

Annotated check-list of the Thoracica of Belgium (Crustacea, Cirripedia)

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Summary

Thus far, 5 species of Balanomorpha, 1 of Verrucomorpha and 8 of Lepadomorpha have been found in the Belgian coastal waters. The different species are briefly discussed and a survey of the literature dealing with Thoracica of the Belgian coast is given.

Key-words : Thoracica, Belgium, list of species

Samenvatting

Tot nu toe zijn er 5 soorten Balanomorpha, 1 Verrucomorpha en 8 Lepadomorpha gevonden in de Belgische kustwateren. De verschillende soorten worden kort besproken en er wordt een overzicht gegeven van de literatuur betreffende de Thoracica van de Belgische kust.

Trefwoorden : Thoracica, België, soortenlijst

Introduction

There are relatively few publications on Thoracica of the Belgian coast. In 1895 LAMEERE catalogued the whole of the Belgian fauna, including Cirripedia. In 1897 MAITLAND did the same for the fauna of the Netherlands and North Belgium. From 1937 to 1965 the fauna and flora of the "Bassin de Chasse" of Ostend was regularly recorded (LELOUP & MILLER, 1940 ; POLK, 1963 ; LELOUP & POLK, 1967 ; LELOUP & VAN MEEL, 1965). Furthermore, LELOUP (1950) described the biological aspects of a musselbank near Ostend and in 1952 he discussed the first appearance of *Elminius modestus* in Belgium. In 1956 several sites in the harbour of Ostend were examined by LEFEVERE et al. A study of the biology of the brackish waters of the Lower Scheldt was published in 1956 by LELOUP & KONIETZKO. In 1969 and 1970, LEFEVERE gave the first comprehensive list of the Belgian Cirripedia. In 1972, a faunistic survey of three breakwaters along the Belgian coast was carried out (DARO et al.). Finally, during the years 1978, 1982 and 1983, several invasions of *Lepas* sp. were observed by RAPPÉ (1978, 1983a, b).

List of species

The Thoracica are the most extensive group of Cirripedia. They include three suborders : the stalked

Lepadomorpha, and the sessile Verrucomorpha and Balanomorpha.

The present list of Belgian Thoracica is based on the collections of Cirripedia of the "Koninklijk Belgisch Instituut voor Natuurwetenschappen", on data from literature and on samples collected along the Belgian coast during the year 1985.

For the classification of the Balanomorpha, the revision of NEWMAN & ROSS (1976) was used, and the classification of the Lepadomorpha is based on the publication of NILLSON-CANTELL (1978).

Thus far, the following Thoracica have been found in Belgium :

Suborder Balanomorpha PILSBRY, 1916

Superfamily Balanoidea LEACH, 1817
Family Archaeobalanidae
Subfamily Archaeobalaninae
Genus *Elminius* LEACH, 1825
Elminius modestus DARWIN, 1854
Subfamily Semibalaninae
Genus *Semibalanus* PILSBRY, 1916
Semibalanus balanoides (LINNAEUS, 1767)
Family Balanidae LEACH, 1817
Genus *Balanus* DA COSTA, 1778
Balanus balanus (LINNAEUS, 1758)
Balanus crenatus BRUGIERE, 1789
Balanus improvisus DARWIN, 1854

Suborder Verrucomorpha PILSBRY, 1916

Family Verrucidae DARWIN, 1854
Genus *Verruca* SCHUMACHER, 1817
Verruca stroemia (O.F. MÜLLER, 1776)

Suborder Lepadomorpha

Family Scalpellidae PILSBRY, 1907
Genus *Scalpellum* LEACH, 1818
Scalpellum scalpellum (LINNAEUS, 1767)

Family Lepadidae DARWIN, 1851
 Genus *Lepas* LINNAEUS, 1758
Lepas anatifera LINNAEUS, 1758
Lepas anserifera LINNAEUS, 1767
Lepas hilli (LEACH, 1818)
Lepas pectinata SPENGLER, 1793
Lepas fascicularis ELLIS & SOLANDER, 1786
 Genus *Conchoderma* OLFERS, 1814
Conchoderma virgatum (SPENGLER, 1790)
Conchoderma auritum (LINNAEUS, 1776)

MAITLAND (1897) also mentions *Balanus perforatus* as common in Belgium, *Pentalasmus vitreus* as rare, and he noted finds of strayed specimens of *Balanus hameri*, *Balanus tintinnabulum* and *Analesma squalicola*. The figures (plate 1 and 2) were drawn from specimens preserved in alcohol in the collection of the "Koninklijk Belgisch Instituut voor Natuurwetenschappen". Unfortunately, the specimens of *Lepas fascicularis* were to decalcified to be reconstructed.

