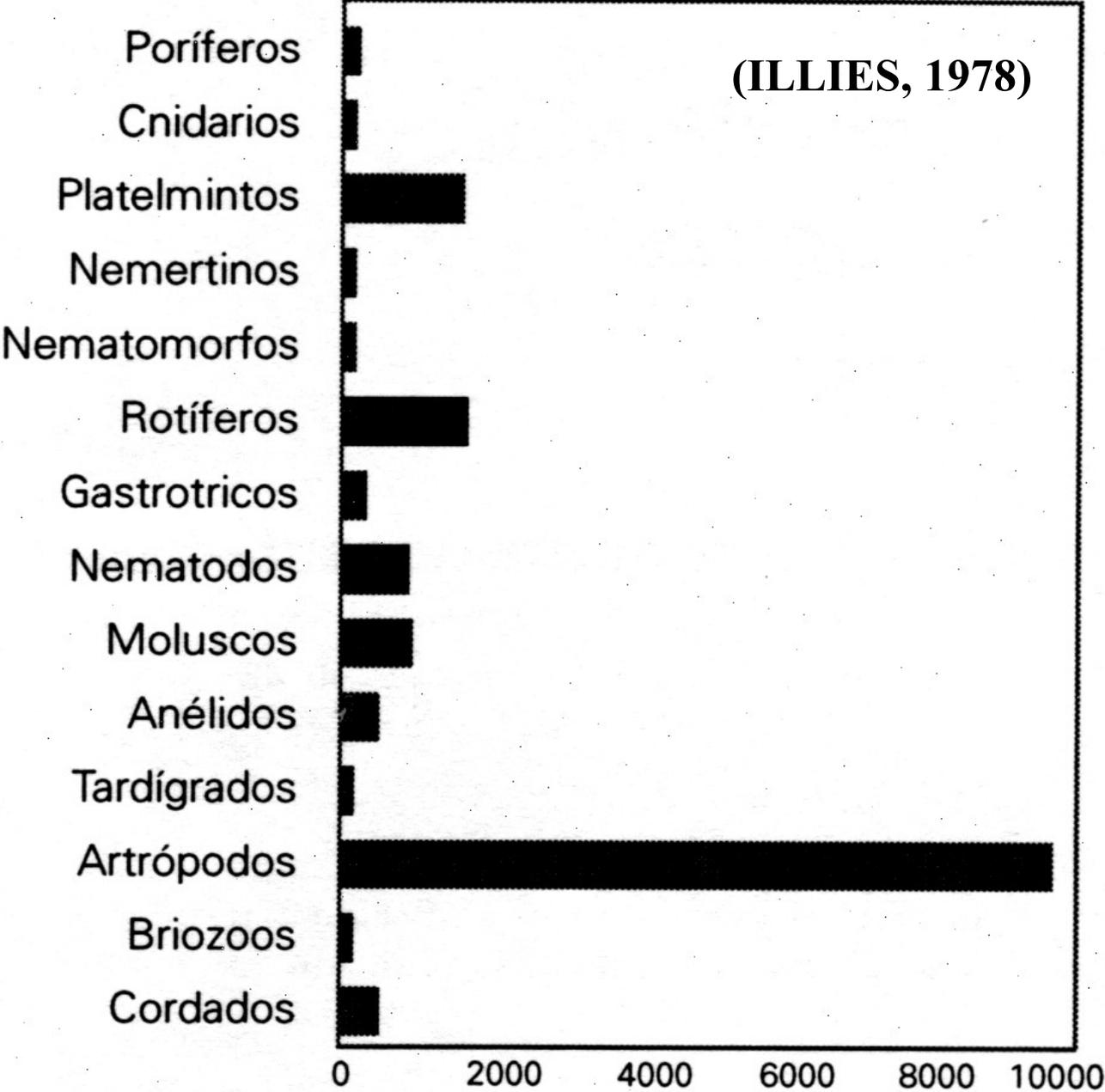
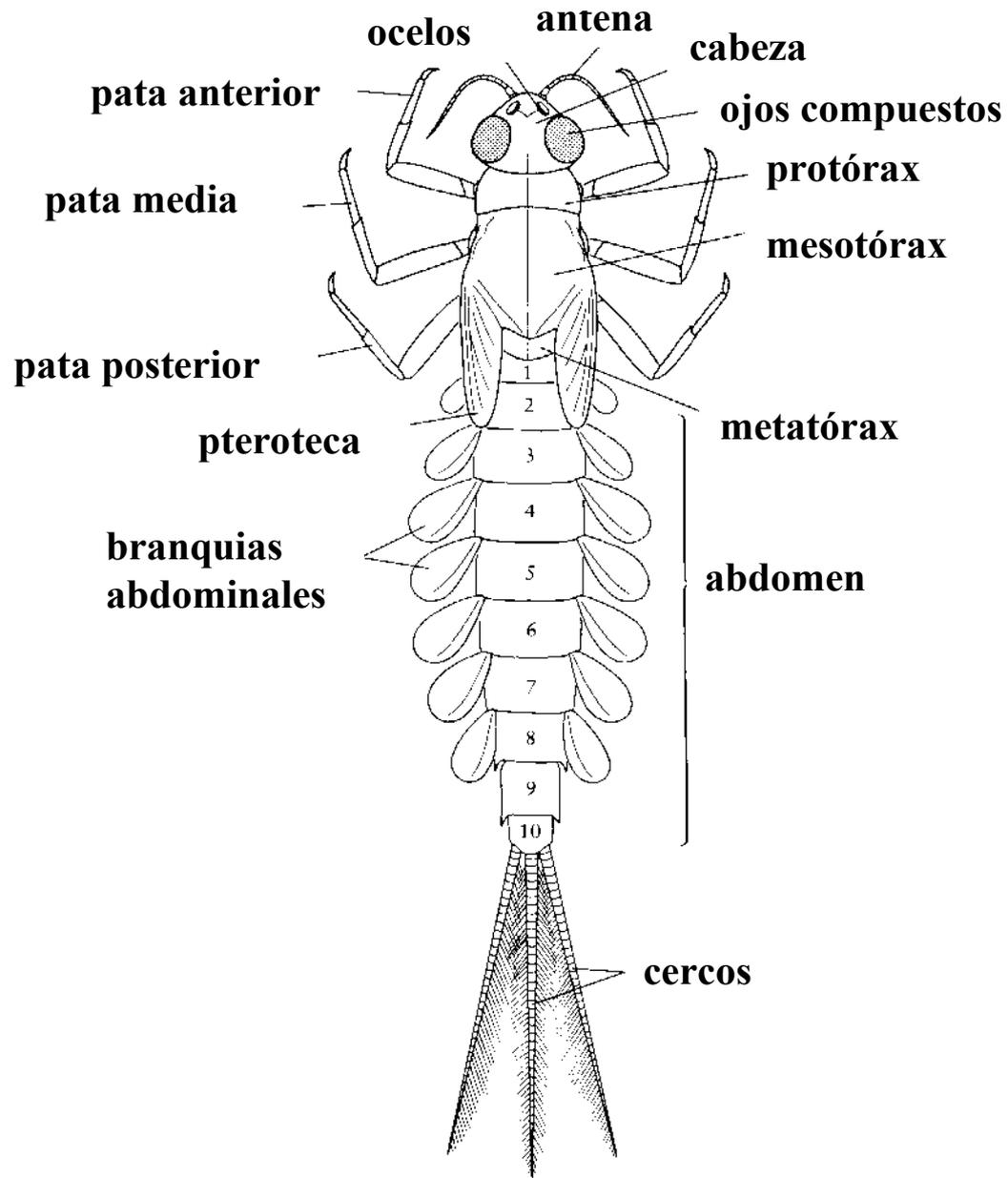


