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| INTERVIEW FOR POSITION |

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| **MEMO:** | 1 |
| **DATE:** | 04/19/24 |
| **WITH:** | ANI - JONATHON |

## DISCUSSIONS

* 96%. OF AL LAND IS PRIVATE
* AVAILABILITY OF DATA
  + DMAP: DEER MNGMT ASSISTANCE PROGRAM
    - 1984 ESTABLISHED
    - 2011-12 ONLY 64 COOPERATORS
* ADCNR REPORTED A DECLINE IN HUNTER #S FOR 2023
* LEGAL ABILITY TO GAIN ACCESS TO LOCATION
  + DATA
    - EG - FB
  + HOW TO INCREASE PRIVATE LANDOWNER COOPERATION?
    - ADDING TAGS DIDN’T WORK
      * WHAT ARE WE ADDING TO CURRENT DMAP
* DATA?
  + MOULTRIE CELL CAM
  + INSURANCE COMPANIES (COLLISION)
  + GBIF/INATURALIST
  + ALL TRAILS PICTURES
  + DISEASES: CWD, EHD, TICK-BORNE
  + PREDATOR POPULATIONS
  + ASIAN LONG HORNED TICKS: POTENTIAL TO INFEST
  + DEER + CAUSED MORTALITY IN DOMESTIC SPP
* MODELING FRAMEWORK INTEGRATION
  + TOOL TO MAKE DECISIONS - WHAT IF SCENARIOS
* THE AGE OF DEER - ERIKA H.

## DECISIONS

* NA

## DIRECTIONS

* NA

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| FIRST COMMITTEE MEETING |

|  |  |
| --- | --- |
| **MEMO:** | 2 |
| **DATE:** | 10/1/2024 |
| **WITH:** | ANI – CONNOR – JONATHON - STEVE |

## DISCUSSIONS

* NPEC: ESTIMATED DEER PRIOR TO APP W/SURVEY "GAME CHECK"
* EVERY HUNTER HAS HUNTING LICENSE #+ CID #
  + HOW MANY PEOPLE USE #?
* COMPLIANCE: HOW ACCURATE ARE CHECK-INS?
  + BIASES/STRENGTHS OF "MANDATORY"
* "FREE WILL" SURVEILLANCE/REPORTING
  + DEER COLLISION INSURANCE / VEHICLE REPORTS
* COMPARE WTD REPORTS FROM AL TO MORE DEVELOPED PROGRAMS
  + EG - PURDUE, MICHIGAN, NEW YORK
* FLEXIBILITY OF LANDOWNERS TO WORK W/IN
* REGULATION FRAMEWORK
* POPULATION RECONSTRUCTION ≠ ESTIMATION
  + SPR RECOVERTRUTH?
  + INTEGRATED MODELING
  + IBM W/ADDITIONAL DATA +
* ★BIOLOGICAL★ METHODS
  + EDUCATE ADCNR ALONG WAY
  + "NO BLACK BOX"
    - MODELS CANNOT BE VALIDATED
      * NEVER 100% CERTAINTY

## DECISIONS

* NA

## DIRECTIONS

* START COMMUNICATING WITH ADCNR / VEHICLE INSURANCE COMPANIES TO GET DATA

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| FIRST 1|1 WITH JONATHON |

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| **MEMO:** | 3 |
| **DATE:** | 1/12/2025 |
| **WITH:** | JONATHON |

## DISCUSSIONS

* ~ $2,500 EACH SEMESTER FOR PROFESSIONAL DEVELOPMENT
  + - NCTC → MINI CAMPUS
* TIDY DATA PRINCIPLES FOR DATA STORAGE

## DECISIONS

* NA

## DIRECTIONS

* NA

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| FIRST CO-ADVISOR MEETING |

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| **MEMO:** | 4 |
| **DATE:** | 02/22/2025 |
| **WITH:** | ANI – JONATHON |

## DISCUSSIONS

* IMPORTANT 1ST STEP = EVALUATE HOW ADCNR AVAILABLE DATA IS PROCESSED TO INPUT ABM/IBM
* MODELS → R PIPELINES
* WHAT OTHER DATA IS PRIORITY TO ADD TO
  + ADCNR REPORTING?
  + FEEDER RECORDS, HUNTER PRACTICES,
* IMPORTANT TO KEEP REPORTS/PRESENTATIONS TO "NEED TO KNOW" LEVEL ~ SIMPLE/CONVERSATION
* STOCHASTIC MODELS (IBM, SPR, MATRICES)
  + DONT PREDICT, BUT IF PRODUCE SAME RESUITS = GOOD INDICATOR FOR TRUTH
    - USING MODEL TO ESTIMATE ANTLERED/NOT - RECORDS AVAILABLE THROUGH ADCNR IS GOOD WAY TO TRUTH/VERIFY MODELS
* WORKING/VERIFYING BACKWARDS
* ADCNR DEER HUNTING REGULATIONS → BASED ONMANAGEMENT UNITS

## DECISIONS

* NA

## DIRECTIONS

* NA

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| DEER POPULATION INTRO LECTURE |

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| **MEMO:** | 5 |
| **DATE:** | 1/5/2025 |
| **WITH:** | ANI – CONNOR – KEVIN – LAUREN – TRISTAN |

## DISCUSSIONS

* COMPONENTS OF POP CHANGE
  + BASIC UNIT OF INTEREST = N
  + AT ANY GIVEN TIME (t), N CAN BE
    - CALCULATED AS: Nt+1 = Nt+B-D+I-E
      * POP AT NEXT TIME STEP
* ★ ACCOUNTING MODEL ★
* EQUATION: Nt = NOe^rt
  + SAME EQUATION THAT BANKS USE FOR COMPOUND INTEREST IN SAVINGS ACCT
    - N0 = INITIAL POP, Nt = POP AT TIMEt
    - e = CONSTANT BASE OF NATURAL LOGARITHM ~ 2.717
      * GOAL: CLIMB FROM BASIC TO COMPLEX
        + EG DETERMINISTIC → STOCHASTIC (EMIG/IMIG)
  + ASSUMPTIONS: CLOSURE, AGE, SEX, HABITAT, NON-HARVEST MORTALITY (STARVATION, DISEASE)
* PARAMETERS: AVAILABLE DATA VS ESTIMATED,
  + METHODS OF COLLECTION, EFFECTS ON OUTPUT VALUES
  + SHOWS TESTING OUTCOMES RELATED TO SCENARIOS
    - TOOLS ON BACK-END FOR INTERPRETATION
* POTENTIAL AGENCY Q: "WHY NOT USE WHATS BEEN OKAY?"
  + JUSTIFICATION: MINIMAL TO O INCREASE FUNDING/EFFORT, THREAT OF DISEASE TO WTD POPULATIONS, DEER POPULATION CAN RESULT IN HUMAN/WILDLIFE CONFLICTS
    - VEHICLE COLLISIONS, HABITAT QUALITY, TICK/VECTOR BORN DISEASES

