National Organic Standards Board
Livestock Committee
Proposed Discussion Document
Guidance for Assessing Animal Welfare on Organic Bison Operations

March 28, 2012

The following is provided to aid in assessment of whether or not the requirements of **§ 205.238-241** are being met sufficiently to demonstrate adequate animal welfare conditions on organic bison operations.

Contents

Introduction

The North American Bison has undergone little modification through domestication or selective breeding. Consequently, it is still possible to compare the characteristics of today's bison to what was historically roaming the North American continent to identify the similarities to what is called typical for this animal.

Because bison remain largely undomesticated, the optimal nutritional requirements, and body conditioning will vary significantly on a seasonal basis. In addition, humane handling procedures are crucial to minimizing stress on the animals. We attempt to address those factors in this guidance document.

Bison Nutrition

General Guidance

Because bison are grazing ruminants with a four chambered stomach for feed digestion, it is easy to assume that the feed requirements for bison are similar to cattle. However, there are some significant differences in the species that require an understanding of the nutritional needs of bison.

A bison's rumen is very structured, ensuring that forage based feeds are retained for long periods of time. Bison retain feed in their digestive system longer than cattle. Longer feed retention means that bison have more time to digest the fiber in feeds such as sedges and grasses. However, when consuming alfalfa or alfalfa brome hay, there is virtually no difference in digestibility between bison and cattle because the fiber level in alfalfa based forages is typically lower than in grasses and sedges. Forages with lower fiber levels do not need to stay in the digestive tract as long to be fully digested as compared to forages with higher fiber levels.

Comparison of total tract retention time and dry matter digestibility of forages between bison and cattle

	Bison	Cattle
Total Tract Retention Time (h)	78.8	68.7
Dry Matter Digestibility (%)		
Sedge hay	64	58
Grass hay	74	62
Alfalfa/brome hay	50	52

SOURCE: Schaefer, A. L., Young, B. A. and Chimwano, A. M. 1978

Bison seem to naturally self-limit intake with less dry matter consumed per unit body weight than bovines. Bison also consume feed in several small meals throughout the day vs. fewer large meals observed in bovines. This habit maintains a more uniform ruminal environment and may contribute to more complete nutrient extraction by bison vs. bovines.

Protein needs to be treated entirely different in bison diets than bovines. Bison recycle nitrogen efficiently, an evolutionary response to very low protein diets from mature grasses during several months of the year. This recycling may cause high blood urea nitrogen levels from modestly high protein levels in the diet. In some areas, many feeds contain protein

levels higher than many bison producers consider optimum making it difficult to formulate diets. Eleven or 12% protein is considered the maximum from anecdotal experience.

Animals given too high protein and feed have produced rapid growth and resulted in horn, hoof and kidney problems that lead to other problems. The over-feeding of high-nutrient feed may lead to lethargic animals that have trouble moving about, and could lead to calving problems. A cow needs nine percent protein just to maintain her condition over winter and try to develop her calf. Less than that amount of protein or severe winter could result in pulling her down physically, and thus would take more time to bring her back into condition prior to breeding. The result is a late calf or no calf the following year.

Forage samples alone would indicate that the forage or feed is sufficient for the bison's need, but examining the water could show that a critical element like copper is tied up by iron and manganese and thus causes a deficiency. Molybdenum, sulfate, nitrate, calcium and sodium can also cause mineral deficiencies due to interference.

Many producers experiencing cold winter climates realize that they need to supplement with more of an energy supplement to insure that their animals have the energy to eat and be active.

Seasonal Considerations

Bison have a strong anabolic/catabolic cycle based on day length (anabolic means build up – catabolic means to tear down). All wildlife species in the northern hemispheres require this cycle for survival. It relies on the animal's ability to have a strong anabolic cycle in spring, summer, and early fall and survive nutritional deficiencies in the winter with the nutrients they stored during the anabolic cycle.

Summer grazing usually meets most bison nutrient requirements so long as carrying capacity is not exceeded and minerals are supplemented. If pasture quality and quantity is low, supplementation with hay or grains may be necessary.

