Optimizing Outdoor Cat Management to Minimize Preventable Deaths

John D. Boone, Philip Miller, Joyce Briggs, Val Benka, Dennis Lawler, Margaret Slater, Julie Levy, and Stephen Zawistowski

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Cat simulation model (Miller et al. 2014)

Parameters

- Age-specific birth rates, survival rates, dispersal rates, etc.

Start State

Apply Birth

Within one time step

Apply movement

End State

Apply management

New time step (end becomes start)

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FRC Initiative

- Dr. Phil Miller, CPSP
- Dr. Aaron Anderson, NWRC
- Dr. John Boone, ACC&D, GBBO, HSUS
- Joyce Briggs, ACC&D
- Val Benka, ACC&D
- Dr. Margaret Slater, ASPCA, ACC&D Sci. Adv.
- Dr. Steve Zawistowski, ASPCA, ACC&D Sci. Adv.
- Dr. Dennis Lawler, Univ. of Illinois
- Dr. Felicia Nutter, Tufts Univ.
**Scenarios**

- No Action (Baseline)
- Light Removal (Remove 25%)
- Heavy Removal (Remove 50%)
- Light Culling (Remove 25%, return to K, repeat)
- Heavy Culling (Remove 50%, return to K, repeat)
- Light Sterilization (Sterilize 25%)
- Heavy Sterilization (Sterilize 75%)

**Cumulative Preventable Deaths over 10 Years**

- Kittens that die before 6 mo.
- Adults removed and killed
Per Capita Reproduction Rate

Population Size

TIME

Number of Deaths

Kittens Live  Kittens Die

Kittens  Adults

No Action  Remove-Low  Remove-High  Cell-Low  Cell-High  Sterilize-Low  Sterilize-High

Kittens Born

0  200  400  600  800  1000  1200  1400

0  200  400  600  800  1000  1200  1400

13  14  15  16
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Number of Preventable Deaths

- High D
- Low N
- Mid
- High D
- High N
- Low N
- Mid
- High D
- High N

Proportion Non-Local

- No Action
- Remove Low
- Remove High
- Cull Low
- Cull High
- Sterilize Low
- Sterilize High

Year

Sterilize 25%
Sterilize 75%
N = 100.6 cats
N = 103.1 cats
Conclusion for TNR

- Intensity ➔
  - Far fewer preventable deaths
  - Better population reduction

- Project planning and funding

Next... Economics