To: Interested Parties
From: Teton Range Bighorn Sheep Working Group Members
Issue: Status of Teton Range Bighorn Sheep

Key Points:

- A small, isolated population of bighorn sheep resides in the Teton Range. The population is further subdivided into two groups, at the north and south ends of the range, with little interchange.
- This population is considered a core, native herd by the State of Wyoming, meaning it has not been extirpated and repopulated with transplanted sheep.
- Bighorn sheep are considered a sensitive species on the Bridger-Teton National Forest and on the Targhee portion of the Caribou-Targhee National Forest. Sensitive species are a species for which population viability is a concern.
- Bighorn sheep are also identified as a Species of Greatest Conservation Need (SGCN) by the Wyoming Game and Fish Department (WGFD). SGCN are species whose conservation status warrants increased management attention, and funding, as well as consideration in conservation, land use, and development planning.
- The population is of high conservation value because of its unique and irreplaceable genetics.
- The already small Teton Range bighorn population appears to have further declined over the last decade.
- The population is currently facing multiple environmental stressors that threaten its long-term survival, including the loss of crucial winter range due to recreational (skier and snowmobile) disturbance and long-term fire suppression, threats of new diseases and possible competition related to an expanding nonnative mountain goat population, and reduced genetic diversity owing to a small population size and isolation from other populations.
- To assure the future of Teton Range bighorn sheep protective management actions are urgent.

Background:

- Historically, the Teton Range bighorn sheep herd was connected to other wild sheep populations in Wyoming and Idaho. The herd is now confined to the Teton Range, no longer migrates to low elevation winter ranges (Whitfield 1983), and is effectively isolated from neighboring herds.
- In the early 1990s, an interagency working group was formed to facilitate cooperation among the wildlife and land management agencies in managing the bighorn sheep population and its habitat.
- The working group completed a strategic plan in 1996 to guide management of the sheep herd.
- The strategic plan identified 7 problems facing the herd and developed strategies to resolve them.
- Significant work towards addressing these issues has been accomplished (although much remains to be done):
  - Factors limiting the availability of winter habitat have been investigated (Courtemanch 2014);
  - All domestic sheep allotments in the Tetons were closed with economic incentives to producers, effectively mitigating disease transmission concerns from domestic sheep (WY Wild Sheep Foundation and others);
  - Two areas of the park have been closed to human entry in the winter: The summit area of Static Peak since at least 1990 and the Mt Hunt/Prospectors complex since 2001. The closures were implemented to mitigate the loss of low elevation winter ranges and address the reduction in available habitat. Additional potential winter closures were identified in 2001, but were not implemented because of low recreation levels at the time;
  - Research on the herd’s genetic status (Fitzsimmons 1992, Kardos et al. 2010) indicated low genetic diversity, geographic isolation from neighboring herds, and genetic isolation between the northern and southern segments of the Teton Range bighorn sheep herd; and
  - Intensive monitoring of both bighorns and nonnative mountain goats is ongoing (NPS and WGFD).
• The small size of the population puts it at increased risk of local extinction due to chance events (e.g. winters of high avalanche activity, disease, etc.) and poor genetic resilience.
• The population no longer has access to its historical, low elevation winter ranges (Whitfield 1983) because of human influence (e.g. development, fire suppression, disturbance, etc.).
• Testing indicates the sheep are relatively free of disease and may be naïve to common pneumonia-causing pathogens found in neighboring sheep herds.
• Transmission of disease from nonnative mountain goats, now established in the Teton Range, is a risk to Teton bighorn sheep. The likely source of the Teton mountain goat herd (mountain goats in the Snake River Range) hosts a community of pathogens known to cause pneumonia in bighorn sheep. The Teton mountain goat herd tests positive for one pneumonia-causing pathogen, but goats that disperse to the Teton Range from the adjacent Snake River Range could introduce other pathogens that would very likely trigger a pneumonia outbreak in the bighorn sheep.

