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PART R, REVISED, VOLUME 1, TREATISE ONLINE 191:

ILLUSTRATED GLOSSARY OF THE DECAPODA

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This glossary covers morphological terminology applied to all groups of Decapoda. This compilation of terms is based on several works. The glossary of MOORE & McCORMICK (1969) formed the primary basis. Terms relevant to Decapoda were extracted from the *Crustacea Glossary* of the Natural History Museum of Los Angeles County (MARTIN & others 2020). As noted by MARTIN in MARTIN & others (2020), some of the definitions in the online glossary were taken verbatim from the cited source. Additional glossaries and books were consulted, including the illustrated crustacean morphology of McLAUGHLIN (1980) and shrimp terminology of PÉREZ FARFANTE & KENSLEY (1997). Sources for original definitions are included so that the reader can consult the primary literature.

This glossary is primarily composed of external morphological terminology that is relevant to fossil decapod crustaceans. Numerous other recent publications complement this glossary, with exhaustive chapters on all aspects of decapod biology, including the *Treatise on Zoology—Anatomy, Taxonomy, Biology, The Crustacea*, Volumes 1–5, 9 (6–8 not yet published); *The Natural History of the Crustacea*, 10 volumes; and *Evolution and Phylogeny of Pancrustacea: a Story of Scientific Method* (SCHRAM & KOENEMANN, (2021).

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FIGURES

All figure references, unless otherwise specified, are to those in *Treatise Online* Number 179, Part R, Revised, Volume 1, Generalized External Adult Decapoda Morphology (SCHWEITZER & others, 2024). This publication is freely available at the same source as this glossary; the two publications are intended to be companion pieces.

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MORPHOLOGICAL ABBREVIATIONS AND NOTATIONS

The letter designations for the carapace grooves in decapods follow GLAESNER (1969) following BOAS (1880), the latter of whom originated the letter system for designation of grooves. Although the letter system is obscure, it has remained in use and is common in literature pre-1960. It is usually used for lobsterlike forms. In some cases, pleonal somites are numbered with Roman numerals, and pereiopods and sternites are numbered with Arabic numerals.

One notable exception to the abbreviations below are the letter and number designations used by HOLTHUIS (1974) and still frequently in use for the carapace spines, carinae, and grooves of lobsters and shrimp. In cases wherein abbreviations are designated on carapaces of lobsters, especially astacidans, and shrimp, consult SCHWEITZER & others (2024, fig. 5), in which these abbreviations are defined.

A	augenrest	Ex	exopod
A1	antennule	e – e ¹	cervical groove
A2	antenna	F	fissure
AL	anterolateral margin length	FL	flank spine
AOS	antorbital spine	FOW	fronto-orbital width of carapace
a – a ¹	branchiocardiac groove	FW	frontal width of carapace
ai	appendix interna	G	gonopore
am	appendix masculina	GL	gastro-orbital spine
B	basis	Gr	granule
Bo	basiophthalmite	G1	first gonopod
b	antennal groove	G2	second gonopod
b'	hepatic groove	I	ischium
BCG	branchiocardiac groove	i	inferior groove
bg1	branchial groove 1	IS	intercalated spine
bg2	branchial groove 2	K	keel
C	carpus	L	length of carapace
c – c ¹	postcervical groove	L to	
c'	intercervical groove	Max W	length from orbital base to position of maximum width of carapace
CG	cervical groove	lh	linea homolica
Co	Cornea	m	merus
Cx	coxa	mb	mesobranchial
D	dactylus	Mxp	maxilliped
d	gastro-orbital groove	O	orbit
E	episternite or endopod	OOS	outer-orbital spine
EL	extralineal	P, p	pereiopod
En	endite	P1-P5	refers to pereiopods 1 through 5
		PCG	postcervical groove
		Pd	podophthalmite
		Pl	pleonite
		Pl1-Pl6	refers to pleonites 1 through 6
		PL	posterolateral margin length
		PO	plage orbitaire
		POS	postorbital spine
		Pr	propodus
		PW	posterior carapace width
		S	sternite
		S1-S8	refers to sternites 1 through 8
		S	pleonal somite
		SE	supraorbital eave
		SH	subhepatic
		Sp, S	spermatheca
		Spi	spine
		T	telson
		Tu	tubercle
		U	uropod
		W	maximum carapace width excluding anterolateral spines
		X	attachment of musculus dorsoventralis posterior (musculus adductor testis)
		ω	Omega swelling near cervical groove

Institutional Abbreviations

BMNH/NHMUK: The Natural History Museum, London, UK

CM: Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA

GSC: Geological Survey of Canada, Eastern Paleontology Division, Ottawa, Ontario, Canada

KSU D: Decapod Comparative Collection, Department of Geology, Kent State University, Kent, Ohio, USA

LPI: Invertebrate Paleontology Collection, Chengdu Institute of Geology & Mineral Resources, Chengdu, China

MGUH: Geologisk Museum, University of Copenhagen, Copenhagen, Denmark

MMNS: Mississippi Museum of Natural Science, Jackson, Mississippi, USA

MNHN.F: Muséum National d'histoire naturelle, Paris, Collection de Paléontologie, France

NHMW: Naturhistorisches Museum Wien (Natural History Museum of Vienna), Austria

RECOLNAT: Réseau national des collections naturalistes National Network of Natural History Collections, France

SM B: Sedgwick Museum, Cambridge University, UK

SMNS: Staatliches Museum für Naturkunde, Stuttgart, Germany

UCBL-FSL: University of Lyon, France

USNM: United States National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA

UWBM: Burke Museum, University of Washington, Seattle, Washington, USA

abdomen (pl., **abdomina**). Posterior section of crustaceans that does not have appendages or a well-developed central nervous system, as differentiated from pleon. Now considered an obsolete term for the posterior part of decapods but common in literature before about 2010 (SCHRAM, 2013).

abdominal holding or locking mechanism. See pleonal locking mechanism.

abdominal somite. See pleonite.

acanthosoma. Obsolete term used for the mysis larval stage in some Dendrobrachiata (MARTIN, OLESON, & HØEG, 2014).

achelate. An appendage, usually a pereiopod, lacking a true chela; dactylus not opposing an extension of the propodus or folding back on the distal margin of propodus (see also pseudochelate) (SCHWEITZER & others, 2024, fig. 15.3).

acicle. Spinelike (exopod) of antenna that is a reduced antennal scale (scaphocerite). Term sometimes refers to a spinelike ophthalmic scale on eyestalk (STACHOWITSCH, 1992).

acron. Anterior portion of body bearing the eyes or eyestalks (ocular peduncles) and not considered a true somite. Anterior part of the head is sometimes interpreted as representing protocephalon (MOORE & McCORMICK, 1969); syn., ophthalmic somite, presegmental region.

acumen. Pointed apical part (tip) of rostrum, can be delineated basally by marginal spines (HOBBS & JASS, 1988).

adductor muscle of carapace. Muscle attached to carapace for pulling it to body (MOORE & McCORMICK, 1969).

adrostral carina. Keel lateral to rostrum, sometimes extending to posterior margin of carapace and parallel to axis (PÉREZ FARFANTE & KENSLEY, 1997); syn., adrostral ridge (SCHWEITZER & others, 2024, figs. 18.1, 18.3).

adrostral groove. Groove extending along rostrum mesial to adrostral carina, sometimes reaching posterior margin of carapace (PÉREZ FARFANTE & KENSLEY,

1997); syn. adrostral sulcus (SCHWEITZER & others, 2024, figs. 18.1, 18.3).

aesthetascs. see esthetasc.

afferent channels. Openings through which water enters the branchial chamber under the carapace. In brachyurans, it is generally located in front of the bases of the chelipeds or behind the pterygostomial region or rarely at the sides of the endostome (MOORE & McCORMICK, 1969); syn., afferent respiratory channel, afferent branchial channel. See also efferent channel.

ambulatory leg. See pereiopod.

anecdysis. The time period between molts; the intermolt stage; occurs in decapods that molt seasonally (BLISS, 1982).

annulations. Ringlike segmentation of an appendage formed of many short cylindrical podomeres.

annulus ventralis. Seminal receptacle in some crayfish, composed of median sclerite between fourth and fifth pereiopods, serves as the receptacle for the spermatophore on sternum of female (HOBBS & JASS, 1988).

antenna (pl., antennae). One of a pair of anterior appendages of head region, form the second pair of appendages posterior to the antennules, biramous in all nauplii and in adults, consisting of a basal peduncle (typically composed of protopod, endopod, and scaphocerite) and distal flagellum; may be extremely long and composed of numerous small segments or much reduced, or lacking; bears antennal (renal) gland pore; syn., second antenna (MOORE & McCORMICK, 1969). Not to be confused with antennule or first antenna, the preceding appendage (SCHWEITZER & others, 2024, figs. 1, 13.1, 19, 20, 29.1, 32, 41, 43, 44, 50.1, 51, 53, 57, 82.2, 92.4, 99, 128).

antennal acicle. See acicle.

antennal carina (pl., antennal carinae). Carina extending posteriorly on carapace from antennal spine; syn., antennal carina (SCHWEITZER & others, 2024, figs. 5, 18.3).

antennal flagellum. Multiarticulate terminal part of antenna (on endopod only) (SCHWEITZER & others, 2024, figs. 13.1).

antennal gland. See green gland; syn., renal gland.

antennal groove. Groove extending anteriorly from ventral end of cervical groove to area of antennal spine; may split into two branches, one extending anteriorly, and one extending dorsally (SCHWEITZER & others, 2024, figs. 5, 28, 31).

antennal region. Anterior marginal part of carapace bordering orbital region laterally and also bordering hepatic, pterygostomial, and, in some forms, frontal region (MOORE & McCORMICK, 1969).

antennal peduncle. Proximal (basal) segments of antenna, from which the antennal flagellum (endopod) and scaphocerite (exopod) extend (SCHWEITZER & others, 2024, fig. 13.1).

antennal scale. See acicle, scaphocerite.

antennal spine. Anteriorly-directed spine slightly ventral to orbit and adjacent to base of antenna, may extend beyond carapace margin (SCHWEITZER & others, 2024, figs. 5, 18.2, 28).

antennula. See antennule.

antennular flagellum. Multiarticulate projections of the antennule, usually on endopod and exopod, may be two or three flagellae (SCHWEITZER & others, 2024, figs. 13.1, 19, 57, 99).

antennular fossa. In Brachyura, anterolateral depression containing basal portion of antennule; syn., antennular fossette (SCHWEITZER & others, 2024, fig. 6.3).

antennular peduncle. Proximal (basal) segments of antennule, usually three, from which flagella arise (SCHWEITZER & others, 2024, figs. 13.1, 19).

antennular scale. See stylocerite; syn., antennular spine.

antennule. First cephalic appendage; with basal peduncle with statocysts and stylocerites and one, usually two, or more distal flagellae; in brachyurans, may be folded into antennular fossa; syn.,

antennula, first antenna (SCHWEITZER & others, 2024, figs. 13.1, 19, 20, 29, 32, 41, 43, 51.2, 92.4).

anterior. Toward the cephalic region of the body (SCHWEITZER & others, 2024, figs. 3, 4).

anterior branchial area. Lateral carapace shield region in paguroids anterior to cervical groove, posterior to masticetic region (FRAAIJE & others, 2014) (SCHWEITZER & others, 2024, fig. 95).

anterior carapace lobe. Paguroid structure positioned lateral to the shield and anterior to the posterior carapace shield lobes, may be up to three anterior carapace lobes (TUDGE, ASAKURA, & AHYONG, 2012) (SCHWEITZER & others, 2024, fig. 94.3).

anterior chamber. Cardiac stomach, second section of the foregut after the esophagus (BLISS, 1982).

anterior rim. Bandlike structure bounded by anterior margin and a weak groove on anterior margin of sixth pleonal somite of some paguroids (FRAAIJE & others, 2013) (SCHWEITZER & others, 2024, fig. 98).

anterolateral carina (pl., anterolateral carinae). Ridge extending longitudinally along anterior part of carapace, ventral to gastro-orbital area (PÉREZ FARFANTE & KENSLEY, 1997).

anterolateral cervical spine. Last of the anterolateral margin spines in Polycheilida, sometimes larger than others, near the hepatic incision (AUDIO & others, 2014)

anterolateral margin. Lateral margin of carapace, usually recognized in brachyurans and some other dorsoventrally flattened groups, generally defined as extending from outer-orbital spine laterally to position of maximum width or flexure of carapace.

anterolateral region. Lateral part of carapace bordering subhepatic or hepatic regions (STACHOWITSCH, 1992).

anterolateral spine. Sharp projection on anterolateral margin of carapace, often

diagnostic for genera; syn., anterolateral tooth (SCHWEITZER & others, 2024, figs. 115.2).

anterolateral tooth. See Anterolateral spine.

antorbital spine. Spine at the base of the posterolateral corner of the supraorbital eave in Majidae (INGLE, 1983) (SCHWEITZER & others, 2024, figs. 117.3, 117.4).

anus. Posterior opening of digestive tract, located on ventral surface of telson.

apical. Apex, tip.

apodemal pit. An unpigmented depression on the carapace of many brachyurans indicating the site of an apodeme (invaginated part of the cuticle) that forms part of the internal thoracic skeleton (CHACE & HOBBS, JR., 1969).

apodeme. Infold of cuticular exoskeleton serving for attachment of muscles (MOORE & McCORMICK, 1969).

appendix interna. Medial projection stemming from pleopodal endopods, serving to hook members of each pair of pleopods to one another (i.e., for swimming); syn., stylamblys (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 18.1, 39, 56.3).

appendix masculina. Complex median process of endopod of second pleopods in males; functions for copulation or transfer of the spermatophore (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, figs. 16.1, 16.2).

apposition eye. Eyes adapted to maximize resolution by maintaining the image from each ommatidium as a discrete unit (BRUSCA & BRUSCA, 2002).

artery. One of numerous blood vessels originating from aorta or directly from heart. Based on position or body region/appendages supplied, these can include antennal, antennular, hepatic, lateral cephalic, ophthalmic, optic, pleopodal, rostral, segmental, sternal, and subneural arteries (STACHOWITSCH, 1992).

arthrobranch. Gill of decapods attached to articular membrane between limb and

body; syn., arthrobranchia (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 10, 11).

arthrobranchia (pl., **arthrobranchiae**). See arthrobranch.

arthrodial membrane. Tough, flexible, cuticular membrane between coxae of appendages and body wall or between any two cuticular elements (WARNER, 1977).

arthrophragm. See endophragm.

article. Individual element of crustacean appendage; syn., element, joint, podomere, segment (MOORE & McCORMICK, 1969). Articles are generally named as illustrated (SCHWEITZER & others, 2024, fig. 10).

articulating rings. Structures adjacent to terga on pleonites that allow for articulation of pleonites with one another but limiting flexure (FELDMANN & SCHWEITZER, 2010).

