



An Easy to Use System for Determining Range Cattle Body Condition

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Why is Body Condition Important?

Just as identifying plants is the baseline skill for rangeland professionals, the ability to assess the condition of grazing livestock by observing them is critical to their effective management. Body condition is really just the amount of fat and thus, energy storage available for a free-ranging animal. This makes it an important indicator of the overall health and well-being of herbivores both wild and domestic. Body condition is often related to reproductive performance. Thin cows do not breed back as effectively as cows in better condition¹. Calves from thin cows gain less than calves from dams in better shape². Body condition is also an indicator of range conditions and management³.

If you grew up around livestock, determinations of body condition are second nature. But for those in the range profession who do not come from a livestock background, visually assessing animal body condition can be intimidating. It is not difficult to tell a fat cow from a skinny one (Figure 1), but when discussing the condition of a group of range cows and you hear that “the black cow 2103 is a 5 and the red cow 3996 is a 4”; you may or may not see the differences between those two animals that a more experienced person is seeing. You may not even understand what a score of 4 or 5 represents. The objective of this publication is to provide you with information to help make those detailed assessments yourself.

How is Body Condition Determined?

In the US, we assign scores for body condition (BCS) using a 1 to 9 scale, based on numerical amounts of body fat. Generally speaking, cows in BCS 1 to 3 are thin, 4 to 6 are moderate, and 7 to 9 are fat (Figure 2). You will not usually see many range cows in BCS 7 or greater. As mentioned earlier, most individuals will recognize the difference between BCS 3 versus 7, but we may not be able to assign a score. Fortunately, it



Figure 1. Cows in thin (top) versus fat (bottom) body condition.

just takes practice and there are extension publications and photo guides available to help you. If you search for “cow body condition score” on the internet for instance you will get about 200,000 results. There have even been apps developed for this. However, much of this material was not developed for those who come from non-livestock backgrounds.



Figure 2. Side view of cows in body condition scores (BCS) 4 (top), 5 (middle), and 6 (bottom).

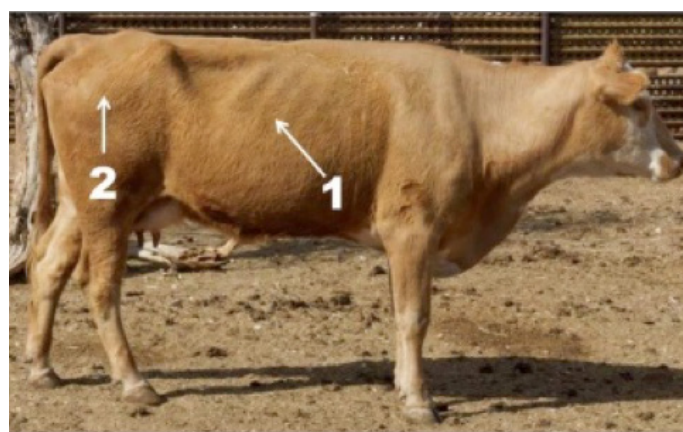
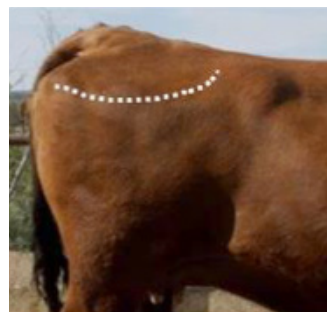
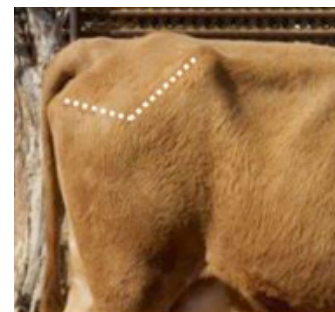


Figure 3. Body condition score landmarks from steps 1 (rib effect) and 2 (U-V effect).



"U" effect
Higher BCS



"V" effect
Lower BCS

Figure 4. Illustration of the "U-V" effect.