## DECISIONS

* ★ APPLICABILITY/IMMORTALITY OF METHODS/MODELING
* IDEAS FOR ACCOUNTING MODEL IMPROVE
  + DETERMINISTIC: REMOVES VARIABILITY (ONE CONSTANT VALUE)
* ★STOCHASTIC: CAN ADJUST EQUATION TO CHOOSE VALUES FROM RANGE OF VALUES
  + REQUIREMENT TO RUN ITERATIONS TO CAPTURE VARIABILITY (EG 10,000 TIMES)
  + DISEASE LOSSES CAN BE ADDED AS SIMILAR COLUMN TO HARVEST #S OR INCORPORATED AS NON-HARVEST MORTALITY (NHM)
    - DEPENDS ON INTENSITY/DURATION OF OUTBREAK

## DIRECTIONS

* HOW TO AUTOMATE INTO ACTIONABLE STEPS THAT ARE ACCESSIBLE/TANGIBLE FOR ADCNR
* INCORPORATE CATCH PER UNIT EFFORT (CPU)
* BUILD "WHAT IF" SCENARIOS
  + WANT MORE FEMALES THAN MALES FOR CWD MANAGEMENT
* OVERALL GOAL: MAINTAIN STATIONARY/INCREASE/DECREASE
* ★RATE & PROBABILITY SHINY APP
  + FINITE RATE + PER (YEAR/MONTH) + PERIOD OF INTEREST
    - INSTANTANEOUS %
      * CALCULATED IN 6 MONTH PROBS/STEPS
* COLUMNS FOR KLM=SURVIVAL RATE
  + RATES FROM AU 2022 PAPER

A diagram of a diagram

AI-generated content may be incorrect.

* + - CALIBRATION SO THAT 75% POPULATION MORTALITY (HARVEST + NON-HARVEST)
      * POSSIBLE TO INCLUDE AS PART OF MODEL/SIMULATION

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| COOP PRESENTATION PREP |

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| **MEMO:** | 6 |
| **DATE:** | 05 / 2025 |
| **WITH:** | ANI – CONNOR – JONATHON |

## DISCUSSIONS

* ① WHY ARE WE DOING THIS?
* ② WHAT DATA CURRENTLY EXISTS?
* ③ WE CAN IMPROVE HARVEST REQS/MODELS
  + PARTICIPATORY
  + REPRODUCIBLE
  + ACCESSIBLE
* ④ DATA → MODELS → FORECASTS

↓ ↓ ↓

INTEGRATED → BOQUET → ACCURATE

* ⑤ SHARE BASELINE ACCOUNTING MODEL FROM CLASS
* ⑥ UTILITY OF MODEL (THIS IBM = FLEXIBLE) DEPENDS ON DATA INPUT QUALITY
* ⑦ NEXT STEPS: ACQUIRE DATA → PROCESS THEM TO INPUT INTO ABM/EXPAND METHODS
* WHY DO WE NEED FORMAL FRAMEWORK?
  + REPRODUCIBLE, LOCALLY RELEVANT (IBM)
* DATA CAN NEVER BE COMPLETE/IDEAL
  + PROCESSING OF DATA FROM MULTIPLE SOURCES WORK = AMENABLE TO MODELS
  + NO MATTER WHAT MODEL ALL STARTS W/ ACCOUNT
    - COMBINATION OF METHODS DEPENDS ON DATA AVAILABILITY
      * QUALITY OF OUTCOME DEPENDS ON WHATS GOING IN (AGGREGATED DATA)

## DECISIONS

* NA

## DIRECTIONS

* SUGGESTED ADDITIONS
  + HUNTERS VS DEER, CAPTIVE DEER FACILITIES, # DEER/COUNTY
* HOW CAN WE USE INCONSISTENT/LIMITED/UNCERTAIN DATA?
  + START W/ BASE-SKELETON-FOUNDATION MODEL

**OUTCOME / APPLICABILITY**

**RELEVANT MANAGEMENT**

**RELEVANT DECISIONS**

**\*\*REFINED DATA = BETTER\*\***

**FRAMEWORK CAN PROVIDE LOCALLY RELEVANT INSIGHTS**

**AVAILABLE (POTENTIAL)**

**VEHICLE COLLISION**

**HARVEST RECORDS**

**CITIZEN SCIENCE**

**\*\* REQUIRES PROCESSING**

**& PARAMETERIZATION\*\***

**EXISTS (ACCCESIBLE)**

**GAME CHECK**

**HUNTER SURVEY REPORT**

**RECENT STUDIES**

**\*\* ADDITIONAL REQUIRES PARTICIPATORY APPROACH FROM AGENCY\*\***

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| BACK TO THE BASICS |

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| **MEMO:** | 7 |
| **DATE:** | SPRING 2025 |
| **WITH:** | JONATHON |

## DISCUSSIONS

* POPULATION CHANGE AT BASIC LEVEL = λ = B + I+D+E
  + HOW DO WE COVER EACH?
* ★ WHEN READING – DON’T LET THE METHODS DRIVE QUESTIONS
  + KNOWLEDGE GAPS IN
    - WAYS TO MODEL POPULATIONS
    - DRIVERS OF TRAJECTORIES
      * POTENTIAL POPULATION DECLINE DUE TO FACTORS
        + MORTALITY
      * WEATHER SEVERITY / CARRYING CAPACITIES (K)

## DECISIONS

* NA

## DIRECTIONS

* HARVEST = DATA
* VEHICLE COLLISION = DATA + MODEL
* SENESENCE = DATA + MODEL

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| EXCEL MODEL IMPROVEMENT |

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| **MEMO:** | 8 |
| **DATE:** | 6/1/2025 |
| **WITH:** | ANI |

