

## Discussion # 12

7 / 8 December

[from the 2009 final exam]

Heather Spalding (Botany Ph.D. candidate, scheduled to defend her dissertation on 2 December) has been studying the life history and ecology of *Halimeda kanaloana*, an endemic marine macroalga that forms dense meadows on sandy substrates from the intertidal to 100 m depths. See <http://www.botany.hawaii.edu/halimeda/index.html> for further information about this alga and Heather's research.

One of Heather's studies focused on describing variation in size and morphology of *H. kanaloana* in relationship to depth; we will analyze her data on algal height. For this study algae were collected from 37 locations around Maui, Moloka'i, Kaho'olawe, Lana'i and O'ahu, at depths ranging from 1 to 85 m. Individuals were randomly selected from *H. kanaloana* meadows at the designated depth. In most cases, a transect was randomly located in the meadow along a given depth contour, quadrats were placed at randomly chosen points along the transect, and one alga was randomly chosen from each quadrat. Sample sizes per site varied greatly, most being < 10 but a few (at sites at which other studies were being done) being much larger (up to 106).

The data are the 37 site means of the heights of the individual algae and the corresponding site depths. The data are listed below and will be distributed electronically.

### The questions:

Is mean height related to depth? If so, how?

Why are we analyzing site mean heights rather than heights of individual algae?

depth	height	depth	height	depth	height
1.0	15.00	20.0	17.00	59.0	24.63
1.0	10.75	20.0	16.19	63.0	20.50
1.5	14.83	20.0	20.28	66.0	32.00
4.0	15.50	20.0	15.09	67.0	26.75
7.0	15.83	27.0	19.90	69.0	28.00
9.0	14.58	30.0	18.01	78.0	24.83
10.0	14.01	32.0	14.67	79.0	27.00
10.0	14.81	40.0	27.56	82.0	28.29
11.0	16.50	42.0	23.00	82.0	28.67
11.0	15.88	50.0	22.67	85.0	24.25
15.0	16.41	56.0	25.50	85.0	24.00
18.0	20.10	56.0	23.33		
20.0	17.05	59.0	27.80		