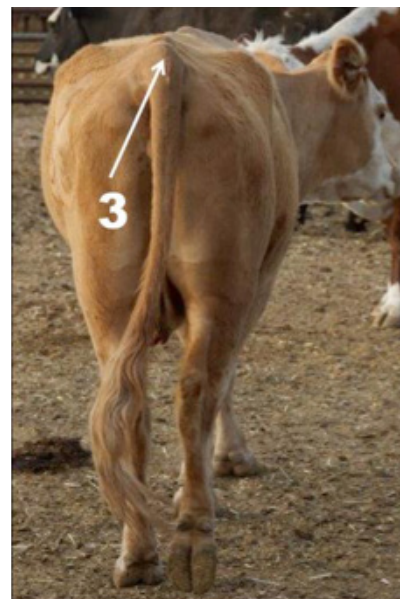


Table 5. Body condition score landmarks from Step 3 (T-P effect).

Below is a "BCS in 3 easy steps", system using terminology developed specifically for novices by the late Dr. Jerry Stuth.

Three-Step Method to Visually Assess Cow Body Condition.

Step 1. Look at the cow's ribs (Figure 3). If you can easily see the last 2 ribs the cow is \leq BCS 5, if you can't see ribs she is \geq BCS 5. This is the "rib effect".

Step 2. Look just in front of the cow's tail along and below her backbone, in the area of the pelvis (Figure 4). This area will vary in overall indentation or fullness depending on fatness. If the area has a flattened or shallow "U" shape the cow is \geq BCS 6. A slightly deeper "U" will be BCS 5, a deep "U" is 4, and a prominent "V" is \leq BCS 3. This is the "U-V effect".

Step 3. From behind, look at the cow's back-bone (Figure 4). If the overall profile is flat she is \geq BCS 6, if there is a slight point along the backbone, i.e. like a teepee, she is BCS 5, if the point is prominent, she is \leq BCS 4. This is the "T-P" effect.

Applying Body Condition Scoring in the Field

Be prepared that as you begin to apply this method in the field, experienced cattle managers will probably also mention characteristics such as “being able to see the short ribs”, “a full brisket”, etc... or they may discuss age and breed differences. As you gain knowledge and see more and more cattle, these statements will start to make sense. Until then, have confidence that this method will give you a good start. We should also point out that any given animal may have 2 out of 3 indicators that she is a “5” and one that says “4”, so there will still be some subjectivity involved. This is normal. Even experienced BCS evaluators may vary somewhat on the assessment of any individual animal.

Research and practical experience indicates that most of the biologically and economically important change in cow body condition occurs between the scores of 4, 5, and 6. For instance, in a study involving more than 1000 beef cows⁴, those in $BCS \leq 4$ had a pregnancy rate of 58% compared to 85% for BCS 5 and 95% for $BCS \geq 6$. Similarly, a recent University of Florida extension publication⁵ estimates \$ of calf weaned per cow exposed to breeding at \$773 for BCS 4 versus \$821 for BCS 5. If you become competent at consistently differentiating cows within that range of scores, you will be well on your way to using BCS as a range and animal management tool. Now let’s learn an easy and practical way to record and apply BCS information.

Spending time out on the range observing land and animal conditions is considered by many range and ranching professionals as one of the perks of the job. These excursions are more than just fun, however. They can be an important part of your overall resource management program. As alluded to earlier, BCS is one of the key indicators used to evaluate animal health and performance. It can also be used to monitor the effectiveness of grazing management decisions such as stocking rates and when to start or stop supplemental feeding. Armed with little more than a pocket notebook, a pen, and your newfound knowledge of how to visually assess BCS, you can collect a great deal of management data relatively easily.

Body condition is an indicator of fatness which is reflective of past nutrition and a predictor of future performance. Plotted at regular intervals over a production year, BCS provides a record of animal performance which can be interpreted in the context of precipitation, range improvements or other management practices (Figure 6).

