

EVERYBODY PLAY NICE NOW: A NOVEL APPROACH
TO MANAGING A BACHELOR PRONGHORN HERD
SUCCESSFULLY THROUGH RUT



Ashley Roberts

Senior Wildlife Care Specialist, San Diego Zoo

AZA Chacoan Peccary Studbook Keeper

IUCN Small Carnivore Specialist Group Member



OUR DEMOGRAPHICS



- * 25 total pronghorn
- * 84% of have had trauma
- * average 2-4 trauma events per year
- * One death = goring

*** Two individuals with no trauma managed under new strategy**

CURRENT CHALLENGES



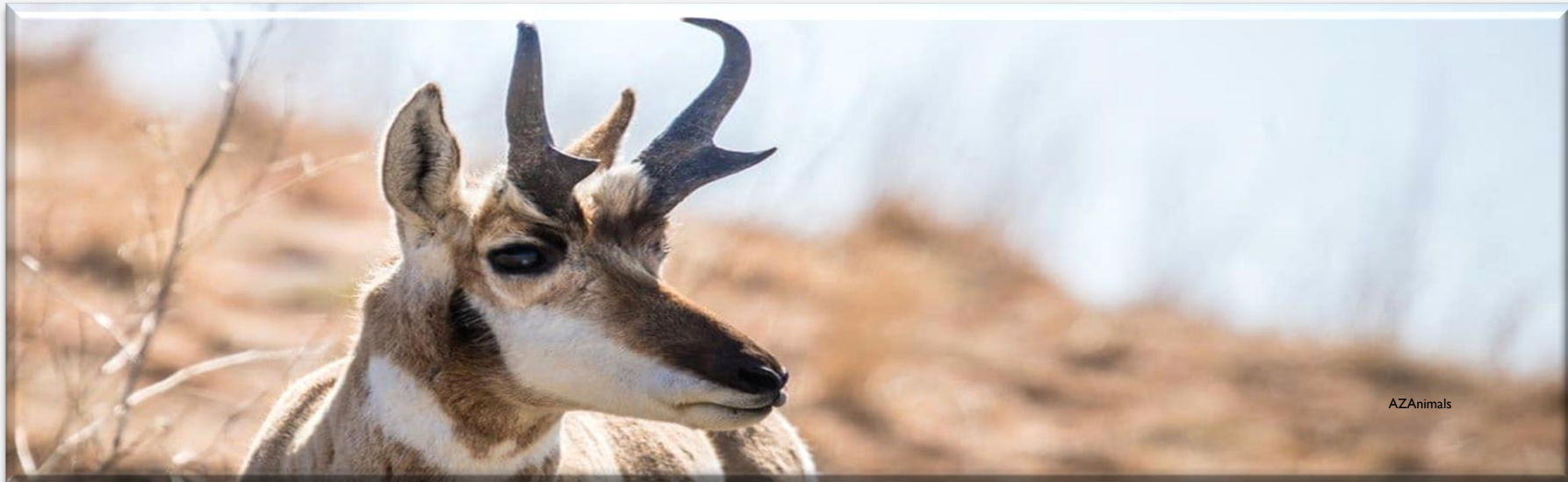
- **Conspecific aggression**
- * displacement
- * secondary injury, i.e. hitting wall or leg injury
- * minor abrasions and fur slip
- * gore wounds
- * death

