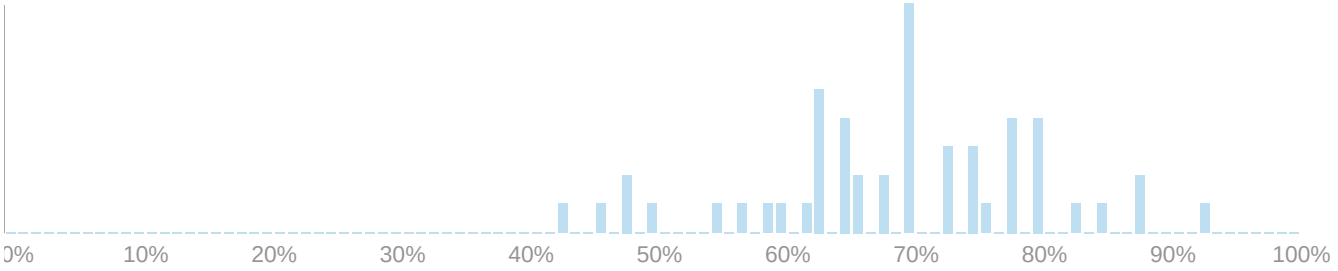
Quiz Summary

Section Filter ▾ | Student Analysis | Item Analysis

Average Score	High Score	Low Score	Standard Deviation	Average Time
69%	93%	43%	4.32	01:07:97



Question Breakdown

Attempts: 51 out of 51

Aldo Leopold discussed changes in oak and rabbit populations over time. What is true about the interaction that he was describing?

-0.06

Discrimination Index

Oak populations decreased due to herbivory by rabbits	44 respondents	**86 %** ✓
Rabbit populations used oak trees for shelter from wolf populations		0 %
Large oaks were more susceptible to rabbit herbivory	3 respondents	6 %
Oak populations decreased when rabbit populations crashed due to a parasitic worm	4 respondents	8 %

86%
answered
correctly

Attempts: 50 out of 51

+0.1

Discrimination Index

Which of the following tend to decrease with body size?

fitness	3 respondents	6 %	
All of these	15 respondents	29 %	
surface area to volume ratio (SA/V)	15 respondents	**29 %**	✓
energetic requirements	17 respondents	33 %	
No Answer	1 respondents	2 %	

29% answered correctly

Attempts: 51 out of 51

Which of the following pairs of evolutionary processes can introduce new alleles into a population?

-0.24

Discrimination Index

Mutation and genetic drift	4 respondents	8 %	
Gene flow and mutation	35 respondents	**69 %**	✓
Genetic drift and recombination		0 %	
Mutation and recombination	12 respondents	24 %	

69% answered correctly

Attempts: 50 out of 51

From **Section 1 (http://jdyeakel.github.io/teaching/ecology/section1/)** , we looked at the diets of 8 sea otter individuals, foraging on 13 different prey species. On average, which prey species

was most preferred by sea otters?

+0.33

Discrimination Index

sea stars		0 %	69% answered correctly
cancer crab	13 respondents	25 %	
kelp crab	35 respondents	**69 %**	✓
mollusks	2 respondents	4 %	
No Answer	1 respondents	2 %	

Attempts: 49 out of 51

Bergmann's Rule states that body size increases with proximity to the Earth's poles. What is an argument for this relationship?

