

# THE KIAWAH ECOSYSTEM

## STATUS AND UPDATE

Town Council  
August 6, 2019





# WHAT IS AN ECOSYSTEM?

An **ecosystem** is a large community of living organisms (plants, animals and microbes) in a particular area. The living and physical components are linked together through nutrient cycles and energy flows.



Illustration by Jeff Grader / property of Delta Education



# UNDERSTANDING AN ECOSYSTEM

- Ecosystems are complex
- Focus on keystone and indicator species
- Keystone species – vital for ecosystem health, can change habitat
  - Bobcats/Coyotes
  - White-tailed deer
  - Alligators
- Indicator species – used to monitor environmental changes, assess the efficacy of management, and provide warning signals for impending ecological shifts
  - Migratory Songbirds
  - Marsh Sparrows
  - Painted Buntings
  - Wilson's Plovers



# BOBCATS



- Keystone species
  - Control deer numbers
  - Control rat and mice populations
- Umbrella species
  - Require large amounts of space, habitat, and resources
  - If Kiawah can provide resources for bobcats, it will also provide resources for other important species (painted bunting)
- Iconic species
  - Charismatic species, important for tourism
  - Helps drive conservation efforts



# STATUS OF BOBCATS

- Population appears to be declining
  - 4 out of 6 bobcats collared this year have died
  - No juvenile bobcats captured during 2019 trapping
  - Sightings down
  - Home range sizes up
  - Deer numbers up
- Why?
  - Loss of habitat
  - More human disturbance
  - Disease?





# WHAT CAN WE DO?

- Preserve/protect vital bobcat habitat
  - Marsh edges, dunes, scrub-shrub habitat
  - Bobcat Management Guidelines (IBAs)
  - Control invasive species
- Create new bobcat habitat
  - Grow Native Initiative
    - Yards and Common Areas
- Continue monitoring/research



# COYOTES

- Keystone species
  - Replacement for the red wolf
  - Can control deer numbers
  - Can control raccoon, feral cat, rodent, and other overabundant mesopredator populations (benefits for ground nesting birds)



- Misunderstood species
  - Un-liked and feared
  - Naturally colonized our area

*Stephen R. Kellert*

**TABLE 2**  
Human Preference for Animal Mean Scores

| <i>Most liked</i><br>$\bar{X} < 3.00$ |      | <i>Least liked</i><br>$\bar{X} > 4.00$ |      |
|---------------------------------------|------|----------------------------------------|------|
| Dog                                   | 1.72 | Cockroach                              | 6.46 |
| Horse                                 | 1.82 | Mosquito                               | 6.29 |
| Robin                                 | 2.04 | Rat                                    | 6.21 |
| Swan                                  | 2.04 | Wasp                                   | 5.72 |
| Butterfly                             | 2.14 | Rattlesnake                            | 5.69 |
| Trout                                 | 2.24 | Bat                                    | 5.40 |
| Eagle                                 | 2.38 | Vulture                                | 5.20 |
| Salmon                                | 2.41 | Shark                                  | 4.94 |
| Cat                                   | 2.77 | Skunk                                  | 4.48 |
| Elephant                              | 2.78 | Lizard                                 | 4.23 |
| Turtle                                | 2.80 | Crow                                   | 4.18 |
| Raccoon                               | 2.90 | Coyote                                 | 4.17 |
| Ladybug                               | 2.95 | Wolf                                   | 4.09 |



# STATUS OF COYOTES

- Population Very Low
  - Arrived on island in 2009, first sightings by residents in 2010
  - Numbers increased substantially in 2012
  - 2012-2013 – coyotes commonly seen by residents (25-28 sightings a year)
  - 2014 – Sightings way down. Numbers have stabilized, follows typical pattern for coyote colonization
- Why?
  - Territory establishment
  - Disease





# WHAT CAN WE DO?

- No action necessary
- Continued monitoring



# WHITE-TAILED DEER

- Keystone species
  - Browsing can change habitat and species composition
  - Can cause significant damage to landscape shrubbery
- Iconic species
  - Popular species
  - Important for tourism
- Public Safety
  - Deer-vehicle collisions
  - Zoonotic diseases





