

Networks and the Environment

Worksheet 2

1. Draw your food web here:

2. Adjacency Matrix

		Arrow To														
Species																TOTAL
Arrow From																
		TOTAL														

3. Connectance

- (a) How many edges are in your food web (i.e. the number of 1's in your adjacency matrix)?
- (b) How many edges could there possibly be in your food web (i.e. the number of 0's or 1's in your adjacency matrix; remember to exclude the main diagonal if you do not allow self-edges)?
- (c) What is the connectance of your food web?

$$\text{Connectance} = \frac{\text{number of edges}}{\text{total number of possible edges}}$$

4. Degree Analysis

- (a) Which species are specialists (i.e. few prey species, low in-degree)?
- (b) Which species are generalists (i.e. many prey species, high in-degree)?

5. Node Deletion Experiment

Category (highest degree, etc.)	Name of Species	Added or Deleted	Number of Secondary Extinctions	Number of Directly Affected Species	Comments

Notes:

- Strategic choices for the node that get deleted include the one with the highest degree, the one with the lowest degree, etc.
- Can you find any keystone species?
- Is there one species you could remove that would kill everything else?
- For species additions (e.g. invasive species), think about how the addition might affect the rest of the food web (positive and negative).