Housing

- * bachelor groups vs solo

Invasive Measures

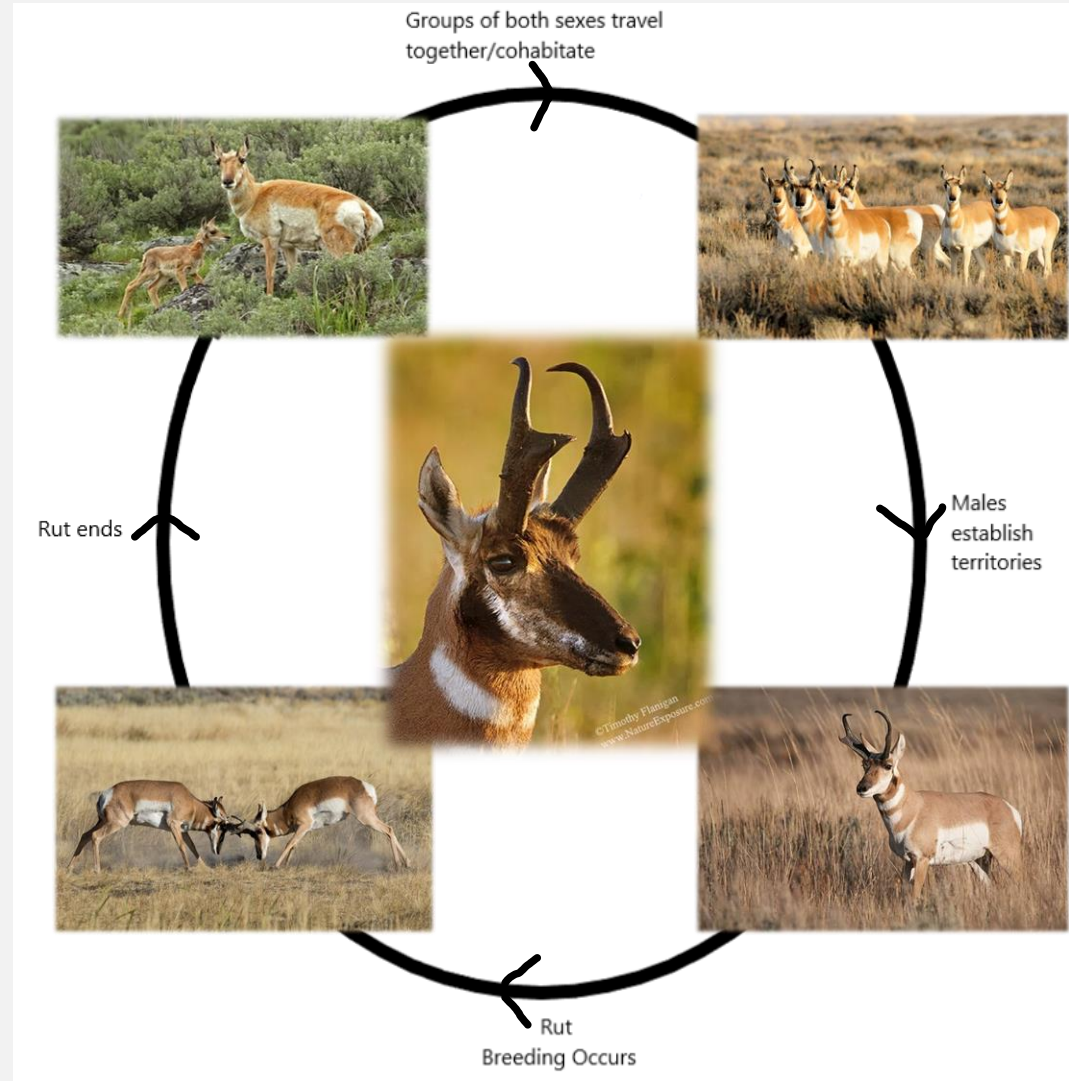
- * hormonal treatment
- * horn cutting/blunting
- * castration



NATURAL HISTORY

How different sexes move through habitats

- Seasonal Behaviors
- Rut cycle



CUES

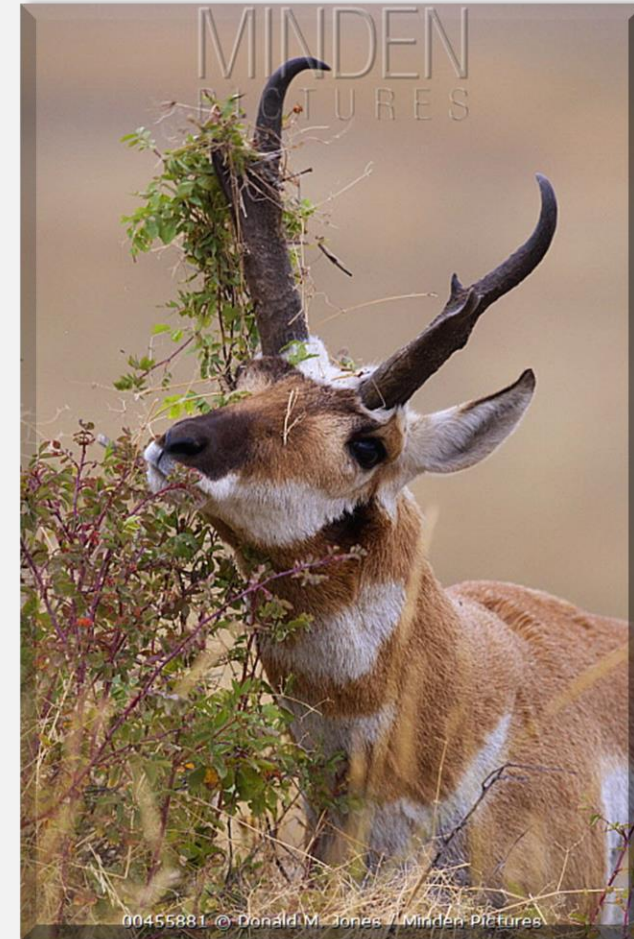
- Environmental cues that affect behavior
 - Precipitation
 - Increase of desirable resources