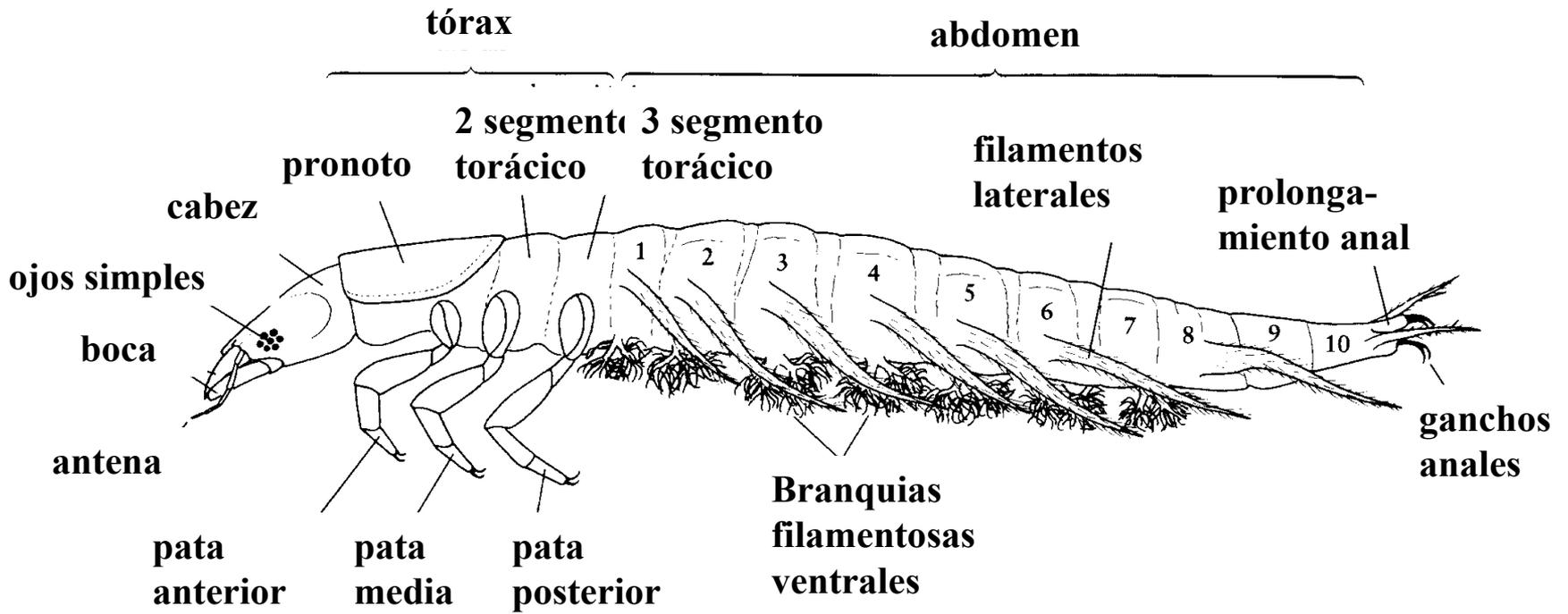
**LOS ARTRÓPODOS COMO
BIOINDICADORES DE LA CALIDAD DE LAS
AGUAS**

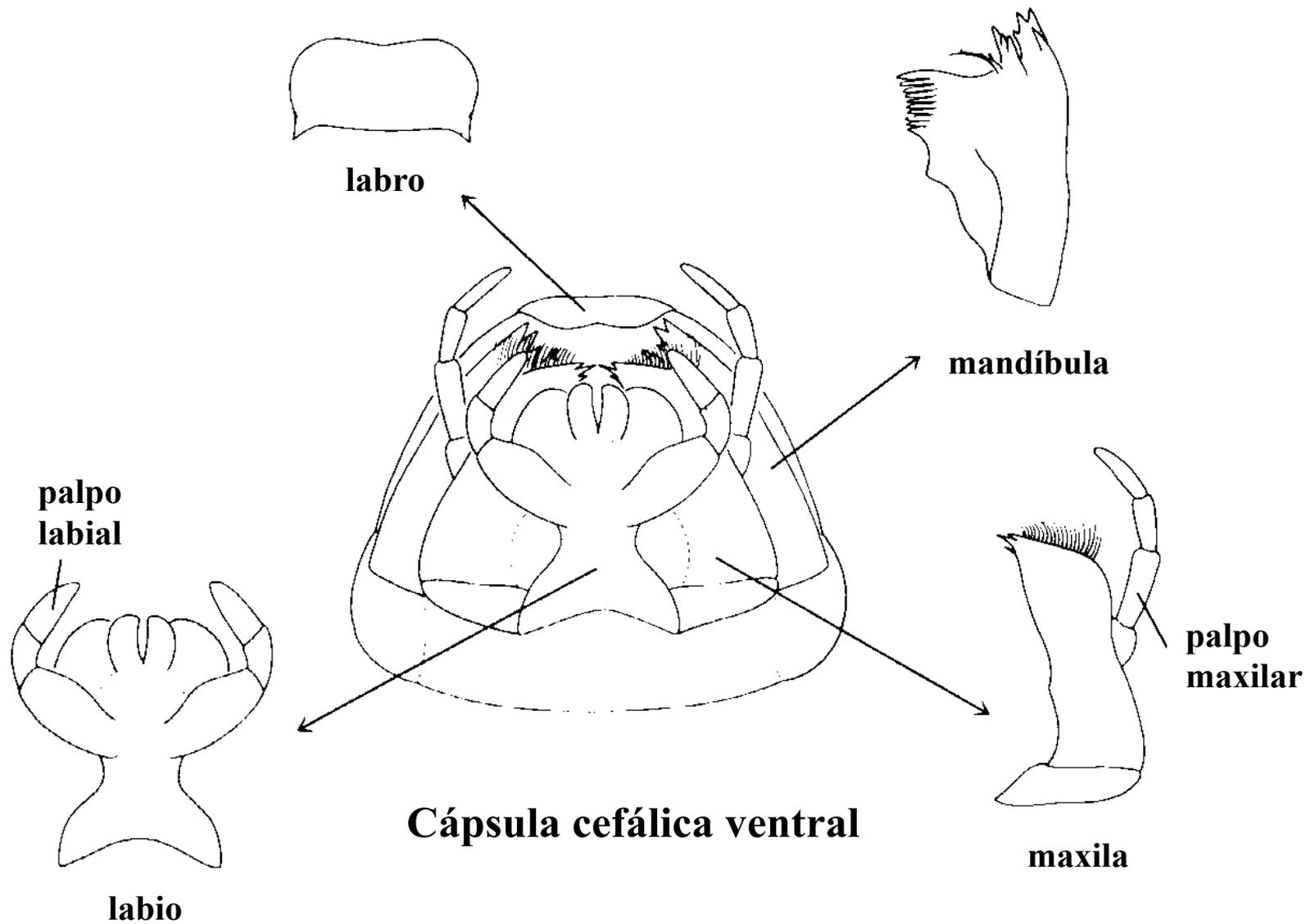
Ana María Pujante Mora

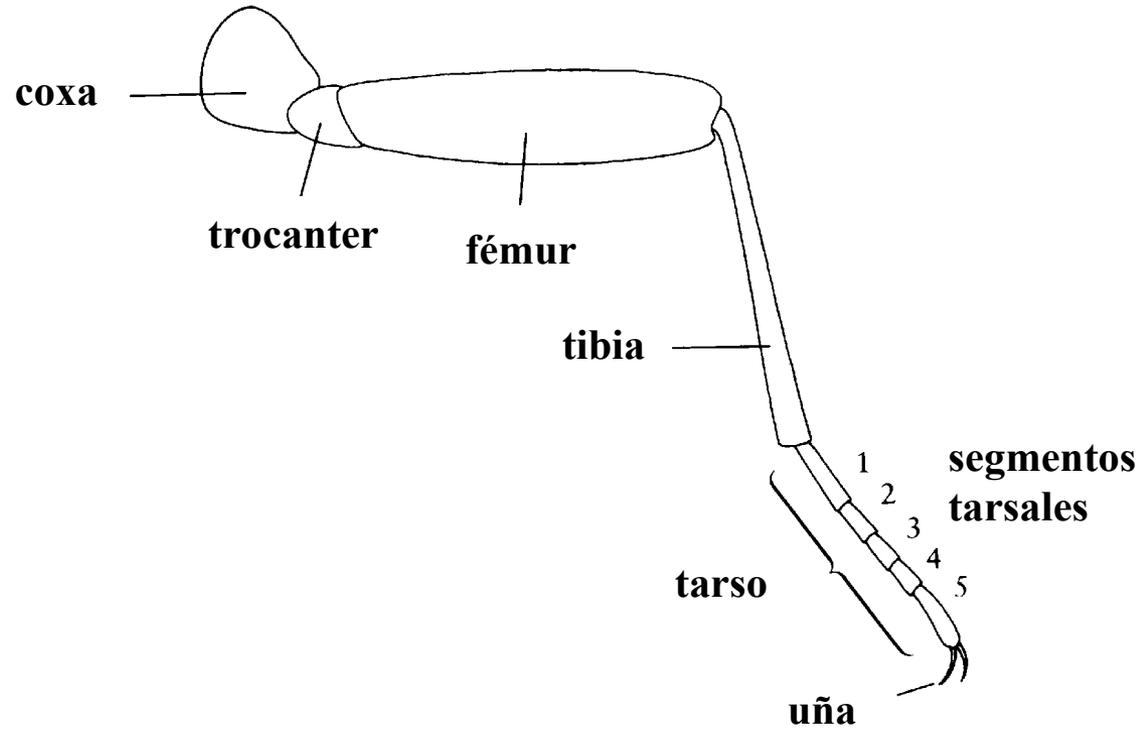
(ILLIES, 1978)

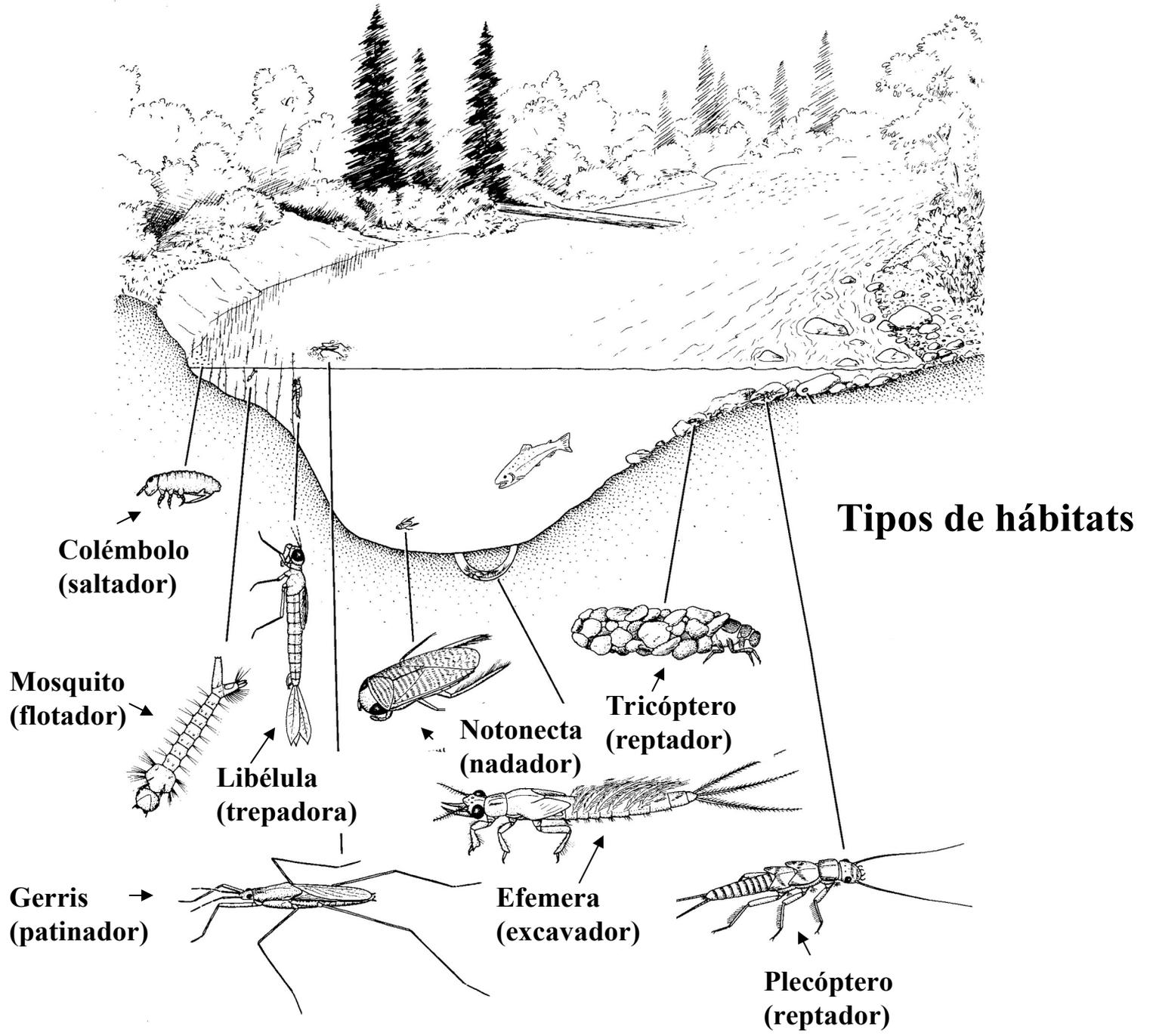


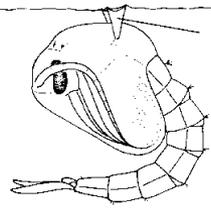






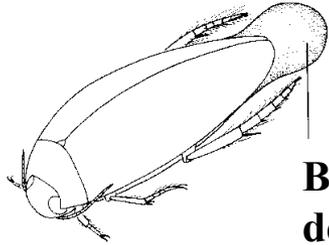






Procesos respiratorios torácicos

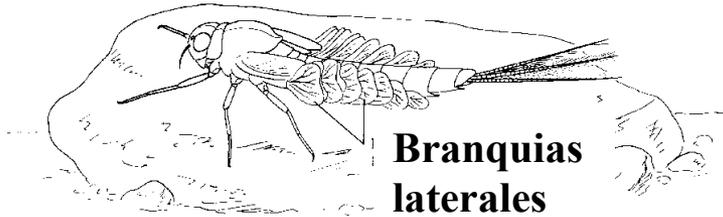
Tubo respiratorio terminal



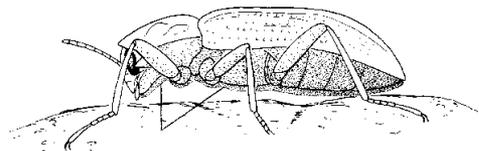
Burbuja de aire



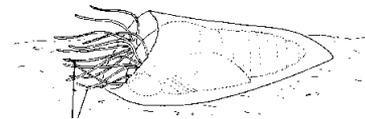
Tipos de respiración



Branquias laterales



Plastron ventral



Spiráculo branqueal

SUBFILO	CLASE	SUBCLASE	ORDEN	Europa (*)	Ibérica (*)	Ibérica (**)
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Unirrámicos