## DISCUSSIONS

* GENERATING IN DEER (X COUNTY):
  + ABM / DENSITY ESTIMATES (QDM)
    - ABM REQUIRES DISCUSSION/ MORE RELATIONSHIP W/ADCNR TO USE DECISIONS (RELEVANT SCENARIOS / WHAT IF)
  + DENSITY DATA FOR AL (QDM) = OUTDATED
* DEER HUNTING REGS X MANAGEMENT UNIT
* PRODUCTIVITY OF POPULATION
  + MODEL
    - N
    - AGE RATIO
    - SEX RATIO

## DECISIONS

* SEX AND AGE RATIOS = MORE IMPORTANT THAN REPRODUCTION
* HYPOTHETICAL MODEL SENSITIVITY
  + PARTICIPANT REMODELING (RELATIONSHIP WITH ADCNR)
    - TRUST IN UTILITY OF DATA/METHODS

## DIRECTIONS

* HOW TO KEEP INPUTS TO MODELS CONTEMPORARY?
  + FUNCTIONS OF WHAT (MECHANISMS)
* DISSERTATION CH → HOW TO CONTINUOUSLY CALIBRATE MODEL PARAMETERS
* WHERE TO FILL DATA GAPS?
  + EXPERTS / QDM / HUNTER SURVEYS / BOOTS ON THE GROUND / TECHNOLOGIES: AERIAL (DRONES), CAMERA TRAPS / PUBLIC RECORDS: ONLINE / ACQUIRED COLLISIONS / SOCIAL MEDIA / CITIZEN SCIENCE
* ★ VISUAL BASIC: EXCEL AUTOMATION

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| SEMINAR SESSION |

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| **MEMO:** | 9 |
| **DATE:** | 4/15/25 |
| **WITH:** | JONATHON (PRESENTER) |

## DISCUSSIONS

* IDENTIFYING PROBLEMS IS ALWAYS EASIER THAN PROVIDING SOLUTIONS
  + EG FOR AGENCY PARTNERS, ADAPTIVE DESIGN APPROACHES:

EXPERIMENTAL

DATA

QUALITY

OBSERVATIONAL

OPPORTUNISTIC

EFFORT

* PERSONAL GUIDING PRINCIPLES:
  + 1. TRIAGE MODE
    - ECOLOGIC CRISIS, LIMITED $ (FUNDING)
  + 2. DATA AVAILABILITY
    - DATA ARE EVERYWHERE: REPOSITORIES, CELL PHONES
    - MESSY, HALF HAZARD DATA CAN BE USED FOR LARGE SCALE INFERENCE

## DECISIONS

* NA

## DIRECTIONS

* NA

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| CO-ADVISOR BIG PICTURES |

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| **MEMO:** | 10 |
| **DATE:** | 6/13/2025 |
| **WITH:** | ANI – JONATHON |

## DISCUSSIONS

* DISSERTATION = 3 BIG PICTURE ACCOMPLISHMENTS
  + DONT LIMIT TO EASY/FEASIBLE
* ★ ADCNR MAIN OBJECTIVE: DEFENSIBLE METHOD TO SET HARVEST NUMBERS
* SET OF QUESTIONS FOR EACH AGENCY = MOSTLY SAME
  + ESPECIALLY W/IN GEOGRAPHIC REGIONS (I.E. SOUTHEAST)
  + EG: DOE/BUCK RATIO, AGE CLASS
* SHAPE METHODS/DATA/MODELS USED TO PRODUCE OUTCOMES
  + ★ DOE/BUCK = SENSITIVE IN IBM
* BETTER DECISIONS MADE BY STATE AGENCY = ASSUMPTIONS, DATA, STRATEGIES
  + EG: LENGTH / TIMING OF HARVEST SEASON
    - STATES W/REPORTED QS/SCENARIOS BETTER THAN AL PRODUCT OF AGENCY COLLABORATION W/RESEARCHERS
      * (MISSOURI, IN, MINNESOTA)
* MOST DEER POPULATION / HARVEST WORK AND RESEARCH FUNDED BY STATE AGENCY
  + FOCUS OF QUESTIONS OVER TIME:
    - 70s/80s: POPULATION INCREASE
    - 80s/00s: ECOLOGY/PHYSIOLOGY
    - 10s/20s: ANALYTICAL METHODS/TECHNOLOGY
      * WHATS LACKING? → REPLICABLE/REPRODUCIBLE METHODOLOGY TO ADDRESS QUESTIONS
      * EXPERTISE IN AUTOMATED PIPELINE
      * TECHNOLOGIES LIKE CLOUD COMPUTING
        + (EG SHINY APPS) TO INCREASE ACCESSIBILITY

## DECISIONS

* ANI "ADCNR SHOULD COME TO US, WE DONT NEED/ARENT LIMITED BY DATA SHARING/AVAILABILITY FROM STATE
* ANI: RULE OF 3 (MODELS) WHERE ANY MODEL CAN ANSWER 2/3 QUESTIONS
  + NEEDS TO BE GENERALIZABLE, ACCURATE, PRECISE ~ REPRODUCIBLE
    - REQUIRES MULTIPLE METHODS/MODELS TO ACHIEVE STATE OBJECTIVES
* MIND MAP/OUTLINE FOR DISSERTATION
  + CONCEPTUAL OUTLINE/SYNTHESIS PAPER
    - APPROPRIATE STEPS FOR ACCOMPLISHING QUESTIONS/TOOLS AVAILABLE
    - WHAT'S BEEN DONE, GAPS, ANALYTICAL IMPROVEMENTS
    - INCLUDE PERSPECTIVE ELEMENT
* INTEGRATION METHODS FOR CITIZEN SCIENCE DATA
  + - POTENTIAL TO SAMPLE (EG CAMERA TRAPS) AROUND POINTS
  + PROCESSING MAY BE DIFFICULT, COMPLEX, IMPOSSIBLE
* ANI'S AGENT BASED/INDIVIDUAL BASED MODELS
  + NOTE THAT NO DATA IS NOT LIMITING
  + 'ABM BASE AS TRUTH
    - EACH AGGREGATION OF DATA = SCENARIO
* ★ ~ ABM FRAMEWORK

