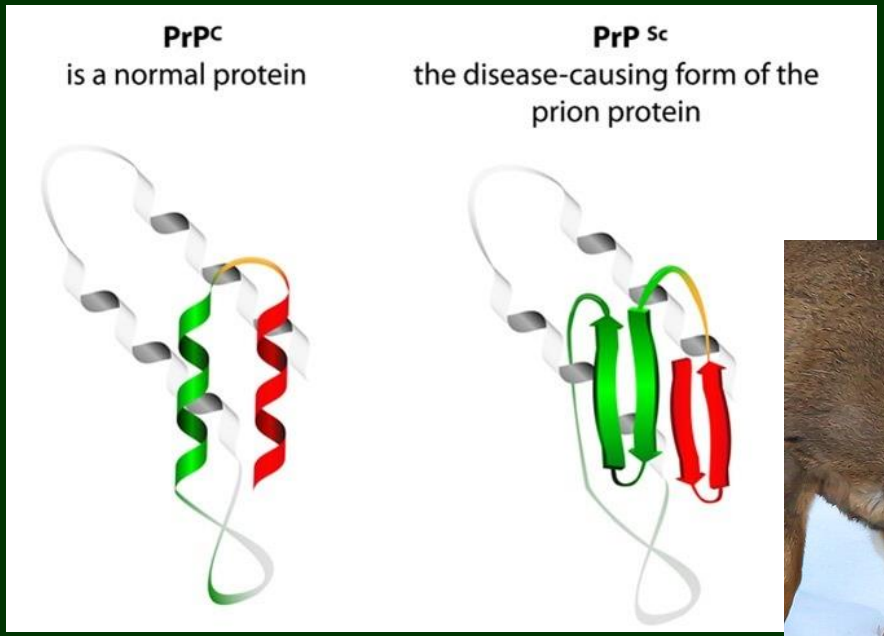
Addressing CWD with innovative research

Dr. David Williams

Boone and Crockett Quantitative Wildlife Center
at Michigan State University

CWD is a strange problem



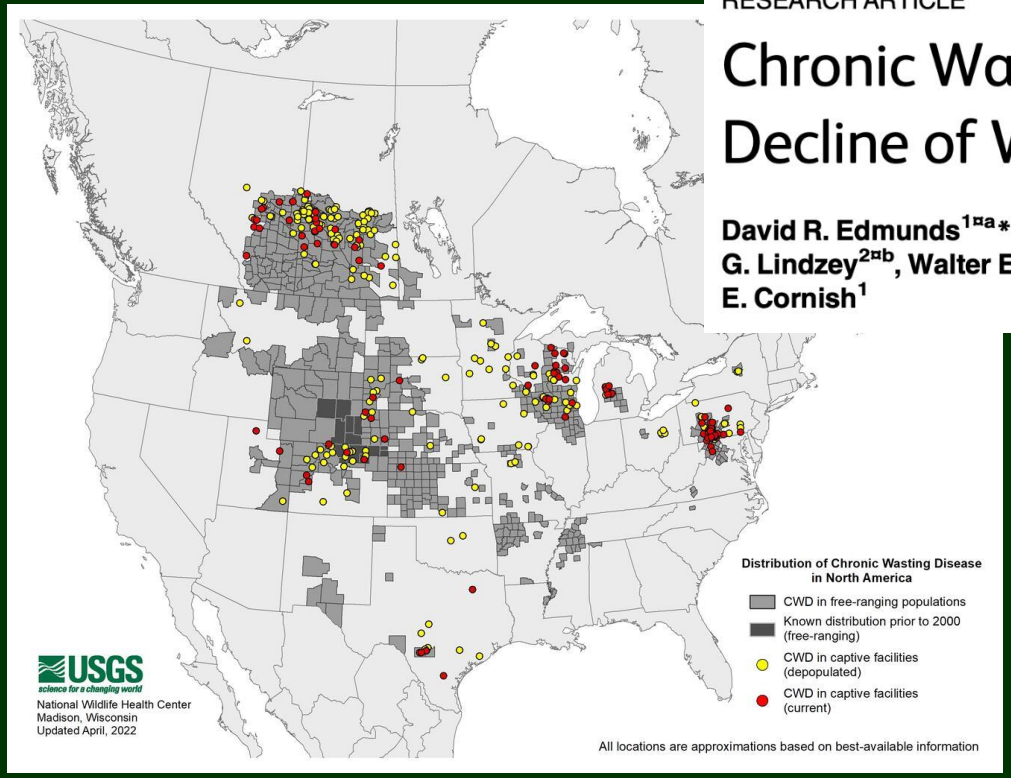
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES · DNR · MICHIGAN

CWD is a costly problem



RESEARCH ARTICLE

Chronic Wasting Disease Drives Population Decline of White-Tailed Deer

David R. Edmunds[1¤a]*, Matthew J. Kauffman[2], Brant A. Schumaker[1], Frederick G. Lindzey[2¤b], Walter E. Cook[3¤c], Terry J. Kreeger[4¤d], Ronald G. Grogan[1¤e], Todd E. Cornish[1]

BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife · Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES · DNR · MICHIGAN