Insectos

Colémbolos	30	11				
Efemerópteros	217	60				
Plecópteros	387	71				116 (3)
Odonatos	127	71				73 (4)
Heterópteros	129	59				79 (5)
Himenópteros	74	3				
Coleópteros	1072	390				498 (6)
Megalópteros	16	5				
Tricópteros	895	231				270 (7)
Lepidópteros	5	5				
Dípteros	4031	537				

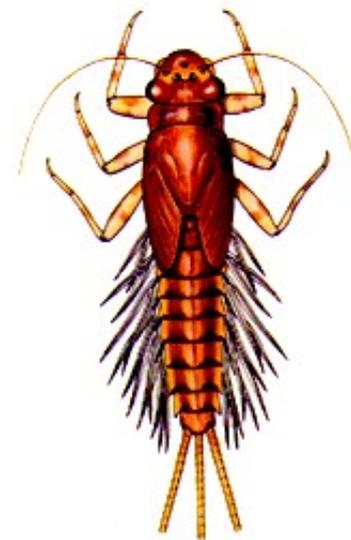
(*) Número de especies en ILLIES (1978).

(**) Número de especies en diversos autores: (1) VALDECASAS (1988), (2) BALTANÁS, BEROIZ y LÓPEZ (1996), (3) SÁNCHEZ-ORTEGA y ALBA-TERCEDOR (1987), (4) CONESA (1985), (5) NIESER y MONTES (1984), (6) RIBERA (inédito), (7) GONZÁLEZ *et al.* (1992).

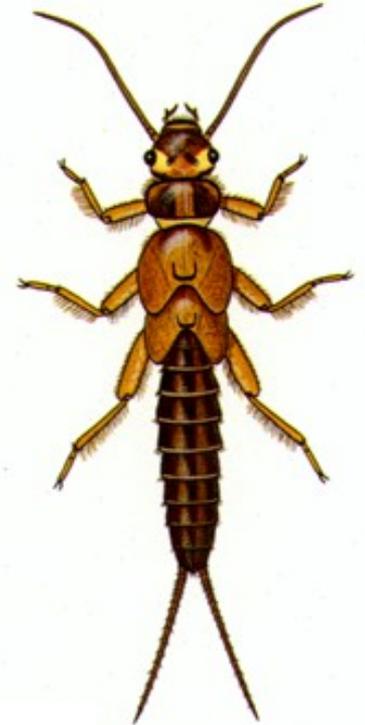
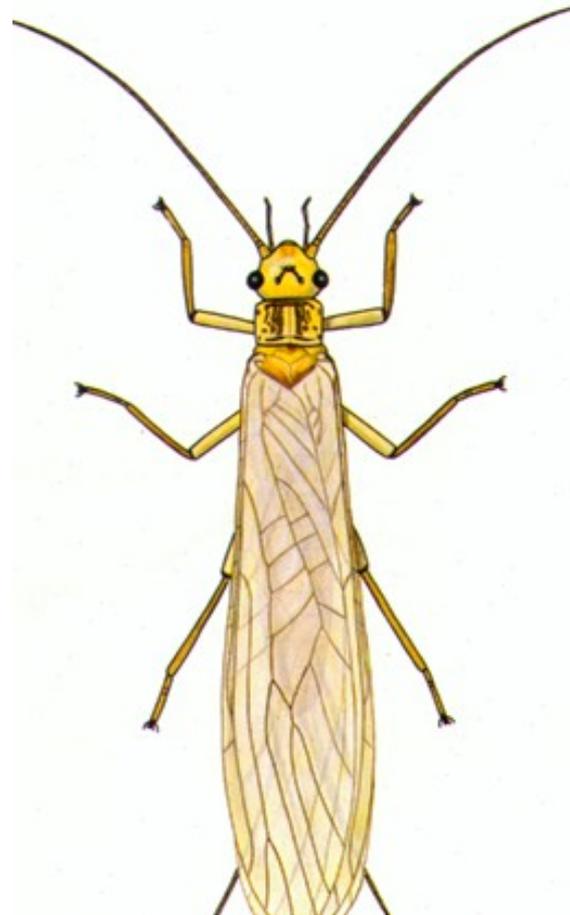
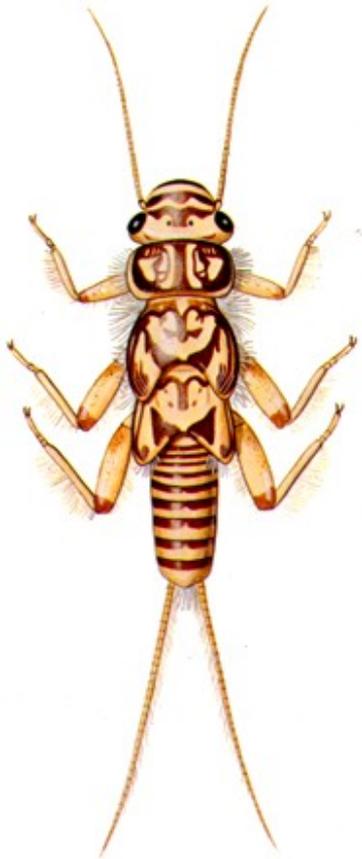
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Efímeras o efémeras

