Altai Argali Sheep

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Common Name: Altai argali sheep
Scientific Name: *Ovis ammon ammon*
Order: Artiodactyla (even-toed ungulates)
Family: Bovidae (antelope, cattle, sheep, goats, and their relatives)
Status: Threatened in the Mongolia Red Book; Endangered in Russia and the People's Republic of China; listed in Appendix II of the Convention on International Trade of Endangered Species; Threatened on the U.S. Endangered Species List; Vulnerable on the 1996 IUCN Red List of Threatened Animals (Baillie & Groombridge 1996 ; Schackleton 1997; Shiirevdamba et al. 1997).
Threats: Primarily poaching and competition with domestic livestock for forage and habitat.
Habitat: Altai argali inhabit cold, arid grasslands of mountains, intermountain valleys, and rocky outcrops in Central Asia. They prefer rolling hills, plateaus, step hills, and gentle slopes over rugged mountainous terrain.
Distribution: Altai argali live in the Altai Mountains and adjacent regions of China, Mongolia, and Russia; they also inhabit mountainous regions and rocky outcrops of northern, central, and western Mongolia and southern Tuva, Russia (Schackleton 1997).

DESCRIPTION

Altai subspecies of argali are the world's largest sheep, with some males growing to 127 cm at the shoulder and weighing over 180 kg (Valdez 1982; Schaller 1977, 1998). Rams have huge, curled horns that spiral outward and reach over 150 cm (record length = 169 cm) (Valdez 1982). Highly sexually dimorphic, female argali ewes are only 60% to 70% the size of rams, and their horns are seldom over 50 cm in length. Argali have relatively long, thin legs and compact bodies built for running speed. The sheep are light brown to brownish grey on their upper parts, with white faces, abdomens, inner legs, and conspicuous rump patches (Schaller 1977). The anterior portion of the body is darker than the back (Valdez 1982). Rams grow neck ruffs and dorsal crests in the winter and have more distinct rump patches than ewes do (Schaller 1977).

NATURAL HISTORY

Altai argali inhabit the Altai Mountains of China, Russia, and Mongolia and nearby mountains and rocky outcrop regions of northern and central

Mongolia (Schackleton 1997). Argali prefer less rugged and precipitous terrain, living instead in foothills, high plateaus, intermountain valleys, gentle slopes, and rolling steppes (Reading, Amgalanbaatar, & Mix 1998; Schaller 1998). Within these regions, argali feed on graminoids, forbs, legumes, and some shrubs (Schaller 1998). The most significant source of mortality for argali in Mongolia is human hunting and poaching. Other important predators include snow leopards (*Uncia uncia*), gray wolves (*Canis lupus*), large raptors, and lynx (*Lynx lynx*).

The Altai argali rut begins in late October or early November, with actual breeding starting in late November to early December. Argali give birth the following late April to early May after an approximately 150-day gestation. Ewes give birth to one, or occasionally two, lambs (Schaller 1977, 1998). Females can reproduce in their second year, although pregnancy rates at that age are relatively low (Schaller 1977). Males are usually prevented from breeding by larger, more dominant rams until they are much older. Few males live beyond 10 years of age (Schaller 1977).

Argali form flexible herd structures, with the only stable bond being that between a female and her lamb, or occasionally her yearling (Schaller 1977). There appears to be no territoriality, although rams defend ewes during the rut (Schaller 1977). Reported mean group size varies considerably, from 2.5 to 39.2, as do lamb : female and adult male : female ratios (11.0–68.5 : 100 and 52.6–92.5 : 100, respectively) (Reading et al. 1997). Groups may be all males (including single males), females with lambs and yearlings of both sexes, and mixed (Schaller 1977; Reading et al. 1997). Generally, rams and ewes (with young) separate following the rut.

CONFLICTING ISSUES

Currently, little is known about the ecology and status of Altai argali. Although Altai argali appear to be declining, population estimates are difficult to make. Most people agree that the subspecies is experiencing marked population declines and fragmentation (although local and foreign trophy-hunting organizations contend otherwise). Estimates vary considerably, with some researchers expressing concern for the status of the subspecies and others suggesting that argali are relatively widespread and less threatened (see review in Luschekina 1994).

Argali population decline appears to be a result of direct mortality (mostly from poaching) and competition with domestic livestock (Reading et al. 1977; Reading, Amgalanbaatar, & Mix 1998). Although argali have been protected from general hunting in Mongolia since 1953 (the species still may be hunted by foreign hunters with a special permit), poaching continues to be an important source of mortality (Luschekina 1994). Lax law enforcement permitted expansion of poaching activity in the wake of the major political and economic changes that have accompanied Mongolia's trans-

formation to a democratic, free market system (MNE 1996). The subsequent weakening of central authority, a severe economic crisis, an increase in the human population growth rate, and the growing importance of meat in the Mongolian diet have all combined to increase the amount of illegal hunting (MNE 1996; Mallon et al. 1997). Indeed, many local people readily admit to shooting argali for meat (Reading, Amgalanbaatar, & Mix 1998).

Argali also suffer from competition with domestic livestock for water and forage (Luschekina 1994). Livestock numbers have increased dramatically over the past few years following privatization of herd ownership (Reading, Amgalanbaatar, & Mix 1998). As the nation's human and livestock numbers increase, herders are expanding grazing into more marginal pastures, resulting in increased competition with wild ungulates and displacement of argali from their former population strongholds (Mallon et al. 1997). The resulting overgrazing and displacement by livestock has substantially reduced and degraded argali habitat (Luschekina 1994). The situation is particularly pronounced in western Mongolia, where the human population has expanded greatly in recent years and livestock grazing has pushed deep into the high mountain regions and even into protected areas (Mallon et al. 1997; Reading, Amgalanbaatar, & Mix 1998).