- Cues between sexes
 - Scent glands
 - Urine



- Non-conspecific and Environmental Cues
 - Predator scents and sounds
 - Abrupt change to resources, i.e. mud slide, tree fall, heat spell, etc.



| BEHAVIOR | CONTEXT/ COMPONENTS | NATURAL HISTORY ADAPTATIONS | OUTCOME | INPUT(S) |
|--|--|--|---|--|
| Any behavior exhibited or expected to be exhibited by the animal. | Break down behavior into various contexts and/or components. | List adaptations that allow animal to execute behavior according to the context/component. | Measureable outcomes you would expect to see if successful at eliciting behavior. | Ideas – A layered approach to what can be implemented guided by the previous categories. |

EXAMPLE:

Species = 'Alalā (Hawaiian Crow)

Behavior = Foraging

| CONTEXT/COMPONENTS | NATURAL HISTORY ADAPTATIONS | OUTCOME | INPUT(S) |
|--------------------------------------|--|---|---|
| Insects | Relies on sensory cues, may use tool, legs, feet, beak, eyes, ears, balance, muscles, speed-strength. Risk of failure | Use correct responses to cues acutely. Problem solving, stalking, physically demanding, tool construction, unpredictable. Strong terrestrial and vertical foraging employed. | Following scent, visual, and auditory cues over a day or two specific to weather events/season prior to offering items. Offer in difficult to access feeders/rotten logs, in leaf litter, etc...Make several very deep or difficult to retrieve without building the correct tool. Provide flying insects for alala to chase. |
| Eggs/Nestlings of Other Birds | Relies on sensory cues to find unpredictable spatial or temporal appearance. Risk of social conflict, risk of predation or injury, must be quick. | Limited window of opportunity, opportunistic, and fast responses. Must follow sensory cues to find. High output of energy and alertness for small reward, social/vocal contact. | Very rare following long period of visual cues (lo, other crows), then scent cues, and finally auditory cues (other predators/scavengers, mongoose). Large and rare whole prey item. Impossible to move, fixed at several points in a very difficult area to access. Only provided on occasion following a specific seasonal event (fall to winter). Auditory cues follow provision (other predators/scavengers) |
| Fruit | Use multiple sensory cues, particularly visual, depending on season, spatial memory and temporal understanding of seasons, requires acute taste to identify ripeness, suspensory and vertical feeding. | Use sensory skills to make correct temporal and spatial choices over a long period of time, correct choices made based on season/ripeness. Suspensory feeding and destructive foraging employed. Identification of native fruit as food item and consumption. | Preceded with visual and olfactory cues of only leaves, buds+leaves, flowers+leaves, unripe fruit+leaves and finally ripe fruit+leaves over the course of days or weeks or months. Seasonally directed with high concentration time points after natural event (cold snap, rain event, or season change). Spatially consistent, temporally linked to wild environment. High diversity of options all in specific presentations (suspended, dense bush, terminal branches, etc...) |

NEXT STEPS

ESTABLISH HABITAT ZONES

- Break the entire habitat up in to zones that can be manipulated independently

- We have 4 feeding zones and 4 shared zones

1 - Barn creep

1 - Shelter

2 - Central creep

2 - Front moat

3 - Front creep

3 - Upper tiers

4 - Back creep

4 - Plateau



NEXT STEPS

RESOURCE VALUE ASSESSMENTS

- Alfalfa = highest value
- Sudan = 2nd
- Bermuda = 3rd
- Ruminant considerations
- Browses
- Favorite eating areas
- Sunning/shade spots
- Safety spots



MODIFIED INPUTS

- Implemented zone feeds
- Incorporated “browse bones” with and without unidentified male scent
- Predator scents and sounds
- Create sparring opportunities with inanimate objects: browse, browse bones, substrates, log barriers, etc.

