Chat Log: Unit 10 Mating & Birth

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Monday, October 29, 2012  grads

8:01 PM: HOST: Hi Jeremy!
8:02 PM: James: Good evening Jeremy and Doc
8:02 PM: Jeremy: Hi Dr. P and James
8:02 PM: HOST: James, have you been to the aquarium lately?
8:03 PM: James: Going there tomorrow after school to collect videos and make observations.
8:04 PM: James: Was there a couple weeks ago, took video, but quality was not good enough, so had to borrow video camera.
8:04 PM: Jeremy: you see any of the 'tsunami' the other night?
8:04 PM: HOST: Cool! what is your plan for observations and video?
8:05 PM: James: No, I am in CA, but my wife saw about a 3 foot surge.
8:06 PM: James: I plan to record 3 ~1 minute sessions at clownfish tank, and 3 ~ 1 min at the damsel fish tank. I will take observations to use as narrative talking points for the learning guide.
8:06 PM: James: I want the videos to serve as observation and inference training aids.
8:07 PM: HOST: sounds good! what sort of behaviors are you expecting to capture?
8:07 PM: James: mainly territorial, but want to keep an open mind.
8:08 PM: James: I want to try to capture at least one video before feeding, one during, and one after
8:08 PM: HOST: I really enjoyed reading up on the clownfish and damsel fish
8:09 PM: HOST: had no idea how much variation there is within each of those taxonomic groups
8:09 PM: James: thank you for articles
8:09 PM: HOST: sounds like the damselfish are territorial for very different reasons?
8:10 PM: James: Yes, and that their territories tend to cover larger area.
8:10 PM: James: I am curious how the area might change as the damsel ages
8:10 PM: James: and how / if it changes with variations in resources
8:11 PM: HOST: sounds like that damsel territories are more based on harvesting algae?
8:11 PM: James: namely when they feed the fish at aquarium
8:11 PM: James: I am not sure if algae harvesting applies at aquarium.
8:12 PM: James: sorry, not sure if it is as strong of a stimuli
8:12 PM: HOST: there were alot of articles about the impacts of damsels on reef ecology
8:12 PM: James: as compared to native wild habitat
8:13 PM: HOST: so maybe the damsel escalation might not be territorial, since the food resource in captivity is not spatial?
8:15 PM: James: hmmm, that may be true. So far, I have noticed that the level of escalation seems to correlate to the species that crosses a spatial threshold
8:15 PM: HOST: pretty interesting!
8:15 PM: HOST: can you map out the locations where they escalate?
8:16 PM: James: Hopefully I can capture on video
8:16 PM: James: Yes, I have been trying to use spatial reference points to help me, but when I go tomorrow I will try to capture so I can examine more in depth.
8:17 PM: James: Sometimes interactions are too quick for me to judge distance
8:17 PM: Jeremy: are these species which are endemic to that area or just part of the collection
at the aquarium?
8:19 PM: James: endemic to kelp forests
8:19 PM: James: clownfish are not
8:20 PM: HOST: hope you can get the species names from the signs.....seems like there is alot of variation in behavior across the different parts of the world where these guys evolved
8:21 PM: James: I will narrow down the specific species, to date I have just been watching.
8:22 PM: James: I have a question about how the anemone fish may have evolved to change from a male to female
8:22 PM: HOST: good, it is wonderful to just immerse yourself in watching....Konrad Lorenz used to love to do that
8:22 PM: James: UF perspective
8:22 PM: HOST: he was proud of having the largest salt water aquarium in Austria
8:23 PM: HOST: James, the sex change mechanisms are fascinating!
8:24 PM: HOST: so you want to work on the functional perspective?
8:24 PM: James: Yes, thank you for article
8:25 PM: HOST: what is your understanding of the function of sex change in the clownfish?
8:26 PM: James: select males will transform to females, within a select temporal span, given some environmental stimuli
8:27 PM: HOST: which is larger, the male or female?
8:28 PM: James: Female
8:28 PM: James: when the largest female dies, that triggers a male to change sex
8:28 PM: HOST: what are the fitness benefits of large females over small females?
