COYOTE BIOLOGY & MANAGEMENT

Drew Ricketts – Wildlife Specialist

DISTRIBUTION

COLORATION

SIZE

• 18-43 pounds
• Males 30.7
• Females 26.0
**Life History**

- Maximum known age
  - 14.5 yrs in wild
  - ~22 yrs in captivity

---

**Mortality**

- 50% die before first breeding season
- Human caused mortality high (40-90%)
  - Konza 17 coyotes GPS Collared April 2013 – August 2015
    - 7 mortalities
    - 3 vehicle collisions
    - 2 shot
    - 2 disease
  - 70% of the coyotes in most populations are less than 3 yrs old

---

**Natural Mortality**

- Diseases
  - Distemper
  - Canine hepatitis
  - Tuleremia

- Parasites
  - Mange (2)
  - Heartworm
  - Hookworm
  - Tapeworm

---

**Food Habits**

- Food Habits (KS Stomach Contents)
  - Rabbit (40%)
  - Rodents (31%)
  - Carrion (28%)
  - Miscellaneous
  - Chicken
  - Game birds
  - Other birds
  - 27% had empty stomachs

- Food Habits (Konza Scats)
  - Mammals (99%)
    - Cotton rats (76%)
    - Voles (29%)
    - Cottontails (19%)
    - Harvest mice (13%)
    - Deer (4%)
    - Cattle (2%)
    - Opossums (0.1%)
    - Insects (19%)
    - Fruits (9%)
  - Birds (9%)
    - Fish (1%)
  - Reptiles (1%)

*Gier, 1968  Brillhart and Kaufman 1995
**LIVESTOCK PREDATION**

- Calf loss to predators
  - 11% U.S.
  - 4.6% in KS
  - Coyotes responsible for 84% of calf loss to predators
  - Total cost of $4 M annually to KS producers

- Sheep and lamb loss to predators
  - ~30% Sheep losses in U.S.
  - ~40% Lamb losses in U.S.
  - KS very similar to national trends
    - ~15% of operations reported losses to predators
  - Coyotes – 45% Lamb 91% Sheep
  - Dogs – 5% Lambs 6% Sheep
  - Eagles – 44% Lambs
  - Total cost of $640,000 to KS producers

**REPRODUCTION**

- One 4-5 Day Estrus Annually Jan- Feb
- In most years, Females born in spring won’t breed the following breeding season
  - Majority of yearling females will produce pups when resources are high
  - Litter size varies depending on resource abundance
  - Low resources – 3 pups/litter
  - High resources – 8 pups/litter

**SPACE USE**

- Home range size varies widely 2-55 mi²
- Urban areas have higher densities and smaller home ranges

**HOME RANGE SIZE**

- Female
  - Mean: ~ 752 acres
  - Range: 222 – 1727 acres
- Male
  - Mean: ~ 886 acres
  - Range: 247 – 21450 acres
- Spring
  - Mean: ~ 914 acres
  - Range: 201–21450 acres
- Fall
  - Mean: ~ 716 acres
  - Range: 247 – 1729 acres
SOCIAL HIERARCHY

- Coyotes establish and defend territories to maximize reproductive fitness
- Resident coyotes are breeders, juveniles, and pups belonging to a family group and in possession of a territory that exhibit passive (i.e., scent marking) and aggressive (i.e., physical conflict) behaviors to exclude other coyotes
- Transient coyotes do not maintain territories and exhibit nomadic movements with no fidelity for a territory
**Family Groups**

- Long-term genetic studies suggest lifetime pair bonds
  - Male and Female both defend the territory
  - Both participate in group howls
  - Both defend the den and care for pups
- Kansas study at Ft. Riley found 47% were Transients (Kamler and Gipson)
- Extremely hard to affect population numbers because of high transient numbers of transients and variable reproduction
  - Models indicate must kill >70% of the population every year for 50 yrs to eliminate

**Natural History**

- Do they hunt with badgers?
- Minta et al. 1992 – coyote-badger pairs captured 1/3 more ground squirrels

**Abundance**

- Coyote

**All Predators**

- Coyote, Badger, Bobcat, Red Fox

FUR PRICES

<table>
<thead>
<tr>
<th></th>
<th># Sold</th>
<th>Top</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Badger</td>
<td>14</td>
<td>$22.00</td>
<td>$6.42</td>
</tr>
<tr>
<td>Beaver</td>
<td>45</td>
<td>$3.50</td>
<td>$2.98</td>
</tr>
<tr>
<td>Bobcat</td>
<td>151</td>
<td>$170.00</td>
<td>43.07</td>
</tr>
<tr>
<td>Coyote</td>
<td>261</td>
<td>$65.00</td>
<td>$25.42</td>
</tr>
<tr>
<td>Grey Fox</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Mink</td>
<td>1</td>
<td>$5.50</td>
<td></td>
</tr>
<tr>
<td>Muskrat</td>
<td>168</td>
<td>$3.25</td>
<td></td>
</tr>
<tr>
<td>Opossum</td>
<td>48</td>
<td>$0.35</td>
<td></td>
</tr>
<tr>
<td>Otter</td>
<td>5</td>
<td>$35.00</td>
<td></td>
</tr>
<tr>
<td>Raccoon</td>
<td>304</td>
<td>$7.00</td>
<td></td>
</tr>
<tr>
<td>Red Fox</td>
<td>2</td>
<td>$12.00</td>
<td></td>
</tr>
<tr>
<td>Skunk</td>
<td>15</td>
<td>$0.76</td>
<td></td>
</tr>
<tr>
<td>Woodchuck</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

