

Carnivorous mammals track fruit abundance

June 14 2010



Carnivorous mammals track fruit abundance. Credit: Minette Layne.

The scientific community already knew that many carnivores eat fruit, but had thought this was something purely anecdotal. Now researchers from the University of Santiago de Compostela (USC) have shown that carnivorous animals such as foxes and martens play an important role in helping fruiting plants to reproduce and disperse their seeds.

Far from viewing the relationship between carnivorous mammals and [plants](#) as irrelevant, a team of researchers from the USC studied how [foxes](#) and (Vulpes vulpes) and the European pine marten (Martes martes) consumed the fruit of the rowan tree (Sorbus aucuparia) in the Cordillera Cantábrica mountain range, and found that both species were

capable of tracking yearly differences in the abundance of rowan fruit in Cantabrian forests, and in addition showed a marked preference for the most productive trees.

"Carnivores are not indifferent to seasonal and spatial variations in the amount of fruit they can obtain from the rowan tree", Ignacio Munilla, co-author of the study and a researcher at the USC' Department of Botany, tells SINC.

The study, published in the journal *Acta Oecologica*, suggests that some of the ecological paradigms about seed dispersal developed in tropical environments should be reconsidered for temperate climates. Munilla says: "The rowan is important to carnivores and carnivores are important to the rowan".

The rowan appears at altitudes of over 1,000 metres in the mountains of the Cordillera Cantábrica, and is a pioneer species that colonises secondary scrub and "prepares the way towards mature forest".

"Given its abundance and wide distribution, the rowan is a very important resource in European forests, from the mountains of the south of the continent right up to Scandinavia", says José Guitián, another co-author of the report and a researcher at the Department of Cell Biology and Ecology of the USC.

However, the amount of fruit this tree produces varies widely from year to year. Periods without any fruit alternate with years of extremely abundant harvests with more than 50,000 fruits per tree. Despite these enormous year-on-year fluctuations, a study over an uninterrupted test series of 11 years into the significance of the rowan in the diet of the fox and marten compared with the environmental abundance of this resource showed that both factors - harvest and consumption - followed very similar patterns.

Monitoring of 20 trees

The same research team also carried out another study published in the same article, in which they monitored 20 rowan trees over 10 days and nights. They found that carnivores visited the 10 trees with the largest fruit production most often, picking up fallen fruit and helping to disperse the seeds.

"The probability of a tree being visited by a carnivore seemed to depend directly on the number of fruits that had fallen below it. The carnivores went off with a considerable proportion of the fallen fruit (much more than the amount destroyed by rodents during the same period)", says Guitián.

The carnivores also help the rowan to thrive by dispersing the seeds contained inside the fruits that fall from the tree.

According to the researchers, the rowan-fox-marten system could be important in mountain ecosystems on the Iberian Peninsula. In addition, the fruit falling under the mother plant may not necessarily represent a failure in terms of dispersal "since there could be a high likelihood of these seeds being mobilised by [carnivores](#)".

More information: Guitián, J.; Munilla, I. "Responses of mammal dispersers to fruit availability: Rowan (*Sorbus aucuparia*) and carnivores in mountain habitats of northern Spain". *Acta Oecologica* 36: 242-247, 2010. [doi:10.1016/j.actao.2010.01.005](https://doi.org/10.1016/j.actao.2010.01.005)

Provided by FECYT - Spanish Foundation for Science and Technology

Citation: Carnivorous mammals track fruit abundance (2010, June 14) retrieved 23 April 2024 from <https://phys.org/news/2010-06-carnivorous-mammals-track-fruit-abundance.html>

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