

# Visual body condition score for brown bears (*Ursus arctos*) under human care

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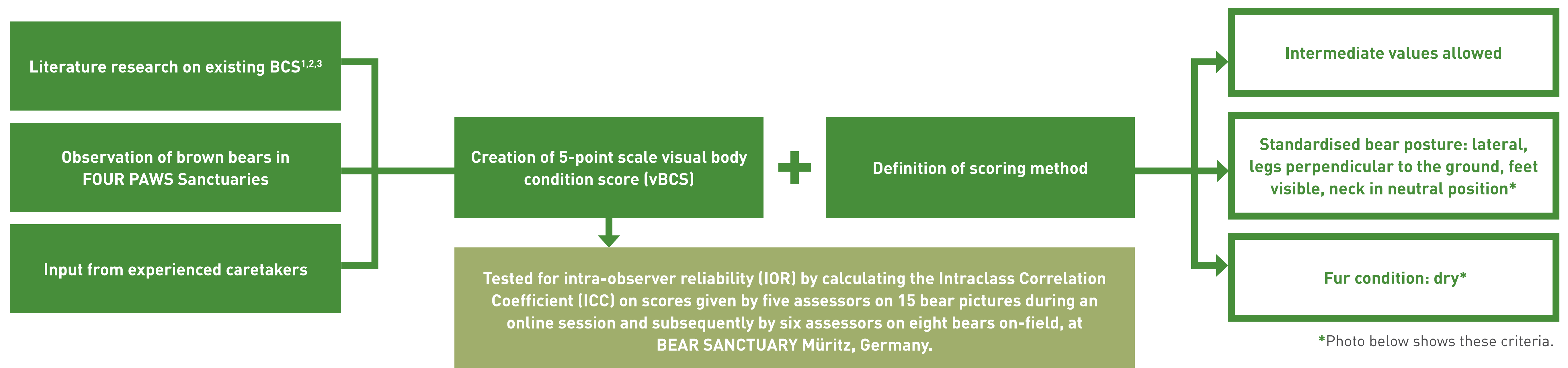
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## INTRODUCTION

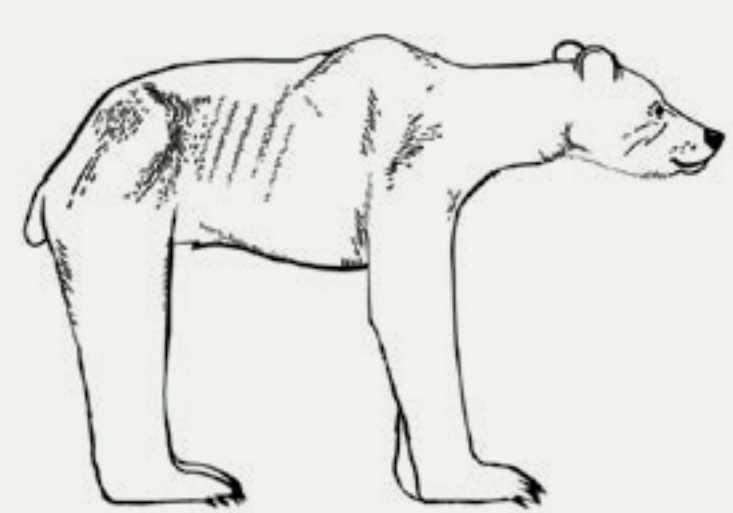
Visual body condition scoring is a practical and non-invasive tool to subjectively assess the subcutaneous body fat storage. It was developed and validated for a variety of species and included as indicator of good feeding in welfare assessment protocols, providing relevant information also on the health status of animals, but not yet for brown bears.

