

## **Activity patterns and site preference of the sympatric land snails *Arianta arbustorum* and *Arianta chamaeleon* at a mountain slope in Carinthia, Austria**

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*Arianta arbustorum* and *Arianta chamaeleon*, two helicid landsnails, share the same habitat around the „Wolayer See“, a mountain lake in the „Karnische Alpen“, part of the Southern Alps in Austria. Both species can be found on vegetation and rocks either. The utilization of resources by these two species is expected to differ in some ways to allow niche differentiation.

In the present study activity patterns and site preferences of coexisting populations of *A. arbustorum* and *A. chamaeleon* were recorded during 24 hours in July 1995. The study area, a trench at a western exposed slight slope, showed a mixture of rocky areas and patches with vegetation and soil.

In the course of 7 recording heats the number of observed *A. arbustorum* (average 120) was three times higher than that of *A. chamaeleon* (average 40). Both species had nearly the same phases of activity with two maxima (around midnight and early in the morning) during the recorded period.

Concerning the site preference *A. arbustorum* was found on vegetation more frequently whilst *A. chamaeleon* was found at rocks more frequently. These tendencies of site preference were the same during activity phases and resting phases (comp. Abstract of LEDERGERBER et al., this volume).

74 *A. arbustorum* were recorded feeding from at least 16 different plants, most frequently from *Petasites* (18 cases), „grass“ (13), *Veratrum album* (9) and *Adenostyles* (6). *A. chamaeleon* was observed one time feeding on lichenes, in two cases on unidentified leaves.

## **Metal concentrations in the alpine snail *Arianta arbustorum* from different altitudes**

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Terrestrial snails are known to accumulate high amounts of metals and can therefore be used as bioindicators for metal pollution. *Arianta arbustorum* is common in north-western and central Europe and reaches altitudes of up to 2700 metres above sea level. Individuals of *Arianta arbustorum* were collected from different sites in Austria: Innsbruck (Tyrol), in the region of Admont (Styria) and from one mountain site (Frauenkar) in Upper Austria. The altitudes of the investigated areas range from 570 to 1900 metres. Concentrations of cadmium, copper, lead and zinc in the whole body of *Arianta arbustorum* were measured by Atomic Absorption Spectrophotometry. Individuals from high-altitude populations had significantly higher concentrations of cadmium (18-69 µg/g dryweight) in their tissues compared to snails from lowland populations (4-7 µg/g dryweight). The highest concentrations of cadmium were detected in snails from the Upper Austrian site at an altitude of 1860 metres. Increasing concentrations in the tissues with rising altitudes were also observed for lead. In contrast the concentrations of copper and zinc appeared to be independent of the altitude. As a possible source for the increasing concentrations of cadmium and lead in *Arianta arbustorum* from high altitudes the metal fallout from precipitations is discussed.

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Artikel/Article: [Metal concentrations in the alpine snail \*Arianta arbustorum\* from different altitudes. 33](#)