S1 - D:B = 5:1

S2 - D:B = 3/1

S3: Harvest Dates

S4: Harvest Length

* + SIMILAR/DIFF OF MODEL OUTCOMES VS TRUTH
    - RELATIVE IMPACT OF SCENARIOS
      * PARTICIPATORY EXPERT OPINION FROM ADCNR
    - ★ UNLOCKS ABM FROM DATA RESTRICTION
      * PARAMETERS BASED ON AGENCY GOALS
        + ANSWER FOR RATIO A/RATIO B
        + SEX, AGE

## DIRECTIONS

* ★ PHD/PROJECT RESULTS/PRODUCTS = "BOQUET OF TOOLS"
  + DECISION MAKING FRAMEWORK
    - BASED ON PUBLICLY AVAILABLE DATA / COMMISSIONED STUDIES
    - STANDARDIZE THE PROCESS (SIMILAR QS FOR MOST STATE AGENCIES)
    - SET OF QS SPECIFIC TO ADCNR → REFER TO PROPOSAL / SEND OUT SURVEY
      * "LIMITED BY POOR COMMUNICATION"
* REVIEW ANNUAL DEER POPULATION REPORTS
* MOST DEER POPULATION / HARVEST WORK AND RESEARCH FUNDED BY STATE AGENCY
  + FOCUS OF QUESTIONS OVER TIME:
    - 70s/80s: POPULATION INCREASE
    - 80s/00s: ECOLOGY/PHYSIOLOGY
    - 10s/20s: ANALYTICAL METHODS/TECHNOLOGY
      * WHATS LACKING? → REPLICABLE/REPRODUCIBLE METHODOLOGY TO ADDRESS QUESTIONS
      * EXPERTISE IN AUTOMATED PIPELINE
      * TECHNOLOGIES LIKE CLOUD COMPUTING
        + (EG SHINY APPS) TO INCREASE ACCESSIBILITY
* ADAPTIVE MANAGEMENT ITERATION ≠ BLACK BOX
  + (INPUT XML/CSV → TABLES/FIGSOUT)
    - NEED TO GET THIS CULTURE TO ADCNR

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| MEETING WITH ADCNR TO DISCUSS CH 1 PLANS |

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| **MEMO:** | 11 |
| **DATE:** | 07 / 2025 |
| **WITH:** | AMY – ANI – COURTNEY – JONATHON |

## DISCUSSIONS

* ANIS ABMS ~ SIMULATE RANDOM UNREPORTED DEATHS BIASING PARAMETER ESTIMATION
* COURTNEY → ASSISTANT CHEIF OF RESEARCH
  + ROIE IN DEER PROJECT (POC)
  + DEER COMMITTEE MEETINGS (ADCNR) MEET W/COURTNEY
    - SURVEYS, RESEARCH NEEDS, ANNUAI REPORTS, DISTRICT SUPERVISORS, COORDINATORS, CHAIRS, BIOLOGISTS
* ★DIFFICUITY OF IMPLEMENTING A STANDARDIZED FRAMEWORK: ECONOMICALLY FEASIBIE LIMITED TIME/RESOURCES
  + STATEWIDE/PROGRAMMATIC POPULATION, DENSITY, ETC.
  + A LOT OF EFFORTS DONE REGIONALLY (REQUIRES EXPERTISE) -CAPTIVE
* HISTORICAL VERSUS CURRENT DEER HARVEST INFORMATION COLLECTED AT WMAS (REPRODUCTION, AGE)
  + MOVED AWAY FROM CHECK STATIONS AT EVERY HUNT
  + MANDATORY CHECK WMAS EVERY WEEKEND (11 HOURS WORTH)
* WHAT EISE IS AVAILABIE? (DATA SHARE)
  + POINT (L/R) # POINTS OF DEER ANTLERS
    - COLLECTED AS PART OF GAME CHECK APP
* DEER CIUB=WMA

WHAT QUESTIONS? WHAT CHALLENGES?

* + TIMELINE? TIME FRAME FOR DATA
* DMAP = SAME INFO AS WMA
  + GIVEN DEER MNGMNT RECS+ PIANS
  + PROVIDE JAWBONES + INFO
  + PRIVATE LAND BIOLOGISTS HANDLE PRIVATE DMAP
    - WEBSITE, PUBLIC MEETINGS, CALL AGENCY
    - ADDITIONAL DOE TAGS DATA

## DECISIONS

* URBAN DEER POCKETS HUNTSVILLE GOING TO BE ISSUE W/EXPANSION (CWD)
* GOAL: DEFENSIBIE DECISIONS NOT ACCURATE/PRECISE
  + ACTIONABIE INSIGHTS
* GOAL ~ START WITH ABM AT COUNTY LEVEL FOR FOCUS OF DATA SHARE REQUESTS
  + FRED T. = LOW HARVEST PRESSURE (SOA) – HARDWOOD
  + BARBOUR = PINCH POINT STATION, GAMMIT DIFFERENT HABITAT
* WMAS CHOSEN FOR INITIAL FOCUS SHOULD MAKE BIOLOGICAL SENSE AND HAVE STRONG DATA INPUT
  + COUNTY / WMA = UNIT WHERE DECISIONS MADE
  + HUNTER PRESSURE
  + ECOREGION
  + COMPLIANCE

## DIRECTIONS

* WHAT SPECIFIC DISTRICTS NEEDS ARE?
* ★SINKAS LAND COVER MODEI
* ★NLCD INTO SHINYAPP
  + SET UP EXCEL MODEL
* HISTORICALLY REQUIRED TO OWN 100 ACRES BUT NO ACREAGE REQUIREMENTS AS OF 6 YEARS AGO
  + LOOK IN DIGEST – LOCAL DISTRICT OFFICE – NRCS FOR HABITAT IMPROVEMENT (FARM BILL)
* WHAT DATA IS COLLECT BY DIFFERENT AGENCIES? WHY?
  + DO AGENCIES COLLECT DATA WITH FORTHOUGHT / INTENTION
* INTEGRATION OF HUNTER COMPONENT

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| IDEAS AND THOUGHTS FROM RECENT MEETINGS |

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| **MEMO:** | 12 |
| **DATE:** | 6/20/2025 |
| **WITH:** | NA |