Current Status
• For many years, the Teton Range bighorn sheep population was estimated at 100-125 individuals. However, fewer than 60 sheep were counted during the three most recent helicopter surveys, and the population is currently estimated at only about 80 individuals.
• The cause of the apparent decline is unknown, but it coincides with an increase in winter backcountry recreation and colonization of the Teton Range by mountain goats.
• During winter, the sheep live along the crest of the Tetons, eking out a living on windswept ridges above 8,500 feet.
• Winter conditions in these locations are often extreme due to high winds, low temperatures, deep snow, and limited forage; and predispose the sheep to avalanches, falls from cliffs, or poor nutrition. Mortality to Teton bighorn sheep from these causes is typically greater than in sheep populations that use low elevation winter ranges.
• Backcountry skiing, snowboarding, and mountaineering are popular winter pursuits in the Teton Range. Winter visitor numbers in the Tetons and the spatial extent of their footprint has increased dramatically during the last decade. Human activity now frequently extends into habitats that are critical to wintering bighorn sheep. If left unregulated, backcountry winter recreation levels are expected to continue to increase.
• Winter is a difficult time for bighorn sheep because they live off their fat reserves built up during the summer. Energy expenditures resulting from recreational disturbance can cause sheep to burn unnecessary calories that could compromise their ability to survive and reproduce.
• Recent research aimed at understanding the effects of winter recreation on bighorn sheep (Courtemanch 2014) found that:
  o sheep avoided backcountry skiing areas, even if those areas were otherwise good habitat (and connected to habitat that sheep were using). In some cases, sheep were effectively losing up to 30% of the available habitat in their home range because of displacement by skiers.
  o sheep wintering in areas with high backcountry skiing activity had higher daily movement rates than sheep in areas with lower skier use, which translates into unnecessary expenditure of calories and may result in reduced reproductive success and overwinter survival.
• At the end of 2016, an estimated 60-80 nonnative mountain goats occupied the Teton Range. The mountain goat population is growing at a rapid rate. Currently, spatial overlap between bighorn sheep and mountain goats is limited to a few locations, but the potential for forage competition on limited winter ranges and the risk of disease transmission will increase if goat numbers expand in numbers and distribution.
• Grand Teton National Park (GTNP) is currently preparing a mountain goat management plan and environmental assessment.
Next Steps
To address concerns about the Teton Range bighorn sheep population the working group proposes the following actions:

- Develop and implement a public information and outreach plan to increase public awareness of the Teton Range bighorn population and engage support for conservation strategies;
- Support completion of GTNP’s mountain goat management planning process and plan implementation;
- Support WGFD efforts to establish a general license mountain goat hunting season in the Teton Range outside of GTNP;
- Identify crucial bighorn sheep winter ranges and develop recommendations to minimize human disturbance during winter and early spring;
- Identify actions needed to allow sheep to occupy historical, but currently unoccupied winter range;
- Assess the effects of recreation on spring/summer habitat use of bighorn sheep and develop recommendations to limit human disturbance as necessary;
- Establish and implement protocols to monitor winter and summer recreation throughout the Teton Range;
- Convene a panel of conservation genetics experts to review past genetics research, identify data gaps and additional research needs, and make recommendations for actions to improve the genetic status of the herd;
- Continue aircraft-based (winter) and ground-based (summer) population surveys;
- Continue telemetry and camera-based studies of bighorn sheep and mountain goats to document sources of mortality, disease status, habitat use, movements, spatial overlap and physical contacts between the two species;
- Update Teton Range Bighorn Sheep Working Strategic Plan (last updated 1996);
- Support implementation of habitat improvement projects for the benefit of bighorn sheep, where appropriate; and
- Support management of wildfires to benefit bighorn sheep habitat, where appropriate.

Interested Parties:
- Agency Managers
- Teton County Idaho and Wyoming Residents
- Park and Forest Visitors
- State and local government officials
- Jackson Hole Mountain Resort
- Grand Targhee Ski Area
- Wildlife Tour outfitters and guides
- Backcountry recreationists
- Winter backcountry guiding services and concessions
- Non-governmental wildlife conservation organizations
- Sportsmen and women
- Hunting outfitters and guides
- Local, State, and Regional Media

Contacts:
Sarah Dewey, Wildlife Biologist, Grand Teton National Park, (307) 739-3488
Aly Courtemanch, Wildlife Biologist, Wyoming Game and Fish Department (307) 733-2383 x227
Michael Whitfield, Research Associate, Northern Rockies Conservation Cooperative, (208) 520-6117
Kerry Murphy, Wildlife Biologist, Bridger-Teton National Forest (307) 739-5411
Steve Kilpatrick, Executive Director, Wyoming Wild Sheep Foundation, (307) 413-7249
Nate Yorgason, Forest Wildlife Biologist, Caribou-Targhee National Forest, (208) 557-5785
Jason Wilmot, Biological Science Technician, Bridger-Teton National Forest (307) 739-5442