

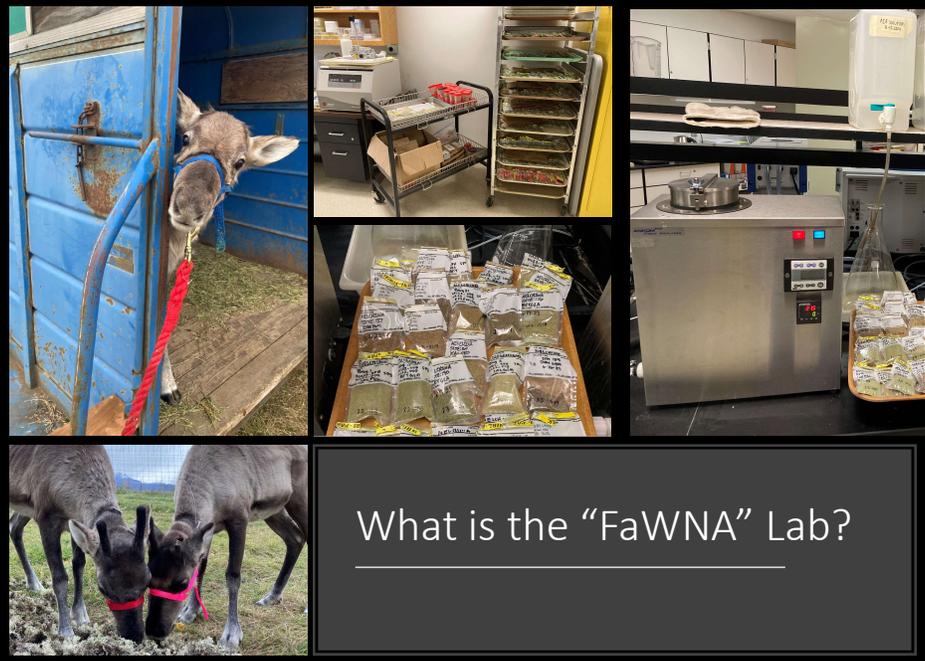


# An Introduction to The Foraging Ecology and Wildlife Nutritional Analysis (FaWNA) Lab

Kristin Denryter, PhD  
Research Coordinator, Region IV  
Alaska Department of Fish and Game  
January 2024

1

1



What is the "FaWNA" Lab?

2

2



### Why study nutrition?

- Reproduction
- Survival
- Recruitment
- Population size
- Nutritional carrying capacity

3

3



Physiology      Behavior      Environment

### How do we study nutrition?

4

4

# Physiology questions

- What are the nutritional requirements?
- What are the digestive constraints?



2000 2500  
Recommended calorie intake per day for adults

?

The infographic shows a female and male human icon with calorie requirements of 2000 and 2500 respectively. Below them is a deer icon with a question mark, suggesting a comparison of nutritional needs between humans and deer.

5

Physiology—nutritional requirements

Maintenance

Activity

Fat gain

Reproduction



The slide is divided into four quadrants. The top-left quadrant shows a 3D white character with a red cap, holding a large wrench and a red toolbox, labeled 'Maintenance'. The top-right quadrant shows a photograph of a dark brown deer with a red collar jumping in a grassy field, labeled 'Activity'. The bottom-left quadrant shows a cartoon sheep with a large white woolly body and a black face, labeled 'Fat gain'. The bottom-right quadrant shows silhouettes of an adult deer and a smaller fawn, labeled 'Reproduction'. A circular icon of a digestive system is in the bottom-left corner of the slide.