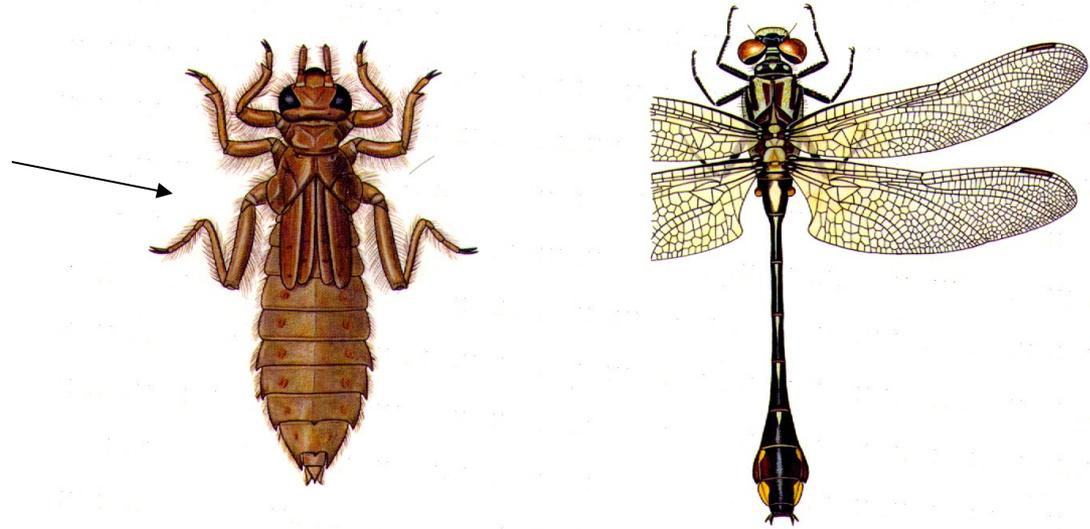


PLECÓPTEROS



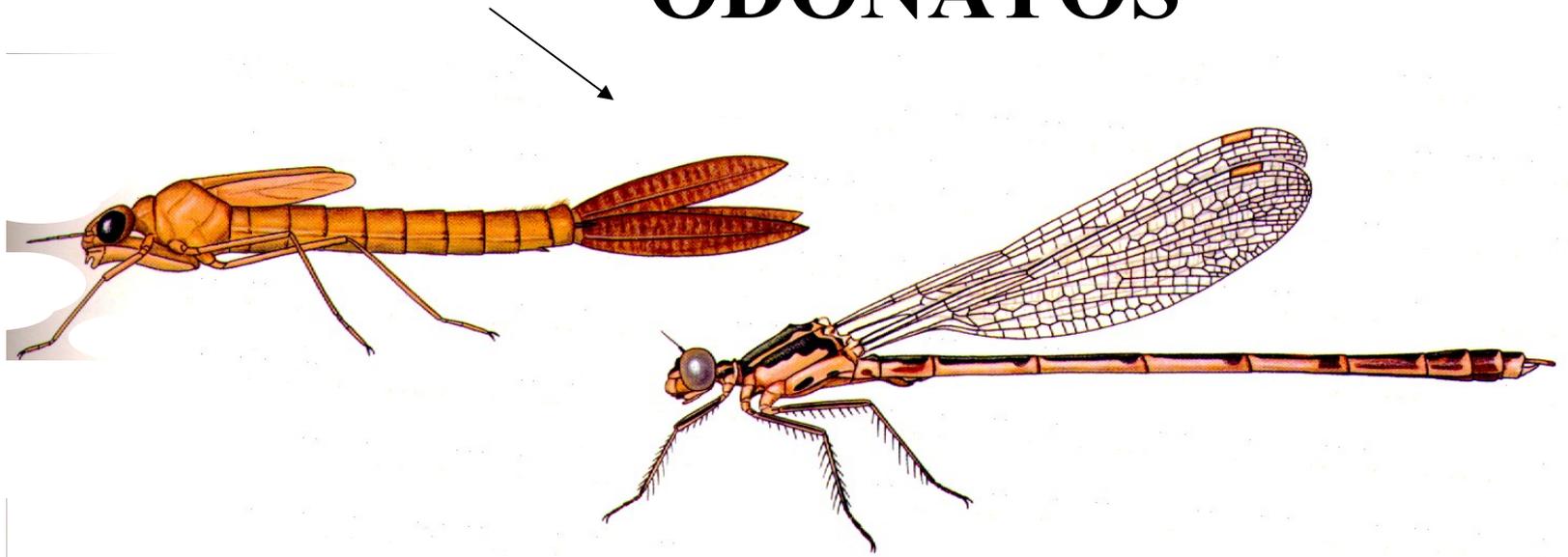
Moscas de las piedras

ANISOPTEROS
(Libélulas)



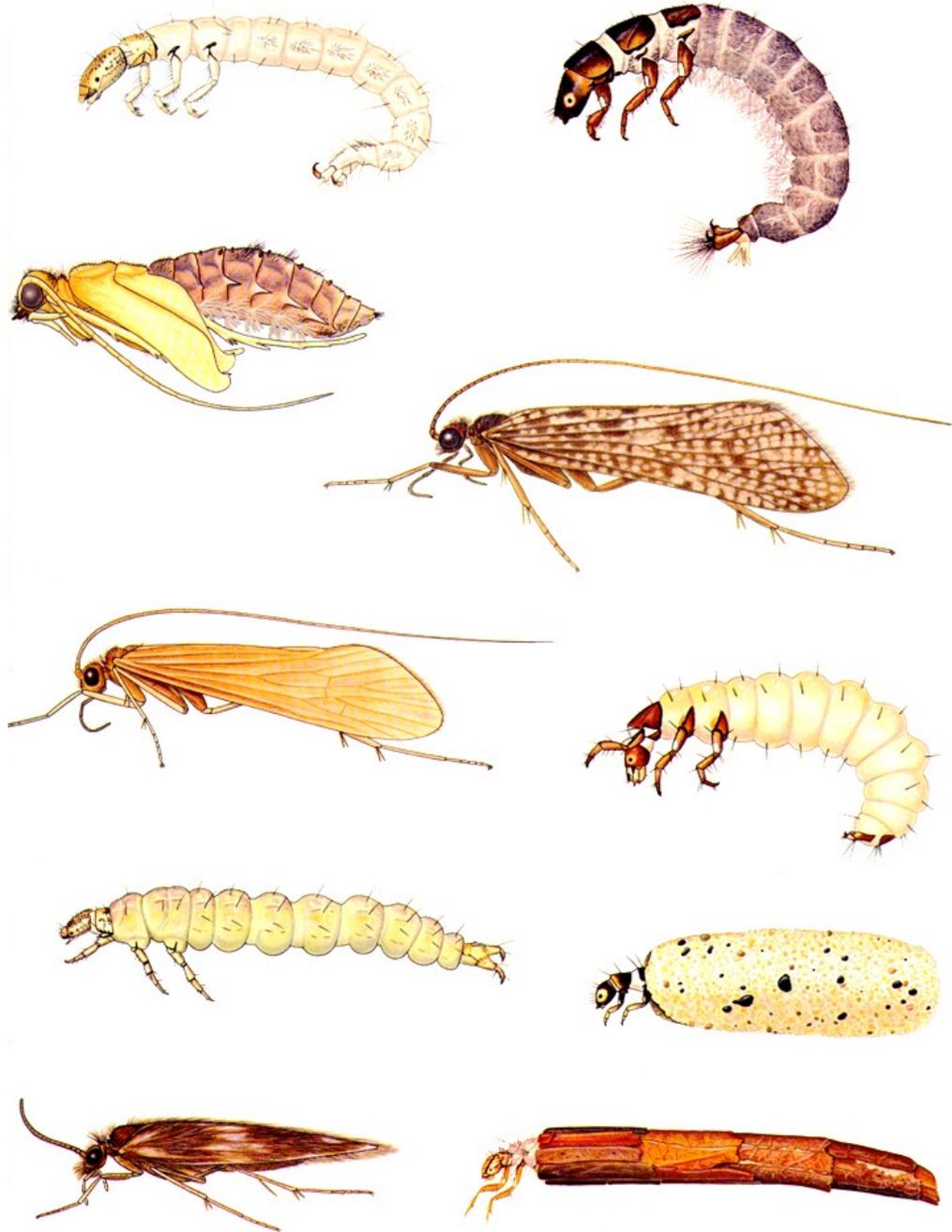
ZYGOPTEROS
(Caballitos del diablo)

