

Density, spatial distribution and dispersal in a population of *Arianta arbustorum styriaca* in the Gesäuse, Styria, Austria

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Near Gstatterboden (Gesäuse), at the Wasserfallweg (approx. 870 m above sea level) exists a population of *Arianta arbustorum styriaca* (FRAUENFELD, 1868), characterized by individuals with extremely flat and wide open umbilicated shells. In this population estimations of the population size, patterns of spatial distribution and dispersal studies were carried out in 2 summer seasons, applying capture-recapture technique. Also shell characterization of *Arianta arbustorum styriaca* has been done. During 35 dates of sampling, 629 adult snails were marked individually by drilling holes into their shell. The finding position of each snail was drawn into maps of the study area.

Estimated density of *Arianta arbustorum styriaca* ranged from 0.69 - 0.89 individuals/m² (according to 3 capture-recapture-models for estimating the population size), in 70.4 - 92.6 % (2 models) of the tested dates of sampling an aggregated spatial distribution was stated. Dispersal in this population is low (mean distance per day in the summer seasons: 0.18 m), calculated as vectors, a significant downhill displacement over winter was detected. In summer, only a tendency to move uphill was found. The population of *Arianta arbustorum styriaca* at the Wasserfallweg seems to have a high local stability.

Differences in resting-site preference in two coexisting land snails, *Arianta arbustorum* and *Arianta chamaeleon* (Helicidae), on alpine slopes

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Resting-site preference and patterns of spatial distribution were examined in the sympatric land snails *Arianta arbustorum* and *A. chamaeleon* on two opposite slopes in the south-eastern Alps, Austria. The two slopes did not differ in proportion of *A. arbustorum* and *A. chamaeleon* (74,4% vs. 25,6% on the NNE-exposed slope and 68,3% vs. 31,7% on the SSW-exposed slope). Individuals of both species showed aggregated dispersion patterns. The nearest-neighbour method indicated that in both species snail aggregations predominantly consisted either of *A. arbustorum* or *A. chamaeleon* on the NNE-exposed slope with a mosaic of rocks and distinct patches of different plants. On the SSW-exposed slope, which was less variable in vegetation cover, snail aggregations consisted of conspecific and heterospecific individuals. Juvenile and adult *A. arbustorum* preferred to rest attached to leaves of *Adenostyles alliariae*, but avoided rock surfaces and patches of grass on the NNE-exposed slope. In contrast, juvenile and adult *A. chamaeleon* preferentially rested on rock surfaces, and also avoided grass patches. Juvenile and adult *A. chamaeleon* did not differ in resting-site preference, whereas small differences in resting sites were observed between juvenile and adult *A. arbustorum*. Differences in resting-site preference is one way of niche differentiation which may allow individuals of the two *Arianta* species to coexist.

* J. Moll. Stud. in press

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