



## ***Interactive comment on “Distribution of overwintering *Calanus* in the North Norwegian Sea” by A. Edvardsen et al.***

**Anonymous Referee #2**

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### **1. General Comments**

The paper presents observations on the distribution and abundance of overwintering copepods (*Calanus* spp.) in the Norwegian Sea. The paper does not contain a great deal of synthesis or novel hypotheses, but it does present extremely valuable new data. In large part due to the practical difficulties in winter sampling such data are still rare but nonetheless important in providing, among other things, test sets for population models. The fact that two surveys were carried out in successive years gives a rare indication of inter-annual variability.

### **2. Specific Comments**

In general the paper is clear and well-written, and I have only a few relatively minor specific comments.

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- i) It would be useful to see the sample locations in Fig.1. I know that are given in Fig.5, but the reader does not get to that figure until near the end on the paper, and in any case they are rather hard to see in that multi-panel plot.
- ii) The description of the how the "700-500m" depth interval was adjusted is not clear and needs to be rewritten. How can one adjust in depth an interval defined by its depth?
- iii) p31 lines 22-23. It is stated that the vertical migration speed was "on average  $10\text{md}^{-1}$ ". As far as I can tell no real averaging was done, simply an observation that there was a general shift of about one depth bin between the two months. I do not have any difficulty with this but "on average" therefore needs be replaced by "of the order of".
- iv) The units of density are missing from Fig.2 and its legend.
- v) The comparison between *C. finmarchicus* and *C. helgolandicus* in Table 5 could be made a bit more conveniently if the proportions in each water mass were also given (perhaps in parenthesis).
- vi) In the dicussion I feel that the authors make a bit too much of the role of density. Although buoyancy must play a part in the vertical distribution of Calanus, the ontogenetic vertical migration cannot be driven by buoyancy considerations alone. Thus Fig. 8 may reflect density differences between developmental stages, but ultimately it is simply an interpretation of the differences in depth and may have nothing to do with the organism's density. The discussion needs to be a bit clearer about the speculative nature of assuming neutral buoyancy.

## 3. Technical Comments

- i) Replace "ca." in abstract with "approximately" or "about"
- ii) p29 line 8 "covered" should be "cover"

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- iii) p 30, sub-section header should have "Bathymetry" not "Bathymetri"
- iv) p32 Second sentence of the Discussion is a bit garbled and needs to be rewritten
- v) p33 line 5 "dominant" rather than "dominating"
- vi) p35 lines 15-16 "effectively transported" rather than "transported effectively"
- vii) p35 line 20 Sentence is a bit clumsy and would read better by replacing "The above outline as" with "This pattern"
- viii) p35 line 26 delete "which values were"
- ix) p35 line 28 replace "were" by "was" (needs to agree with "one").
- x) p36 lines 20-21. Replace "females was...satge V." with "females were slightly more dense than stage IV's, which in turn were slightly more dense than stage V's."
- xi) p36 line 24 "less" should be "lower"
- xii) p36 line 25 replace "density positions" with "the density of the water in which they were found"
- xiii) p36 line 26 replace "entering" with "to enter"
- xiv) p36 line 29 "The moulting" should be "The moult"

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