

Hibernation experiment with two populations of *Arianta arbustorum*

Helmut Sattmann, Agnes Bisenberger, Doris Kleewein

Three cages constructed with wooden frames (160x80x40cm) and plastic coated metal grids (12mm diameter mesh) were positioned close to an alpine pasture hut near Johnsbach/Styria at 1300 m a.s.l. The floors of the cages were submerged 20 cm into the earth. One half of the surface area of each cage was equipped with soil and meadow, the other half with rock debris up to the surface level of the surrounding meadow (20cm). Sixty individuals of a population of globular *Arianta arbustorum* from a meadow in Johnsbach (**group A**) and 59 individuals of a population of *Arianta arbustorum* with flattened shells (**group B**) from a slope with rocks and rock debris in the Gesäuse mountains were collected. Twenty (in one case 19) individuals of each population were placed in every cage in mid-October. Also 8 data loggers for measuring temperatures over the winter period were placed in the cages at the surface and 10cm underneath the earth. After late November the cages were under a permanent heavy snow cover. In May the cages were excavated and the snails retrieved. The location and orientation of each shell was measured and recorded.

The mortality of group B was much higher (53%) than it was in group A (16%). The specific winter mortality - dead animals with remains of the softbody were assumed to have died while hibernating - in group A was relatively low (3.4%), in group B significantly higher (30%).

Animals from both populations preferred the meadow as hibernating site (group A: 65%; group B: 70%). Around 50 % of both groups hibernated at the surface, the other half hibernated underneath the surface up to 17cm. Both groups preferentially hibernated with an „apex down“ orientated shell (group A: 75%; group B: 65%).

No significant differences between surviving individuals of the globular and flat shelled group were detected with regard to the hibernating location and orientation. Differences in mortality may probably have been caused by different acceptance of living conditions in the cages.

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Autor(en)/Author(s): Sattmann Helmut, Bisenberger Agnes, Kleewein Doris

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