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3-Step Body Condition Scoring (BCS) Guide FOR RANGE CATTLE

Implications for Grazing and Reproduction

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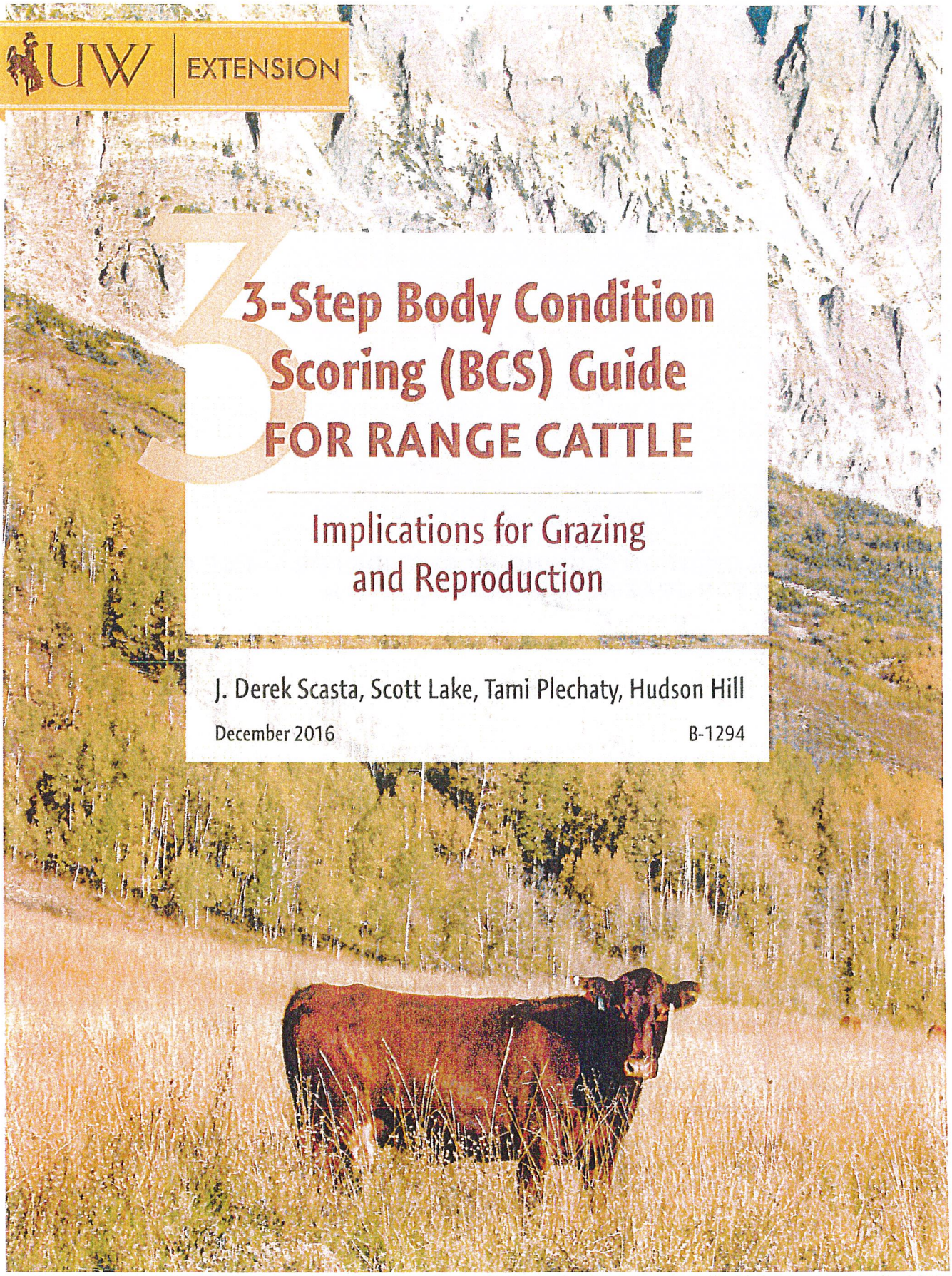

3-STEP BODY CONDITION SCORING (BCS) GUIDE FOR RANGE CATTLE: IMPLICATIONS FOR GRAZING AND REPRODUCTION

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3-Step Body Condition Scoring (BCS) Guide for Range Cattle: Implications for Grazing and Reproduction is a peer-reviewed publication.

