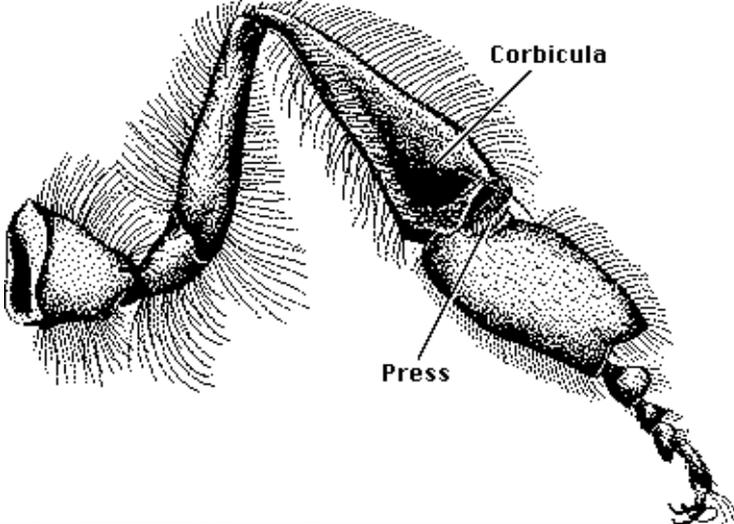


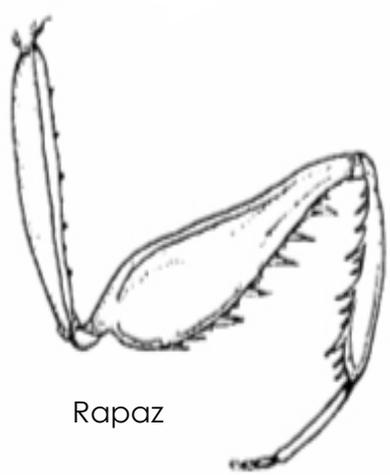
Joe Singleton 2001

Cavadora

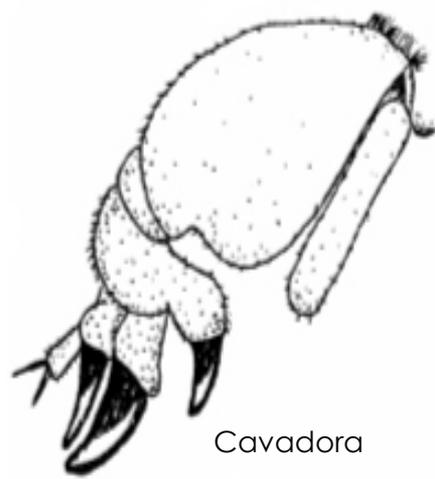


Colectora

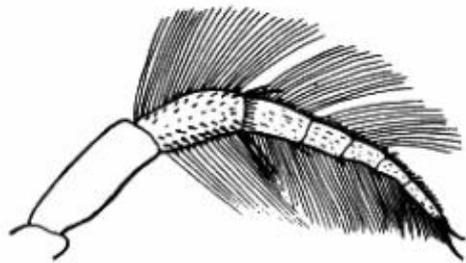