articular knob. A swelling or irregularity in the cuticle at a joint, for example, on either side of a chela at the base of the movable finger or between the pleonal somites at the juncture of the terga and pleura (CHACE & HOBBS, JR., 1969).

articular membrane. Uncalcified integument at a joint, allowing movement of the exoskeleton, for example, between the segments of a pereiopod or between pleonal somites (PÉREZ FARFANTE & KENSLEY, 1997).

attractor epimeralis muscle. Important muscle in many decapods, inserted along inner line of branchiocardiac groove in carapace (MOORE & McCORMICK, 1969).

augenrest. Concavity distal to the orbit and separated from it by a ridge or constriction of the orbital margin; houses part of the ocular apparatus (SCHWEITZER & others, 2024, fig. 118).

axial. Toward the midline (SCHWEITZER & others, 2024, figs. 3, 4).

bar linea. Transverse linea on Aeglidae, extending across posterior half of cara-

pace (SCHWEITZER & others, 2024, fig. 83).

basal antennal article. First article of antenna, can be lodged in the orbital hiatus, and may be fused with the epistome to varying degrees (DAVIE, GUINOT, & NG, 2015).

basial spine. Spine projecting from basis of a thoracic appendage (PÉREZ FARFANTE & KENSLEY, 1997).

basicerite. Second of two segments of peduncle of antenna, may bear antennal scale (STACHOWITSCH, 1992).

basi-ischium. Second article from base of an appendage, formed from fusion of basis and ischium (WARNER, 1977); syn., ischiobasis.

basiophthalmite. Proximal segment of eyestalk, articulating with distal segment (podophthalmite), which bears corneal surface of eye (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 127.5).

basipod. See basis; syn., basipodite.

basis (pl., **bases**). Limb segment adjoining coxa on its distal side and commonly bearing endopod and exopod; syn., basipod, basipodite (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 10).

bidentate. With or forming two spines.

bifid. Divided into two lobes or parts (FELDER, 1973), often applied to spines or rostrum.

biramous. Two-branched; crustacean limb in which basis bears both exopod and endopod (MOORE & McCORMICK, 1969).

body somite. Generally refers to a segment or unit division of the thorax and/or the pleon, in contrast to cephalic somite (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 1).

boss Rounded protuberance, usually on outer surface of cuticle.

bouton-presson. See pleonal locking mechanism.

branchia (pl., **branchiae**). Thin-walled, fingerlike or leaflike structure extending

outward from limb or secondarily from side of body, functioning for respiration; syn., gill. (Special types are termed arthrobranchs, pleurobranchs, and podobranchs, depending on their place of attachment, and dendrobranchs, phyllobranchs, mastigobranchs, and trichobranchs, depending on their shape.) (MOORE & McCORMICK, 1969) (FIGS. 10, 11, 12).

branchial carina (pl., **branchial carinae**).

Carina extending posteriorly from level of lower/outer orbit across branchial region (SCHWEITZER & others, 2024, fig. 5).

branchial cavity. See branchial chamber.

branchial chamber. Space between body

and wall of carapace enclosing branchiae. Particularly well-developed in brachyurans and especially in intertidal or terrestrial brachyurans; syn., branchial cavity, gill chamber (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 11).

branchial glands. Masses of connective tissue cells surrounding venous channels in branchiae and devoid of ducts (MOORE & McCORMICK, 1969).

branchial groove 1. Oblique groove extending posterolaterally from cervical groove and intersecting posterolateral margin. Developed in brachyurans of Etyoida (SCHWEITZER & others, 2024, fig. 116).

branchial groove 2. Oblique groove extending posterolaterally from cervical groove and intersecting posterolateral margin, more or less paralleling branchial groove 1. Developed in brachyurans of Etyoida (SCHWEITZER & others, 2024, fig. 116).

branchial pouch. Pouch or cavity between bases of pereiopods in ocypodid crabs, may be lined with setae, apparently facilitates oxygen transfer in semiaquatic environments (DAVIE, 2002).

branchial region. Posterolateral part of dorsal carapace overlying branchiae, divided by some authors into epibranchial, mesobranchial, and metabranchial subregions (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 101, 103, 111, 114).

chial, mesobranchial, and metabranchial subregions (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 101, 103, 111, 114).

branchiocardiocarina (pl., **branchiocardiocarinae**). Carina separating branchial from cardiac region of carapace (SCHWEITZER & others, 2024, fig. 18.2).

branchiocardiocarina groove (notated as: a – a¹).

Oblique furrow approximately in middle of posterior half of each side of carapace, separating branchial and cardiac regions and reaching dorsomedian part of carapace well behind cervical or postcervical grooves; may be longitudinal, connecting cervical and postcervical grooves, or extending posteriorly from submedian point on postcervical groove (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 5, 28, 31, 41, 57).

branchiostegal area. See branchiostegite.

branchiostegal groove. Groove parallel to the branchiostegal carina, located on the anteroventral part of the carapace (PÉREZ FARFANTE & KENSLEY, 1997).

branchiostegal lobe. Anteroventral lobe, free from the carapace and developed as a separate plate located between linea thalassinica and branchiostegite, that encloses the mouthparts, seen in Axiideans and Gebiideans (DWORSCHAK, 2003; DWORSCHAK, FELDER, & TUDGE, 2012).

branchiostegal spine. Anteriorly directed spine on branchial regions of shrimps below branchiostegal groove and between antennal and pterygostomial spines; in crayfish, located ventral to anterior extremity of cervical groove (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, figs. 5, 18.2).

branchiostegite. Part of carapace extending laterally and ventrally over branchiae, forming branchial chamber (MOORE & McCORMICK, 1969); syn., branchiostegal region (SCHWEITZER & others, 2024, fig. 6).

brush. Cluster or band of setae or spinules on distal margin of propodus of fifth

pereiopod, used for grooming (BUTLER, 1980).

buccal cavity. Hollow space on ventral side of body containing mouth parts, bounded by epistome in front and laterally by free edges of carapace; syn., buccal cavern (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 6).

buccal frame. Structure in brachyuran decapods enclosing mouth parts, its sides formed by free anterolateral edges of carapace, its front delimited by epistome, and commonly closed by operculiform third maxillipeds (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 6, 129).

buccal groove. Transverse groove extending between gastro-orbital groove and antennal groove (STACHOWITSCH, 1992).

carapace. Cuticular, varyingly calcified structure comprising cephalic shield and fold of integument arising from posterior border of maxillary somite extending over trunk, usually covering it laterally as well as dorsally; fused to thoracic somites, encloses branchial chambers (MOORE & McCORMICK, 1969); large, shieldlike cuticular structure covering cephalothorax; typically with well-defined regions and ornamented with grooves, spine, nodes, or carinae; encloses gill-bearing bases of thoracopods and thus forms branchial chambers; many shape terms used to describe (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, figs. 2, 7).

carapace adductor muscle. See adductor muscle.

carapace lateral lobe. Paguroid structure variously named, positioned lateral to the shield and delimited by the cervical groove and the linea transversalis; syn., accessory portion of the shield, posterior carapace lateral lobe or element (TUDGE, ASAKURA, & AHYONG, 2012) (Fig. 94.2).

carcinization. Pattern of convergent evolution in decapods and possibly other Crustacea to develop a crab-like form,

characterized by a reduced pleon that may be held ventrally or mostly ventrally under the sternum, a flattened carapace, and a wide sternum broadly separating the pereiopods (KEILER, WIRKNER, & RICHTER, 2017) (SCHWEITZER & others, 2024, fig. 2). See also decarinization.

cardiac groove. Groove extending from dorsal margin of carapace ventrally to intersect the postcervical groove (KARASAWA, SCHWEITZER, & FELDMANN, 2013; CHARBONNIER & others, 2013) (SCHWEITZER & others, 2024, fig. 31).

cardiac notch. Indentation on posterior margin of carapace, often seen in shrimp (STACHOWITSCH, 1992).

cardiac prominence. A swelling near the posterior margin of many axiideans (DWORSCHAK, FELDER, & TUDGE, 2012) (SCHWEITZER & others, 2024, figs. 69.6, 70.6).

cardiac region. Relatively large, unpaired region in posterior half of carapace overlying cardiac portion of the stomach; adjoined anteriorly by urogastric region, posteriorly by intestinal region; laterally by branchial regions (STACHOWITSCH, 1992; DAVIE, GUINOT, & NG, 2015) (SCHWEITZER & others, 2024, figs. 82, 83, 88, 111.1, 112.1, 113.1, 114.1, 115.5)

cardiac spine. Spine on mid-line of carapace just posterior to cervical groove.

cardiac stomach. Anterior, larger region of the foregut, characterized by gastric mill (STACHOWITSCH, 1992).

cardiac sulcus. Pair of uncalcified lines positioned on either side of axis on posterior carapace of paguroids (TUDGE, ASAKURA, & AHYONG, 2012) (SCHWEITZER & others, 2024, fig. 94).

caridean lobe. Setose broadening or lobe at base of exopod of first maxilliped seen in caridean shrimp (STACHOWITSCH, 1992).

caridoid facies. Aspect of the ancestral eumalacostracan body plan, distinguished by enclosure of thorax by carapace, movably stalked eyes, bira-

mous antennules, scaphocerite-bearing antennae, thoracopods with natatory exopods, elongate pleon ventrally flexed and powerfully muscled, and caudal fan (MOORE & McCORMICK, 1969); generally refers to shrimplike decapods (SCHWEITZER & others, 2024, fig. 2).

carina (pl., **carinae**). Narrow, elevated ridge variously located on cuticle surface; syn., keel, ridge (SCHWEITZER & others, 2024, fig. 5).

carpocerite. Last of three segments of endopod in antenna (ischiocerite, mero-cerite and carpocerite) (STACHOWITSCH, 1992), may also be interpreted as the fifth segment of the antennal peduncle (MOORE & McCORMICK, 1969).

carpopod(ite). See carpus.

carpus (pl., **carpi**). Segment of limb located next distally from merus and joined to propodus proximally; syn., carpopod(ite), wrist (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 10, 55.1).

caudal. Posterior end of organism.

caudal fan. Combination of laterally expanded uropods and telson forming a powerful swimming structure or means of steering and balancing; syn., tail fan (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 16.3).

central gastric groove. Axial groove extending posteriorly from postfrontal ridge on gastric region of carapace in paguroids (FRAAIJE & others, 2014) (SCHWEITZER & others, 2024, fig. 95).

cephalic. Pertaining to the head.

cephalic carinae. Keels parallel to long axis and positioned in cephalic region of carapace, usually in gypheoid lobsters (SCHWEITZER & others, 2024, fig. 31).

cephalic flexure. Forward or even upward deflection of anterior sterna of some decapods (MOORE & McCORMICK, 1969).

cephalic somite. Unit division of head region, generally recognized as one of five such parts that bear distinctive paired appendages (antennules, antennae,

mandibles, maxillules, maxillae) in addition to “precephalic” acron bearing eyes; syn., cephalomere (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 1).

cephalomere. See cephalic somite.

cephalon. Anterior region of body bearing eyes, antennules, antennae, mandibles, maxillules, and maxillae; syn., head (SCHWEITZER & others, 2024, fig. 1).

cephalothorax. Anterior part (tagma) of body composed of united cephalic and thoracic somites, comprising not only those with appendages modified as mouth parts or for food capture but others with relatively unmodified appendages, all forming a fused complex that is largely or completely covered by carapace (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 1, 2).

cervical carina (pl., **cervical carinae**). Mesially transverse and laterally oblique carina extending from the anterior limit of the hepatic region toward the middorsal line (PÉREZ FARFANTE & KENSLY, 1997) (SCHWEITZER & others, 2024, fig. 18.2).

cervical furrow. See cervical groove.

cervical groove (denoted as $e - e'$). Transverse furrow in median part of carapace between gastric and cardiac region and branchial regions, curving anteriorly; syn., cervical furrow, cervical sulcus, cervical suture (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 5, 19, 28, 31, 41, 50.2, 51.2, 69, 82.2, 83, 89, 94, 95, 99, 103.2, 115.3, 115.5).

cervical notch or incision. Strong indentation of carapace at level of cervical groove (e.g., scyllarid palinurans) (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 51.1).

cervical spine. Spine on lateral surface of carapace just posterior to cervical groove in crayfish (HOBBS & JASS, 1988) (SCHWEITZER & others, 2024, fig. 5).

cervical sulcus. See cervical groove.

cervical suture. See cervical groove.

chela (pl., **chelae**). Pincerlike distal part of limb consisting of opposed movable

finger composed of dactylus and fixed finger composed of a distal extension of the propodus (manus) (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 15).

chelate. Bearing chela (chelae) (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 15.1).

cheliped. Any thoracopod bearing chelae; usually referring to first pair of pereiopods (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 57).

chi region. Site of adductor testis muscle, positioned near the ventral end of the postcervical groove and lateral to hepatic groove, usually denoted by χ symbol; syn., chi prominence (HOLTHUIS, 1974) (SCHWEITZER & others, 2024, fig. 5).

chitin. A polymer composed of *N*-acetylglucosamine, which is a polysaccharide related to cellulose and is the main constituent of the exoskeleton of all crustaceans.

chromatophore. A pigment-filled cell in the exoskeleton, contraction and expansion of which changes the color (STACHOWITSCH, 1992).

cicatrix (pl., cicatrices). Longitudinal ridges on lateral part of sixth pleonal somite of shrimp (PÉREZ FARFANTE & KENSLEY, 1997).

cincinnuli. Tiny interlocking hooks that project from the petasma of shrimp (PÉREZ FARFANTE & KENSLEY, 1997). (SCHWEITZER & others, 2024, fig. 26.1). See also retinaculum.

circumgastric groove. Ovate or circular groove bounding the gastric region (SCHWEITZER & others, 2024, fig. 88); may have two subbranches, hepatic branch and epibranchial branch (ROBINS, FELDMANN, & SCHWEITZER, 2013). SCHNABEL (2020) termed what is more or less the circumgastric groove as the anterior cervical groove and the epibranchial branch was termed the posterior cervical groove.

claw. See chela.

clasper organ. An extension of the ventral flagellum of the antennules in sergestid shrimps, occurs only in males (TAVARES & MARTIN, 2010).

compound eye. Array of contiguous ommatidia having a common optic nerve trunk; paired (MOORE & McCORMICK, 1969).

condyle. Knob, rounded process, at the base of the male first pleopod; may be present in crayfish (HOBBS & JASS, 1988).

copulatory stylets. First pleopods of some male Nephropidae; syn., gonopod.

cornea. Transparent cuticle covering ommatidia of compound eye (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 19, 127.5).

corneous. Structures that are sclerified (hardened or thickened), often referring to tips of appendages.

coxa (pl., coxae). First, most proximal segment of limb directly attached to sternite of body, may bear gill or gonopore; syn., coxopod(ite) (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, fig. 10).

coxal plate. Lateral expansion of pereiopod coxa joined broadly to lateral margins of tergites (MOORE & McCORMICK, 1969).

