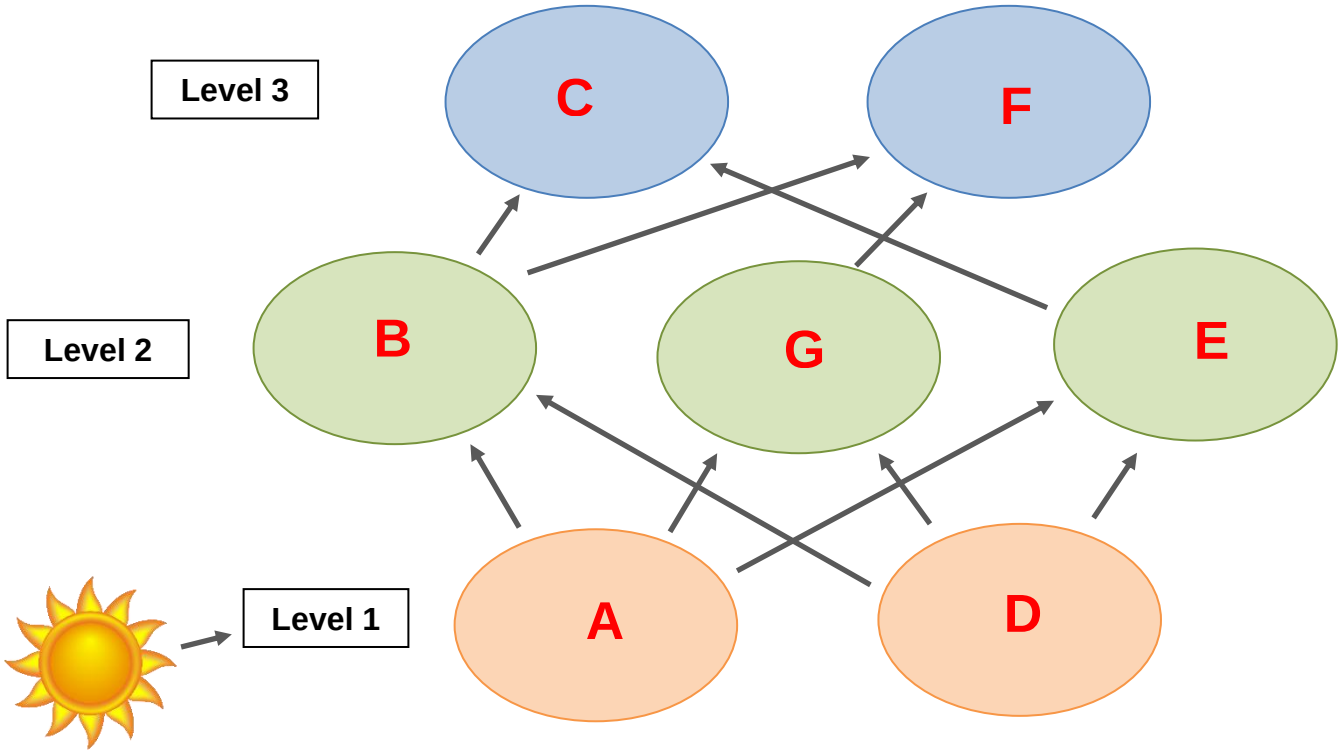
OREGON ENVIROTHON 2023 **TEAM #_____**

WILDLIFE ECOLOGY **Test Total_____ / 50 points**

Part I: Wildlife Ecology Concepts

1-7. Energy flows in a food-web. In the diagram below, write the letter of each of the species listed into one of the circles to create a logical food web representing three trophic levels for a **Shrub-Steppe Ecosystem** where sunlight is captured at Level 1. Please note the arrows point in the direction of energy flow (the direction of the consumer). [7 points]



Species List:		
	A. Sagebrush	E. White-tailed antelope squirrel
	B. Black-tailed jack rabbit	F. Mountain lion
	C. Red-tailed hawk	G. Pronghorn
	D. Prickly pear cactus	

8. What trophic level of this food web has herbivorous animals? ___2___
9. What trophic level is most likely to be affected by bioaccumulation? ___3____
10. What trophic level of this food web has autotrophic organisms? ___1___

____/ 10 points

Part II: Wildlife Management Issue – American Pika in Oregon

Each Team should find a copy of a document entitled ***"Habitat availability and gene flow influence diverging local population trajectories under scenarios of climate change: a place-based approach."***

Don't worry; you will **NOT** need to read the whole thing. Instead, just skim this document to help you answer the following questions.

11. Species Distribution Models (SDMs) are widely used by scientists for what purpose? [2 points]

    They are widely used to estimate potential future impacts of climate change on species distributions and to assess population vulnerability.

12. Why do scientists predict that the American pika will experience dramatic range reductions due to climate change? [2 points]

    The low heat tolerance exhibited by captured pikas and observed extirpations in some warmer portions of the species' range.

13. What is the distance at which gene flow occurs within pika populations in Oregon? [2 points]

    a. 3.4 km
    b. 3.5 km
    c. 2.5 km

14. According to the results of this study, how are future pika populations in Oregon predicted to change due to climate change? [2 points]

    a. Populations will decline consistently without extirpation.
    b. Populations will increase.
    c. Populations will be extirpated.