+0.33

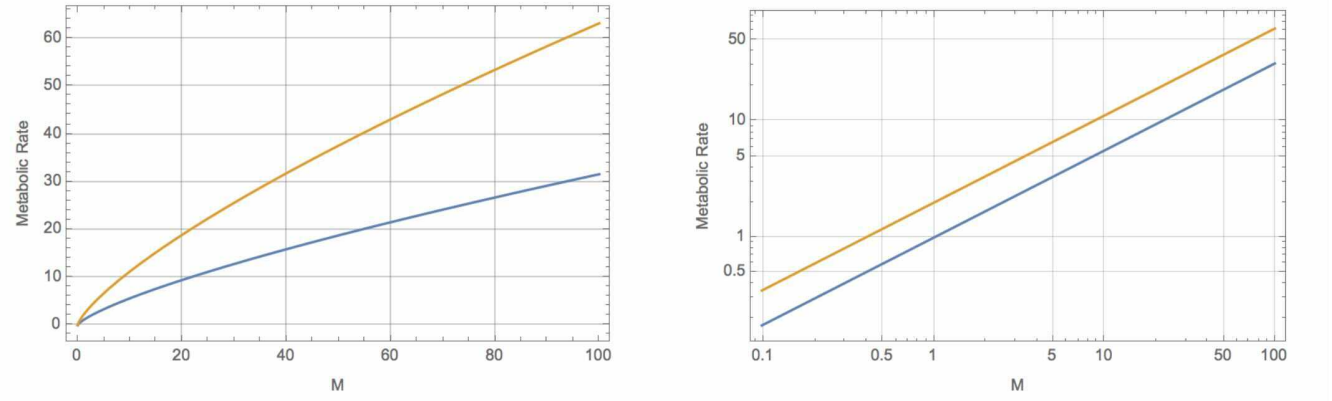
Discrimination Index

Larger bodies can last longer on stored resources during seasonal food depletion	29 respondents	**57 %**	✓
Smaller bodies are less prone to starvation during seasonal food depletion		0 %	
Larger bodies have more surface area relative to volume, minimizing heat dissipation	18 respondents	35 %	
Increased seasonality near the poles limit the need to maintain energetic stores	2 respondents	4 %	
No Answer	2 respondents	4 %	

57% answered correctly

Attempts: 51 out of 51

Metabolic rates (MR) as a function of body mass (M) are shown for 2 groups of species (blue, orange). On the right are the MR-M lines on a [linear, linear] plot; on the left are the same relationships on a [log, log] plot. **If you can't see the figure click here (https://ucmerced.box.com/s/ozjimg62sb7ugo9tjqsimeui6ltf8irn)**



Question: The relationships above have the same scaling exponent.

+0.44

Discrimination Index

True	24 respondents	**47 %**	✓ 47% answered correctly
False	27 respondents	53 %	

Attempts: 51 out of 51

+0.29

Genetic drift

Discrimination Index

occurs by the movement of species between populations across the landscape.	2 respondents	4 %	
occurs in response to fitness differences between individuals.	2 respondents	4 %	
is related to random fluctuations in the proportion of alleles within a population.	45 respondents	**88 %**	✓
introduces new alleles into the population.	2 respondents	4 %	

88% answered correctly

Attempts: 51 out of 51

+0.29

An endothermic poikilotherm

Discrimination Index

needs to bask in the sun to warm up.		0 %
has a constant internal body temperature.	3 respondents	6 %
has an internal temperature determined by the environment.	6 respondents	12 %
has a fluctuating internal body temperature.	42 respondents	**82 %** ✓

82% answered correctly

Attempts: 51 out of 51

The _____ range represents the primary environmental/physiological constraints experienced by species, whereas the _____ range represents that which the species can obtain in the presence of interactions with other species.

+0.19

Discrimination Index

potential; realized	22 respondents	**43 %** ✓
intrinsic; extrinsic	9 respondents	18 %
potential; endothermic	1 respondents	2 %
environmental; competitive	19 respondents	37 %

43% answered correctly

Attempts: 51 out of 51

Which of the following biomes are thought to be maintained by the presence of fire and larger herbivores?

+0.38

Discrimination Index ⓘ

Temperate grasslands	47 respondents	**92 %**	92% answered correctly
Arctic deserts		0 %	
Tropical rainforests	2 respondents	4 %	
Temperate woodlands	2 respondents	4 %	

Attempts: 51 out of 51

+0.24

The fitness of an organism

Discrimination Index ⓘ

can be evaluated to estimating lifespan		0 %
can be measured by counting the number of offspring.		0 %
is a relative measure of reproductive success and offspring survival.	45 respondents	**88 %**
is an absolute measure of reproductive success and offspring survival.	6 respondents	12 %

88% answered correctly

Attempts: 51 out of 51

Elephants require _____ resources overall, and are _____ expensive per gram to ‘run’ than smaller animals.

+0.4

Discrimination Index ⓘ

less; more	1 respondents	2 %	57% answered correctly
less; less	4 respondents	8 %	
more; more	17	33 %	

	respondents		
more; less	29 respondents	**57 %**	✓

Attempts: 49 out of 51

From **Section 3 (http://jdyeakel.github.io/teaching/ecology/section3/)** , if MR = Metabolic rate, M = species body mass, and N = population density, how would we calculate the amount of energy produced by metabolism per unit body mass?

+0.05

Discrimination Index ⓘ

MR/M	32 respondents	**63 %**	✓ 63% answered correctly
MR*N	6 respondents	12 %	
MR*N*M	2 respondents	4 %	
MR*M	9 respondents	18 %	
No Answer	2 respondents	4 %	

Attempts: 51 out of 51

Leaves open their stomata to absorb CO_2 and release water. What is one of the reasons for this activity?