FUR-AUCTION RESULTS: 2016/18

<table>
<thead>
<tr>
<th></th>
<th># Sold</th>
<th>Top</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Badger</td>
<td>3</td>
<td>$18.00</td>
<td>$12.83</td>
</tr>
<tr>
<td>Beaver</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bobcat</td>
<td>43</td>
<td>$105.00</td>
<td>$39.59</td>
</tr>
<tr>
<td>Coyote</td>
<td>156</td>
<td>$75.00</td>
<td>$32.18</td>
</tr>
<tr>
<td>Grey Fox</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mink</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muskrat</td>
<td>18</td>
<td>$2.00</td>
<td>$1.83</td>
</tr>
<tr>
<td>Opossum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Otter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raccoon</td>
<td>186</td>
<td>$8.50</td>
<td>$4.26</td>
</tr>
<tr>
<td>Red Fox</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skunk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woodchuck</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HYBRIDIZATION

Cotel et al. 2004

FUR-LINED HOODS

1. Thinner boundary layer
2. More loss of heat from head

FUR-LINED HOOD

1. Thicker boundary layer
2. Much less loss of heat from head

Cold wind

Cotel et al. 2004

FUR-LINED HOODS

Cold wind

FUR-LINED HOOD

Cold wind

Evidence of hybridization

**Why do Coyotes Respond to Calls?**

- Greed or competition
- Hunger
- Curiosity and entertainment
- Social communication
- Territory defense

**Vocalization Types**

**Greeting**
1. Whine (low frequency)
2. Group howl

**Contact**
1. Lone Howl (best for an approach)
2. Group Howl (best for vocal response)
3. Group Yip-Howl

---

**Vocalization Types**

**Agonistic**
1. Woof
2. Growl
3. Huff
4. Bark (avoid)
5. Bark-Howl (often misused) avoid
6. Yelp
7. Whine (high frequency)

---

**Lone Howl**

[https://www.youtube.com/watch?v=qQFuftBXc7k](https://www.youtube.com/watch?v=qQFuftBXc7k)
GROUP HOWL

https://www.youtube.com/watch?v=YtsZole3Czk

YIPS AND BARKS

https://www.youtube.com/watch?v=DaLekKRzG8M

PUP DISTRESS

https://www.youtube.com/watch?v=E-WOo4iv314

LEGAL METHODS OF TAKE

- Shooting
- Calling
- Trapping
- Snaring
**SHOOTING AND CALLING**

- Legal equipment
  - Firearms, except fully automatic
  - Archery equipment
  - Calls, Lures, Bait, and Decoys
  - Coyotes and furbearers may be taken at night without the aid of artificial light or light amplification devices during the legal season (no closed season for coyotes)
  - Vehicles and radios may be used while taking coyotes

**NEW FOR 2021**

- Night vision/thermal scopes and artificial lights
  - Coyotes only
  - Only during January 1 – March 31
  - Requires $2.50 Night Vision Equipment Permit
  - Use of vehicle is not permitted when using lights and night vision
  - Not allowed on department lands and waters, including WIHA and iWIHA properties

---

**NIGHT VISION, THERMAL & LIGHTS**

Figure 3. Kansas furharvester opinions on the legalization of lights, night vision and thermal imaging equipment to hunt coyotes at night in Kansas (n=1170).

Figure 5. Opinion by Kansas furharvesters on potential restrictions to night hunting in Kansas with lights, night vision and thermal imaging equipment.
COYOTE CALLING

• Find an elevated position and quietly approach from downwind

COYOTE CALLING

• Call into the wind towards draws and other cover that holds coyotes

COYOTE CALLING

• Call types
  • Open reed
  • Closed reed
  • Diaphragm
  • Electronic

TRAPPING AND SNARING

• Legal equipment
  – .17 and .22 caliber rimfire rifles and handguns may be used to dispatch trapped animals when using a light
  – Foothold traps used in land sets must have a jawspread of 7” or less and smooth jaws
  – Bodygripping traps must have a jawspread of less than 8”
  – Snares may not be set within 50’ of a roadway except by landowner, tenant, immediate relatives, or authorized agents.
LOCATION

www.youtube.com/watch?v=blFgfMDEy_Y&list=PLv5hSjfvFanJWDfZorTRA8TrxrEX41LKJ&index=1

LOCATION

• Set on sign!!

DIRT HOLE SET

www.youtube.com/watch?v=fuCTxZYOmT8&list=PLv5hSjfvFanJWDfZorTRA8TrxrEX41LKJ&index=4
FLAT SET

www.youtube.com/watch?v=QRcUvwmGtHk&list=PLv5hSjfvFanJWDfZorTRA8TrxrEX41LKJ&index=5

QUESTIONS?

Drew Ricketts
785-307-3831
arickett@ksu.edu
www.wildlife.ksu.edu

YouTube: www.youtube.com/channel/UCoCUoT3Oi90S5zDnzgL34iA
Facebook: www.facebook.com/ksrewildlife (@ksrewildlife)