

Job Baster's description of nudibranch veliger larvae (1759)

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The 18th century physician Job Baster, made extensive studies on marine life along the Dutch coast. Between 1759 and 1765 he published his illustrated books 'Natuurlijke Uitspanningen' about his observations. An account that has been poorly understood to date is his description of the release of 'hand grenade-like young' from egg masses, which were attached to hydroids. This paper discusses Baster's observations and concludes that he observed the release of nudibranch larvae. Baster's illustrated account may well be the first record ever of veliger larvae.

Key words: Gastropoda, Opisthobranchia, egg masses, veliger larvae, Baster.

INTRODUCTION

Job Baster, for whom this journal is named, studied medicine in Leiden in The Netherlands. After settling down as a physician, he started to study marine life in the Oosterschelde estuary in the southern part of the country. Between 1759 and 1765 he published his books 'Natuurlijke Uitspanningen' in which he described and discussed his observations of marine organisms.

During his education, Baster had been trained in scientific methods, emphasizing the importance of thorough observation in order to understand natural phenomena (Fournier, 1987). This training probably accounts for the fact that Baster described various phenomena that were unknown or little known in his time. He was one of the first to recognize that organisms cause luminescence in seawater (Harvey, 1940) and with his description of the outburst of the Black Sea jellyfish (*Maotias marginata* Modeer, 1791) he described one of the first known marine invasions ever (Mills & Rees, 2000).

One of the subjects that received Baster's special attention was the reproduction of hydroids and molluscs. Studying hydroids, he became the first person to record medusa release in *Obelia* (Cornelius, 1977). A great deal of energy went into describing the reproduction of bivalves such as mussels and oysters and the eggs or egg masses of gastropods, like periwinkles [*Littorina littorea* (L., 1758) and *L. obtusata* (L., 1758)], whelks [*Buccinum undatum* L., 1758 and *Neptunea antiqua* (L., 1758)] and the nudibranch *Aeolidia papillosa* (L., 1761). In most cases, his observations were quite accurate but he also made some explicit errors: faecal pellets were given a role in the reproduction of mussels and the egg mass of a nudibranch was assigned to the barnacles.

An account that has been poorly understood to date is his description of the release of 'hand grenade-like young' from egg masses, which were attached to hydroids (Baster, 1759: 44). In order to understand what he observed, it is necessary to first determine the nature of the spawn. Baster wrote that he found a large amount of small egg masses on hydroids during the summer months. The egg masses were either directly attached to the hydroids or connected by a 'string' or by a stalk (Fig. 1 VI b and B) and some of them 'were like a vesicle'. Further on in his text, where he compared the eggs to polyps, he emphasized the fact that the eggs were surrounded by a 'vesicle'.

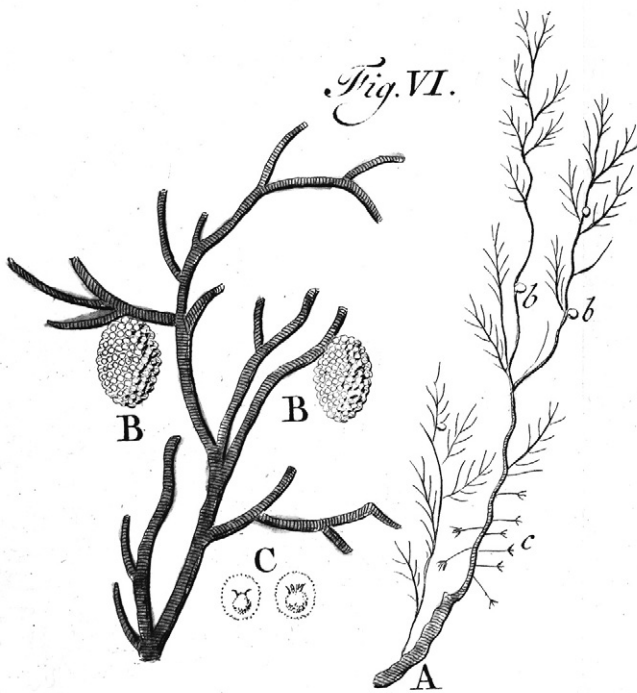


Fig. 1. Hydroids (*Obelia* spec.) with attached egg masses (B, b). C: Drawing of newly released larvae under a microscope, Job Baster described these larvae as 'hand grenade like young' (Baster, 1759-1765, book 1, pl. 5 fig. 6).

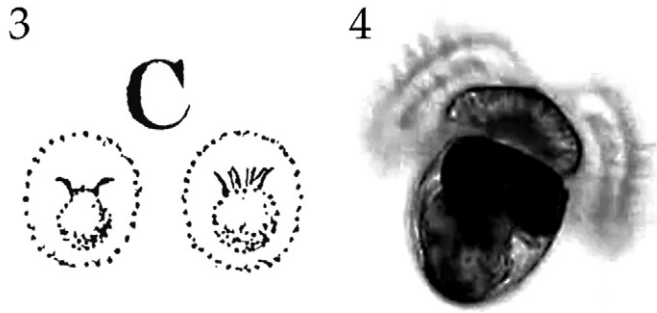


Fig. 2. Egg masses of the nudibranch *Tergipes tergipes* attached to hydroids (*Obelia* spec.) (Photo: John de Jong).

Baster had no idea to which species this spawn belonged, but his acquaintance Leendert Bomme stated in an unpublished manuscript that the egg mass drawn by Baster belonged to a sea slug (Bomme, 1769). In fact, there is no doubt about Bomme's assumption that these egg masses that frequently occur, belong to nudibranchs (M. Faasse, G. van Moorsel, pers. comm.). Nudibranchs that lay small compact egg masses along the Dutch coast belong to Tergipedidae or Eubranichidae (Swennen & Dekker, 1987; van Bragt, 2004). Based on the frequency and the radial symmetry of the egg mass, *Tergipes tergipes* (Forskål, 1775) is the most probable species to have spawned these eggs (Fig. 2).

Baster followed the development of the egg masses using transparent bottles as aquarium tanks. On a certain day, in strong sunshine, he observed the eggs mass through a magnifying glass and saw the 'young' hatching. After collecting some specimens with a feather he studied them under a Cuff's microscope. He noted that they looked like little hand grenades (which were globular in his time), at which point he referred to his figure VI C.

From the context, it is clear that Baster had observed newly hatched veliger larvae (Fig. 4). The form of the veligers corresponds to those of Tergipedidae or Eubranichidae, which have egg-shaped shells (Thorson, 1946). Although



Figs 3, 4. 3, Job Baster's 'hand grenade like young', newly released larvae observed through a Cuff's microscope. (magnification of C in fig 1). 4, Microscopic view of a newly hatched nudibranch veliger larva (frame from video by Ellen Kosman).

Baster did not mention further details in his text, the right larva in his drawing (Fig. 3) suggests that he observed the cilia of the veliger. Baster's description and drawings are not very detailed but are memorable to malacologists for the fact that these may well be the first records ever of 'veligers', a name that was not given to these larvae until approximately a century later.

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