It is not uncommon for bison older than 18 months of age to lose 10 to 15% of pre-winter body weight from December to April. Dry matter intake during the winter period tends to range from 1.4 to 1.8% of body weight depending on forage quality, fiber levels, metabolism and total tract retention time. In the spring to autumn, dry matter intake can be expected to range from 2.0 to 3.0% of body weight.

Nutrition and Bison Reproduction

Heifers/Cows

Bison typically mature at two years of age for both male and females. Some yearling females will breed at one year of age and give birth to a calf as they turn two years of age, but this is an exception. The nutrient intake during the pregnancy of first and second calf heifers is significantly higher than a mature cow, especially during the third trimester. These young females must have sufficient nutrient intake to finish growing their own body in addition to finish growing a calf.

This nutrient demand will continue after the calf is born and taper off some as the calf forages on grass. Her ability to seek sufficient nutrition to grow and come into cycle during the normal breeding period is dependent on the quality of food available to her. The result is that calves are then born 45 days following the spring equinox. Normal practice is to breed females at age two with bulls that are two years or older. If a heifer does not attain sufficient size, it may be difficult for her to stand up under the weight of large mature bulls. A key concern for first and second calf heifers is to grow them to sufficient size prior to being bred to insure pregnancy each year of their lives.

A critical issue affecting pregnancy is the ability of a female to flush on highly nutrient forage or feed. Spring time usually brings forth lush vegetation that is high in nutrients. Having this available to females that have recovered from previous pregnancies will help insure a high calving percentage the following year.

Drought and high temperatures prior to and during the normal rut (breeding) period can have a negative effect on pregnancy rate. Often times, a fall green up will cause a flush in the cows that did not breed or take during the normal rut period, and the result is a late calf the next year.

Bulls

A bison male at 18 months of age will begin a lifetime cycle of winter weight loss followed by spring/summer weight gain. Mature bulls will also lose weight during the breeding season, followed by a final period in the fall to allow for weight gain.

Much like mature females, bison bulls can lose 10 to 15% of their pre-winter body weight from December to April due to a slower metabolism. During this winter period, dry matter intake will range from 1.4 to 1.8% of body weight. If grass hay diets are supplemented with grain, winter weight loss will be minimized, but compensatory gains in the spring and summer will not be as great.

During the breeding season, bulls can potentially lose 10 to 15% of body weight again. Therefore, it may be necessary to provide extra energy through supplementation to prevent too much loss of body condition. Excessive loss of body weight during breeding makes it more difficult for the bulls to regain a proper weight status prior to the start of the wintering period. It is important to ensure the bulls are of adequate body condition prior to the winter and breeding seasons. Much like the cows, thin or poorly conditioned bulls entering the winter will still lose weight and be more expensive to feed.

Body Condition and Scoring

As mentioned above, the idea body condition for bison is based upon the attributes that the animal carries in nature. Survivability and low management requirements are important characteristics.

Even though bison in commercial organic operations are selected for the meat marketplace, it is important that the commercial characteristics (size, yield, etc.) are not accomplished at the expense of sacrificing the unique genetic characteristics that allow

bison to survive in a wide variety of conditions, and to calve easily. In other words, bison producers must avoid an attitude of “screw the hump, and build the rump.”

Bison characteristics are usually developed and identifiable by the time they mature at two years of age. The characteristics become more pronounced with age such as the horn growth and overall size. Calves start exhibiting typical bison characteristics late in their first year of life. The more angular and triangle shaped heads, greater horn bases and growth are found on the males, while the females have smaller horns both in diameter and length.

Female bison heads are longer and narrower than the male. Female horns are typically more curved and possess less circumference and more curvature, with the horn tips curved up and inward and often times pointing at each other.

Typical bison characteristics of the Plains bison, (*Bison, bison, bison*), include long hair under the chin forming a large rounded beard, long hair on the front legs forming leggings, and a raised pelage of usually longer and lighter colored hair located over the front shoulder. The pelage extends along the back to just behind the front shoulders. The raised hump is a distinguishing characteristic as well. Calves should exhibit the development of the hump as they approach one year of age.