CWD is a wicked problem

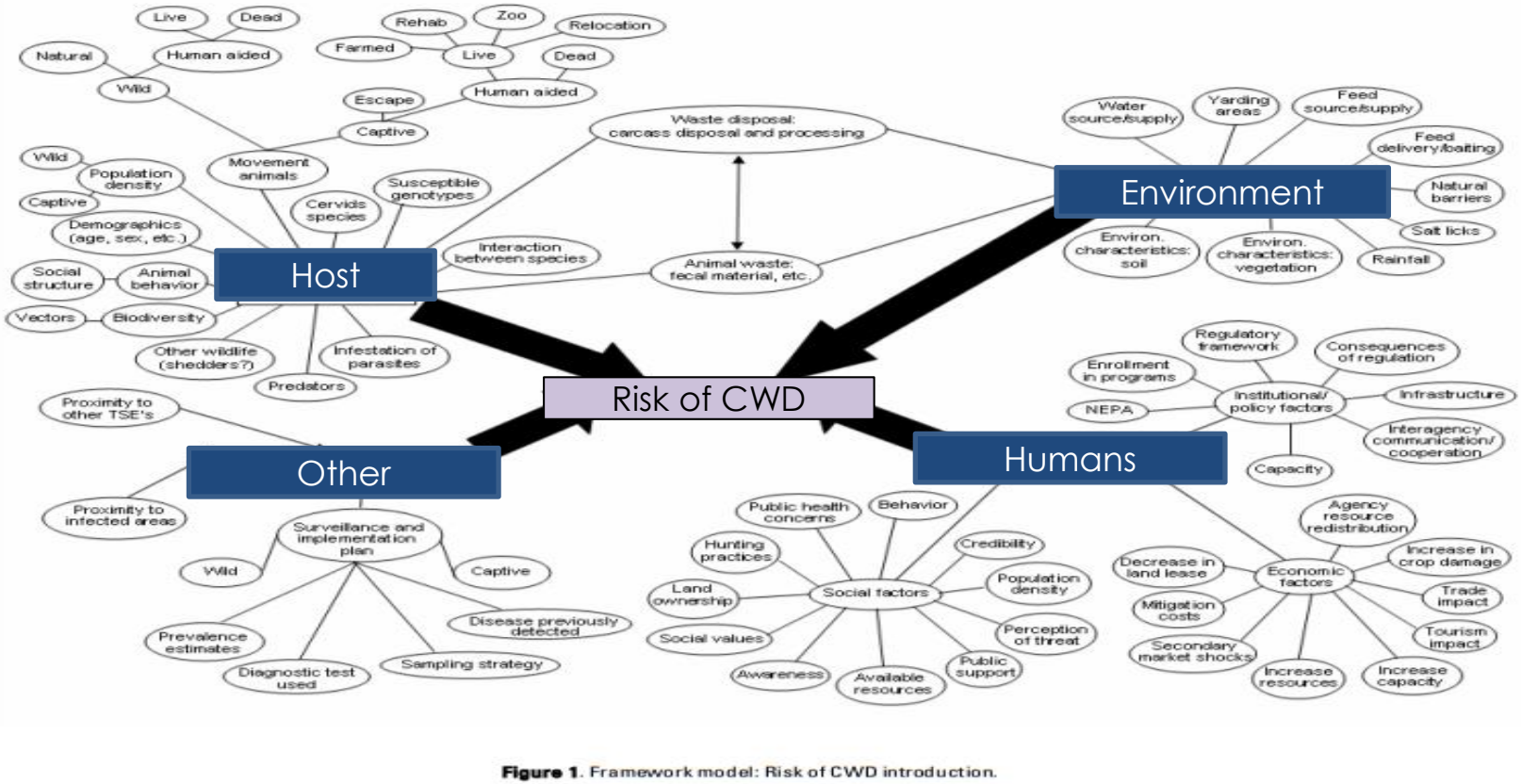


Figure 1. Framework model: Risk of CWD introduction.

Adapted from USGS 2004

BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

QWC/MDNR CWD Research Overview

- Where do we look?
- Where is it going?
- Can we simulate and assess potential impacts?
- How do we fill information gaps?

*A note about scale

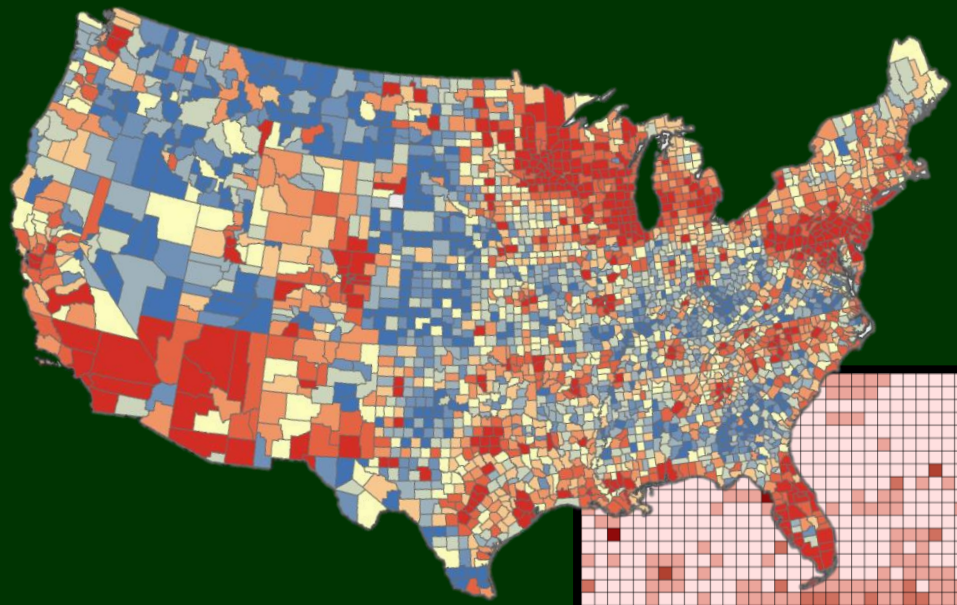
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

