

## Appendices

(Large) Tables: Electronic-only material provided as supplementary information

**Table A1.** List of Eltonian traits, their categories and codes used the analyses.

Traits	Trait categories	Code
Diapause/ Hibernation stages	Egg	DIAEGG
	≤ 2 larval stages	DIA2IN
	> 2 larval stages	DIAMIN
Dispersal <sup>a</sup>	Passive	PASSIV
	Active	ACTIV
Emergence period duration <sup>a</sup>	Short period (hours to few days; <15 d.)	EDSHORT
	Long period (several days; >15 d.)	EDWIDE
Emergence season	Winter	EMWINT
	Spring	EMSPRI
	Summer	EMSUMM
	Autumn	EMAUTU
Feeding habits	Fine sediment eater	DEFEE
	Shredder	SHR
	Scraper, grazer	SCR
	Filterer	FFEEDT
	Predator	PRED

	Symbiotic life	SIMB
Flight period <sup>a</sup>	Winter	FLYWINT
	Spring	FLYSPRI
	Summer	FLYSUMM
	Autumn	FLYAUTU
Hemoglobin <sup>a</sup>	Present	HBPRES
	Absent	HBNONE
Length of larval development	Always short ( $\leq 3$ months)	DEVLARVS
	Longer ( $>3$ months)	DEVLARVI
Life cycle duration <sup>a</sup>	$\leq 1$ year	LCEQ1
	$>1$ year	LCMO1
Maximal body size of 4th larval stage (mm)	$\leq 2.5$	SIZE1
	$>2.5-5$	SIZE2
	$>5-10$	SIZE3
	$>10-20$	SIZE4
	$>20-40$	SIZE5
Number of eggs per egg-mass <sup>a</sup>	$\leq 500$	EGGMAS1
	$>500$	EGGMAS2
Number of generations per year/ Voltinism	1	GENY1
	2	GENY2
	3	GENY3

	>3	GENYM
Reproduction type <sup>a</sup>	Eggs in clutches	CLUTCH
	Asexual reproduction	ASEXU
Resistance forms and habits to avoid desiccation <sup>a</sup>	Cocoons	RFCOC
	Resistant instars	RFINST
	Diapause or quiescence	RFDIAP
	Deeper penetration in substrate during dryness	RFSUB
Respiration type (tracheas)	12 tracheas	TRACH1
	6 tracheas	TRACH2
	3 tracheas	TRACH3
Substrate relation	Free living	FREELV
	Burrower	BURROW
	Miner	MINER
	Fixed (substrate or plants)	FIXED
Tube construction	Tube absent	TUBNON
	Tube without shape, unorganized	TUBUNO
	Tube rigid	TUBRIG