+0.46

Discrimination Index ⓘ

Drive the oxygenase reaction, which makes photosynthesis more efficient	15 respondents	29 %	
Cool the leaves down to a manageable temperature	25 respondents	**49 %**	✓
Rid the plant of water and lower the weight of plant tissues so that it can support itself	1 respondents	2 %	
Enable sunlight to enter the leaf tissues and drive photosynthesis	10 respondents	20 %	

49%
answered
correctly

Attempts: 49 out of 51

Which of the following interactions has a low cost of stoichiometric conversion (i.e. converting resource to consumer tissue) and a high foraging cost?

+0.35

Discrimination Index

A mistletoe consuming an alder	12 respondents	24 %	
A pitcher plant consuming a trapped spider	3 respondents	6 %	
A cichlid fish catching freshwater shrimp	23 respondents	**45 %**	✓
A giraffe eating Acacia leaves	11 respondents	22 %	
No Answer	2 respondents	4 %	

45%
answered
correctly

Attempts: 51 out of 51

A plant that parasitizes other plants and has lost the ability to photosynthesize is a

+0.28

Discrimination Index

parasitoid		0 %	
hemiparasite	3 respondents	6 %	
holoparasite	48 respondents	**94 %**	✓

94%
answered
correctly

herbivorosite		0 %

Attempts: 51 out of 51

+0.14

Discrimination Index

In what sized population should the effects of genetic drift be strongest?

within small populations	42 respondents	**82 %**	✓
within large populations		0 %	
within populations that are isolated	6 respondents	12 %	
within populations that are connected by migration/dispersal	3 respondents	6 %	

82% answered correctly

Attempts: 51 out of 51

Increasing the amount of sunlight always leads to an increase in photosynthetic yield.

+0.34

Discrimination Index

True	15 respondents	29 %	
False	36 respondents	**71 %**	✓

71% answered correctly

Attempts: 50 out of 51

In **Section 4 (http://jdyeakel.github.io/teaching/ecology/section4/)** , we examined a simulation of evolution by natural selection. What do each of the lines in the plot represent?

+0.22

Discrimination Index

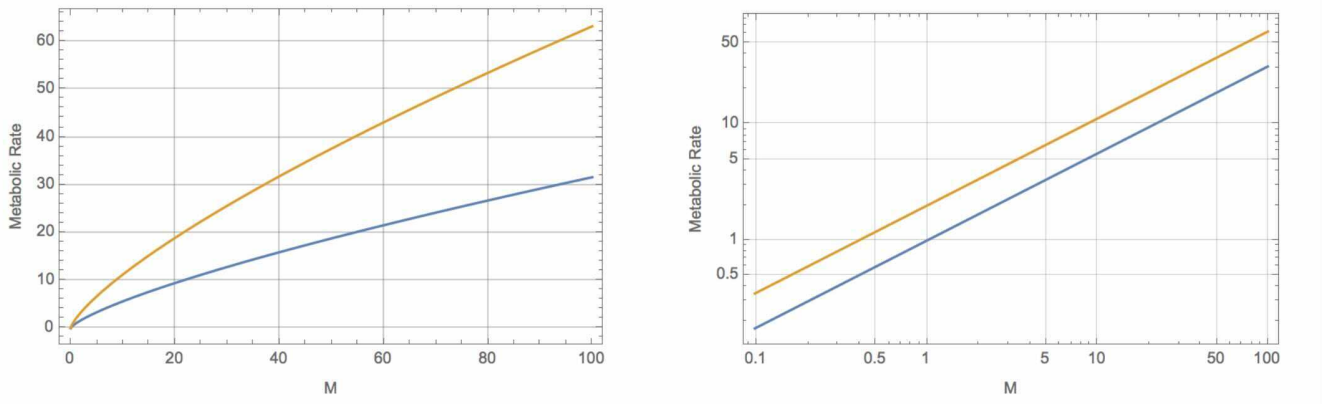
Mean trait values of the population over time	35	**69 %**	✓

	respondents	
Mean trait values of families over time		0 %
Mean trait values of individuals within a population over time	14 respondents	27 %
Mean trait values of multiple species within the same community over time	1 respondents	2 %
No Answer	1 respondents	2 %

69% answered correctly

Attempts: 51 out of 51

Metabolic rates (MR) as a function of body mass (M) are shown for 2 groups of species (blue, orange). On the right are the MR-M lines on a [linear, linear] plot; on the left are the same relationships on a [log, log] plot. **If you can't see the figure click here (https://ucmerced.box.com/s/ozjimg62sb7ugo9tjqsimeui6ltf8irn)**



Question: If the colors represented an endothermic and ectothermic species, which color is more likely to represent ectotherms?

