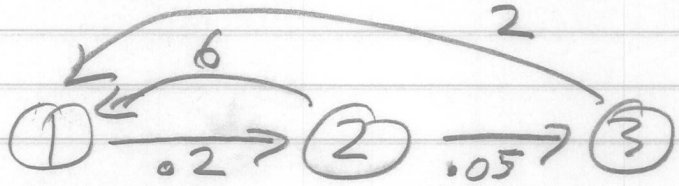
Quiz 18

An insect that lives 3 years has a life history given by the loop diagram



Then the Leslie matrix is

$$A = \begin{bmatrix} 0 & 6 & 2 \\ .2 & 0 & 0 \\ 0 & .05 & 0 \end{bmatrix}$$

If we start with $\vec{n}(0) = B = \begin{bmatrix} 100 \\ 0 \\ 0 \end{bmatrix}$

(a) Find $\vec{n}(30)$ and the percent in each stage.

$$\vec{n}(30) = [A]^{30}[B] = \begin{bmatrix} 1573.22 \\ 60.20 \\ 13.07 \end{bmatrix}$$

% in stage 1 = 95.5%
% in stage 2 = 3.7%
% in stage 3 = .08%

(b) Same for $\vec{n}(40)$

$$\vec{n}(40) = [A]^{40}[B] = \begin{bmatrix} 3986.14 \\ 204.35 \\ 33.08 \end{bmatrix}$$

% in 1 = 94.4%
% in 2 = 4.8%
% in 3 = .08%