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Introduction

Body condition scores (BCS) are a systematic approach to quantifying the energy reserves of beef cattle grazing on rangeland and pastureland. Much of what we know about BCS has been documented in the National Research Council's Nutrient Requirements of Beef Cattle. Changes in these fat and muscle reserves are visually noticeable and are an indication of the nutritional status of the animal, rangeland forage conditions, and reproductive performance.

Key times to score cattle are prior to calving, prior to breeding, and at weaning. This is often done 100 days before calving and 60 days before breeding. Body condition of beef cattle are judged on a scale of 1-9 (with 1 being emaciated, 5 being ideal, and 9 being obese; Table 1). Having more fat on beef cattle, as compared to dairy cattle, is desirable, so different BCS scales are used. This is important because dairy cattle are judged on a BCS scale of 1-5 (with 1 being emaciated, 3 being ideal at calving, and 5 being obese) and different observations of ligaments considered. Different breeds may have slightly different standards, so making sure you are using the appropriate guide for your cattle is important. We will focus on the system and ideals used for British and continental beef breeds. BCS is based on the visual appraisal of fat condition and can be used as a decision-making tool for supplemental feeding, grazing, breeding, and predicting animal performance.

Table 1. Body Condition Score (BCS) index for beef cattle.

Body Condition Score (BCS)	Description	Percent Carcass Fat
1	Emaciated	4
2	Very thin	
3	Thin	9
4	Moderately thin	
5	Moderate (ideal)	19
6	Moderately fleshy	
7	Fleshy	27
8	Very fleshy	
9	Obese	35

Implications for Grazing

From a nutritional perspective, BCS reflects the quality and quantity of forage that has been available to the animal; thus, BCS is a good indicator of what cattle have been eating and can inform future management. Placing BCS in the context of rangeland forage conditions is important. For example, winter forage is dormant, and supplemental feeding programs drive animal nutrition. Data from Laramie, Wyoming, has measured rangeland forage as low as ~ 3% crude protein and ~ 40% total digestible nutrients (TDN) in January. For ranchers calving early to mid-spring, this has a substantial effect on the nutritional plane and supplemental feeding decisions that should be made at that time. In contrast, spring and early summer forage is of high quality with rangeland forage exceeding 18% crude protein, but total forage quantity may be low early on. Summer forage will be declining in quality but high in quantity. These forage conditions have to be related to stocking rate and grazing management. For example, relative to stocking rate, is there adequate standing forage or not, and what is the life stage of the cow (breeding, mid-gestation, late-gestation, early lactation, or weaning)? Late gestation and early lactation are typically considered to be critical production stages, and low nutrition and low body condition scores during these periods will inhibit animal performance.

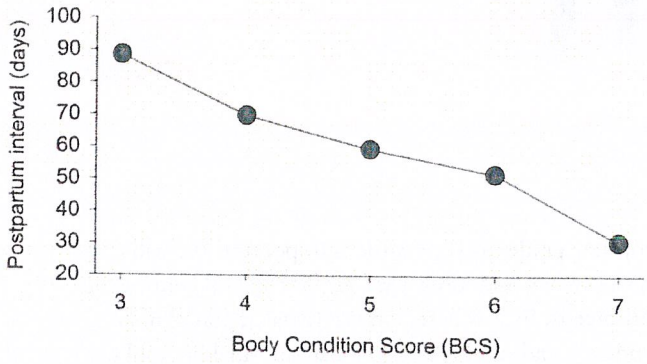


Figure 1. As BCS improves, time from calving to first estrous (postpartum interval) and conception improves (data adapted from Houghton et al., 1990). This is important if a cow is expected to produce a calf every 365 days because she will need to breed back within 83 days of calving.

