

PENDALAMAN MATERI 2 (18 MEI 2022)

1

10.70 Nitrogen and Seagrass. The seagrass *Thalassia testudinum* is an integral part of the Texas coastal ecosystem. Essential to the growth of *T. testudinum* is ammonium. Researchers K. Lee and K. Dunton of the Marine Science Institute of the University of Texas at Austin noticed that the seagrass beds in Corpus Christi Bay (CCB) were taller and thicker than those in Lower Laguna Madre (LLM). They compared the sediment ammonium concentrations in the two locations and published their findings in *Marine Ecology Progress Series* (Vol. 196, pp. 39–48). Following are the summary statistics on sediment ammonium concentrations, in micromoles, obtained by the researchers.

CCB	LLM
$\bar{x}_1 = 115.1$	$\bar{x}_2 = 24.3$
$s_1 = 79.4$	$s_2 = 10.5$
$n_1 = 51$	$n_2 = 19$

At the 1% significance level, is there sufficient evidence to conclude that the mean sediment ammonium concentration in CCB exceeds that in LLM?

2

10.76 Nitrogen and Seagrass. Refer to Exercise 10.70 and determine a 98% confidence interval for the difference, $\mu_1 - \mu_2$, between the mean sediment ammonium concentrations in CCB and LLM.

3

10.109 Wing Stroke Frequency. T. Casey et al. investigated wing stroke frequencies among two species of Euglossine bees, Friese and Cockerell, in the paper “Flight Energetics of Euglossine Bees in Relation to Morphology and Wing Stroke Frequency” (*Journal of Experimental Biology*, Vol. 116, Issue 1, pp. 271–289). Following are the wing stroke frequencies, in beats per second, for samples of each species.

Friese		Cockerell		
188	235	180	182	169
190	225	178	185	180

At the 5% significance level, do the data provide sufficient evidence to conclude that a difference exists in the mean wing stroke frequencies of the two species of Euglossine bees?

