A few rules while you are here:

- No pens are allowed in the museum galleries – pencils only.
- Do not touch any painting, ever. Do not even look as if you are going to touch any painting, ever – the security guards and other museum personnel cringe whenever you come too close.
- Do not lean on the walls, touch the walls, or use them as a “desk” for filling out your worksheets.
- Museum galleries are typically places of quiet reflection. We don’t expect you to be silent while you are here, but please talk quietly and try not to shout to your friends across the gallery.

Part 1 – General Ecology Questions (7 points)

Instructions: For part 1 of this lab, you will work with your group (no more than three students per group, please) to answer a series of ecology-related questions about paintings on the main floor. You must pick a different painting for each of the questions.
POPULATION ECOLOGY

1. a. What is a population?

   b. Find a painting that depicts a population of any species (plant or animal, including humans).

   • Title:
   • Artist:
   • General description of subject:

   c. Choose any species you can see in the painting. What is it? ___________________

   • For the species you chose, describe the population’s density (high? low? somewhere in between?) and pattern of dispersion (random? clumped? a combination?)

   • How are members of the species interacting with one another? (competition? mating? something else?)

   • What is an example of a density-dependent control on the growth of this population? (It can be either evident in the painting or implied)

   • What is an example of a density-independent control on the growth of this population? (It can be either evident in the painting or implied)

2. In lecture, you learned about the factors that determine whether a population grows or shrinks.

   a. What are the events that cause a population’s size to increase?

   b. What are the events that cause a population’s size to decrease?
c. Find a painting that depicts one or more of the events you listed above.

• Title:
• Artist:
• General description of subject:
• Describe the event(s) that are affecting the population’s size.

COMMUNITY/ECOSYSTEM ECOLOGY

3. What is the difference between a community and an ecosystem?

4. Find any painting that shows a community with a **large number of different species** (that is, high species diversity).

• Title:
• Artist:
• General description of subject:
• Describe any of the autotrophs you can see in the painting:
• Describe any of the heterotrophs you can see in the painting:
• Which are more prominent in the painting, the heterotrophs or the autotrophs?
• Give an example of a type of organism that MUST be in the scene (because you know how ecosystems work) **but that isn’t actually depicted.**

5. Find any painting that shows a community with **low species diversity**.

• Title:
• Artist:
• General description of subject:

• Do you think the species diversity is “naturally” low, or is it low because of human alteration of the environment? How can you tell?

6. a. In class, you learned about three types of community interactions. Define each of these terms:

• interspecific competition:

• symbiosis:

• predation:

b. Find a painting that shows (or implies) a community interaction of any type.

• Title:

• Artist:

• General description of subject:

• Describe the community interaction.

7. Find a painting that you think shows major human alteration of the environment.

• Title:

• Artist:

• General description of subject:

• How does this painting show human alteration of the environment?
8. Find a painting that you think shows *minimal human alteration* of the environment.
   - Title:
   - Artist:
   - General description of subject:
   - What clues in the painting suggest that there are few human impacts on the environment?

9. What was your favorite piece in the gallery, and what did you like about it?

**Part 2 – Group Presentation (3 points)**

*Owing to construction in the museum, the amount of space available is too small to do group presentations for spring 2011. Instead of group presentations, simply fill out the rest of this worksheet along with the rest of your group, then turn in your worksheets to your TA before you leave.*

For this part of the exercise, choose a painting that *depicts an outdoor scene*. Note that each group must choose a different painting, and you may not choose a painting you have already used in Part 1.

1. What are the names of the other people in your group?

2. What is the title of the painting you chose, and who is the artist?
   - Title:
   - Artist:

3. Give a brief, general description of what is going on in the painting.

4. What can you infer about the weather or climate in the painting? Based on what clues?
5. What types of plants and non-human animals (if any) can you see in the painting? Is the painting realistic enough for you to be able to see any of their adaptations to their climate? If so, what?

6. What does abiotic mean? Name three abiotic conditions that are either evident or implied in the painting.

7. What can you infer about the people (if any) in the painting? (Their clothing, activities, posture, etc. may give you clues).

8. What are three human impacts on the environment that this painting either depicts or implies? If you can’t see three, think about the title and/or the subject and think about some other impacts that are implicit in the subject of the painting.
   a.
   b.
   c.

9. How does each of the three impacts you chose affect the living and/or nonliving environment?
   a.
   b.
   c.
10. Name any one thing that the artist had to have KNOWN about BIOLOGY to be able to paint this work.

11. Do you see anything in your painting that is inconsistent with what you know about biology?

Be sure to turn this entire worksheet in to your TA and fill out an evaluation before you leave!
An Anonymous Evaluation Form
Art Museum Ecology Lab

What lab are you in? (circle one): Tues       Thurs
For each of the following statements, circle the letter that corresponds to you:
A = I understood this subject very well before this lab
B = I now understand this subject much better
C = I still don’t understand this subject very well

<table>
<thead>
<tr>
<th>Abiotic factors in ecosystems</th>
<th>A</th>
<th>B</th>
<th>C</th>
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</thead>
<tbody>
<tr>
<td>Population ecology</td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Community ecology</td>
<td>A</td>
<td>B</td>
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<tr>
<td>Human impacts</td>
<td>A</td>
<td>B</td>
<td>C</td>
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<td>on the environment</td>
<td>A</td>
<td>B</td>
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</tbody>
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Rate this lab on a scale of 1 to 10 (1 = incredibly boring; 10 = extremely interesting):

1   2   3   4   5   6   7   8   9   10

Additional comments (use back of sheet if necessary)

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