8:28 PM: James: only largest males and female mate
8:29 PM: James: better able to protect offspring or/and adequate surplus energy for gestation
8:29 PM: James: not sure
8:29 PM: HOST: the hypothesis is greater fecundity (more eggs)
8:30 PM: James: ahh, makes sense
8:30 PM: HOST: so if there was a genotype that switched to females at a small size, it would have been outcompeted by a genotype that waited until a larger size to switch
8:31 PM: James: yes, since larger males (ones that mate) may not select smaller female
8:31 PM: James: therefore, not fitness gain by switching early
8:31 PM: HOST: good point!
8:31 PM: HOST: are you thinking of the anemone clownfish or another?
8:32 PM: James: clownfish, although many fish can transform
8:32 PM: HOST: with the anemone clownfish, the anemone clumps are small and widely distributed
8:33 PM: HOST: one small male can defend a small clump as well as a large male
8:33 PM: HOST: but how about the wrasse, who switch from female to male?
8:34 PM: James: not sure, I have heard wrasse can change, but not sure why
8:34 PM: HOST: the females all spawn on one side of the reef, usually upstream where it catches alot of food from currents
8:35 PM: HOST: if one male can defend that hotspot where are the chicks hang out, then he passes on more genes than one that defends a less attractive territory
8:35 PM: James: and dominate female will change sex if the dominate male dies...
8:36 PM: Jeremy: in the wrasse, i think the number of primary males has to do with the size of the population, right?
8:36 PM: James: yes
8:36 PM: HOST: large males are more effective at defending the large territory preferred by the females for laying eggs
8:37 PM: James: so if only one dominant male, then if he dies, there is a fitness advantage to the female that can transform, since she can then pass on genes (mate with multiple partners).
8:37 PM: HOST: those females that switched to being males too early, at a small body size, got
the less than attractive home sites
8:38 PM: James: ahh, and female may not select for mating is she perceives smaller home site = less fit male
8:38 PM: HOST: yes, with the wrasse, there is no fitness advantage to producing lots of eggs, so many of them get carried away with the current
8:39 PM: HOST: I think the wrasse could care less about the males, they are just responding to the stimulus that triggers egg laying
8:39 PM: James: but with anemone, they lay in anemone, so more eggs = increased fitness advantage
8:39 PM: HOST: yes, eggs settle into the anemone, they have smaller clutches, and if I recall, subsidize each with more nutrients
8:40 PM: James: very interesting considering differences between male to female and female to male
8:41 PM: HOST: also, the male helps defend the anemone from egg predators, which is easy because the anemones have those nasty chemicals
8:42 PM: HOST: pretty classic example of the difference in life history options "few large" (clown) vs. "many small" (wrasse)
8:42 PM: James: I was about to say less energy to defend, but then remembered the males may expend equivalent energy to produce mucous to ward off effects of nematocysts
8:42 PM: HOST: good thinking about those tradeoffs!
8:43 PM: HOST: so is this what you wanted to cover about sexual selection?
8:43 PM: James: yes, thank you. I have to go in a few
8:44 PM: James: thanks for steering me to some additional insights
8:44 PM: HOST: you are very welcome
8:44 PM: James: have a great night
8:44 PM: HOST: bye!
8:44 PM: HOST: Jeremy, did you have anything burning that you want to cover?
8:45 PM: Jeremy: no, i’m good for now. we can close down shop if you’d like
8:45 PM: HOST: OK. I have lots of inquiries to look over!
8:45 PM: James has left the room.
8:46 PM: HOST: did you find your way to the videos of the red deer at Fossil Rim?
8:46 PM: Jeremy: ha, I bet you do. going to be a busy few weeks for you
8:46 PM: Jeremy: yes, pretty awesome videos
8:47 PM: HOST: any questions about the A3 prey inquiry?
8:48 PM: Jeremy: not yet. I’m still working on module 1
8:48 PM: HOST: good. I guess I need to post some of the details on the M1 page, re. the camera etc.
8:50 PM: Jeremy: might be a good idea
8:50 PM: HOST: Have a good evening!
8:50 PM: Jeremy: you too. thank you. see you wednesday
8:50 PM: Jeremy has left the room.
8:50 PM: HOST has left the room.
8:53 PM: HOST has entered the room.
8:53 PM: HOST has left the room.