Wood bison, normally associated with the Canadian provinces, (*Bison, bison athabascae*) tend to have less developed beard, leggings, and an incomplete pelage. The structure of the Wood bison is taller, more moose-like in form. The incomplete development of the beard, leggings and raised pelage, and the body higher off the ground is an advantage for Wood bison, who have to endure the deep snow and ice conditions found in Canada.

The head and neck projection of the Plains bison favored grazing of the plains in more mild climates. The Plains bison’s highest point is typically found by extending a line straight up the center of the leg to a point on the back. The highest point on a Wood bison is also the hump, but it is typically projected as much as one foot forward from a line extending up the middle of the front leg to a point on the back.

Bulls that have to compete within a herd for breeding rights need to have size, muscling and strength less they be overpowered by a bull having more strength. Bison strength is a result of a wide and deep body conformation. The lack of muscle development may be attributed in part to nutrition and exercise.

Female bison need to have sufficient “spring of rib” (width and depth to provide for room for an unborn calf to grow, develop and be born). Pelvic structure is important. Females possessing a narrow pelvis or a serious drop in the top line in the last foot before the tail could very easily develop calving problems due to restriction of the birthing canal. A high tail head can also produce a problem, due to narrowing of the birthing canal to compensate for the projected high tail head.

Bison are seldom caught in a squeeze to allow a “hands on” body condition scoring system so most of the criteria used to assess the animal are visual clues.
A body condition score (BCS) of 1 indicates that the animal is very thin. A BCS of 5 indicates that it is very fat. Alberta Agriculture has developed a comprehensive guide for body conditioning scoring for bison. The table below is excerpted from that guide. The entire guide is available at:
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex9622/$FILE/bcs-bison.pdf. The guide can also be obtained through the National Bison Association at www.bisoncentral.com.

BODY CONDITION SCORING GUIDE FOR BISON

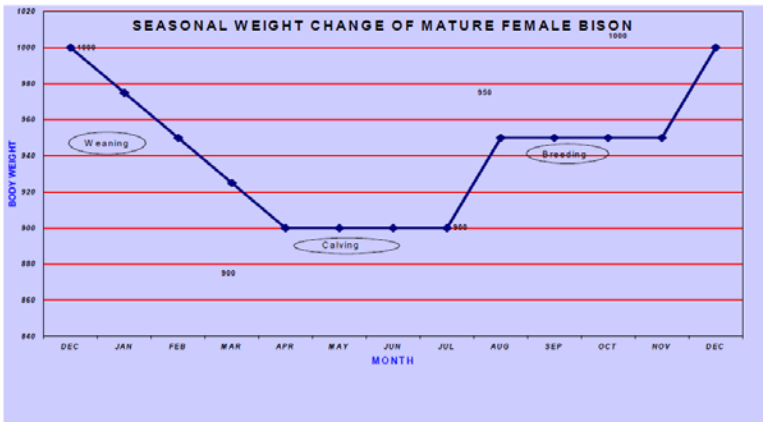
This table can be used to score bison in the field.

BCS	RIBS	SPINE (backbone)	HIP BONE	TAIL HEAD	HUMP
1 very thin	prominent in summer; many ribs visible; in winter, visible but less distinct	very sharp; angle of muscle is steep	prominent and edges are very sharp; rump muscles are caved in	devoid of fat; deep sunken depressions on either side of the tailhead; no fat palpable if bison is in a squeeze	sharp topline; narrow with flat sides when viewed from the front; sharp contrast between the hump and shoulder when viewed from the side
2 moderately thin	some ribs visible in summer and winter	evident but not sharp; angle of muscle is steep	readily seen and edges are sharp; rump muscles cave in slightly	sunken depressions on both sides of the tailhead; small amount of fat palpable if bison is in a squeeze	hump is narrow but not sharp; sides are flat when viewed from the front; distinct contrast between the hump and the shoulder
3 moderate	may be visible in summer but not sharp or distinct; edges round and covered in flesh; not visible in winter	not prominent but can be seen; angle of the muscle has a moderate slope similar to the roof of a tent	visible but not sharp; rump muscles are flat and angular	slight hollowing on either side of the tailhead; some fat palpable if bison is in a squeeze	well developed but not bulging; noticeable distinction between the hump and shoulder
4 moderately fat	may be visible in summer but not sharp or distinct; edges round and covered in flesh; not visible in winter	not readily seen; angle of the muscle has a gentle slope	barely visible; muscles are full but not bulging	slight depression in bulls and no depression in cows	full hump when viewed from the front but not round and bulging; little distinction between the hump and shoulder when viewed from the side.
5 very fat	not visible in winter or summer; covered in fat	not visible and is buried in fat; angle of muscle has little slope and is flat	covered in fat and is not seen; rump is rounded out and full	no depression (bulls) or bulging with fat (cows) on both sides of the tailhead	thick with rounded top when viewed from the front; blends into the should when viewed from the side

