


- 7.64 a. The point estimated for the true proportion of flightless birds for the extinct species is  $\hat{p}_1 = \frac{y_1}{n_1} = \frac{21}{38} = .5526$ .


The point estimated for the true proportion of flightless birds for the nonextinct species is  $\hat{p}_2 = \frac{y_2}{n_2} = \frac{7}{78} = .0897$ .

7.72 The confidence interval for  $\sigma^2$  is:

$$\frac{(n-1)s^2}{\chi_{\alpha/2}^2} \leq \sigma^2 \leq \frac{(n-1)s^2}{\chi_{1-\alpha/2}^2}$$

- 8.20 We test:  $H_0: \mu = 4$   
 $H_a: \mu < 4$  

The test statistic is  $t = \frac{\bar{y} - \mu_0}{s/\sqrt{n}} = \frac{2.413 - 4}{2.081/\sqrt{26}} = -3.889$

The small sample one-tailed rejection region requires  $\alpha = .10$  in the upper tail of the  $t$  distribution with  $df = n - 1 = 26 - 1 = 25$ . From Table 7, Appendix B,  $t_{.10} = -1.316$ . The rejection region is  $t < -1.316$ . 

- 8.24 a. Since it is desired to determine if the mean breaking strength is more than 2500 pounds per linear foot, we test the hypotheses:

$$H_0: \mu = 2500$$

$$H_a: \mu > 2500$$

The rejection region for a small-sample, one-tailed test requires  $\alpha = .10$  in the upper tail