Wednesday, October 31, 2012 undergrad
8:00 PM: HOST: Hi Julie! Still on for meeting tomorrow?
8:01 PM: Julie: Yes ma'am! Looking forward to it. :) 
8:01 PM: HOST: Happy Halloween!
8:01 PM: Julie: You too! Hope it's been a good one so far!
8:01 PM: HOST: got any trick or treaters?
8:02 PM: Julie: Apparently we’ve been getting some at home!
8:02 PM: HOST: What would you like to chat about tonight?
8:05 PM: Julie: I wouldn’t mind going over some more questions!
8:05 PM: **HOST**: Great, do you have particular ones that are snags for you, or would you like to just start working through them?
8:06 PM: **Julie**: Just working through them, I think.
8:07 PM: **HOST**: okay.
8:10 PM: **Julie**: I've watched video 8.1, so maybe we can start with internal fertilization?
8:10 PM: **HOST**: Good Q8.1 In a species of your choice, how is internal fertilization accomplished?
8:11 PM: **HOST**: This is a proximate cause perspective
8:11 PM: **HOST**: Which example did you like best out of the video?
8:13 PM: **Julie**: Probably the wildebeest, just because they're so strange looking. I'm not sure if that's what you meant though, since that was more of a birthing video than a mating one.
8:14 PM: **HOST**: what did they say about the wildebeest in your reading for this unit?
8:15 PM: **Julie**: Well, they were talking about how different species had different optimal times for birthing, and the wildebeest actually gave birth when they were on the move for food resources
8:16 PM: **HOST**: yes, that is one of the functional hypotheses about internal fertilization
8:17 PM: **Julie**: The fact that the babies can easily keep up with their mothers only a few hours after birth also supports the hypothesis
8:17 PM: **HOST**: so lets dig into that a bit more, does the mating occur right after birth of the young, or at a later season like with the red deer?
8:17 PM: **Julie**: I believe it was right after the birth of the young.
8:18 PM: **HOST**: I agree
8:18 PM: **HOST**: so with the species that have internal fertilization, there are alot of complexities associated with mating
8:19 PM: **HOST**: Do you remember the video about the mating behavior of the topi?
8:20 PM: **Julie**: Yes. Another one of my favorites were the hanging flies and the gifts the males would give to the females
8:20 PM: **HOST**: the wildebeest mating is essentially like the topi
8:21 PM: **HOST**: the "courts" that the males defend are mobile, moving along with the migratory females
8:22 PM: **Julie**: Okay, that makes sense.
8:22 PM: **HOST**: so the males are checking out when females are coming into standing estrus, chasing away other males and mounting when the female comes into standing estrus
8:22 PM: **HOST**: pretty complex
8:23 PM: **HOST**: How do the hangingflies do it?
8:24 PM: **Julie**: The males bring the female a gift, and while she's eating it, they clasp/mate with her for about twenty minutes
8:24 PM: **HOST**: yes! pretty remarkable way of keeping out the other males!
8:25 PM: **Julie**: Yeah! It's a very effective way of making sure they're the fathers.
8:25 PM: **HOST**: Yes! and that is relevant to the next Q8.2 What are alternative hypotheses about the function of internal fertilization?
8:26 PM: **Julie**: I sort of had to laugh when they try to keep the remains of the 'gift' to attract another female.
8:27 PM: **HOST**: sneaky!
8:27 PM: **HOST**: have you heard about the balloon flies, a related species?
8:28 PM: **Julie**: I don't think I have. Do they also give gifts?
8:28 PM: **HOST**: the females evolved a receptor mechanism that is excited by large gifts
8:29 PM: **HOST**: the balloon flies make large wads of web, which look like a gift but are really
empty
8:29 PM: **HOST**: bling!
8:29 PM: **Julie**: Oh wow!
8:29 PM: **Julie**: That's really sneaky!
8:29 PM: **HOST**: there is an intermediate species in the lineage, which wraps the prey in silk web
8:30 PM: **HOST**: so it is easy to fill in the gaps and hypothesize the steps in coevolution between the male and female
8:30 PM: **Julie**: That's really, really interesting.
