

Copyright ©

Es gilt deutsches Urheberrecht.

Die Schrift darf zum eigenen Gebrauch kostenfrei heruntergeladen, konsumiert, gespeichert oder ausgedruckt, aber nicht im Internet bereitgestellt oder an Außenstehende weitergegeben werden ohne die schriftliche Einwilligung des Urheberrechtinhabers. Es ist nicht gestattet, Kopien oder gedruckte Fassungen der freien Onlineversion zu veräußern.

German copyright law applies.

The work or content may be downloaded, consumed, stored or printed for your own use but it may not be distributed via the internet or passed on to external parties without the formal permission of the copyright holders. It is prohibited to take money for copies or printed versions of the free online version.

Size dissociation in krill swarms

U. Kils

Institut für Meereskunde an der Universität Kiel, Kiel, Germany

The individuals in one single krill swarm are mostly of a very uniform size – other swarms in the same region may consist of animals of quite a different size, but again with a very narrow standard deviation of length within each swarm.

This study introduces a hypothesis for a “sorting mechanism” resulting in a size dissociation of krill stocks.

Due to an unusually high under water weight of krill (Fig. 1) the animals let themselves sink with a speed of 10–180 meters per hour for several hours a day. The sinking

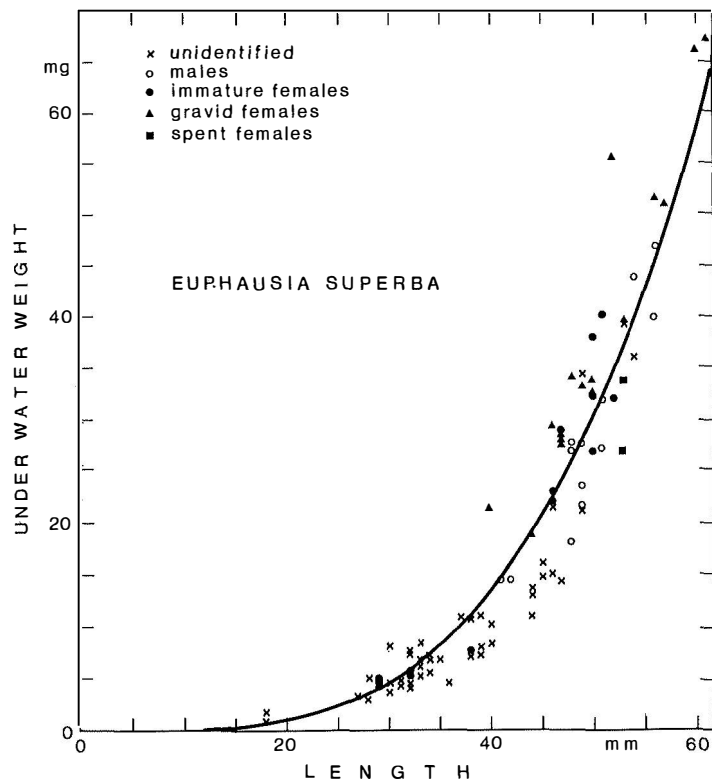


Figure 1
Under water weight of *Euphausia superba*

speeds of dead animals are presented in Fig. 2. Live animals show a characteristic posture-reaction during sinking periods (Fig. 3); this "parachuting"-behavior enables the animal to reduce sinking speed by 13% (Fig. 4).

As the speed varies with size, in a sinking krill swarm different sized animals will find themselves at different depths, after such a period forming new "size-sorted" swarms there.

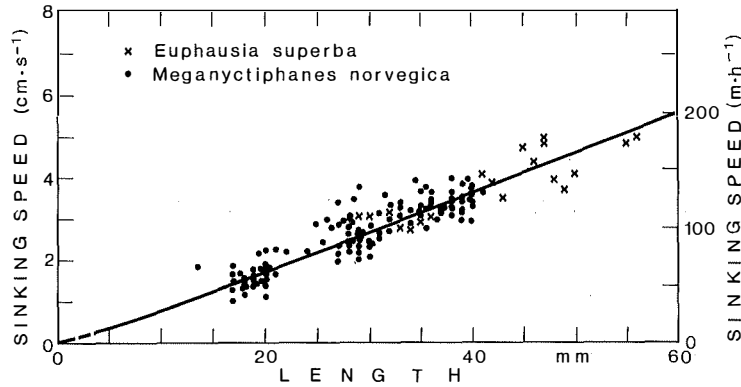


Figure 2
Sinking speed of dead animals

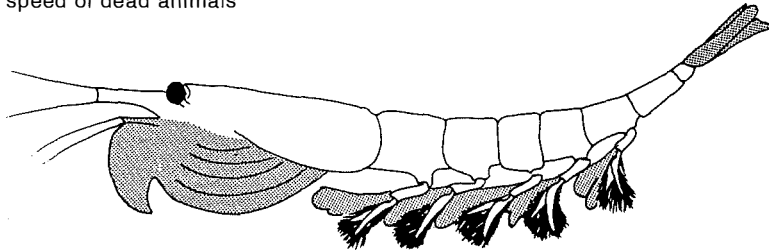


Figure 3
Posture reaction of krill during sinking periods

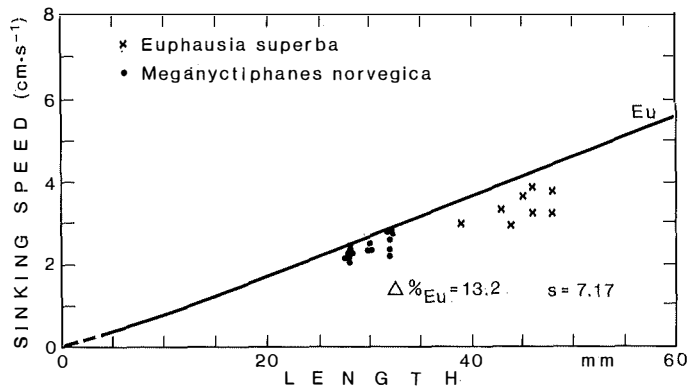


Figure 4
Reduction of sinking speed of live animals