

Climate change reduces nutritional value of algae

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Micro-algae are growing faster under the influence of climate change. However, the composition of the algae is changing, as a result of which their nutritional value for other aquatic life is decreasing. And because algae are at the bottom of the food chain, climate change is exerting an effect on underwater life. This is the conclusion of researchers from the Netherlands Institute for Ecology and the Universiteit van Amsterdam.

Dutch researchers wanted to know whether an increased CO₂ concentration exerted an influence on [underwater life](#). They therefore examined freshwater micro-algae: small, floating and mostly unicellular [algae](#). The experiments were performed in large tanks called limnotrons. These were aerated with ordinary air or with air containing an elevated concentration of CO₂. The researchers then examined the ratio between the important elements carbon, nitrogen and phosphorous.

The micro-algae grew faster at a higher CO₂ concentration, exactly as the researchers had expected. Yet this growth was also associated with a change in the composition of the algae. The algae cultured at a higher CO₂ concentration contained relatively more carbon and relatively less phosphorous. This meant a reduction in the nutritional value, which could have detrimental effects upon the small animals that eat the algae such as water fleas. These in turn form food for fish, for example. As they are the first link in the underwater [food chain](#), the algae ultimately influence the entire ecosystem.

In a follow-up study, the Centre for Limnology (NIOO-KNAW) and the

Department of Aquatic Microbiology at Universiteit van Amsterdam will examine what effects the reduced nutritional value of the algae can have in real ecosystems. Meanwhile, it is already clear that the effects can become more pronounced as a result of higher water temperatures.

The best-known effects of [climate change](#) are shifts in the habitats of animals and plants, for example, species that spread further northwards. This research has shown that climate change can also exert significant effects on the underwater food chain.

Source: Netherlands Organization for Scientific Research

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