

Gray Whale UME Dead Whale Nutritional Condition Protocol & Table

Purpose:

To standardize photographs, external and internal examinations, and descriptions to assess nutritional body condition of stranded gray whales.

Plan:

To use data from all stranded live, fresh dead, and moderately decomposed gray whales using the below protocol and table to categorize whales into the following nutritional condition categories:

- 1 Emaciated (Poor Nutritional Condition);
- 2 Thin (Fair Nutritional Condition);
- 3 Average (Moderate Nutritional Condition); and
- 4 Fat (Good/Excellent Nutritional Condition)

Process – External Evaluation/How to Take Photos:

BEFORE touching the whale

- Photos taken from beside the whale, lateral (right angle to whale) views of:
 - Thoracic and lumbar epaxial regions to demonstrate vertebral process prominence (or lack of)
 - Post nuchal area (“peanut head site”)
- Photos taken from an oblique angle of the whole body facing towards head and towards fluke to demonstrate scapula area and vertebral process prominence;
- Photos of the genital slit area from the umbilicus (level with distal tip of pectoral flipper) to anal sac region or mid-peduncle;
- Photo-id protocol of markings (see existing protocol); and

- If ventral side up - oblique hypaxial muscle, mandibles.

REPEAT photos after deflating your whale









Process – Internal/Necropsy Evaluation:

- Examine and document blubber characteristics, presence and consistency of subcutaneous fat, and status of internal fat stores (nuchal pad, mesenteric, omental, peri-renal, mediastinal, coronary groove; see protocol below).








Scoring:

For the 7 External and Internal Features [External: Nuchal fat pad area, Vertebral processes, Epaxial muscle profile (thoracic and lumbar views), Scapulae: Internal: Blubber Characteristics - *Blubber Oiliness*; *Blubber Texture*; Subcutaneous fat; Fat in coronary groove, around kidneys, in mesentery, omental and mediastinum] identified in the Table, score the photos/findings as 1-4 in the Nutritional Categories or as CBD/NE. If features are categorized evenly between two Nutritional Categories, i.e. two in 1 and two in 2, grade the condition as a 2. See example below in Appendix I.



Dead Whale Nutritional Condition Protocol & Table Updated January 2020

		Nutritional Body Condition Status Score Table			
#	Feature-External Exam	1 Emaciated (Poor)	2 Thin (Fair)	3 Average (Moderate)	4 Fat (Good/Excellent)
1	Nuchal fat pad area	<p>Marked dipping</p> 	<p>Slight dip</p> 	<p>Flat</p> 	<p>Convex</p> 
2	Vertebral processes	<p>Prominent processes</p>	<p>Shape detectable</p> 	<p>Not visible</p>	<p>Very rounded profile</p>
3	Epaxial muscle profile (thoracic and lumbar views)	<p>Sharply concave musculature</p> 	<p>Slight dipping of the epaxial areas</p> 	<p>Flat</p>	<p>Rounded convex (add new photo)</p> 
4	Scapulae prominence (Live whales only)	<p>Very visible</p>	<p>Just visible</p>	<p>Not visible</p>	<p>Not visible (see nuchal fat photo above)</p>

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#	Feature- Internal Exam	1 Emaciated (Poor)	2 Thin (Fair)	3 Average (Moderate)	4 Fat (Good/Excellent)
5	Blubber Characteristics - <i>Blubber Oiliness</i> *note that very decomposed whales will seep oil, making it appear more oily than expected	Watery or Dry 	Low oil 	Moderately oil (can see/feel oil but not dripping)	Very oily, oil drips when cut 
	<i>Blubber Texture</i> *note that decomposition can make blubber more pliable	Very fibrous	Moderately fibrous	Somewhat to moderately pliable	Very pliable
6	Subcutaneous fat	None 	Scant	Moderate	Abundant 
7	Fat in coronary groove, around kidneys, in mesentery, omental and mediastinum	None 	Scant	Moderate	Abundant 

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Other Features (Supportive):	
Serous Atrophy of Fat	<p>Yes/no?: Describe anatomic location</p> 
Blubber Color?	Yes/no?: Note color - Pink; Orange/Salmon; Yellow; Cream/Tan; White
Blubber Red-Band?	Yes/no?: Describe – Red band inside layer; Red band mid-layer; Red band outer layer; None/Color even throughout
Cyamid load?	Yes/no?: Describe Location and Percent coverage (note which species of cyamids)
Gastrointestinal Contents?	Yes/no?: Describe (including gas)
Gastrointestinal Parasites?	Yes/no?: Describe and location
Lipid Data?	Yes/no?: Include lipid% and triglyceride % (if available)
Histologic Nutritional Information	If histopathology tissues are sampled include: Presence/absence, extent (superficial, middle or deep layer), and severity (moderate, marked, severe) of fat atrophy, muscle atrophy, hemosiderosis
Overall Body Shape	<p>Snake-like, full body elongated fusiform appearance. Yes/no?</p> 

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Other characteristics to consider/document-

- Dorsal recumbency photos/criteria (**if you have heavy machinery - please take photos of both sides)
- Visible temporal mandibular joint? Concave/flat/convex mandible/throat area?
- Visible neck? (have to be careful with floaters because skin can expand, larynx full of other material)
- Neck width (from aerial photos?)
- Prominent post-anal cyst? (does this change with age?)
- Bony pectoral/scapular area

Appendix I - Example Nutritional Body Condition Status Score (Findings highlighted in yellow)

No.	External/Internal	Feature	1 Emaciated (Poor)	2 Thin (Fair)	3 Average (Moderate)	4 Fat (Good/Excellent)	CBD
1	External	Nuchal fat pad area	Marked dipping	Slight dip	Flat	Convex	
2	External	Vertebral processes	Prominent processes	Shape detectable	Not visible	Very rounded profile	
3	External	Epaxial muscle profile (thoracic and lumbar views)	Sharply concave musculature	Slight dipping of the epaxial areas	Flat	Rounded convex (add new photo)	
4	External	Scapulae prominence (Live whales only)	Very visible	Just visible	Not visible	Not visible (see nuchal fat photo above)	CBD
5	Internal	Blubber Characteristics - <i>Blubber Oiliness</i>	Watery or Dry	Low oil	Moderately oil (can see/feel oil but not dripping)	Very oily, oil drips when cut	
	Internal	<i>Blubber Texture</i>	Very fibrous	Moderately fibrous	Somewhat to moderately pliable	Very pliable	
6	Internal	Subcutaneous fat	None	Scant	Moderate	Abundant	
7	Internal	Fat in coronary groove, around kidneys, in mesentery, omental and mediastinum	None	Scant	Moderate	Abundant	
	Other Features	Y/N/CBD					
	Serous Atrophy of Fat	N					
	Blubber Color?	Y, Salmon color					
	Blubber Red-Band?	Y, Outer-layer band					
	Cyamid load?	Y, Moderate load, head					
	Gastrointestinal Contents?	None					
	Gastrointestinal Parasites?	None					
	Lipid Data?	NA					
	Histologic Nutritional Information	NA					
	Overall Body Shape-Snake-like	N					
	Overall Score			2-Thin (Fair)			