

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

STEN LENNART JAKOBSEN & JOE S. H. COLLINS



Jakobsen, S. L. & Collins, J. S. H.: New Middle Danian species of anomuran and brachyuran crabs from Fakse, Denmark. *Bulletin of the Geological Society of Denmark*, Vol. 44, pp. 89–100. Copenhagen 1997–03–15.

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.

*S. L. Jakobsen, Geological Museum, University of Copenhagen, Øster Voldgade 5–7, DK–1350 Copenhagen, Denmark. J. S. H. Collins, 8 Shaw's Cottages, Perry Rise, London, SE23 2QN, UK. 6 January 1997.*

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 description 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 Zealand. 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.

<p>Infraorder Anomura H.Milne Edwards, 1832  Superfamily Galatheoidea Samouelle, 1819  Family Galatheidæ Samouelle, 1819  Subfamily Galatheinae Samouelle, 1819  <i>Galathea strigifera</i> von Fischer-Benzon, 1866  <i>Munida primaeva</i> Segerberg, 1900  <i>Protomunida munidoides</i> (Segerberg, 1900)</p> <p>Subfamily Munidopsinæ Ortmann, 1892  Genus <i>Faxegalathea</i> gen. nov.  <i>Faxegalathea platyspinosa</i> sp. nov.</p> <p>Infraorder Brachyura Latreille, 1803  Section Podotremata Guinot, 1977  Subsection Dromioidea de Haan, 1833  Family Prosopidae von Meyer, 1860  Genus <i>Plagiophthalmus</i> Bell, 1863  <i>Plagiophthalmus depressus</i> (Segerberg, 1900)</p> <p>Family Dynomenidae Ortmann, 1892  Genus <i>Dromiopsis</i> Reuss, 1859  <i>Dromiopsis rugosa</i> (von Schlotheim, 1822)  <i>Dromiopsis elegans</i> Reuss, 1859  <i>Dromiopsis minor</i> von Fischer-Benzon, 1866  <i>Dromiopsis laevior</i> Reuss, 1859</p> <p>Subsection Archaeobrachyura Guinot, 1977  Superfamily Homoloidea de Haan, 1839  Family Homolidae de Haan, 1839  Genus <i>Homolopsis</i> Bell, 1863  <i>Homolopsis transiens</i> Segerberg, 1900  <i>Homolopsis spiniga</i> sp. nov.</p>	<p>Genus <i>Eohomola</i> Collins &amp; Rasmussen, 1992  <i>Eohomola affinis</i> sp. nov.</p> <p>Superfamily Raninoidea de Haan, 1841  Family Raninidae de Haan, 1841  Genus <i>Raniliformis</i> Jagt, Collins &amp; Fraaye, 1993  <i>Raniliformis baltica</i> (Segerberg, 1900)</p> <p>Section Heterotremata Guinot, 1977  Superfamily Calappoidea de Haan, 1833  Family Calappidae de Haan, 1833  Genus <i>Necrocarcinus</i> Bell, 1863  <i>Necrocarcinus senonensis</i> Schlüter, 1879</p> <p>Superfamily Xanthoidea MacLeay, 1838  Family Xanthidae MacLeay, 1838  Genus <i>Xanthosia</i> Bell, 1863  <i>Xanthosia gracilis</i> sp. nov.</p> <p>Genus <i>Cyclocorystes</i> Bell, 1858  <i>Cyclocorystes incertus</i> (Segerberg, 1900)</p> <p>Genus <i>Xanthilites</i> Bell, 1858  <i>Xanthilites cretaceus</i> Segerberg, 1900</p> <p>Genus <i>Titanocarcinus</i> Milne-Edwards, 1863  <i>Titanocarcinus subellipticus</i> (Segerberg, 1900)  <i>Titanocarcinus faxeensis</i> (von Fischer-Benzon, 1866)</p> <p>Family Carpiliidae Ortmann, 1894  Genus <i>Caloxanthus</i> Milne-Edwards, 1864  <i>Caloxanthus ornatus</i> (von Fischer-Benzon, 1866)</p>
--	---

present study 131 carapaces and 11 homolopsid side-walls 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 sec-

ond 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 side-walls 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 Pleocyemata Burkenroad, 1963  
Superfamily Galatheoidea Samouelle, 1819  
Family Galatheidæ Samouelle, 1819  
Subfamily Munidopsinæ 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 sul-

