New Middle Danian species of anomuran and brachyuran crabs from Fakse, Denmark

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One new genus and four new species of crabs (Crustacea, Decapoda) from the Middle Danian *Tylocidaris bruennichi* Zone of Fakse, Denmark are described. These include the anomuran crab *Faxegalathea platyspinosa* gen. et sp. nov. and the brachyuran crabs *Homolopsis spiniga* sp. nov., *Eohomola affinis* sp. nov. and *Xanthosia gracilis* sp. nov. All known crabs from Fakse are listed and some are illustrated photographically for the first time.

Key words: Crabs, new species, Middle Danian, Fakse, Denmark.

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Almost a century has passed since Segerberg (1900) monographed the crab fauna from the Danian of Denmark and Sweden. In his work he described 13 species of brachyuran and three species of anomuran decapods from the Middle Danian limestone at Fakse, Denmark (Faxe and Faxoe in earlier spellings). Crabs from Fakse were mentioned already by Pontoppidan (1763: 138) and Schlotheim (1820) established *Brachyurites rugosus* (= *Dromiopsis rugosa*). Subsequent studies by Reuss (1859) and von Fischer-Benzon (1866) resulted in the descripton of six brachyuran and one anomuran species. Crabs from Fakse have also been described, discussed and commented upon by Woodward (1901), Förster (1975), Rasmussen (1972) and Jagt, Collins & Fraaye (1993).

Collins & Jakobsen (1994) briefly outlined the stratigraphical distribution of the Danian crab genera of Denmark and Sweden and notice was drawn to three new, undescribed species from Fakse. These, as well as one other species, are described herein. In addition, the total known crab fauna of Fakse consisting of 20 species is listed (Table 1) and illustrated photographically.

Stratigraphy and geological setting

Fakse limestone quarry is situated to the east of the small town of Fakse in eastern Zeeland. It constitutes together with nearby Stevns Klint the type locality of the Danian Stage, the lowermost stage of the Palaeogene. The Fakse quarry displays a section through a bryozoan-coral mound complex of Middle Danian age, the local *Tylocidaris bruennichi* echinoid Zone (Ødum 1926, Ravn 1928, Rosenkrantz 1937) and nannoplankton zone NP3 (Perch-Nielsen 1979). The carbonate sequence is highly fossiliferous, and the fauna and lithofacies have been described by several authors, among others Rosenkrantz (1938), Rosenkrantz & Rasmussen (1960), Asgaard (1968), Floris (1979, 1980), Jørgensen (1988), Bernecker & Weidlich (1990) and Willumsen (1995).

Material

Intensive collecting in the Fakse quarry over the last 25 years by one of us (SLJ), aided in the initial stage by Mr Søren Bo Andersen, Århus, has resulted in a large collection, comprising more than 5000 registered specimens of anomuran and brachyuran crabs. In the

Table 1. Systematic list of anomuran and brachyuran decapods from the Fakse quarry, Zeeland, Denmark.

Infraorder Anomura H.Milne Edwards, 1832
Superfamily Galatheoidea Samouelle, 1819
Family Galatheidae Samouelle, 1819
Subfamily Galatheinae Samouelle, 1819
Galathea strigifera von Fischer-Benzon, 1866
Munida primaeva Segerberg, 1900
Protomunida munidoides (Segerberg, 1900)

Subfamily Munidopsinae Ortmann, 1892
Genus *Faxegalathea* gen. nov.
Faxegalathea platyspinosa sp. nov.

Infraorder Brachyura Latreille, 1803
Section Podotremata Guinot, 1977
Subsection Dromioidea de Haan, 1833
Family Prosopidae von Meyer, 1860
Genus *Plagiophthalmus* Bell, 1863
Plagiophthalmus depressus (Segerberg, 1900)

Family Dynomenidae Ortmann, 1892
Genus *Dromiopsis* Reuss, 1859
Dromiopsis rugosa (von Schlotheim, 1822)
Dromiopsis elegans Reuss,1859
Dromiopsis minor von Fischer-Benzon,1866
Dromiopsis laevior Reuss,1859

Subsection Archaeobrachyura Guinot,1977
Superfamily Homoloidea de Haan,1839
Family Homolidae de Haan,1839
Genus *Homolopsis* Bell, 1863
Homolopsis transiens Segerberg, 1900
Homolopsis spiniga sp. nov.

Genus *Eohomola* Collins & Rasmussen, 1992
Eohomola affinis sp. nov.

Superfamily Raninoidea de Haan,1841
Family Raninidae de Haan,1841
Genus *Raniliformis* Jagt, Collins & Fraaye,1993
Raniliformis baltica (Segerberg,1900)

Section Heterotremata Guinot, 1977
Superfamily Calappoidea de Haan, 1833
Family Calappidae de Haan,1833
Genus *Necrocarcinus* Bell, 1863
Necrocarcinus senonensis Schlüter, 1879

Superfamily Xanthoidea MacLeay,1838
Family Xanthidae MacLeay,1838
Genus *Xanthosia* Bell, 1863
Xanthosia gracilis sp. nov.

Genus *Cyclocorystes* Bell, 1858
Cyclocorystes incertus (Segerberg, 1900)

Genus *Xanthilites* Bell, 1858
Xanthilites cretaceus Segerberg, 1900

Genus *Titanocarcinus* Milne-Edwards, 1863
Titanocarcinus subellipticus (Segerberg, 1900)
Titanocarcinus faxeensis (von Fischer-Benzon, 1866)

Family Carpiliidae Ortmann,1894
Genus *Caloxanthus* Milne-Edwards,1864
Caloxanthus ornatus (von Fischer-Benzon,1866)

present study 131 carapaces and 11 homolopsid sidewalls are extracted from that collection and form the basis of the description of one new genus and four new species.