## MATERIALS AND METHODS

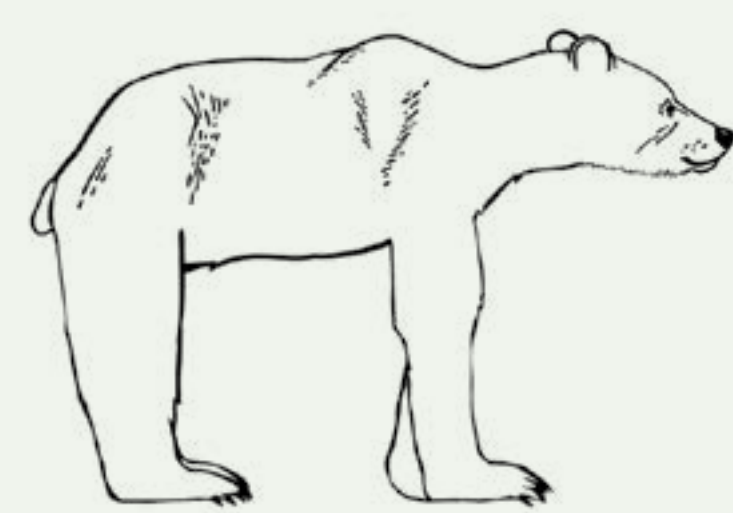


## RESULTS

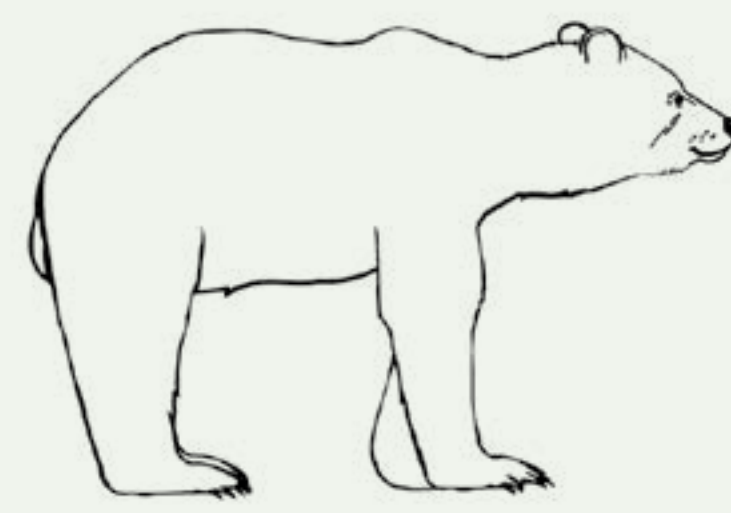
IOR	Online session on pictures	Field session
ICC Value	0.98 [0.97 - 0.99; 95% CI], high <sup>4</sup>	0.76 [0.19 - 0.98; 95% CI], high <sup>4</sup>



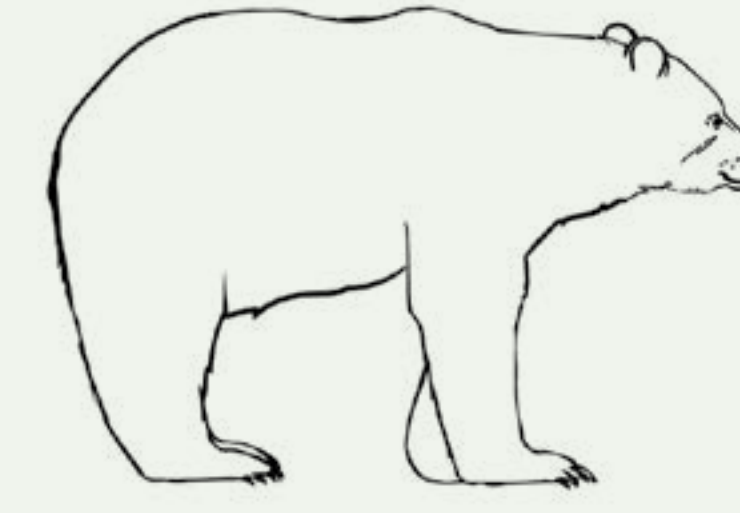
**SCORE 1**  
The **appearance** is squared and the **rump** is angular.  
**Scapula, pelvis** and **ribs** are clearly visible and protruding.  
The **ventral abdominal line** is concave, giving a longer appearance to the skinny limbs.  
**Hollow/space** between last rib and **pelvis** is obviously visible and sunk.



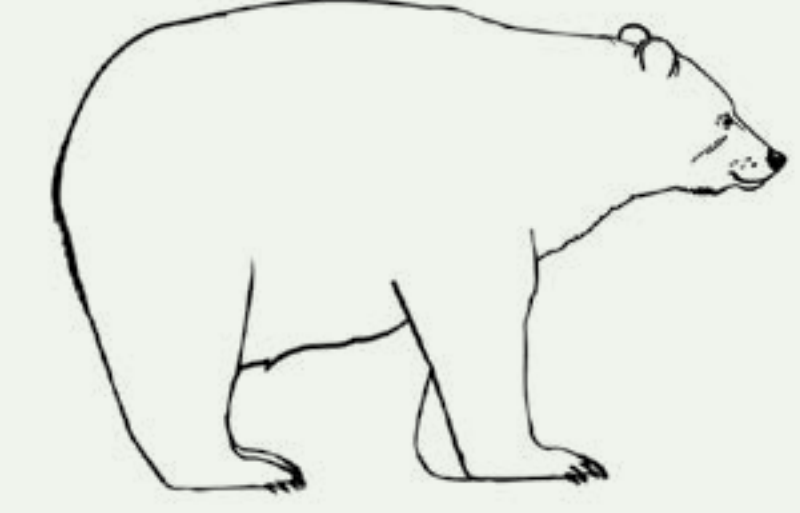
**SCORE 2**  
The **appearance** is fleshier and **rump** is "less bony", but still not rounded.  
**Scapula** and **pelvis** are visible, but not protruding.  
**Ribs** are not visible.  
The **ventral abdominal line** is straight or slightly concave.  
**Limbs** are thin.  
**Hollow/space** between last rib and **pelvis** is visible, but only slightly sunk.



