Genetic diversity of *Bryum argenteum* Hedw. along an altitudinal gradient in Sierra Nevada, Spain

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Global change is one of the greatest threats for biodiversity of all time. The expected rise of average temperatures will drastically affect the distribution of plants and animals and many of them will not be able to adapt or migrate in time. Bryophytes constitute a major part of the existing biodiversity with approximately 15,000 species. Although they generally do not dominate landscape, they play an important role in ecosystems. Mountain systems are supposed to be especially sensitive to the effects of global change, most of all, species living at higher altitudes. Furthermore, they offer an opportunity to study the effects of global change over a small geographical range. In this respect, the Sierra Nevada montains are unique in Europe since, within an area of 40 km, subtropical Mediterranean habitats near the coastline and alpine meadows with altitudes over 3000 m can be found. In this study we present data of the cosmopolitan moss species *Bryum argenteum* which grows frequently at disturbed sites along roads. In Sierra Nevada and its surroundings, the species can be found from sea level up to 2800 m a.s.l. We sequenced the nuclear ITS1 and ITS2 regions in order to study the genetic diversity along an altitudinal gradient from near sea level up to 2400 m a.s.l. Results show a clear separation of two groups. Group one includes only specimens from the alpine region while group two includes individuals from a broad range of altitudes. Interestingly the sequences of group one are very similar to sequences available at GenBank with their origin in the Antarctic region. Therefore, it seems possible that cryptic species exist within a broader *Bryum argenteum* complex. In general terms (with the exclusion of temperature) the ecological needs of both supposed cryptic species may not be very different, because at some locations we found both genotypes within a few meters of each other. The *Bryum argenteum* species complex might offer an interesting model system in order to study and monitor the effects of global change.