The material consists of external and internal moulds. It is remarkable that, apart from two specimens of the brachyuran decapod *Raniliformis baltica* Segerberg, 1900, no evidence of corpses has been found among the crab assemblage at Fakse. The numerous remains consist almost entirely of isolated carapaces and chelae, many of which show pre-fossil fragmentation. Although isolated chelae are common and more than 15 species are now recognized, instances of carapace-chelae association are rare and whereas reasonably accurate surmises of relationships can be made, we prefer to treat such association with extreme caution.

Segerberg (1900) founded his species *Homolopsis transiens* on Middle Danian carapaces from both Denmark and Sweden. Hitherto differences in dorsal features seen on specimens among older collections were considered to be due to ontogeny. However, with the addition of the material collected recently, it can be seen that these differences constitute constants present on carapaces of similar growth size and allow a second Danian species, *Homolopsis spiniga* sp. nov. to be described. Both *H. transiens* and *H. spiniga* sp. nov. are described from that part of the carapace between the *lineae homolicae* and no carapaces with associated side-walls are known. A number of sidewalls among the new material, however, evidently belong to two different species. These we prefer to treat as 'forms', rather than hazard specific determination.

The majority of the specimens figured in this paper are housed in the Type Collection of the Geological Museum, prefix MGUH and MMH. Specimens that are not figured carry the accession numbers of the museum, prefix GM.

Systematic Palaeontology

Order Decapoda Latreille, 1802
Suborder Pleocyemmata Burkenroad, 1963
Superfamily Galatheoidea Samouelle, 1819
Family Galatheidae Samouelle, 1819
Subfamily Munidopsinae Ortmann, 1892

Genus *Faxegalathea* gen. nov.

Type species. – By monotypy *Faxegalathea platyspinosa* gen. et sp. nov.

Diagnosis. – Carapace subquadrate with weakly spinose lateral margins, transversely steeply arched; rostrum broadly triangular with five pairs of marginal spines, without a median ridge; dorsal surface tuberculate.

Derivation of name. – From the old name Faxe, for Fakse and familial root.

Range. – Early Danian-?late Danian.

Faxegalathea platyspinosa gen. et sp. nov.
Pl. 2, figs 3–7; Fig. 1A

Types. – Holotype, MGUH 24372, Pl. 2: 7; paratypes, MGUH 24369–24371, Pl. 2: 3–6, and GM 1996.69–83.

Derivation of name. – With reference to the flattened dorsal spines.

Diagnosis. – As for genus.

Material. – 19 specimens.

Measurements. – See Fig. 1A.

Description. – Carapace, exclusive of rostrum, quadrate in outline, the sides slightly divergent posteriorly; tectate in transverse section, slightly curved longitudinally. The steeply downturned rostrum is almost one fourth the carapace length, broadly triangular with the base occupying about half the frontal width; its dorsal surface is moderately sulcate, smooth, non-ridged; from the sharply triangular tip the sides are lined with three more or less even-sized spines, followed immediately by a depressed, stouter spine of twice the length, directed outwards at a broader angle, then by a smaller one; all spines are flattened in cross section. The base of the proximal spine curves smoothly into a short, thinly raised, upper orbital margin terminating in a sharp spine at the outer orbital angle. The anterolateral margins are shortly rounded behind the orbit to the antennar notch, and lined with granules developing into spinules during growth; straight posterolateral margins remain granulated and a nearly straight posterior margin is bounded by a narrow rim and deep groove. A thin median sulcus divides steep-fronted epigastric lobes curving across the base of the rostrum and a spine on each side of the midline forms the foremost, and largest pair of eleven spines surrounding two prominent laterally compressed median spines, the distal the larger, on the mesogastric lobe. The smaller spine may sometimes show a median sulcus. Three smaller spines on each side lay close to the antennal furrow. The cervical furrow runs in a shallow curve across the midline a little posterior to carapace midlength, then gently concave to the margin. Equally prominent antennar furrows lead off from the basal angle of the mesogastric lobe and enclose a small trapezoid hepatic region; at midlength a feeble protogastric furrow branches off and curves towards the inner orbital angle. From near the mesogastric basal angle an obscure groove isolates the epibranchial lobe. Each hepatic region has four small tubercles and there is one at each inner angle of the urogastric lobe which is formed by two triangles meeting at the midline; a deep straight groove separates it from the tumid, transversely ovate cardiac region which generally has a group of irregular-sized granules. Several large granules scattered on the branchial region are interspersed among minute forwardly directed fan-shaped groups which, becoming denser posteriorly, form short rows, some corresponding to the curve of the cervical furrow, others medially transverse. Fine granules are also scattered over the gastric region. Internal casts show no striated ornament, but the larger granules remain prominent.

Discussion. – The vaulted transverse section, five pairs of rostral spines and well defined surface ornament are characters readily distinguishing *Faxegalathea platyspinosa* gen. et sp. nov. from other known galatheiids. The ancestry of *Faxegalathea* gen. nov. is obscure; resemblance to *Gastrosacus* von Meyer, 1851 is largely superficial, that genus differing in the shape of the rostrum and lack of secondary ornament. Absence of transverse ridges and presence of a broadly triangular rostrum without a median ridge suggests a relationship of *Faxegalathea* gen. nov. to *Paragalathea* Patrulius, 1960, but in *Paragalathea* the rostral spines are confined to a single pair set distally, and the carapace, though sometimes well rounded transversely, is not tectate. Whereas the dorsal surface of *Paragalathea neocomiensis* (Van Straelen, 1936), from the Hauterivian of France is sharply granulate, it lacks median tubercles, however. The Maastrichtian *Paragalathea ubaghsi* (Pelseneer, 1886) has paired secondary ornament, features suggesting *Paragalathea* and *Faxegalathea* gen. nov. may be derived from common stock.