Rapaz



Cavadora



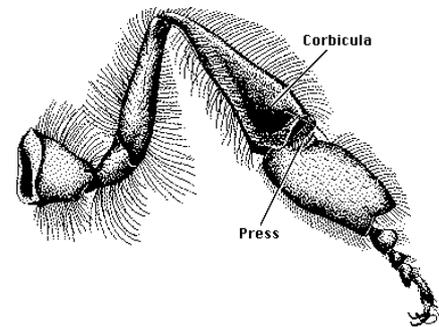
Nadadora

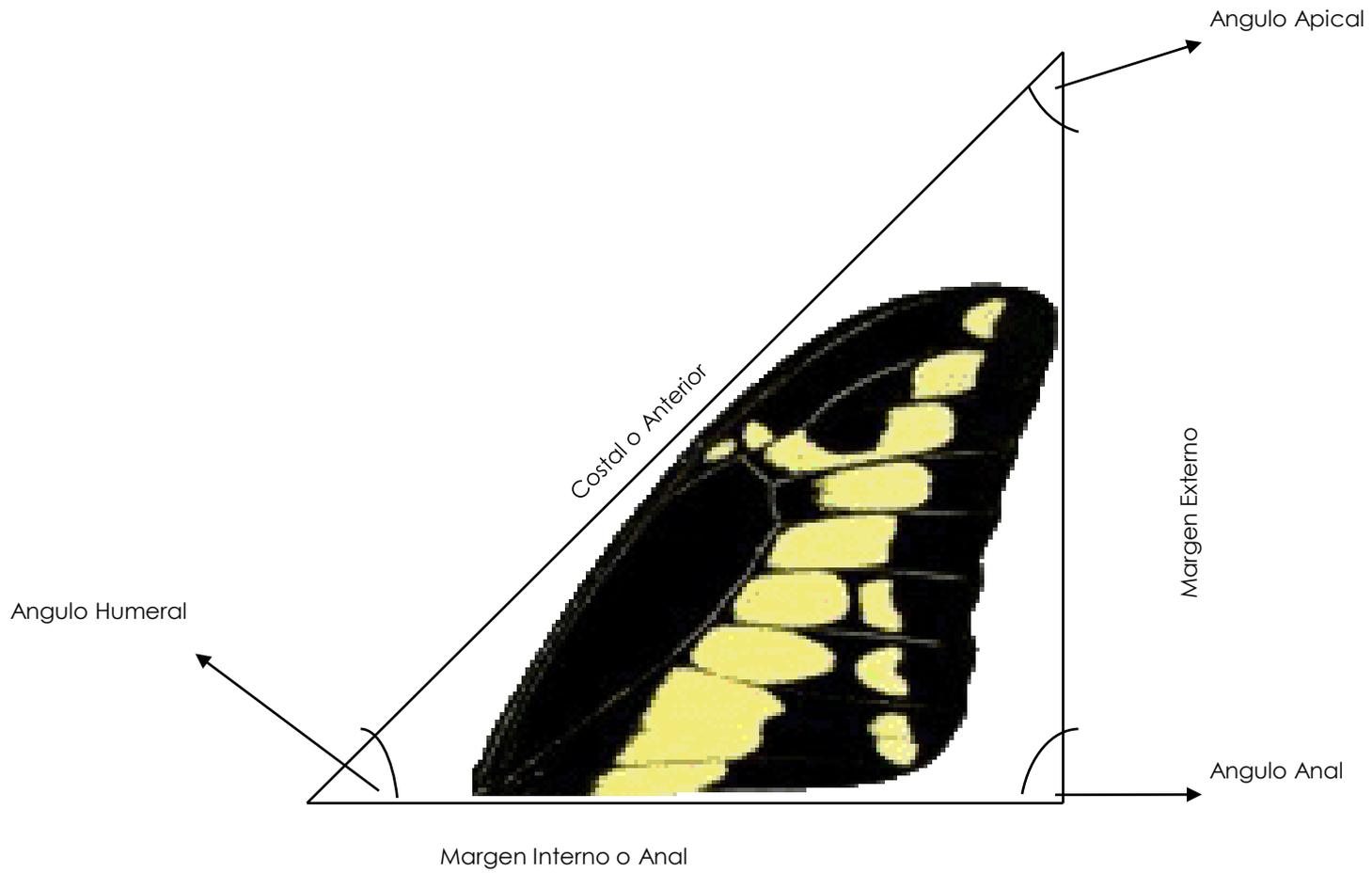


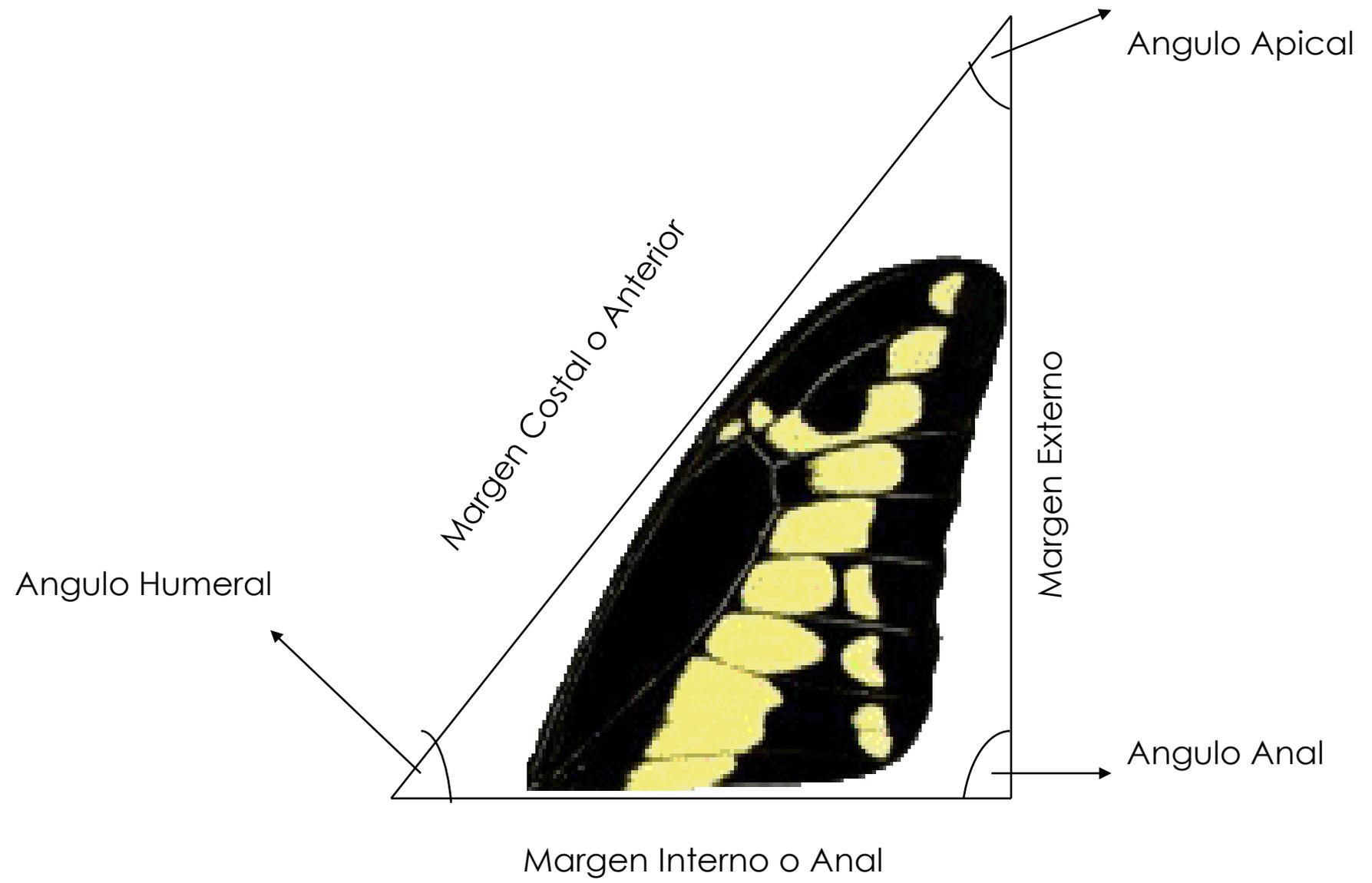
Saltadora

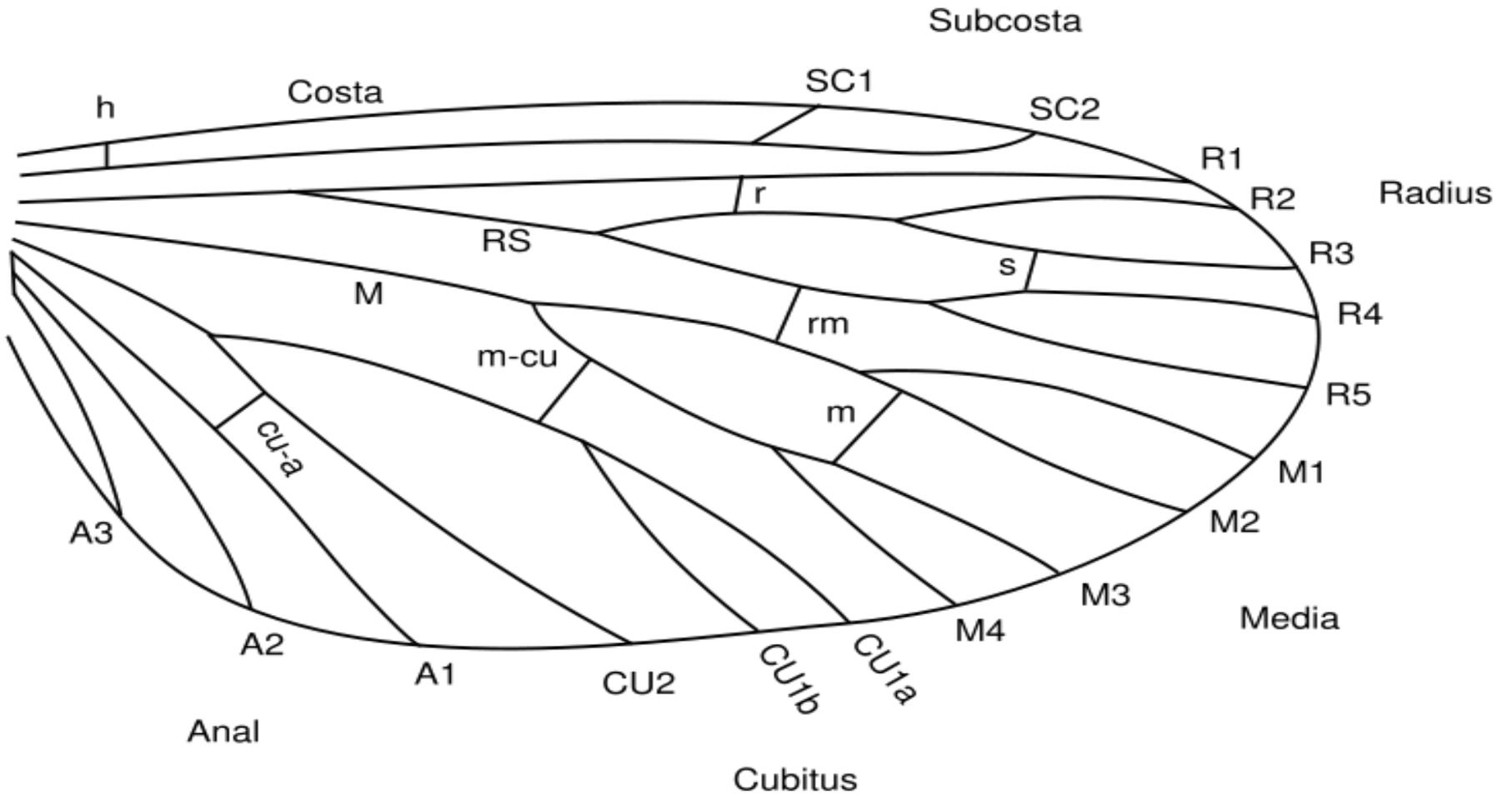