+0.2

Discrimination Index ⓘ

blue	38 respondents	**75 %**	✓ 75% answered correctly
orange	13 respondents	25 %	

Attempts: 51 out of 51

From **Section 1 (http://jdyeakel.github.io/teaching/ecology/section1/)** , we looked at the diets of 8 sea otter individuals, foraging on 13 different prey species. Which of the prey species had the least amount of variability in sea otter diet?

+0.43

Discrimination Index ⓘ

sand dollars	3 respondents	6 %	84% answered correctly
lobster	43 respondents	**84 %** ✓	
snails	4 respondents	8 %	
cancer crab	1 respondents	2 %	

Attempts: 51 out of 51

Why is it that we can say that organisms approach 4-dimensions?

+0.39

Discrimination Index ⓘ

this is untrue - organisms are strictly 3-dimensional	3 respondents	6 %	
the fractal geometry of physiological distribution networks	21 respondents	**41 %**	✓
the fractal geometry of the chemical reactions within metabolic networks	23 respondents	45 %	
because of the 2/3 body size scaling law	4 respondents	8 %	

41% answered correctly

Attempts: 49 out of 51

In **Section 4 (http://jdyeakel.github.io/teaching/ecology/section4/)** we examined the data from the Rosemary and Peter Grant expedition to Daphne Major. How much did the mean beak width *change* from 1976 to 1978?

+0.56

Discrimination Index ⓘ

0.48	6 respondents	12 %	73% answered correctly
0.68	3 respondents	6 %	
0.53	37 respondents	**73 %**	✓
-0.48	3 respondents	6 %	
No Answer	2 respondents	4 %	

Attempts: 51 out of 51

A cichlid fish follows water currents to maintain a strict internal temperature. This organism is a(n)

+0.32

Discrimination Index ⓘ

endothermic homeotherm	6 respondents	12 %	73% answered correctly
ectothermic homeotherm	37 respondents	**73 %**	✓
ectothermic poikilotherm	5 respondents	10 %	
ectothermic poikilotherm	3 respondents	6 %	

Attempts: 51 out of 51

Which of the following are required for evolution by natural selection? Select all that apply.

gene flow	16 respondents	31 %	63% answered correctly
genetic drift	14 respondents	27 %	
variation	46	**90 %**	✓

	respondents		
heritability	45 respondents	**88 %**	✓

Attempts: 51 out of 51

Ecosystems that cross elevational gradients on mountains show similarities to ecosystems that cross _____ gradients.

+0.23

Discrimination Index ⓘ

pelagic -> benthic	6 respondents	12 %	63% answered correctly
longitudinal	4 respondents	8 %	
marine -> terrestrial	9 respondents	18 %	
latitudinal	32 respondents	**63 %**	✓

Attempts: 51 out of 51

Which of the following behaviors is used by mammals to withstand extreme seasonality?

+0.49

Discrimination Index ⓘ

bipedalism		0 %	63% answered correctly
low critical temperatures	7 respondents	14 %	
low activity rates	12 respondents	24 %	
torpor	32 respondents	**63 %**	✓

Attempts: 51 out of 51

Which of the following groups of species obtain their energy from other organisms? Select all that apply.

herbivores	50 respondents	**98 %**	✓ 86% answered correctly
autotrophs	3 respondents	6 %	
chemotrophs	4 respondents	8 %	
heterotrophs	50 respondents	**98 %**	✓

Attempts: 51 out of 51

What plant group uses bundle sheath cells to create a high-concentration CO2 chamber to increase the efficiency of photosynthesis?

+0.33

Discrimination Index ⓘ

C3 plants	4 respondents	8 %	76% answered correctly
C4 plants	39 respondents	**76 %**	✓
CAM plants	1 respondents	2 %	
C3 and C4 plants	7 respondents	14 %	

Attempts: 51 out of 51

In **Section 4 (http://jdyeakel.github.io/teaching/ecology/section4/)** , we examined a simulation of evolution by natural selection. Now we want to run the simulation, but we do *not* want to observe evolution. What should we do?

+0.11

Discrimination Index ⓘ

set N0 = 0 and sd0 = 0	3 respondents	6 %

set mutation = 0 and sd0 = 0	20 respondents	**39 %**	✓
set mutation = 0	26 respondents	51 %	
set sd0 = 0.1 and mutation = sd0	2 respondents	4 %	

39% answered correctly

Attempts: 51 out of 51

What environments favor C3 plants relative to C4 plants? Select all that apply.

