Name\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_

**New research in Thailand finds birds and bats key to reforestation efforts**

From: Heather D'Angelo, MONGABAY.COM, September 30, 2014

Tropical forest restoration projects are exciting research sites for scientists studying factors that affect ecosystem recovery. Here, scientists are trying to understand plant community succession, i.e. the process of recovery after cleared lands are abandoned and allowed to regrow naturally. One of the most important components of this recovery process is seed dispersal, since seeds from nearby forests allow a deforested habitat to become populated again by native plants and trees.

Animals play a huge role in seed dispersal in the tropics, especially birds and fruit bats. Both of these animals create 'seed rain' across different habitats as they ingest fruits at one location, and then deposit seeds at another through their feces. In regenerating areas, seed rain is thought to occur mainly by bats when they fly over grassy open areas, and mainly by birds when they are perched under shrubs and trees. Some forest restoration techniques involve clearing out remnant shrubs and trees before planting new tree seedlings in order to reduce competition. But a new study in mongabay.com's open-access journal Tropical Conservation Science, challenges this practice, asserting that without remnant shrubs and trees, the birds will not show up.

Led by Tuanjit Sritongchuay with the Prince of Songkla University, the researchers placed 60 seed traps within a 20-hectare clearing in southern Thailand consisting of several different microhabitats ranging from shrub-like vegetation to tree-like vegetation. Later the scientists compared differences in seed abundance and species richness. They also counted the number of birds and bats observed on the days when seeds were collected, and made a note of which plants the birds were perching on.

They found that different microhabitats contained very different seed rain abundance and seed species richness, with the highest amount of seed rain found under the shrubs and the highest species richness found under the trees. Two families of birds, bulbuls and flowerpeckers, were the main seed dispersers at trees and shrubs, while bats were the main seed dispersers over the grassland patches.

Questions:

1. What do you expect are some characteristics of the seed that bats and birds disperse? Explain your answer.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What might be the benefit of bats and birds for seed dispersal? What would you anticipate the trade-offs are?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_