Section Archaeobrachyura Guinot, 1977
Superfamily Homoloidea de Haan, 1839
Family Homolidae de Haan 1839 (ICZN Opinion 1987)
Genus *Homolopsis* Bell, 1863

Type species. – By monotypy *Homolopsis edwardsii* Bell, 1863.

Range. – Hauterivian-Danian.

Homolopsis spiniga sp. nov.
Pl. 1, figs 1, 5, 7–8; Fig. 1B

1900 *Homolopsis transiens* Segerberg, p. 366, Pl. 8: 8 *non* 6–7
1994 *Homolopsis* sp. Collins & Jakobsen, p. 38

Types. – Holotype, MGUH 24359, Pl. 1: 1; paratypes MGUH 24360–1, Pl. 1:1, 5, 7–8, and GM 1991.1530–77, GM 1996.1830, GM 1996.2–40.

Derivation of name. – Relating to the spinous frontal margin.

Diagnosis. – Carapace subquadrate with two spines lining each upper orbital margin.

Material.– 91 specimens.

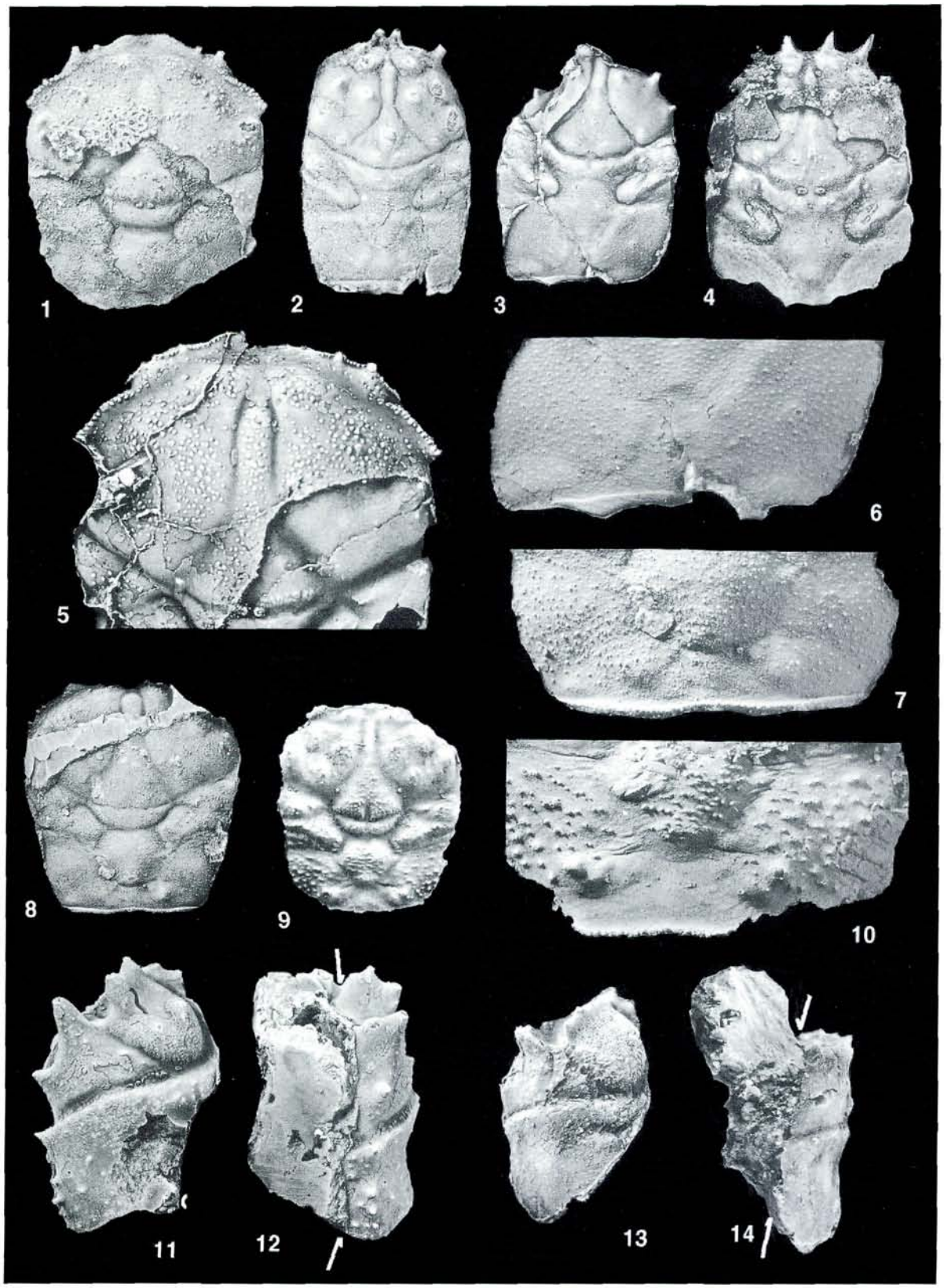
Measurements. – See Fig. 1B.

Description. – Carapace between the *lineae homolicae* subquadrate, slightly downcurved in longitudinal section with the point of curvature from about the epibranchial lobes, and flat behind. The orbitofrontal margin is broadly triangular, the width almost that of the carapace width. Well rounded posterior angles lead to a straight posterior margin bounded by a finely beaded ridge: there is a low node above each posterior angle. The steeply downturned rostrum is broadly triangular with gently concave sides and rounded sulcate tip, at the base the sides enclose a small circular depression more noticeable on internal casts; beaded spinules lining the rostral margin are interupted by two mammillated tubercles, the hinder the larger, behind the tubercle the convex upper orbital margin,extending shortly onto the dorsal surface is more coarsely granulated to a rounded tubercle at the outer orbital angle immediately before the hepatic notch; the short anterolateral margin is convex to the cervical notch. Straight posterolateral margins become broadly curved to the posterior margin. From the lateral margin the cervical furrow runs almost straight back to the mesogastric angle and is gently curved across the midline. The often inconspicuous branchiocardiac furrows, running parallel to the cervical, are sometimes bounded by a fine ridge, the rather deeper anterior branch turns forward to delimit the urograstric and cardiac regions. Weak hepatic furrows curve forward and outward from near the basal mesogastric angle.