8:31 PM: **HOST**: as I recall, there is a box about the balloon flies in this chapter, or maybe the next chapter
8:32 PM: **HOST**: ....we digress!
8:32 PM: **Julie**: I've noticed I tend to do that when I'm in these chats.
8:33 PM: **HOST**: so the function of internal fertilization in the hangingflies is paternity protection for the males, and nutrition for the eggs of the females
8:33 PM: **HOST**: what other functional hypotheses can you think about?
8:33 PM: **Julie**: Oh, that's true, I didn't even think about the nutritional benefit they'd receive.
8:34 PM: **Julie**: Hmm. Well, like in birds, sometimes both parents help to guard/raise the chicks.
8:34 PM: **HOST**: yes, extra help for a few large offspring
8:35 PM: **HOST**: how about the hamster, do you remember which function that illustrated?
8:35 PM: **Julie**: Was it multiple copulations?
8:36 PM: **HOST**: synchrony of ovulation and fertilization
8:36 PM: **Julie**: And I know the male mates guarded--ah okay
8:36 PM: **Julie**: That makes sense
8:36 PM: **HOST**: the females are "hot" for only 3 hours after they give birth
8:37 PM: **Julie**: Interesting, so he can basically continue to breed them and make sure he's teh father
8:37 PM: **Julie**: *the
8:37 PM: **HOST**: pretty narrow window of opportunity!
8:38 PM: **HOST**: yes, its pretty different than the sea urchins that just broadcast sperm and eggs to float on the ocean currents
8:39 PM: **HOST**: Ready to move on to external fertilization?
8:40 PM: **Julie**: I think so!
8:40 PM: **HOST**: What is your favorite example? sea urchins, herring, midas cichlids? land crabs?
8:41 PM: **HOST**: oh, also the trinidad tree frogs that place sperm and eggs in a leaf cup
8:41 PM: **HOST**: there are also lots of good examples in your reading
8:41 PM: **Julie**: Yeah, I liked the frog example. I'll need to check the book again
8:42 PM: **HOST**: so how do the tree frogs do it?
8:44 PM: **Julie**: Just the thought of the little tadpoles slipping out of the leaf was really cute to me. That's a good example of optimal conditions.
8:45 PM: **HOST**: yes, protected from predators, who are probably really dense in the pond below, particularly when it dries up between the rainy seasons
8:46 PM: **Julie**: Yeah, makes sense!
8:46 PM: **HOST**: so who deposits first? the eggs or the sperm?
8:46 PM: **Julie**: The eggs.
8:47 PM: **HOST**: and who pulls the leaves togethr?
8:49 PM: **Julie**: I think the female does with her hind legs
8:49 PM: **Julie**: Then the male releases sperm and fertilizes the eggs
8:49 PM: **HOST**: I agree, so what are some of the ideas about the function of external fertilization?
8:51 PM: **HOST**: do you remember the one about recombinant DNA being an adaptation to a patchy environment? similar to the lottery hypothesis?
8:51 PM: **Julie**: It seems like there are a lot of small young that don’t need much care.
8:51 PM: **Julie**: Yes, I do remember that
8:52 PM: **HOST**: yes, many get eaten by predators, but if one settles in a good environment for it, bingo, it can make thousands of eggs!
8:52 PM: **Julie**: Yes, exactly.
8:52 PM: **HOST**: want to move on to the wild and wonderful world of asexual reproduction?
8:53 PM: **Julie**: Yes!
8:53 PM: **HOST**: Remember how the sea louse reproduces? she is similar to our freshwater daphnia
8:54 PM: **HOST**: Q8.5 For an asexual species of your choice how does reproduction occur?
8:55 PM: **Julie**: Gosh, for the sea louse, she practically fills herself up with little baby clones of herself.
8:55 PM: **Julie**: She dies after giving birth, but she's basically given rise to the next generation.
8:55 PM: **HOST**: yes, they eat her up and then she dies when they go free! the ultimate sacrifice!
8:56 PM: **HOST**: so gruesome, a good example for Halloween!
8:56 PM: **Julie**: Haha, a perfect one, really!
8:56 PM: **HOST**: OK. Here is the hardest question of them all
8:57 PM: **HOST**: Q8.6 what is the phylogenetic history of asexual reproduction?
