Chapter 2

AS AN EXTREME HABITAT FOR PLANTS: SERPENTINE SOILS

Beste Gizem ÖZBEY[1]

The primary goals of organisms are to survive by their nature. In this way, they transfer genetic information and ensure it continues from generation to generation. An organism that has not been able to complete the transfer of genetic information, in a sense, has not fully completed its task. The more an organism can adapt to environmental conditions, the longer it can survive, increase the likelihood of transferring its genes, and is regarded as evolutionarily successful.

The success of keeping up with change and difficult conditions is parallel with the success of survival. Some environmental conditions become harder and cause life to turn into a challenge for most of all species. These habitats, called extreme habitats, act as a formidable test for organisms.

Extreme habitats are depicted under harsh environmental conditions and contain species that can adapt to conditions where related species couldn't be able to tolerant [(1)].

Extreme habitats, which are important laboratories of biodiversity in the nature, create serious pressures on the species and lead them to selection. These extreme habitats, serpentine, gypsum and saline soils can be edaphically exemplified, are extremely important centers of endemism almost everywhere in the world. These areas formed as a result of geological isolation are known as geological/edaphic islands. Some plant species that have been able to cope with extreme-edaphic conditions can survive in these habitats with their rare biota[(2, 3)].

Plants that named as halophytes, serpentinophytes, gypsophytes, metallophytes are adapted to edaphic conditions which are negative for other plants. While intraspecific differentiation can lead to resistant ecotypes, some species are known to prefer extrem habitats more because of their basic physiological properties. Physiotypical properties play an important role in explaining the survival of some plants in adverse conditions [(4)].

Serpentine soils are natural and ideal model systems that were developed to investigate the responses of plants against edaphic factors. Avoiding current ad-

[1] Dr., Ankara University Faculty of Science, Biology Department, Ankara. bozbey@ankara.edu.tr

the presence of serpentinicoles. Serpentine soils provide niche to other organisms besides plants [44, 45]. In arthropods, physiological camouflage is the same as in seeds [Fig. 7.].

Fig. 7. A serpentine-adapted arachnoid from Elmadağ, Ankara (Photo by B.G.ÖZBEY)

Serpentine habitats are used as models for adaptation to extreme habitats and for restoration of soils exposed to metal contamination. Understanding these habitats that need to be protected and researched will be of great benefit in shedding light on evolutionary and ecological approaches.

Particularly, some of the plants specific to these habitats are quite rare, so maximum care must be taken to protect them. As in the other serpentine habitats in the world, day by day in Turkey is being described new species in these special habitats that contribute to the flora and biodiversity.

Although there are many studies, more studies are needed on edaphic specialization in order to illuminate the serpentine systems that have not been completely resolved.

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