15. According to Figure 5, what does this study predict about maximum pika occupancy probability in Oregon in the future, under the eight climate models? [1 point]

    Maximum pika occupancy probability in Oregon is approximately equal across all the three 30-year periods and using all eight climate models.

____/ 9 points

Part III: Wildlife Interaction – Oregon Owls

Refer to book "*Field Guide to the Birds of North America*."

Both of these owls are found in Oregon. Only one of the owls shown here is a native species associated with old forests, the other is a non-native that has expanded its range from the eastern United States and was first reported in Oregon in the 1970s.

16. Why is Species B decreasing in number and range? [1 point].

    Habitat destruction/loss, interspecific competition from invasive species

17. Give the common name of Species A [1 point]. _____ Barred owl _____

18. Give the scientific name of Species B [1 point]. ____*Strix occidentalis (caurina)*____

19. Besides differences in physical markings, list two other characteristics/traits that help identify the native species. [2 points] Any two of:

    Tamer, also a specialist
    Main call: four doglike barks and cries; Contact call (females): hollow, upslurred whistle, coooo-weep
    Strictly nocturnal (not likely to be seen/heard in daytime)

20. These two species utilize the same types of habitats and eat similar diets. Circle the term that best describes this type of interaction. [1 point]

    Predation Parasitism Commensalism (Competition)

____/ 6 points

Part IV: Skins, Skulls, and Bones

Your test station should have **field guides** and **materials** to help answer the following questions.

21. Examine and identify the set of **6 skins** of animals that are **all found in Oregon**.

Match the **Letter** attached to each **skin** to the correct mammal species in the list below. [6 points]

_____ Virginia opossum	__M__ American mink
__D__ American badger	__B__ gray fox
__G__ northern river otter	_____ coyote
_____ red fox	_____ long-tailed weasel
__N__ ermine	__F__ northern raccoon
_____ nutria	_____ bobcat
_____ woodchuck	_____ yellow-bellied marmot

22. Examine each labeled **Animal skull** displayed on the table (**be gentle with them**).

Assign each of the **4 skulls** to the appropriate mammal family. [4 points]

_____ Felidae (cats)	_____ Castoridae (beavers)
__E__ Mustelidae (weasels)	__F__ Didelphidae (opossums)
__D__ Canidae (dogs, foxes)	__H__ Cervidae (deer, elk)
_____ Mephitidae (skunks)	_____ Procyonidae (coatis, raccoons)

23. Compare the two skins and give the scientific name for each. [2 points]

A. __*Canis latrans*_____

B. __*Lynx rufus*_____

The skull is from one of these two species. Which species does it belong to? (Circle one.) [1 point]

A B

____**/ 13 points**

Part B: Identifying Tracks and Sign

For each of the following, use the picture and the track provided to identify the species.
Book: "*Scats and Tracks of the Pacific Coast*"

Sign A

See "Track A" for reference

Background. This species is the largest rodent in North America. They are seldom found far from a creek, river, pond, or lake.

Questions: [2 points]

24. What is the common name of this animal? __ Beaver_____

25. Name a type of structure that this species builds? __ Lodge or dam, bank dens __

____/ 2 points

Sign B

See "Track B" for reference

Background. This species digs dens on exposed hilltops or ridges with a view of the surrounding area. Their scat varies from pure black animal protein to mostly hair with some bones. Tips are tapered into long ends.

Questions: [2 points]

26. What is the common name of this animal? __Coyote_____

27. What family does this mammal belong to? ___Canidae/Canids_____

____/ 2 points

Sign C

See "Track C" for reference

Background. This species inhabits areas with dense cover, especially with rocky ledges. Rock piles, caves, and high rocky ledges are important for bearing young. Besides scat, individuals often leave behind other signs such as scrapes (see picture above) or scent marks.

Questions: [2 points]

28. What is the common name of this animal? __ Bobcat _____

29. What family does this mammal belong to? ___ Felidae/Felids _____

____/ 2 points

Part VII: Species Identification

Use the available **field guides** to help you identify the following species pictured on the next page. All these species can be found in Oregon.

Species A. [2 points]

This bird is partial to conifer seeds and has a long dagger-like bill that differentiates it from a closely related species. In the high elevation conifer forest at tree line Species A is a keystone species and is also involved in mutualism with White bark pine.

30. What is the scientific name of Species A? ___*Nucifraga columbiana*_____

31. What family is Species A in? ___Corvidae_____

Species B. [2 points]

32. Give the scientific name: ___*Centrocercus urophasianus* _____

33. What is the area called where sage-grouse congregate in the spring and males conduct their courtship display? _____lek _____

Species C. [2 points]

34. This species is found in Western Oregon. What is its common name? __Sooty Grouse_

35. Without visual observation, why is Species C sometimes mistaken for a great gray owl?

____male call is a series of low hoots like a great gray – “sounds similar” ____

____**/ 6 points**


Species A


Species B


Species C