

# Application Of Existing Domestic Animal Condition Scoring Systems For Captive (Zoo) Animals

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Quantifying body weight of captive wild animals has become one common assessment tool for evaluating general health. Although body weight is a very useful measurement, for most zoo animals the average body weight for stages of growth, pregnancy, or maintenance have yet to be defined. Another concern is that using weight alone, as a means of determining proper conditioning, is difficult. Subsequently, the experiences of zoo animal care personnel with captive and domestic animals have become an essential point of reference.

Body condition scoring is a subjective measurement of muscular definition and external deposits of adipose tissue. This system provides an opportunity to identify obesity or thinness issues, determine if dietary adjustments are needed for body weight changes, and has been used as a tool to improve reproductive efficiency and neonate survival.

The Ralston Purina body condition scoring system for domestic dogs and cats suggests that for each change in numerical score, there is an approximately 11.5% change in body weight. Similar, but not linear, changes in body condition are noted in beef cattle [NRC, 1996].

Bray and Edwards [1999] proposed a numerical system for captive (zoo) equids that was modified from the body condition scoring system used for domestic horses. The nine-point system provided a useful tool to subjectively determine if an equid was too fat or too thin. The categories, similar to the domestic horse condition scoring system, ranged from 1 (poor) to 9 (extremely fat) with 5 (moderate) representing a suitable body condition. They also noted that ass-type equids were more angular in the hips than the horse-type equids of comparable condition scores. Granted, differences do exist within *Equus* such as *caballus* vs *asinus* (African ass), *grevyi* (Grevy's zebra), *przewalskii* (Mongolian horse), or zebras; however, as stated by Bray and Edwards (1999), zoo professionals that have a foundation of a numerical scoring system will share

a common language to communicate information to each other relative to the animal's general and nutritional health. The use of a condition scoring system has also been expanded at the Zoological Society of San Diego; a nine point system has been used to evaluate the giant pandas during routine health examines [Edwards, 2000].

Body condition scoring systems also exist for other domestic species including dairy, beef, swine, sheep, goats, poultry (layers), cats and dogs. Although animals vary immeasurably in body type and function, the basic concept or guidelines for developing a body condition evaluation of animals are similar. A numerical system is used with the lowest number (1) representing the poorest body conditioning and the highest number representing obesity. The median value of the numerical system will correspond to the "ideal" body condition score. Condition scoring systems require observing the animals from each side, rear and top; palpating the anatomical areas for the evaluation is very helpful but obviously with zoo animals is usually impractical. Thus, observations must be very focused and the evaluator must be able to articulate the observations.

Anatomical areas for assessment include the:

1. Forequarter, including the neck, shoulder and behind the point of shoulder
2. Back, including the withers (3<sup>rd</sup> 4<sup>th</sup> & 5<sup>th</sup> thoracic vertebra on hoof stock), and lumbar vertebra
3. Ribs, including the thoracic cavity, flank and abdominal
4. Hindquarter, including the pelvic region, ilium (point of hip), ischium (point of buttocks) and around the tail head.

Since zoo animals clearly are not for production, scoring is based on muscular definition and level of fat deposition over and around the anatomical areas identified. The condition scoring assessment should be at regular intervals, evaluating the degree of fatness or thinness of the animal. Frequent monitoring provides the evaluator an opportunity to observe any rapid changes in mobilization of body tissues and bodyweight changes.

Condition scoring terminology is not necessary universal for all animals. For example, wither is a term used for the 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> thoracic vertebra of equids; waist and abdominal tuck are terms used with felids, canine, and primates, but not hoof stock. The evaluator will need to become familiar with condition scoring systems respective terminology.