coxepipod(ite). Coxal exite.

coxicerite. First of two segments of peduncle of antenna (STACHOWITSCH, 1992).

coxite. See protopod(ite).

coxopod(ite). See coxa.

crista dentata. Spinose inner (mesial) margin of ischium of third maxilliped (STACHOWITSCH, 1992).

cristate. Sharply emarginate, forming a crest or crestlike structure (INGLE, 1980).

crushing claw. Usually larger of the pair of first chelae of decapods, on which the occlusal surfaces are armed with molariform teeth, usually in species with heterochely in which opposite chela is a cutting claw; syn., crusher, crusher claw (SCHWEITZER & others, 2024, fig. 64).

crystalline cone. The core of an ommatidium composed of crystalline cone cells and retinular cells that compose the rhabdome (BRUSCA & BRUSCA, 2002).

cuticle. Noncellular, multilayered, relatively thick layer secreted by epidermis, primarily composed of chitin and proteins and often mineralized with calcium carbonate, and forming exoskeleton and endoskeleton and lining foregut and hindgut (STACHOWITSCH, 1992).

cuticular. Of the cuticle.

cutting claw. Smaller and more slender of the first chelae on decapods, which often have smaller teeth and/or spines on the occlusal surfaces, usually in species with heterochely in which the opposite chela is a crushing claw; syn., cutter, cutter claw (SCHWEITZER & others, 2024, fig. 64).

dactyl. See dactylus.

dactylopod(ite). See dactylus.

dactylus (pl., **dactyli**). Distal-most segment of limb, may be movable finger in chela; syn., dactylopod(ite) (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 10).

decapodid. The last larval phase in malacostracans, usually used for anomurans and brachyurans, wherein the last larval series has two distinctly different forms, representing the transition from the planktonic zoeal phase and the benthic juvenile phase (MARTIN, OLESON, & HØEG, 2014). See megalopa.

decarcination. The convergent loss or dramatic departure from a typical crab-like body form, characterized by an elongated carapace and pleon usually exposed posteriorly and visible dorsally (LUQUE & others, 2019). See also carcinization.

deflexed front. Broadly downturned front marginal part of carapace in some decapods (MOORE & McCORMICK, 1969).

dendrobranch. Type of gill having tubes divided into arborescent bundles, highly subdivided branches (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 12.3).

dendrobranchiate. Having dendrobranch gills; term sometimes used to refer to the Dendrobranchiata clade of shrimps.

dermal gland. Gland in epidermis underlying cuticle that opens to exterior through long ducts in cuticle (STACHOWITSCH, 1992).

deutocerebrum. Second part of the brain and ganglion of antennular somite, situated posteriorly to protocerebrum and connected by nerves to the tritocerebrum; syn., mesocerebrum (MOORE & McCORMICK, 1969).

diaresis. Transverse articulation on posterior part of exopod (rarely also endopod) of uropodal appendage, in some forms dividing exopod into two movably connected parts (MOORE & McCORMICK, 1969); sometimes present on telson. Alternative spelling, diaeresis (SCHWEITZER & others, 2024, figs. 32, 57, 61, 62).

digestive gland. Hepatic cecum.

distal. Direction away from central part of body; opposite of proximal (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 3, 4).

dorsal. Top or back of body, opposite of ventral (SCHWEITZER & others, 2024, figs. 3, 4).

dorsal oval. Dorsal region of carapace defined by linea thalassinica laterally, cervical groove posteriorly, and oblique semicircle anteriorly in some axiideans (POORE, 2004) (SCHWEITZER & others, 2024, figs. 71.1, 72).

dorsal plate. See intercalated plate.

dorsolateral carina (pl., **dorsolateral carinae**). Carina extending longitudinally on dorsolateral region of carapace dorsal to orbital region (PÉREZ FARFANTE & KENSLEY, 1997).

dorsolateral groove. Longitudinal groove present close to midline of pleonal somites (PÉREZ FARFANTE & KENSLEY, 1997).

dorsoventralis posterior muscle. Important muscle connecting head apodemes with internal surface of carapace just behind cervical groove (MOORE & McCORMICK, 1969).

ecdysis. Clearly defined process by which shedding and growing a new exoskeleton occurs, often accompanied by growth or change in shape; syn., molt.

efferent channels. Passageways through which water moves away from gills and out of branchial region, located anteriorly on each side of endostome; syn., efferent respiratory channels (MOORE & McCORMICK, 1969).

endite. Inwardly (medially) directed lobe of preoxa, coxa, or basis; usually on maxillules, maxillae, and/or maxillipeds (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 10).

endocuticle. Innermost, sometimes calcified, layer of cuticle lying above the membranous layer and below the exocuticle; laminated.

endognath. Endopod (inner and principal branch) of maxilliped (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 10, 13.4).

endophragm. Septum formed by union of apposed apodemes forming part of endoskeleton of some decapods; syn., arthrophragn (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 11).

endophragmal skeleton. Complex internal skeletal structure formed by fusion of apodemes in decapods providing framework for muscle attachment, generally not strongly calcified (MOORE & McCORMICK, 1969).

endopleurite. Lateral apodeme of endoskeleton in decapods (MOORE & McCORMICK, 1969).

endopod(ite). Innermost ramus of limb arising from protopod basis. Refers to three-segmented part of peduncle of antenna, inner branch of mouth parts, and inner branch of pleopods and uropods, and considered to represent the main part of the pereiopod typically composed of five segments (ischium, merus, carpus, propodus, and dactylus) (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 10).

endoskeleton. Internal hard parts of some decapods consisting mainly of endophragms (MOORE & McCORMICK, 1969).

endosternite. Calcareous plate between nerve cord and alimentary canal in anterior part of thorax in some crabs (MOORE & McCORMICK, 1969).

endostome. Palate-like part of buccal frame posterior to the epistome in some brachyuran decapods; syn., palate (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 6.3).

entire. Complete, smooth, without spines, usually referring to a margin that lacks spines or other projections (SCHWEITZER & others, 2024, fig. 107.9).

epibranchial region. Anterior part of branchial region of brachyuran carapace (MOORE & McCORMICK, 1969), often arcuate or linear in shape (SCHWEITZER & others, 2024, figs. 112.1, 113.1 115.5).

epigastric region. Paired swellings adjacent to anterior process of mesogastric region of brachyuran carapace (SCHWEITZER & others, 2024, fig. 114.1).

epibranchial space. Part of gill chamber above (external to) gills, space between gills and wall of carapace (MOORE & McCORMICK, 1969; STACHOWITSCH, 1992).

epibranchial spine. Spine on anterolateral margin at position of epibranchial region.

epidermis. Outer cellular layer that secretes cuticle; syn., hypodermis (STACHOWITSCH, 1992).

epigastric spine. Situated above gastric region and posterior to first (posterior-most) rostral tooth on dorsal carapace (PÉREZ FARFANTE & KENSLY, 1997) (SCHWEITZER & others, 2024, fig. 18.1).

epimere. See pleuron. Lateral downfold of tergite; syn., epimeron, pleurepimere, pleurite, pleuron, tergal fold, tergopleuron (MOORE & McCORMICK, 1969).

epimeron (pl., epimera). See epimere.

epipod(ite). Laterally directed ramus (exite) of coxa of thoracopods (maxillipeds and pereiopods), usually with respiratory function (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 10).

episternite. Posterolateral projection of various sternites of decapods serving as ventral support for articulation with pereiopods (MOORE & McCORMICK, 1969); syn. episternum (SCHWEITZER & others, 2024, fig. 121).

epistome. Plate of varying shapes between labrum and bases of antennae in some decapods, also defined as sternum of antennal somite (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 6, 33, 35).

esophagus. Cuticle-lined anterior part of alimentary canal between mouth and cardiac stomach; syn., oesophagus.

esthetasc. Sensory seta covered by delicate cuticle projecting from most antennules and antennae; syn., aesthetasc, olfactory hair, esthete (MOORE & McCORMICK, 1969).

excretory organ. See antennal gland.

excretory pore. Opening in basal segment of antenna leading to antennal gland.

exhalant passage. Canal in front of gill chamber containing scaphognathite, which functions for driving water outward, leads to large anterior opening (MOORE & McCORMICK, 1969).

exite. See epipod.

exognath. Exopod (outer) and secondary branch of maxilliped (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 13.5-7).

exopod(ite). Outer ramus of limb arising from protopod basis; refers to antennal scale of antenna, scaphognathite of maxilla, flagelliform branch of maxillipeds, and variously developed outer branches of pereiopods, pleopods, and uropods; often absent in decapod pereiopods (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 10).

exorbital spine. See outer orbital spine.

exoskeleton. Entirely chitinous and proteinaceous or more or less calcified outer integument of crustacean body and its appendages (MOORE & McCORMICK, 1969).

extra-lineal. Refers to portion of carapace of homoloid crabs lateral to linea homolica, which is often not preserved in fossils (SCHWEITZER & others, 2024, fig. 115.4).

eye. Visual organ consisting of numerous ommatidia covered by cornea, typically positioned at the end of an eyestalk in decapods, either compound or naupliar (simple) (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, figs. 1, 22, 37, 46, 127).

eyestalk. Peduncle movably articulated with head, carrying corneal eye at its distal extremity, may be divided into two or three segments and may be retractable; syn., ocular peduncle (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 127).

false orbit. See plage orbitaire.

finger. Dactylus and elongate extension of the propodus at claw end of cheliped, one finger movable (dactylus) and other immovable (fixed), which is an extension of the propodus; fingers articulate to form an occlusal surface (SCHWEITZER & others, 2024, fig. 15).

first antenna. See antennule.

first maxilla. See maxillule.

fixed finger. Immovable distal extension of propodus of chela; syn., immovable finger, pollex, thumb (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 57, 111.1, 112.1, 113.1).

flagellum (pl., flagella). Slender, multiarticulate distal part of antennule, antenna or pleopod (MOORE & McCORMICK, 1969).

flank spine. Spines placed on cephalic region of carapace, at about mid-height, just anterior to postcervical groove (TSHUDY, CHAN, & SORHANNUS, 2007) (SCHWEITZER & others, 2024, fig. 58.5).

foregut. See stomodaeum.

front. Part of a brachyuran or anomuran carapace between orbits (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 117, 119).

frontal carina (pl., **frontal carinae**). Carina parallel to anterior margin of carapace in some palinurid lobsters (SCHWEITZER & others, 2024, fig. 50.2).

frontal horn. Large, stout, curved spine on the anterior margin of the carapace above the eye in Palinuridae; syn., supraorbital spine of STENZEL (1945) (SCHWEITZER & others, 2024, fig. 50).

frontal margin. Margin between the orbits in polychelidans and some other decapods.

frontal plate. Modified rostrum of brachyuran decapods that bears downward projecting process between antennules that unites with epistome (MOORE & McCORMICK, 1969).

frontal region. Anteromedian part of carapace including rostrum and area behind it (MOORE & McCORMICK, 1969).

frontal spine. Spine placed on frontal margin of carapace exclusive of orbital spines; syn., frontal teeth, frontal lobes.

fronto-orbital width or distance. The interval between the outer orbital angles. May change allometrically with growth (SCHWEITZER & others, 2024, fig. 119).

fungiform node. Cuticular upright node with expanded top (mushroomlike) forming circular or hexagonal pattern in surface (WAUGH, FELDMANN, & SCHWEITZER, 2009).

fusiform carina (pl., **fusiform carinae**). Carina subparallel to axial carina in palinurid lobsters (SCHWEITZER & others, 2024, fig. 50.2).

gastric mill. Apparatus of varying complexity in stomodeum that serves to break up food; consists of framework of movably articulated ossicles, sometimes with toothlike elements, developed as thickened and calcified part of stomodeal lining (MOORE & McCORMICK, 1969).

gastric neck. Term applied to long, anterior extension on carapace of brachyurans of Latreilliidae, leading to orbits and eyestalks.

gastric region. Median part of carapace in front of cardiac region and behind frontal region overlying stomach; divided by some authors into paired epigastric and protogastric and unpaired mesogastric, metagastric, and urogastric subregions (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 82, 101.2, 111.1).

gastric spine. On mid-line of carapace just anterior to cervical groove.

gastrofrontal carina (pl., **carinae**). Short, longitudinal ridge extending posteriorly from the ventral extremity of the orbital region (PÉREZ FARFANTE & KENSLEY, 1997) (SCHWEITZER & others, 2024, figs. 18.1, 18.3).

gastrofrontal groove. Short longitudinal groove accompanying the gastrofrontal carina dorsally (PÉREZ FARFANTE & KENSLEY, 1997) (SCHWEITZER & others, 2024, figs. 18.1, 18.3).

gastrolateral spine. Spine on cephalic region of carapace at level of orbit about midway between orbit and cervical groove (TSHUDY, CHAN, & SORHANNUS, 2007) (SCHWEITZER & others, 2024, fig. 58.5).

gastrolith. Discoid, calcareous nodule used to store calcium carbonate during the intermolt period, common in the stomodeum of crayfish (MOORE & McCORMICK, 1969).

gastro-orbital carina (pl., **carinae**). Ridge extending posteriorly from supraorbital spine; syn., supraorbital carina (SCHWEITZER & others, 2024, figs. 18.1, 18.3).

gastro-orbital groove. Short longitudinal furrow branching from cervical groove at level of orbit and extending toward it (SCHWEITZER & others, 2024, figs. 5, 28, 31).

genital region. See urogastric region.

gill. See branchia.

gill bailer. See scaphognathite.

gill cavity. See branchial chamber.

gill chamber. See branchial chamber.

gill formula (pl., **gill formulae**). Notation indicating type and number of gills associated with each thoracopod; full complement would include one podobranch, two arthrobrachs, and one pleurobranch per thoracopod; syn., branchial formula (STACHOWITSCH, 1992).

glaucothoe stage. Decapodid larval stage of anomurans, sometimes used as a synonym for megalopa (MARTIN OLESON and HØEG, 2014).

gnathal lobe. Masticatory endite of mandible; syn., masticatory process (MOORE & McCORMICK, 1969).

gnathobase. Endite, which through medial contact with opposite member of its pair, serves for comminution of food; may also serve in food transport (MOORE & McCORMICK, 1969).

gonad. Hollow reproductive organ in either sex, cavity communicating with pair of efferent ducts (MOORE & McCORMICK, 1969).

gonopod. Modified male first and/or second pleopod serving for transfer of spermatoophores to female (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 136).

gonopore. Outlet for genital products, usually on coxa of fifth pereiopod in males and coxa of third pereiopod in females; syn., sexual pore (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 6.1, 8.2, 17, 122.1, 122.4, 122.5, 124).

granule. Small, rounded prominence on cuticle surface (SCHWEITZER & others, 2024, fig. 7.1).

green gland. One of pair of complex excretory glands located in antenna on front of head (e.g., crayfish); syn., antennal gland, renal gland (MOORE & McCORMICK, 1969).