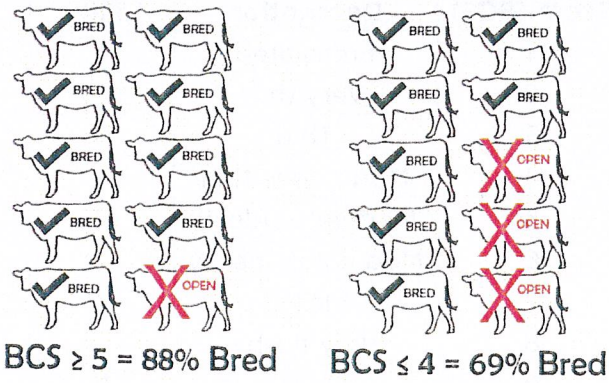


Figure 2. Effect of BCS on breeding success and pregnancy rates.

Implications for Reproduction

From a reproductive standpoint, BCS at calving and breeding can have an effect on the percentage of cows open after breeding, postpartum interval (PPI), or length of time between calving and resumption of her estrus cycle, and calf vigor at birth. Aiming to have cows calve every 12 months is critical. If this calving interval is extended beyond 12 months, the cost of pound of calf produced by the herd is increased and will expand the calving window or will eventually result in open cows.

To maintain that calving interval, cows need to have their first estrous cycle within 60 days of calving and be re-bred within 80 days after calving. Data indicates cows with a BCS of 3 had a PPI of ~ 90 days, cows with a BCS of 4 had a PPI of ~ 70 days, cows with a BCS of 5 had a PPI of ~ 60 days, cows with a BCS of 6 had a PPI of ~ 52 days, and cows with a BCS of 7 had a PPI of ~ 31 days (Figure 1). Additionally, thinner cows will not only take longer to breed, but overall pregnancy rates will be lower.

Data from the University of Wyoming (Lake et al., 2005) demonstrated that, during a 60-day breeding season, cows in a BCS between 5 and 6 had an overall pregnancy rate of 88%, while cows in a BCS of 4 had an overall pregnancy rate of only 69%. (Figure 2).