The primary conflicts surrounding argali conservation in Mongolia revolve around trophy hunting and domestic livestock grazing (Luschekina 1994; Mallon et al. 1997; Reading, Amgalanbaatar, & Mix 1999). Poaching, although a significant problem, is the cause of much less conflict but may grow in importance as law enforcement efforts improve.

The Altai argali is the world's largest sheep. Because of its size and impressive horns, it is greatly sought by trophy hunters. In fact, foreign sports hunters paid over U.S. $20 million to harvest 1,630 rams from 1967 to 1989 (Luschekina 1994). However, trophy hunting of argali is a contentious issue both locally and internationally (Reading, Amgalanbaatar, & Mix 1998). Most local people oppose trophy hunting, especially by foreign hunters, which they blame for argali population declines. This blame is probably misplaced. Trophy hunting may have negative impacts on selected populations; however, the 20–30 animals trophy hunters harvest each year is a small fraction of the number poached by local people and displaced by their livestock.

Internationally, the situation has pitted hunting organizations against conservation organizations. The European Union had banned importation of argali from Mongolia, but pressure from hunters recently caused the ban to be lifted. The United States provided Mongolian argali with a Threatened status but has been issuing permits recently for importation by trophy hunters. A lawsuit challenging the legality of U.S. permit issuance is pending.

The United States provided Threatened status to Mongolian argali because the species' status is not clear and because U.S. authorities require, among other things, that hunted species be actively managed and that

money generated from hunting fees be used for the conservation management of that species (Reading, Amgalanbaatar, & Mix 1999). Conservationists claim that neither case holds in Mongolia. Indeed, under the Mongolian Hunting Law of 1995 none of the revenue generated from argali hunting goes directly to conservation or management. Hunting fees are instead divided among the federal government's general funds (70%), the local Sum (or county) government (20%), and the hunting organization (10%) (Reading, Amgalanbaatar, & Mix 1999). The government does not actively manage argali, and very little government-sponsored conservation or management activity has been undertaken on behalf of argali over the past several years (Mallon et al. 1997; Reading et al. 1997; Reading, Amgalanbaatar, & Mix 1998). Hunting organizations have provided modest support for argali surveys and conservation activities. The results of this work suggest that Altai argali are declining (Valdez & Frisina 1993).

Trophy hunters and the organizations that represent them argue that trophy hunting can provide an important source of income for conservation as well as for local communities. However, this is only true if at least some of the money goes to the local communities and to the conservation management and research of the hunted species. Trophy hunting in the absence of a well-managed population could have negative impacts on local argali populations, conservation of the species, and future hunting opportunities. Alternatively, adequate conservation management would ensure survival of the species, thereby benefiting the species, the hunters, the government of Mongolia (through the revenue generated), and the ecology of the region.

Livestock numbers have increased rapidly in Mongolia since the privatization of livestock herds that accompanied the transition from a communist, centrally planned society to a democratic, free market system (MNE 1996; Reading, Amgalanbaatar, & Mix 1998). Local nomadic herders have moved quickly to improve their standards of living by enlarging and diversifying their herds. Many of these people live a marginal existence, barely able to feed and clothe their families. Most are also concerned about conserving nature and wildlife, which they view as part of their cultural heritage.

Local herders argue that efforts to curtail grazing within protected areas, some newly created, are unnecessary. Herders suggest that foreign hunters are actually causing argali population declines and that they, the native herders, are able to co-exist with argali. This is probably not true (see above). Individuals who admit to poaching argali suggest that their actions have little impact on the overall argali population. Fewer individuals argue that argali conservation should be secondary to human development and resource use by people.

FUTURE AND PROGNOSIS

More active argali conservation and management are necessary to halt and reverse the current population decline and fragmentation. Perhaps the

greatest challenges to Altai argali conservation are poaching and competition with domestic livestock. Yet Mongolia has greatly expanded its protected area system since 1991, and argali currently inhabit or recently inhabited over 20 protected areas there. However, both poaching and overgrazing are prevalent throughout most of these protected areas (Mallon et al. 1997).

There are no easy solutions to argali conservation in the face of increased grazing pressure. By law, most protected areas in Mongolia permit limited grazing within at least a portion of their boundaries. However, the Mongolian Protected Areas Law of 1994 provides little guidance for doing so (MNE 1996). Currently, protected area managers, conservationists, and local herders are struggling to zone protected areas and devise management plans that are satisfactory to all stakeholders.

Poaching also presents a challenge to wildlife managers in Mongolia, especially given the size of the country and the limited numbers of rangers and other wildlife enforcement officials. Although an increase in the number of enforcement personnel would help, a more comprehensive strategy that couples enforcement with an education campaign would likely be more effective. Such a program should focus on Mongolia's long tradition of nature conservation while simultaneously making people aware of the rapid, recent decline of argali and the role of poaching in this decline. Making people aware of the inconsistency between their behaviors (poaching) and their values (nature conservation) might improve the situation.

Conflicts over trophy hunting are likely to continue in the near future (Reading, Amgalanbaatar, & Mix 1999). Trophy hunting should be permitted only if argali populations are more carefully managed and deemed capable of sustaining such harvests. Management in this regard would require systematic, rigorous, and comprehensive surveys for more accurate estimates of numbers and distribution. At least a substantial portion of money generated from sports hunting should be directed toward management of argali and their habitat. Given the high fees being charged to hunt Altai argali, it should be possible to increase fees marginally (from a percentage basis) but still generate significant revenue for conservation. Funds should go to increasing ranger staff, equipment, and training and to conducting more rigorous and regular argali surveys and research (see also Mallon et al. 1997). Without more active conservation management measures, Mongolia risks further declines in argali numbers and distribution, including the imminent loss of several populations.