cus. 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* Patruilius, 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 sec-  
tion 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 poste-  
rior angle. The steeply downturned rostrum is broadly  
triangular with gently concave sides and rounded sul-  
cate tip, at the base the sides enclose a small circular  
depression more noticeable on internal casts; beaded  
spinules lining the rostral margin are interrupted by  
two mammillated tubercles, the hinder the larger, be-  
hind the tubercle the convex upper orbital mar-  
gin, 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 cervi-  
cal notch. Straight posterolateral margins become  
broadly curved to the posterior margin. From the lat-  
eral margin the cervical furrow runs almost straight  
back to the mesogastric angle and is gently curved  
across the midline. The often inconspicuous branchio-  
cardiac furrows, running parallel to the cervical, are  
sometimes bounded by a fine ridge, the rather deeper  
anterior branch turns forward to delimit the urogastric  
and cardiac regions. Weak hepatic furrows curve for-  
ward 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 protogastric lobe is strongest, while that  
closest to the mesogastric lobe is more or less obso-  
lete, there is a node on each hepatic region and three  
form an inverted triangle on the cardiac region, al-  
though these are often poorly developed in young in-  
dividuals. The shell surface shows minute granules  
crowding the shallow post rostral depression and clus-  
ters 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,  $\times 3$ .

Fig. 2. *Eohomola adelphina* Collins & Rasmussen, 1992, MGUH 21590, dorsal view of carapace,  $\times 4.5$ .

Fig. 3. *Eohomola affinis* sp. nov., holotype, MGUH 24362, dorsal view of siliconerubber cast from external mould of carapace,  $\times 3$ .

Fig. 4. *Eohomola affinis* sp. nov., paratype, MGUH 24363, dorsal view of internal cast of carapace,  $\times 2$ .

Fig. 5. *Homolopsis spiniga* sp. nov., paratype, MGUH 24360, siliconerubber cast of anterior portion of external mould of carapace,  $\times 6$ .

Fig. 6. *Eohomola affinis* sp. nov., holotype, MGUH 24362, posterior margin of the carapace,  $\times 7$ .

Figs 7–8. *Homolopsis spiniga* sp. nov. paratype, MGUH 24361; 7, posterior margin of carapace,  $\times 7$ ; 8, dorsal view of carapace,  $\times 3$ .

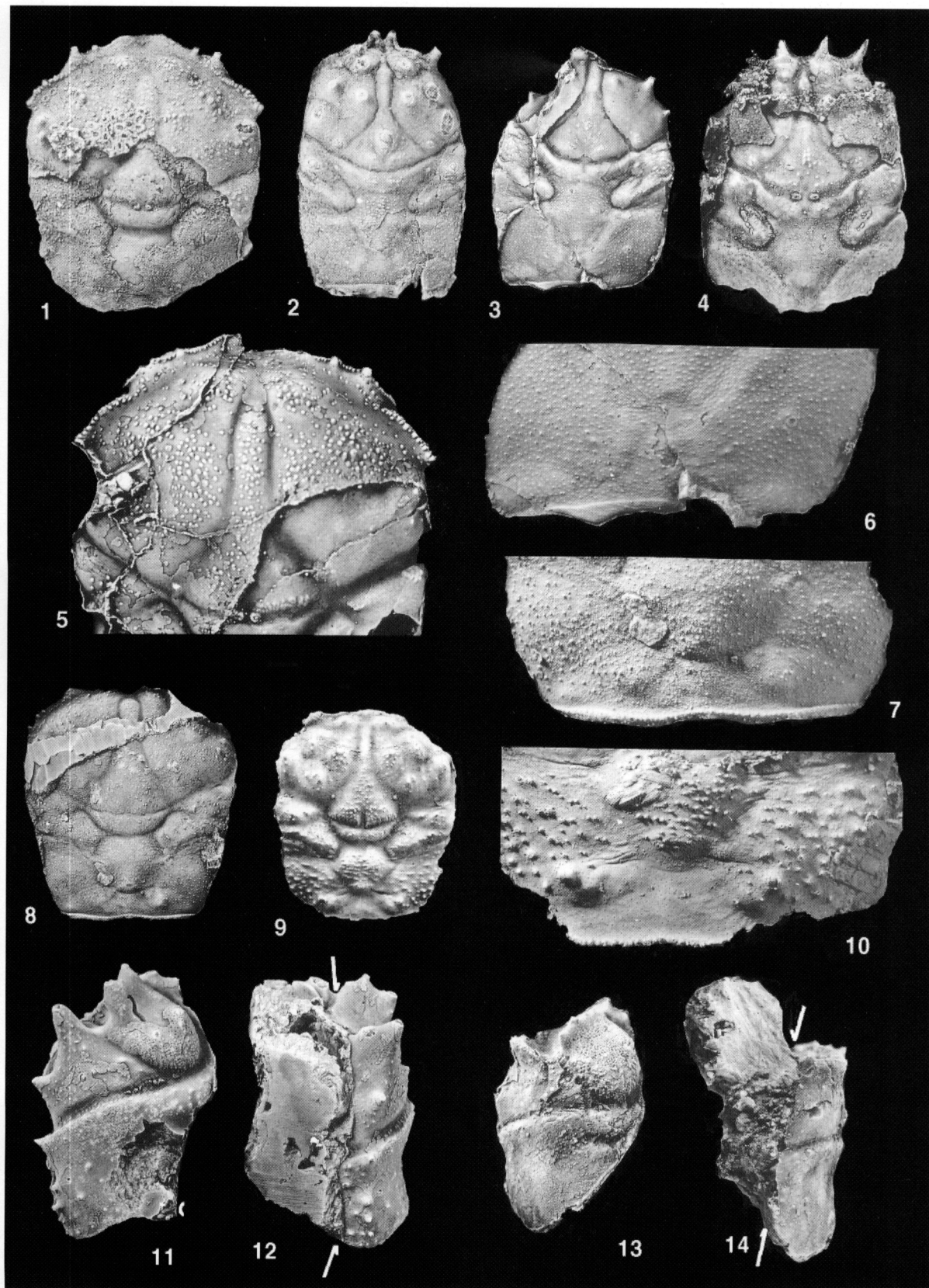
Fig. 9. *Homolopsis transiens* Segerberg, 1900, lectotype, MMH 256, dorsal view of internal cast of carapace,  $\times 1.5$ .