Colectora









upload.wikimedia.org

Venación según Comstock-Needham

ALAS DE LOS INSECTOS

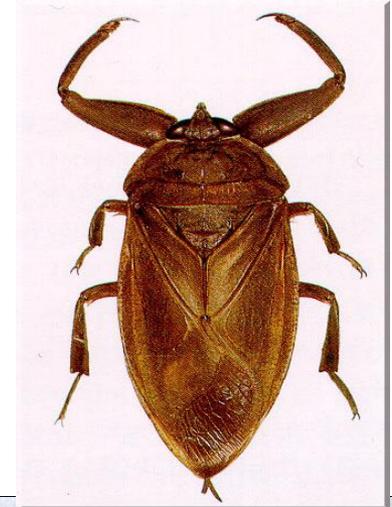
Elitros



Tegminas



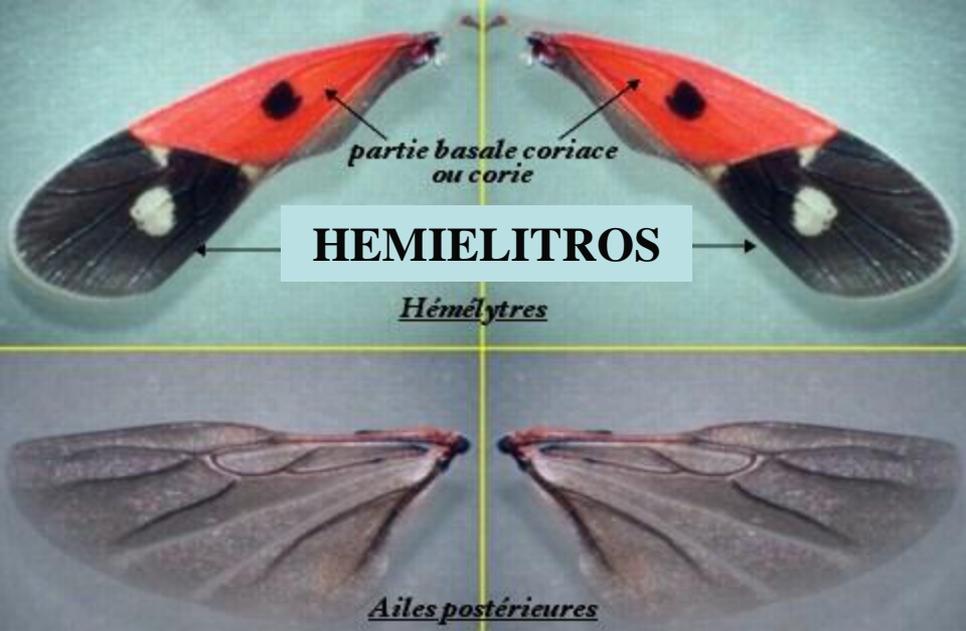
Hemielitro