The nine-point system categorizes 1 as very poor and 9 as extremely fat (obese) with 5 representing the "ideal" or moderate body condition. A five point system [Ferguson, 1996] would use scores of 1, 5 and 3 respectively. Animals in an emaciated condition appear very angular; ribs, vertebrae, pelvis and other bone structures protrude, are very prominent, and are easily visible from a distance. As the animal gains weight and deposits fat in the observed areas, the

prominence of bone structures will decrease with a corresponding higher numerical score. Over-weight to obese animals will show more contours and less angularity. Patches of fat can appear on the neck, shoulder, along top of back and hip with the higher scores, such as 8 and 9. The anatomical areas observed on obese animals are not only difficult to identify but difficult to palpate. Obesity in zoo animals in captivity is a serious health and medical issue. Fat animals can be a higher risk during surgery, more prone to injury, and have more stress on their internal organs and joints. Condition scoring can facilitate a balance between economical feeding and minimal welfare problems.

Intermediate half scores are frequently used and perhaps practical when an animal's body condition score is ambiguous. Determining a precise score is not as important as placing a score that is relative. For example, a body condition score of 5 vs 5.5 is not relevant as the difference that exist between a 6 and 7.5.

Condition scoring is subjective and concerns have been shared concerning the repeatability of body condition scoring between evaluators. However, as noted by Bray and Edwards [1999], proper use of a system evaluating body conditioning will provide an opportunity to improve nutritional management of wild equids maintained in captivity. Table 1 provides an example of terminology used to describe body condition for scores of 1, 5 and 9; that is the lowest, ideal and highest scores, respectively.

## REFERENCES

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**TABLE 1. Terminology used to describe the lowest (1), ideal (5), and highest (9) body condition scores**

Condition Score	Descriptive Terminology
<p><b>1</b> <b>Very Poor</b> <b>or</b> <b>Emaciated</b></p>	<ul style="list-style-type: none"> <li>• Ribs, lumbar vertebra, pelvic bones and all skeletal structures in general protrude, very prominent and are easily visible</li> <li>• Very angular in general appearance</li> <li>• Emaciated in appearance; no fatty tissue can be felt</li> <li>• Extremely thin</li> <li>• Spinous processes are sharp in appearance and project prominently; may be able to feel between each process</li> <li>• Transverse processes are sharp in appearance</li> <li>• Point of hip and buttocks project prominently</li> <li>• Obvious loss of muscle mass; lack of external body fat</li> <li>• Sever abdominal tuck</li> </ul>
<p><b>2 (very thin), 3 (thin), &amp; 4 (moderately thin)</b></p>	
<p><b>5</b> <b>Moderate</b></p>	<ul style="list-style-type: none"> <li>• Well proportioned</li> <li>• Shoulder will appear to blend into body</li> <li>• Back appears level</li> <li>• Ribs are not visible, slightly covered with fat but if accessible, could be easily felt</li> <li>• Spinous process are smooth in appearance and well covered</li> <li>• Tailhead is not prominent; fat around area</li> <li>• Sides of hip have slight curve</li> <li>• Waist observed behind ribs when viewed from dorsal surface; waist and tuck are oblivious but not prominent</li> <li>• Minimum abdominal fat pad</li> </ul>
<p><b>6 (moderately fleshy), 7 (fleshy), &amp; 8 (fat)</b></p>	
<p><b>9</b> <b>Extremely</b> <b>Fat</b> <b>or Obese</b></p>	<ul style="list-style-type: none"> <li>• Obese !!!</li> <li>• Heavy fat layer obscures ribs visually and essential not palpable</li> <li>• Patchy fat may appear over ribs and back; fat evident</li> <li>• Waist and abdominal tuck do not exist</li> <li>• Protruding abdomen and appears round</li> <li>• Fat is evident along neck; withers on hoof type stock not identifiable; fat patches are evident</li> <li>• Hip and thigh are obviously round</li> <li>• Patchy fat, back wide</li> <li>• Prominent flank folds that sway when walking</li> <li>• Tailhead may have a telescope appearance with body because of bulging fat folds</li> <li>• For ruminants, brisket area appears heavy</li> </ul>