Fig. 10. *Homolopsis transiens* Segerberg, 1900, MGUH 24364, siliconerubber cast of external mould of posterior margin of carapace,  $\times 4$ .

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,  $\times 1.5$ .

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,  $\times 4$ .





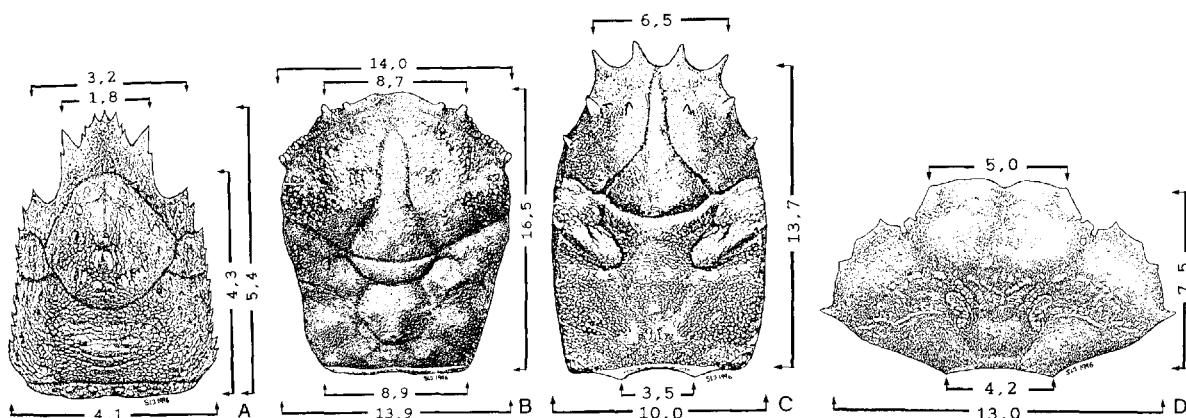


Fig. 1. Diagrammatic reconstructions and measurements in mm of four new species of crabs from Faxø. The reconstructions are based upon the holotypes. A. *Faxegalathea platyspinosa* gen. et sp. nov.; B. *Homolopsis spiniga* sp. nov.; C. *Eohomola affinis* sp. nov.; D. *Xanthosia gracilis* sp. nov.

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 pterygostomial 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 exceeding 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 original 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 furrow 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, interrupted 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

metabranhial 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 reminiscent of some raninids.

*Discussion.* – *Eohomola* differs from *Homolopsis* in having a bifurcated rostrum and metabranhial 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 metabranhial ridges and nodes on the metabranhial 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 metabranhial 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.