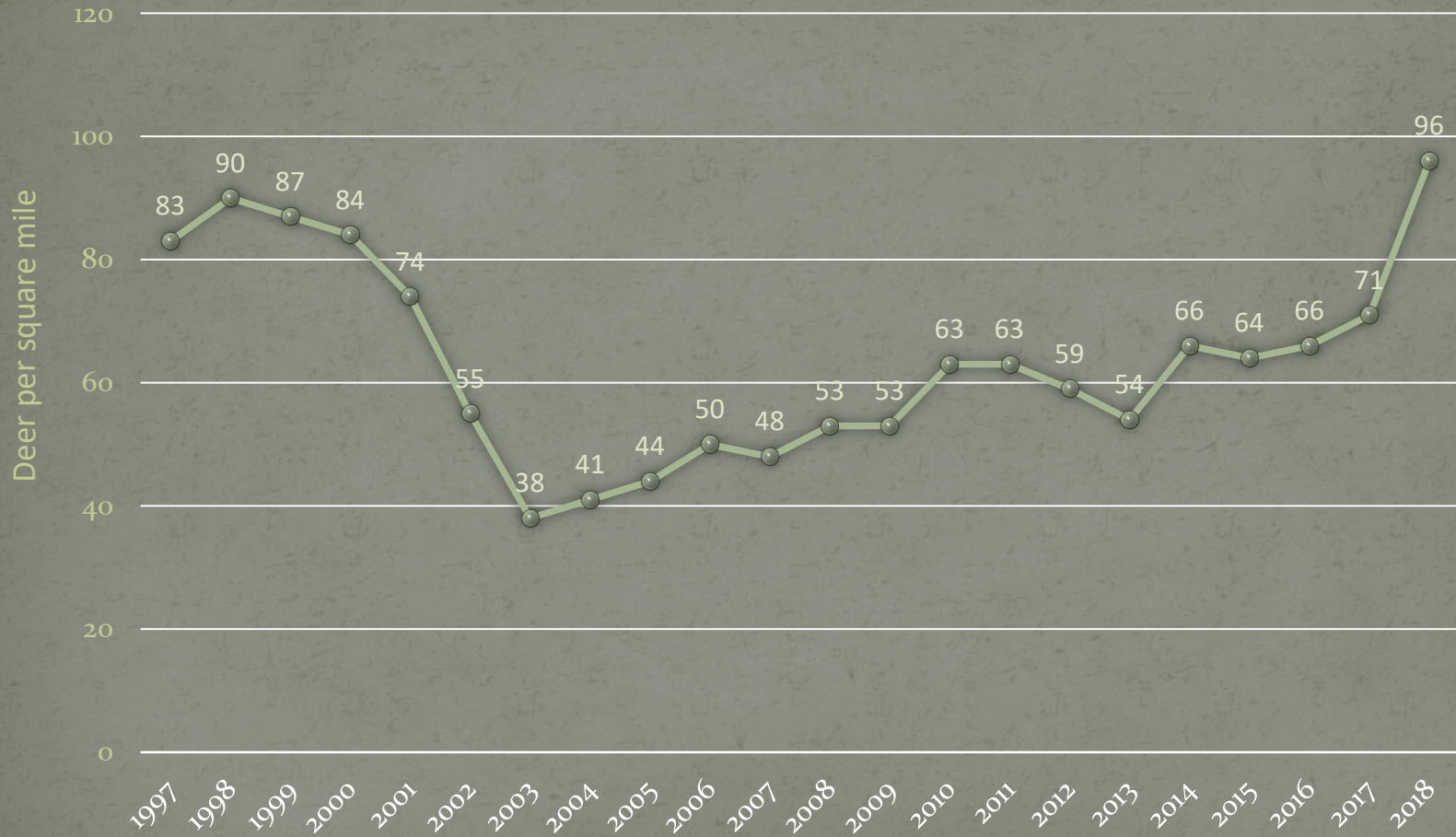
# STATUS OF WHITE-TAILED DEER

- Population Up
  - Numbers high in 1990s
  - Combined effort of fertility control, research and bobcats reduced numbers substantially by 2003
  - Numbers remained relatively stable until 2017
  - 2018 highest numbers to date
- Why?
  - Bobcat population decline