8:58 PM: **Julie**: Hmm. Don't we hypothesize that it started out as one-celled organisms? So it was an ancestral trait.
8:58 PM: **HOST**: yes, the salty ocean environment is very similar to the internal body
8:59 PM: **HOST**: many marine organisms reproduce asexually
8:59 PM: **HOST**: some adapted to the aquatic environments on land
9:00 PM: **Julie**: Ahh, okay
9:00 PM: **HOST**: but then there is another hypothesis....some species were sexual then diverged to be asexual (sort of backwards)
9:01 PM: **Julie**: Oh, interesting... I personally believe in the asexual to sexual hypothesis.
9:01 PM: **HOST**: Usually they are adapted to very patchy environments...like the whiptail lizards who are female...but outside the ovulation period, they behavior like males and stimulate parthenogenesis in other females
9:02 PM: **HOST**: they live in clumps of rocks, where the population is so small there might not be any males around, but that does not stop them from reproducing!
9:02 PM: **Julie**: I remember the whiptail lizards, they're so weird and cool.
9:04 PM: **HOST**: Looks like our chat time has come to an end
9:05 PM: **HOST**: anything else before we sign off?
9:05 PM: **Julie**: I don't think so!
9:05 PM: **Julie**: I'll see you tomorrow, Dr. P!
9:05 PM: **Julie**: has left the room.
9:14 PM: **HOST**: has left the room.

Wednesday, October 31, 2012
7:52 PM: **HOST** has entered the room.
7:52 PM: **Jeremy** has entered the room.
7:54 PM: **HOST:** Hi Jeremy!
7:55 PM: **Jeremy:** Hi Dr. Packard
8:01 PM: **HOST:** Happy Halloween!
8:02 PM: **Jeremy:** oh yeah! I forgot all about that. same to you
8:02 PM: **HOST:** There were a few good costumes walking around campus
8:02 PM: **Jeremy:** oh, I bet. I remember that from when I was an undergrad there. fun times
8:03 PM: **HOST:** What would you like to chat about tonight?
8:03 PM: **Jeremy:** I take it the WFSC faculty did not have a costume contest?
8:04 PM: **Jeremy:** I don't have any specific questions about this week's info. finished with spotlight questions. I'll post discussion later tonight. maybe you could offer a few pointers about my paper? I emailed about it earlier today. Not sure if you've seen that email yet
8:05 PM: **HOST:** yes, I responded that you present a persuasive argument from a wildlife ecology perspective
8:06 PM: **HOST:** As a next step, I would recommend choosing a target journal
8:06 PM: **Jeremy:** oh, I hadn't checked email in the past couple hours
8:06 PM: **HOST:** I was just looking at Mammal Review, to see what sorts of papers are published there, if we could find a behavior article, that would give a good target to work from
8:07 PM: **Jeremy:** good idea. I'll do some searching on the library site and see what journals may be appropriate
8:09 PM: **HOST:** Here is a bear article: Andean bear Tremarctos ornatus natural history
8:12 PM: **Jeremy:** k, heading there
8:15 PM: **Jeremy:** strange. Doesn't show up in Google Scholar or TAMU library. What journal is that in
8:23 PM: **HOST:** Mammal Review on WoS
8:24 PM: **HOST:** Another title that looks more like behavior is "Fight or flight: antipredator strategies of baleen whales"
8:24 PM: **HOST:** I am seeing that most of the reviews seem to be more taxonomy, conservation related
8:25 PM: **Jeremy:** that's what I found too
8:26 PM: **HOST:** "Variations in bark-stripping by red deer...."
8:31 PM: **HOST:** "Sex related differences in roost site selection...."
8:34 PM: **HOST:** "Process of dispersal in badgers..."
8:37 PM: **Jeremy:** the red deer one looks pretty good
8:39 PM: **HOST:** Does it give you an idea about how to structure your manuscript?
8:43 PM: **Jeremy:** kind of
8:43 PM: **Jeremy:** I didn't think the 'methods' and 'results' sections would be appropriate for a paper like mine
8:44 PM: **HOST:** so its not really a review?
8:47 PM: **Jeremy:** so I should include how the various researchers gathered their data and the numerical data they recorded?