Source: Alberta Agriculture, "What's the Score; Bison"
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex9622/$FILE/bcs-bison.pdf

Optimal body condition for bison varies with the seasonal weight fluctuations of the animals.

For example, the weight of mature females will vary up to 15% throughout the year. The animals' typically achieve top weight in the late fall as they graze to store fat to provide energy for both mother and unborn calf to overwinter. The females will lose up to 100 lbs. from December to April, when calving season typically begins.



Source: USDA NRCS Grazing Lands Technology Institute

The chart at right illustrates a typical weight change for mature female bison.

Most people aim to have their bison fat in the fall so that they do not require as much feed over the winter. Most experienced producers aim to have their bison lean in the spring because excess fat may lead to calving problems.

By the beginning of breeding season, the cows should be back to a moderate to good body condition to ensure optimal conceptions rates.

The best indication of overall bison health and condition throughout the season is the hair. Healthy animals have a good hair coat that is full of life that may give a producer an indication of proper nutrition.

TIME OF YEAR	IDEAL SCORE	RANGE
November	4	3-4+
April	2+	2-3
July	3+	3-3+

Bison Health

Bison are not cattle. Differences include the age to breeding (2.5 years), nutritional requirements over winter, nutrition for slaughter animals, social structure, and longevity. Bison have a relatively good resistance to many pathogens that affect cattle.

The two primary factors affecting the health of bison are environmental/nutritional considerations, and chronic stress. Paying attention to these two areas is critical

because typical livestock therapeutic drugs are not as effective in bison as in cattle. In fact, one saying in the bison business is: “A sick bison is a dead bison.”
Because bison still carry the prey/predator instinct, they will mask a sickness until seriously ill (why let the predators know your sick?). At that point, antibiotics and other therapeutic remedies will have only limited efficacy. In addition, the added stress induced to administer the treatment is so great that it often pushes the animal over the edge. This stress can be effectively eliminated by using one of the modern air-powered dart guns.

Poor environmental and feed conditions will weaken the animal’s natural immune system, and increase susceptibility for disease. A successful organic systems plan for bison must focus heavily on the ecosystem and developing systems that will provide optimal nourishment for the bison while sustaining the natural environment.

Chronic stress will have the same effect as more environmental and nutritional conditions. Bison can readily handle the acute stress that comes from a short-term perceived threat. That is the “fight or flight” response to a stimulus. They can fight or run from grizzlies or humans and when all threats are passed, go back to grazing and the adrenalin and steroid levels return to normal. However, they react poorly to extended or continuous (chronic) stress. That stress can be minimized through humane handling procedures (discussed later).

Pathogens

Bison have a strong resistance to many pathogens prevalent in other livestock. Much of this resistance is the result of the “bottleneck” that the species passed through roughly 110 years ago.

In the 1850’s, the bison population was estimated to be somewhere between 30 and 60 million animals. The domesticated livestock species introduced to the West allowed the pathogens these species carried to adapt to these new and different species. BVD, IBR, PI3, BRSV, TB, Johne’s, mycoplasma, leptosirosis, clostridia, Staph, Strep, internal and external parasites and probably pasteurella found a plethora of new ways to reproduce and spread their DNA (genes) to the demise of these native ungulates.

