

Ecophysiological investigations on bipolar lichens from the Antarctic: comparative studies of photosynthetic performance of *Usnea aurantiaco-atra*

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In hot and cold deserts lichens are part of important plant communities and they contribute substantially to the primary production. As arido-passive plants their physiological activity is limited to the moist period. Lichens are known for their extreme tolerance of high temperatures and subzero temperatures in the Antarctic. The King George Islands and South Shetland Islands belong to the cold-Antarctic zones and is a semi-arid cold desert. In the ice-free areas of the islands of the maritime Antarctic and of the continental Antarctica lichens are the major component of the vegetation.

One of the species with a wide distribution is *Usnea aurantiaco-atra* and occurs from the islands of the Antarctic peninsula to South America. On the Antarctic islands *Usnea aurantiaco-atra* inhabits a wide range of habitats from the beach up to the mountains. The intra-specific variants of photosynthesis and dark respiration were investigated from populations from the South Shetland Islands. Temperature and light dependent response of net photosynthesis and dark respiration were determined under laboratory conditions by means of a minicuvette-system (Fig. 1). The results will be discussed in relation to microclimatic habitat conditions and population genetics.

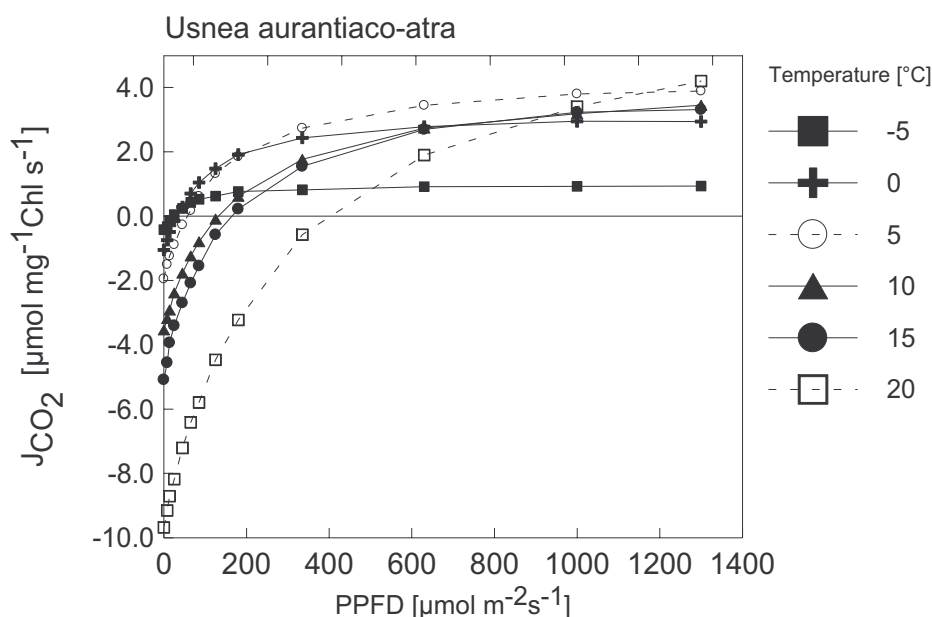


Fig. 1: Light dependent response of net photosynthesis of *Usnea aurantiaco-atra* at different temperature

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