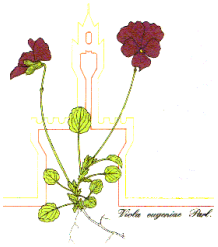

SOCIETÀ BOTANICA ITALIANA

Sezione Sarda

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The huge and violent wildfire, spread throughout 10 municipalities over more than 20,000 hectares, in the Montiferru region, on 24-26 July 2021, threw all Sardinian citizens into despair and, consequently, affected the public opinion and the political class at national level.

The immense environmental, agricultural and livestock heritage, as well as the industrial and infrastructural assets, went up in smoke in the space of a few days. The wildfire entirely affected some municipalities (Sennariolo is one of them) or incinerated high percentages of land in others, or dramatically damaged almost the entire cultural heritage as in Cuglieri. In still other places, emblematic for the significance of their landscape and cultural identity, were scarred by the passage of fire. This is what happened to the peaks between Badde Urbara and Monte Urtigu in Santu Lussurgiu or to the monumental oleaster of Tanca Manna in Cuglieri.

But, above all, hundreds of farms were brought to their knees.

After the shock and despondency, we are now experiencing solidarity among citizens, a wonderful example of resilience from below in our communities. But as the days go by, the debate develops, often in a confused manner, on the causes and, above all, on the actions to be taken to ensure that similar events will not happen again in the future, and the territory will recover from this dramatic event as soon as possible and in the best possible way.

Driven by the emotional wave, "big numbers" were proposed as a solution to the problem: lots of planes and helicopters to set up a regional fire-fighting fleet; millions of trees to be planted over the next few years to reconstitute the forest cover that had gone up in smoke, to name but a few. The scientific community, while sharing in the emotion of the moment and showing solidarity with the communities affected by such fire, has the duty to note the critical issues and opportunities to be assessed in order to achieve lasting and sustainable results from both a socio-economic and ecological point of view.

As Botanists we feel the urgency and the duty to participate in this debate on the basis of our expertise. We would like to ask ourselves and all Sardinians: is the solution to all this to re-plant 100 million trees in the next few years? Which trees? Where and how will they be produced and then planted? Is this an ecologically lasting and sustainable solution for the territory?

Already after the disastrous fires in 1983 and 1994 - to mention only the latest fires of comparable magnitude - the area was reforested in terraces with the introduction of plants, such as pines and field maples, that had nothing to do with the Montiferru ecosystem. They were planted by mechanical means, clearing the spontaneous strawberry-tree and heather sward and increasing the hydrogeological instability of the mountain slopes without improving their resistance to fire. In addition, a large proportion of these pine plantations have been irreparably destroyed and the considerable resources deployed have been wasted.

We want to avoid repeating the same mistakes!

Not only are our human communities resilient, but so are our plant communities. Some of Montiferru's native trees and shrubs are still viable in terms of their root systems and, in the coming weeks, they will react to the fire by producing new shoots (suckers) which will become the pioneers of recolonization by the mountain vegetation. We hope and suggest, therefore, that the main commitment of public money will be directed towards encouraging natural ecological processes, by means of interventions that include the cutting of parts that are no longer viable, succession and marking operations on stumps, silvicultural interventions to care for the forest and the planting of autochthonous planting stock which has not shown resilience. Sardinia does not only need new trees, but also olive groves, vineyards, cultivated fields and above all prevention and correct land planning and forest management policies, which should be rethought with a participatory and transdisciplinary vision. Human intervention can be useful in favoring the rebirth of the forest and accelerating the conversion of scrubland into forest. In the first few years after the fire, low vegetation communities such as cistus will develop, gradually evolving into shrubs layer with heather and Mediterranean strawberry trees.

Those pre-forest maquis layers will then have the potential to evolve into a holm oak, cork oak or mixed forest with deciduous oaks. The knowledge of natural dynamics, already acknowledged on paper in the Regional Environmental Forestry Plan (PFAR), can help us to direct management and restoration policies, which will have to be based on a qualitative rather than quantitative approach. In fact, Sardinia, like many Italian regions, has seen a considerable increase in forest areas over the last few decades, especially because of the detriment of mountain pastures. Therefore, there is no urgent need to increase the forest area, but rather to improve the quality of the forests.

As our heritage consists mainly of young forests (coppices), often ungoverned, with a considerable accumulation of biomass, it is necessary to rethink regional land-use and agroforestry planning policies and regulations in a transdisciplinary way, incorporating issues such as pastoralism and the management of agrosilvopastoral systems, the conservation of biodiversity and ecosystem services, the fight against climate change, soil protection, and the participation of local communities and agricultural and forestry entrepreneurs.

Numerous studies show that a continuous and homogeneous forest cover, although ideal in the collective imagination, is not functional for fire prevention, biodiversity conservation, meat and dairy farming productions and other ecosystem services provisioning forests provide (for free). For example, mosaic forest systems, where areas of natural forest alternate with grazed forests - or those subject to silvicultural uses, wooded pastures, garrigue with medicinal plants, clearings, mountain pastures, cultivated areas, olive groves and vineyards, possibly taking into account orography, roads, water resources and the risk of fire spreading - are much more effective in fire prevention. They also generate more income (because traditional livestock farming and forestry can be combined with other products such as berries, mushrooms and truffles, honey and medicinal plants), they are more attractive to tourists and more efficient in combating hydrogeological instability (this is an aspect that should be taken into account especially in rainy period such as the autumn) or in storing carbon dioxide.

A final consideration is that, apart from the Sos Pabariles forest estate in Santu Lussurgiu and the one in Tresnuraghes, last summer vast fire has mainly affected private land.

It is necessary to avoid to-down plummeting models, created in areas far from the territory, but to develop participatory processes by which the citizens of Montiferru play an active role in the planning, as well as in the implementation stage. Montiferru is a paradigmatic case in which good results will only be achieved with a synergy between the public and private sectors. Botanical studies provide detailed data on the presence of many spontaneous plant species that have certainly been damaged from the fires and still survive through small populations in areas not affected by the fire (i.e., yew, holly, laurel, wild cherry). Transferring this

information to the public authorities, involving the private sector, could facilitate the creation of a network of livestock farmers who are the guardians of biodiversity (and agrobiodiversity). Part of the public resources could be used to set up small nurseries where local farmers would collect and multiply local botanical resources in order to reconstitute the plant heritage (arboreal, shrubby and herbaceous) of the area, overseeing the territory and promoting it, both towards external users and the local population (with particular attention to the youngsters).

The challenge for the Sardinian community will be how to transform, once again, a critical situation into an opportunity. It is necessary that all the stakeholders do their part, communicating and collaborating with each other in a coordinated manner and, above all, decisively taking a knowledge-sharing-oriented direction. Complex problems require high analytical abilities, and this means that there is no one solution: possible solutions must be assessed, identified and put into practice together, in the knowledge that everyone has both to learn and to teach.

Sardinian Botanists are available to share their knowledge and collaborate with other scientific areas to build up a democratic resilience model of Montiferru socio-ecological system which can certainly become, if we are wise, applied not only in Sardinia but also in the entire Mediterranean area.

The President of
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