In the late 1800’s, bison were driven to the brink of extinction because of market hunting, war tactics against the Native Americans, and because of the introduced pathogens. Fewer than 1,000 bison survived this onslaught. The surviving animals were those bison that had a genetic resistance to these new pathogens. Testing of wild ungulate species has been undertaken for the past several decades across the western states. All wild populations show exposure to these introduced pathogens without large detrimental effects - yet these same pathogens remain of utmost importance to the livestock industry.

Today, the primary diseases affecting bison are Bovine TB, brucellosis, Bovine Virus Diarrhea (BVD) and Malignant Catarrhal Fever (MCF).

Bovine Tuberculosis (TB)

Bovine Tuberculosis (TB) is a slow, progressive bacterial disease that is difficult to diagnose in the early stages. As the disease progresses, animals may exhibit emaciation, lethargy, weakness, anorexia, low-grade fever, and pneumonia with a chronic, moist cough. It usually is transmitted through contact with respiratory secretions from an infected animal. TB is a zoonotic disease meaning it can be transferred to other species, including man.

Free-ranging and privately owned bison in the U.S. have been free of TB for several decades. TB testing in bison has proven to be effective in diagnosing infected animals. If you are buying animals to start or augment your herd, have the bison over 12 months old tested. Many states are TB free and testing is not required, but as a precautionary measure require TB testing before purchasing.

Brucellosis

Brucellosis is a disease that has strong regulatory and economic guidelines for all states. A majority of states have been brucellosis free in livestock for many years.

The notable exceptions are the states that border Yellowstone National Park. State and federal regulatory agencies consider the Greater Yellowstone Area (GYA) an area of interaction with these wildlife species the last nidus of infection in the U.S. Brucellosis was introduced into bison and elk in the early 20th century. Once the organism was in these wildlife populations it became problematic to control. To this day 20 to 40 percent of the bison and elk in the GYA have been proven to harbor titers from exposure or infection.

Abortion is the most obvious indication of the disease in a herd. Brucellosis is a disease not spread from cow to cow, but from a birthing or abortive event where the abortive event including the aborted, stillborn, newborn calf and afterbirth are exposed to other animals. There are several tests to determine if bison are infected or exposed. These tests are, for the most part, accurate. There are cross-reactions with other organisms that can create suspects in your bison. Regulators are working on being able to identify these other organisms and incorporate them in the battery of tests for brucellosis "suspect" bison.

Calfhood vaccination for brucellosis (Bang's vaccinations) is not mandatory in many states. The vaccine (RB51) is safe for use in bison. It is not as protective against abortion or infection as in cattle, but does offer limited protection. Brucellosis is also a zoonotic disease and can be transmitted to other species including man.

Bovine Virus Diarrhea (BVD)

Anywhere in the world there are cattle, there is Bovine Virus Diarrhea (BVD). This worldwide distribution makes this disease important to cattle producers. BVD is a complicated disease to discuss as it can result in a wide variety of disease problems from very mild to very severe. BVD can be one of the most devastating diseases cattle

encounter and one of the hardest to get rid of when it attacks a herd. The viruses that cause BVD have been grouped into two genotypes, Type I and Type II. The disease syndrome caused by the two genotypes is basically the same. However, disease caused by Type II infection is often more severe in cattle. The various disease syndromes noted in cattle infected with BVD virus are mainly attributed to the age of the animal when it became infected and to certain characteristics of the virus involved.

As mentioned earlier, bison appear to be resistant to clinical manifestations from exposure. BVD has been incriminated in losses of bison placed in feedlots in conjunction with cattle. Vaccinations for BVD Type I and Type II are effective in preventing the disease in bison. I have never seen the disease in free-ranging or any captive herd.

Malignant Catarrhal Fever (MCF)

Malignant Catarrhal Fever (MCF) is a generally fatal disease of cattle, bison, true buffalo species, and deer. It is caused by viruses belonging to the Herpesvirus family. MCF occurs worldwide and is a serious problem, particularly for bison in the United States and Canada.