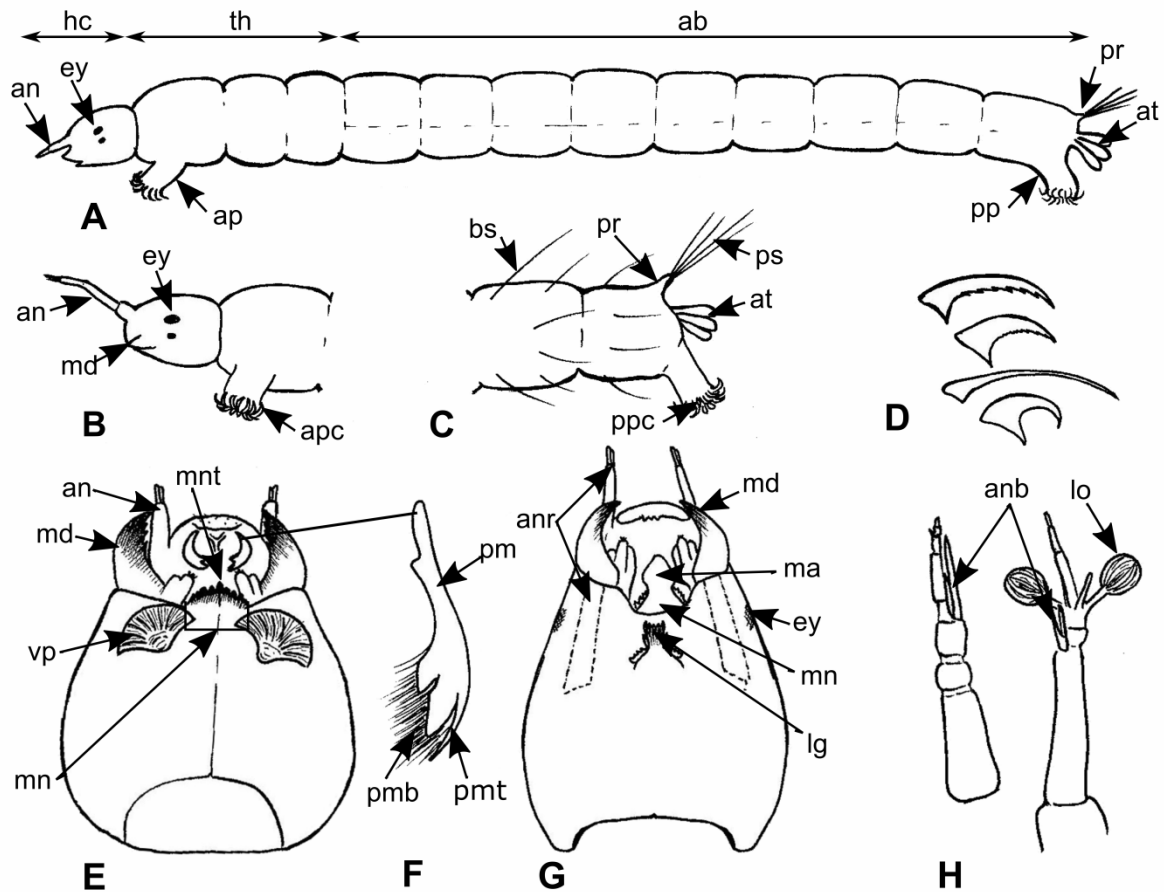
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**Table A2.** List of morphological traits, their categories and codes used in the analyses (see details on morphological traits in Appendix Fig. A1).

Traits	Categories	Code
Anal Tubules	Present	ATUP
	Absent	ATUA
Body setae	Setal tufts in abdomen or lateral fringe of swim- setae	TUFFR
	Body setae pale and/or indistinct	SIND
	Simple long body setae	SETP
	Seta absent at least on abdomen	SETA
Claws of anterior parapods	All Simple	CASIM
	Some larger with fine spinules/spines	CASPI
	At least some serrated	CASER
Claws of posterior parapods	All Simple	CPSIM
	Some larger with fine spinules/spines	CPSPI
	At least some serrated	CPSER
Lauterborn organs	Indistinct	LOI
	Small, much shorter than flagellum	LOS
	Moderate to large, if small in pedicel longer than flagellum	LOL
Mentum	Simple or absent	SABS

	Double-walled plate without teeth	DNOT
	D-w plate with $\leq 13$ teeth	D13T
	D-w plate with $> 13$ teeth	DTM
Premandible brush	Present	PMBP
	Absent	PMBA
Procercus	Shorter than wide	PROCS
	Longer than wide	PROCL
Type of Antenna/ length	Retractable into head capsule	ARETR
	Less than $\frac{1}{2}$ head capsule	AHALF
	At least $\frac{1}{2}$ head capsule	ALONG

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**Fig. A1.** General larval morphology of Chironomidae: (A) Body structure, lateral view; (B) Anterior part of the body, lateral view; (C) Posterior part of the body, lateral view; (D) Different types of claws of parapods; (E) Head capsule of Chironominae, ventral view; (F) Premandibule; (G) Head capsule of Tanypodinae, ventral view; (H) Antenna types with and without Lauterborn organs. ab - abdomen (9 body segments); an - antenna; anb - antennal blade; anr - antenna retractable; ap - anterior parapods; apc - anterior parapod claws; at - anal tubules; bs - body seta; ey - eyespot; hc - head capsule; lg - ligula of the prementum; lo - Lauterborn organ; ma - M-appendage; md - Mandible; mn - mentum; mnt - mentum median tooth; pm - premandible; pmb - premandible brush; pmt - premandible apical tooth; pp - posterior parapods; ppc - posterior parapod claws; pr - procercus; ps - procercal seta; th - thorax (3 body segments); vp - ventromental plate.