Low precipitation environments	13 respondents	25 %	
High O2 environments	18 respondents	35 %	
High temperature environments	11 respondents	22 %	
High CO2 environments	41 respondents	**80 %**	✓

41% answered correctly

Attempts: 51 out of 51

The purely geometrical argument for the relationship between metabolic rate and body mass is based on the different scalings of surface area and volume with mass. Based on this alone, the theoretical expectation for the scaling of metabolic rate to body mass results in an exponent of

+0.19

Discrimination Index ⓘ

2/3	30 respondents	**59 %**	✓
-3/4		0 %	
1/4	2 respondents	4 %	
3/4	19 respondents	37 %	

59% answered correctly

Attempts: 51 out of 51

Within some species, the female is larger than the male. What is the primary advantage of this?

+0.11

Discrimination Index

Increased competitive abilities	1 respondents	2 %	
Decreased likelihood of starvation	1 respondents	2 %	
Increased fecundity	47 respondents	**92 %**	✓
Decreased surface area relative to volume	2 respondents	4 %	

92% answered correctly

Attempts: 51 out of 51

When the temperature falls below the lower critical temperature, endothermic basal metabolic rate

+0.38

Discrimination Index

increases	38 respondents	**75 %**	✓
remains the same	2 respondents	4 %	
it doesn't matter because the organism will die		0 %	
decreases	11 respondents	22 %	

75% answered correctly

Attempts: 51 out of 51

In **Section 4 (http://jdyeakel.github.io/teaching/ecology/section4/)** , we examined a simulation of evolution by natural selection. True or False: the offspring of parents are just as likely to have a trait value greater than the parent's value as they are to have a trait value less than the parent's value.

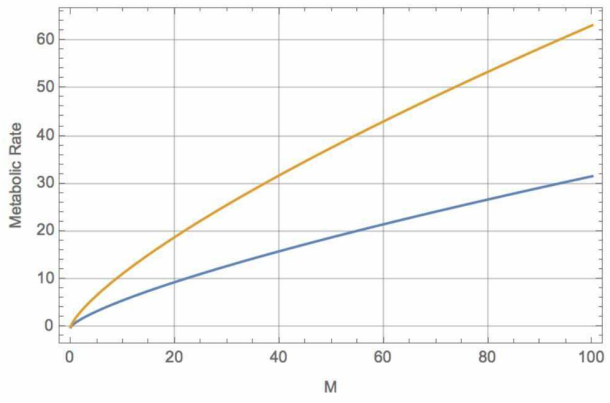
-0.22

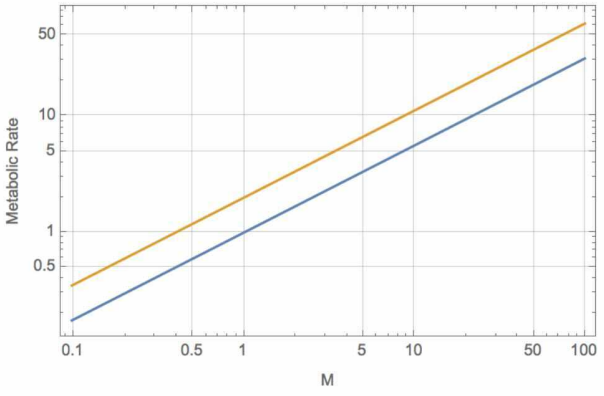
Discrimination Index ⓘ

True	35 respondents	**69 %**	✓ 69% answered correctly
False	16 respondents	31 %	

Attempts: 51 out of 51

Metabolic rates (MR) as a function of body mass (M) are shown for 2 groups of species (blue, orange). On the right are the MR-M lines on a [linear, linear] plot; on the left are the same relationships on a [log, log] plot. **If you can't see the figure click here (https://ucmerced.box.com/s/ozjimg62sb7ugo9tjqsimeui6ltf8irn)**





Question: True or False... Larger species fall along the orange line.

+0.18

Discrimination Index ⓘ

True	23 respondents	45 %	55% answered correctly
False	28 respondents	**55 %**	✓

Attempts: 51 out of 51

How do plants control their temperature? Select all that apply.

pubescence	47 respondents	**92 %**	✓
leaf orientation	47 respondents	**92 %**	✓
larger leaf stem diameters relative to vein diameters	8 respondents	16 %	
transpiration	50 respondents	**98 %**	✓

75%
answered
correctly