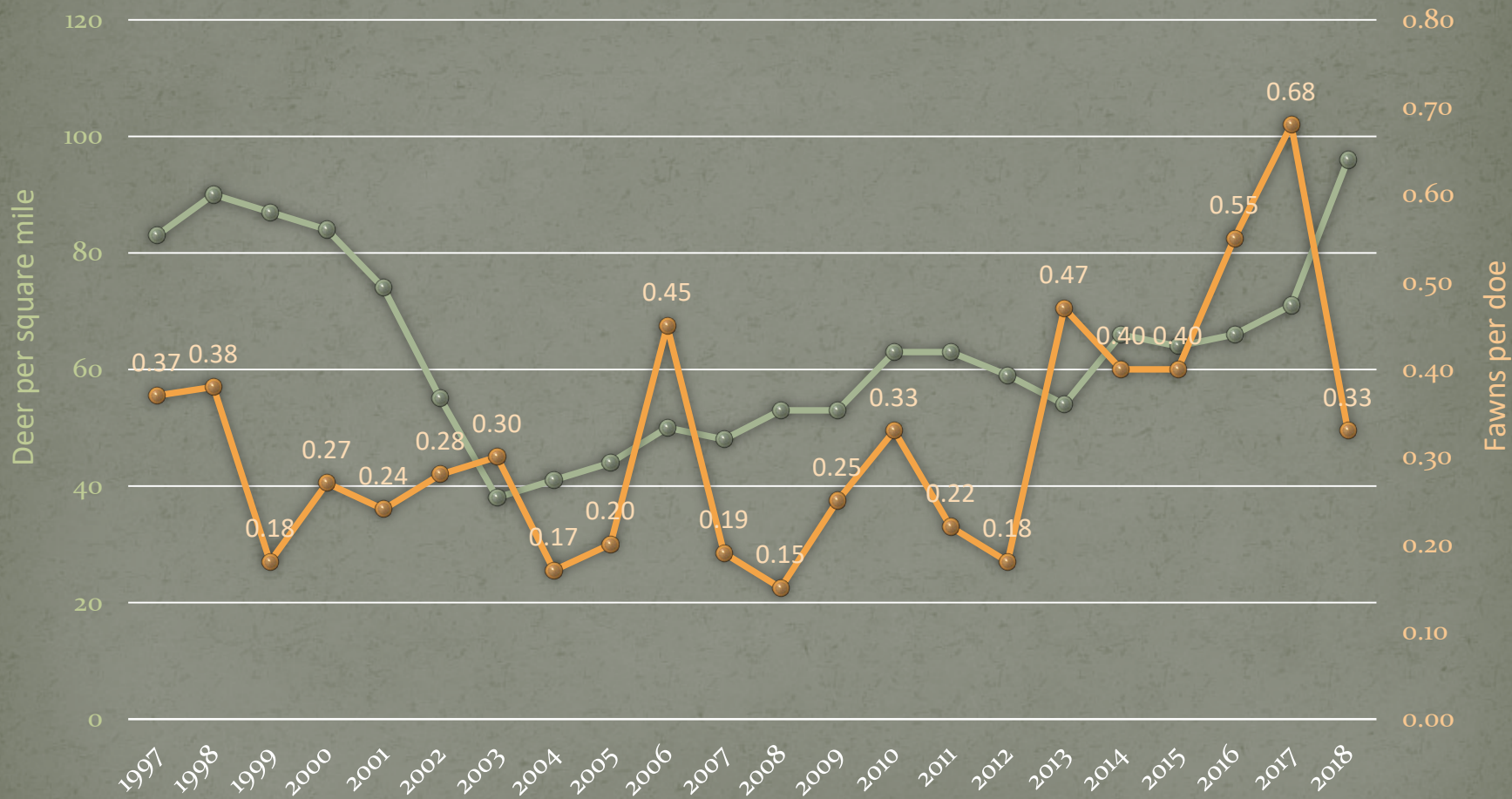


# HOW MANY DEER?





# DEER DENSITY AND RECRUITMENT





# WHAT CAN WE DO?

- Continue population monitoring
- Homeowner survey to gauge perceptions and tolerance
- Develop population management plan
  - Look at 2019 numbers first
  - Lethal removal via sharpshooting is best option
    - Requires permits and specialized equipment



# ALLIGATORS

- Keystone species
  - Help control prey species populations
  - Create habitat (wallows)
- Iconic species
  - Popular species
  - Important for tourism
- Public safety
  - Alligators are a potential risk to people, especially when fed





# STATUS OF ALLIGATORS

- Population stable
- Alligators removed annually using SCDNR Tags
  - Typically 2-6 per year
  - 5 so far in 2019
- Feeding and harassment are ongoing issues
- New signage installed in 2017



