BIO 182 LAB SIGN OFF PAGE — LESSON 15

Name _______________________________

Please staple all of your lab pages for this Lesson together with this page as the top. You will use this page to get your Labs for Lesson 15 signed off by the Biology Learning Center staff. You need to have all of the following steps initialed by a staff member before you can receive your 15 labs points for Lesson 15 and be allowed to take Exam 8.

After you have obtained all of your sign offs for this Lesson, be sure that a BLC staff member indicates on your Lab Card that you have completed all the Labs. Also, keep this sign off page, along with your completed lab worksheets, as proof of your lab completion. If your Lab Card indicates that you have not completed the required Labs for this Lesson and you believe that you have, it is up to you to provide proof that you have indeed completed the Labs. Keep this page!

__________  Lesson 15, Step 3A: SimbioVirtual Ecobeaker: The Barnacle Zone (in BLC)

__________  Lesson 15, Step 3B: SimbioVirtual Ecobeaker: The Barnacle Zone (in BLC)

*BLC Staff: After the student receives his/her last initial on this page, please indicate on his/her Lab Card that s/he has completed all the Lesson 15 labs.
**Step 3: In-Class Activity – SimbioVirtual: The Barnacle Zone**

This is another lab exercise that uses SimbioVirtual Ecobeaker, software that simulates ecological processes. To complete this activity, you will need to use computers in the Biology Learning Center. The Bio 182 EvoBeaker/EcoBeaker manual with instructions for this activity is located on the shelf behind the World of Microbes in the Biology Learning Center. (Be sure you don’t accidentally grab a gray notebook that contains Ecobeaker directions for another course.)

**PART A.**

1. Describe your observations of where each species can be found and fill in the figure with “b” for *Semibalanus* and “c” for *Chthamalus*.

2. Write down at least three hypotheses to explain your observations.
   1. 
   2. 
   3. 

3. *Semibalanus* tends to be found lower on the rock, below the tide line. What happens if you remove a patch of *Semibalanus*, and leave exposed bare rock?

4. What happens if you transplant a patch of *Chthamalus* on top of *Semibalanus* low on the rock?

5. *Chthamalus* tends to be found higher on the rock, above the tide line and above *Semibalanus*, where *Chthamalus* is regularly exposed to air. What happens if you remove a patch of *Chthamalus*, and leave exposed bare rock?
6. What happens if you transplant a patch of *Semibalanus* on top of *Chthamalus* high on the rock?

7. How do your observations from Questions 3-6 affect your hypotheses from Question 2? Are some hypotheses no longer valid? Do you have new hypotheses?

8. Describe where *Chthamalus* is found in the absence of *Semibalanus*? Fill in the figure with “b” for *Semibalanus* and “c” for *Chthamalus*.

This is the **fundamental niche** of *Chthamalus*; where it lives in the absence of all other species.

9. Describe where *Semibalanus* is found in the absence of *Chthamalus*? Fill in the figure with “b” for *Semibalanus* and “c” for *Chthamalus*.

This is the **fundamental niche** of *Semibalanus*; where it lives in the absence of all other species.

10. How do your observations from Questions 8 & 9 affect your hypotheses? Are some hypotheses no longer valid? Do you have new hypotheses? What is currently your most strongly supported hypothesis for the observations you have made?

BRING YOUR WORKSHEETS TO THE FRONT DESK IN THE BIOLOGY LEARNING CENTER FOR THE FIRST SET OF LAB POINTS.

(Bio 182, Lesson 15 Step 3A)
**Part B.**

11. Describe what happens when *Nucella*, the predatory snail, is added to the ecosystem. What is the distribution of *Nucella*? How have the distributions of *Semibalanus* and *Chthamalus* changed? Fill in the figure with “b” for *Semibalanus*, “c” for *Chthamalus*, and “n” for *Nucella*.

12. State a hypothesis that explains your observations in Question 11.

13. What is a **niche**?

14. What is a **fundamental niche**? What determines fundamental niches: physical limitations or biological factors (like predation and competition for space)?

15. What is the **fundamental niche** of *Semibalanus* (the larger barnacle)? What physical limitation, if any, determines its fundamental niche?

16. What is the **fundamental niche** of *Chthamalus*? What physical limitation, if any, determines its fundamental niche?
17. What is a realized niche? What determines realized niches: physical limitations or biological factors (like predation and competition for space)?

18. To answer Question 18, look at your answers to questions 1 and 11 and compare them to the fundamental niches of both barnacle species. How does the presence of *Chthamalus* (the smaller barnacle) affect the realized niche of *Semibalanus*?

19. How does the presence of *Semibalanus* affect the realized niche of *Chthamalus*?

20. How does the presence of *Nucella* (the predatory snail) affect the realized niches of *Semibalanus* and *Chthamalus*?

21. Do you agree or disagree with Connell’s hypotheses? If you disagree, explain how your hypotheses differ from his.

22: What did you learn about where organisms live from this lab activity?

WHEN YOU HAVE COMPLETED THIS LAB ACTIVITY, BRING YOUR WORKSHEETS TO THE FRONT DESK IN THE BIOLOGY LEARNING CENTER FOR LAB POINTS.

(Bio 182, Lesson 15, Step 3B)