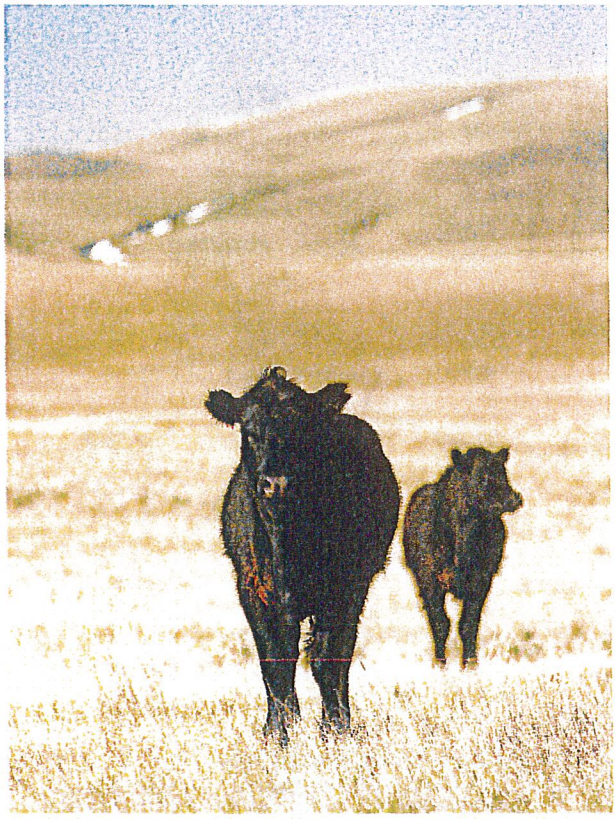
Improving Body Condition Scores

While having animals in ideal BCS (~5) by breeding, or as close to ideal as possible, is critical, keep in mind the difficulty of increasing the condition of a cow during early lactation. Table 2 illustrates the amount of weight gain required to increase condition score from calving to breeding. Notice that cows in a low condition need to gain upward of 3 lbs/day prior to breeding. Under most practical conditions, that is a very difficult task. It is recommended cows be in an acceptable BCS by the time they calve. Feeding beef cows to their requirements or considering non-feeding factors such as timing of calving and grazing management to either gain or maintain weight, is critical.

Table 2. Weight and average daily gains required for a mature lactating cow to achieve a certain BCS if taken at calving (data from Wiltbank 1982).

Body Condition			Weight and Gains Needed by Breeding (lbs)		
BCS at Calving	to	BCS Needed at Breeding	Days to Breeding	Body Weight Change (total lbs)	Average Daily Gain (ADG, lbs per day)
5		5	60	0	0.0
4		5	60	80	1.3
3		5	80	160	2.0
3		5	60	160	2.7
3		5	40	160	4.0

A good rule of thumb is 7-9-11 for protein requirements. A dry cow during early gestation has a crude protein requirement of 7%; a cow during late gestation has a protein requirement around 9%; and a cow during early lactation has a crude protein requirement of 11%. Likewise, her energy maintenance requirements can increase by 80% from early gestation to peak lactation. Knowing and feeding to a cow's requirements and managing condition relative to critical production periods such as timing of calving and forage quality is critical.

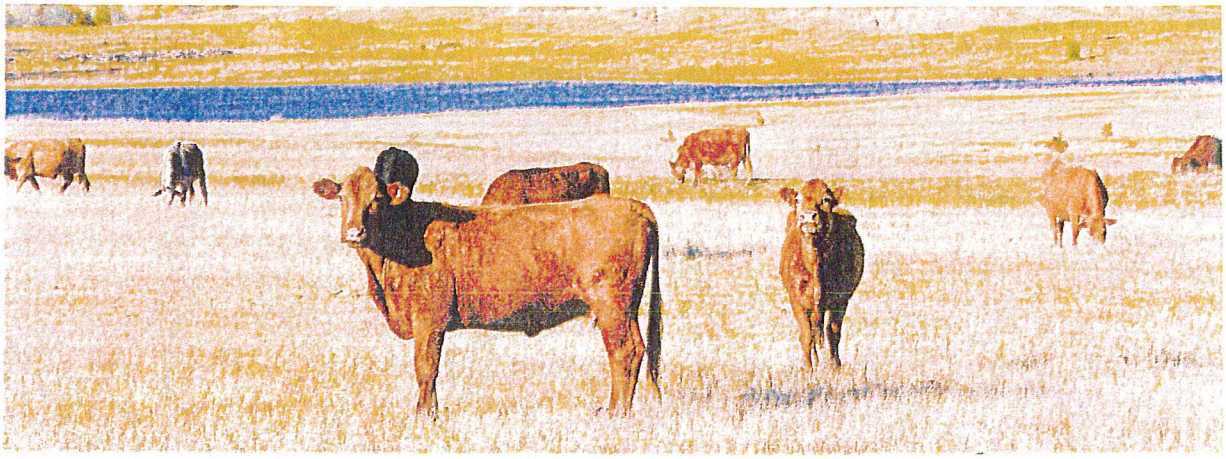


BCS Index Description

Optimum BCS is a 5 at breeding, which equates to ~19% body fat (Table 1). Cows with a BCS of 4 or less will have lower reproductive performance. In beef cattle, if the backbone is highly visible or spinal processes can be felt easily, the animal falls at a BCS of 3 or lower. If the backbone can only be felt through palpation and feels rounded, the animal is at or above a BCS of 4. If the cow's 12th and 13th ribs can be easily seen, a cow is considered a BCS less than a 5. If the 12th and 13th ribs cannot be easily seen, a cow is considered a 5 or higher, and the tailhead ligaments will not be visible and are filling with fat. Cows with BCS scores of 6 or higher have hindquarters that are filled out, spinal processes that are not noticeable as the spaces have filled in with fat, and a brisket that has filled out. At a BCS of 9, the animal can't walk easily and bone structure can't be seen with the naked eye. All of these are indicators of previous nutrient supply compared to nutrient requirements and influence potential reproductive performance – considerations that are critical to the economic performance of cow-calf operations.