#1183
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UP



ELITROS



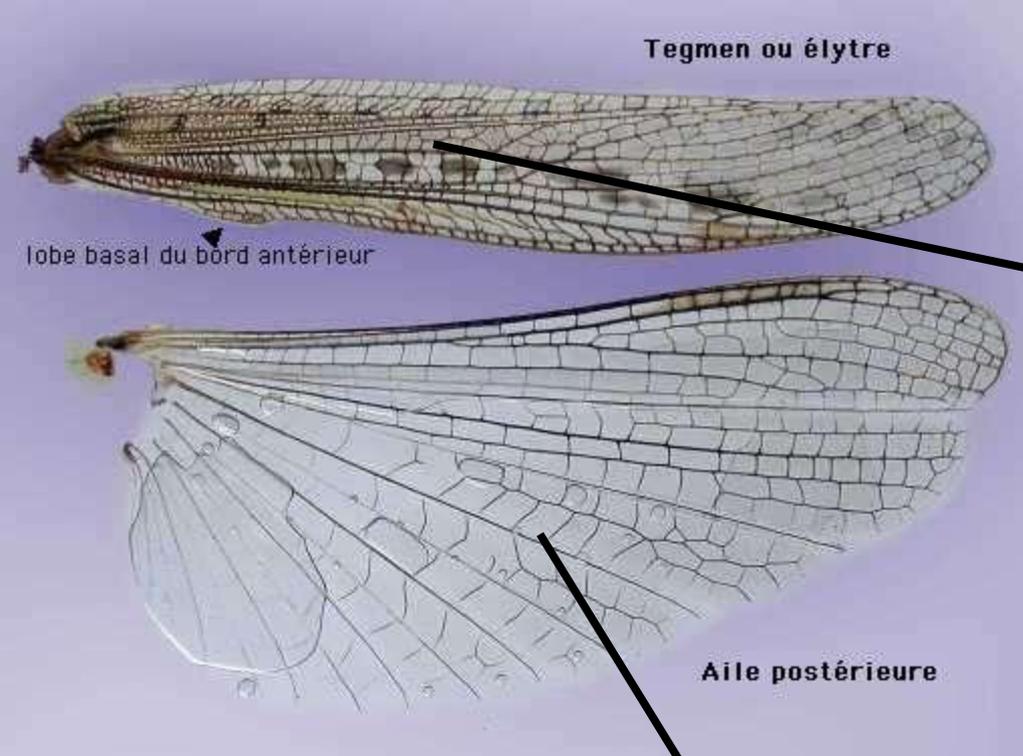
Tegmen ou élytre

lobe basal du bord antérieur

Aile postérieure

TEGMINAS

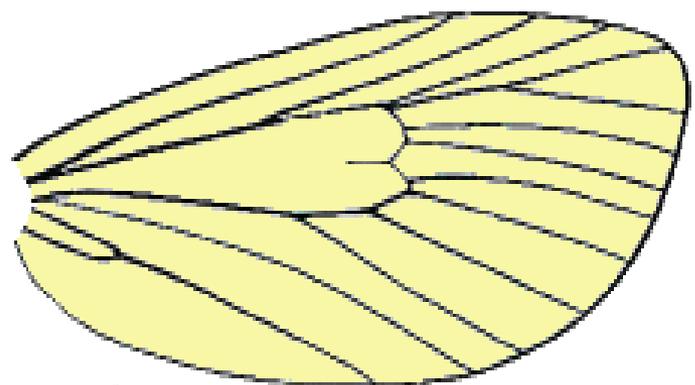