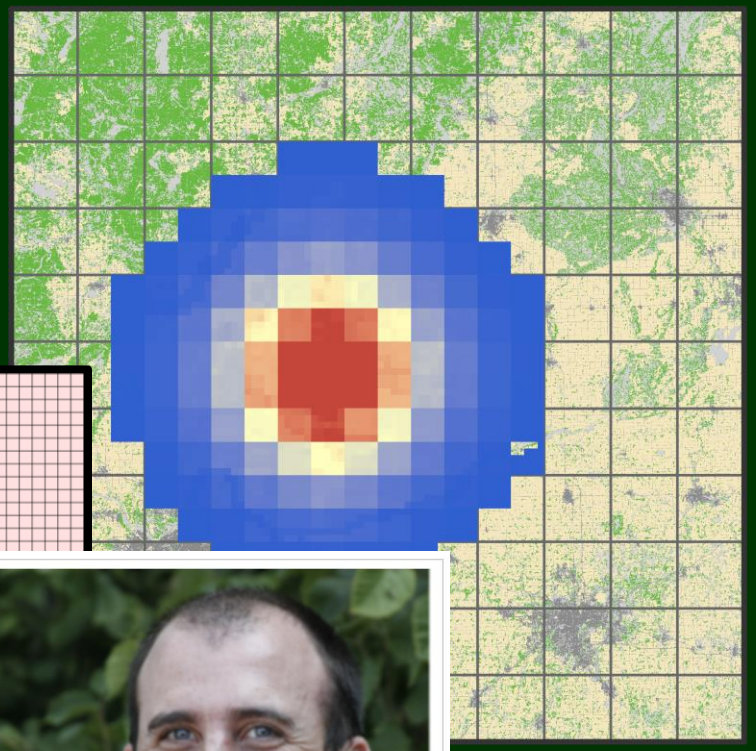
Department of Fisheries and Wildlife • Michigan State University

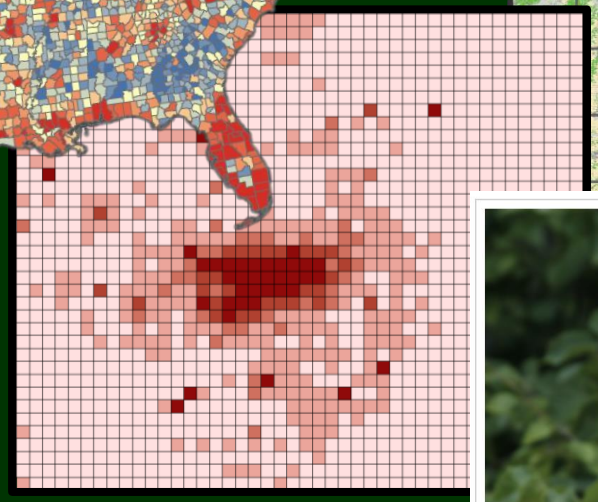
MICHIGAN STATE UNIVERSITY

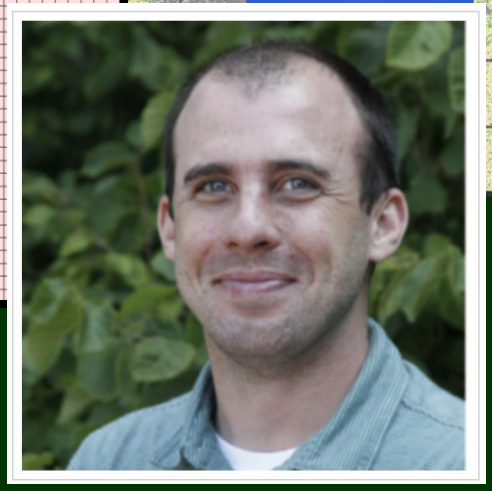
DEPARTMENT OF NATURAL RESOURCES • DNR • MICHIGAN

Risk Integration and Decision Making: Surveillance Approaches for CWD









BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

Surveillance:
estimating risk in “disease-free” locations

CONTRIBUTED PAPER

Conservation Science and Practice
A Journal of the Society for Conservation Biology
Open Access
WILEY

An expert-elicited approach to inform proactive risk assessments for chronic wasting disease in white-tailed deer

Jonathan D. Cook | Sonja A. Christensen | David M. Williams | William F. Porter | Kelly F. Robinson

BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES • DNR • MICHIGAN

Risk factors

- Deer density (buck harvest/km$^{2)}$
- Out-of-area hunters (presence)
- Taxidermists or processors (#)
- Captive cervid facilities (presence)
- Wintering complex (presence)

BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES • DNR • MICHIGAN

Outcomes

- Protocol to combine knowledge of experts
  - Identify risk
  - Control for biases
- Map relative risk
- Inform pre-detection surveillance
  - **Where to look when we lack data**
- Effective
  - 87% MI CWD positive locations

BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

Predicting and Forecasting CWD

Improved predictions and forecasts of chronic wasting disease occurrence using multiple mechanism dynamic occupancy modelling

Jonathan D. Cook[1], Michigan State University, 480 Wilson Road, East Lansing, MI 48823, USA

David M. Williams, Michigan State University, 480 Wilson Road, East Lansing, MI 48823, USA

William F. Porter, Michigan State University, 480 Wilson Road, East Lansing, MI 48823, USA

Sonja A. Christensen, Michigan State University, 480 Wilson Road, East Lansing, MI 48823, USA