6



Physiology—nutritional requirements

7

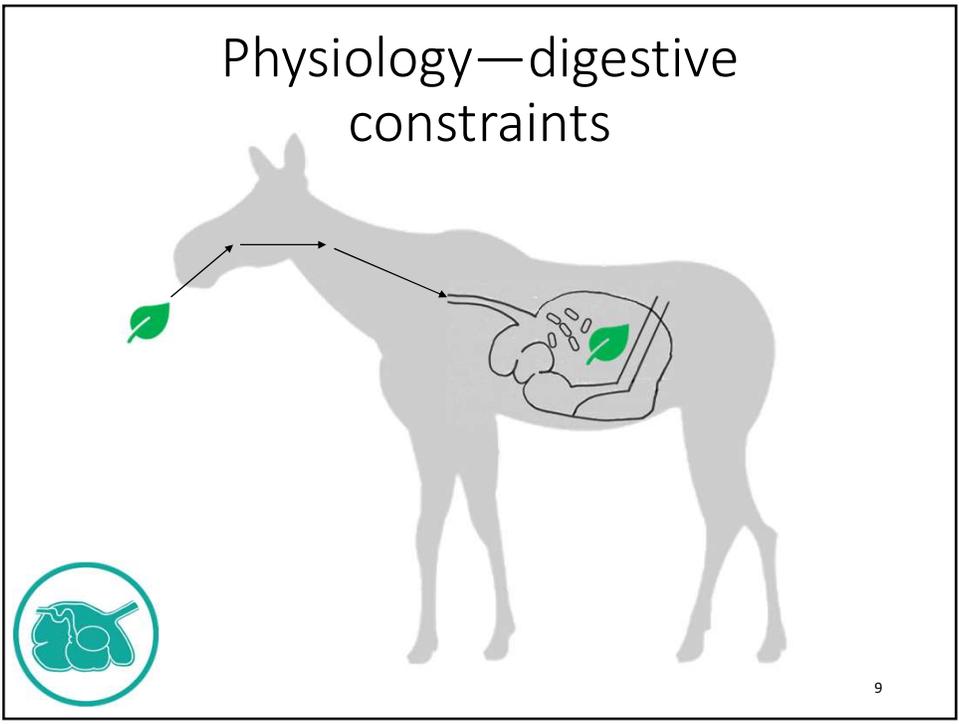
7



Physiology—nutritional requirements

8

8



9



10

# Behavioral questions



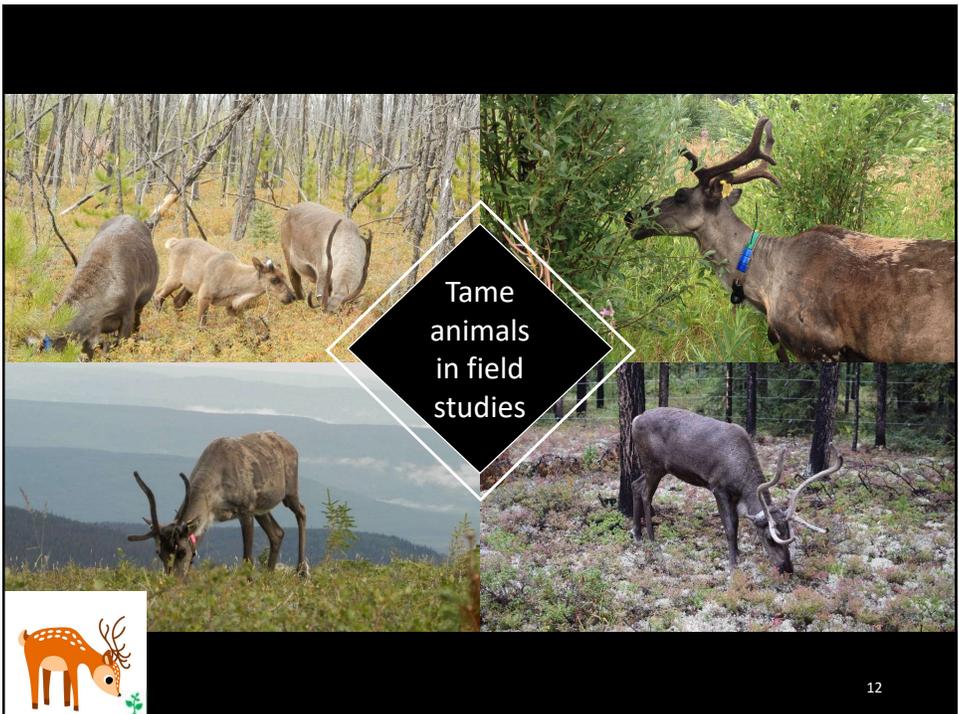
What do animals eat?



How much do they eat in a day?



