

#	Whiskey Mountain Bighorn Sheep Issues February 2019	Main Theme	Sub-theme
1.	More Access: Human access e.g. hunters and motorized and equal access for all. <ul style="list-style-type: none"> There were more access points/ recreation back when sheep numbers were high (i.e. noon rock etc.) Increased road closures have caused lack of access, leads to fewer predators taken. Increased road closures lead to lack of knowledge. 	Access	
2.	Environmental groups: Communicate with local groups to activate local involvement. More enlargement locally.*	Communications	
3.	Elk herd increase – impact to winter and summer range? Habitat/Nutrition: poor body condition after summer*	Competition	Elk
4.	Competition on summer range? Elk (wild) and goats and sheep (domestic)*	Competition	Summer Range
5.	Increased stress and displacement levels due to increased human presence.	Disturbance	
6.	Sheep's responses to dogs.	Disturbance	Dogs
7.	WGFD funding to figure out disease issues.* WGFD funding and accountability e.g. for summer range studies* Budget for sheep.	Funding	Funding
8.	There has been dramatic acidification in the Winds compared to other Mountain ranges. Some relation? <ul style="list-style-type: none"> Pollution as driver of affecting habitat/nutrition (e.g. air, water) 	Habitat/Nutrition	Acidification
9.	Barren Ewe group – relating to habitat.	Habitat/Nutrition	Barren Ewes
10.	Habitat disturbed/negatively impacted by high recreational use summer and winter and negatively impacted by off-road ATV use.	Habitat/Nutrition	Disturbance
11.	Advanced succession on key areas/lack of fire* - Increase prescribed burns forest wide. Conduct thorough, robust forage study. <ul style="list-style-type: none"> Poor body condition after summer.* Examine fire use on summer/winter ranges – invite Wyoming Wilderness Association – burns in Wildernesses. * Habitat: Fire – increased sheep. Timber thinning and/or fire* Wilderness regulations restrictive of habitat projects* 	Habitat/Nutrition	Fire

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12.	Fringed Sage loss – anti-parasite plants	Habitat/Nutrition	Fringed Sage
13.	Herbicide effects on forage and sheep – current and long term. <ul style="list-style-type: none"> • Effects on lamb recruitment or health overall? • Herbicide used on Torrey* - Selenium 	Habitat/Nutrition	Herbicides
14.	Presence of invasives species, poisonous, noxious weeds, nonnative plants. – various stages/seasons	Habitat/Nutrition	Invasives
15.	Grazing influence on forage stand composition and nutrients*	Habitat/Nutrition	Nutrition
16.	Comparing within the herd unit habitat and nutrition factors.*	Habitat/Nutrition	Nutrition
17.	Habitat/Nutrition: poor body condition after summer <ul style="list-style-type: none"> • Summer habitat nutrition in question* • Unknowns in nutritional deficits on summer range. • Poor condition coming off summer range* • Summer Range Habitat quality: Specific variables influence summer range quality - Could be acid rain/snow influence.* • Poor summer range – decreased nutrition – decrease milk quality – increase disease susceptibility 	Habitat/Nutrition	Summer Range
18.	Mild winters affecting distribution, not moving to lower traditional winter ranges. <ul style="list-style-type: none"> • Lack of data (or shortage) on winter ranges outside Whiskey/Torrey rim. • Winter range look good because of fewer sheep? • Increase winter range activity? 	Habitat/Nutrition	Winter Range
19.	Climatological changes impacting vegetation quality (i.e. drought, annual precipitation decrease).	Habitat/Nutrition	Climate Impact
20.	Predation and habitat/nutrition as added stressors that make sheep more vulnerable to disease – all tied together***	Habitat/Nutrition	Interrelatedness
21.	Industrial pollution possibly affecting nutrition, mineral uptake in forage (i.e. acid rain)*	Habitat/Nutrition	Pollution
22.	Disease: lack of science/understanding of effects of specific strains of bacteria leading to pneumonia.	Health	Bacterial Strains
23.	Disease: scrapie possible? CWD?	Health	CWD
24.	Expression of disease/asymptomatic sheep*	Health	Disease
25.	Disease and re-introduction/augmentation dynamics*	Health	Disease
26.	North side/Spring Mountain herd*- antibodies, genetics, difference to WMBHS	Health	Disease