In revision – Journal of Wildlife Management

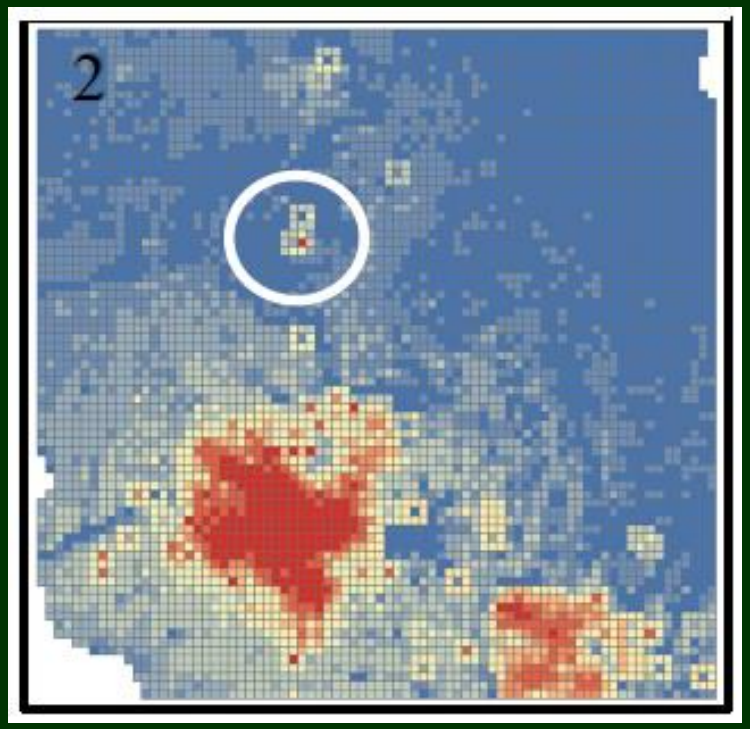
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

Predicting and Forecasting CWD - Outcomes



- New approach with multiple mechanisms for spread
  - Explicit estimation of local & long-distance spread
- Direct sampling efforts
  - Allocating resources
- Identify high-risk landscapes
  - Demarcating CWD zones
- Inform data needs

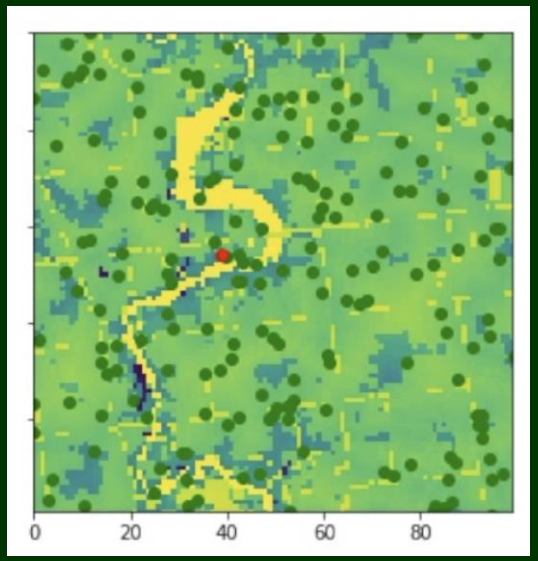
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

Agent-based simulations



Simulate spatially-explicit disease processes among individuals

- Powerful tool to assess probabilistic outcomes
- Incorporate many dynamic aspects of individual and group behavior
- Virtually experiment with populations and disease systems
  - Assess management interventions, surveillance, disease dynamics, etc.

BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

The Next Frontier of CWD models: An Agent-Based Approach for Informing Surveillance and Understanding Disease Persistence

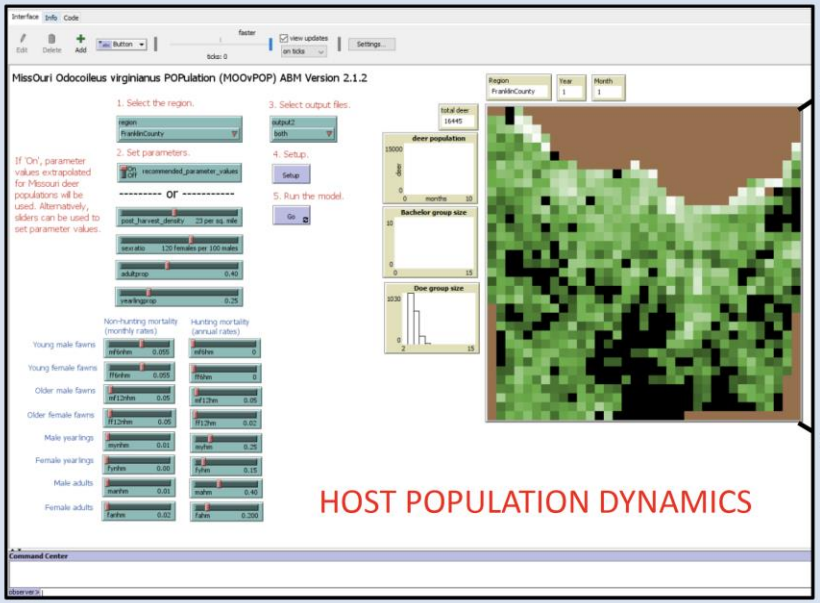
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

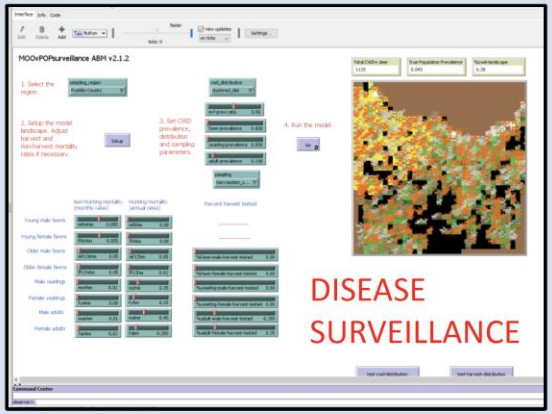
Department of Fisheries and Wildlife • Michigan State University

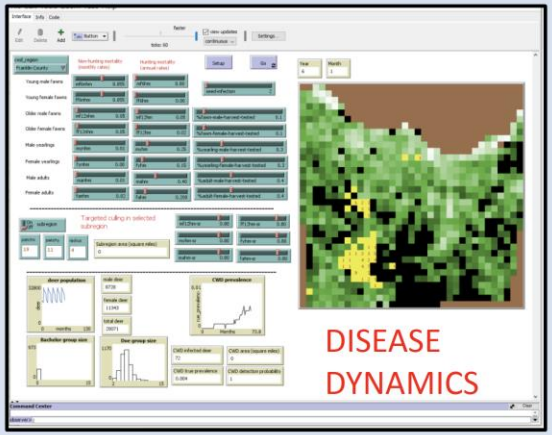
MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES · DNR · MICHIGAN