Annotations

BALANOMORPHA AND VERRUCOMORPHA

Elminius modestus DARWIN, 1854 originates from Australia. It was observed for the first time in Belgian coastal waters in 1950, attached to a ship (LELOUP, 1952). *Elminius modestus* occurs along the whole littoral. It has only 4 wall plates and preserves a smooth, regular surface, when getting older.
 Diameter : 6 to 7 mm ; very common.

Semibalanus balanoides (LINNAEUS, 1767) is the most common barnacle of the littoral zone of the Belgian coast. The wall is composed of 6 plates, the basis is membranous. Elderly solitary barnacles have a strongly serrated, irregularly formed outside wall. If the barnacles occur in great numbers, then they grow very high and become very elongated.
 Diameter : 10 to 16 mm ; very common.

Balanus balanus (LINNAEUS, 1758) is a sublittoral species. It is a large, cone-shaped barnacle. The basis easily reaches a diameter of 4 cm. The tip of the *tergum* is hooked. This species has also been collected under the name of *Balanus porcatus* (DA COSTA, 1778). The collection of the K.B.I.N. contains only a few specimens from the "Explorations de la Mer" (beginning of this century).

Balanus crenatus BRUGIERE, 1789 is a sublittoral species which can be found in the lowest part of the eulittoral zone. Elongated forms often occur. The calcareous basis is solid.
 Diameter : 10 to 20 mm ; very common.

Balanus improvisus DARWIN, 1854 can be found low in the eulittoral zone and also in the sublittoral zone. Because the barnacle is very euryhaline, it is also living along rivers and channels. The general appearance of *Balanus improvisus* is very close to that of *Balanus crenatus*. It can be distinguished by the adductor ridge on the inside of the *scutum*, which is lacking in *Balanus crenatus*. The calcareous basis is perforated.
 Diameter : 10 to 17 mm ; common.

Verruca stroemia (O.F. MÜLLER, 1776) is mainly a sublittoral species. With a maximum diameter of 11 mm, it is only 2 to 3 mm high. The species can easily be recognized by its asymmetrical, finely curved shell. Only a few specimens are present in the collections, originating from the "Explorations de la Mer".

LEPADOMORPHA

There have been several invasions during the last decennia, namely in 1971, 1976, 1981 en 1983 (RAPPÉ, 1978, 1983a, b), mostly by *Lepas anatifera*, but also by *Lepas pectinata*, *Lepas hilli* and *Lepas fascicularis*. In the collections of the K.B.I.N. only a few specimens of each species are present.

Scalpellum scalpellum (LINNAEUS, 1767) has a *capitulum* covered with 14 spined plates. The peduncle is set with small scales.
 Length : \pm 22 mm.