Where do they eat?\*





13



14

**Direct Observations of Tamed Deer to Measure Their Consumption of Natural Forage**

O. C. WALLMO<sup>1</sup> and D. J. NEFF<sup>2</sup>

---

**Life History, Ecology, and Range Use of the Pronghorn Antelope in Trans-Pecos Texas**

Helmut K. Buechner

The American Midland Naturalist  
Vol. 43, No. 2 (Mar., 1950), pp. 257-354 (98 pages)

---

**Is Social Learning an Important Influence on Foraging Behavior in White-Tailed Deer?**

D. E. Spalinger, S. M. Cooper, D. J. Martin and L. A. Shipley

The Journal of Wildlife Management  
Vol. 61, No. 3 (Jul., 1997), pp. 611-621 (11 pages)

---

**Comparative Food Habits of Deer and Three Classes of Livestock**

Craig A. McMahan

The Journal of Wildlife Management  
Vol. 28, No. 4 (Oct., 1964), pp. 798-808 (11 pages)

---

**COMPARABILITY OF FORAGING BEHAVIOR AND DIET SELECTION OF TRACTABLE AND WILD MULE DEER**

Kathrin Maja Olson-Rutz and Philip J. Urness

October 1987  
Publication No. 88-3

---

**Food Habits of Newfoundland Caribou**

Arthur T. Bergerud

The Journal of Wildlife Management  
Vol. 36, No. 3 (Jul., 1972), pp. 913-923 (11 pages)

---

**Food Habits of Hand-Reared Caribou Rangifer tarandus L. in Newfoundland**

Arthur T. Bergerud and Michael J. Nolan

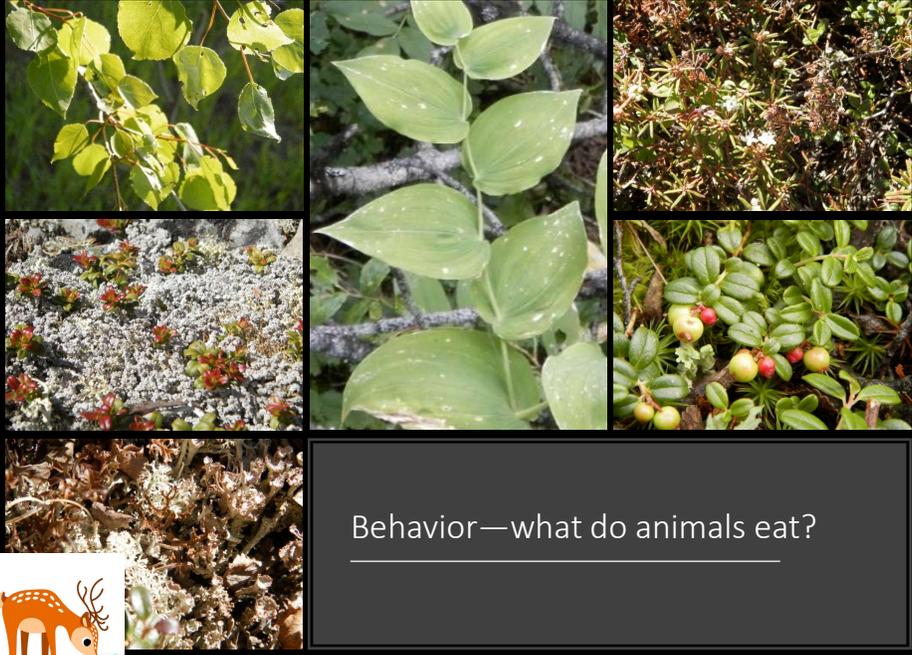
Dikos  
Vol. 21, No. 2 (1970), pp. 348-350 (3 pages)

---



15

15



Behavior—what do animals eat?

---



16

16

Behavior—what do animals eat?

17

17

Behavior—how much do they eat in a day?

18

18

# Questions about the environment



How much food is available?



How nutritious is the available food?



When is food available and for how long?



## Environment—how much food is available?



Environment—how much food is available?



<50% of vegetation = food  
78% of diet = 28 species



21

21



Environment—how nutritious is the available food?

22

22

Environment  
—how  
nutritious is  
the available  
food?



Nutrition Facts	
servings per container	
<b>Serving size</b>	<b>(148g)</b>
<b>Amount per serving</b>	
<b>Calories</b>	<b>80</b>
<b>% Daily Value*</b>	
<b>Total Fat</b> 0.5g	<b>1%</b>
Saturated Fat 0g	<b>0%</b>
Trans Fat 0g	
<b>Cholesterol</b> 0g	<b>0%</b>
<b>Sodium</b> 0mg	<b>0%</b>
<b>Total Carbohydrate</b> 21g	<b>8%</b>
Dietary Fiber 4g	<b>14%</b>
Total Sugars 15g	
Added Sugars 6g	<b>0%</b>
<b>Protein</b> 1g	