## DISCUSSIONS

* NA

## DECISIONS

* NA

## DIRECTIONS

* GIS FIELD MAPS / OTHER METHOD FOR WMA / OTHER AGENCY DATA TO GO FROM BOX IN BASEMENT TO CONSTANTLY SELF-UPDATING DATA CLOUD
* FINE SCALE EVALUATION OF DRONE SURVEY DATA IN ABM FRAMEWORK
  + SIMILAR TO VALENTE IDEA WITH CITIZEN SCIENCE / CAMERA TRAP DETECTIBILTIY ~ DEMOGRAPHIC STRUCTURE
  + KEVIN INCREASE ESTIMATING / EVALUATION DRONE SURVEY METHODS – STEP AHEAD IN TRUSTRWORTHY OF DATA
* GITHUB REPO WITH MODEL PIPELINE / FRAMEWORK
  + POTENTIAL NAMES – DATA2DECISIONS, POPD2D, DEERD2D, DEERCISION

|  |
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| FURTHER DEVELOP CHAPTER 1 IDEAS |

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| **MEMO:** | 13 |
| **DATE:** | 7/6/25 |
| **WITH:** | ANI – JOHNATHON |

## DISCUSSIONS

* ★ NORTH AMERICAN MODEL OF CONSERVATION KEY TO MANAGEMENT IN THE 20TH CENTURY
  + 20TH CENTURY = WORRIED ABOUT POPULATION
    - TREND IN SLOW INCREASE
    - CHANGE IN FOCUS / CONCERN TODAY
* 21ST CENTURY: DISEASE (ESPECIALLY CWD) SHAPING POPULATION
  + NEED TO TRULY UNDERSTAND WHAT’S AVAILABLE / NEEDED
    - DATA NEEDED TO INFORM ANALYTICAL FRAMEWORK
      * + DOES NOT MEAN DATA NEEDED TO PROVIDE TOOL THAT’S CALIBRATED AND INFORMATIVE GIVEN CORRECT PARAMETER VALUES
    - ★ BETTER FRAMEWORK = BETTER MANAGEMENT
  + TURNING POINT FOR DEER POPULATION MANAGEMENT
    - TECHNOLOGY = COLLECT AND PROCESS DATA
    - DISEASES AND INFLUENCE ON POPULATION
      * STANDARDIZED DECISION MAKING PROCESS
        + WILDLIFE SOCIETY – BELSARE / DITCHKOFF
* ★ PURPOSED TRAVEL TO MEET WITH DEER BIOLOGISTS (LAUREN/RYLEE
  + GOAL = 10 STATES IN SE/MIDWEST
    - GO WITH QUESTIONS – REPORT:
      * “INTERACTED WITH AGENCY”, “WANT TO BETTER UNDERSTAND”
    - “FIELDWORK” OF CHAPTER 1 TO IDENTIFY THE CURRENT STATUS “WHATS CURRENTLY HAPPENING”
* BASE ABM + WHAT HAVE + WHERE GO
* PROPOSED START TO CHAPTER 1 OUTLINE BY ANI
  + INTRODUCTION, CHALLENGES, TECHNOLOGY AND TOOLS, CLEAR / STANDARDIZED DIRECTION FOR DEVELOPMENT OF CONCEPTUAL FRAMEWORK
  + HISTORY OF DEER MANAGEMENT ALL THE WAY TO URBAN DEER POPULATION MANAGEMENT

## DECISIONS

* DEVELOPMENT OF LOCALLY DEFENSIBLE POPULATION STRATEGY
  + SHARED CONCERNS / CHALLENGES BETWEEN AGENCIES
    - HUNTER SATISFACTION, QDMA – BIG ANTLER, PRIVATE (DMAP), HUNTER PARTICIPATION
  + FRAMEWORK TO ADRESS ALL ↑
    - GENERALIZABLE TO DIFFERENT AGENCIES
      * WHAT INFO DO DIFFERENT AGENCIES COLLECT?
        + SOURCES FOR DATA?
      * ★ FUNCTION OF AGENCY FUNDING
      * WHAT ARE QUESTIONS? USUALLY DEMOGRAPHIC (M:F)

## DIRECTIONS

* ★ SUGGESTED TITLE: DEER POPULATION MANAGEMENT IN THE 21ST CENTURY

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| THOUGHTS AND IDEAS |

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| **MEMO:** | 14 |
| **DATE:** | 7/18/2025 |
| **WITH:** | - |

## DISCUSSIONS

* NA

## DECISIONS

* NA

## DIRECTIONS

* HOW IS DMAP ADVERTISED?
* HOW TO CAPTURE PRIVATE LAND?
  + IS HARVEST DATA REPRESENTATIVE WITH SO LITTLE SPATIAL COVERAGE WITHIN THE STATE?
* WHAT DATA DO AGENCIES COLLECT? WHY?
  + FORTHOUGHT VS INTENTION
    - INTEGRATION OF HUNTER COMPONENT IN CHAPTER 1?
  + WHAT DIFFERENCE EXIST BETWEEN WHAT DATA AGENCIES SAY THEY COLLECT / WHAT’S ACTUALLY PUBLICALLY AVAILABLE / WHAT IS QUICKLY ACCESSIBLE TO AGENCY FOR DISTRIBUTION TO RESEARCH COLLABORATORS
* NA CONSERVATION IN GLOBAL LENSE – CRITICISM? SUCCESS?

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| RETURN FROM MENTAL HEALTH SABBATICAL |

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| **MEMO:** | 15 |
| **DATE:** | 10/1/2025 |
| **WITH:** | ANI |

## DISCUSSIONS

* NA

## DECISIONS

* NA

## DIRECTIONS

* START WITH BASICS
* 1. ADCNR REPORTS – HUNTER SURVEYS, DEER MANAGEMENT REPORTS
  + RESEARCH DESCRIPTION
* 2. COINED TERMS / INFORMATION AVAILABLE
  + E.G. ANTLERED BUCKS, UNANTLERED DEER, ANTLERLESS DEER
    - FOR ALABAMA BUT ALSO SURROUNDING SE STATES
      * STEP FURTHER – IDENTIFY IN, OTHER MIDWESTERN STATES REPORTS SIDE BY SIDE TO IDENTIFY HOW ADCNR REPORTS CAN IMPROVE WITH MINIMAL/NO ADDITIONAL RESOURCES
        + E.G. DEER HUNTING IN AL