Such information is obviously important for current management, but may be equally important to provide a historical context for future managers. Often, BCS is recorded for an entire herd of animals and used to sort them into feeding groups. Animals in lower BCS can be fed to

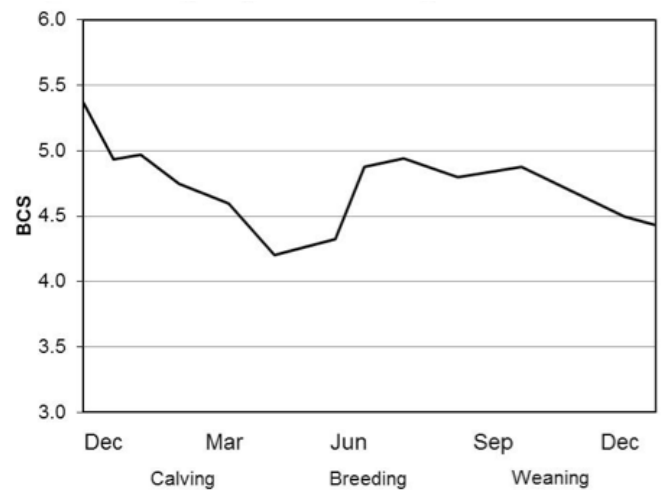


Figure 6. Observed body condition score (BCS) from range cows in central Arizona during a production year (V Bar V Ranch).

improve condition and subsequent performance without expending resources of time and money feeding animals which are in adequate BCS. In extensive range management scenarios, such a practice may not always be practical. In this case, BCS can be used as previously mentioned, i.e. to collect BCS on a subset of animals in the pasture to infer condition of the herd and inform management.

Practical Method For Recoding Body Condition Scores

In order to use BCS effectively as a nutritional monitoring tool, one must determine the number of animals to sample, how often to collect information and how to best interpret the information collected. Practical application of statistical methods to determine an adequate sample size indicates that for BCS in herds larger than 500, sampling about 10% of the animals will represent the herd reasonably well. For smaller herds, you may need to obtain observations on about 25% of the animals. Monthly sampling is frequent enough for most cow/calf production situations, but more frequent observation may be called for during animal transitional periods such as calving, or during environmental changes such as spring green-up and around the first frost of the year.

If you collect BCS observations from a herd and just write down the numbers, add them up and divide by the number observed, you will get an average BCS for that herd. In extensive range management situations where we are focusing on managing a herd instead of individual animals, this value may be all we can really use. We submit, however, that it is useful to collect those numbers in just a little different way. Figure 7 illustrates a way of collecting BCS for a group in single score categories and rather than writing down the BCS values, use “tick marks” in each score as you observe an animal in that BCS. By so doing, you will

BCS	Field Observations	Count	%
3	IIII	4	7
4	IIII II	7	13
5	IIII IIII IIII II	22	41
6	IIII IIII IIII III	18	33
7	II	2	4
8	I	1	2
		54	100

Figure 7. Collection of cattle body condition scores (BCS) to illustrate distribution of BCS in the herd. Herd average = 5.2; approximately 20% of the herd is BCS 4 or less.

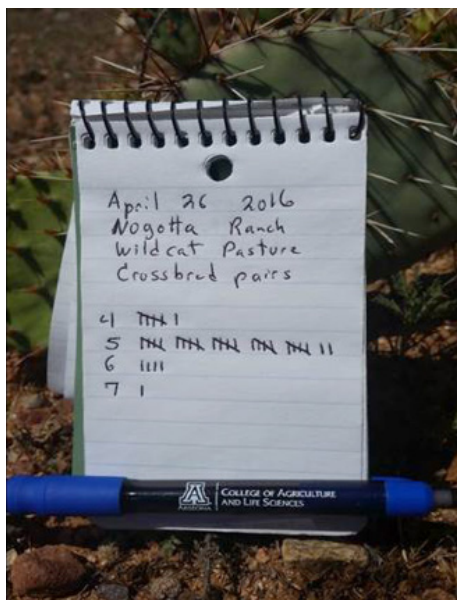


Table 8. Body condition scores recorded on "in your pocket" data sheets.

create a bar chart of the BCS in the herd and get an indication of how BCS is distributed. This will provide an indication of how many animals are under that economic threshold of BCS 4 for instance. Now, in a particular operation it may or may not be practical to separate and manage those animals differently, but a manager will at least know what the BCS distribution is and be able to plan for subsequent performance (e.g. breed-back, culling rate, etc...).

So, if you will keep a small notebook and record your BCS observations this way (Figure 8), you can keep a history of BCS along with other useful range monitoring information such as precipitation or forage production. They can be stored on the

dash of the pickup until taken in (or photographed with your cell phone) and used for management decisions and permanent record keeping.

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