The lobes are well defined; a rather wide parallel-sided anterior mesogastric process extends to the base of the epigastric lobes. An oblique groove separates epibranchial from large mesobranchial lobes and the rounded cardiac region is equally well separated from the urogastric lobe. Normally the outermost of three nodes on each protogastic lobe is strongest, while that closest to the mesogastric lobe is more or less obsolete,there is a node on each hepatic region and three form an inverted triangle on the cardiac region, although these are often poorly developed in young individuals. The shell surface shows minute granules crowding the shallow post rostral depression and clusters of even-sized granules are concentrated on the more tumid gastric parts of the carapace; the branchial region has coarse granules scattered among much finer ones.

Discussion. – *H. spiniga* sp. nov. differs from *H. transiens* Segerberg, 1900 in its frontal ornament, in virtual absence of or subdued surface ornament, in having the lobes separated by narrower furrows, and triangular epi- and sub-rhomboidal mesobranchial lobes, rather than the ridged lobes of *H. transiens* Segerberg, 1900, also no 'ridges', each formed by two

Plate 1
Fig. 1. Homolopsis spiniga sp. nov., holotype, MGUH 24359, dorsal view of internal cast of carapace showing the anterior surface granulation, ×3.
Fig. 2. Eohomola adelphina Collins & Rasmussen, 1992, MGUH 21590, dorsal view of carapace, ×4.5.
Fig. 3. Eohomola affinis sp. nov., holotype, MGUH 24362, dorsal view of siliconerubber cast from external mould of carapace, ×3.
Fig. 4. Eohomola affinis sp. nov., paratype, MGUH 24363, dorsal view of internal cast of carapace, ×2.
Fig. 5. Homolopsis spiniga sp. nov., paratype, MGUH 24360, siliconerubber cast of anterior portion of external mould of carapace, ×6.
Fig. 6. Eohomola affinis sp. nov., holotype, MGUH 24362, posterior margin of the carapace, ×7.
Figs 7–8. Homolopsis spiniga sp. nov. paratype, MGUH 24361; 7, posterior margin of carapace, ×7; 8, dorsal view of carapace, ×3.
Fig. 9. Homolopsis transiens Segerberg, 1900, lectotype, MMH 256, dorsal view of internal cast of carapace, ×1.5.
Fig. 10. Homolopsis transiens Segerberg, 1900, MGUH 24364, siliconerubber cast of external mould of posterior margin of carapace, ×4.
Figs 11–12. Carapace side-wall of *Homolopsis* sp. indet. form 1, MGUH 24365; 11, right lateral view of internal cast; 12, dorsal view showing position of lineae homolicae indicated by arrows, ×1.5.
Figs 13–14. Homolopsis sp. indet. form 2, MGUH 24366; 13, right lateral view of internal cast; 14, dorsal view showing position of lineae homolicae indicated by arrows, ×4.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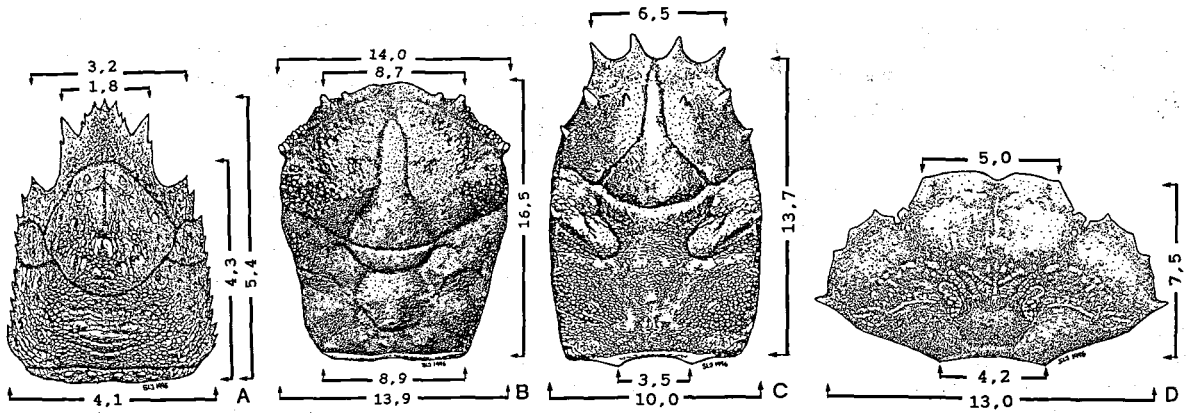


Fig. 1. Diagrammetric reconstructions and measurements in mm of four new species of crabs from Faxe. The reconstructions are based upon the holotypes. A. *Faxegalathea platyspinosa* gen. et sp. nov.; B. *Homolopsis spiniga* sp. nov.; C. *Eohomola affinis* sp. nov.; D. *Xanthosia gracilis* sp. nov.

or three granules, are developed posteriorly as in *H. transiens* Segerberg, 1900 (see Pl. 1: 10). Where, as opined by Wright & Collins (1972), it is possible that *H. transiens* Segerberg, 1900 was descended from the Cenomanian *H. brightoni* Wright & Collins, 1972, and those authors chose to illustrate their point by referring to the form figured by Segerberg (1900, Pl. 8: 7) when to the other figure (Segerberg 1900, Pl. 8: 6) is eminently more appropriate. The original of Segerberg (1900, Pl. 8: 7) more closely approximates *H. glabra* Wright & Collins, 1972, which species could possibly have given rise to *H. spiniga* sp. nov.