ALAS MEMBRANOSAS



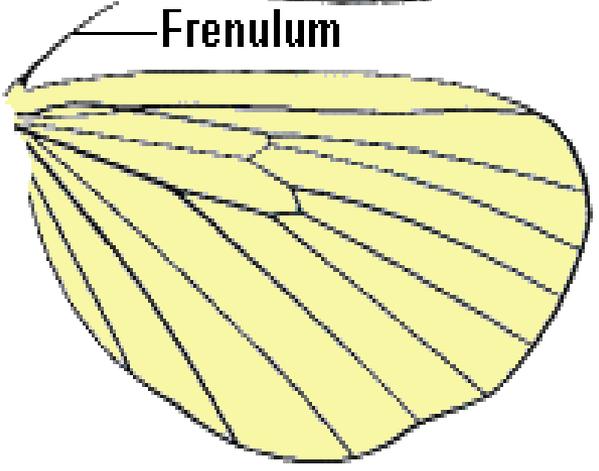


HALTERES O BALANCINES

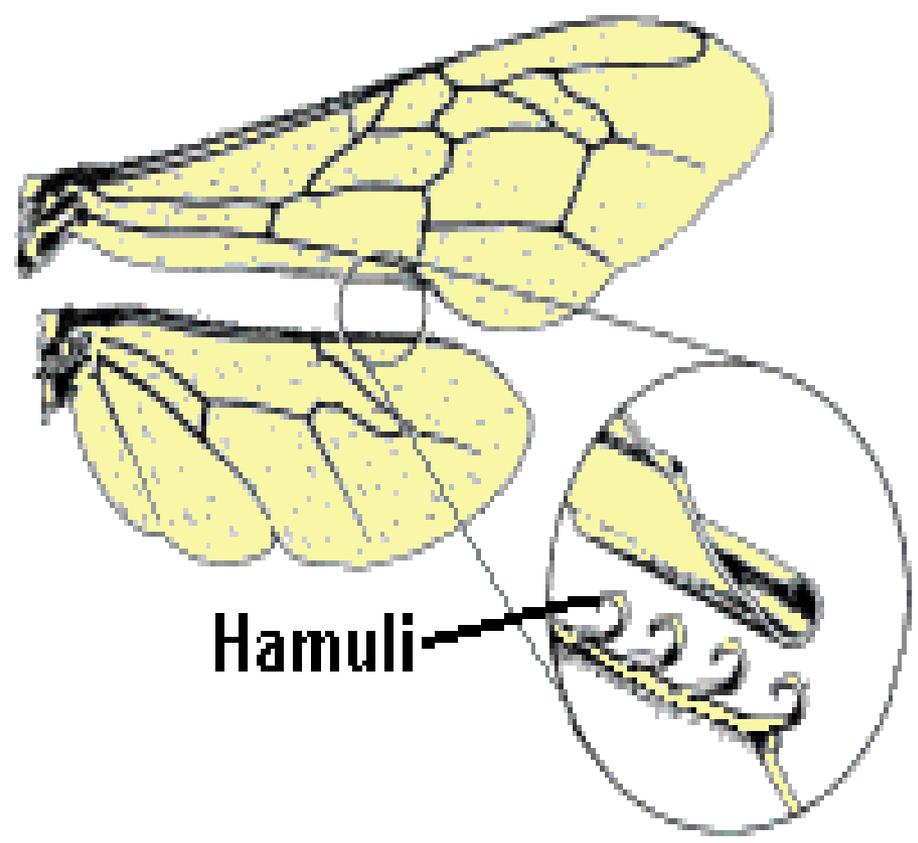




Frenulum

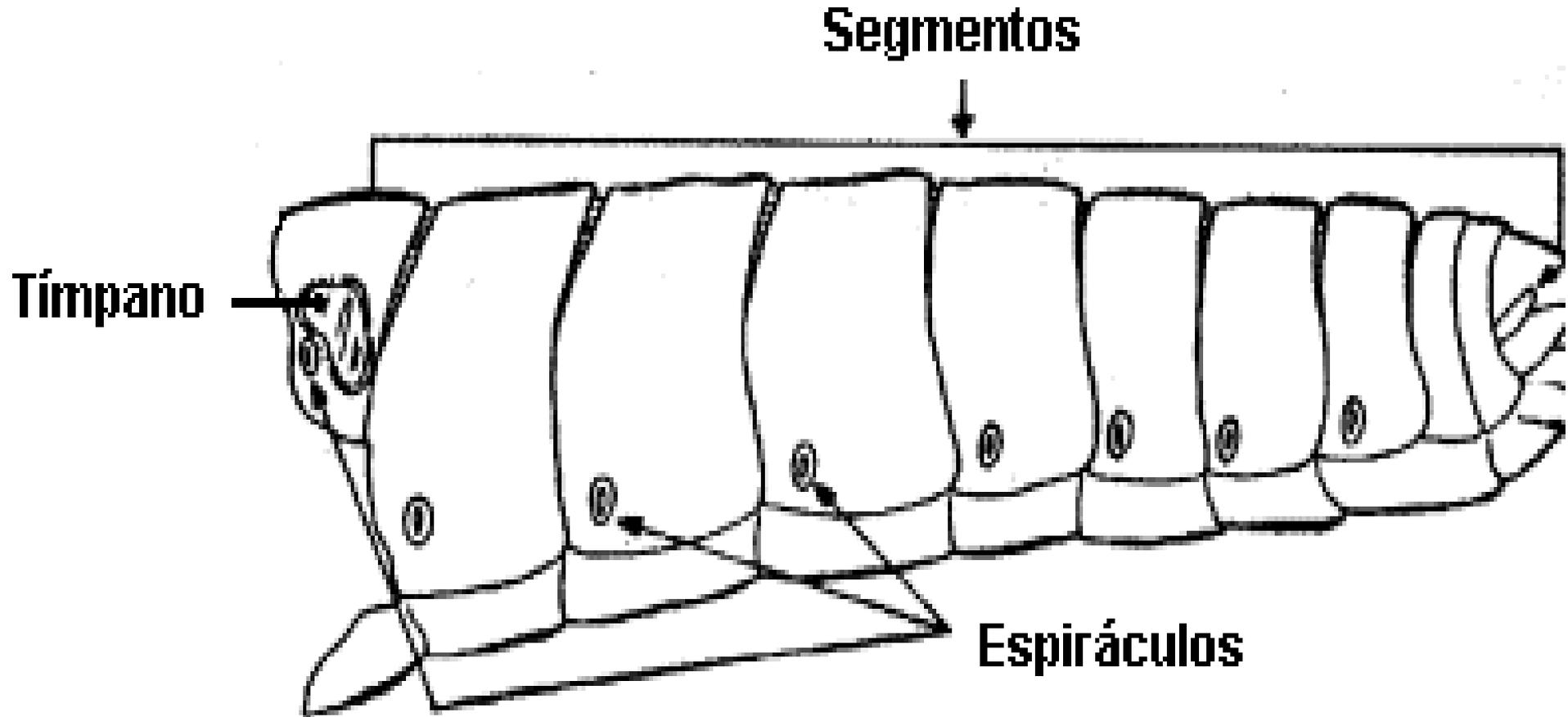


www.cals.ncsu.edu