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27.	Disease: main problem that influences the rest of the issues – learn about possible new factors, their hosts* <ul style="list-style-type: none"> Disease transmission: carriers e.g. mites, black flies, eagles, etc.* Parasite, etc. in water BHS are drinking: reduction of overall fitness: susceptible to disease 	Health	Disease Carriers
28.	Disease function weak genetics* <ul style="list-style-type: none"> Herd genetics, bring genetics back – Genetic vigor. Control group of sheep* - move to see if habitat or animal genetics, compare Whiskey Mountain herd to other herds. Lack of genetic diversity Historically healthy herd: genetic changes?* Lack of knowledge on interactions of disease with nutrition and genetics. 	Health	Genetics
29.	Migration Corridors and Stress	Health	Migration
30.	Changes in composition relative to time when sheep populations were doing well, i.e. micronutrients. <ul style="list-style-type: none"> Salt/mineral blocks. Other species' selenium levels. 	Health	Minerals
31.	Thin skulls relative to other hunt areas – bone density.	Health	Nutrition
32.	Decrease in nutrition: Disease susceptibility* <ul style="list-style-type: none"> Forage quality* Small sheep suggest poor forage. Glacier Lake Meadow* - high protein, nutritious seed, basin wild rye, lions live there (cover) 	Health	Nutrition
33.	Lack of science and understanding – need more studying/education re. effects of specific strains of bacteria which lead to pneumonia.*	Health	Research Needs
34.	Forage nutrients analysis: selenium, summer habitat*	Health	Summer Range
35.	Local pockets of summer range provide disease sink/vector: decreased nutrition.	Health	Summer Range
36.	Disease: potential white muscle disease.	Health	White Muscle
37.	Estimate too high.	Population Mgmt.	
38.	Seen increases in late season hunting hunter numbers, increased road traffic.	Population Mgmt.	Hunting
39.	Hunting season – Any ram leads to fewer ram impacts.	Population Mgmt.	Hunting
40.	Don't hunt near conservation camp.	Population Mgmt.	Hunting
41.	Coordinate with tribes – hunting – management.	Population Mgmt.	Hunting
42.	Influence of capture and collaring on sheep?	Population Mgmt.	Research

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43.	Coyotes at Red Creek? Impacts and behavioral response?* <ul style="list-style-type: none"> • Coyote vs. lion? • High coyote numbers. 	Predators	Coyote
44.	Predators: eagles?* plenty of eagles	Predators	Eagles
45.	Historical effects of predation vs. current conditions.*	Predators	History
46.	Winter access for predator hunting*	Predators	Hunting
47.	Lion predation being high* <ul style="list-style-type: none"> • Arizona had a similar problem with some lions (10%) and took out specific, collared Mountain Lions that were taking lambs = effective 	Predators	Lions
48.	Habitat: poor nutrition intake because of predator pressures.	Predators	Nutrition
49.	Predators – indirect impacts – Harassment of BHS - BHS in poorer habitat * <ul style="list-style-type: none"> • increased predators lead to fewer sheep. • Stealth vs. coursing predators • Predator hunting area closures* • Reduced predation control. • Other Predators. 	Predators	Nutrition
50.	Wolves: Canadian wolves vs. historical species (smaller)*	Predators	Wolves
51.	Wolves: added stressor/increased stress* <ul style="list-style-type: none"> • experimental status* • 1999 promise to “take them out” if impacting wintering wildlife* • Honesty, transparency from WGFD on effect of wolves* • Is the priority wolves or sheep (“choose or lose”). * • Increased wolf activity/presence – longer/late wolf season. • eliminate closing date, keep wolf season open until quota filled. • wolves – area 9, • control and hunting methods for wolves limited. • sheep still learning how to deal with increase of wolves. • predator zone? Increase take? Open WHMA Roads* 	Predators	Wolves
52.	Need results from UW lamb survival study to evaluate impact of predators....	Predators	Research Needs
53.	Predation: We don’t know <u>overall</u> impacts of predators on BHS – need the science*. <ul style="list-style-type: none"> • Understand underlying reasons predators and sheep relationship has changed* 	Predators	Research needs
54.	Wolves: Comparing effects of wolves within the herd unit, across ranges*	Predators	Research Needs
55.	Examination of historical protections, synthesis and gaps?...results.*	Research Needs	History