Homolopsis sp. indet. form 1
Pl. 1, figs 11–12

Material. – Two carapace side-walls, MGUH 24365 and GM 1996.50.

Description. – A 'finished' edge, bounded by a groove, indicates the dorsal position of the *lineae homolicae* and that the side was sharply downturned close to the lateral margin at an angle of about 90° to the dorsoventral axis. A robust outer orbital spine superimposed vertically upon another, is followed by a deep, broad notch, rounded at its base, preceding a more elaborate arrangement, ventral to the ocular pad, comprising a stout flattened rectangular 'base' bearing two triangular spines; the enclosed ocular pad being deeply concave and smooth surfaced. The notch between the spines is the dorsal extent of the subhepatic furrow which turns obliquely back to unite with the forwardly directed cervical furrow; from this union it runs to the ocular pad between a vertical, non-fused pair of forwardly directed spines and there is a marginal spine midway between the upper one, another behind the cervical notch and a ridge bounds the cervical furrow. The frontal areas enclosed by the furrows are tumid and there is a scattering of coarse and fine granules, particularly on and posterior to the cervical ridge.

The pterygostomian process margin is sharply inflected at about 45° to the dorsoventral axis of the carapace, but matrix impairs description.

Homolopsis sp. indet. form 2
Pl. 1, figs 13–14

Material. – Nine carapace side-walls, MGUH 24366 and GM 1996.41–48.

Description. – Generally smaller than form 1. The side was probably inclined a little inwards from the carapace midline, depth slight exceding twice the length and the *lineae homolica* margin is slightly downturned in front. The broad, deep cervical furrow curves sharply down almost to the ventral margin where, curving to the front, it is joined by the less conspicuous subhepatic and branchiocardiac furrows which, latter, runs parallel to the cervical for most of its length. The smooth, narrowly ovate, forwardly facing ocular pad is slightly dished and inclined to a sharp spine immediately above and behind the subhepatic furrow; its thin lower border is accentuated by a groove. The area ventral to the ocular pad is tumid, with a blunt spine and the subhepatic lobe has a spinule close to the cervical furrow. The surface, with the exception of the ocular pad, is minutely granulated.

Genus *Eohomola* Collins & Rasmussen, 1992

Type species. – By origial designation *Eohomola adelphina* Collins & Rasmussen, 1992, from the Upper Campanian/Maastrichtian of West Greenland.

Range. – Lower Campanian-Middle Danian.

Eohomola affinis sp. nov.
Pl. 1, figs 3–4, 6; Fig. 1C

1994 *Eohomola* sp. nov. Collins & Jakobsen, p. 38, Pl. 10: 5.

Types. – Holotype, MGUH 24362, Pl. 1: 3, 6, preserved as external mould; paratype, MGUH 24363, Pl. 1: 4.

Derivation of name. – Indicating a close relationship to the type species.

Diagnosis. – An *Eohomola* with strong frontal spines, otherwise with weak surface ornament, tapering metabranchial ridges extend almost to the margin.

Material. – Two specimens (holotype and paratype).

Measurements. – See Fig. 1C.

Description. – Carapace between the lineae homolicae subquadrate in outline, about one fifth longer than broad, longitudinally nearly flat, the front only slightly downturned, slightly arched in transverse section. Convex lateral margins diverge posteriorly; the posterior margin is bounded by a narrow ridge, expanding laterally, and an uniformly transverse furrow. The orbitofrontal and rostral areas are not preserved, but probably occupied about 60% of the carapace width. The cervical furrrow is deep and distinct, it curves broadly across the midline about mid-carapace length, then runs almost straight to the margin. Equally prominent branchiocardiac furrows run almost parallel to the cervical, their forward branches curving to separate the uro/cardiac and epi-mesobranchial lobes. The lobes are flatly tumid. There are two prominently erect spines on each epigastric lobe and behind these two spines on each protogastric lobe, the median pair is smaller. The anterior mesogastric process extends just beyond the epigastric lobes and, whereas the shell surface of the triangular mesogastric lobe has three clusters of fine granules with a few individuals interspersed, only the latter and a low, interupted basal ridge is seen on the internal cast. An almost obsolete groove defines the hepatic region which has a small marginal spine. The narrow urogastric lobe is weakly divided medially and barely separated from the cardiac region, it is deeply excavated round the epigastric lobes. There are three nodes on the shield-shaped cardiac region from the widest part of which almost transverse ridges taper towards and almost reach the margin. The shell surface shows a pair of granules at the base of the outer protogastric spines and a node by the basal mesogastric angle; granules are clustered in the median corner of the hepatic lobes, and clusters, forming a triangle on the mesogastric lobe, have individual granules scattered around them. Denser, coarser granules crowd the epigastric lobes and the entire cardiac and metabranchial area is crowded with fine granules of several diameters; there is a node opposite the basal cardiac one, the granules on the cardiac region, however, are arranged in close pairs reminescent of some raninids.

Discussion. – *Eohomola* differs from *Homolopsis* in having a bifurcated rostrum and metabranchial ridges, and the bifurcate rostrum separates it from *Hoplitocarcinus* Beurlen, 1928 (=*Metahomola* Collins & Rasmussen, 1992). Although the (presumably) downturned part of the rostrum is missing, *E. affinis* sp. nov. is sufficiently close to *E. adelphina* to leave little doubt of its generic position.

