Chat Log: UNIT 11 FORAGING/STORING

Monday, November 22, 2010

8:00 PM: **Aletia**: I was really interested in the ant-fungi relationship discussed in this week's chapter ...i had no idea
8:01 PM: **Rafael**: yeah, that was pretty amazing; first id heard of it
8:01 PM: **HOST**: Aletia, I agree, the ants that grow fungus gardens are amazing
8:01 PM: **Bessie** has entered the room.
8:01 PM: **HOST**: Hi Cecilia, do you remember seeing mounds of leaf cutting ants in the tropics?
8:01 PM: **Cecilia**: all the time
8:01 PM: **HOST**: Hi Bessie
8:02 PM: **Bessie**: Good Evening
8:02 PM: **HOST**: we have them around here also, more in wet east Texas than drier central Texas
8:02 PM: **Diana** has entered the room.
8:02 PM: **Cecilia** has left the room.
8:02 PM: **HOST**: Hi Diana
8:03 PM: **Diana**: Hello Dr. Packard
8:03 PM: **Ellie** has entered the room.
8:03 PM: **Felicity** has entered the room.
8:03 PM: **Grace** has entered the room.
8:03 PM: **HOST**: Do you remember seeing the video about the leaf cutting ants in our unit on sociality?
8:04 PM: **Felicity** has left the room.
8:04 PM: **HOST**: Hi Felicity, Grace & Ellie
8:04 PM: **Felicity** has entered the room.
8:05 PM: **HOST**: Who is ready for a Turkey meal?
8:05 PM: **Cecilia** has entered the room.
8:05 PM: **Bessie**: I'm picking up my turkey tommorrow
8:05 PM: **Grace**: ham
8:05 PM: **Felicity**: im a vegetarian :)
8:05 PM: **Rafael**: i could skip it and hit the dessert buffet
8:05 PM: **Aletia**: i am
8:05 PM: **Ellie**: I'm all about the dessert
8:05 PM: **Hallie** has entered the room.
8:05 PM: **HOST**: chuckle!
8:06 PM: **Diana**: I will be ready on thursday since I will be the one cooking the T giving dinner
8:06 PM: **Ed**: Undecided - we're just breaking in our new oven
8:07 PM: **Grace**: i'm working so it's whatever is leftover
8:07 PM: **Rafael**: im also ready to see some Aggies walk over some Longhorns
8:07 PM: **HOST**: Well, I hope you won't be thinking about "Specialists" and "Generalists", or "storing nutrients" as body fat on Thurs! [-]
8:08 PM: **Hallie**: don't think so. ill be focusing on relaxing:)
8:08 PM: **Ellie**: haha I will be a generalist and probably storing some nutrients
8:08 PM: **Aletia**: hahah
8:09 PM: **HOST**: Who is ready to jump into Unit 11: Foraging (our next to the last unit!)
8:09 PM: **Rafael**: sounds good
8:09 PM: **Diana**: I am ready!
8:09 PM: **Aletia**: ready
8:10 PM: **Hallie**: lets go
8:10 PM: **Cecilia**: ok
8:10 PM: **HOST**: any one have a "problem Q" you want to get started with, or do you want an overview?
8:11 PM: **Rafael**: overview sounds good to me...
8:11 PM: **Bessie**: me too
8:12 PM: **Ellie**: sounds good
8:12 PM: **HOST**: OK. There are alot of details that some of the textbooks get into about the mathematical models for foraging...in my opinion....
8:13 PM: **Grace**: yeah math is bad
8:13 PM: **HOST**: the most important thing when you encounter a new species is to figure out if it is a generalist or specialist
8:13 PM: **Diana**: overview sound good and after word can you explain what you mean on 11.6 by predictable and unpredictible in regards to food storage in animals.
8:13 PM: **HOST**: If its a generalist, you can basically feed it kitchen scraps
8:14 PM: **HOST**: but if it is a specialist, you may have to import its special food, like eucalyptus for koala bears
8:15 PM: **HOST**: So we are mostly talking "diet" here, there are other questions, like which patch to choose and when to leave a patch and move to another patch, but lets focus on choice of item
8:15 PM: **HOST**: using the analogy of a shopping list, would you say that a generalist would have a long or short shopping list compared to a specialist?
8:16 PM: **Rafael**: long
8:16 PM: **Cecilia**: long
8:16 PM: **Felicity**: long
8:16 PM: **Ellie**: long
8:16 PM: **Grace**: long
8:16 PM: **Aletia**: long
8:16 PM: **HOST**: good, you got the idea
8:17 PM: **HOST**: would you think that "generalist" is an adaptation to a changing environment, or a static (unchanging) environment?