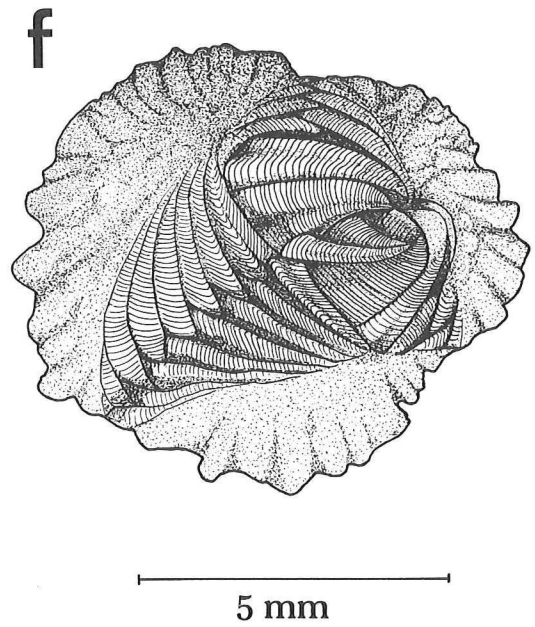
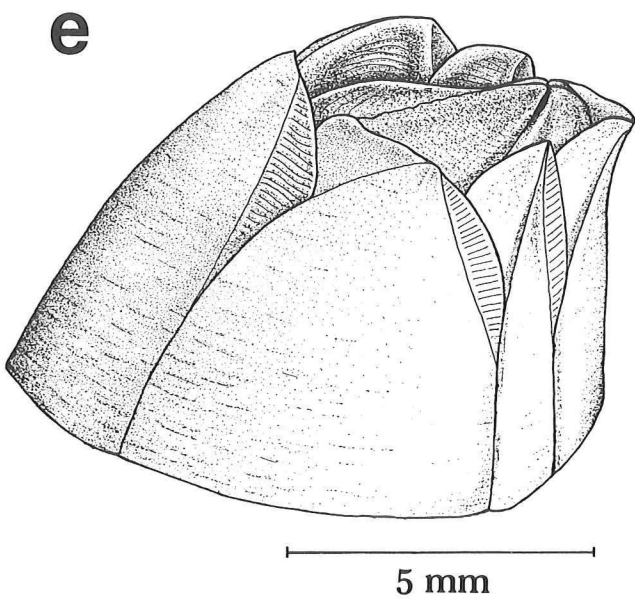
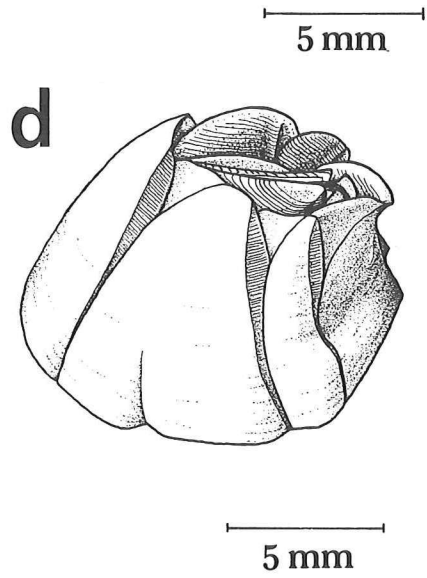
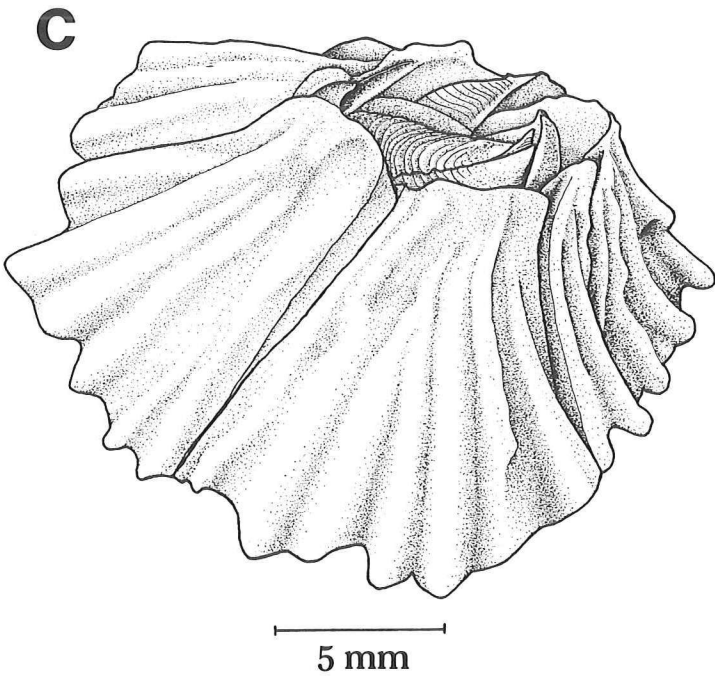
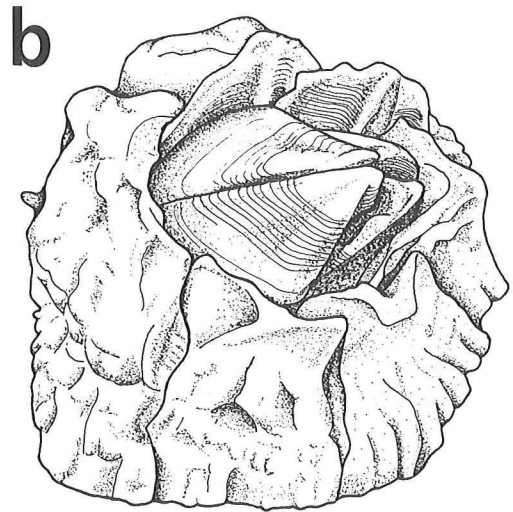
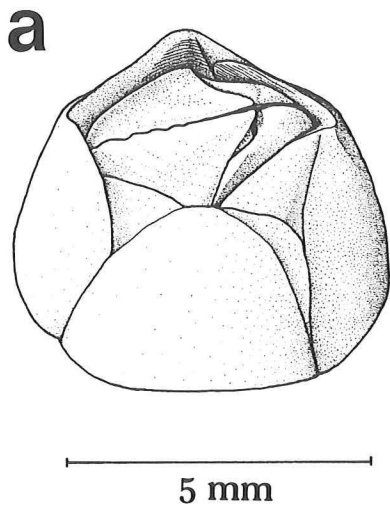
Lepas anatifera LINNAEUS, 1758 is characterized by smooth or weakly striated plates. The occludent margin of the *scutum* is straight and there is only a small gap between *scutum* and *carina*.
 Length : \pm 50 mm ; peduncle up to 80 mm.