E. affinis sp. nov. differs from *E. adelphina*, however, in having a tapered anterior mesogastric process, absence of mesogastric tubercles, in having coarse granules replacing an epibranchial tubercle, narrower metabranchial ridges and nodes on the metabranchial lobes. The cervical furrow of *Eohomola dispar* (Roberts, 1962) from the Campanian of New Jersey, is broadly V-shaped across the midline. The somewhat worn dorsal tuberculate surface, which could well have been spinose, is more prominent than that of *E. affinis* sp. nov. and the metabranchial ridges extend to the margin.

Collins & Rasmussen (1992) drew attention to the similarity of *Eohomola* to the Recent *Homola barbata* (Fabricius, 1793) and *Homola orientalis* Henderson, 1888. Of these the former species more closely resembles *E. adelphina*. Guinot & Richer de Forges (1981) figured *H. orientalis* and two 'forms' of it, all of which have surface characters more in common with *E. affinis* sp. nov. than does *H. barbata*. The latter, however, has strong frontal spines – not possessed by *H. orientalis* – in common with *E. affinis* sp. nov.

Section Heterotremata Guinot, 1977
Superfamily Xanthoidea MacLeay, 1838
Family Xanthidae MacLeay,1838
Genus *Xanthosia* Bell, 1863

Type species. – *Xanthosia gibbosa* Bell, 1863 (= *Podophthalmus buchii* Reuss, 1845) by subsequent designation of Glaessner (1927).

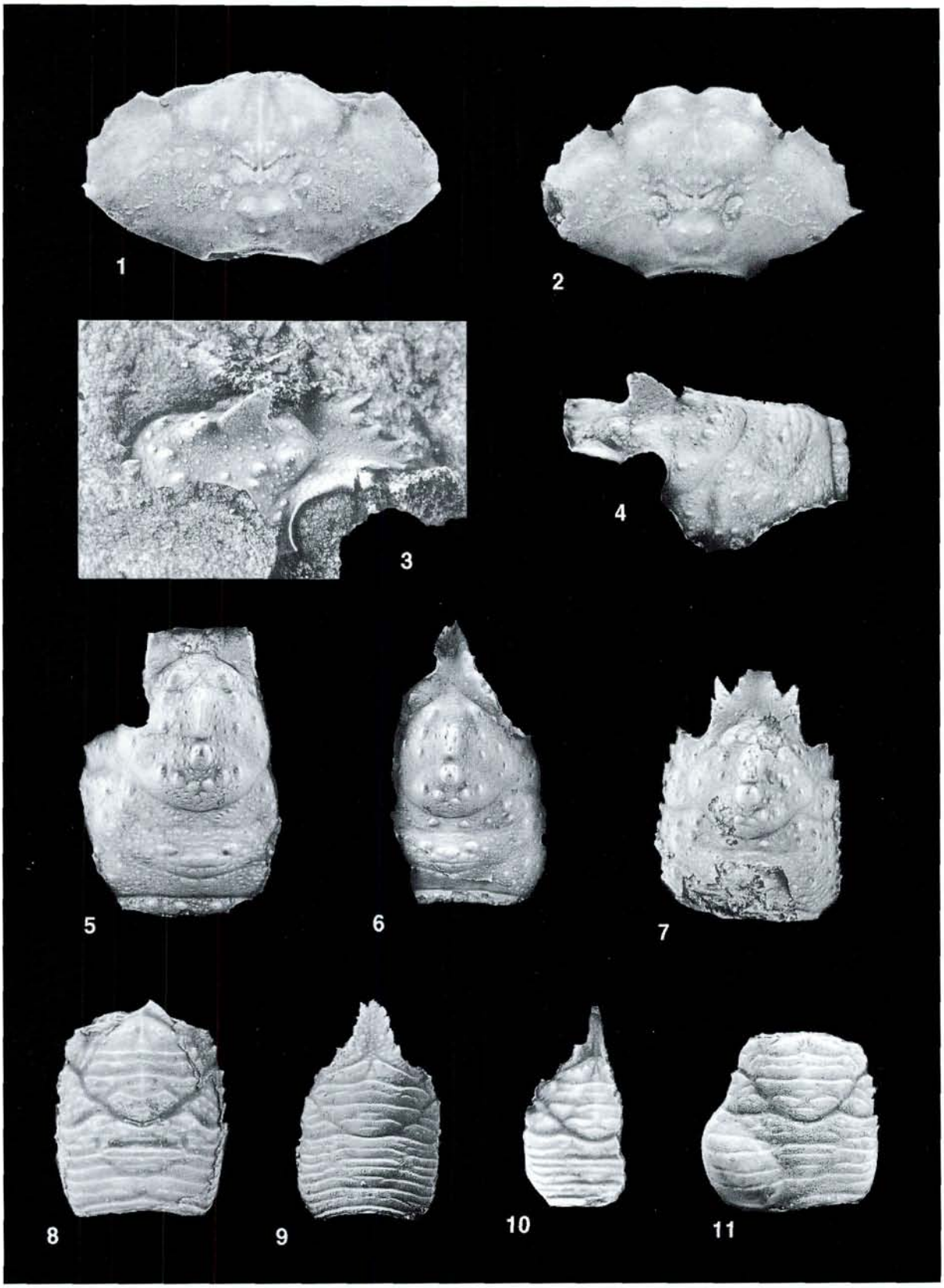
Range. – Lower Aptian-Middle Danian.

Xanthosia gracilis sp. nov.
Pl. 2, figs 1–2; Fig. 1D

1994 *Xanthosia* sp. Collins & Jakobsen, p. 39, Pl. 10: 14

Types. – Holotype, MGUH 24367, Pl. 2: 1; paratypes, MGUH 24368, Pl. 2: 2, and GM 1996. 51–68

Derivation of name. – From Latin, graceful.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Diagnosis. – Carapace rounded hexagonal with two marginal spines before the cervical notch and another immediately behind; lateral course of the cervical furrow almost obsolete; epi- and mesobranchial lobes minutely granulated.