BCS Steps

This guide is intended to be a very simplistic and usable approach to developing body condition scores. A simple three-step guide is the systematic approach to visually appraising key areas of cattle (Figure 3). Note that cattle, like people, can carry fat differently, and looking at all locations when developing each individual score is important. Examples of Wyoming cattle with BCS scores of 3, 4, 5, and 6+ are provided in Figure 4.



STEP #1 –

Look at the last two ribs. If both are easily visible, BCS < 5. If not, BCS ≥ 5.

STEP #2 – , short ribs

Look at spine. If individual vertebrae are visible, BCS ≤ 3.

STEP #3 –

Look at shape between hooks and pins. Shallow U - BCS = 6, Strong U - BCS = 5, V Shape - BCS = 4, Strong V - BCS = 3, Very Strong V - BCS = 2.

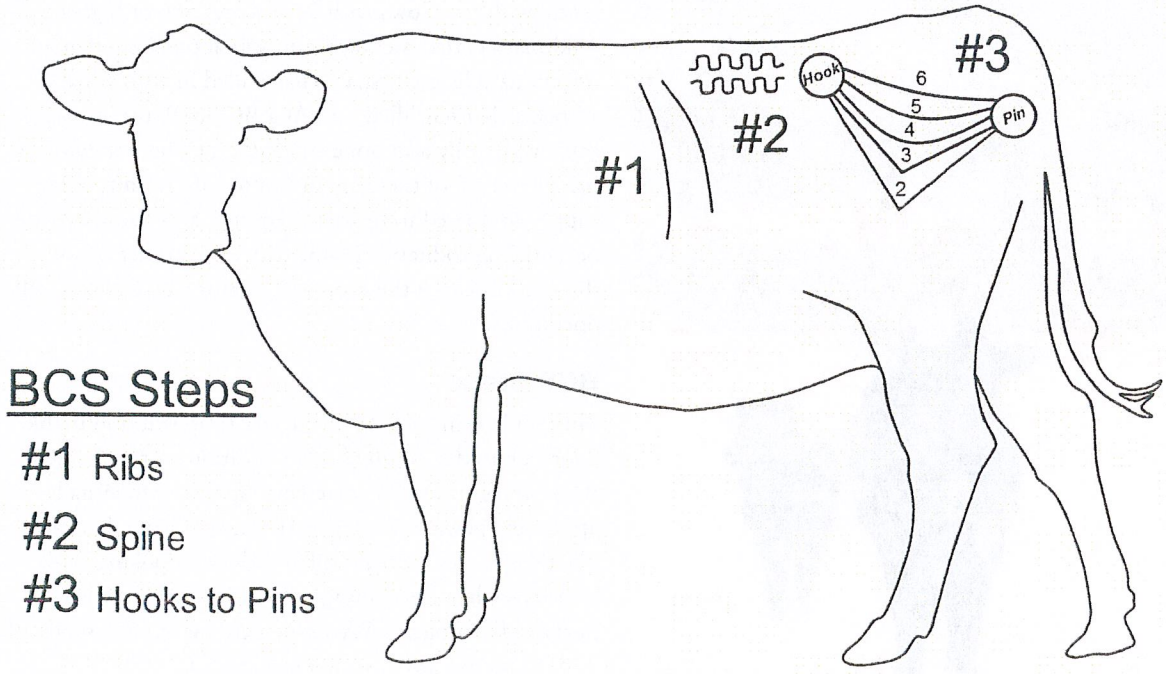
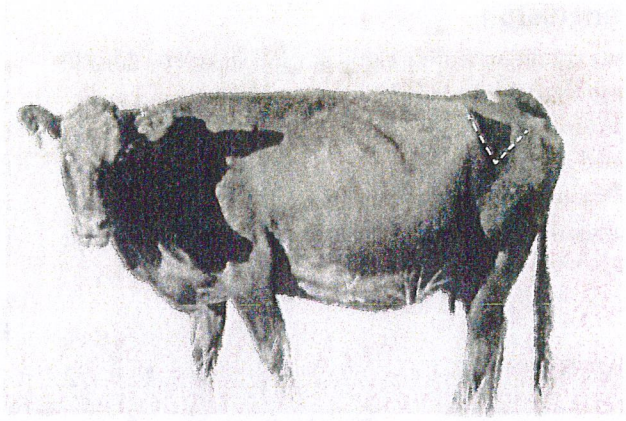