- **Pronghorn High Value Food Acquisition Experience**

- **Purpose:** To mimic the scenario in which an animal must seek out the desired food items (alfalfa) in new locations.

- **Requirements:** Should establish different feeding zones within the habitat. Zones may/should be randomized with each experience.

- **Zone 1:** Hay feeder in the old tour/creep area

- **Zone 2:** Hay feeder in the central creep

- **Zone 3:** Hay feeder in the front creep

- **Zone 4:** Hay feeder in the back creep

- **Day 1:** Do not put out any alfalfa, only Sudan and Bermuda grasses.

- **Day 2:** Only put alfalfa in zone 1. Sudan and Bermuda grasses should be still be put around at all feeders.

- **Day 3:** Only put alfalfa in zone 2. Sudan and Bermuda grasses should be still be put around at all feeders.

- **Day 4:** Only put alfalfa in zone 3. Sudan and Bermuda grasses should be still be put around at all feeders.

- **Day 5:** Only put alfalfa in zone 4. Sudan and Bermuda grasses should be still be put around at all feeders.

- **Day 6:** Do not put out any alfalfa, only Sudan and Bermuda grasses.

BUILD EXPERIENCE



- **Day 1:** No alfalfa, only Sudan and Bermuda.
- **Day 2/3:** Alfalfa in zone 1. Sudan and Bermuda at all feeders.
- **Day 4/5:** Hypothetical (Hyp.) male browse bones in zone 1, pull all hay. Bermuda/Sudan zones 2 – 4. Alfalfa zone 2 only.
- **Day 6/7:** Hyp. male browse bones in zone 2, pull all hay. Bermuda/Sudan in zones 1, 3, and 4. Alfalfa zone 3 only.
- **Day 8/9:** Hyp. male browse bones in zone 3, pull all hay. Bermuda/Sudan in zones 1, 2, and 4. Alfalfa to zone 4 only.
- **Day 10:** Hyp. male browse bones in zone 4, pull all hay. Bermuda/Sudan in zones 1-3, add no alfalfa
- **Day 11:** Singing dogs visit, remove browse bones. Only Bermuda/Sudan out in all 4 zones.
- **Day 12:** Alfalfa added to Bermuda/Sudan at all zones



DEVELOP
MANAGEMENT PLAN
BASED ON OUTPUTS
AND EXPERIENCES

- December-May – Winter/early Spring
- May – Rainy season
- June-July – Pre-rut
- August – Pre-rut/beginning of rut
- September/October – Rut
- October/November – End of Rut - when the horn sheaths drop