Lepas anserifera LINNAEUS, 1767 is characterized by closeby arranged and slightly striated plates. The occludent margins of the *scuta* are protruding.
 Length : up to 40 mm ; peduncle as long as *capitulum*.

Lepas hilli (LEACH, 1818) has rather smooth valves. The gaps between *scuta* and *carina* are broad, which is a diagnostic feature to distinguish *Lepas hilli* from *Lepas anatifera*.
 Length : up to 40 mm ; peduncle as long as *capitulum*.

Lepas pectinata SPENGLER, 1793 has coarsely striated valves and a *scutum* with a prominent curved ridge from the *umbo* to the *apex* ; the occludent margin is convex.
 Length : up to 20 mm ; the peduncle is shorter than the *capitulum*.

Plate 1 : a. *Elminius modestus* DARWIN, 1854 ; b. *Semibalanus balanoides* (LINNAEUS, 1767) ; c. *Balanus balanus* (LINNAEUS, 1758) ; d. *Balanus crenatus* BRUGIERE, 1789 ; e. *Balanus improvisus* DARWIN, 1854 ; f. *Verruca stroemia* (O.F. MÜLLER, 1776).



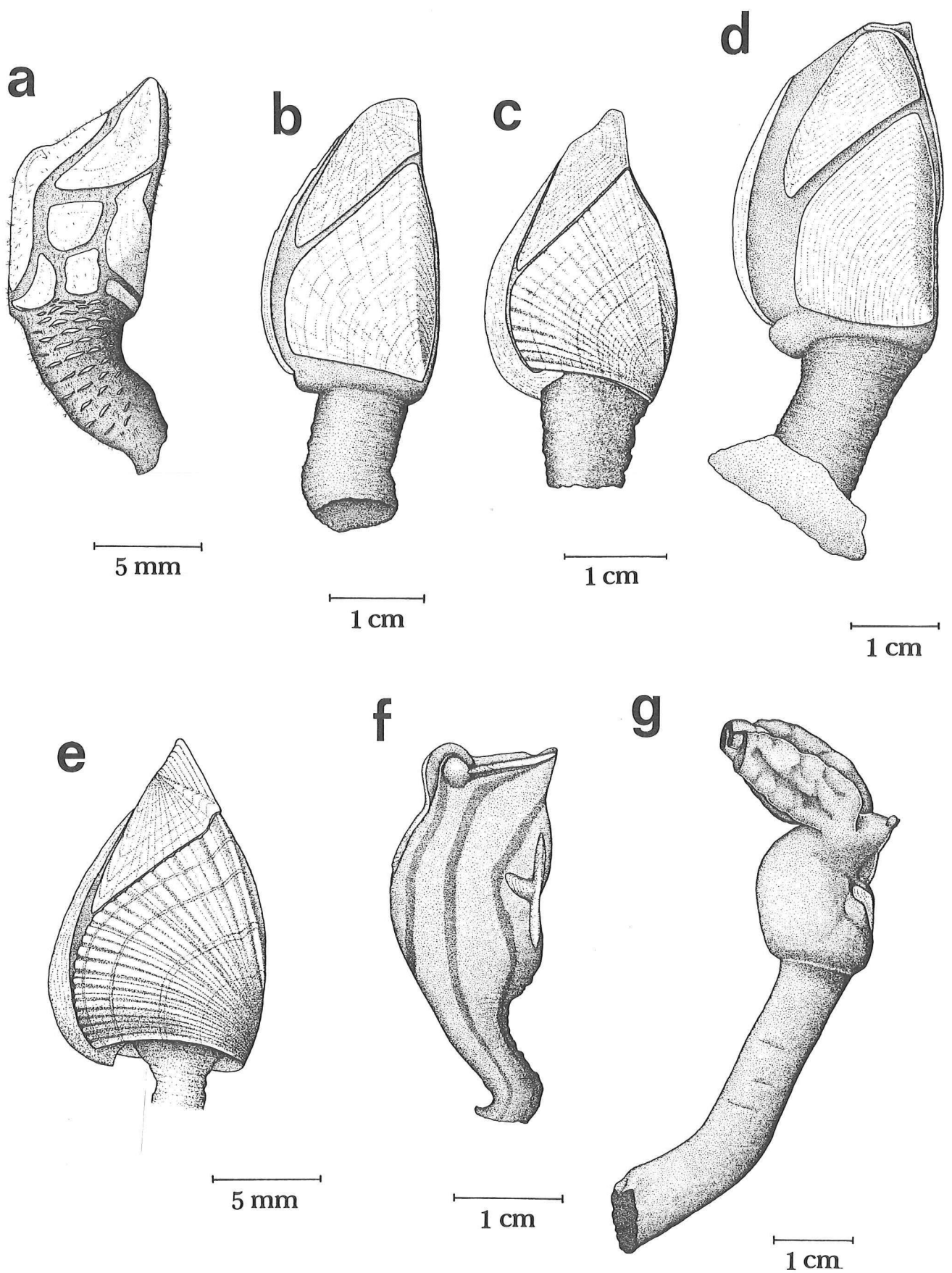


Plate 2 : a. *Scalpellum scalpellum* (LINNAEUS, 1767); b. *Lepas anatifera* LINNAEUS, 1758 ; c. *Lepas anserifera* LINNAEUS, 1767 ; d. *Lepas hilli* (LEACH, 1818) ; e. *Lepas pectinata* SPENGLER, 1793 ; f. *Conchoderma virgatum* (SPENGLER, 1790) ; g. *Conchoderma auritum* (LINNAEUS, 1776).

Lepas fascicularis ELLIS & SOLANDER 1786 can easily be recognized because of the angle of 90° in the outer margin of the *carina*. The plates are thin and translucent. Length : up to 40 mm ; the peduncle is shorter than the *capitulum*.

Conchoderma virgatum (SPENGLER, 1790) has only rudimentary *scuta*, *terga* and *carina*. The *capitulum* is not distinctly separated from the peduncle. The *capitulum* has several longitudinal dark bands. Length : ± 35 mm.

Conchoderma auritum (LINNAEUS, 1776) is easy to recognize because of its two long ear-like tubes. The bilobed *scuta* are small. The *terga* and *carina* are small or absent.

Length : ± 35 mm.

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