8:17 PM: **Ellie**: changing
8:17 PM: **Felicity**: changing
8:17 PM: **Cecilia**: changing
8:17 PM: **Diana**: changing
8:17 PM: **Bessie**: changing
8:17 PM: **Hallie**: long
8:17 PM: **Aletia**: changing
8:17 PM: **Hallie**: changing
8:17 PM: **Grace**: what they said
8:18 PM: **HOST**: good, so you have made the connection between variable behavior and adaptation to a changing environment!
8:18 PM: **HOST**: So in contrast, the hypothesis is that specialists are adapted to get a few items better than others in a stable environment
8:19 PM: **Hallie**: but being a specialist, wouldn't it limit a species to food due to it only eating certain things and not eating a variety of things
8:20 PM: **HOST**: Hallie, good critical thinking. Let's put up a few examples here....what is your favorite example of a generalist species?
8:20 PM: **Cecilia**: but the nutritional value of those few items should be higher, right
8:20 PM: **Cecilia**: ?
8:20 PM: **Grace**: a pig is a generalist
8:20 PM: **Bessie**: Raccoon
8:21 PM: **Diana**: pandas will be a example of generalist?
8:21 PM: **Grace**: no they would be a specialist
8:21 PM: **Ed**: Pandas are specialist - bamboo only
8:21 PM: **Diana**: sorry
8:21 PM: **Grace**: thanks Ed
8:21 PM: **Diana**: that is what a meant
8:22 PM: **Diana**: pandas are specialist
8:22 PM: **Diana**: thank Ed for correcting me
8:22 PM: **HOST**: Pandas are a good example to talk about the questions that Hallie and Cecilia raised.
8:23 PM: **Rafael**: how about eagles?
8:23 PM: **Grace**: what kinda eagles
8:23 PM: **Rafael**: golden
8:23 PM: **Cecilia**: Pandas eat bamboo
8:23 PM: **Hallie**: if the bamboo was depleted then the panada would have a greater possiblity of starving and possibly the population declining.
8:23 PM: **HOST**: Lets start with an anecdote. Jose told me that when he was caring for the pandas at a zoo in Mexico, they ran out of bamboo. So they went out on the street and bought tacos for the pandas. Those pandas reproduced happily!
8:24 PM: **Hallie**: what about a koala bear, would that be a specialist?
8:24 PM: **Grace**: ug
8:24 PM: **Diana**: no they will not be able to reproduce
8:24 PM: **Diana**: they will not be able to eat the tacos
8:25 PM: **HOST**: They did! To solve this puzzle, we need to look at the phylogenetic history
8:25 PM: **Grace**: I'd say they'd eat them but the gut flora
8:25 PM: **Grace**: would be a mess
8:25 PM: **Hallie**: isn't that related to caching ability
8:25 PM: **Cecilia**: I guess because they were starving and had no other choice
8:25 PM: **Diana**: really wow i did not know that!
8:25 PM: **HOST**: we need to compare one species to another and say "one is relatively more specialist compared to this other one"
8:26 PM: **HOST**: pandas are in the bear lineage, can you think of another species of bear that is more of a generalist?
8:26 PM: **Hallie**: black bear
8:26 PM: **Diana**: black bears
8:26 PM: **Grace**: black
8:26 PM: **Ed**: brown and black bears
8:26 PM: **Diana**: polar bears
8:27 PM: **Hallie**: they will forage on both fruit and nuts as well as fish and small mammals
8:27 PM: **HOST**: good! can brown and black bears survive on bamboo?
8:27 PM: **Hallie**: would polar bears be specialist because there is not much foliage around and would be limited to seals and fish in the sea?