- Establishment of rut guidelines

- How far is too far?
- Ethogram
- Monitoring

Inherent limitations

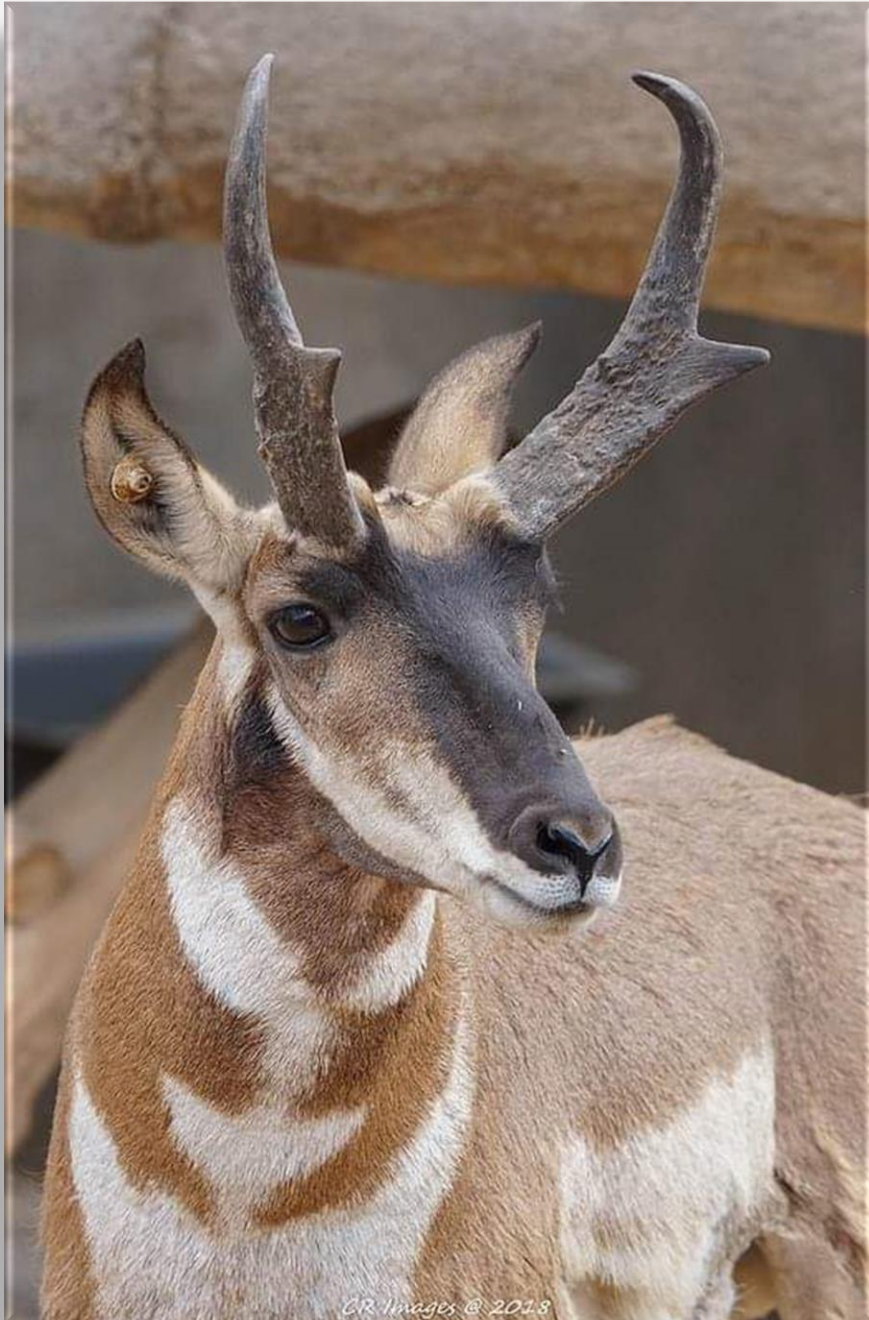
- Small group (3.0)
- Males that had never been with females
- Young males (the oldest was 5 years)

Translations to other species

- Could this be adapted for non-rutting ungulates, i.e. gazelles?

DISCUSSION





THANK YOU!!

SAN DIEGO ZOO WILDLIFE ALLIANCE,
ELEPHANT ODYSSEY TEAM

WELFARE MANAGER JESSICA SHEFTEL

SDZ HEALTHY UNGULATE GROUP
(H.U.G.)

DR. BETH BICKNESE AND DR. BEN
NEVITT, SDZWA

PHOTO CREDIT: DARREN WINOGRAD,
HELENE HOFFMAN, MIKE WILSON,
AUDRA MORRIS, CYN REYNOLDS,
BEKKA SABATINI

[://www.facebook.com/ashley.roberts.92798/videos/4534678396623051/?mibextid=Nif5oz](https://www.facebook.com/ashley.roberts.92798/videos/4534678396623051/?mibextid=Nif5oz)

ARoberts@sdzwa.org

List of Available Resources:

- ❖ PowerPoint with notes
- ❖ Published paper on Outcome-Based Husbandry by SDZWA Welfare Management Team
- ❖ Template for behavioral workflows
- ❖ Experiences
- ❖ Example management plan
- ❖ Pronghorn rut protocol
- ❖ Injury monitoring sheet
- ❖ Working group meeting template
- ❖ Behavior based working group guidelines
- ❖ Behavioral observations quick reference guide



QUESTIONS??

