Climate Change and Ecosystems of Asia With Emphasis on Inner Mongolia and Mongolia

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Asia is the most populated continent with almost 3.9 billion people. More than half of these people live in rural areas, with many being pastoralists depending on livestock and rangelands for their livelihood. Rangelands occupy over 4.3 billion acres (1.72 billion ha) on the Asian continent, almost 38% of the total land area (Fig. 1). For some counties, such as Sri Lanka and Laos in southeast Asia, the percentage of rangeland within their borders is relatively minor. However, for many Asian nations, rangelands represent a major land category. Countries such as China, Mongolia, and Russia in northern Asia; and Iran, Afghanistan, and Turkey in western Asia (more commonly referred to as the Middle East) have huge expanses of grasslands and shrublands, and more than 40% of the land in these nations is categorized as rangeland.

Given the extent and diversity of rangelands across this continent, this paper will focus on an area central to the continent that is still extremely important as a pastoral landscape. The region of Mongolia and Inner Mongolia, China (boxed area within Fig. 1) represents nearly 1.3 billion acres (520 million ha) of rangeland, about 30% of the rangeland area across this continent. In both Mongolia and Inner Mongolia, livestock production on rangelands is a major source of wealth and well being. Due to large contiguous land areas of rangelands in this region, impacts to the rangeland resource from changing climate can make livestock producers especially vulnerable. In this paper, we will provide an overview of the existing status and uses of rangelands in Mongolia and Inner Mongolia, the projected impacts of climate change, and a discussion on future strategies that can be employed to adaptively manage and reduce vulnerability in this changing environment.