

Dr. Jeff Brotherton	Rain Forests; Sustainable Use
North Greenville University Tigerville, SC	Concepts in Chemistry CHEM 1440 Plant Science BIOL 2450
Puerto Rico's Rainforest	Lecture section with assignment

**Objective:** To challenge students to consider what is different about rainforests, what is their special value, and whether they can/should be sustainably used or protected. Relate these ideas to local development issues and southeastern US forestry practices.

**Background:** CHEM 1440 As part of Chapter 3 (The Chemistry of Global Warming; Chemistry in Context, 5<sup>th</sup> ed., McGraw Hill, 2006) students consider the chemistry of the global carbon cycle. A subsection placed in this series of lectures will introduce the Puerto Rico Rainforest. BIOL 2450 Similar approach as above used in chapter 2 (The Chemistry of Life; Plant Biology, Rost et al., 2<sup>nd</sup> ed., Thomson, 2006) but as a sidebar in this early chapter with subsequent applications in later chapters (photosynthesis to biomass, genetics to biodiversity, ecology to sustainable use).

**Materials:** PowerPoint slides; blue mahoe wood sample.

**Technology:** Computer and projector.

**Instructional Procedure:**

1. Transition into section. What I did last summer.
2. Show slides with commentary.

Slide 1- Measuring forest density. Picture of me using lens to estimate forest density. Describe procedure for taking twenty measurements across plot, and difficulties involved. Slide 2- Team in forest. Describe other measurements taken in study. Explain Earthwatch approach and point to website address for more information.

Slide 3- Forest floor. Questions for class discussion: How would you describe this forest? How does it compare to a South Carolina forest? What is biomass?

Slide 4- Arboreal bromeliad. Questions: What do you see? What is biodiversity?

Slide 5- Blue mahoe seedlings. Pass around wood sample. Explain project approach and objectives. Questions: What are costs involved? Compare this to southeastern US forestry practices?

Slide 6- Blue streets of Old San Juan. Explain the source of the blue cobblestones with a brief review of history. Questions: What is ballast? What is the cultural equivalent of ballast?

Slide 7- Assignment. Four terms: biomass, species diversity, sustainable use, and ballast.

3. Pass out 3x5 cards numbered 1-8. Inform that the following opinions are to be defended:

- #1 – Person with high regard for biomass value of rainforests.
- #2 – Person less impressed by biomass value of rainforests. Focus on other ways.
- #3 – Person placing high value on preservation of biodiversity.
- #4 – Person less convinced about biodiversity. Focus on other issues.
- #5 – Person committed to sustainable use.
- #6 – Person convinced of need for more protective plan.
- #7 – Person who likes change and sees value in new ways.
- #8 – Person who respects that way things have always been done.

4. Student preparation. Develop a working definition of your term. This should include some real science. Find at least one source who agrees with our position. Read an article about or by this person. Record on your card a key idea you learned and the source of this idea. Come to class ready to participate in a 20 minute discussion about the following scenario.

Your friend owns a sizeable area of mature, secondary growth rainforest in Puerto Rico. He has received a considerable offer from a developer to purchase the land as a location for new housing, including some for low and moderate income families. Your friend wants to know what you think. Would you sell if it were your rainforest?

5. Your instructor will represent your friend. He will ask individuals in the class to share their advice and ask others to respond to the advice given. Keep your opinions brief and to the point. At the end of the discussion a poll will be taken relative to whether to sell or not. A final recap of the discussion will focus on what lessons might be learned about applying science to real life, and the reality of conflicting values.

**Assessment:**

1. Assignment credit given for participation in the discussion and the submitted 3x5 card with cited source.
2. A chapter test question will ask for an explanation of biomass and biodiversity. A second question will ask for lessons learned about applying science to real life.