Material. – 19 specimens.

Measurements. – See Fig. 1D.

Description. – Carapace rounded hexagonal in outline,length about one third the width, widest posterior to midlength, transversely and longitudinally weakly arched. The orbitofrontal margin occupies about two thirds the carapace width; the front is a little produced, widely bilobed with the sides straight to gently convex before the upper orbital margin. Broadly ovate orbits occupy less than half the orbitofrontal margin; thin upper orbital margins have two notches with U-shaped bases, the outer, deeper one set about mid-orbital length and there is a small, but distinct outer orbital spine. The anterolateral margins are convex between the 1st and 2nd spines, the 2nd set at margin midlength, and convex to a larger, forwardly directed spine at the lateral angle. The posterolateral margin is weakly convexi-concave and the posterior margin moderately concave, finely rimmed and bounded by a thin groove. The regions are moderately tumid. A low median ridge lines the anterior mesogastric process almost to the base of the mesogastric lobe. From a pair of gastric pits the cervical furrow is broadly V-shaped round the base of the mesogastric lobe, broadening before its junction with conspicuous hepatic furrows it becomes almost obsolete towards the margin. Thin, sinuous branchiocardiac furrows, bounded by a granulated ridge, extend to the urogastric-cardiac junction. Large hepatic regions are somewhat depressed between tumid protogastric and epigastric lobes. A fine groove separates a small urogastric lobe from the rounded pentagonal cardiac region. There are a few granules before a low granulated ridge bounding the base of the mesogastric lobe and minute granules form a row between the epi- and mesogastric lobes; the cardiac region has two or three conspicuous granules.

Discussion.– *Xanthosia gracilis* sp. nov. most closely approximates *Xanthosia buchii* (Reuss, 1845) and *Xanthosia jacksoni* (Wright & Collins, 1972) in general carapace outline, but differs in having a convex rather than concave margin between the 2nd anterolateral spines. Furthermore, the arrangement of the dorsal ornament distinguishes *X. gracilis* sp. nov. from all known members of the genus.

Summary

Of the four genera discussed herein, *Faxagalathea* gen. nov. is new to the Danian of Denmark and Sweden; it is known to occur in the Early Danian of Stevns Klint and has been found in a glacial boulder, possibly of late Danian age, in the neighbourhood of Copenhagen. Being monospecific, *Faxegalathea* gen. nov. may be considered to be endemic to Denmark. *Faxegalathea platyspinosa* gen. et sp. nov. is possibly derived from *Paragalathea* Patrulius 1960, which has its roots in the Tithonian. *Eohomola affinis* sp. nov. not only establishes that genus – hitherto known only from North America and West Greenland – in Europe, but it is the youngest known member of that genus; among recent homolids, *E. affinis* sp. nov. has many characters in common with *Homola orientalis* Henderson, 1888. The stratigraphical range of *Xanthosia*, a genus first known from the Lower Aptian, is extended into the Lower Tertiary with *Xanthosia gracilis* sp. nov., a species that has much in common with the Aptian *Xanthosia jacksoni* Wright & Collins, 1972 and the Cenomanian *Xanthosia buchii* (Reuss, 1845).

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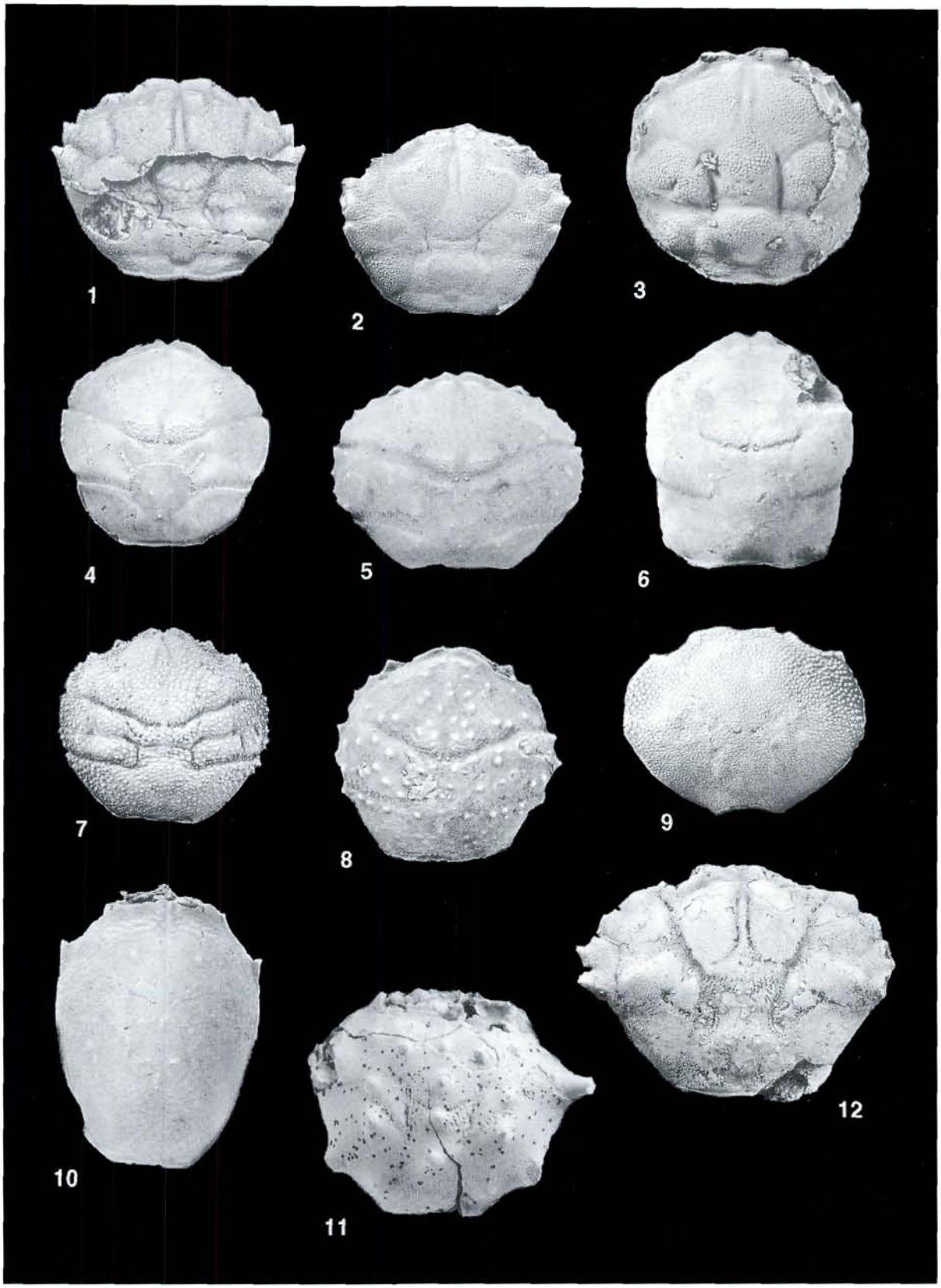
Plate 2