groove. Furrow on surface of decapod carapace or other element, generally on dorsal carapace but may occur on pleonal somites or sterna (SCHWEITZER & others, 2024, fig. 5).

gymnopleuran. A condition in which the branchiostegites are reduced and the pleurae of the cephalothorax are exposed (BOURNE, 1922); seen in some Raninoida (KARASAWA & others, 2014, fig. 1C).

gynglyme. Socket that receives an articular knob for articulation of pereiopods with sternites (GUINOT, 2008).

hair. See seta.

hand. See manus.

head. See cephalon.

hemocoel. Lacunar system extending throughout much of body, filled by blood (MOORE & McCORMICK, 1969).

hemocyanin. Copper-containing respiratory pigment in blood of malacostracans (MOORE & McCORMICK, 1969).

hepatic boss. A large swelling ventral to the linea thalassinica anteriorly on the carapace of some axiideans, marking the point of insertion of a transverse muscle (DWORSCHAK, FELDER, & TUDGE, 2012) (SCHWEITZER & others, 2024, figs. 70.4–6).

hepatic carina (pl., **hepatic carinae**). Longitudinal or oblique ridge of variable length lying ventral to hepatic region, sometimes extending almost to the anterior margin of the carapace (PÉREZ FARFANTE & KENSLEY, 1997) (SCHWEITZER & others, 2024, figs. 18.1, 18.2).

hepatic groove. Short longitudinal furrow connecting cervical with postcervical and branchiocardiac grooves, more or less continuing antennal groove (STACHOWITSCH, 1992); groove ventral to hepatic region extending posteriorly, sometimes from near the anterior margin of carapace (PÉREZ FARFANTE & KENSLEY, 1997) (SCHWEITZER & others, 2024, figs. 5, 28, 31).

hepatic lobe. One of three pairs of lobes on the anterolateral margin of the carapace of aeglids, delimited anteriorly and posteriorly by emarginations (HOBBS, HOBBS, & DANIEL, 1977).

hepatic region. One of two lateral regions of carapace more or less corresponding to underlying hepatic ceca; may adjoin antennal, protogastric, branchial, and pterygostomial regions (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, figs. 88, 101.2, 111.1, 112.1, 113.1, 114.1, 115.5).

hepatic spine. Spine on hepatic region of carapace ventral to lower branch of cervical groove and posterior to it (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 5, 18.1, 18.2).

hepatopancreas. Digestive gland consisting of ramified tubules spread through cephalothorax, performing functions of both liver and pancreas (MOORE & McCORMICK, 1969).

heterochelate. Chelae of left and right chelipeds differing in shape, size, and usually function. Can be characteristic of taxa or secondarily acquired if one claw is smaller after being recently regenerated (SCHWEITZER & others, 2024, figs. 64, 65, 131, 132, 133).

heterotrematous. Term referring to the brachyuran groups exhibiting the heterotreme condition (SCHWEITZER & others, 2024, figs. 106, 107, 121.2, 121.3).

heterotreme. Condition in which the female gonopore occurs on sternite six, and the male gonopore occurs on the coxa of the fifth pereiopods. Occurs in many brachyurans (SCHWEITZER & others, 2024, figs. 106, 107, 121.2, 121.3).

hindgut. See proctodeum.

homochelous. See isochelous.

hypobranchial space. Part of gill chamber below gills (MOORE & McCORMICK, 1969).

hypodermis. See epidermis.

hypopharynx. See metastoma.

hypostoma. See metastoma.

hypostome. See metastoma.

immovable finger. See fixed finger, pollex.

incisor process. Cutting edge on mandible (SCHWEITZER & others, 2024, fig. 13.2).

inferior groove. Transverse furrow extending from junction of hepatic and cervical grooves toward lateral or ventral margin of carapace, more or less continuous with cervical groove (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 5, 28, 31).

infraorbital ridge. A ridge located below the orbit, on the ventral side of the crab, seen in Grapsoida.

infraorbital spine. Spine on lower angle of orbit.

inner orbital angle. Inner (axial) edge of orbit (SCHWEITZER & others, 2024, fig. 89).

inner orbital spine. Spine on inner (proximal) margin of orbit.

integument. Outer covering of exoskeleton (PÉREZ FARFANTE & KENSLEY, 1997).

interantennular septum. Plate in some malacostracans that separates one antenular cavity from other; syn., proepistome.

intercalated plate. Spindle-shaped division of carapace in some lobster-like decapods (Erymidae) intercalated in median suture anteriorly; may be related to molting; syn., dorsal plate (SCHWEITZER & others, 2024, figs. 28, 29.2-4).

intercalated spine. Spine between supr orbital eave and outer orbital spine in Majoidea (SCHWEITZER & others, 2024, figs. 117.3, 117.4).

intercervical groove. Oblique furrow connecting cervical and postcervical grooves (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 5).

intermediate carina (pl., **intermediate carinae**). In lobsters, longitudinal carina paralleling branchiocardiatic groove (HOLTHUIS, 1974) (SCHWEITZER & others, 2024, fig. 5).

intestinal carina (pl., **intestinal carinae**). In lobsters, a carina paralleling the posterior margin (HOLTHUIS, 1974) (SCHWEITZER & others, 2024, fig. 5).

intestinal groove. Short transverse furrow across dorsomedian surface, interrupted by tubercle (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, fig. 5).

intestinal region. Short transverse part of carapace posterior to cardiac region, designated by some as posterior cardiac lobe (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 111.1, 112.1, 113.1, 114.1, 115.5).

intestine. Short, slender, part of alimentary canal between the esophagus and the proctodeum, used in food absorption, not covered by cuticle; syn., mesenteron; competing usage: entirety of the digestive tract, including the stomach, mesenteron, and proctodeum.

intragastric groove. Groove anterior in the gastric region of paguroids (FRAAIJE & others, 2014) (SCHWEITZER & others, 2024, fig. 95).

intraorbital spine. Spine between inner and outer orbital angles.

ischial hooks. Large hook-like structure on the ischia of pereiopods 2–4 (usually two pairs) in the male of northern hemisphere crayfishes, Astacoidea (HOBBS & JASS, 1988).

ischiobasis. Segment of appendage formed by fusion of basis and ischium (STACHOWITSCH, 1992).

ischiocerite. Variously interpreted as first of three segments of endopod of antenna or the third segment of antennal peduncle (STACHOWITSCH, 1992).

ischiomerus. Segment of appendage formed by fusion of ischium and merus (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, fig. 10).

ischiopod(ite). See ischium.

ischium (pl., **ischia**). Third limb segment distal from body articulating with basis and comprising first segment of endopod; syn., ischiopod(ite) (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 10).

isochelous. Refers to chelae, usually of the first pereiopod, of the same size and general shape; syn., homochelous (SCHWEITZER & others, 2024, fig. 130).

joint. Articulation; most commonly applicable to movable connection of individual

segment of appendage with neighbors or body but relates also to movable connection of body parts; loosely and undesirably employed as synonym of segment (MOORE & McCORMICK, 1969).

jugal region. See pterygostomial region.

keel. See carina.

keraial groove. Groove bounding anterior margin of keraial region (FRAAIJE & others, 2014); may be a synonym of Y-linea (TUDGE, ASAKURA, & AHYONG, 2012) (SCHWEITZER & others, 2024, fig. 95).

keraial region. Longitudinal region posterior to submassetic region (FRAAIJE & others, 2014) (SCHWEITZER & others, 2024, fig. 95).

knee. Point of most pronounced flexure of endopod (MOORE & McCORMICK, 1969).

labium. Liplike structure posterior to mouth on underside of head; symmetrically bilobed, each lobe being termed paragnath; syn., metastome, hypostoma, hypostome, hypopharynx, paragnath (STACHOWITSCH, 1992).

labrum. Relatively large, unpaired, fleshy lobe in front of and partially covering mouth; adjoined anteriorly by epistome; syn., upper lip (STACHOWITSCH, 1992).

lateral. Referring to or toward the side (SCHWEITZER & others, 2024, figs. 3, 4).

lateral angle. Point where anterolateral margin curves to become the postero-lateral margin, usually the point of maximum width of carapace in brachyurans (FELDER, 1973).

lateral bulge. Convex projection on lateral margin of tergite on paguroid sixth pleonal somite (FRAAIJE & others, 2012) (SCHWEITZER & others, 2024, fig. 98).

lateral carina (pl., **lateral carinae**). Keel on lateral margin of carapace (SCHWEITZER & others, 2024, fig. 50.2).

lateral gastrocardiac markings. Insertions of attractor epimeralis muscle in most Brachyura, in which the branchiocar-

diac groove has disappeared (MOORE & McCORMICK, 1969).

lateral groove. Groove bounding lateral bulge on paguroid sixth pleonal somite (FRAAIJE & others, 2013) (SCHWEITZER & others, 2024, fig. 98).

lateral margin. Differentiated edge of carapace in some advanced macrurans and many brachyurans (MOORE & McCORMICK, 1969).

lateral spine. Spine placed on lateral margin of carapace (includes anterolateral, mediolateral, posterolateral spines); usually in brachyurans; syn., lateral tooth.

laterocardiac groove. Groove extending dorsoventrally between postcervical and branchiocardiac grooves (KARASAWA, SCHWEITZER, & FELDMANN, 2013; CHARBONNIER & others, 2013) (SCHWEITZER & others, 2024, fig. 31).

leg. Generally refers to pereiopods.

linea (pl., **lineae**). Linear marking on carapace composed of weakly calcified or uncalcified, differentially thickened cuticle that weakens during molting cycle.

linea aeglica. Linea extending from antennal region to epigastric spine on ventral surface (MARTIN & ABELE, 1988) (FIG. 83).

linea aeglica dorsalis. Linea extending from anterolateral margin at position of epigastric spine, arcing convexly anteriorly and extending posteriorly to intersect bar linea and then extending into the dorsal longitudinal linea, which reaches the posterior margin (MARTIN & ABELE, 1988) (SCHWEITZER & others, 2024, fig. 83).

linea aeglica lateralis. Linea paralleling the posterolateral margin of the carapace (MARTIN & ABELE, 1988) (SCHWEITZER & others, 2024, fig. 83).

linea aeglica ventrali. Linea on pterygostomial region extending from just below epigastric spine to edge of pterygostome (MARTIN & ABELE, 1988) (SCHWEITZER & others, 2024, fig. 83).

linea anomurica. Longitudinal groove or uncalcified line on carapace of many anomuran decapods, defining upper margin of branchiostegite (POORE, 2004) (SCHWEITZER & others, 2024, figs. 91.2, 94).

linea brachyura. See pleural suture.

linea branchiostegal. Longitudinal groove or uncalcified line extending posteriorly from front margin of carapace slightly above branchiostegal spine and reaching to or beyond hepatic spine (e.g., palaeomonid carideans) (MOORE & McCORMICK, 1969).

linea-d. Groove occurring in pairs extending from posterolateral margin anteriorly onto the shield in paguroids (TUDGE, ASAKURA, & AHYONG, 2012) (SCHWEITZER & others, 2024, fig. 94.2).

linea dromica. Feature on carapace of dromiid crabs possibly comparable to linea thalassinica extending from anterior to posterior margin; syn., linea dromiidica (MOORE & McCORMICK, 1969).

linea dromiidica. See linea dromica.

linea homolica. Feature similar to linea thalassinica extending from anterior to posterior margin in homoloid crabs (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 115.1, 115.4).

linea lateralis. Longitudinal groove or uncalcified line extending posteriorly from frontal margin of carapace below orbit, in some forms to rear extremity of carapace (e.g., some penaeids [MOORE & McCORMICK, 1969]).

linea thalassinica. Longitudinal groove or uncalcified line on dorsal part of carapace extending from anterior margin below antennal spine across entire length of carapace to its posterior edge in most axiideans and gebiideans (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 69, 70).

linea transversalis. Generally uncalcified hinge line separating calcified shield from posterior-most carapace in paguroids (TUDGE, ASAKURA, & AHYONG, 2012,

fig. 70.6A) (SCHWEITZER & others, 2024, fig. 94).

longitudinal carina. See median carina.

longitudinal median groove. Groove following axis of tergite, can be diagnostic for sixth pleonal somite of some paguroids (FRAAIJE & others, 2013) (SCHWEITZER & others, 2024, fig. 98).

longitudinal suture. Fine longitudinal line extending posteriorly just above the base of the antennal spine (PÉREZ FARFANTE & KENSLEY, 1997).

lyreidid hook. Posterolateral projection on sternite 5 of members of Lyreidae (Brachyura, Raninoida) (GUINOT, 1979; KARASAWA & others, 2014, fig. 2a).

major chela. Larger of the chelae of the first pereiopod (SCHWEITZER & others, 2024, figs. 75-77).

major cheliped. Larger of the chelipeds, usually of the first pereiopods (SCHWEITZER & others, 2024, figs. 75-77).

mandible. First of three pairs of cephalic appendages used to masticate food, mostly reduced to the coxa forming mesially an incisor process and often a molar process, often with a reduced endopod forming a palp (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 1, 13.2, 14, 33.2, 33.3, 35).

mandible body. Inflated base (coxa) of mandible providing for attachment of mandibular muscles; syn., body of mandible, corpus mandibulae (MOORE & McCORMICK, 1969).

mandibular foramen. Relatively large opening in body of mandible for passage of transverse adductor muscle (MOORE & McCORMICK, 1969).

mandibular palp. Distal articulated part of mandible (endopod) that functions as aid in feeding or cleaning (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 13.2).

manus (pl., mani). Broad proximal part of cheliped propodus (i.e., the propodus minus fixed finger); syn., palm (MOORE

& McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 111, 112, 113, 114).

marginal carina (pl., marginal carinae). A carina paralleling and extending along lateral margins in lobsters (HOLTHUIS, 1974).

marginal groove. Furrow close to posterior edge of carapace and parallel to it; may be subdivided into lateromarginal groove and postmarginal groove (MOORE & McCORMICK, 1969).

massetic region. Anterolateral region of shield, analogous in position to hepatic region in brachyurans (FRAAIJE & others, 2012) (SCHWEITZER & others, 2024, fig. 95).

massetic groove. Longitudinal groove separating massetic and submassetic regions (FRAAIJE & others, 2012) (SCHWEITZER & others, 2024, fig. 95).

mastigobranch. Slender respiratory process at base of epipod(ite) of thoracic appendages that serves as a support and respiratory structure; syn., mastigobranchia (pl., mastigobranchiae) (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, fig. 13.6).

mastigobranchia (pl., mastigobranchiae). See mastigobranch.

mastigopus stage. An obsolete term used for the decapodid phase of some dendrobranchiate larvae (MARTIN, OLESON, & HØEG, 2014).

maxilla (pl., maxillae). Appendage next posterior to maxillule (third paired mouthpart) serving functions in feeding and respiration; usually has a protopod, two endites, palp, and scaphognathite; syn., second maxilla (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 1, 13.4).