ODONATOS

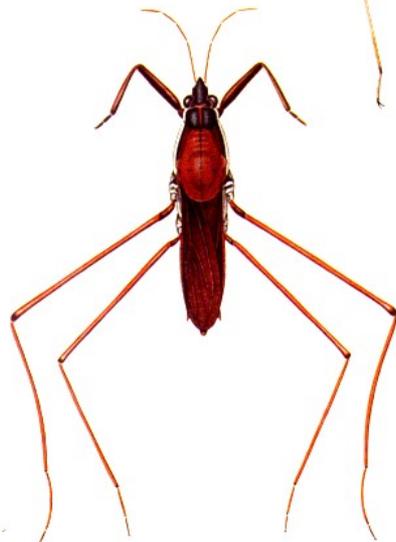
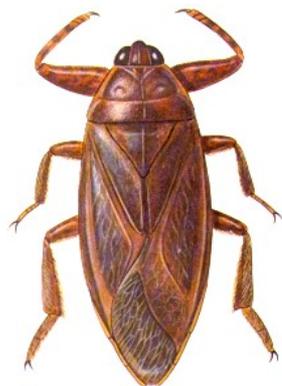
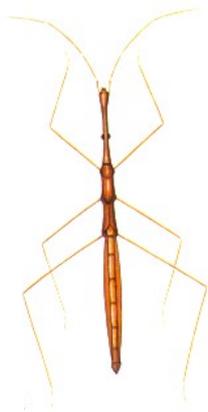
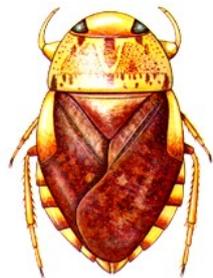
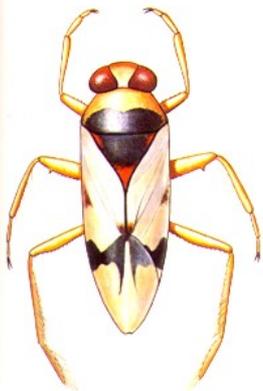


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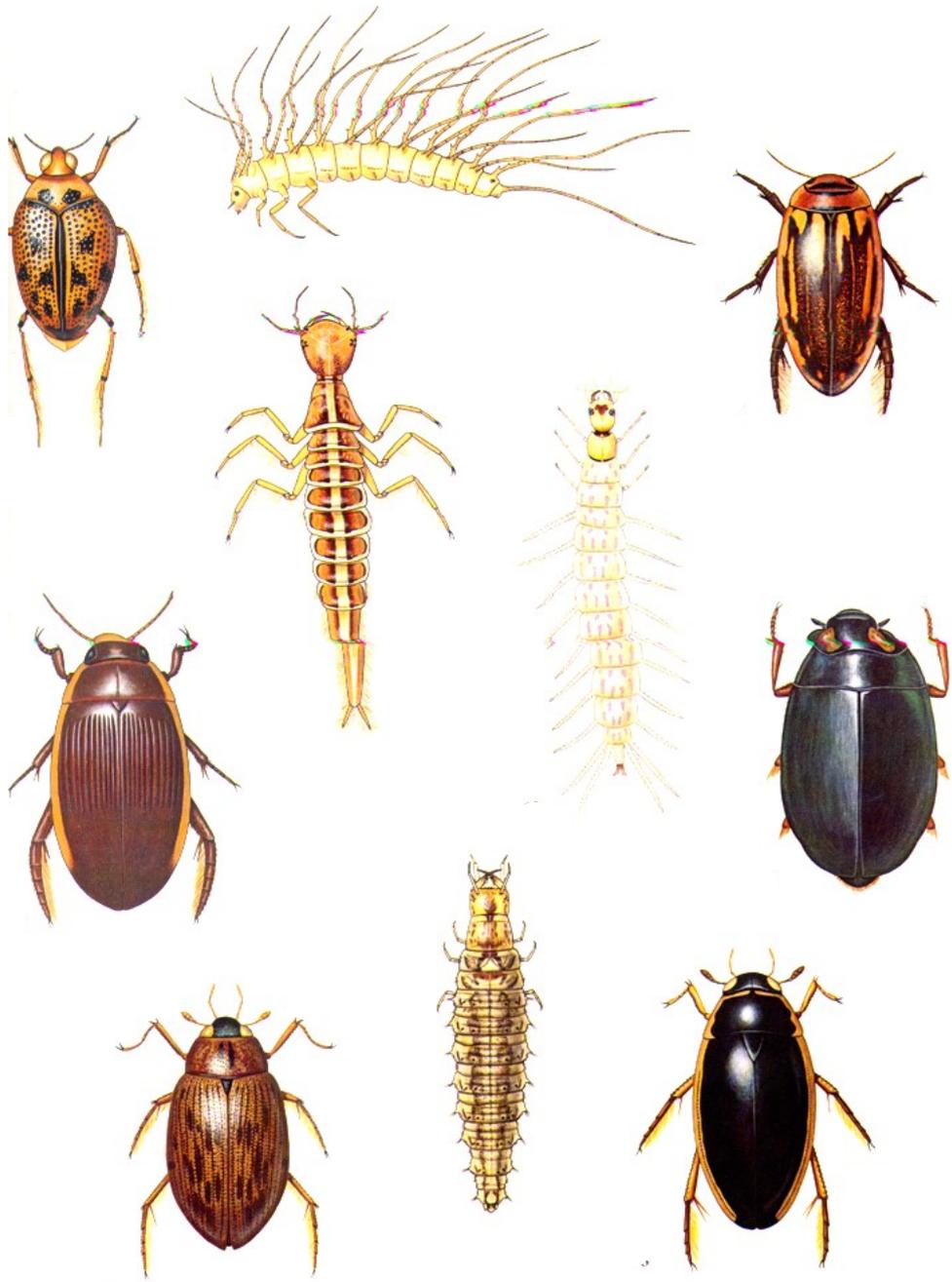
Frigáneas

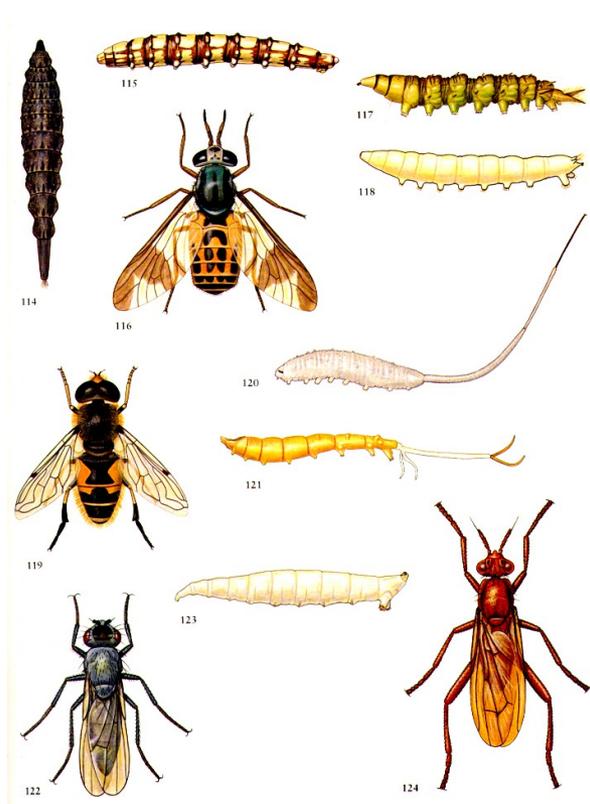
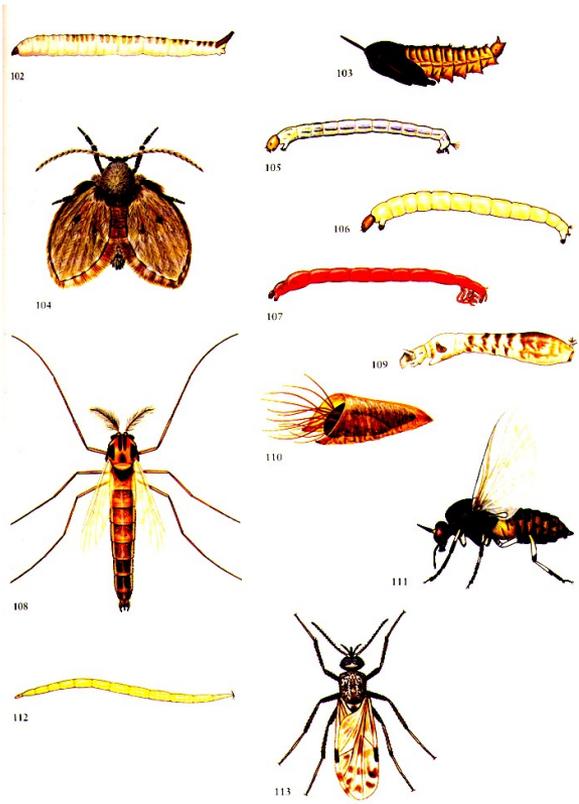
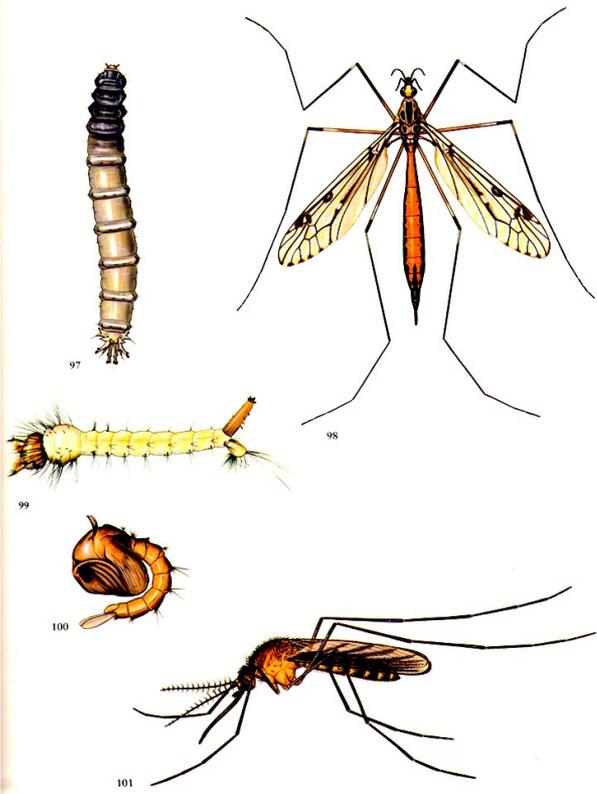