OvCWD: AGENT-BASED MODELING FRAMEWORK







- Spatially explicit
- Heterogeneities
- Customizable
- Engage stakeholders

Scale: county+, section, month

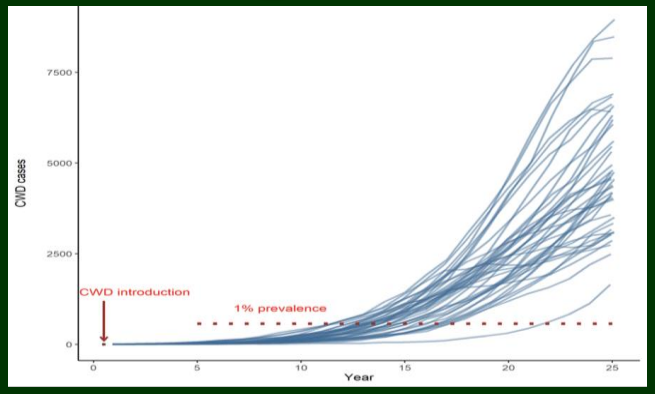
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

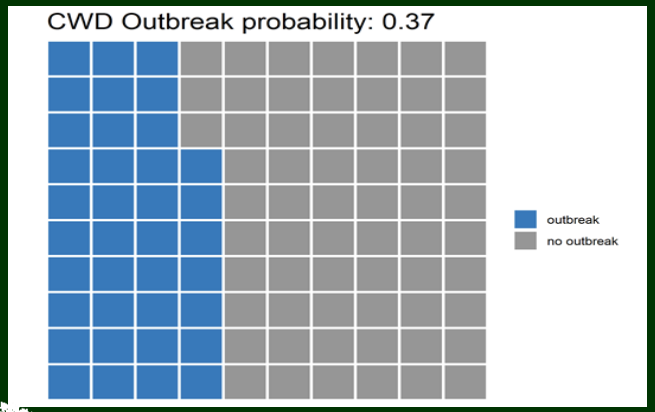
Department of Fisheries and Wildlife • Michigan State University

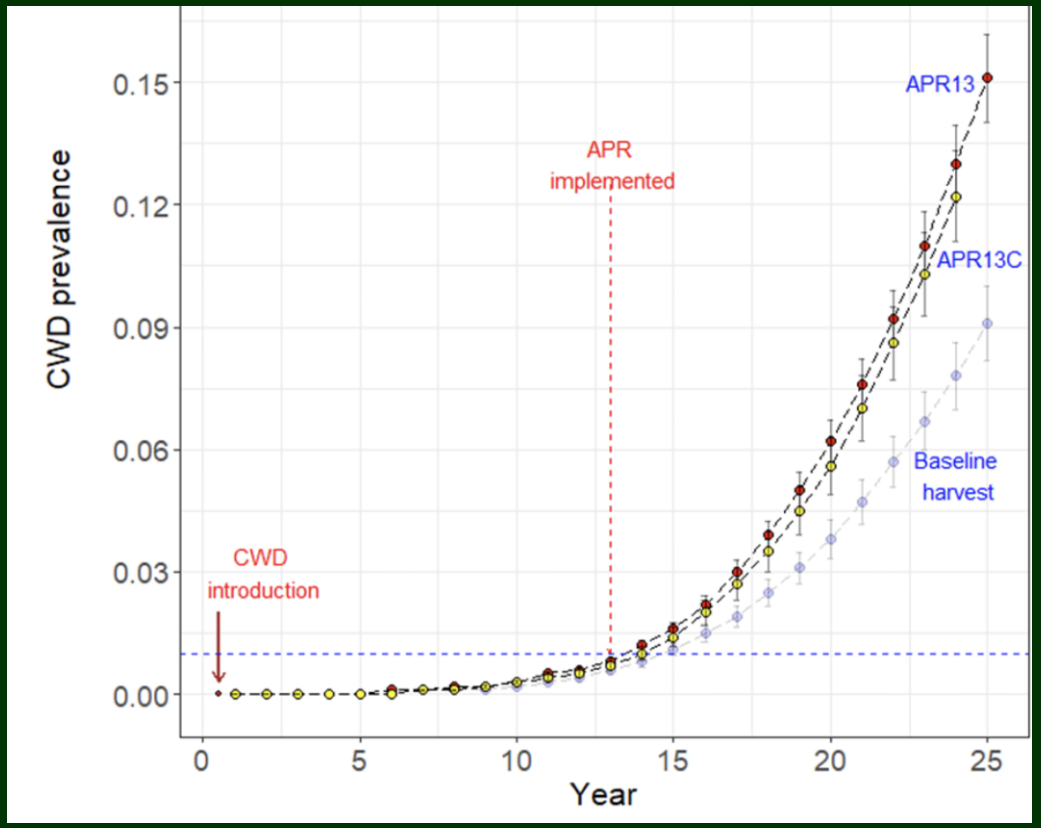
MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

