The Syrian Steppe: Past Trends, Current Status, and Future Priorities

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Syria’s rangelands are vitally important both ecologically and economically, and they also have significant cultural and heritage values for Bedouin communities. Rangelands are the country’s largest land-use category. The Syrian steppe covers approximately 10.5 million hectares, over half the country’s landmass (Fig. 1). The Badia, as it is known in Arabic, is largely populated by seminomadic Bedouin people whose main occupation is herding sheep (Fig. 2). In addition to serving as the resource base for animal production (a key source of income and livelihoods), rangelands provide a range of ecological services, such as nutrient cycling, pollutant filtering, and biodiversity preservation.

Complex political, social, and environmental factors have resulted in the progressive degradation of the Badia ecosystem over the last 50 years. This degradation, caused by over-exploitation and unsustainable, poorly planned use of resources, is amplified by harsh ecological conditions, including frequent droughts. In such environments, unchecked degradation often results in desertification—a serious and irreversible threat with drastic consequences for the livelihoods of those dependent on rangelands. There are large spatial differences in the importance, intensity, and extent of land degradation in Syria, depending on a number of variables, including human and livestock density, living standards and conditions, and past and current management practices. The management of these rangelands, now and into the future, is therefore critical to the national economy. Past management practices have led to degradation of large rangeland areas, calling into question their long-term sustainability under current usage practices.

Climate, Vegetation, and Soil

Most of the Badia rangeland areas fall within arid and semiarid zones characterized by wide variability in rainfall and temperature (Fig. 1). There are no clearly defined boundaries, because they shift depending on climatic conditions. Many areas adjacent to the Badia should be managed in similar ways, and, indeed, many of the ecological, economic, and social issues in these adjacent areas are similar to those in the Badia. Generally, rainfall is low, erratic, and poorly distributed, with large spatial, seasonal, and annual variations. The distribution and beginning of the rainfall season may determine vegetative composition in a given year. In most years, rainfall is below average (127 mm annually, over 42 years in Palmyra), and extended dry periods are common. Droughts are common, resulting in lower forage and crop productivity and water scarcity. Summer in the Badia is long, dry, and hot, with temperatures sometimes in excess of 45°C in July and August. The effects of high temperatures are aggravated by dry winds, or sirocco, which may occur during the growing season, making the steppe an exceedingly hostile environment.

Because of the frequency of drought years, Badia vegetation is composed primarily of dwarf shrubs, with a few annual forbs and grasses. The most common species are Poa bulbosa, Anabasis syriaca, and Artemisia herba-alba. The main shrub species (A. syriaca and Noaea mucronata), which dominate the landscape, are unpalatable for sheep and used only for fuel (Fig. 3). The soils of Syria are spread over five orders of the United States Department of Agriculture Soil Taxonomy. The dominant soil type in the Badia is aridisols, which cover 47.5% of the country, generally occurring where the annual rainfall is below 250 mm. They are mostly characterized by calcic or gypsic horizons close to the surface, weak structure, and relatively light texture, which predisposes them to erosion.

Changes in Pastoral Practice

Until the end of the 1940s, most of the Bedouin occupying the Syrian steppe were fully nomadic, relying on natural grazing as feed for their flocks. Their nomadic lifestyle was well suited to the harsh environment of the Badia, and the traditional Hema system—a sort of rotational grazing