## Teaching Notes

### By *James B. Deemy*

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**Course Information**

Department: Deprtment of Natural Sciences, College of Coastal Georgia

Level: **Lower Undergraduate**

Course type: **Both**

Students: **Non-majors**

Number of Students: 30

**Module Information**

Original Module Name: Ecosystems Ecology -> Trophic Energy Transfer

Link to Original:

Modified Module Name:

Files associated:

MarsColony.docx

Modification Learning Goals:

* Students will apply concepts of trophic energy loss to choose and structure an agroecosystem for a hypothetical Mars colony.

**Teaching Notes**

*(Think about what you would like to read about this activity if you came back to it in 2 years)*

Suggestions for this section (not all required, and extras always welcome):

* How did the activity go?
  + *Very well.*
  + What went well and why?
    - *Students were highly engaged in the activity and some branched out beyond the suggestions meant to guide their Mars Colony food supply (example: some students made the leap to using fresh or salt marshes for beyond aquaponics or conventional crop ideas, one group even suggested a very wet food forest -> including mayhaw bushes and blue berries which are big crops in South Georgia, USA).*
    - *Students were able to think through alternate food supplies and ways to increase growing space in three dimensions.*
    - *Students also frequently included pollinators (honey bees) and even insect based protein sources.*
  + What went wrong and why?
    - *Students had difficulty with feasibility of certain food sources (cattle etc).*
    - *Students had difficulty with conceptualizing space available. Many solutions were creative ecologically but in reality not remotely feasible.*
* What was the prep like?
  + *Very simple, review agroecosystems and trophic energy transfer etc, practice the exercise.*
  + How much time went into prep?
    - *One hour*
  + Did you have to do any prep (i.e. grow cultures, grow seeds, order supplies) ahead of implementation?
    - *No*
* Would you do this activity again?
  + *Yes, absolutely, in both upper level and introductory level courses*
  + What would you change in the future?
    - *I would add some ideas of space (1 m^3, 10 m^3) and a agriculture feasibility scale for the space provided. I almost did this and decided to see how it went without hints on scale and feasibility. In the future I will probably provide these but it was helpful for some students to work through these ideas without the aids.*
* What do you wish you’d known before you ran the activity?
  + *That some students would have very little concept of how much space cows need and how little concept some student have about where food is generated. I expected the lack of understanding on energetics but did not anticipate students not having much understanding of where food is harvested.*
* Is there anything else you would like to make note of?
  + *Students may need some prompting to think their way through the exercise. I almost always help by using a series of questions to walk them to feasible solutions.*
* How does this activity fit in your overall course curriculum?
  + *I use activities like this very regularly (my own and borrowed). Concrete examples and manipulations of concepts are a frequent aspect of my curriculum.*
* In what ways, if any, did you modify your teaching practice with this activity?
  + *No modifications, we regularly complete similar activities in class.*