Assessing dynamics and harvest strategies







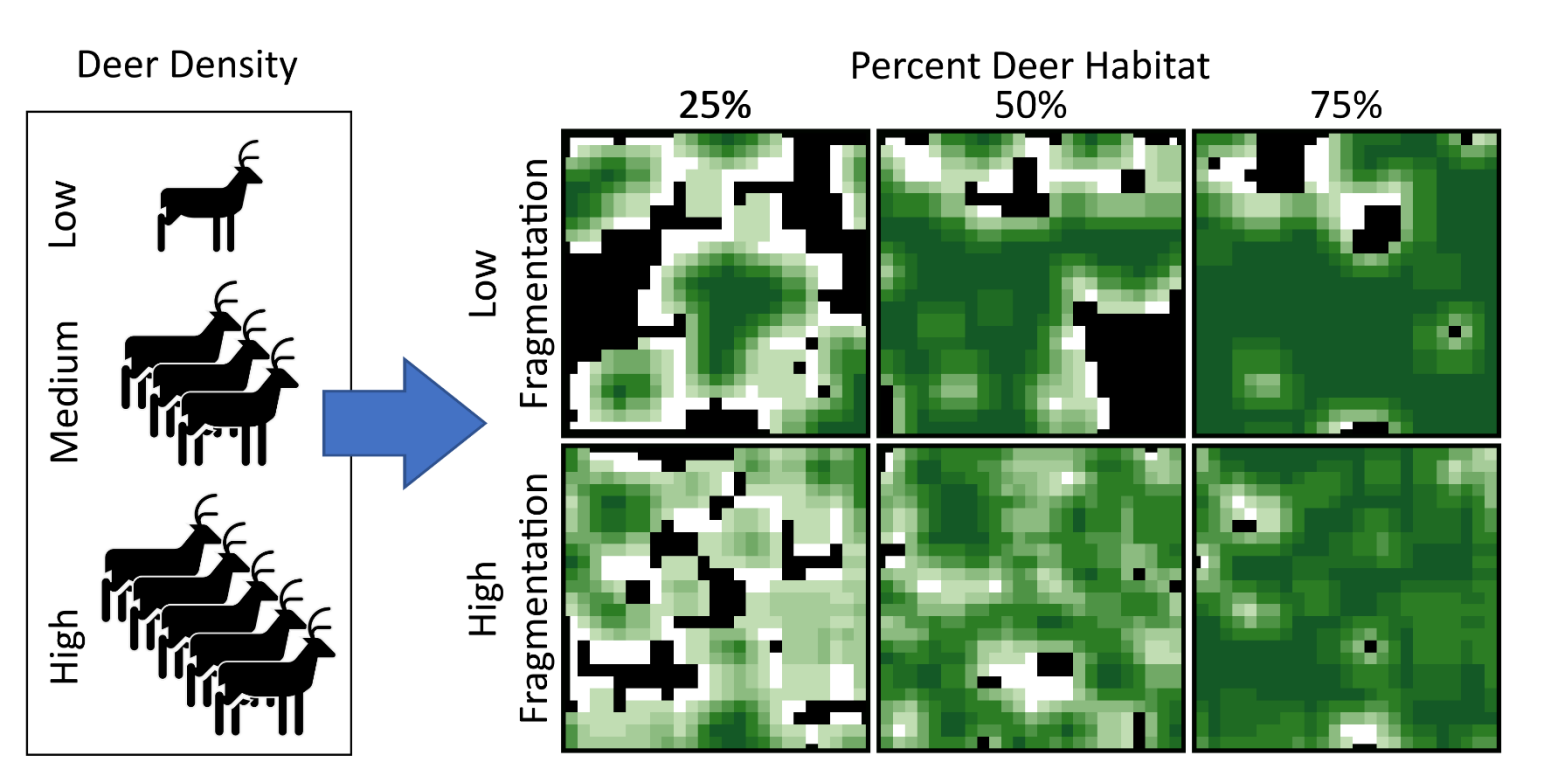
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife · Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES · DNR · MICHIGAN

How do landscape characteristics and deer density influence CWD spread?



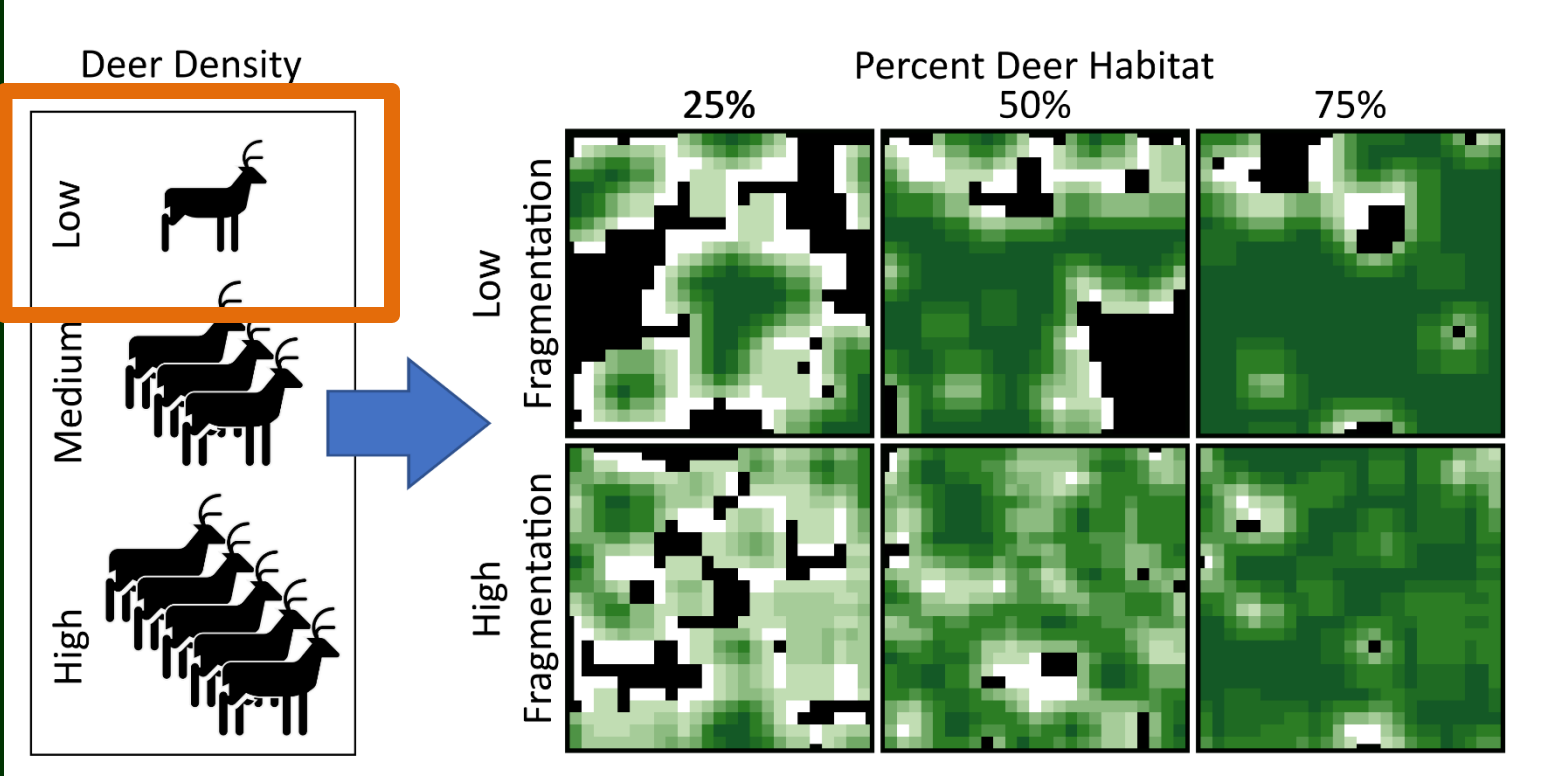
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES • DNR • MICHIGAN