300K DEER HARVESTED ~ 292K = PRIVATE LAND

* + PRIVATE LAND INFORMATION (2016-PRESENT)
    - BARBOUR COUNTY – ANTLER RESTRICTION
  + COMPILE ALL INFORMATION IN MASTER CSV (FOR USE IN R)
    - ALABAMA – NEIGHBORS
      * 2022-2023 DEER RUT MAP AS AN EXAMPLE AND SUGGESTION
      * TERMS
        + BALANCE OF FOCUSING ON MODERN TERMS USED IN LITERATURE / TERMS USED BEFORE 2014 IN AL (MIGHT BE OUTDATED FOR RESEARCH PURPOSES)

★ MEANT TO INFORM CONVERSATIONS WITH ADCNR GEARED TOWARD OTHER DATA THAT COULD BE COLLECTED USING SAME METHODS IN PLACE

FOR INFORMATION AVERAGED OVER TIME, WANT TO SEE IF ADCNR CAN PROVIDE YEAR/YEAR INFORMATION RATHER THAN 10 YEAR

* 3. RELEVANT AND RECENT (SINCE 2014) STUDIES CONDUCTED RELATED TO ALABAMA DEER POPULATIONS
  + SURVIVAL OF FAWNS FT RUTGER
  + ADULT WHITE TAILED DEER SURVIVAL ON PUBLIC AND PRIVATE LAND
    - GOAL ~ USED SCATTERED DATA AS ‘POINTS ON MAP’ AND THEN MAKE INFERENCES ACROSS SIMILAR ECOLOGICAL/BIOLOGICAL/MANAGEMENT STRATEGY AREAS USING SPATIAL INTERPOLATION / OTHER METHODS
      * PUT INTO CSV, PARAMTERS LIKE DEER POPULATION COURSE
        + HARVEST #S, SURVIVAL
        + MISSING: AGE COMPOSITION, FAWN / YEARLING, YEARLY REPORTS FROM CHECK STATIONS AND PHONE SURVEYS

WHATS AVAILABLE BUT DON’T HAVE PUBLIC ACCESS?

* 4. HOW TO FILL DATA GAPS
  + WHAT DATA TO BORROW/USE FROM NEIGHBORING STATES?
    - TERMINOLOGIES TO MAKE REGULATIONS
    - BRING SOMEONE IN TO HELP FILL IN NARRATIVE (EXPERT OPINION)
  + ANCILLARY DATA FROM OTHER DATA SOURCES (CITIZEN SCIENCE, DEEP MINING, ETC.)
    - HALF HAZARD BUT MS STUDENT WILL BE LOOKING INTO THAT IN MORE DETAIL

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| COFFEE MAFIA UNDERCOVER CO-ADVISEMENT |

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| **MEMO:** | 16 |
| **DATE:** | 10/6/2025 |
| **WITH:** | ANI – JOHNATHON |

## DISCUSSIONS

* ★ NEED DATA TO MAKE DECISIONS, STARTING WITH FOCUS ON:
  + DATA FROM ECOLOGICAL STUDIES
  + PRIMARY DATA USED / RETRIEVABLE FOR AL = HARVEST + STL

## DECISIONS

* INFORMATION AND DATA COLLECTED WILL BE USED FOR –
  + SELECTIVE HARVEST CRITERIA
  + DEVELOPING A UNIFYING FRAMEWORK (GENERALIZABLE)
    - SHOULD SERVE AS A STEP BY STEP GUIDE AND REFERENCE TO HETEROGENEOUS DATA
      * WHILE IMPORTANT TO INCLUDE ADVANCED/DETAILED UNDERSTANDING, GOAL IS TO PRESENT INFORMATION IN WAY THAT SOMEONE WHO KNOWS NOTHING ABOUT ECOLOGY, DEER POPULATIONS, BIOLOGY, MANAGEMENT COULD FOLLOW ALONG

## DIRECTIONS

* OBJECTIVES DIVERSE EVEN WITHIN REGIONS (TRUE TO SOUTHEASTERN US)
  + READ MORT ET AL. FROM NORTH CAROLINA
* ANALYSIS TOOLS DECISIONS TO INCREASE WILDLIFE POPULATION GROWTH WAS CENTRAL FOCUS OF THE JOURNAL OF NORTH AMERICAN CONSERVATION
  + HOW CAN WE INTREGRATE TODAYS TECHONOLOGICAL ADVANCEMENTS WITH TRADITIONAL VALUES AND CURRENT CHALLENGES?
    - APPROACH TO MAKE LEAP / CHANGE MOST EFFICIENT
      * LESS FRICTION WITH STATE AGENCY IN GROWTH AND HUNTERS IN INTEREST / AGREEMENT TO PARTICIPATE
* HOW HAS HARVEST CHANGES ACROSS STATES
* GOAL – PRESENT AT ALABAMA TWS (FEBRUARY 2026)

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| CHAPTER 1 OVERVIEW OF INTRODUCTION |

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| **MEMO:** | 17 |
| **DATE:** | 6/13/2025 |
| **WITH:** | ANI – JONATHON |

