

Herbivorous fish like eating meat

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Graskarper. Foto: Bureau Natuurbalans

The grass carp, thought to be a strict vegetarian, seems to have a preference for amphipoda. NWO researcher Liesbeth Bakker made this discovery during her research into the food preferences of fish. The discovery turns our current understanding of the relationships between plants and animals on its head. Further, herbivorous fish do not seem to have equal preferences for all types of aquatic plants. This means that their grazing behaviour has an important impact on underwater vegetation.

The concept that [herbivores](#) in the water, just like those on land, have preferences for certain plants seems obvious. However, little was known about the factors that influence the preferred menu of underwater grazers. Therefore Liesbeth Bakker, working at the Netherlands Institute of Ecology (NIOO-KNAW) set out to investigate this together with

researcher Martijn Dorenbosch. She gave common rudds and grass carps five types of water plants. She weighed the amount of plant material before and after the experiment, which allowed her to calculate the amount of [plant material](#) the fish had eaten.

Obviously [aquatic plants](#) containing the most phytotoxins were at the bottom of the list, as these are the least palatable. Next came the plants with an increasingly higher [nutritional value](#) in terms of the carbon-nitrogen ratio. The most favourite plant by far was the aquatic plant with the highest [nitrogen content](#), as nitrogen is an important nutrient for animals. But then Bakker observed something rather unexpected: 'When the fish were left to choose between their favourite plant and amphipoda, they ate the small aquatic animals first before starting on the plants. This was to be expected for the omnivorous common rudds but not at all for the herbivorous grass carps. They simply switched to meat. Undoubtedly a good choice, as amphipoda contain far more nitrogen than plants do. Nevertheless, this result makes me wonder whether strict underwater vegetarians even exist.'

According to Bakker, the discovery that fish prefer certain aquatic plants has an impact on surface water management, as the eating pattern of the fish influences the vegetation. At present, water boards sometimes use grass carps as underwater mowers. Ditches at risk of becoming clogged up with aquatic plants are kept open by the fish so that the water continues to flow. However, this requires further investigation now that we know that fish do not simply eat any aquatic plant. Bakker: 'Aquatic plants play an important role in keeping the water clear and some aquatic plants are better at doing that than others. We need to know which plants [fish](#) will eat and which they won't. Then we can predict the impact of their grazing behaviour more accurately, just like we do for Highland cattle on the Veluwe.'

In September, Bakker published an article about her research in the

scientific journal *Freshwater Biology*.

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