

Small ruminants in a sustainable socio-ecological metabolism: A case study from Samothraki, Greece.

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Sustainable agriculture; social metabolism; social ecology; social learning; decision support app; sustainability transition; small ruminants; citizen science

Summary

I am presenting a socio-ecological case study about a small Greek island that aims at pursuing scientific and practical goals. The conceptual framework of social metabolism (FISCHER-KOWALSKI et al. 1997) serves as the scientific basis to answering key questions regarding more sustainable farming practices and how they can be integrated into farming communities, within protected areas on islands. The outlined transdisciplinary approach involves the application of a decision support app for small ruminant farmers (HAPPY GOATS APP 2016) in order to support social learning opportunities among these farmers. It also enables public involvement into the research process (citizen science).

The north Aegean island of Samothraki represents a unique site of archaic wilderness, rarely found among the Greek archipelago. Because of the island's outstanding ecological values, the largest part of its terrestrial area and 50km² of the adjoining marine area, were included in the Natura 2000 network. The ongoing efforts of the scientific and local community to include the island into the worldwide network of Biosphere Reserves resulted in a successful submission of an application to UNESCO in 2013. Despite increasing efforts in environmental protection activities, the development process of recent decades has generated a wide variety of environmental and social problems the island community is currently facing. One of the major threats is the sharp increase in free roaming sheep and goats since the 1960s, which has led to overgrazing, forest reduction and soil erosion (BIEL & TAN 2014). As studies from other Greek islands and mainland regions reveal, the agricultural and respectively, the small ruminant sector, is transforming throughout the country at unprecedented rates for several decades now (e.g., HADJIGEORGIOU 2011; KIZOS et al. 2013). Throughout the Mediterranean, livestock has begun to lose its many essential functions which had been fulfilled with traditional systems. Those systems were built mostly on circular nutrient and resource flows with little or no external inputs, where animals were mainly fed on biomass not suitable for human consumption and manure was used as fertilizer for crop production (DUMONT et al. 2013). Land use and marketing practices have gradually been adapted according to these changes. The former, mainly circular, local economies are now being increasingly replaced by import oriented economies, making it more difficult for farmers to sell their products at local markets. It is therefore of great importance to understand how current development pathways affect small ruminant farming on islands and to identify feasible strategies for a sustainable future of the sector on Samothraki.

Our findings indicate that since the 1980s grazing resources were not sufficient to keep the growing number of animals adequately fed and farmers had to supply more imported animal feed (FETZEL et al. In submission). Data from local fodder importers show that, despite increasing animal numbers in the 1990s, imports of supplementary feed did not initially increase, resulting in growing grazing pressure on the islands ecosystems. After local feeding resources became less productive and numbers of animals suffering from malnutrition increased, farmers were forced to supply more feed which then only exacerbated their difficult economic situation. Since 2001 the sector is declining, with the reduction of the number of animals to those levels experienced in the early 1990s and a 50% reduction of the population economically active in the primary sector.

A planned survey with several dozen local sheep and goat farmers will be conducted by using citizen science methods and the Happy Goats App. The survey will not only yield high quality bottom-up data which will be used for outlining scenarios that aim for a sustainable development of the sector in three dimensions, i.e. socially, economically and environmentally. It also serves as an opportunity to introduce the Happy Goats App to farmers and foster social learning opportunities which might open new and promising perspectives for local small ruminant farmers. In my contribution, I will give background information on the ongoing research process on the island of Samothraki, present latest findings about the small ruminant sector of the island and report from the survey with local small ruminant farmers.

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