## DISCUSSIONS

* WHITE-TAILED DEER POPULATION MANAGEMENT IN THE 21ST CENTURY (CHAPTER 1)
  + ENTIRELY DIFFERENT OBJECTIVES IN THE 20TH VS 21ST CENTURY
    - 20TH TIED TO POPULATION RECOVER + HARVEST REGULATION / PROFIT
    - 21ST TIED TO DISEASE + DECLINE OF HUNTER PARTICIPATION + PUBLIC HEALTH + CLIMATE CHANGE
      * DECLINE IN HUNTER PARTICIPATION ~ POLITICAL, RELIGIOUS PERCEPTION
        + AGENCY USE OF MONEY (E.G., BELIEVE CLIMATE CHANGE IS A HOAX)
        + HEALTH RISK RELATED TO CWD
      * CLIMATE CHANGE
        + GEOGRAPHIC DISTRIBUTION OF WTD (MOVING NORTH)
      * DISEASE
        + LYME , CWD, EHD, BRUCELLOSIS, ETC.
      * PUBLIC HEALTH
        + SARS-COVID-2
    - CAVEAT: 21ST ISSUES ARE RESULT OF DEER POPULATION MANAGEMENT IN 20TH CENTURY
    - CAVEAT:DEER POPULATION MANAGEMENT IN THE 21ST CENTURY IS PRIMARILY FOLLOWING SAME GUIDELINES/ APPROACHES USED TO MANAGE DEER IN THE 20TH CENTURY
  + INTERRELATED CHALLENGES RELATED TO WHITE-TAILED DEER POPULATION MANAGEMENT
* NO MAJOR DOCUMENT OUTLINES HOW TO INFLUENCE OTHER ASPECTS + GUIDES OF 21ST MANAGEMENT + RELATIONSHIP TO NORTH AMERICAN MODEL OF CONSERVATION
  + HOW DO THESE CHANGE – REGIONALLY, TEMPORALLY (DECADES)
    - MANAGEMENT APPROACHES WITH NEW TECHNOLOGIES, TOOLS, AND INCREASED ACCESSIBILITY (COST, LABOR)
  + IS THE CURRENT MODEL OF DEER MANAGEMENT AT ODDS WITH 21ST CENTURY CHALLENGES?
    - MANAGEMENT HEAVILY INFLUENCED BY ISSUES IN THE 20TH CENTURY
    - NA MODEL CONSERVATION MADE DEER PROFITABLE AND PUBLIC IN EFFORT TO PREVENT EXTIRPATION + INCREASE POPULATION
* A diagram of a problem

  AI-generated content may be incorrect.
* DEER POPULATION IN THE 20TH CENTURY = ENTIRELY DIFFERENT OBJECTIVES THAT THE OBJECTIVES IN THE 21ST CENTURY
  + – E.G. TIED TO DISEASE
    - CAVEAT – THE ISSUES WERE DEALING WITH TODAY ARE THE RESULT OF DEER POPULATIONS AND THEIR MANAGEMENT IN THE 20TH CENTURY – WHY IMPORTANT TO UNDERSTAND
  + CLIMATE CHANGE IN A MAIN CHALLENGE IN THIS CENTURY BECAUSE DEER ARE IN NORTHERN CLIMATES WHERE THERE WERE NONE
    - PUBLIC HEALTH AND DISEASE ISSUES ASSOCIATED WITH THIS
* MONEY THAT GOES INTO THE POPULATION MANAGEMENT (COMES FROM DEER HUNTER PARTICIPATION WHICH HAS DECLINES)
* REGION SPECIFIC ISSUES WITH DEER POPULATIONS
  + E.G. MICHICAN WHERE DEER TB WAS AN ISSUE FROM THINGS THAT HAPPENED IN THE 50S-70S
  + HAVE CWD EMERGING IN VARIOUS STATE S
* ISSUE WITH PUBLIC PRACTICES
* CAPTIVE DEER POPULATION
* ALL OF THE ABOVE ARE INTERERELATED – CAUSE AND EFFECT - SNOWBALL WITH SEVERAL OTHER ASPECTS, ISSUES
  + NO MAJOR DOCUMENT THAT OUTLINES HOW THIS HAS ALL INFLUENCED OTHER ASPECTS AND HOW THIS GUIDES DEER MANAGEMENT IN THE 21ST CENTURY
* DEER = HUNTERS = MONEY = MANAGEMENT
  + AGENCIES MAY NOT WANT TO KNOW CWD PRESENCE IF IT’S GOING TO LOWER HUNTER PARTICIPATION
    - IS MODEL PREVENTING FROM ADEQUATELY ADDRESSING SOME OF THE MODERN CHALLENGES?
    - DO POLITICAL VIEWS OF THE HUNTING POPULATION MATTER?
      * CLIMATE CHANGE IS MAJOR ISSUE – THOSE PAYING FOR DEER MANAGEMENT DON’T BELIEVE IN CLIMATE CHANGE = CONSTITUENTS THAT NO LONGER WANT TO PAY MONEY IF STATE AGENCY IS SPENDING MONEY ON PHONY RESEARCH
        + RULE OF TRADITION – LEGACY – GRANDFATHER TO SON TO GRANDCHILD IN TRADITIONS OF HUNTING
    - SCIENCE DENIAL / MISTRUST OF GOVERNMENT AGENCIES = ALL TIME HIGH
      * HUNTERS MAY BE PAYING $ FOR
      * HOW TO BRIDGE THE GAP BETWEEN THE STAKEHOLDERS AND HUNTERS? HOW DOES THIS DIFFER BETWEEN DIFFERENT STATES?
        + DMAP - CONFLICT BETWEEN LAND OWNERS ON PRIVATE LAND – HOW IS THIS DEALT WITH? HOW IS THIS ACCOUNTED FOR?
      * WTD = EVERYWHERE
        + IF AGENCIES IN WEST AREN’T COMMUNICATIONS WITH SE..

HOW ARE CHALLENGES DIFFERENT? – E.G. MULTIPLE UNGULATE SPECIES CO-OCCURING

* + - * GLOBAL NA CONSERVATION PERSPECTIVE IN GLOBAL LENSE
        + CRITIS
* LIME DISEASE TB CWD EHD MENIGENTAL WORM – CANNOT KEEP IT OWN OF DISCUSSING CHALLENGES IN 21ST CENTURY
  + CHALLENGES IN 21ST CENTURY – AND HOW THEY CHANGE, REGIONALLY, TEMPORALLY (DECADES), MANAGEMENT APPROACHES GIVEN NEW TECHNOLOGIES AND ACCESSIBILITY?
    - DISEASES
    - HUNTER PARTICIPATION
      * HARVEST REGULATIONS = CONFLICT WITH THE SCIENCE, GOVERNMENT, ETC. TRUST AND PARTICIPATION
    - PUBLIC HEALTH
      * SARS COVID 2 AND TB
    - CLIMATE CHANGE
      * CHANGES DISTRIBUTION AND PRESENCE OF WTD – E.G. ALASKA AND BRING NEW ISSUES
* HUNTER SURVEYS ARE ALSO GOING TO INFORM THE MODELS
* CHALLENGES AND MANAGEMENT IN THE 20ST CENTURY
* HOW IT IS HAS CHANGED IN THE 21ST CENTURY
* TOOLS AND TECHNOLOGY AVAILABLE TODAY THAT DIDN’T EXIST BEFORE AND HOW DOES THAT INFLUENCE MANAGEMENT
* PLUGS IN TO INTERVIEWS WITH AGENCIES
  + WHAT ARE THEY DOING DIFFERENTLY?
    - E.G. STATES USING X TECHNOLOGIES AND HOW THAT HELPS, LIMITS, ETC. COMPARED TO OTHER AGENCIES
    - NOT FORMAL INTERVIEWS – FOR LETTER –
      * WE ARE VERY INTERESTED IN THESE ISSUES DEER POP / CWD MANAGEMENT
        + INTERESTED IN LEARNING MORE ABOUT THE PERSPECTIVE AND REAL WORLD EXPERIENCES FROM MANAGING THOSE TOPICS