HETEROPTEROS



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DÍPTEROS

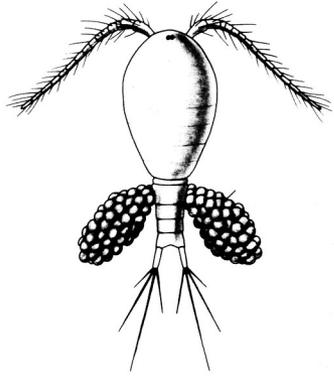
SUBFILO	CLASE	SUBCLASE	ORDEN	Europa (*)	P.Ibérica (*)	P.Ibérica (**)
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Quelicerados

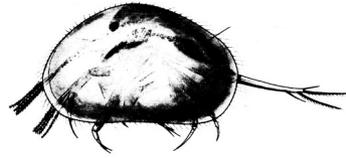
Arácnidos		Ácaros	970	254	312 (1)
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Crustáceos

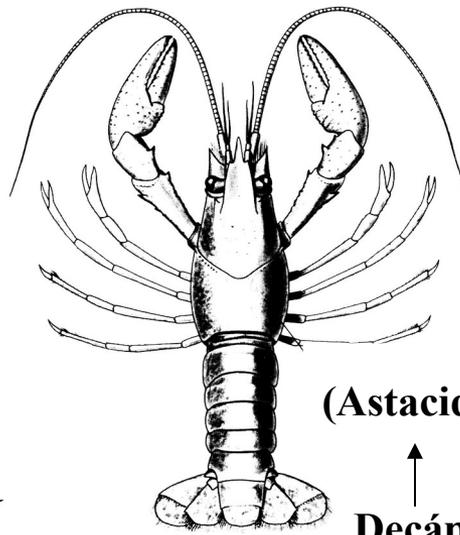
Branquiópodos		Anostráceos	36	9	
		Notostráceos	4	4	
		Concostráceos	13	1	
		Cladóceros	154	47	
Maxilópodos	Ostrácodos		409	38	77 (2)
	Copépodos		467	88	
	Branquiuros		3	2	
Malacostráceos		Sincáridos	41	8	
		Decápodos	28	7	
		Misidiáceos	19		
		Cumáceos	13		
		Isópodos	173	45	
		Anfípodos	356	38	



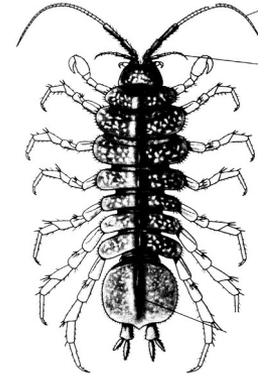
Copéodos



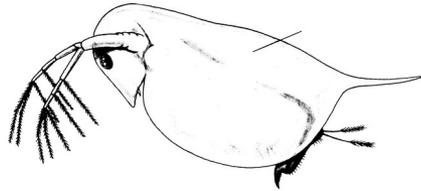
Ostrácodos



(Astacidae)



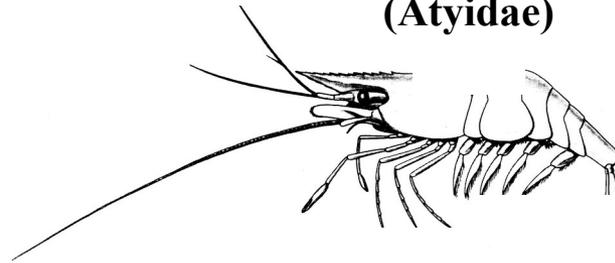
**Isópodos
(Asellidae)**



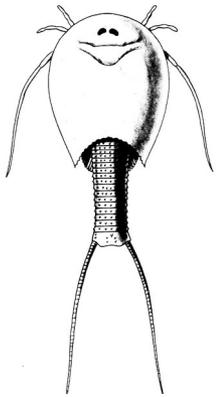
**Cladóceros
(Daphnia)**

Decápodos

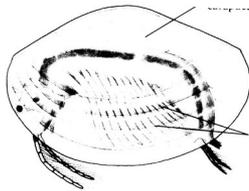
(Atyidae)