8:27 PM: **Ed**: probably not
8:27 PM: **Grace**: nah
8:27 PM: **Diana**: I am going to say no
8:27 PM: **Ellie**: no
8:27 PM: **Hallie**: i would think they could if they were forced to since they eat plants
8:28 PM: **Ellie**: i would think it would be nutritionally limiting
8:28 PM: **Bessie**: If they were hungry enough they would eat it but im not sure they would be healthy
8:28 PM: **Hallie**: that they could adapt to eating bamboo only but it is not in their region
8:28 PM: **HOST**: I agree, the ancestors of pandas were more like black bears
8:28 PM: **Ed**: bamboo is very nutrient poor
8:28 PM: **Hallie**: koala bears are similar since they eat eucalyptus plants
8:28 PM: **HOST**: pandas have specialized adaptations, like a thumb, and a different stomach, which allows them to survive on bamboo shoots
8:29 PM: **HOST**: there is a lot of nutrition in growing shoots
8:29 PM: **Diana**: but bamboo will not give them all their nutrition values they would need more then just bamboo to be healthy
8:30 PM: **HOST**: So the hypothesis is that when the environment changed in Asia, those bears that were better able to digest the bamboo shoots produced more copies of their genotype
8:30 PM: **Hallie**: like a phylogentic adaptation
8:31 PM: **HOST**: bamboo is very heavily defended against a variety of herbivores....so the next step in evolution would be that pandas had vew competitors for bamboo once they "cracked" the bamboo's defenses
8:31 PM: **Ellie**: so would it be better for pandas for zoos to feed them things other than bamboo?
8:31 PM: **Grace**: no
8:33 PM: **Grace**: maybe for enrichment
8:33 PM: **Grace**: but not for dietary needs
8:34 PM: **HOST**: Hallie pointed out earlier that pandas now are in danger of extinction because they are now dependent on bamboo in their native habitat in China
8:34 PM: **Cecilia**: If bamboo is nutrient-poor, then how pandas get all nutrients? Do they supplement their diet ? or eat large amounts of bamboo
8:34 PM: **Cecilia**: ? 
8:35 PM: **Diana**: Thank you Cecilia that was my question? I think the pandas need something more then just bamboo in their diet
8:35 PM: **HOST**: like other herbivores, they eat large amounts, no wonder they have big "santa" tummies!
8:35 PM: **HOST**: Diana, growing shoots have alot of protein, leaves have vitamins, and juices
have carbohydrates
8:35 PM: **Cecilia**: quantity makes up for quality
8:35 PM: **Ed**: I understand that is why they only have one cub - they will abandon one if they have twins
8:36 PM: **HOST**: so lets chat about whether this specialist adaptation has made the panda species "more fit"?
8:38 PM: **Hallie**: i woudl think they are more fit due to their ability to sustain themselves with the diet they have
8:38 PM: **Rafael**: i would say it depends on the environment they're in. in a bamboo forest in China, they are very fit; now that the bamboo/access to the bamboo is becoming more scarce, not so much
8:38 PM: **Ellie**: maybe more fit in a region overwhelmed with bamboo, but now they are less fit because of the reduction in bamboo
8:38 PM: **Bessie**: I think they were "more fit" in the past but will need to adapt to the current changes in their environment
8:39 PM: **HOST**: so in a changing environment, specialists are more likely to go extinct?
8:39 PM: **Ed**: If you live in a forest of bamboo that no one else eats then they are "more fit" for taking advantage of that food source
8:39 PM: **Grace**: apparently there's different types of bamboo with different nutritional values
8:39 PM: **Ellie**: yes (to specialists)
8:39 PM: **Ed**: Yes, I would think so
8:39 PM: **Cecilia**: agree
8:39 PM: **Grace**: ug I can't copy and paste
8:40 PM: **Grace**: I'm looking at the giant panda ssp
8:40 PM: **HOST**: Ok. you got the idea: generalists are an adaptation to a changing environment, specialists are better at getting the nutrients and face few competitors for the food that they specialize on
8:42 PM: **HOST**: OK. We were talking earlier about the importance of a balanced diet. Do generalists eat what comes to them at random, or do they pick and choose?
8:42 PM: **Grace**: for additiional reading
8:42 PM: **Grace**: http://www.giantpandaonline.org/captivemanagement/nutrition_articles/bamboocult.htm
8:42 PM: **Bessie**: Depending on the species they pick and choose
8:42 PM: **HOST**: thanks Grace!
8:42 PM: **Hallie**: i would think they arent too picky but they would take what they could get if necessary
8:43 PM: **Grace**: I'd say they definitely pick and choose
8:43 PM: **HOST**: what is your favorite example of a generalist whose diet changes over the season?
8:44 PM: **Ed**: bears - they'll eat low calorie flowers and berries until the salmon arrives
8:44 PM: **HOST**: did you like the example of the grizzlies in lecture?
8:44 PM: **Rafael**: so, it sounds like the environment is driving prey selection, but from reading about the optimal foraging theory it is the most profitable prey available that a predator bases it's diet on. would you consider the available prey as a function of the environment?