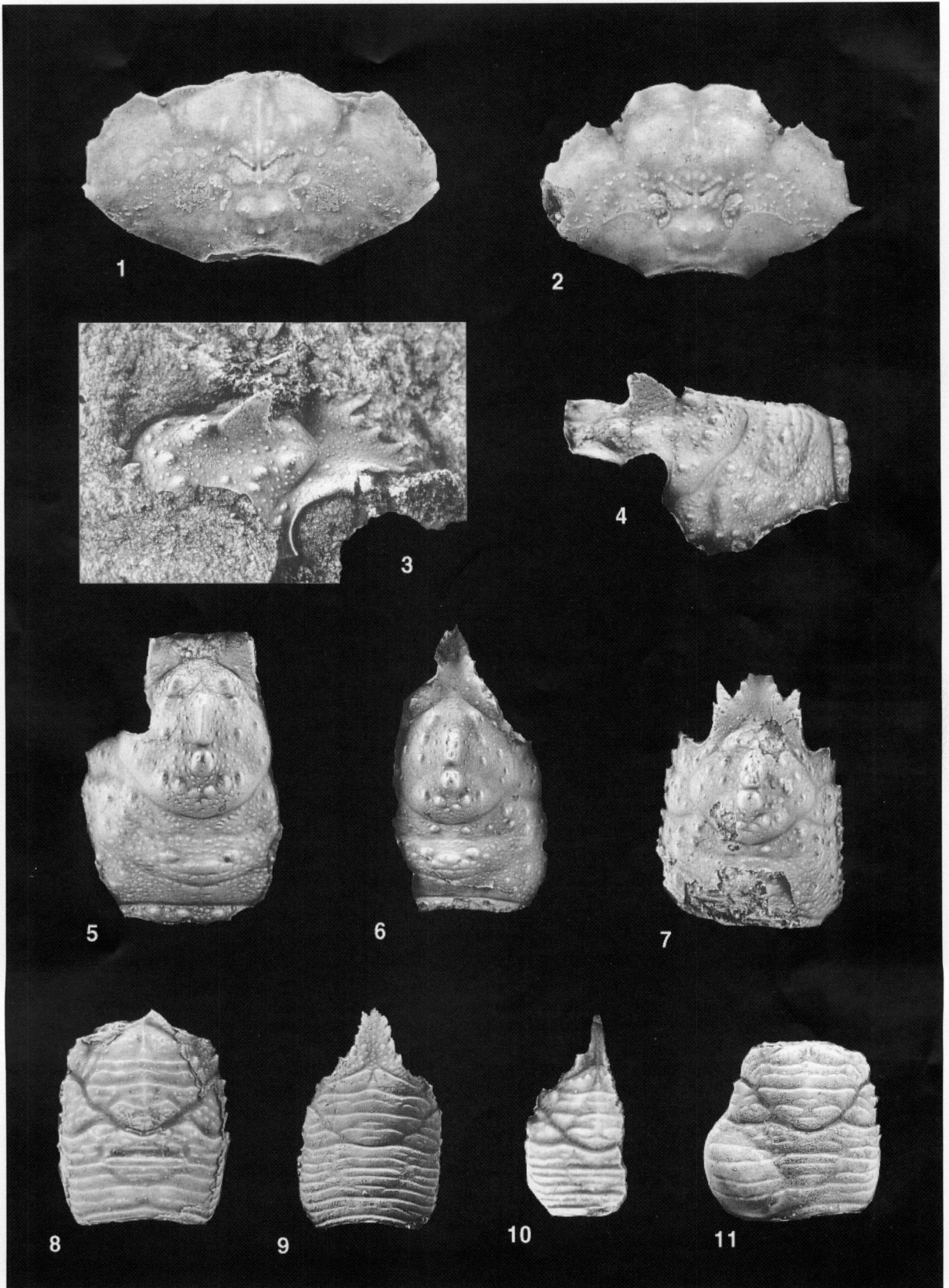
*Xanthosia gracilis* sp. nov.

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.





**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 convex-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, *Faxagalathea* gen. nov. may be considered to be endemic to Denmark. *Faxagalathea platyspinosa* gen. et sp. nov. is possibly derived from *Paragalathea* Patruilius 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).

---

## Plate 2

Fig. 1. *Xanthosia gracilis* sp. nov., holotype, MGUH 24367, dorsal view of internal cast of carapace,  $\times 6$ .

Fig. 2. *Xanthosia gracilis* sp. nov., paratype, MGUH 24368, dorsal view of internal cast of carapace,  $\times 4$ .

Fig. 3. *Faxagalathea platyspinosa* gen. et sp. nov., paratype, MGUH 24369, right lateral view of siliconerubber cast of external mould showing downturned rostrum and prominent dorsal spines,  $\times 10$ .

Figs 4–5. *Faxagalathea platyspinosa* gen. et sp. nov., paratype, MGUH 24370, 4, siliconerubber cast of external mould of carapace, left lateral view; 5, dorsal view,  $\times 6$ .

Fig. 6. *Faxagalathea platyspinosa* gen. et sp. nov., paratype, MGUH 24371, siliconerubber cast of external mould of carapace, dorsal view,  $\times 6$ .

Fig. 7. *Faxagalathea platyspinosa* gen. et sp. nov., holotype, MGUH 24372, siliconerubber cast of external mould of carapace, dorsal view,  $\times 8$ .

Fig. 8. *Munida primaeva* Segerberg, 1900, lectotype, MMH 249, dorsal view of internal cast of carapace,  $\times 6$ .

Fig. 9. *Galathea strigifera* von Fischer-Benzon, 1866, MGUH 24373, siliconerubber cast of external mould of carapace, dorsal view,  $\times 6$ .

Fig. 10. *Protomunida munidoides* (Segerberg, 1900), lectotype, MMH 248, dorsal view of internal cast of carapace,  $\times 6$ .

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,  $\times 4$ .