8:48 PM: **HOST:** can you find an article that is a review, which could be a better example for you to target?
8:49 PM: **Jeremy:** I'm looking through mammal review articles
8:52 PM: **Jeremy:** what about 'autumn winter energetics of holarctic tree squirrels - a review'
8:53 PM: **HOST:** sounds good!
8:55 PM: **HOST:** that should give you a good indication of how much concepts and how much examples the editors are looking for
8:55 PM: **Jeremy:** so just kind of follow the structure in that paper as a guide?
8:56 PM: HOST: that is what we want our students to learn in the masters program, how to structure a paper to match the audience to maximize chances of getting published!
8:57 PM: Jeremy: ok, that makes sense
8:58 PM: HOST: for the behavior journals, it is definitely more concept than example oriented
9:00 PM: Jeremy: so for example, in my section about timing of den entrance, i should elaborate about the concepts of cause, etc and then go into the examples?
9:02 PM: HOST: for the wildlife journals, it is more about the examples, as you have discovered
9:03 PM: HOST: Since you have chosen Mammalian Review, go with the balance of concept and example that seems to be accepted there
9:03 PM: HOST: As a good scientist, I encourage you to be very explicit about the hypotheses that were tested
9:03 PM: Jeremy: ok, that sounds like a plan. After I revise the paper, should i resubmit a rough copy
9:04 PM: HOST: and use your critical thinking about whether they answered proximate questions with data on individuals, and ultimate questions with data on gene pools
9:05 PM: Jeremy: ah, good point
9:05 PM: Jeremy: so i can interject some of my own interpretations
9:06 PM: HOST: usually with a review paper, you want to finish up with some statement about an overarching model of the system, or where are the information gaps
9:06 PM: HOST: Yes, the editor will expect you to insert original thinking.
9:06 PM: HOST: your piece needs to contribute to the scholarly dialogue
9:07 PM: Jeremy: gosh, my whole paper is wrong
9:07 PM: HOST: I will be happy to look at another draft
9:07 PM: HOST: Whoa! not wrong! you have alot of good information summarized in there
9:07 PM: HOST: its just a matter of "packaging"
9:08 PM: Jeremy: ok, that makes me feel better
9:08 PM: HOST: If you go back an look at the Hogland denning paper in Appalachia, she started out with a habitat suitability model, critiqued it and presented a revised model
9:09 PM: Jeremy: i remember that
9:09 PM: HOST: that is one example of how science is done....the HSI is the hypothesis that was tested
9:11 PM: HOST: So you could repackage your paragraphs to examine one or models for denning, which emerge from what you have read. Maybe one is focused mor on the den characteristics, another on the microhabitat, another on the variability of entry and exit times
9:11 PM: Jeremy: ok, there were various hypotheses from the articles i reviewed, such as hypothesis about den abandonment, hypothesis about anthropogenic food sources influencing denning, etc. So, I just be more explicit in describing those hypotheses, followed by examples, etc
9:11 PM: HOST: then in the end you could show how all of those are important to build a model for when human activity should be restricted around den sites
9:12 PM: HOST: I am just shooting in the dark here, since I really do not know this literature...
9:12 PM: Jeremy: you've been very helpful. I think I have a much better idea of where to go from here
9:12 PM: HOST: just trying to reinforce what we have been trying to say in so many ways about the value of formulating, testing and reformulating hypothesis
9:13 PM: Jeremy: I'll send in another draft after I've updated it and what not
9:13 PM: HOST: cool! looking forward to it!
9:13 PM: Jeremy: wish me luck lol
9:13 PM: HOST: You have done an awesome job of pulling together some complex
information
9:13 PM: HOST: just a matter of tying it up with a nice neat bow now!
9:14 PM: Jeremy: That's my plan. I'll let you go, I know we're past time. Thank you very much for all your help.
9:14 PM: HOST: have a good eve!
9:14 PM: HOST: stay clear of the goblins!
9:15 PM: Jeremy: haha, you too. I'm going to keep this window open to make some notes of your comments, so just disregard my name staying up in the list
9:15 PM: HOST: okay. want me to send you a direct copy of the chat log?
9:15 PM: Jeremy: if it's not much trouble, that would be awesome