MCF in bison is caused by a virus called ovine herpesvirus-2 (OvHV-2). Most infections are characterized by depression, separation from the rest of the herd, loss of appetite, and in many bloody diarrhea. Unlike MCF in cattle, discharge from the eyes and nasal passages of affected bison is minimal. Animals develop a fever and may pass bloody urine. The clinical course is generally 1-7 days. Most animals die within three days of developing clinical signs. There is no effective treatment for MCF in bison. Bison older than six months, particularly if stressed by bad weather, transportation and handling are the most susceptible to infection. Large outbreaks occur in feedlots, where stress due to crowding is likely.

Studies of field outbreaks strongly suggest that sheep infected with OvHV-2 are the principal source of MCF outbreaks in bison. A strong association between outbreaks in bison and recent exposure to sheep has been documented repeatedly since 1929. In some outbreaks, however, no sheep were in the vicinity immediately prior to the first case being identified. There is no evidence that transmission occurs horizontally from one bison to another. Currently there is a study supported in part by the National Bison Association to establish whether bison-to-bison transmission is a factor in natural outbreaks.

Internal parasites

It is necessary for special attention to be given to managing internal parasites on organic bison operations. Each parasite's life cycle is different and many cycles can be interrupted by changes in management. Sometimes small changes in the way the producer pastures or feed bison may slow or stop the future spread of the parasite based on the available facilities.

If breed selection, pasture management, supplements and allowed treatments are not successful in keeping sheep parasite loads from impacting well-being, individual animals need to be given conventional treatments.

External Parasites

Ticks and lice have been identified on bison and could potentially be detrimental. Bison have a thicker hair coat and identification of lice in bison is rare. Ticks have been found on bison around the tail head. In many areas where elk and deer are infested with ticks, bison sharing the same habitat are tick free.

Physical Alterations

Consistent with the low-management approach to bison, bulls are not castrated. Nor is there any need to dehorn bison.

Bison Handling

The primary objective of any handling program is to reduce stress on the animals while assuring the safety of handlers. A bison organic systems plan must discuss how the producer will handle or move bison; how they manage them on range; how they confine and feed them; as well as how they are worked in the corral.

It is important to recognize that bison are an extremely social animal with strong matriarchal divisions. Establishing a herd with the correct social balance, and the ability for animals to express their natural behavior, is the first step in reducing stress.

Bison have a very intact social structure that has definite spacing requirements between individuals and family groups. This spacing requirement may be different for different sexes and ages of animals throughout various times of the year. Herds that generate their own replacements from offspring will develop family groups between related individuals.

The pasture environment includes the size and shape of the pastures, forage quantities and qualities available, watering sources, spatial requirements for individuals and/or family groups as well as a myriad of other considerations. Social stress will become a factor if pasture size is too small to give adequate spatial requirements for individuals or family groups for large herds. This causes discontent and disharmony within the herd, causing animals to breach fences and become difficult to handle.

Bulls will separate from the herds after breeding and only young bulls are allowed to stay with the cows and calves. Post-breeding, the bulls have been nutritionally and physically stressed and should be checked for wounds or other forms of trauma.

Corrals

Corrals and working facilities should be designed to minimize the stress on animals, and to facilitate the ability of handlers to gently apply and release pressure. The amount of space allowed for each individual animal depends upon the amount of time that the animal will be maintained in the corral. When animals are introduced into a new herd, is advisable to house those animals in the corral for several days so that the animal s can adjust to their new environment. The producer should allow a minimum of 250 sq. /ft. (preferably 400 sq. ft.) per adult animal in this type of confined situation.

Never place just one bison in a corral or pasture for extended periods. Because they are extremely social, they will experience chronic stress when isolated from the herd.

When handling bison, the producer should strive for a gentle "dance" of applying pressure, the animal moving away from the pressure and then releasing the pressure. The fact that we move into an animal's flight zone giving it pressure and when it moves away from us, we release the pressure by either not moving with them in the same direction (by stopping) or we move in a different direction. This sets up a positive cause and effect relationship – that is we get into their flight zone putting pressure on them, and they, by moving away from us get released from the pressure.

The National Bison Association—in cooperation with Dr. Temple Grandin of Colorado State University—developed has developed a bison welfare audit form to measure several areas of working bison in the corral. That audit form is included as an attachment at the end of the Guidance Document.

