

TROPICAL ECOSYSTEMS FINAL EXAM

- 0 ✓ 1. Describe the important environmental features (geology, climate, ecosystems) of La Selva, Palo Verde, Monteverde and Manuel Antonio.
- 0 ✓ 2. In each of our four sites describe the impact made by humans. To what degree is each site threatened by human "development" pressure?
- ✓ 3. What defines the carrying capacity for any particular environment? How does this impact on the number of birds in Costa Rica as opposed to northern New Jersey?
- ✓ 4. What is the difference between the habitat and the niche of a species? Give some specific examples from our study sites.
- ✓ VAL 5. What is succession? A pioneer species? A climax community? An ecosystem? What are the implications for sustainable land use practices in the tropics?
- ✓ 6. What would happen if you tried to grow a vegetable garden (tomatoes, green peppers, etc.) in the middle of La Selva? Why? How about the chances of success for weeds?
- ↓ * 7. Discuss the positives and negatives that modern agricultural methods have brought to Costa Rica.
- ✓ 8. What are those ants doing with all the leaves they are carrying around? Why not just eat them, instead of growing fungus on them and eating the fungus?
- ✓ 9. There is no evidence that butterflies have color vision. Why, then, do they have such a variety of colored wings and bodies?
- 0 ✓ 10. Palo Verde is hot, very dry half the time, and very wet half the time. Why do you suppose so many organisms live there as opposed to a place that has a more uniform environment?
- ✓ 11. Why are there more conspicuous species or organisms in the tropics than in the temperate zone? (colorful birds and butterflies, for example)
- ✓ 12. During the rainy season in Palo Verde there is a multitude of insects. There is a 6 month dry season during which life is difficult for insects. How do they survive?

- ✓ 13. Discuss the role of vertebrates as vectors for seed dispersal and pollination in the tropics.
- ✓ 14. Discuss the role of tree falls and tree fall gaps in tropical forest dynamics.
- ✓ 15. Most tropical frogs are small and apparently defenseless. How do they survive predation? Why are they so colorful and conspicuous?
- ✓ 16. Why are there buttresses on many tropical trees?
- ✓ 17. Why are bats so successful in Costa Rica? How is the ecology of tropical bats different from those in the temperate zone?
- ✓ 18. Compare and contrast what happens to a tree after it falls in Costa Rica and in New Jersey.
- ✓ 19. Discuss the role that agriculture has played in Costa Rica ecology. Give attention to bananas, and discuss some alternatives.
- ✓ 20. In 1950 Costa Rica was 80% covered in forest; today it has about 22% forest cover. Why did this forest come down?
- ✓ 21. Agriculture is basic and essential to a society's survival and prosperity. The application of the temperate zone model of agriculture has been a disaster in the tropics. What would you suggest to improve this situation?
- ✓ 22. What are the characteristics of primary tropical wet forest?
- ✓ 23. What are the characteristics of secondary tropical wet forest?
- ✓ 24. New world monkeys and sloths are Arboreal. Monkeys defecate from the canopy while sloths come to the ground to defecate and bury their feces at considerable risk. Why?
- ✓ 25. Nicole Plantation agriculture is common in the tropics. Insect pests are controlled by the application of insecticides. What are some anticipated results of this practice?
- ✓ 26. In the African oil palm plantations which line the road to Manuel Antonio, rats are a serious pest. How might you control them?
- ✓ 27. Why is there no vegetation on the down wind side of the main Poas Crater?

everybody &

28. The government of Costa Rica offers you the rights to operate the only fishing camp on the lake in the dormant Poas crater. You can obtain the exclusive lease for 25,000 colones. Are you interested?
29. Some forest trees have red foliage when young and green foliage when more mature. Which group shows this characteristic? Why does this occur?
30. What seems to be the dominant animal in the forest at La Selva? What animal dominates the cloud forests of Monteverde?
31. Are there any evergreen (not coniferous evergreen) communities in the dry forest of Palo Verde?
32. We observed varying amounts of leaf litter on the floor of different forests. Why?
33. What is the impact of epiphytes on forest trees? What about lianas? - live off trees, use trees for light. Some start from top down, some down up - ones from down climb up tree, can weigh tree down
34. The species which inhabit the early regrowth stages in the La Selva successional plots are very different from those in the surrounding forest. Where did they come from?
35. How do pollination mechanisms in temperate and tropical forests differ? Why?
36. Costa Rican forests are rich, productive and diverse, yet there is a conspicuous lack of large land animals. Why? Is this characteristic of the tropics?
37. Many birds winter in the tropics and summer in temperate places like New Jersey. Are these our birds or theirs?
38. There appears to be conspicuous mechanisms in tropical plants which involve interactions with large animals (ask about these). Where are the animals?
39. Howler monkeys, white-faced monkeys and spider monkeys are common in Costa Rica's forests. How do they differ ecologically?
40. Make as many valid generalizations as possible about the tropics.
41. If you were in a position of power and authority, how would you try to promote economic development in tropical regions?

✓ 42. If you were in a position of power and authority, what policies would you establish to preserve tropical forests?

✓ 43. Monkey ladder vine is a strange looking plant. What might explain its striking and unusual morphology?

✓ 44. Hummingbirds are beautiful and interesting animals. What do they eat? What are some of their obvious adaptations? Why are there so many more species in the tropics compared to the temperate zone?
Wind? Stretch

✓ 45. What are the top predators in the forest ecosystem at La Selva? What are the top predators at Palo Verde and Monteverde?

✓ 46. San Jose is in the central valley at an altitude of about 4,000 feet. What was this area like ecologically before it became the population center of the country?

✓ 47. What do the rivers, which we are constantly crossing, tell us about the ecology of their drainage basins?

✓ 48. Why was Lake Aranal created? What has been its impact on the ecology of the country? What is the ecological future of Lake Aranal? How might you deal with problems in this area?

✓ 49. What are plant/animal interactions? What are some specific examples?

✓ 50. La Selva is connected to Brauilo Carillo National Park by a narrow corridor of protected reserve. Why is this so important?

51.

52.

53.