Figure 3. 3-Step Body Condition Score (BCS) guide for beef cattle. **Step 1** – Look at the last two ribs. If apparent, BCS < 5. If not apparent, BCS ≥ 5. **Step 2** – Look at spine. If visible, BCS ≤ 3. **Step 3** – Look at shape between hooks and pins. Shallow U - BCS = 6, Strong U - BCS = 5, V Shape - BCS = 4, Strong V - BCS = 3, Very Strong V - BCS = 2.

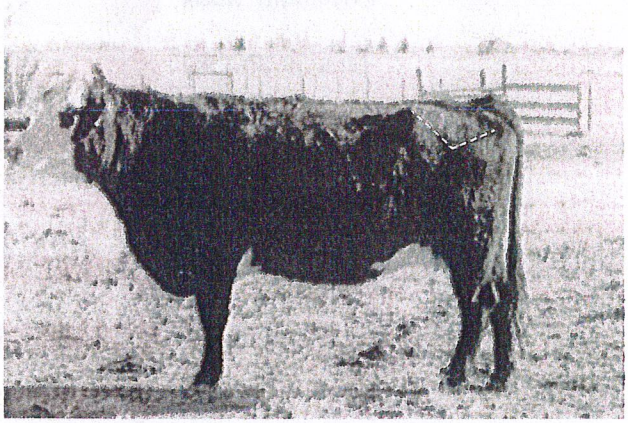
BCS = 3

Last two ribs are visually apparent so BCS < 5; spine is visible so BCS ≤ 3. Shape between hooks and pins is a strong V so BCS = 3.



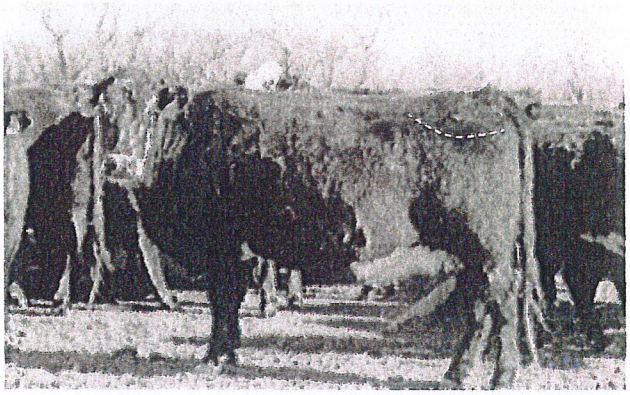
BCS = 4

Last two ribs are visually apparent so BCS < 5 (this cow has a lot of hair making visual appraisal difficult); spine is not visible so BCS > 3. Shape between hooks and pins is trending toward a V so BCS = 4.



BCS = 5

Last two ribs are not visually apparent so BCS ≥ 5; spine is not visible so BCS > 3. Shape between hooks and pins is trending toward a shallower U so BCS = 5.