8:46 PM: **HOST**: with the grizzlies, when they first emerge from hibernation, their fat is depleted and if it was a really hard winter, their muscle tone was catabolized (broken down for
water and calories)
8:47 PM: **HOST**: the first food available to them is rapidly growing sedge, which are rich in protein and the carrion of bulls that fought too hard in the fall and did not make it through the winter
8:47 PM: **HOST**: so, yes, they are taking what is available to them, and it happens to be what their body needs
8:48 PM: **HOST**: then when the berries set on in the middle of summer, why do they switch to feeding on berries?
8:48 PM: **Ed**: probably the nutrients and sugars
8:49 PM: **HOST**: yes, carbohydrates and sugars in berries
8:49 PM: **Hallie**: helps build up sugar supplies and fats for the coming winter
8:49 PM: **Cecilia**: they need to start storing fat
8:49 PM: **HOST**: when the salmon come in to spawn, are they "hungry" for the protein or the fat at the end of the summer?
8:50 PM: **Felicity**: the fat
8:50 PM: **Ed**: fat - need to stock up for the winter
8:50 PM: **Bessie**: Fat to bulk up for winter
8:50 PM: **Diana**: could it be both?
8:51 PM: **HOST**: gppd. and what would you hypothesize is the environmental stimulus that makes their metabolism change so that they "crave" fat?
8:51 PM: **Bessie**: hours of daylight?
8:51 PM: **HOST**: bingo!
8:52 PM: **HOST**: so this all makes sense....but why would grizzlies go down to the seashore and eat clams?
8:52 PM: **Hallie**: changing in the tide allows easy access to the clams?
8:53 PM: **Ed**: Clams might be higher in salts
8:53 PM: **Rafael**: to pick up a trace nutrient
8:53 PM: **HOST**: bingo! essential nutrients
8:54 PM: **Grace**: like the moose going for the aquatic plants over terrestrial plants
8:54 PM: **HOST**: so now we have covered two hypotheses about generalists: (1) adaptation to changing environment and (2) adaptation to choose items that balance the nutritional requirements
8:55 PM: **HOST**: and two hypotheses about specialists: (1) adaptation to predictable foods in the environment and (2) better competitors in a stable environment
8:56 PM: **HOST**: lets slose up with "storing" nutrients....these animals can't go down and buy a frozen turkey at HEB like we can
8:56 PM: **HOST**: where do grizzlies store their water and calories?
8:57 PM: **Ed**: In their fat
8:57 PM: **Bessie**: Do they have yellow fat?
8:57 PM: **Ellie**: fat
8:57 PM: **HOST**: think about that on Thurs!!
8:57 PM: **HOST**: and what is your favorite example about specialized storage vessels in animals?
8:58 PM: **Ed**: You mean physiological storage?
8:58 PM: **HOST**: did you like the example of the ant honey pots in lecture?
9:00 PM: **HOST**: Ed, there are also alot of good examples of how animals cache and make other
structures to store nectar, like the honey bees
9:00 PM: Ellie: ok well i have to go, goodnight y'all!
9:00 PM: Ellie has left the room.
9:00 PM: Hallie: chipmunks storing acorns
9:00 PM: Ed: Okay, wasn't sure which directed to go - I was thinking chipmunk cheeks
9:01 PM: Ed: "direction"
9:01 PM: HOST: actually, chipmunk cheeks would store seeds, rather than acorns, Hallie
9:01 PM: HOST: I think of squirrels storing acorns
9:02 PM: HOST: or the woodpeckers we learned about earlier!
9:02 PM: Ed: big chipmunks
9:02 PM: Grace: lol
9:02 PM: HOST: chuckle, any other Q's before we sign off tonight?
9:02 PM: Grace: no chat wednesday?
9:02 PM: Hallie: sorry was thinking about both of them:)
9:02 PM: HOST: No chat WEd. Have a wonderful T-Day!
9:03 PM: Rafael has left the room.
9:03 PM: Bessie: Thanks you too
9:03 PM: Grace: night y'a;;
9:03 PM: Bessie has left the room.
9:03 PM: Grace: ll
9:03 PM: Aletia: Thanks, you too.
9:03 PM: Grace has left the room.
9:03 PM: Cecilia: good night everybody!
9:03 PM: Aletia has left the room.
9:03 PM: Felicity has left the room.
9:03 PM: Ed: Night and happy eating
9:04 PM: Ed has left the room.
9:04 PM: Diana: Have a great T-Day Dr. packard. I will see next week. Goodnight everyone.
9:04 PM: HOST: bye!
9:04 PM: Cecilia has left the room.
9:04 PM: Diana: bye!
9:04 PM: Diana has left the room.
9:05 PM: HOST has left the room.

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