Low density reduces persistence and prevalence



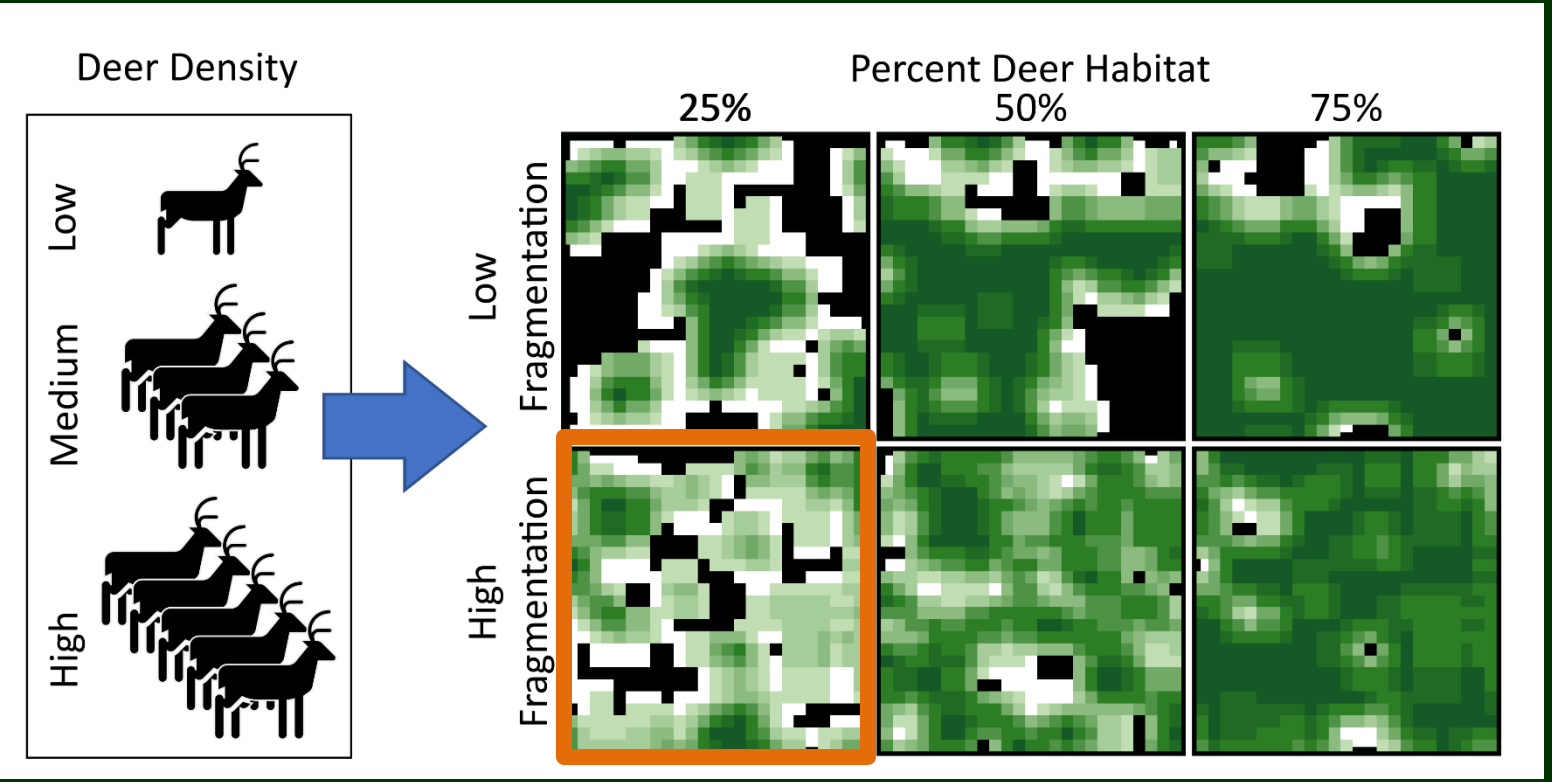
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES • DNR • MICHIGAN