COMING FROM 2 PEOPLE WITH LIMITED HUNTING EXPERIENCE – LITTLE MANAGEMENT EXPERIENCE

HELP GUIDE FOCUS

* + - * + WOULD BE HAPPY TO DO IT ZOOM BUT WOULD LOVE TO TRAVEL TO YOU AND INFORMALLY DISCUSS – APPROX. 2 HOURS
  + \*\* POTENTIALLY LEAD TO MORE FORMAL CONVERSATION AT DEER CONFERENCE LATER
    - * IF DRIVING – TALK TO WMA / DMAP / OTHER PEOPLE THAT MANAGE DEER
  + IF WANT TO PUBLISH – TALK TO ALLY MC. – IRB APPROVAL FOR STRUCTURED SURVEY FOR DEER POPULATION MANAGERS
  + WE WANT TO UNDERSTAND SO THAT WE CAN BE HELPED TO PREPARE A GROUP MEETING IN UPCOMING MONTHS – ALL PARTICIPATING WILL BE INVITED – ABLE TO TALK THROUGH THESE DIFFERENCES, SUCCESSES, CHALLENGES AS GROUP
* IS THE CURRENT MODEL OF DEER MANAGEMENT AT ODDS WITH THE 21ST CENTURY CAHLLENGES?
  + THE WAY THAT WE MANAGE DEER IS HEAVILY INFLUENCES THE WAY THAT DEER ARE MANAGED
    - NA CONSERVATION – BIG POINT IS THAT IT MADE WILDLIFE PUBLIC TRUST; BIG POINT TWO IS THAT IT MADE HUNTER PARTICIPATION PROFITABLE AND LEGITIMATE/REGULATED
* 1. REPORT THE HISTORY OF WTD MANAGEMENT IN NA IS FIRST CRITICAL STEP BEFORE ADDRESSING ANYTHING ELSE IN CHAPTER
  + HISTORY OF DEER MANAGEMENT – WHAT WE DO NOW AND N 75 YEARS WILL BE DRASTICALLY DIFFERENT
    - BUT WE NEED TO REVIEW THE LAST CENTURY TO GUIDE THE NEXT – WHAT CAN WE LEARN? WHAT WERE FAILURES? SUCCESSES? ISSUES?
      * WHAT’S AT OUR DISPOSAL NOW?
        + TELEMETRY – 1 PARAGRAPH – WHEN DID THEY START – WEIGHT OF COLLARS – TRIANGULATION VS EXACT LOCATION – COST AND HOW IT HAS INFLUENCED ACCESSIBILITY (NOT JUST FOR THE COLLARS BUT ALSO FOR THE LABOR AND RESOURCES AND TIME THAT GO INTOIT)
        + CAMERA TRAPS
        + AI

## DECISIONS

* NA

## DIRECTIONS

* NA

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| WELL-RED PROGRESS AND EXPECTATIONS |

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| **MEMO:** | 19 |
| **DATE:** | 10/21/2025 |
| **WITH:** | JONATHON |

## DISCUSSIONS

* ★ MY CURRENT UNDERSTANDING OF WHAT CH 1 PRIMARY OBJECTIVES ARE
  + 1. IDENTIFY MAJOR DRIVERS OF DEER POPULATION MANAGEMENT DECISIONS
  + 2. IDENTIFY TOOLS FOR DECISIONS
  + 3. IDENTIFY DATA FOR DECISIONS
    - SYNTHESIZE IN TERMS OF 20TH CENTURY / TRADITIONAL COMPARED TO 21ST CENTURY / CONTEMPORARY OR MODERN
* WHAT DO AGENCIES ‘NEED TO KNOW’ TO INFORM MANAGEMENT DECISIONS (E.G., HARVEST NUMBERS)
  + # DEER HARVESTED (ALONE) DOESN’T INFORM RECOMMENDATIONS → NEED TOOL

## DIRECTIONS

* ★ NEED TO SWITCH FROM CHECKING BOXES TO ACTUALLY THINKING ABOUT AND WRITING DOWN – “WHAT AM I DOING”
  + HELP ANI/JONATHON KNOW THAT WORKING AND ON WHAT + REQUIRED FOR SATISFACTION OF PHD ROLE
* REASONS FOR INTEGRATED/SUITE OF DEER POPULATION MODELING TOOLS
  + PARAMETERIZATION OR TO INFORM ABM +..?
* FOR NEXT MEETING:
  + DEMONSTRATE UNDERSTANDING OF WHAT’S GOING ON IN AL AND NEIGHBORING SE STATES (SPECIFICALLY, GA, MS, TN)
    - SIMILAR TO PRIMARY OBJECTIVES
      * WHAT ARE THE MAJOR QUESTIONS
      * WHAT DATA IS BEING COLLECTED
      * WHAT TOOLS ARE USED FOR MODELS
    - FOR MAJOR OBJECTIVES / QUESTIONS – NOTES SHOULD ELABORATE ON HOW/WHY IDENTIFIED FROM LITERATURE OR AGENCY RESOURCES
* ★ FROM HERE ON OUT FOCUS ON BEING PROACTIVE; DO SOMETHING; BRING IDEAS
  + MORE WRITING, MORE THINKING, MORE IDEAS
  + AFTER RECEIVING INSTRUCTIONS ON NEW TASK / DELIVERABLE TRY OUT NEW METHOD OF REPHRASING WHAT I HEARD OR THE MAJOR GOALS OF THE TASK AND SEND IT BACK TO CONFIRM UNDERSTAND

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## DISCUSSIONS



## DECISIONS

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## DISCUSSIONS



## DECISIONS

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## DISCUSSIONS



## DECISIONS

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## DISCUSSIONS



## DECISIONS

## DIRECTIONS