Hamuli

ABDOMEN DE LOS INSECTOS



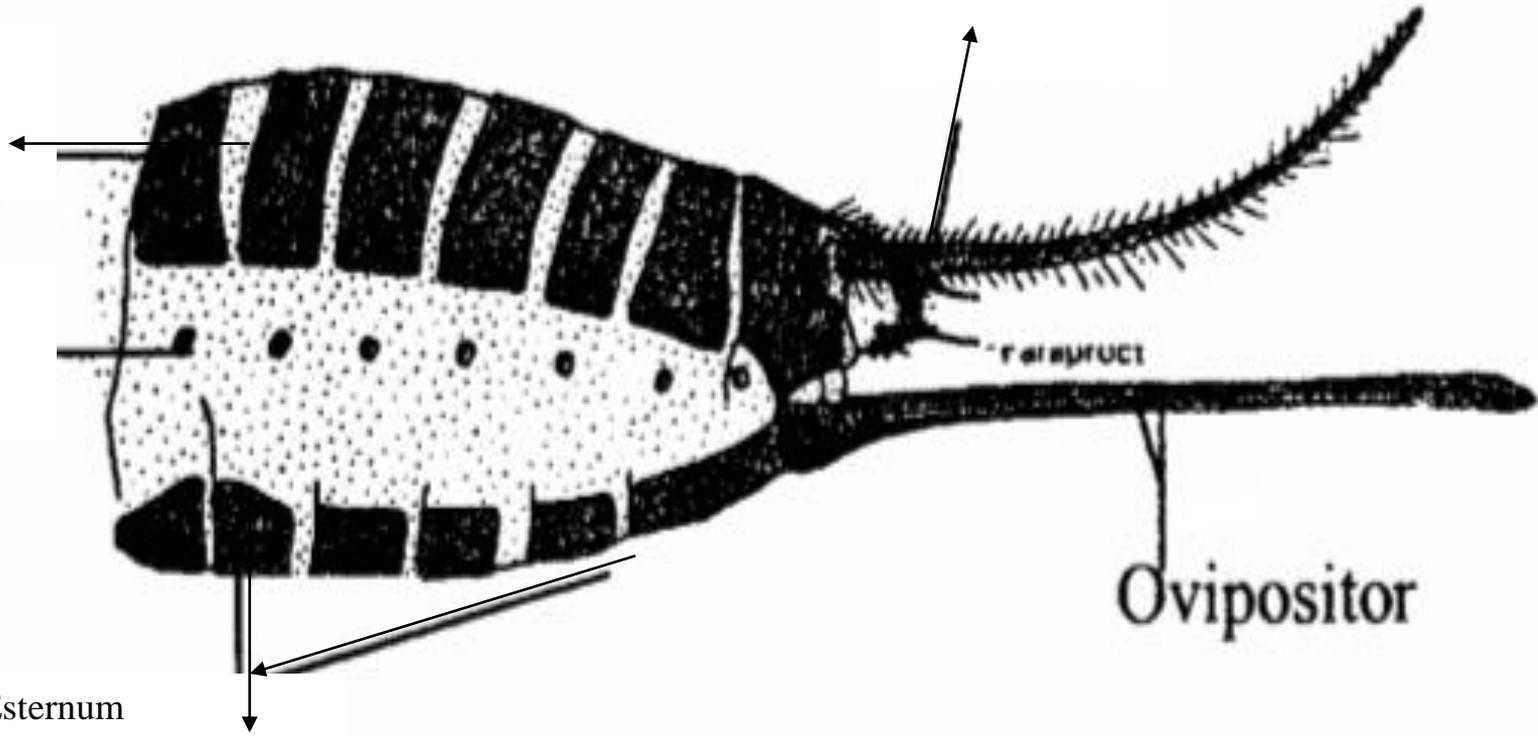
Cercos

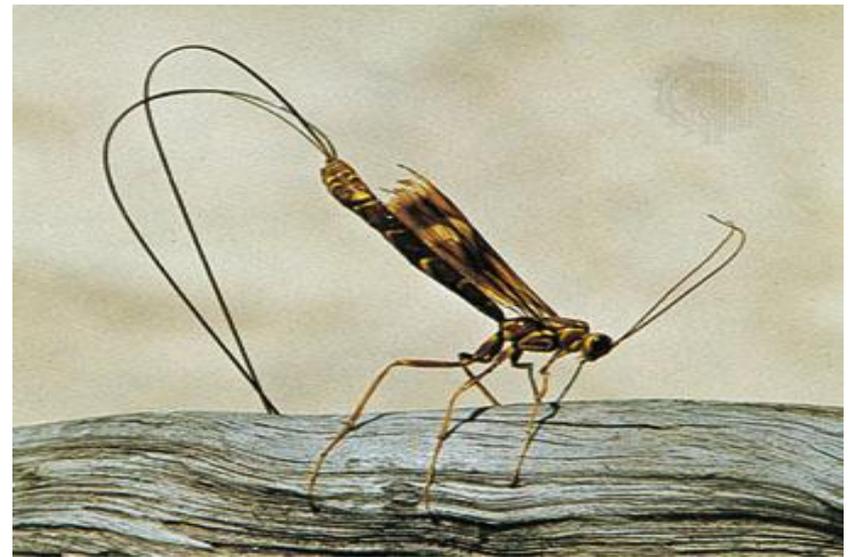
Tergo

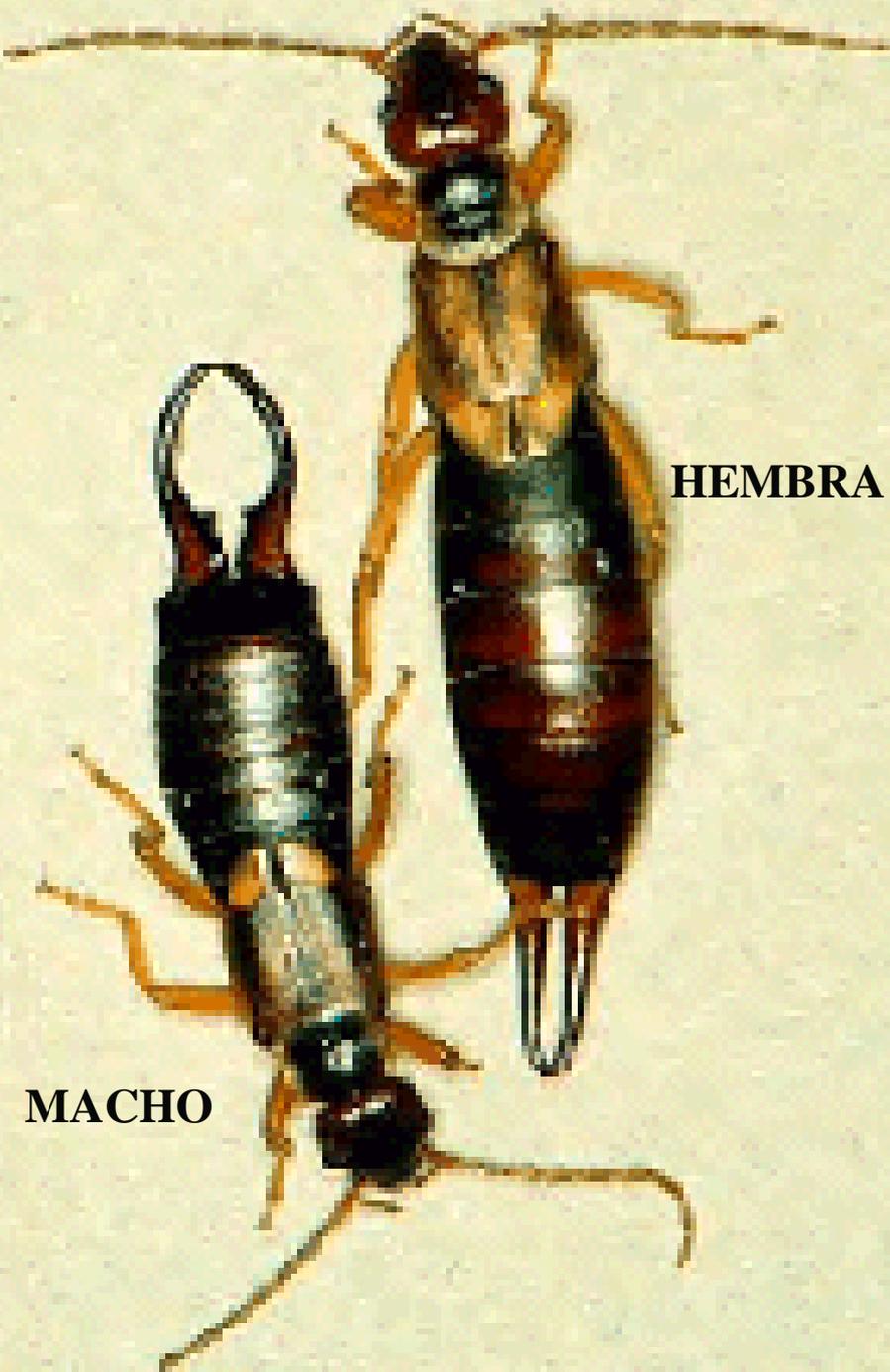
Espiráculo

Esternum

Ovipositor