Inside housing is rarely used for bison. These animals are adapted for extreme weather conditions in the outdoors. Bringing the animals inside actually increases stress.

Calving

Human interaction with calving bison should be held to a minimum. Because bison have not been bred to produce calves larger than nature intended, cows rarely need assistance in calving.

One of the most important things a bison cow needs at calving time is peace. There is no fixed rule regarding amount of space a calving bison cow needs. However, the producer can judge that space by monitoring the cow's behavior: If she changes her behavior with the producer's presence (such as standing up, running off or her labor arrests) she needs more space. If the other bison pester her and she cannot get away, then she needs more room.

Nature also needs the cow to be leaner to give birth effectively. A fat bison cow will have trouble giving birth, and the calf from such a cow will likely be too big and too hard to birth.

Reference Material:

Alberta Agriculture (2007) "What's the Score: Bison" Body Condition Scoring Guide.

Anderson, Vern PhD (____) “perspectives on Nutritional Management of Bison Bulls Fed for Meat, Carrington Research Extension Center, North Dakota State University.

Feist, Murray (2000)”Basic Nutrition of Bison,” Saskatchewan Agriculture, Agriculture Knowledge Centre, Saskatoon, Saskatchewan, CA

National Bison Association (2010) The Bison Producers’ Handbook, A Complete Guide to Production and Marketing, Westminster, CO.

USDA NRCS (2006) “Bison Body Condition.” Grazing Lands Technology Institute, Fort Worth, TX

Attachment -- Bison Welfare Audit

The National Bison Association—in cooperation with Dr. Temple Grandin of Colorado State University—developed the following bison welfare audit to measure several areas of working bison in the corral.

Bison Welfare Audit

ranch _____ auditor _____ date _____

class of animals_____ time of day _____ total time_____

(score 50 consecutive head - score each animal individually - repeat audit as necessary)

a) ELECTRIC PROD usage ---- Circle number if prod is USED --- Slash otherwise

(The goal is to not carry a Hot-Shot in hand - even a touch without the shock counts as usage.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

note where usage took place-

b) COLLISION with HEAD GATE ---- Circle number IF HARD HIT occurred --- Slash otherwise

(use your best judgment here - If the bison hits hard enough to cause a bad headache, count it)

(moving further from the chute, or enclosing the sides and/or front of the chute are common solutions)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

c) CHUTE EXIT SPEED ---- Circle number if the bison FELL exiting the chute --- Slash otherwise

(a rubber mat for footing, or a visual barrier in front of the chute will help this problem)

(a knee hitting the ground, or worse, constitutes a fall)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

d) INJURY ---- Circle number, if at any time, recent injuries are apparent --- slash otherwise

(broken legs, broken horns, broken ribs, puncture wounds, etc.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

b) CROWDING ---- Circle number if any bison climbs on another --- slash otherwise

(position in the stack does not matter, count all involved; also include bison that turn over backwards)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

note where crowding occurred -

Questions: (to assist in improvement - check appropriate box)	yes	no	?
1) Bison were gathered from the pasture into a holding area at a slow pace			
2) Bison were moved into the corral system at a reasonably slow pace			
3) The bison were generally relaxed while in the corral system before processing			
4) Bison flowed through the corral system to the tub smoothly with minimal effort			
5) Personnel moved slowly without making excessive noise (yelling, slamming gates, etc.)			
6) Bison were moved easily through the corral with one or two people			
7) Post processing, bison receive ample space, water, and feed			
8) Weaning pens have adequate space, water and bunks, and dust is minimal			
9) Panting was observed in some animals in the corral			
10) Dust was a problem during processing			
11) Excessive poking, beating on, or multiple electric prod use on animals occurred			
12) Old bulls were a problem when gathering and/or processing			
13) Too many serious bison injuries occur during processing			
14) The corral system needs significant modifications			

Additional comments:

Committee vote:

Motion: Wendy Fulwider Second: Colehour Bondera

Yes: 8 No: 0 Absent: 0 Abstain: 0 Recuse: 0