

## Metadata S1

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### Copepods true colors: astaxanthin pigmentation as an indicator of individual fitness

Journal name: Ecological Monographs

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- Description of:

#### **Data S1. List of all the publications that discussed and/or quantified carotenoid pigmentation in copepods**

This dataset identifies all studies that contained the words “*copepod*” associated with “*carotenoid\**”, “*astaxanthin*” or “*redness*” anywhere in the text body.

- Column details:

**study, year, order:** name of authors, year of publication, and we added the column “order” with letters a, b or c if authors published several articles in a year

**study\_type:** we distinguished different types of studies according to the study objective in relation to copepod carotenoids:

- no\_quantification: *authors observed or discussed pigmentation in copepods but did not quantify it*
- pigment identification/quantification: *carotenoids forms were identified and/or quantified (ex. by HPLC) but without any additional experiments*
- forcing variables: *carotenoids were quantified and tests about effects of forcing variables on carotenoid pigmentation were performed (ex. temperature, UV radiations, etc)*
- diet effect: *effect of the diet on carotenoid pigmentation were tested*
- redness + fitness: *tests of the influence of pigmentation on fitness-related variables (ex. % of survival)*
- forcing variables and redness + fitness: *studies with both tests of forcing variables effects on pigmentation, and pigmentation influence on copepod fitness*
- methodology: *new methodologies tested to quantify or use copepod pigmentation*

- Studies belonging to the “forcing variables” type were then used in Data S3
- Studies belonging to the “redness + fitness” type were then used in Data S4

**latitude (°N), longitude (°E):** latitude and longitude of copepod samplings, as described in articles

**ecosystem:** freshwater or marine

**altitude (m):** altitude above sea level for freshwater ecosystems  
this information is generally provided in articles, otherwise it was searched on the web

**sampling\_months:** month(s) of copepod sampling  
if several, they are separated by an underscore

**genus:** copepod genus of the individual whose pigmentation was quantified  
mixed = *if several genus present*

**species:** copepod species of the individual whose pigmentation was quantified:  
“mixed” or separated by a comma = *if several species were present*

**stage:** copepod stages  
adults\_females, adults\_males, adults\_females\_eggs (= *adults females with eggs*), copepodits, nauplii, eggs, mixed (= *if several stages*)

**astaxanthin\_or\_carotenoids:** type of pigments quantified in the article:  
carotenoids = *all carotenoids (ex. mix of canthaxanthin, echinenone, astaxanthin..)*  
astaxanthin = *only astaxanthin*  
NA = *no information*

**astaxanthin\_on\_total\_car:** part of astaxanthin content on total carotenoid content:  
percentage (*if given by authors*)  
dominance or minority (*as mentioned in the text by authors*)  
NA (*if nothing specified*)

**asta\_form:** free form, esters (all), monoesters or diesters:  
percentage (*if given by authors*)  
dominance or minority (*if mentioned in the text by authors*)  
NA (*if nothing specified*)

- Studies that detailed carotenoids forms (18 articles) were then used in Data S2 for more precise analyses

**concentration:** concentration of carotenoids for each combination  
latitude/longitude/altitude/genus/species/stage;  
if several measures were performed, the mean concentration was calculated;  
if necessary, information was estimated from graphs

**unit:** unit of pigment concentration  
mostly ug/mgDW (=  $\mu\text{g/mgDW}$ )

**daily\_pic\_moment:**  
if daily variations in pigmentation were observed, we reported it here, examples:  
max morning (= *maximum pigmentation in the morning*)  
min day, max night (= *minimum pigmentation during the day, maximum in the night*)  
max midnight, min sunrise (= *maximum pigmentation at midnight, minimum at sunrise*)

**seasonal\_pic\_season, seasonal\_pic\_month:**

if seasonal variations in pigmentation were observed, we reported the season of the maximum (winter, spring, summer or autumn) and the month of the maximum  
be careful, some studies were done in the southern hemisphere

**predator\_abundance:**

estimation of predator abundance in freshwater ecosystems (high, low, or null) according to the discussion of authors, or research of lake information on the web

**comments:**

Any interesting/important information from the article

Notably: we reported here if canthaxanthin was found in copepods, or if blue coloration was mentioned