maxilliped. One of three pairs of mouthparts posterior to maxillae on underside of head. Maxillipeds represent highly modified and anteriorly displaced first three pairs of thoracic appendages (thoracopods 1-3); basically consist of protopod (bearing endite and epipodite), endopod, and exopod. Posterior pair(s) increase-

ingly resemble fourth through eighth thoracopods (pereiopods) and may bear gills (podobranchs) (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, figs. 1, 13.5-7, 19, 20, 29, 32, 45, 54.3-5, 63.3-5, 74.4-6, 129).

maxillule. Second paired mouth-part on underside of head; borne on second cephalic segment (maxillular somite) and located between mandibles and maxillae. If fully developed, consists of protopod (with two endites), endopodal palp, and exite (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, figs. 1, 13.3).

median carina (pl., **median carinae**). Extends along axis of cephalothorax (HOLTHUIS, 1974) (SCHWEITZER & others, 2024, fig. 5).

median eye. Sessile unpaired eye of nauplius larva, which persists in some adults; syn., naupliar eye (MOORE & McCORMICK, 1969).

median groove. Dorsomedian groove on the carapace (PÉREZ FARFANTE & KENSLY, 1997); syn., median sulcus.

median line. An axial groove on the sternum separating some sternites axially (KARASAWA & others, 2014, fig. 1B); syn., longitudinal groove, longitudinal line (SCHWEITZER & others, 2024, figs. 121.2-4). Also used to denote the axis of the carapace (shield), notably to indicate if a lateral groove or carina intersects it.

median protuberance. Conspicuous raised area, may be platelike, on the posterior part of the seventh thoracic sternite (PÉREZ FARFANTE & KENSLY, 1997).

median sulcus. See median groove.

megalopa stage. A functionally and ecologically transitional larval stage between the planktonic zoeal phase and the benthic juvenile stage in brachyurans; pleopods become used for locomotion in this phase; sometimes called a post-larval phase but is really more of a transitional form (MARTIN, OLESON, & HØEG, 2014). See decapodid.

megalops stage. See megalopa stage.

merocerite. Second of three segments of endopod of antenna (STACHOWITSCH, 1992).

meropod(ite). See merus.

merus (pl., **meri**). Fourth limb segment distally from body, its proximal extremity articulating with ischium; usually forms first long segment of cheliped; syn., meropod(ite) (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 10).

mesenteron. Mid-portion of alimentary tract of endodermal origin with surface commonly increased by pouchlike extensions that serve as digestive glands and aid absorption of partly digested food; syn., midgut (MOORE & McCORMICK, 1969).

mesial. Referring to or toward the middle.

mesobranchial region. Intermediate part of branchial region of brachyuran carapace, often largest of subdivisions of branchial region (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 112.1, 113.1, 116).

mesocerebrum. See deutocerebrum.

mesogastric region. Medial division of gastric region of brachyuran carapace, generally pentagonal in outline with long narrow anterior process (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 112.1, 113.1, 114.1, 115.5).

mesosternum. Median plate arising from sternum in many brachyurans, which may give rise to inwardly directed endosternite (MOORE & McCORMICK, 1969).

metabranchial region. Posterior division of branchial region of brachyuran carapace, often smaller of subdivisions of the branchial region (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 112.1, 113.1, 115.5).

metacerebrum. *see* tritocerebrum.

metagastric region. Subdivision of gastric region of brachyuran carapace posterior to mesogastric region; may be ill-defined or undifferentiated (MOORE & McCORMICK, 1969).

MICK, 1969) (SCHWEITZER & others, 2024, figs. 112.1, 113.1, 115.5).

metanauplius. A nauplius larva with same general body and limb morphology as nauplius, but having additional limbs (MOORE & McCORMICK, 1969; MARTIN, OLESON, & HØEG, 2014).

metazoea. Third protozoea in dendrobran- chiate shrimp with prominent, biramous thoracopods (MARTIN, OLESON, & HØEG, 2014).

metopon. Entire preoral area in decapods, including parts of mandibular somite; syn., metapon (MOORE & McCORMICK, 1969).

metorbital spine. Spine placed posterior to orbital margin and anterior to postorbital spine and between the antennal carina and supraorbital carina on nephropid lobsters (HOLTHUIS, 1974) (SCHWEITZER & others, 2024, fig. 5).

midgut. See mesenteron.

Milne-Edwards openings. The main inhalant respiratory openings, one on either side between the base of the cheliped and the lower edge of the bran- chiostegite, in brachyurans (WARNER, 1977).

minor chela. Smaller of the chelae of the first pair of pereiopods (SCHWEITZER & others, 2024, figs. 75-77).

minor cheliped. Smaller of the chelipeds, usually of the first pereiopods (SCHWEITZER & others, 2024, figs. 75-77).

molar process. Grinding portion of gnathal lobe of mandible; syn., pars molaris (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 13.2).

molariform tooth. Large, blunt projection on occlusal surfaces of fingers of chela, ostensibly as a shell crushing or peeling device (SCHWEITZER & others, 2024, fig. 131.3).

molt. See ecdysis.

mouthparts. Collective term for mandibles, maxillules, maxillae, and maxillipeds, associated with cephalic somites 3-5 and thoracic somites 1-3 (SCHWEITZER & others, 2024, figs. 1, 13).

movable finger. Dactylus of chela.

multiarticulate. Composed of many articles; if applied to appendages, then usually more than is typical (SCHWEITZER & others, 2024, figs. 25.7, 27.1).

mysis stage. Larval stage in Dendrobran- chiate in which the carapace covers all thoracic somites, and the maxillipeds are used for locomotion. Not to be confused with the taxonomic usage for mysidacean shrimp (MARTIN, OLESON, & HØEG, 2014).

naupliar eye. Small unpaired eye or light- sensitive organ found in naupliar larval stages and sometimes adult stages; syn., median eye (MOORE & McCORMICK, 1969; MARTIN, OLESON, & HØEG, 2014).

nauplius (pl., **nauplii**). The earliest larval stage having a rounded or ovate body and only three pairs of appendages, the antennules, antennae, and mandibles (MOORE & McCORMICK, 1969; MARTIN, OLESON, & HØEG, 2014).

nephropore. Elevated outlet of antennal gland, located on coxa of antenna (MOORE & McCORMICK, 1969).

nisto. Decapodid phase of some achelatans (Scyllaridae), composed of a transparent and short-lived adult-like form but that is flattened, with large pleopods (MARTIN, OLESON, & HØEG, 2014).

notopodine chela. Distinctly shaped chela, in which manus is very high, movable finger is both long and arcuate, and fixed finger is very short (KARASAWA & others, 2014, fig. 2B). Used for Notopodinae in Raninoida.

occlusal surface. Refers to surfaces of fingers in chelae that occlude, or touch. Often ornamented with teeth or spines.

ocular acicle. Scale-like projection on prox- imal segment of eyestalk; syn., ocular scale, ophthalmic scale (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, fig. 92.4).

ocular bulla. Knob on inner surface of carapace connecting lower and upper orbital margins with basal segment of antenna, serving for protection of eye (MOORE & McCORMICK, 1969).

ocular sinus. See orbit.

ocular peduncle. See eyestalk.

ocular spine. Spine or lobe on carapace above eyes.

olfactory hair. Sensory seta covered by delicate cuticle projecting from most antennules and antennae; syn., aesthetasc, esthetasc, aesthete, esthete (MOORE & McCORMICK, 1969).

omega region. A swelling sometimes developed in lobsters, anterior and ventral to the confluence of the cervical and hepatic grooves, usually denoted by ω symbol; syn. omega prominence (HOLTHUIS, 1974) (SCHWEITZER & others, 2024, fig. 5).

ommatidium (pl., ommatidia). Cylindrical or prismoidal visual constituent or photoreceptive unit of compound eye covered by transparent cuticle (cornea) (MOORE & McCORMICK, 1969; BRUSCA & BRUSCA, 2002) (SCHWEITZER & others, 2024, figs. 22, 37, 46).

ophthalmic somite. See acron.

orbit. Concave opening in front part of some decapod carapaces enclosing eyestalk; syn. ocular sinus, orbital cavity, orbital sinus (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 5, 6.2, 6.3, 83, 115.5, 117, 118).

orbital carina (pl., **orbital carinae**). Carina along margin of orbit (STACHOWITSCH, 1992). Not orbital carina of CHARBONNIER and others 2013.

orbital fissure. A narrow slit extending from the upper orbital margin posteriorly onto the dorsal carapace in the orbits of brachyurans (SCHWEITZER & others, 2024, fig. 117.2).

orbital hiatus. Gap in orbital margin of carapace at its lower (inner) angle (MOORE & McCORMICK, 1969).

orbital margin. Margin of orbit, subdivided into upper and lower in brachyurans.

orbital region. Part of carapace behind eyes, bordered by frontal and antennal regions.

orbital spine. Spine on orbital margin, spines on augenrest margin often referred to as orbital spines (SCHWEITZER & others, 2024, figs. 115.2, 115.3, 117.2, 118).

orbito-antennulary pits. Cavities on the anterior margin into which eyestalk and antennule may be retracted; syn., antennular fossa (STACHOWITSCH, 1992).

orbitorostral groove. Paired grooves between median ridge extending to rostrum and ridges above eyes (POORE, 2004).

ossicles. One in a complex of rigid, plate-like structures associated with wall of cardiac stomach and, to a lesser extent, with pyloric stomach. Serves as site of attachment of muscles operating gastric mill or gives rise to tooth-like projections (STACHOWITSCH, 1992).

outer orbital angle. Outer (lateral) edge of orbit (SCHWEITZER & others, 2024, figs. 89, 115.1, 115.2, 117).

outer orbital spine. Spine on outer (distal) edge of orbit, often long and produced anteriorly, presumably to protect the eye; syn., outer-orbital spine, exorbital spine, postocular projection (SCHWEITZER & others, 2024, fig. 117).

oviduct. In females, passageway from ovary to uterus and leading to genital opening (MOORE & McCORMICK, 1969).

oxystomatous. A condition in which the buccal frame narrows anteriorly, seen in several groups of brachyuran crabs.

paguroid shield. See shield.

palm. See manus.

palate. See endostome.

palm. See manus.

palp. Reduced distal portion of limb, usually only one of its rami, but may comprise both rami plus basis; usually consists of distal two or three segments following merus (MOORE & McCORMICK, 1969).

palp foramen. Small circular opening in body of mandible communicating with

mandibular palp (MOORE & McCORMICK, 1969).

parabranchial groove. A groove positioned ventral to and posterior to, and almost parallel with, branchiocardiac and post-cervical grooves; joins latter in lower part (HOLTHUIS, 1974; STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, fig. 5).

parapostcervical groove. Groove more or less parallel to intercervical groove and hepatic groove and situated between them in glypheoid lobsters (= second intercervical groove of FELDMANN, TSHUDY, & THOMSON, 1993) (KARASAWA, SCHWEITZER, & FELDMANN, 2013) (SCHWEITZER & others, 2024, fig. 31).

pars incisiva. See incisor process.

pars molaris. See molar process.

pectinate claw. Chelae having narrow, closely spaced, spinelike projections on fingers, usually seen in lobster-like and shrimp-like decapods (SCHWEITZER & others, 2024, fig. 65).

pediform. Leglike, elongate.

peduncle. Proximal of two divisions of antennule or antenna. In antennule, typically consists of three segments (also termed protopod) and bears stylocerite. In antenna, typically consists of two-segmented protopod and two- or three-segmented endopod and bears scaphocerite (STACHOWITSCH, 1992).

penial groove. A groove usually between sternites 7 and 8, housing the penis.

penis. (pl., penes). Male copulatory organ. See also gonopod.

peraeopod. See pereiopod.

pereiopod. Locomotory thoracopods 4–8; syn., peraeopod, pereopod, ambulatory leg, walking leg (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 1, 15, 19, 20, 29.1, 29.3, 41, 43–45, 50.1, 57, 64, 65, 99, 101.1, 111–114).

pereopod. See pereiopod.

pericardium. Blood sinus surrounding heart and communicating with it by a pair of

ostia in each somite except terminal one; may run entire length of trunk above gut (MOORE & McCORMICK, 1969).

petasma. The male genital structure consisting of the much enlarged and coupled endopods of the first pair of pleopods, consisting of a median lobe and a lateral lobe and ornamented with spines and costae (PÉREZ FARFANTE & KENSLY, 1997); see also gonopod (SCHWEITZER & others, 2024, figs. 18.1, 26).

pharynx. Part of alimentary tract next to mouth and adjoining esophagus (MOORE & McCORMICK, 1969).

photophore. Luminous organ generally located on eyestalk, limbs, or pleon (MOORE & McCORMICK, 1969).

phragma. A transverse wall of the internal skeleton, positioned between somites.

phyllobranch. Gill with flattened, leaflike filaments arranged around an axis; syn., phyllobanchia (Schweitzer & others, 2024, fig. 12.1).

phyllobanchia (pl., phyllobanchiae). See phyllobranch.

phyllodium (pl., phyllodia). Leaflike thoracic appendage of some crustaceans (e.g., Branchiopoda) including maxillulae and maxillae of Decapoda (MOORE & McCORMICK, 1969).

phyllosoma stage. Planktonic zoeal larval stage in achelatan lobsters, dorsoventrally flattened and transparent, with a huge carapace and reduced pleon (MARTIN, OLESON, & HØEG, 2014).

plage orbitaire. Flattened area housing the eye in some podotrematous crabs (GUINOT & RICHER DE FORGES, 1995); also called false orbit (WRIGHT & COLLINS, 1972) (SCHWEITZER & others, 2024, fig. 117.1).

pleomere. See pleonite, pleonal somite.

pleon. Trunk region following thorax; possessing six pleonal somites or pleonites bearing pairs of appendages called pleopods or uropods; sixth somite bearing telson; in brachyurans may or may not be bent sharply forward and held under thorax against the sternum,

often much wider in females than in males to accommodate brooding of eggs (SCHRAM, 2013) (SCHWEITZER & others, 2024, figs. 1, 2, 8).

pleonal locking mechanism. In brachyuran crabs consisting of a small boss, most often on sternite five, that locks into a socket on pleonite six, holding the pleon to the sternum, but boss may be located on other sternites (GUINOT & BOUCHARD, 1998); syn., abdominal locking mechanism, abdominal holding mechanism, bouton-presson, pleonal holding mechanism.

pleonite. Any single division of body posterior to thorax and anterior to telson; syn., pleomere, pleonal somite, abdominal somite (SCHWEITZER & others, 2024, figs. 1, 9).

pleopod. Limb of any pleonal somites, typically consisting of base (protopod) and two branches (endopod, exopod); pair of the sixth pleonite modified into uropods, along with telson forming the tail fan. Serve in swimming or variously modified as copulatory structures (e.g., gonopod, petasma) in males, egg-brooding structures in females; syn., swimmeret (MOORE & McCORMICK, 1969; STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, figs. 1, 9, 16, 27).

