

Numerical Comparative Statics in a Dynamic System: Ball Python Breeding

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ROADMAP OF SEMINAR

1. Observations
2. Assumptions
3. Theory
4. Some Preliminary Results

Observations

1. If you're not intending to breed a snake, sell immediately.
2. Males can inseminate 5 females apiece.
3. About 60% of pairings result in a 'clutch'.
4. It costs about \$80 to keep a snake for a year.
5. A male takes a year to grow to a breedable size.
6. A female takes two years.

Assumptions

1. Clutch size is distributed discrete triangular $[2,13]$ max 6.
2. A breeder has a capacity that they are not willing to exceed.
3. No sickness.

Theory

- PAM (with a caveat)

$$\begin{aligned} \max_{\mathbf{x}, \mathbf{y}, \mathbf{z}} & \{ \mathbf{1}_I^T \mathbf{R}^T \mathbf{x} \mathbf{1}_J - 80 \mathbf{y}^T \mathbf{1}_I - 80 \mathbf{z}^T \mathbf{1}_J \} \\ \text{s.t.} \quad & \mathbf{x} \mathbf{1}_J \leq 5 \mathbf{1}_I \\ & \mathbf{x}^T \mathbf{1}_I \leq \mathbf{1}_J \\ & \mathbf{x} \mathbf{1}_J \leq M \mathbf{y} \\ & \mathbf{x}^T \mathbf{1}_I \leq M \mathbf{z} \\ & \mathbf{y}^T \mathbf{1}_I + \mathbf{z}^T \mathbf{1}_J \leq 15 \\ & x_{ij}, y_i, z_j \in \{0, 1\} \end{aligned}$$

Preliminary Results

