

Biology 4605/7220  
16 September 2015

NAME KEY Quiz #2b

1. Stebbins (1950 Table 9) reported data from Reid and Reid (1915) on extinction rates in woody and herbaceous species of the early Pliocene in Northwestern Europe.

		Woody Nspecies	Herbaceous Nspecies
Modern species	$N_s$	25	31
Modern genera	$N_g$	56	70
Unidentified	$N_{unid}$	13	22
	Total	94	123

Calculate

a. Proportion of all Woody plants that belong to modern genera.  $p_W = \frac{56}{94}$  [1]

Proportion of all Herbaceous plants that belong to modern genera.  $p_H = \frac{70}{123}$  [1]

Odds of extinction of modern species where  $Odds_W = p_W / (1 - p_W)$   $Odds_W = \frac{56 \cdot 94}{94 \cdot 38}$  [1]

$Odds_H = \frac{70 \cdot 123}{123 \cdot 53}$  [1]

Odds ratio:  $OR = (Odds_W) / (Odds_H)$   $OR = \frac{56 \cdot 70}{38 \cdot 53}$  [1]

b. Mean extinction rate of modern genera  $N_g$ .  $mean(N_g) = \frac{56+70}{2} = 63$  [1]

$CV = \text{st.deviation} / \text{mean}$   $CV(N_g) = 0.152$   $\text{st.deviation}(N_g) = (0.152)(63) = 9.576$  [1]

$t = (\text{mean} - \mu) / \text{st.deviation}$  If  $\mu = 0$ , calculate  $t$   $t = 6.58$  [1]

$t = CV^{-1}$  if  $\mu = 0$  OR  $t = \frac{63}{9.576} =$

2. 1 acre = 1 rod X 1 furlong    1 rod = 22 yards    1 furlong = 220 yards

$m = 1.098$  yards    0.742 acres = 3591 yards<sup>2</sup> [1]

show your work [2]

$(0.742 \text{ acres}) = (0.742)(22 \text{ yd})(220 \text{ yd}) = 3591 \text{ yd}^2$

0.742 acres = 2979 m<sup>2</sup> [1]

3002 m<sup>2</sup> = exact value

show your work [2]

$(3591 \text{ yd}^2) \left( \frac{1 \text{ m}}{1.098 \text{ yd}} \right)^2 = 2979 \text{ m}^2$