Fossils of the Gatun Formation: Field Exercise
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I. Introduction: Instructor gives an overview of the site

a. Safety in the field
b. Geology of the site
c. Nature of paleontological field work, why we do it, how we prepare, what data to collect

II. Collection

a. Split the students into groups
    i. Estimated four groups of 5-6 students; each with an adult leader
b. Send them to different parts of the quarry
c. Tell them to collect all relatively complete fossils (big and small) in a given area
d. This part of the exercise should take about 30 minutes

III. Tally the taxa

a. Regroup all the students under shade (pop-up tent), each group with its own tarp/sheet to sit on
b. Have each group sort their fossils based on morphology into different taxa
c. Have each group tabulate their results, with the leader's help.
    i. How many of each kind?
        1. Number (specimens) of each taxon on tally sheet
        2. Total number of taxa (genera) on tally sheet
        3. Number of different taxa, not on tally sheet
    ii. What did they all do?
        1. Total number of specimens in three categories
            a. Orange= infaunal suspension feeders: they lived in the sediment and filtered nutrients out of the water column
            b. Green= epifaunal suspension feeders: they lived above the sediment and filtered nutrients out of the water column
            c. Pink= carnivores: we can explore this group further with discussion, explaining the different methods they use to consume animals (active vs. passive) as well as what they prefer to eat (worms, fish, or snails)
    iii. Who was on the menu?
        1. Look at eight pre-selected taxa (*Anadara, Panchione, Turritella,* Naticids, *Antillophos, Strombina, Terebra, Polystira*) and tabulate:
            a. Bore holes

b. Scars from crab attacks

d. Tabulate the results for all groups to increase sample size and permit between group and between fieldtrip (with data from previous trips) comparisons

IV. Topics for Discussion/Exploration

a. Biodiversity: looking at how many different types of animals lived in the area. We can look at the overall biodiversity for the site and make comparisons between the different groups. Discuss why there are differences between the groups, and how scientists need to compile a lot of data to produce a meaningful sample size.
b. Ecological Niches: Discuss how many of each type of organism there are, and how they interact. Look at how different types of organisms have different functions in the community, and how that compares to different jobs/roles in our society.
c. How do paleontologists look at behavior and interaction between different organisms?
    i. Trace evidence can be used to show predation by certain organisms on other organisms
    ii. Sometimes the victim survives the attack(s), you can see where the shell grows after the scar
    iii. The maker of the trace may not preserve well (e.g., crabs) and therefore traces can be as important as body fossils in reconstructing past communities.