1. $y_1 = 13$, $y_2 = 15.1$, and $y_3 = 16.57$. The equilibrium is $y_e = 20$ and is stable.

2. $z_1 = 40$, $z_2 = 28$, and $z_3 = 13.6$. The equilibrium is $z_e = 100$ and is unstable.

3. $c_1 = 0.7144$, $c_2 = 0.7262$, and $c_3 = 0.7359$. The equilibrium is $c_e = 0.78$ and is stable.

4. $c_1 = 90.52$ ppm, $c_2 = 81.99$ ppm, and $c_3 = 74.31$ ppm. The equilibrium is $c_e = 5.2$ ppm and is stable.

5. $q = 0.14$ and $V_r = 2457$ ml.

6. a. $q = 0.16935$ and $V_r = 1717$ ml.

b. $c_{10} = 9.08$ ppm and the equilibrium concentration, $c_e = 5.2$ ppm.

c. The expiratory reserve volume is 767 ml, while the inspiratory reserve volume is 183 ml. The normal expiratory reserve for a woman is about 800-1000 ml, so this value is a little low. The normal inspiratory reserve volume for a woman is about 2500 ml, so this patient has an extremely low value for this parameter, suggesting problems in the diaphragm muscles (polio or spinal paralysis).

7. $p_1 = 1250$, $p_2 = 1513$, and $p_3 = 1788$.

8. a. $p_1 = 88.9$ with -3.3% error, $p_2 = 104.0$ with -1.6% error, and $p_3 = 121.7$ with -0.88% error.

b. $p_1 = 89.6$ with -2.6% error, $p_2 = 105.2$ with -0.48% error, and $p_3 = 122.9$ with 0.09% error.

9. a. $r = 2$ and $\mu = 50$, so $p_{n+1} = 2p_n - 50$.

b. $p_1 = 150$, $p_2 = 250$, and $p_3 = 450$.

c. $p_e = 50$ and is unstable.

10. a. $r = 0.8$ and $\mu = 700$. The populations in 1993, 1994, and 1995 are 4780, 4524, and 4319, respectively.

b. The equilibrium is $p_e = 3500$. This equilibrium population is stable. Ultimately, the population of moths on the island will balance at 3500 moths.

c. The graph of the updating function and the identity map are below. Note that the equilibrium population is where the updating function and identity map intersect. Also included is the cobwebbing for the first few iterations, showing the solution heading toward the equilibrium.