23

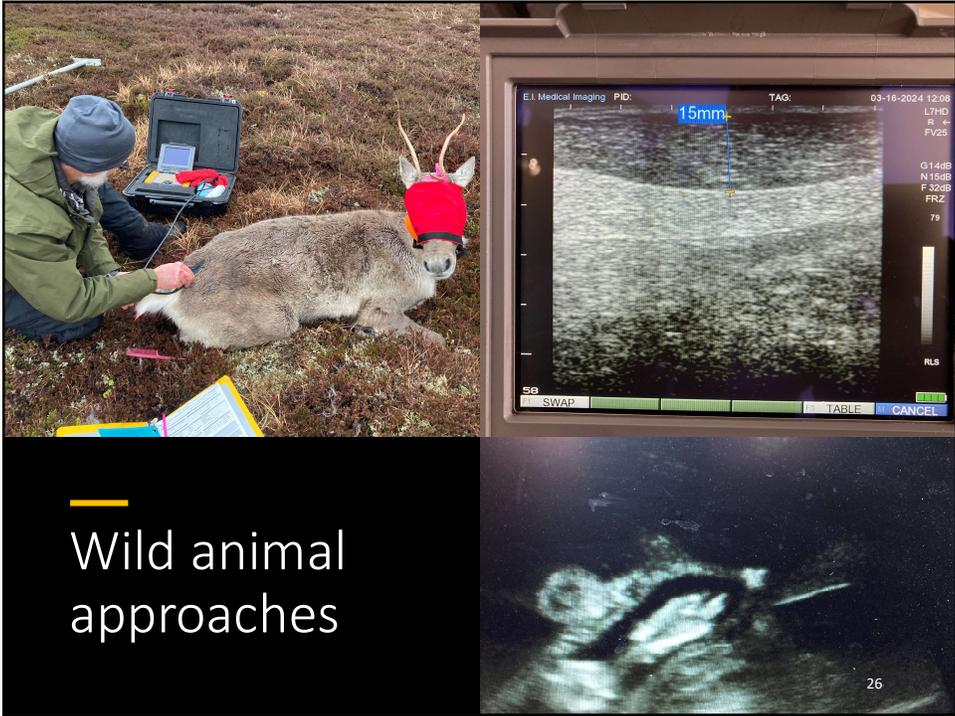
Environment  
—when is  
food  
available and  
for how  
long?



24



25



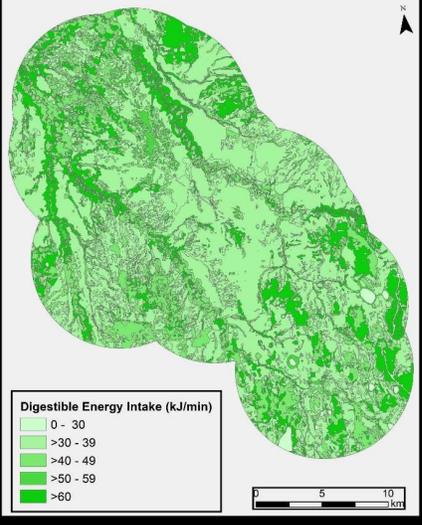
26



27



28



Digestible Energy Intake (kJ/min)

- 0 - 30
- >30 - 39
- >40 - 49
- >50 - 59
- >60

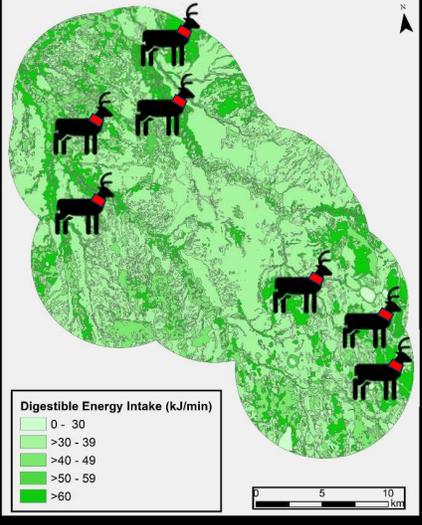
0 5 10 km

29



Applying tame animal work to landscapes

29



Digestible Energy Intake (kJ/min)

- 0 - 30
- >30 - 39
- >40 - 49
- >50 - 59
- >60

0 5 10 km

30



Wild animal approaches: behavior—where do they eat?

30

Digestible Energy Intake (kJ/min)

- 0 - 30
- >30 - 39
- >40 - 49
- >50 - 59
- >60

0 5 10 km

Tame + Wild = Estimate NCC

31

31

Questions?

[Kristin.Denryter@alaska.gov](mailto:Kristin.Denryter@alaska.gov)

32

32