**Anfípodos
(Gammaridae)**



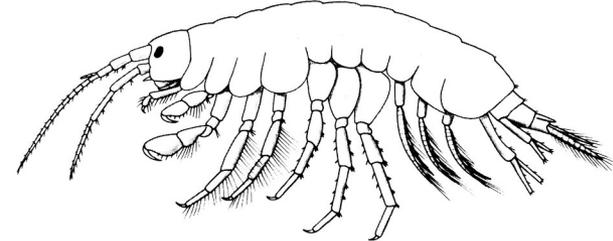
**Notostráceos
(Triops)**

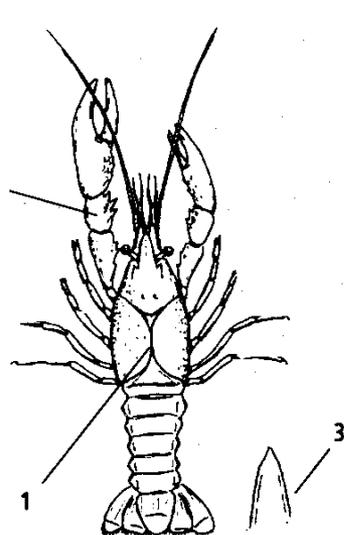


Conchostraceos

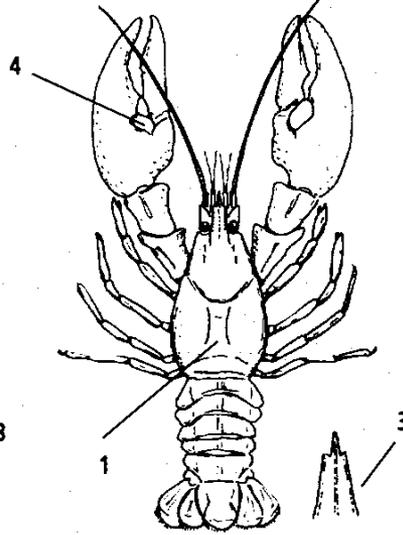


**Anacostráceos
(Artemia)**

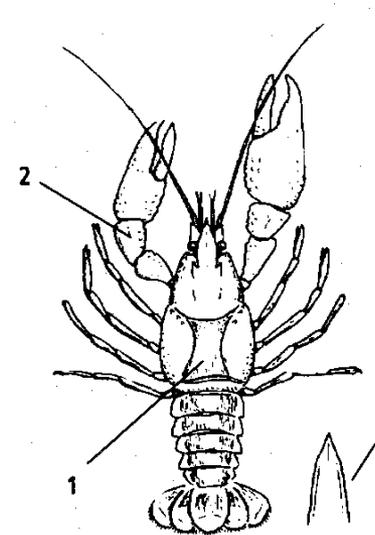




Cangrejo rojo
(*Procambarus clarkii*)

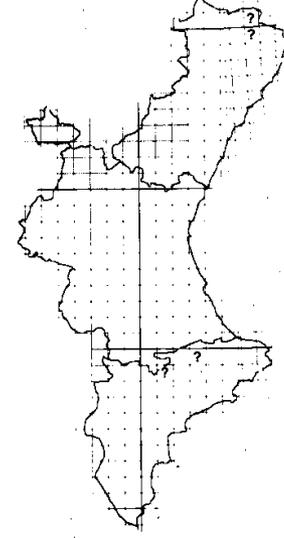
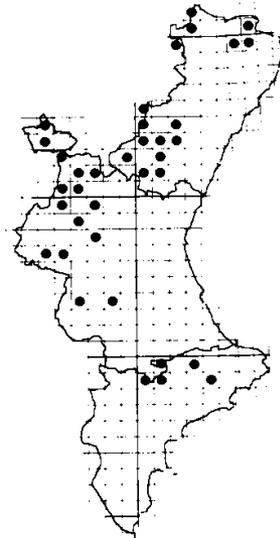
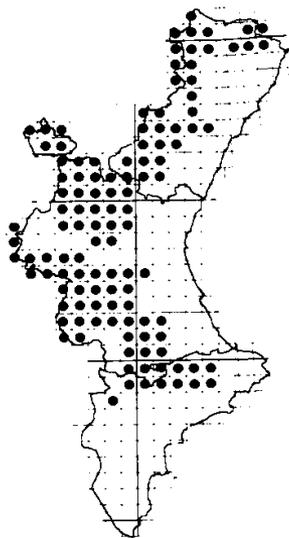


Cangrejo señal
(*Pacifastacus leniusculus*)



Cangrejo de río autóctono
(*Austropotamobius pallipes*)

DISTRIBUCIÓN DEL CANGREJO DE RÍO AUTÓCTONO EN LA COMUNIDAD VALENCIANA



**Galindo, Monzó y Sancho
Quercus, Julio 2000**



Atyidos



Asellidos



Gammaridos

ÁCAROS

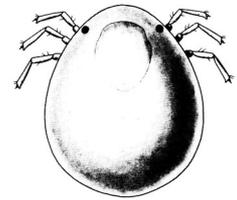
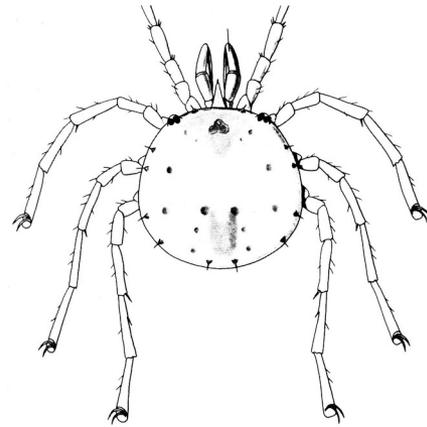
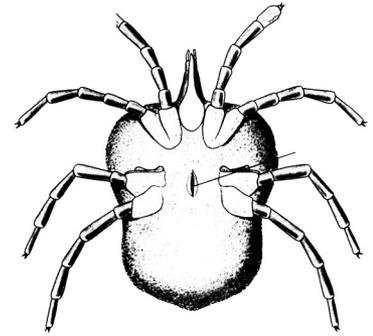
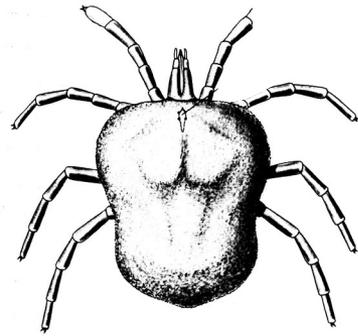


TABLA 2

Familias de macroinvertebrados y sus puntuaciones de acuerdo con el índice BMWP' (ALBA-TERCEDOR y SÁNCHEZ-ORTEGA, 1988). Se destacan en negrilla todas las familias de artrópodos.

Familias	Puntuación
Siphonuridae, Heptageniidae, Leptophlebiidae, Potamanthidae, Ephemeridae Taeniopterygidae, Leuctridae, Capniidae, Perlodidae, Perlidae Chloroperlidae	
Aphelocheiridae	10
Phryganeidae, Molannidae, Beraeidae, Odontoceridae, Leptoceridae, Goeridae Lepidostomatidae, Brachycentridae, Sericostomatidae Athericidae, Blephariceridae	
Astacidae	
Lestidae, Calopterygidae, Gomphidae, Cordulegasteridae, Aeshnidae Corduliidae, Libellulidae Psychomyiidae, Philopotamidae, Glossosomatidae	8
Ephemerellidae	
Nemouridae	7
Rhyacophilidae, Polycentropodidae, Limnephilidae	
Neritidae, Viviparidae, Ancylidae	
Hydroptilidae	
Unionidae	6
Corophiidae, Gammaridae	
Platycnemididae, Coenagrionidae	

Oligoneuriidae	
Dryopidae, Elmidae, Helophoridae, Hydrochidae, Hydraenidae, Clambidae	
Hydropsychidae	5
Tipulidae, Simuliidae	
Planariidae, Dendrocoelidae, Dugesidae	
Baetidae, Caenidae	
Haliplidae, Curculionidae, Chrysomelidae	
Tabanidae, Stratiomyidae, Empididae, Dolichopodidae, Dixidae,	
Ceratopogonidae, Anthomyidae, Limoniidae, Psychodidae,	4
Sialidae	
Piscicolidae	
Hidracarina	
Mesoveliidae, Hydrometridae, Gerridae, Nepidae, Naucoridae, Pleidae	
Notonectidae, Corixidae	
Helodidae, Hydrophilidae, Hygrobiidae, Dytiscidae, Gyrinidae	
Valvatidae, Hydrobiidae, Lymnaeidae, Physidae, Planorbidae	3
Bithyniidae, Bythinellidae, Sphaeridae	
Glossiphoniidae, Hirudidae, Erpobdellidae	
Asellidae, Ostracoda	
Chironomidae, Culicidae, Muscidae, Ephydriidae, Thaumaleidae	2
Oligochaeta	1