pleura (pl., pleurae). See pleuron.

pleural lobe. See epimere.

pleural suture. Line of splitting apart of carapace in molting, may correspond to linea dromica, and present in all brachyurans (MOORE & McCORMICK, 1969); syn., linea brachyura.

pleurepimere. See pleuron.

pleurite. See pleuron.

pleurobranch. Gill attached directly to body wall above base of thoracopods 2–7; syn., pleurobranchia (SCHWEITZER & others, 2024, figs. 10, 11).

pleurobranchia (pl., pleurobranchiae). See pleurobranch.

pleuron (pl., pleura). Lateral downfold of tergite; syn., epimeron, pleurepimere, pleurite, tergal fold, tergopleuron

(MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 9).

pleuropod. See precoxa.

podobranch. Gill placed on coxa or on epipods of coxa of thoracopods 2–7; syn., podobranchia (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 10, 11).

podobranchia (pl., podobranchiae). See podobranch.

podomere. Individual segment of limb. See also article.

podophthalmite. One of two segments of eyestalk, articulating with basiophthalmite proximally and bearing corneal surface of eye distally (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 127.5).

podotrematous. A term generally used to refer to the brachyuran groups exhibiting the podotreme condition (SCHWEITZER & others, 2024, figs. 105, 122).

podotreme. A condition in which the male gonopore is located on the coxa of the fifth pereiopod, and the female gonopore is located on the coxa of the third pereiopod; occurs in most Decapoda, but usually the term is applied only to brachyurans (SCHWEITZER & others, 2024, figs. 105, 122).

pollex. See fixed finger.

postabdomen. See telson.

postannular plate. Medially situated sclerite immediately posterior to annulus ventralis (HOBBS & JASS, 1988).

postantennal spine. Spine on anterolateral area of carapace on the posterior part of the antennal region; syn., postantennal projection (PÉREZ FARFANTE & KENSLY, 1997) (SCHWEITZER & others, 2024, fig. 5).

postcephalic groove. One of three transverse furrows on carapace of many fossil decapods (MOORE & McCORMICK, 1969), probably meaning cervical, postcervical, and branchiocardiac grooves.

postcervical carina (pl., postcervical carinae). Carina parallel and posterior to cervical groove (SCHWEITZER & others, 2024, figs. 41–43).

postcervical groove (c – c¹). Furrow located posterior to cervical groove and parallel to it, dividing cardiac region into two parts; syn., branchial groove (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 5, 28, 31, 41–43, 57).

postcervical notch or incision. Strong indentation of carapace at level of postcervical groove (e.g., scyllarid palinurans) (MOORE & McCORMICK, 1969).

postcervical spine. Spine immediately posterior to cervical carina (SCHWEITZER & others, 2024, fig. 5).

postermarginal carina. Rim forming the posterior margin of the carapace (HOLTHUIS, 1974) (SCHWEITZER & others, 2024, fig. 5).

postfrontal. Refers to carapace just posterior to frontal margin or rostrum and orbits; term commonly used in Raninoida.

post-frontal ridge. Transverse ridge posterior to orbits and rostrum and parallel to frontal margin of carapace (SCHWEITZER & others, 2024, fig. 95).

posterior. Toward caudal or tail end (SCHWEITZER & others, 2024, figs. 3, 4).

posterior carapace. Portion of carapace posterior to cervical groove (TUDGE, ASAKURA, & AHYONG, 2012) (SCHWEITZER & others, 2024, fig. 94.3).

posterior carapace lateral element. See carapace lateral lobe.

posterior carapace median element. In paguroids, calcified plate between posterior carapace lateral elements (TUDGE, ASAKURA, & AHYONG, 2012) (SCHWEITZER & others, 2024, fig. 94.3).

posterior cardiac lobe. See intestinal region.

posterior carina (pl., **posterior carinae**). A keel anterior to carapace marginal groove (MOORE & McCORMICK, 1969).

posterior gastric pit. One of two small depressions near midline of dorsal exterior of decapod carapace, marking insertion point of stomach muscle; syn., gastric pit (MOORE & McCORMICK, 1969).

posterior median furrow. An axial groove extending from posterior rim and merging with longitudinal median

groove on sixth pleonal somite of some paguroids (FRAAIJE & others, 2013) (SCHWEITZER & others, 2024, fig. 98).

posterior notch. A narrow incision in posterolateral margin of sixth pleonal somite of some paguroids (FRAAIJE & others, 2013) (SCHWEITZER & others, 2024, fig. 98).

posterior rim. Bandlike structure on the posterior margin of a carapace structure or somite.

posterior spine. Spine on midline of carapace just anterior to posterior margin between it and marginal groove.

posterolateral margin. Margin of decapod carapace, usually in crab-like forms, between widest point and lateral edge of posterior margin.

posterolateral plate. Region lateral to cardiac sulci of paguroids, usually weakly calcified, with sulcus cardiobranchialis laterally (TUDGE, ASAKURA, & AHYONG, 2012) (SCHWEITZER & others, 2024, figs. 94.2, 94.3).

posteromedian plate. Region bounded by cardiac sulci in posterior carapace of paguroids (TUDGE, ASAKURA, & AHYONG, 2012) (SCHWEITZER & others, 2024, figs. 94.2, 94.3).

postlarval stage. A rather broad term used for any stage after the last true larval form, which varies depending on the decapod group (MARTIN, OLESON, & HØEG, 2014); syn., early juvenile.

postocular. Behind the eye (FELDER, 1973).

postocular projection. Spine lateral to rostrum (= lateral projection in TUDGE, ASAKURA, & AHYONG [2012, fig. 70.6A]).

postorbital carina (pl., **postorbital carinae**). A keel slightly posterior to orbital margin and parallel to it (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 50.2, 52.2).

postorbital groove. Furrow posterior to orbit and more or less parallel to orbital margin (MOORE & McCORMICK, 1969).

postorbital spine. Spine on carapace positioned just posterior to orbit (SCHWEITZER & others, 2024, fig. 5).

postrostral carina (pl., **postrostral carinae**).

Keel posterior to rostrum extending along dorsal midline of carapace, usually with spines (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 18.1, 41, 51.1).

postrostral spine. Dorsomedian spine immediately posterior to rostrum (MOORE & McCORMICK, 1969).**postsegmental region.** See telson.**preanal carina** (pl., **preanal carinae**).

Rigid keel protruding from the ventral midline of the sixth pleonal somite between the insertions of the uropods (CHACE & HOBBS, JR., 1969).

precoxa. Limb podomere articulating between the body and the coxa, rarely present; syn., *praecoxa* (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 10).**pregastric spine.** Spine on midline of carapace between gastric spine and rostrum.**prezoea stage.** Just-hatched larva still covered by embryonic cuticle, stage is of short duration; nonswimming and nonfeeding (MOORE & McCORMICK, 1969; MARTIN, OLESON, & HØEG, 2014).**process.** Any marked prominence or projecting part (FELDER, 1973).**proctodaeum.** See proctodeum.**proctodeum.** Posterior part of alimentary canal lined with cuticle of ectodermal origin that is continuous with anus; syn., hindgut, proctodaeum (MOORE & McCORMICK, 1969).**proepistome.** See interantennular septum.**propodus** (pl., **propodi**).

Penultimate article (sixth from base) of segmented appendage, located between carpus and dactylus; may serve as part of a chela (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, figs. 10, 15).

prosartema. Scale implanted on inner margin of basal segment of antennular peduncle in Penaeidae (MOORE & McCORMICK, 1969).**protocephalon.** See acron.**protocerebrum.** Ganglion of first (preantennular) somite and first part of the brain,

connected posteriorly to deutocerebrum (MOORE & McCORMICK, 1969).

protogastric region. Paired anterior division of gastric region of brachyuran carapace lying between mesogastric region and hepatic regions (SCHWEITZER & others, 2024, figs. 88, 112.1, 113.1, 114.1, 115.5).**protopod(ite).** Proximal portion of limb, consisting of preoxa, coxa, and basis, fused together in some forms; its distal edge generally bearing endopod(ite) and exopod(ite); syn., coxite, sympod(ite) (STACHOWITSCH, 1992) (MOORE & McCORMICK, 1969).**protozoaea stage.** Larval stage in ontogeny of some decapods preceding zoea stage; occurs in Dendrobranchiata and features a carapace not covering all of the thoracic somites (MOORE & McCORMICK, 1969; MARTIN, OLESON, & HØEG, 2014).**proximal.** Direction toward center of body; opposite of distal (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 3, 4).**pseudoeipod(ite).** Lateral ramus arising from proximal portion of exopod or from basis just proximal to exopod (MOORE & McCORMICK, 1969).**pseudochela** (pl., **pseudochelae**).

Terminal structure on cheliped in which dactylus closes against a short prolongation of propodus such that only a short occlusal surface exists, or closes against the distal margin of the propodus. Differs from subchela in possessing short prolongation of propodus (SCHWEITZER & others, 2024, fig. 15.2).

pseudochelate. Possessing a pseudochela.**pseudorostral spine.** Spines located lateral to, and at the base of, the rostrum, usually applied to homoloid brachyurans (SCHWEITZER & others, 2004) (SCHWEITZER & others, 2024, fig. 115.1).**pseudorostrum.** In certain crab-like (brachyuran) decapods, anterior extension of carapace formed by fusion of two projecting teeth of frontal margin (STACHOWITSCH, 1992).

pterygostomial carina (pl., **pterygostomial carinae**). Ridge extending parallel to pterygostomial spine on anteroventral part of carapace (PÉREZ FARFANTE & KENSLEY, 1997).

pterygostomial region. On ventral side of carapace, one of two anterolateral regions flanking buccal cavity (STACHOWITSCH, 1992); syn., pterygostome, pterygostomian flap (SCHNABEL, 2020) (SCHWEITZER & others, 2024, figs. 6.4, 115.3).

pterygostomial spine. Anteriorly directed, located below branchiostegal spine on anterolateral angle of carapace (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, fig. 18.2).

puerulus. Decapodid phase of achelatan (Palinuridae) lobsters, mostly resembling the adult but dorsoventrally flattened and with pleopods flattened and used for swimming (MARTIN, OLESON, & HØEG, 2014).

punctuation. Small depression, pit; syn., punctae.

pyloric stomach. Posterior smaller division of stomach separated from larger cardiac stomach by cardiopyloric valve; opens into intestine (STACHOWITSCH, 1992).

ramus. Branch of limb or other appendage (e.g., exopod and endopod) (MOORE & McCORMICK, 1969).

rectum. Most posterior portion of hindgut.

region. Differential portion of decapod carapace surface distinguished in descriptions and used in classification; syn., area, lobe.

retinula. A structure in the eye formed from photosensitive cells (BRUSCA & BRUSCA, 2002).

retinaculum (pl., **retinacula**). A small hook at the tip of the appendices interna, which serves to lock the right and left pleopods together (MOORE & McCORMICK, 1969; McLAUGHLIN, 1980); syn., retinacular hooks.

rhabdome. The core of the center of the crystalline cone in the eye which initiates

the nerve impulse for vision (BRUSCA & BRUSCA, 2002).

ridge. See carina.

rostral carina (pl., **rostral carinae**). Keel continuous with lateral margin of rostrum, may join submedian carina, same as subdorsal carina of HOLTHUIS (1974), may be same as orbital carina of CHARBONNIER and others 2013 (SCHWEITZER & others, 2024, fig. 5).

rostral spine. Spine on rostrum; may be single (e.g., scyllarid palinurans) or multiple and classified as suprarostral (upper or dorsal), subrostral (lower or ventral), or lateral (common in nephropid astacideans and shrimp); syn., frontal tooth (SCHWEITZER & others, 2024, figs. 5, 18).

rostrum. Unpaired anterior extension of carapace. Projects between eyestalks (ocular peduncles) and represents extension of frontal region (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, figs. 18-20, 28, 31, 69.3, 69.4, 82-83, 112.1, 115.2).

rugae. Folds or wrinkles often appearing as low crests or ridges (FELDER, 1973).

rugose. Covered with rugae or wrinkles (FELDER, 1973).

scale. Nonarticulated cuticular extension with a very broad base relative to length.

scaphocerite. Variously shaped outer branch (exopod) of antenna, projecting from peduncle (broad, flat, lanceolate, ovoid, rounded, slender, serrate, setose) (STACHOWITSCH, 1992); syn., antennal scale (SCHWEITZER & others, 2024, figs. 13.1, 19, 20, 29.1, 32.2, 41, 43, 44).

scaphognath(ite). Relatively large outer branch (exopod) of each maxilla. Typically consists of two branches or lobes with setose margins, one of which may extend under carapace to generate respiratory current; syn., gill bailer (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, fig. 13.4).

second antenna. See antenna.

second maxilla. See maxilla.

secondary groove. Groove extending from anterolateral margin onto carapace, then turning at about 90 degrees posteriorly to cervical groove. Seen in some Necrocarcinoidea (Brachyura, Raninoida) (SCHWEITZER & others, 2016).

segment. Individual component of crustacean limb connected by movable articulation with adjoining segments; syn., article, podomere (not equivalent to somite, though used by some authors in this sense) (MOORE & McCORMICK, 1969).

sella turcica. In endoskeleton of brachyurans, fused and anteriorly extended endosternite on posterior border of last thoracic somite (STACHOWITSCH, 1992).

seller groove. Short, transverse groove extending across dorsomedian surface anterior to cervical groove (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, fig. 5).

seminal receptacle. Diverticulum of oviduct or external pouch for storing spermatozoa delivered by male; syn., receptaculum seminalis, receptaculum seminis (MOORE & McCORMICK, 1969).

serrate. Having a sawlike or toothed margin.

seta (pl., *setae*). Small, bristlelike cuticular projection articulating with or extending through cuticle. According to shape, these can be distinguished as brush, cuspidate, feathered, hamate, nonplumose, pappose, plumodenticulate, plumose, serrate, setose, simple, trisererate, and triserrulate setae; syn., bristle, hair (STACHOWITSCH, 1992).

setal pit. A hole in the cuticle, often preserved in fossils, through which a seta extended (presumably) (SCHWEITZER & others, 2024, fig. 7.2).

setal row. Row of regularly spaced plumose setae, attached in pits on carapace and some limbs (POORE, 2004).

setose. Covered with setae.

sexual pore. See gonopore.

shield. More strongly calcified section of cephalothorax anterior to cervical groove in hermit crabs; syn., anterior shield

(STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, figs. 94, 99).

sinuous. Undulating, curving.

somite. One in a series of divisions of body. Head (cephalon) consists of five somites (antennular, antennal, mandibular, maxillular, maxillar somites), excluding acron; thorax of eight somites (thoracomeses); and pleon of six somites (pleomeres), excluding telson. Each somite basically consists of dorsal tergite, ventral sternite, and lateral pleurites (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, fig. 1).