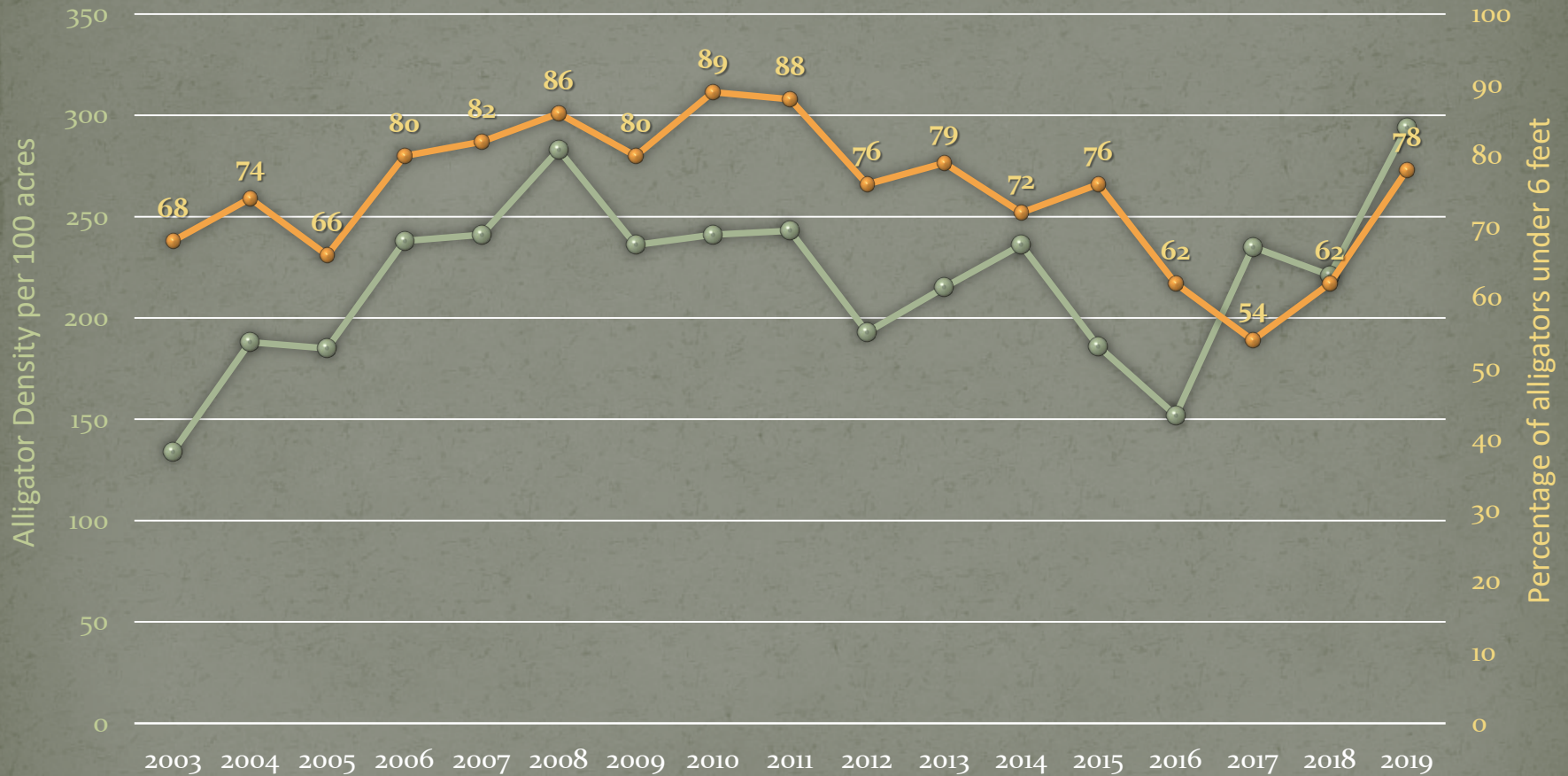


# HOW MANY ALLIGATORS?





# HOW MANY ALLIGATORS?





# WHAT CAN WE DO?

- Continue spotlight surveys and research
  - Clemson PhD study
  - Internal visual tag study
- Evaluate new surveys and monitoring techniques
- Evaluate aggressive alligator protocol and policy
  - Joint working group
- Manage numbers?
  - Not typically necessary
  - Alligator populations manage themselves
    - Reduced recruitment and survival as density increases



# OTHER ECOSYSTEM CONCERNS

- Mosquito Misting Systems
  - Dispenses insecticides multiple times per day
  - Effectiveness questionable
  - Kills all insects (bees, moths, butterflies)
  - Toxic to fish
  - Insecticides are not labeled for use around people, pets, food
  - Regulated by KICA Board in 2008 but not currently enforced

