ABSTRACT

Post-2000 efforts to protect China’s grassland areas are distant from earlier efforts in that funding for the most recent round of policies and programs is commensurate with the task. Among the most controversial of the current policies is the provision of an annual subsidy ranging from 2 yuan to 20 yuan/mu (1/15 hectare) to herders to not graze livestock contracted by their families for periods from 3–10 years. Many other recent policies, such as fencing programs and hunting and burning bans to protect keystone species are also controversial. Ideally, the policies are intended to protect grassland ecological systems while assuring acceptable revenues to affected families and regions. In truth, results of these efforts have been mixed, but more successful in locations that tailor policies to local conditions. This poster summarizes a May 2014 study of three counties in Gansu on the interactions among pasture protection policies, outcomes and husbandry. The research joins environmental data and livestock counts at the township scale from 2000 to 2012 to depth interviews with herding families and husbandry officials. Joining biophysical analyses of changes in pasture with in-depth interviews, we seek to determine how the husbandry sector and grassland areas have changed under post-2000 policy interventions. In all three counties included in the study, despite severe degradation, pasture cover has improved and CAPD livestock has increased. However, herders and local officials also report that some of the new policies and programs have important unanticipated negative impacts on pasture quality, pasture ecology and economic returns from pasture-based husbandry.

BACKGROUND: CAUSES OF PASTURE DEGRADATION

Many researchers believe the major anthropogenic reason for the current increase in pasture degradation is overgrazing (Liu, Li and Zheng 2015, Wei et al. 2009, Wen et al. 2015). Indeed, overgrazing probably still stands as contributing factor in many of China’s pastoral regions, but there are many other reasons for ecological collapses in pastoral regions that are far more important at local scales. In addition to rapid increases in the absolute size of herds using the diminishing grasslands, other scholars cite additional management issues including over-ambitious land reclamation efforts by the agricultural sector (Wen et al. 2015), changing grazing patterns and cycles (Li and Hao 2011), fencing policies that concentrate livestock (Li and Zhao et al. 2005). The changes to China’s grasslands are not just anthropogenic in origin. There are also many researchers focusing on the roles that climate change plays with respect to both rising temperatures and declining precipitation on China’s grassland areas (Chen et al. 2006, Liu, Dong, and Liu 2015, Wei et al. 2009, Wen et al. 2015).

METHODOLOGY

Spatial coverage of the Enhanced Vegetation Indices (EVI) Monthly L3 Global 1 km2 (pixel) data product (MODIS 2013A) was obtained for 57 township (sub-county) through the online Data Pool at the NASA Land Processes Distributed Active Archive Center (LP DAAC). USGS/Earth Resources Observation and Science (EROS) Center, Sioux Falls, South Dakota

RESULTS FROM MODIS IMAGERY ANALYSIS

In May of 2014 visits were made to three counties in Gansu (Jingtai, Minqin, and Tantash A.C.) to investigate the interactions among pasture protection policies, economic outcomes for herding families and the husbandry sector. The research joins remotely-sensed environmental data and livestock counts at the township scale for the years from 2000-2012 to depth interviews with herding families and village, township and county officials who work on issues some way related to the husbandry sector.

In March 2015 annual mean EVI values were obtained for the three counties of Jingtai, Minqin, and Tantash A.C. (China) for the years from 2000 to 2013. Analyses of mean enhanced vegetation index (EVI) aggregated to 57 township units in three counties of central Gansu indicate IMPROVED pasture quality for the period from 2000 to 2013. Despite very significant increases in livestock in a majority of townships for all three counties (see next column top), field trips throughout May of 2014 were made to interview herders and local government officials responsible for pasture management and husbandry extension.

REFERENCES


Chen J., Gong, P. Li, Y.C., Liu C.X. and Yu D.Y. (2006). Vegetation cover changes and correlation with climatic factors in Northern China during 1982-2000 efforts to protect China’s grassland areas are distinct from earlier efforts in that funding for the most recent round of policies and programs is commensurate with the task. Among the most controversial of the current policies is the provision of an annual subsidy ranging from 2 yuan to 20 yuan/mu (1/15 hectare) to herders to not graze livestock contracted by their families for periods from 3–10 years. Many other recent policies, such as fencing programs and hunting and burning bans to protect keystone species are also controversial. Ideally, the policies are intended to protect grassland ecological systems while assuring acceptable revenues to affected families and regions. In truth, results of these efforts have been mixed, but more successful in locations that tailor policies to local conditions. This poster summarizes a May 2014 study of three counties in Gansu on the interactions among pasture protection policies, outcomes and husbandry. The research joins environmental data and livestock counts at the township scale from 2000 to 2012 to depth interviews with herding families and husbandry officials. Joining biophysical analyses of changes in pasture with in-depth interviews, we seek to determine how the husbandry sector and grassland areas have changed under post-2000 policy interventions. In all three counties included in the study, despite severe degradation, pasture cover has improved and CAPD livestock has increased. However, herders and local officials also report that some of the new policies and programs have important unanticipated negative impacts on pasture quality, pasture ecology and economic returns from pasture-based husbandry.

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