spermatheca. An internal structure located between the internal phragma of sternites 7 and 8, forming a pouchlike structure, sometimes paired, that holds spermatozoa. Occurs in the various infraorders of podotrematous brachyurans (GUINOT & QUENETTE, 2005; DAVIE, GUINOT, & NG, 2015) (SCHWEITZER & others, 2024, figs. 122.5, 124.1, 124.2, 125.2, 125.3).

spermatophore. Packet of spermatozoa consisting of sperm encased in a mass from the sperm duct, for transfer from male to female (MOORE & McCORMICK, 1969).

spine. Small, sharp projection of the cuticle, without a socket, non-articulating, generally not as wide as long, in varied locations (WATLING, 1989; DAVIE, GUINOT, & NG, 2015) (SCHWEITZER & others, 2024, fig. 7.1).

statocyst. Diminutive organ providing sense of balance located in first segment of peduncle of each antennule (MC LAUGHLIN, 1980; MOORE & McCORMICK, 1969).

statolith. Solid body within statocyst, supported by rows of sensory hairs; may be composed of sand grains (STACHOWITSCH, 1992).

stenopodium. Slender, elongate limb composed of rodlike segments; may refer to endopod of third maxillipeds or main part of pereiopods; syn., stenopod (STACHOWITSCH, 1992).

sternal canal. Internal skeletal structure of some crabs formed by meeting of sternal

apodemes of opposite sides above nerve cord; may be developed as firm plate (endosternite) in anterior part of thorax (MOORE & McCORMICK, 1969).

sternal plastron. See sternum.

sternal suture. Boundary between individual sternites, usually refers to brachyurans. May be complete (SCHWEITZER & others, 2024, fig. 121.2), incomplete (interrupted axially) (SCHWEITZER & others, 2024, fig. 121.4), or a combination of the two (SCHWEITZER & others, 2024, fig. 121.3).

sternite. Sclerotized ventral surface of single body somite (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 8, 59, 60, 84, 90, 96, 121, 122).

sterno-abdominal cavity. See sterno-pleonal cavity.

sterno-abdominal depression. See sterno-pleonal depression.

sterno-coxal depression. Depressions on the lateral margins of sternites in which the coxae of the pereiopods articulate; apparently helps to lock the pleon in place (GUINOT, 1995; DAVIE, GUINOT, & NG, 2015). Seen in several podotrematous brachyuran groups.

sterno-pleonal cavity. A deep excavation for retention of the pleon in brachyurans. Seen in Cyclodorippoidea and Eubrachyura; syn., sterno-abdominal cavity (DAVIE, GUINOT, & NG, 2015).

sterno-pleonal depression. A shallow excavation where the pleon rests. Seen in many podotrematous sections; syn., sterno-coxal depression (DAVIE, GUINOT, & NG, 2015).

sternum (pl., **sterna**). Sternites of all body somites taken together; ventral segmented floor of thorax; syn., sternal plastron, sternal plate (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 8.1, 8.2, 35, 59, 60, 84, 90, 96, 121, 122).

stomodaeum. See stomodeum.

stomodeum. Anterior part of alimentary tract, ectodermal in origin and lined with cuticle continuous with mouth; includes

esophagus and dilated part corresponding to stomach; may contain so-called gastric mill of varying complexity for trituration of food; syn., foregut, stomodaeum (MOORE & McCORMICK, 1969).

stridulating organ. Structure in which two parts of exoskeleton are rubbed together in order to produce sound, one part consisting of ridge or tuberculate or cross-ridged surface, which is opposed to another part usually having single transverse ridge or tubercle (MOORE & McCORMICK, 1969).

stylamblys. See appendix interna.

styliform. A structure with a long, slender needlelike shape, terminating to a narrow, pointed apex (INGLE, 1980).

stylocerite. Rounded or spiniform process on outer part of proximal segment of antennular peduncle in some decapods (e.g., natantian decapods); syn., antennular scale (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 13.1).

subbranchial region. Ventrally placed part of brachyuran carapace corresponding in position to branchial region of dorsal part of carapace (MOORE & McCORMICK, 1969).

subchela. Distal extremity of limb developed as prehensile structure by folding back of dactylus against propodus or broadened part of it (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 15.2).

subchelate. Provided with subchelae.

subdorsal. Refers to a structure, usually a pereiopod, held at least partly over the dorsal carapace (SCHWEITZER & others, 2024, figs. 134.3, 134.2, 135.3).

subhepatic carina (pl., **subhepatic carinae**). Ridge extending posteriorly from branchiostegal spine.

subhepatic groove. Groove located substantially ventral to the hepatic region and the hepatic spine (PÉREZ FARFANTE & KENSLEY, 1997).

subhepatic region. Part of carapace ventral to hepatic region and anterolateral

margin (WILLIAMS, 1984) (SCHWEITZER & others, 2024, fig. 115.3).

sublateral groove. Groove located substantially ventral to lateral carina (PÉREZ FARFANTE & KENSLEY, 1997).

submedian carina (pl., **submedian carinae**). Ridge on either side of postrostral carina and parallel to it; may join rostral carina (MOORE & McCORMICK, 1969).

submedian groove. Longitudinal furrow in submedian dorsal part of carapace closely adjacent to postrostral carina (MOORE & McCORMICK, 1969).

submarginal carina (pl., **submarginal carinae**). An almost longitudinal ridge extending between rigid and membranous part of the branchiostegite (PÉREZ FARFANTE & KENSLEY, 1997) (SCHWEITZER & others, 2024, fig. 18.2).

submassetic region. Anterolateral region of shield axial to massetic region and bounded laterally by massetic groove in paguroids (FRAAIJE & others, 2014) (SCHWEITZER & others, 2024, fig. 95).

submassetic groove. Groove bounding anterior end of submassetic region in paguroids (FRAAIJE & others, 2014) (SCHWEITZER & others, 2024, fig. 95).

suborbital region. Narrow area bordering lower margin of orbit; may be ill-defined or indistinguishable (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 6.4).

suborbital spine. On orbital region on each side of carapace, located at anterior edge, on lower rim of orbit between supraorbital and antennal spines (STACHOWITSCH, 1992).

subrostral groove. A longitudinal elongate groove extending along dorsal limit of the orbital region (PÉREZ FARFANTE & KENSLEY, 1997).

subrostral spine. Spine on lower margin of rostrum; syn., subrostral tooth.

sulcus. See groove.

sulcus cardiobranchialis. Groove extending posteriorly onto posterior carapace from linea transversalis (TUDGE, ASAKURA, &

AHYONG, 2012, fig. 70.6A) (SCHWEITZER & others, 2024, fig. 94).

superposition eye. Eyes in which the light received by each rhabdome is collected by several facets, not just one, as in the apposition eye. Superposition eyes have evolved several times, with at least three known optic types: reflective (squared ommatidia), refractive, and parabolic. In each of these eye types, a clear zone exists between the optics of the eye (corneal lenses + crystalline cone) and the retina (rhabdomes), allowing the optical outer layers of the eye to create an erect image on the retina. Superposition eyes are only known in adult decapods, larvae only have transparent apposition eyes (see for instance CRONIN & PORTER 2008).

supracervical spine. Spine dorsal to termination of cervical groove, close to dorsal surface of carapace (TSHUDY, CHAN, & SORHANNUS, 2007) (SCHWEITZER & others, 2024, fig. 58.5).

supraesophageal ganglion. Nerve plexus above esophagus in head of malacostracans (MOORE & McCORMICK, 1969).

suprahepatic spine. Spine arising from the edge of the cervical carina dorsal to the hepatic spine (PÉREZ FARFANTE & KENSLEY, 1997).

supraocular spines. Spines present on or just above ocular eaves (INGLE, 1992) or positioned above the eye (frontal horns of Palinurid lobsters) (SCHWEITZER & others, 2024, fig. 50).

supraorbital carina (pl., **supraorbital carinae**). Ridge extending posteriorly from supraorbital spine, same as gastroorbital carina for shrimp; syn., suborbital keel of STENZEL (1945) (SCHWEITZER & others, 2024, fig. 5).

supraorbital eave. Projecting lateral part of the orbital region about the eyestalk. Seen in Majoidea (Brachyura). May possess a preorbital spine and/or antorbital spine (INGLE, 1983) (SCHWEITZER & others, 2024, fig. 117.3).

supraorbital spine. Spine at moderate distance obliquely posterior to and

above orbit (may be placed on postorbital carina) (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 5).

suprarostral spine. Spine on upper margin (dorsal) of rostrum; syn., suprarostral tooth, dorsal rostral spine (SCHWEITZER & others, 2024, fig. 5).

supplementary plate. A plate between sternites 7 and 8 in some Brachyura that covers the penial groove.

suture. Weakly calcified lines along which exoskeleton splits during molting; a nonflexible or slightly flexible joint or seam (FELDER, 1973; STACHOWITSCH, 1992).

swimmeret. See pleopod.

swimming leg. Can refer to pleopods or pereiopods, often flattened, modified for swimming (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, fig. 135.2, 135.4).

sympod(ite). See protopod(ite).

syncerebrum. See supraesophageal ganglion.

synovial membrane. Structure located on the first male gonopod between the last and second-to-last articles, apparently secreting a sticky fluid for lubrication (Marine Species Identification Portal, Crabs of Japan, K. SAKAI, glossary). Only in some freshwater crabs.

tagma (pl., **tagmata**). Major division of body (e.g., cephalon, thorax, pleon), each composed of varying number of somites (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 1, 2).

tail fan. See caudal fan.

telopod. Part of limb distal to coxa.

telson. Posteriormost segment of body, not considered to be a true somite. May form tail fan together with uropods and bears anus ventrally (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, figs. 1, 16.3, 19, 20, 29.1, 29.3, 32, 41, 43, 44, 50.1, 51.2, 57, 61, 91, 92, 99, 123).

telsonal plate. Subdivisions of the telson in some galatheoids and chirostyloids, may be diagnostic at generic level, include anterolateral plate, central plate, inter-

mediate plate, lateral plate, medial plate, posterior plate (MC LAUGHLIN, 1980) (SCHWEITZER & others, 2024, fig. 91.1).

telsonal spine. Spine on dorsal surface or lateral margins of telson; may be movable or immovable (SCHWEITZER & others, 2024, fig. 19).

tergite. Sclerotized dorsal surface of single body somite; syn., tergum, plural, terga (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 9).

terrace. Raised, linear, often transverse platform on cuticle, usually with vertical surface facing anteriorly and more gently sloping posteriorly (WAUGH, FELDMANN, & SCHWEITZER, 2009) (SCHWEITZER & others, 2024, figs. 7.3-7.5).

thelycum. In female reproductive system of certain shrimplike (natantian) decapods, pouchlike accessory copulatory structure formed by sternites of last and next to last thoracic somites. Serves as seminal receptacle and may be composed of several lobes or plates (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, fig. 21).

third maxilliped. Posteriormost pair of mouth parts of a decapod crustacean; used, with the assistance of two other pairs of maxillipeds and two pairs of maxillae, for holding food until it can be pushed into the esophagus by the mandibles (BLISS, 1982) (SCHWEITZER & others, 2024, figs. 1, 14, 19, 20, 29.1, 32, 45, 47, 54.3, 63.5, 74.6, 129.3-13).

thoracic limb. Any limb attached to somite of thorax; syn., thoracopod (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 1).

thoracic median carina (pl., **thoracic median carinae**). Axial carina posterior to cervical groove.

thoracomere. Somite of thorax (SCHWEITZER & others, 2024, fig. 1).

thoracopod(ite). Limb attached to any thoracic somite; syn., thoracic limb (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 1).

thoracotrematous. Term applied to brachyurans with the thoracotreme condition (SCHWEITZER & others, 2024, figs. 108, 121.4).

thoracotreme. Condition in which the gonopores of females occur on the sixth sternite and the gonopores of males occur on the eighth sternite. Occurs in some brachyurans (SCHWEITZER & others, 2024, figs. 108, 121.4).

thorax. Tagma between cephalon and pleon comprising anterior portion of trunk, always limb-bearing. In decapods, consisting of eight somites (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, figs. 1, 2).

tooth. Term often used as synonym for spine. Its usage is restricted only to structures which occlude, such as on fingers of chela.

transverse suture. Fine, short, vertical line extending dorsally from the ventral margin of the carapace (PÉREZ FARFANTE & KENSLY, 1997).

trichobranch. Gill of filamentous structure with hairlike projections from axis (e.g., crayfish); syn., trichobranchia (MOORE & McCORMICK, 1969) (SCHWEITZER & others, 2024, fig. 12.2).

trichobranchia (pl., **tricobranchiae**). See trichobranch.

tritocerebrum. Third part of the brain and ganglion of antennal somite, posterior to deutocerebrum; syn., metacerebrum (MOORE & McCORMICK, 1969).

trunk. Postcephalic portion of body; syn., thorax (MOORE & McCORMICK, 1969).

tubercle. Low or small protuberance on exoskeleton (SCHWEITZER & others, 2024, fig. 7.1).

upright node. Node formed of endocuticle, protruding into the exocuticle (WAUGH, FELDMANN, & SCHWEITZER, 2009).

urogastric groove. Short, transverse groove across axis of carapace posterior to postcervical groove, sometimes joining on

lateral ends with postcervical groove (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, fig. 5).

urogastric region. Subdivision of gastric region anterior to cardiac region and posterior to meso- or metagastric region; syn., genital region (SCHWEITZER & others, 2024, figs. 112.1, 113.1, 114.1, 115.5).

uropod(ite). One of two appendages of last (sixth) pleonal somite (pleomere); typically flattened and consisting of basal protopod and two branches (endopod, exopod). May form tail fan together with telson (elongate, falciform, ovate; with spine, with tooth) (STACHOWITSCH, 1992) (SCHWEITZER & others, 2024, figs. 1, 16.3, 19, 20, 41, 43, 44, 50.1, 51.2, 80.4, 80.8, 86, 91, 92.2, 92.4).

vas deferens. Duct in males for passage of spermatozoa from testis to penis (MOORE & McCORMICK, 1969).

ventral. On or toward the underside, opposite of dorsal (SCHWEITZER & others, 2024, figs. 3, 4).

ventral nerve chain. Ganglia or connectives on somites joined by single or double nerve cord extending longitudinally ventral to alimentary canal (MOORE & McCORMICK, 1969).

vertex. Top part of head (cephalon) (MOORE & McCORMICK, 1969).

vesicula seminalis. See seminal vesicle.

walking leg. See pereiopod.

wrist. See carpus.

Y-linea. A y-shaped groove axially and posteriorly on the shield of some paguroids (TUDGE AND others, 2012) (SCHWEITZER & others, 2024, fig. 94.2).

Zoea (pl., **zoeae**). An early larval stage, usually planktonic, in ontogeny of decapods except Dendrobranchiata, in which it follows the metanaupliar stage (MOORE & McCORMICK, 1969; MARTIN, OLESON, & HØEG, 2014).