BCS = > 6+

Last two ribs are not visually apparent so BCS ≥ 5; spine is not visible so BCS > 3. Shape between hooks and pins is a very shallow U, so BCS = 6+. Brisket is filling out, and fat around tailhead is apparent.

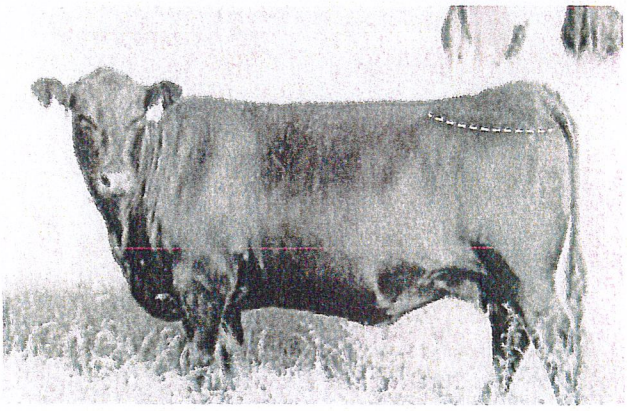
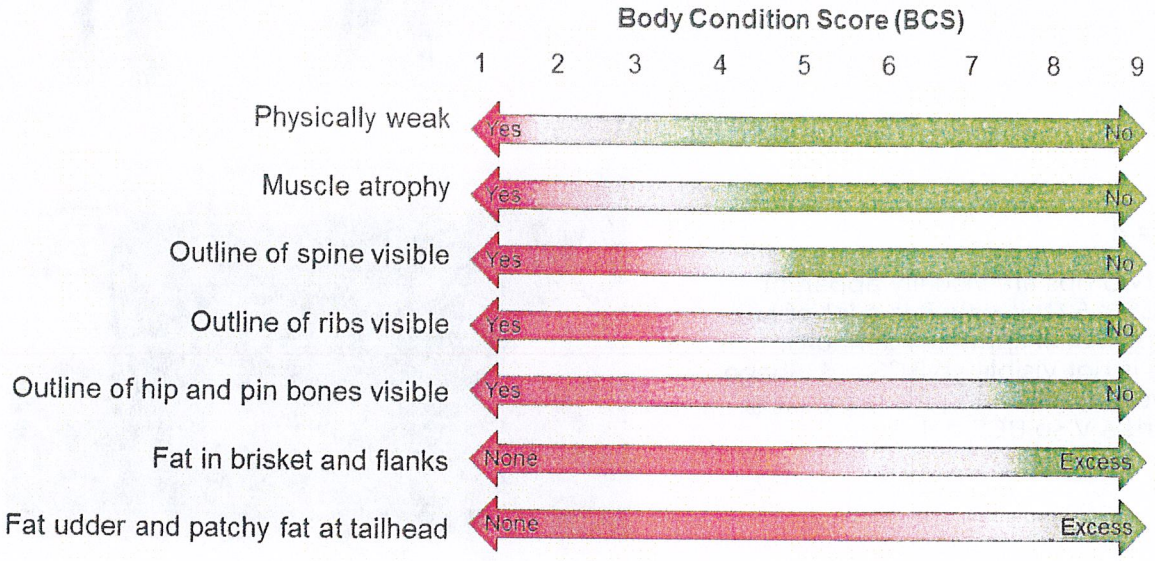


Figure 4. Examples of Wyoming cattle with a range of BCS scores from 3 to 6+.

Conclusion

Body condition scoring cattle can and should be done by ranchers to determine reproduction potential and make grazing or supplemental feeding decisions. We have presented an easy-to-use, three-step method of determining body condition scores. Remember also that visual appraisals of body condition can sometimes vary due to the shape of an individual animal. For example, an animal with a lot of rib shape will have ribs more easily seen at higher body condition scores than an animal that is more flat-ribbed. To help deal with this variability and understand other indicators of body condition, please refer to Figure 5.



(Modified from Pruitt 1994 and Eversole et al. 2009)

Figure 5. Other indicators of body condition of beef cattle.