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Conservation project: Protection of red list species of lichens in endangered habitats in Upper Austria

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Several common lichen species disappeared or became extinct in the last 50 years due to air pollution, destruction of habitats and impact of intensive agriculture. Especially, at the colline and sub-montane zones of Austria in former times abundant lichens like *Anaptychia ciliaris* vanished in most regions. Also, lichens from the montane zone like *Lobaria pulmonaria* and *Nephroma resupinatum*, are disappearing from continually and well observed habitats. The heterogeneous landscape in Upper Austria (Austria) provides three different main types. 1) The 'Mühlviertel' in the north on the Bohemian Mass, shaped by granite boulders in colline and high montane zones; 2) The broad valley of the river Danube and adjacent Alpine foothills in the center and 3) in the south the montane and subalpine areas of the northern rim of the Alps. The hotspots of the most endangered species which were found in surprisingly high diversity and good condition are remote areas at the 'Mühlviertel' and unsettled, humid heads of valleys in the Alps. These retreat areas will be protected by an ongoing conservation project, initiated and funded by the provincial government of Upper Austria and is unique in its extensive achievement in Central Europe.

Lichens diversity of Zagros oak forests in west of Iran at risk

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The unique Zagros Mountains forest-steppe ecoregion is located primarily in west Iran. In recent years, dust storm as natural phenomena has taken on new dimensions in Zagros Oak forests and has changed from a local problem to a national issue in Iran. Epiphytic lichens respond sensitively to ambient air pollution. The diversity of epiphytic lichens in the Zagros Oak forests still remains unknown. Such special lichens diversity is now under threats of heavy dust storm. Dust storm increase eutrophication and nitrogen-polluted environments. Recent lichenological observation in the Zagros oak forests confirm high eutrophication in tree trunks. In many localities in Ilam province, tree trunks bear no epiphytic lichen communities which could possibly colonize such substrate in normal condition. In some tree trunks we discovered some dead thalli of macrolichens. It seems that the volume of dust coating layer on bark of oak trees reach over thickness of the microepiphytic lichens such as *Caloplaca polycarpoides* or *Lecanora hagenii* or even completely cover *Phyconia* sp. Such lichen species are hidden by dust coating layer. The lichen loss of oak trees possibly is the result of dust coating layer and ambient air pollution. Lichens become overdose or passing the threshold of eutrophication.

From local to global: knowledge transfer of Swiss lichen distribution data for conservation and research

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The SwissLichens data base (National Data and Information Centre for Swiss Lichens) contains more than 120,000 georeferenced and validated records of lichen localities in Switzerland from various origins (voluntarily provided data from naturalists, public data from the Red List Program, biodiversity surveys, research projects, museum collections). Dynamically generated distribution maps and graphs describing ecological requirements at species level as well as information about their protection status and conservation needs are published on the homepage of SwissLichens (www.swisslichens.ch). More detailed information about specimens and collections is provided by the Swiss Portal of the Global Biodiversity Information (www.gbif.ch). To facilitate the planning of conservation actions, occurrence records from the SwissLichens data bases are served to the Swiss Virtual Data Centre (VDC). VDC provides controlled access to the raw data of all national data centres (Info Species network, www.info-species.ch) by a web based, interactive map tool to Swiss authorities. To support the documentation of the global diversity and promote species conservation at international level, species occurrence data from the Swiss national data centres are transferred to GBIF international (www.gbif.org). Individual data requests for research is highly appreciated! The Info Species data use agreement guarantees a targeted and transparent policy on data use.

First results obtained in a study of the Asian population of *Erioderma pedicellatum*

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The Asiatic population of *Erioderma pedicellatum* (Hue) P. M. Jorg. was found in 2009 in primeval oceanic spruce forests of Kronotsky Nature Reserve, Kamchatka, Russian Federation. Kamchatka is the fourth location of this species, which is listed as globally critically endangered. During the last six years several eruptions of volcano Kizimen, located in the near vicinities of the location of *E. pedicellatum*, have been recorded. In 2015, monitoring data were collected from the same sites as in 2009. Despite the ash emission, the boreal felt lichen survived. In total, 21 sample plots (20 × 20 m) were studied and more than 600 thalli of *E. pedicellatum* were found on 14 plots among these. Probably, the Asiatic population of *E. pedicellatum* is the most abundant in the world. The healthy state of the population is confirmed by a large number of fertile and juvenile thalli. In 2013, a substantial part of the *E. pedicellatum* population was discovered outside the Kronotsky Reserve in the vicinities of Lazo on Nikolka volcano slopes. This is the most threatened part of the population because of forest management. It is necessary to study this part of the population and to protect the whole population.