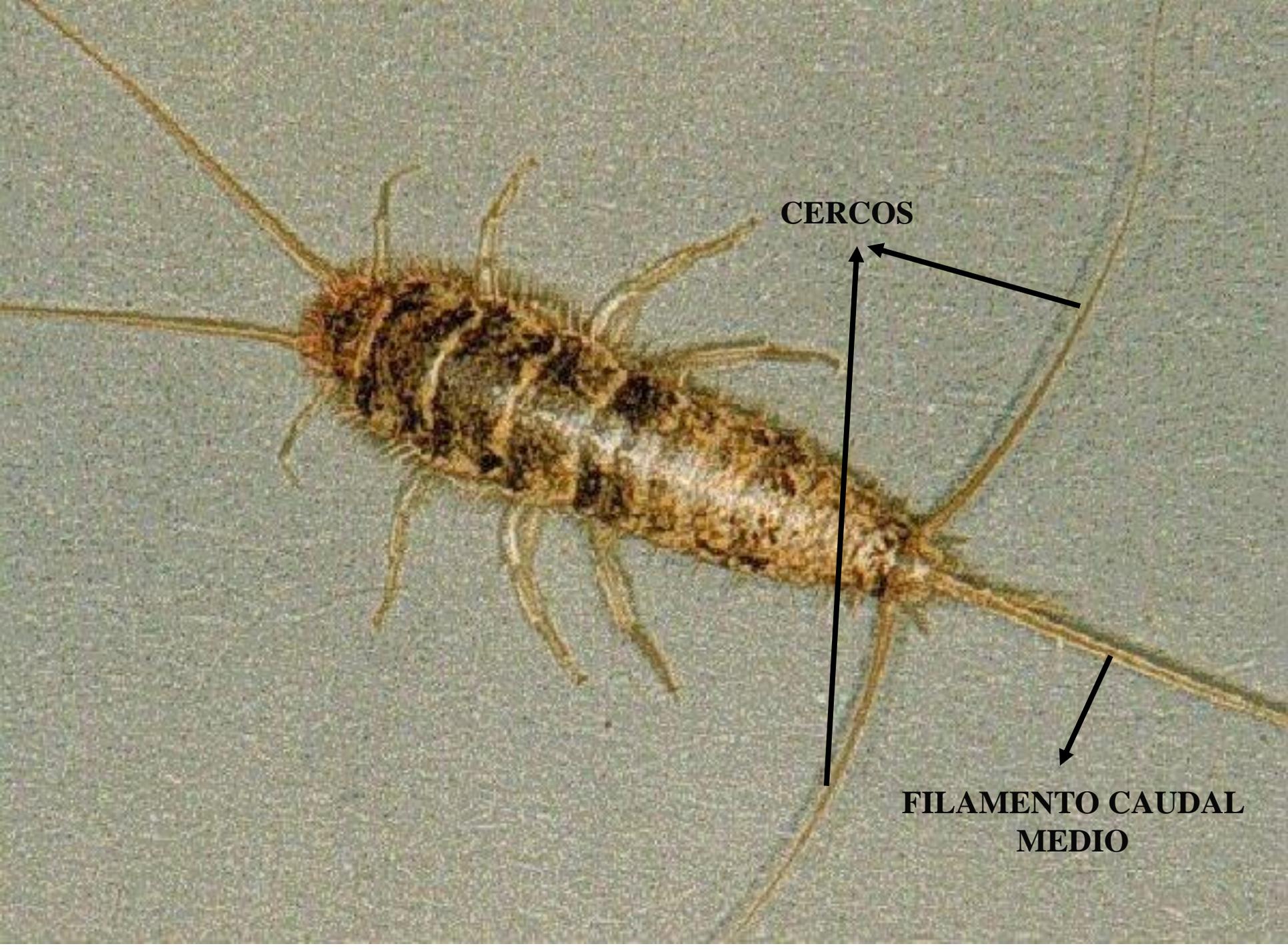


HEMBRA

MACHO



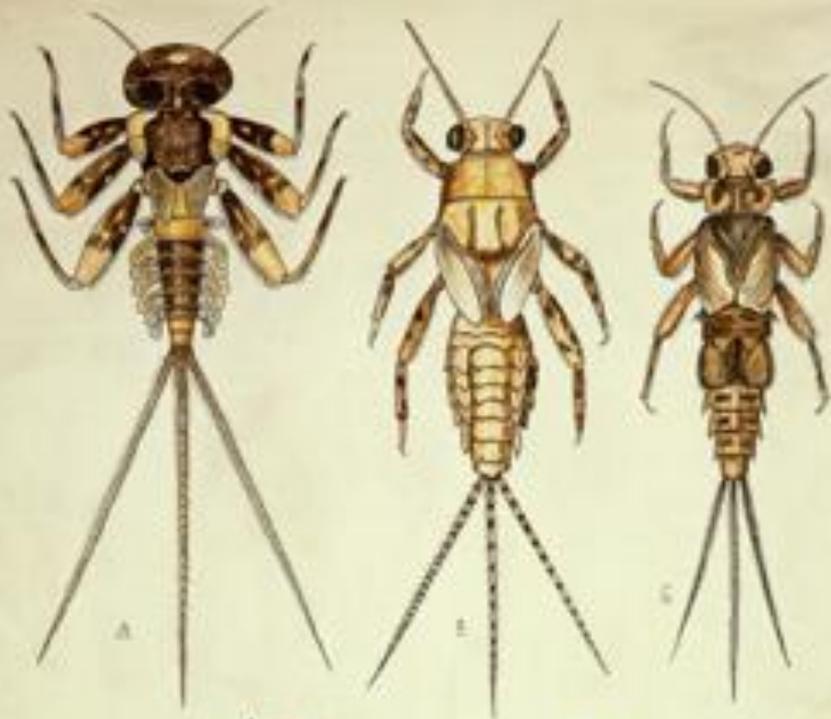
CERCOS



CERCOS

**FILAMENTO CAUDAL
MEDIO**





- LARVAE
 1. *EPHEMERELLA TORCIPES* FORB.
 2. *EPHEMERELLA JACCA* FORB.
 3. *CAENIS PALKIJANI* SIEB.
 4. *TRICHOPTERA* (EPHEMERELLA) FORB.

EPHEMERELLA
 CAENIS - C
 EPHEMERELLA - B
 EPHEMERELLA - A
 LARVA - D
 MOUTH - E
 MOUTH - F
 MOUTH - G
 MOUTH - H

EPHEMERIDA II