Fig. 1. Xanthosia gracilis sp. nov., holotype, MGUH 24367, dorsal view of internal cast of carapace, ×6.
Fig. 2. Xanthosia gracilis sp. nov., paratype, MGUH 24368, dorsal view of internal cast of carapace, ×4.
Fig. 3. Faxegalathea platyspinosa gen. et. sp. nov., paratype, MGUH 24369, right lateral view of siliconerubber cast of external mould showing downturned rostrum and prominent dorsal spines, ×10.
Figs 4–5. Faxegalathea platyspinosa gen. et. sp. nov., paratype, MGUH 24370, 4, siliconerubber cast of external mould of carapace, left lateral view; 5, dorsal view, ×6.
Fig. 6. Faxegalathea platyspinosa gen. et. sp. nov., paratype, MGUH 24371, siliconerubber cast of external mould of carapace, dorsal view, ×6.
Fig. 7. Faxegalathea platyspinosa gen. et. sp. nov., holotype, MGUH 24372, siliconerubber cast of external mould of carapace, dorsal view, ×8.
Fig. 8. Munida primaeva Segerberg, 1900, lectotype, MMH 249, dorsal view of internal cast of carapace, ×6.
Fig. 9. Galathea strigifera von Fischer-Benzon, 1866, MGUH 24373, siliconerubber cast of external mould of carapace, dorsal view, ×6.
Fig. 10. Protomunida munidoides (Segerberg, 1900), lectotype, MMH 248, dorsal view of internal cast of carapace, ×6.
Fig. 11. Protomunida munidoides (Segerberg, 1900), MGUH 24358, dorsal view of internal cast of carapace showing large swelling on the left branchial region, caused by parasitic bopyrid isopod, ×4.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Dansk Sammendrag

Fossile krebsdyr er generelt sjældne i de fleste danske Palæogene aflejringer. Koralkalken i Fakse kalkbrud rummer imidlertid en rig fauna af krebsdyr, især domineret af anomure og brachyure krabber.

I arbejdet beskrives en ny slægt og fire nye arter: *Faxegalathea platyspinosa* gen. et sp. nov., *Homolopsis spiniga* sp. nov., *Eohomola affinis* sp. nov. og *Xanthosia gracilis* sp. nov. Krabbefaunaen fra Faksekalken omfatter ialt 20 arter, som er placeret i 15 slægter fordelt på 8 familier.

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Plate 3

Fig. 1. Titanocarcinus subellipticus (Segerberg, 1900), MGUH 24375, siliconerubber cast of external mould of carapace, dorsal view, ×2.

Fig. 2. Titanocarcinus faxeensis (von Fischer-Benzon, 1866), MGUH 24376, siliconerubber cast of external mould of carapace, dorsal view, ×5.

Fig. 3. Cyclocorystes incertus (Segerberg, 1900) MGUH 24377, siliconerubber cast of external mould of carapace, dorsal view, ×5.

Fig. 4. Dromiopsis laevior Reuss, 1859, MGUH 24378, dorsal view of internal cast of carapace, ×1.5.

Fig. 5. Dromiopsis elegans Reuss, 1859, MGUH 24379, dorsal view of internal cast of carapace, ×2.5.

Fig. 6. Plagiophthalmus depressus (Segerberg, 1900), MMH 266, dorsal view of internal cast of carapace, ×5.

Fig. 7. Dromiopsis rugosa (von Schlotheim, 1822), MGUH 24380, siliconerubber cast of external mould of carapace, dorsal view, ×1.5.

Fig. 8. Dromiopsis minor von Fischer-Benzon, 1866, MGUH 24381, dorsal view of internal cast of carapace, ×2.

Fig. 9. Caloxanthus ornata (von Fischer-Benzon, 1866), MGUH 24382, siliconerubber cast of external mould of carapace, dorsal view, ×5.

Fig. 10. Raniliformis baltica (Segerberg, 1900), dorsal view of internal cast of carapace, ×2.

Fig. 11. Necrocarcinus senonensis Schlüter, 1879, dorsal view of internal cast of carapace, ×2.5.

Fig. 12. Xanthilites cretaceus Segerberg, 1900, MGUH 24383, dorsal view of internal cast of carapace, ×1.5.

The specimens figured as Pl. 3: 10–11 are in the collection of Alice Rasmussen, Fakse.

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