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## Are rangeland management policies inappropriate to biodiversity conservation on the western Tibetan Plateau , Tibet Autonomous Region , China ?

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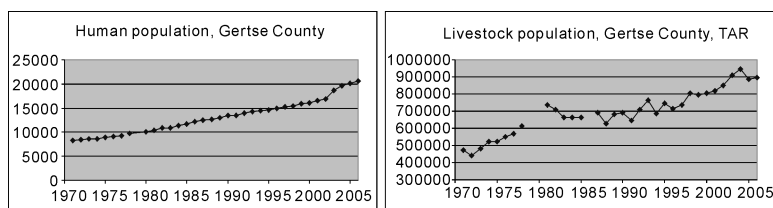
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**Key words :** rangeland management , grassland policy , fencing , wildlife conservation , Tibetan Plateau , Chang Tang Nature Reserve

**Introduction** A substantial portion of the northwest Tibetan Plateau in China , known as the Chang Tang region , has been designated as nature reserves . At the same time grassland development policies , based on those in areas farther east in China , are now being introduced throughout the Tibetan Plateau , including within these nature reserves . With human and livestock populations having increased 3-fold in this region since the early 1970's ( Fig . 1 ) , pressures on the land are increasing . In 2005 policies associated with the " household responsibility contract system " and a campaign to " return pasture to grassland " were instituted on the northwest plateau , including the nature reserves . Rangeland carrying capacity has been determined , household winter grazing areas have been allocated and large-scale fencing has begun . The effects of these actions on conservation goals is yet to be determined .



**Figure 1** Human and livestock population trends from 1971-2006 in Gerze County , Ngari Prefecture , TAR , China ( from Fox et al . in press ) .

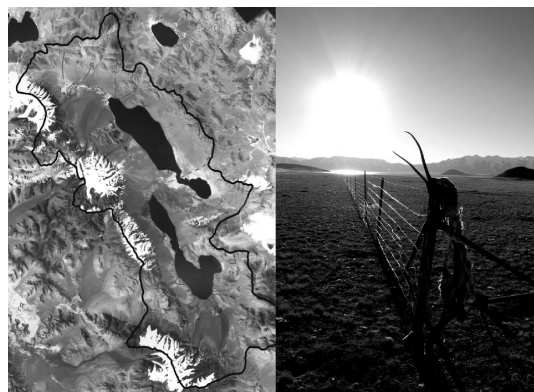
**Study background** From 1999 to 2007 we have conducted ten periods of fieldwork to investigate rangeland ecology and human-wildlife interaction in the western Chang Tang Nature Reserve , Ngari Prefecture . This work has been centered around the Aru Basin ( 33° 45' -34° 25' N and 81° 55' -82° 40' E ) in Gerze County , but also includes other areas of Gerze , Rutok and Gege Counties . We have investigated wildlife populations and their relation to human use ( Fox and Bårdsen 2005 ) , conducted interviews and evaluated records regarding human and livestock activity ( Yangzong 2006 , Dunzhu 2007 ) , including hunting ( Fox and Dorji , in press ) , and addressed the effects of livestock grazing on vegetation characteristics ( Dorji 2006 ) .

**Results and discussion**-Tibetan antelope densities have been decreasing in the Aru Basin over the past 7 years , probably influenced by increased human use . Livestock carrying capacity estimates are now being applied without reference to wildlife requirements , even in important wildlife areas in the reserve .

Within the past two years fence construction has begun ( Fig . 2 ) , including within areas of Tibetan antelope winter concentration and their staging areas for summer calving migration .

The fences can block antelope migratory movements and they provide a modern and lethal game-drive function , especially when motorcycles are used to drive the animals . The ongoing concentration of fencing within areas of wildlife abundance needs to be questioned , as well as the allocation of pasture to livestock without considering the needs of Tibetan antelope and other wildlife .

**Conclusions** Continued application of standard rangeland management policy to areas of abundant wildlife in the Chang Tang Nature Reserve may prove to be disastrous for certain species such as the endangered Tibetan antelope . Appropriate rangeland conservation policies need to be developed for nature reserves on the western Tibetan Plateau .



**Figure 2** Map of new fence locations in the Aru Basin , and location of the Chang Tang Nature Reserve ( left ) . Tibetan antelope male killed in one of the new fences in the Aru Basin , constructed with funds allocated to " return pasture to grassland " ( right ) .