REFERENCES

Audo, Denis, Sylvain Charbonnier, Günter Schweigert, & J.-P. Saint Martin. 2014a. New eryonid crustaceans from the Late Jurassic Lagerstätten of Cerin (France), Canjuers (France), Wattendorf (Germany) and Zandt (Germany). *Journal of Systematic Palaeontology* 12 (4):459–479. [DOI:10.1080/14772019.2013.777809].

Bliss, D. E. 1982. Shrimps, lobsters, and crabs: their fascinating life story. New Century Publishers. New Jersey. 243 p.

Boas, Johan E. V. 1880. Studier over Decapodernes Slaegtkskabsforhold. Kongelige Danske Videnskabernes Selskabs Skrifter, 6 række, naturvidenskabelig og mathematiske, Afd. I. 2: 188 p., 7 pl.

Bourne, G. C. 1922. On the Raninidae: a study in carcinology. *Journal of the Linnean Society of London (Zoology)* 35:25–78, pl. 4–7.

Brusca, R. C., & G. J. Brusca. 2002. Invertebrates. 2nd edition. Sinauer Associates. Sunderland. 936 p.

Butler, T. H. 1980. Shrimps of the Pacific Coast of Canada. Department of Fisheries and Oceans, Ottawa, Bulletin 202: 280 p.

Charbonnier, Sylvain, Alessandro Garassino, Günter Schweigert, & Martin Simpson. 2013. A worldwide review of fossil and extant grypheid and litogastrid lobsters (Crustacea, Decapoda, Glypheoidea). *Mémoires du Muséum National d'Histoire Naturelle* 205:304 p.

Cronin, T. W. & M. L. Porter. 2008. Exceptional variation on a common theme: The evolution of crustacean compound eyes. *Evolution: Education and outreach* 1 (supp. 4):463–475. [DOI:10.1007/s12052-008-0085-0].

Davie, P. J. F. 2002. Crustacea: Malacostraca: Eucarida (Part 2): Decapoda Anomura, Brachyura. In A. Wells & W. W. K. Houston, eds., *Zoological Catalogue of Australia* 19.3B. CSIRO Publishing. Melbourne. 641 p.

Davie, P. J. F., Danièle Guinot & P. K. L. Ng. 2015. Anatomy and functional morphology of Brachyura. In Peter Castro, P. J. F. Davie, Danièle Guinot, F. R. Schram & J. C. von Vaupel Klein, eds., *Treatise on Zoology: Anatomy, Taxonomy, Biology. The Crustacea*, Vol. 9, Part C. Brill NV. Leiden. p. 11–163.

Dworschak, P. C. 2003. A new species of ghost shrimp from the Gulf of Aqaba, Red Sea (Crustacea: Decapoda: Callianassidae). *Annalen des Naturhistorischen Museums in Wien* 104B:415–428.

Dworschak, P. C., D. L. Felder, & C. C. Tudge. 2012. Infraorder Axiiidea de Saint Laurent, 1979 and Gebiidea de Saint Laurent, 1979 (formerly known collectively as Thalassinidea). In F. R. Schram & J. C. von Vaupel Klein, eds., *Treatise on Zoology: Anatomy, Taxonomy, Biology. The Crustacea*, Vol. 9, Part B. Brill NV. Leiden. p. 109–219.

Felder, D. L. 1973. An annotated key to crabs and lobsters (Decapoda, Reptantia) from coastal waters of the northwestern Gulf of Mexico. In Center for Wetland Resources, Louisiana State University, Publication No. LSU-SG-73-02. Baton Rouge. 130 p.

Feldmann, R. M., & C. E. Schweitzer. 2010. Is *Eocarcinus* the earliest brachyuran? *Journal of Crustacean Biology* 30:241–250. [DOI:10.1651/09-3230.1].

Fraaije, R. H. B., Pedro Artal, B. W. M. van Bakel, J. W. M. Jagt, & A. A. Klompmaker. 2013. An array of sixth abdominal tergite types of paguroid anomurans (Crustacea) from the mid-Cretaceous of Navarra, northern Spain. *Netherlands Journal of Geoscience* 92 (2/3):109–117. [DOI:10.1017/S0016774600000032].

Fraaije, R. H. B., Wiesław Krzeminski, B. W. M. van Bakel, Ewa Krzeminska, & J. W. M. Jagt. 2012. The sixth abdominal tergites of paguroid anomurans—a newly recognized crustacean macrofossil type. *Neues Jahrbuch für Geologie und Paläontologie, Abhandlungen* 266:115–122.

Fraaije, R. H. B., Wiesław Krzeminski, B. W. M. van Bakel, Ewa Krzeminska, & J. W. M. Jagt. 2014. New Late Jurassic symmetrical hermit crabs from the southern Polish Uplands and early paguroid diversification. *Acta Palaeontologica Polonica* 59:681–688.

Glaessner, M. F. 1969. Decapoda. In R. C. Moore, ed., *Treatise on Invertebrate Paleontology*. Part R, Arthropoda 4, vol. 2. The Geological Society of America & The University of Kansas Press. Boulder. Lawrence. p. 400–533, 626–628.

Guinot, Danièle. 1979. Données nouvelles sur la morphologie, la phylogénie et la taxonomie des Crustacés Décapodes Brachyures. *Mémoires du Muséum National d'Histoire Naturelle (A, Zoologie)* 112:1–354.

Guinot, Danièle. 1995. Crustacea Decapoda Brachyura: révision de la famille des Homolodromiidae Alcock, 1900. In Alain Crosnier, ed., *Résultats des Campagnes MUSORSTOM*, vol. 13. *Mémoires du Muséum National d'Histoire Naturelle*, Paris 163:155–282.

Guinot, Danièle. 2008. A re-evaluation of the Dynomenidae Ortmann, 1892 (Crustacea, Decapoda, Brachyura, Podotremata), with the recognition of four subfamilies. *Zootaxa* 1850:1–26.

Guinot, Danièle, & J.-M. Bouchard. 1998. Evolution of the abdominal holding systems of brachyuran crabs (Crustacea, Decapoda, Brachyura). *Zoosystema* 20:613–694.

Guinot, Danièle, & Gwenaël Quenette. 2005. The spermatheca in podotreme crabs (Crustacea, Decapoda, Brachyura, Podotremata) and its phylogenetic implications. *Zoosystema* 27:267–342.

Guinot, Danièle, & Bertrand Richer de Forges. 1995. Crustacea Decapoda Brachyura: Révision de la famille des Homolidae de Haan, 1839 In A. Crosnier, ed., *Résultats des Campagnes MUSORSTOM*, vol. 13. *Mémoires du Muséum National d'Histoire Naturelle*, Paris 163:283–517.

Hobbs, H. H. Jr., H. H. Hobbs, III, & M. A. Daniel. 1977. A review of the troglobitic decapod crustaceans of the Americas. *Smithsonian Contributions to Zoology* 244:1–183.

Hobbs, H. H., III, & J. P. Jass. 1988. The crayfishes and shrimp of Wisconsin (Cambaridae, Palaemonidae). *Special Publications in Biology and Geology*, Milwaukee Public Museum. Wisconsin 5:viii + 177 p.

Holthuis, L. B. 1974. The lobsters of the superfamiliy Nephropidea of the Atlantic Ocean (Crustacea, Decapoda). *Bulletin of Marine Science* 24: 723–884.

Ingle, R. W. 1980. British Crabs. Oxford University Press. New York. 222 p.

Ingle, R. W. 1983. Shallow-water crabs: Keys and notes of the identification of the species. In D. M. Kermack & R. S. K. Barnes, eds., *Synopses of the British Fauna* No. 25. Cambridge University Press. London. 206 p.

Ingle, R. W. 1992. Larval stages of northeastern Atlantic crabs: An illustrated key. Chapman and Hall Identification Guide No. 1. Chapman & Hall. London. 363 p.

Keiler, Jonas, C. S. Wirkner, & Stefan Richter. 2017. One hundred years of carcinization—the evolution of the crab-like habitus in Anomura (Arthropoda: Crustacea). *Biological Journal of the Linnean Society* 121:200–222. [DOI:10.1093/biolinnean/blw031].

Karasawa, Hiroaki, C. E. Schweitzer, & R. M. Feldmann. 2013. Phylogeny and systematics of extant and extinct lobsters. *Journal of Crustacean Biology* 33:78–123.

Karasawa, Hiroaki, C. E. Schweitzer, R. M. Feldmann, & Javier Luque. 2014. Systematics and Phylogeny of the Raninoida (Crustacea: Brachyura). *Journal of Crustacean Biology* 34:216–272. [DOI:10.1163/1937240X-00002111].

Luque, Javier, R. M. Feldmann, Oksana Vernygora, C. E. Schweitzer, C. B. Cameron, K. A. Kerr, F. J. Vega, Alex Duque, Michael Strange, A. R. Palmer, & Carlos Jaramillo. 2019. Exceptional preservation of mid-Cretaceous marine arthropods and the evolution of novel forms via heterochrony. *Science Advances* 5:eaav3875. [DOI:10.1126/sciadv.aav3875].

Martin, J. W., & L. G. Abele. 1988. External morphology of the genus *Aegla* (Crustacea: Anomura: Aegidae). *Smithsonian Contributions to Zoology* 453:46 p.

Martin, J. W., Jørgen Oleson, & J. T. Høeg. 2014. Glossary. In J. W. Martin, Jørgen Oleson, & J. T. Høeg, eds., *Atlas of Crustacean Larvae*. Johns Hopkins University Press. Baltimore, MD, USA. p. 315–324.

Martin, J. W., N. D. Pentcheff, Darolyn Striley, Christian Perrodin, A. R. Wall, Jenessa Wall, & Jennifer Zieba, eds. 2020. Crustacea Glossary. Crustacea Department, Natural History Museum of Los Angeles County. Accessed: September 21, 2025. <https://research.nhm.org/glossary>.

McLaughlin, P. A. 1980. Comparative morphology of Recent Crustacea. W. H. Freeman & Company. San Francisco. 177 p.

Moore, R. C., & Lavon McCormick. 1969. General features of Crustacea. In R. C. Moore, ed., *Treatise on Invertebrate Paleontology*. Part R, Arthropoda 4, Vol. 1. The Geological Society of America & The University of Kansas Press. Boulder. Lawrence. p. 57–120.

Ng, P. K. L. 1998. Crabs. In K. E. Carpenter & V. H. Niem, eds., *The Living Marine Resources of the Western Central Pacific*, Vol. 2, Cephalopods, crustaceans, holothurians and sharks. FAO Species Identification Guide for Fishery Purposes. FAO. Rome. p. 1045–1155.

Pérez Farfante, Isabel, & Brian Kensley. 1997. Penaeoid and Sergestoid Shrimps and Prawns of the World: Keys and Diagnoses for the Families and Genera. Mémoires du Muséum National d'Histoire Naturelle, Paris 175:233 p.

Poore, G. C. B. 2004. Marine Decapod Crustacea of Southern Australia. A Guide to Identification with chapter on Stomatopoda by Shane Ahyong. Museum of Victoria. Melbourne. 574 p.

Robins, C. M., R. M. Feldmann, & C. E. Schweitzer. 2013. Nine new genera and 24 new species of the Munidopsidae (Decapoda: Anomura: Galatheoidea) from the Jurassic Ernstbrunn Limestone of Austria, and notes on fossil munidopsid classification. *Annalen des Naturhistorischen Museums in Wien (Serie A)* 115:167–251.

Schnabel, Karen. 2020. The Marine Fauna of New Zealand. Squat Lobsters (Crustacea, Decapoda, Chirostyloidea). NIWA Biodiversity Memoir 132:351 p.

Schram, F. R. 2013. Comments on crustacean biodiversity and disparity of body plans. In Les Watling & Martin Thiel, eds., *Functional Morphology and Diversity*. Oxford University Press. Oxford. p. 1–33.

Schram, F. R., & Stefan Koenemann. 2021. Evolution and Phylogeny of Crustacea. Oxford University Press. Oxford. 872 p.

Schweitzer, C. E., R. M. Feldmann, D. Audo, S. Charbonnier, R. H. B. Fraaije, O. D. Franțescu, M. Hyžný, H. Karasawa, A. A. Klompmaker, J. Luque, C. M. Robins, F. R. Schram, G. Schweigert & D. Tshudy. 2024. Part R, Revised, Volume 1: Generalized external adult Decapoda morphology. *Treatise Online*, 179: 125 p., doi.org/10.17161/to.vi.22462.

Schweitzer, C. E., Hiroaki Karasawa, Javier Luque, & R. M. Feldmann. 2016. Phylogeny and classification of Necrocarcinoidea Förster, 1968 (Brachyura: Raninoida) with the description of two new genera. *Journal of Crustacean Biology* 36:338–372. [DOI:10.1163/1937240X-00002432].

Stachowitzsch, Michael. 1992. *The Invertebrates: An Illustrated Glossary*. Wiley-Liss. New York. 676 p.

Stenzel, H. B. 1945. Decapod crustaceans from the Cretaceous of Texas. The University of Texas Publication 4401:401–477.

Tavares, Carolina, & J. W. Martin. 2010. Chapter 63. Suborder Dendrobranchiata Bate, 1888, p. 99–164. In F. R. Schram, & J. C. von Vaupel Klein, eds., *Treatise on Zoology: Anatomy, Taxonomy, Biology*. The Crustacea, Vol. 9, Part A. Brill NV. Leiden. p. 99–164.

Tshudy, Dale, T.-Y. Chan, & Ulf Sorhannus. 2007. Morphology based cladistic analysis of *Metanephrops*: the most diverse extant genus of clawed lobster (Nephropidae). *Journal of Crustacean Biology* 27:463–476. [DOI:10.1651/S-2777.1].

Tudge, C. C., Akira Asakura, & S. T. Ahyong. 2012. Infraorder Anomura MacLeay, 1838. In F. R. Schram, & J. C. von Vaupel Klein, eds., *Treatise on Zoology: Anatomy, Taxonomy, Biology*. The Crustacea, Vol. 9, Part B. Brill. Leiden. p. 221–333.

Warner, G. F. 1977. *The Biology of Crabs*. Van Nostrand Reinhold Company. New York. 202 p.

Watling, Les. 1989. A classification system for crustacean setae based on the homology concept. In B. E. Felgenhauer, Les Watling, & A. B. Thistle, eds., *Functional Morphology of Feeding and Grooming in Crustacea*. Crustacean Issues, Vol. 6. A. A. Balkema. Rotterdam. p. 15–26.

Waugh, D. A., R. M. Feldmann, & C. E. Schweitzer. 2009. Systematic evaluation of raninid cuticle microstructure. *Bulletin of the Mizunami Fossil Museum* 35:15–41.

Williams, A. B. 1984. Shrimps, lobsters, and crabs of the Atlantic coast of the eastern United States, Maine to Florida. Smithsonian Institution Press. Washington, D.C. p. xviii+550.

Wright, C. W., & J. S. H. Collins. 1972. *British Cretaceous Crabs*. Palaeontographical Society Monographs 126(533):1–113.