Identifying and Prioritizing Marking Methods for Non-Surgically Sterilized Cats and Dogs

Valerie Benka, Project Manager, ACC&D on behalf of ACC&D’s Scientific Think Tank Team

The objective

To identify a new method, or improve upon an existing method, to mark animals as non-surgically sterilized or contracepted.

Target Populations (our focus):

- Non-surgically sterilized cats, particularly free-roaming/feral populations
- Non-surgically sterilized free-roaming/community dogs
- Dogs and cats who are temporarily contracepted and require re-treatment, with a focus on free-roaming/community populations

Potential applications for:

- Surgically sterilized free-roaming cat and dog populations
- Rabies vaccination campaigns (free-roaming animals, esp. dogs)
- Even livestock and marked/monitored wildlife populations
Think Tank Participants

Scientific and expert panel:
- Dr. John Boone
- Kelly Coladarci
- Bruce Earnest
- Dr. Amy Fischer
- John Friar
- Dr. Stan Gehrt
- Dr. Michelle Kutzler
- Dr. Cynthia Mills
- Anne Olscher
- Gene Pancheri
- William Perlman
- Dr. Sheilah Robertson
- Aileen L. Walden

ACC&D representatives:
- Joyce Briggs
- Valerie Benka

Research presentation:
- Dr. Raffaella Leoci

Facilitation:
- Dorian Simpson
- Ed de la Fuente

Scientific Reporting:
- Dr. Tamara Golden

Many thanks to our Think Tank sponsor:

Marking Criteria: Minimum and Ideal

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Minimum</th>
<th>Ideal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visibility</td>
<td>~12 ft</td>
<td>&gt;25 ft</td>
</tr>
<tr>
<td>Permanence</td>
<td>&gt;3 years</td>
<td>Life of animal</td>
</tr>
<tr>
<td>Behavioral impact (i.e., interference with normal behavior, other animals, or humans)</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Application time required</td>
<td>&lt;10 minutes</td>
<td>5 seconds</td>
</tr>
<tr>
<td>Humane/pain level</td>
<td>No anesthesia, pain controllable/very brief</td>
<td>No anesthesia, no pain</td>
</tr>
<tr>
<td>Cost per application</td>
<td>&lt;$50</td>
<td>&lt;$50</td>
</tr>
<tr>
<td>Application device cost</td>
<td>Deferred discussion</td>
<td>Deferred discussion</td>
</tr>
<tr>
<td>Information retrieval</td>
<td>Visual reading or simple device</td>
<td>Visual + data capture</td>
</tr>
<tr>
<td>Quantity of information</td>
<td>Treated [yes/no]</td>
<td>Type of treatment, date(s) of treatment, other</td>
</tr>
<tr>
<td>Info retrieval device cost</td>
<td>&lt;$50</td>
<td>$0</td>
</tr>
</tbody>
</table>

Multi-Phase Process

- Literature review of current marking techniques
  - What currently exists and uses, pros, and cons of these options; findings from wildlife and livestock
- InnoCentive Challenge (www.innocentive.com)
  - Crowd-sourcing innovation
  - 367 participants from around the globe, 74 active solvers, 99 proposed solutions → 2 winners, 2 runners-up
  - Solutions provided foundation for Think Tank
- Scientific Think Tank
  - Convened experts, professionally facilitated, included presentation on Dr. Leoci’s preliminary study findings
  - Yielded consensus about desired/necessary features of mark and recommendations for how to proceed
Current Marking Methods

Used for dogs and/or cats
- Observation/imaging
- Collars
- Microchips
- Tattoo
- Ear tags
- Ear notching
- Ear tipping
- Freeze branding

Used for other species
- Leg bands
- DNA profiling
- Iris/retinal scanning
- Hot branding
- Paint

Solutions

- Focused on ear marking to enhance visibility
- To date, have ear tag options really been optimized?
  - Opportunities for innovation: materials, shape, placement, analgesia, antiseptic/antibiotic, piercing mechanism
- Optional RFID technology

Solutions: Visible Component

- Ear stud with disk. Advanced material (e.g., flexible, non-reactive silicone).
- Disk potentially convex/concave to reduce contact with fur/skin.
- Bright center post, color- or shape-coded to ID procedure, date, location applied, additional desired information.

- Apply with ear piercing-type gun using local anesthetic/NSAID/antiseptic – e.g., Tri-Solfen. Use squeeze trap for cats.
- Outreach component (option for caretaker to have matching stud, community education about meaning of stud/colors).
Solutions, cont’d: Visible component

- Flexible (breathable? reflective?) ear wrap attached with 2+ thin posts, folded over ear.
- Appropriately sized/shaped for individual animal.
- Color-coded or patterned to convey information.
- Apply with local anesthetic/NSAID/antiseptic – e.g., Tri-Solfen. Use squeeze trap for cats.

Solutions, cont’d: Technology add-ons

- Optional add-on: SAW RFID/QR code
- External placement = extended range
- Possibility of adding RFID or QR code once optimal “tag” design is determined
- Value-add: “smart traps” release treated animals, auto-monitoring using detectors at feed stations

Next Steps

- **Tag and application design:** Design and fabricate tag prototypes, accounting for myriad factors and outsourcing to experts.
- **Study design:** Controlled and field.
- **Potential partner outreach:** Identified broad potential partner categories, plus multiple possible partners within each. Explore opportunities for partnerships.
- **Community considerations:** Account for cultural and physical barriers to application/compliance in target communities.

Interested in learning more?

- Check out our complete Think Tank report and literature review of current marking methods in the 5th International Symposium online proceedings.
- Questions/suggestions? We’d love to hear from you! Please contact Valerie at valerie@acc-d.org, (734) 780-7817.