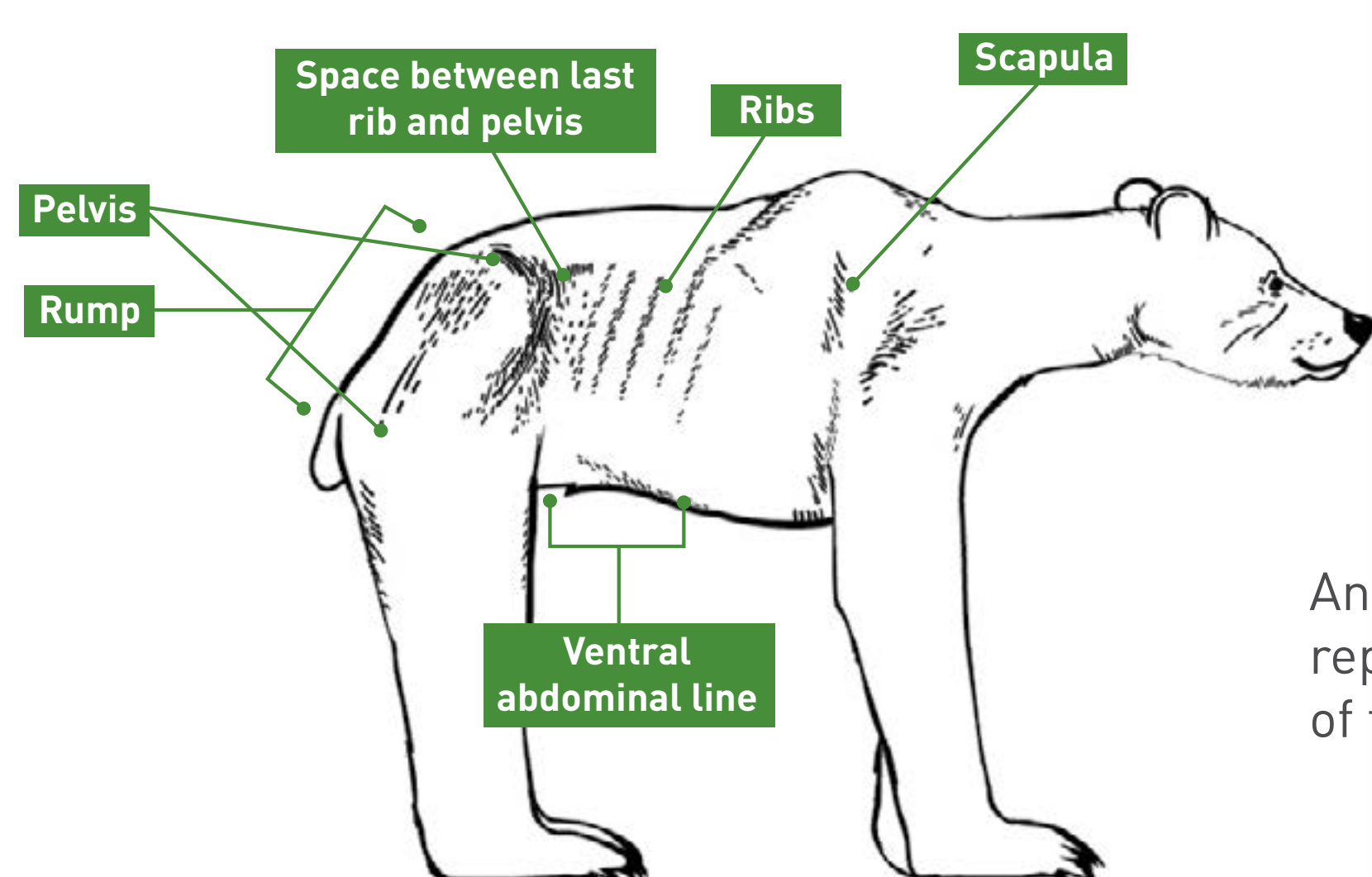
**SCORE 3**  
The **appearance** is healthy, the **rump** is slightly rounded.  
**Scapula, pelvis** and **ribs** are not visible.  
The **ventral abdominal line** is straight or slightly hanging lower than the thorax.  
The **limbs** are "lean and muscular"<sup>2</sup>.  
**Hollow/space** between last rib and **pelvis** is not visible.



**SCORE 4**  
The **appearance** is rounded as well as the **rump**.  
**Scapula, pelvis** and **ribs** are not visible and partly covered by fat deposits.  
The **ventral abdominal line** is rounded and hanging lower than the thorax.  
**Limbs** are start-ing to show fat deposits.



**SCORE 5**  
The **appearance** is blocky and the **rump** is heavily rounded.  
**Scapula, pelvis** and **ribs** are not visible and completely covered by fat deposit.  
The abdomen is distended and the **ventral abdominal line** is hanging obviously lower than the thorax.  
The **limbs** are covered and rounded by fat and appear shorter.



Anatomical reference points represented on the drawing of the vBCS Score 1



## CONCLUSION

Caretakers are trained on the vBCS for its implementation in their routine care of brown bears in FOUR PAWS sanctuaries to regularly monitor their body condition across the physiological seasonal changes and, relying also on other animal- and resource-based measures, to assess their welfare. This tool can be applied also in other facilities housing brown bears to enable management adjustments aiming at animal welfare improvements.