Limited habitat that is highly fragmented reduces persistence



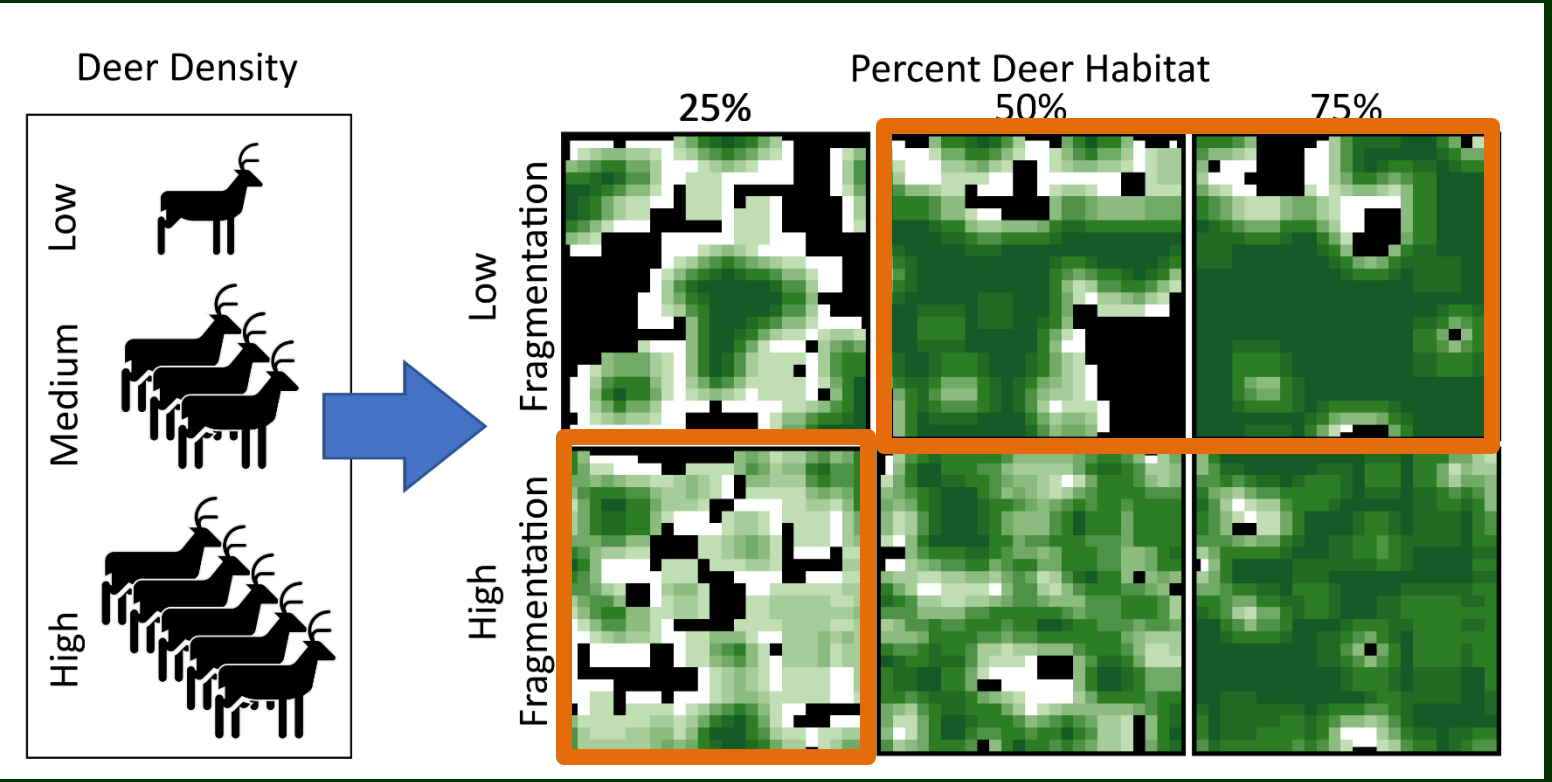
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES • DNR • MICHIGAN

More habitat that is less fragmented reduces persistence



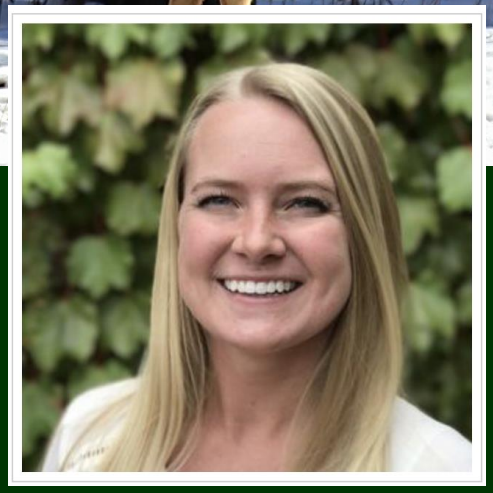
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

Using Agent-based Modeling to Assess Management Strategies for Chronic Wasting Disease



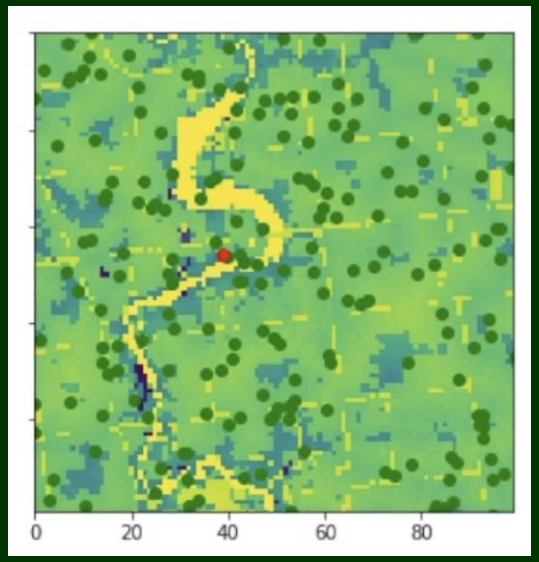
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

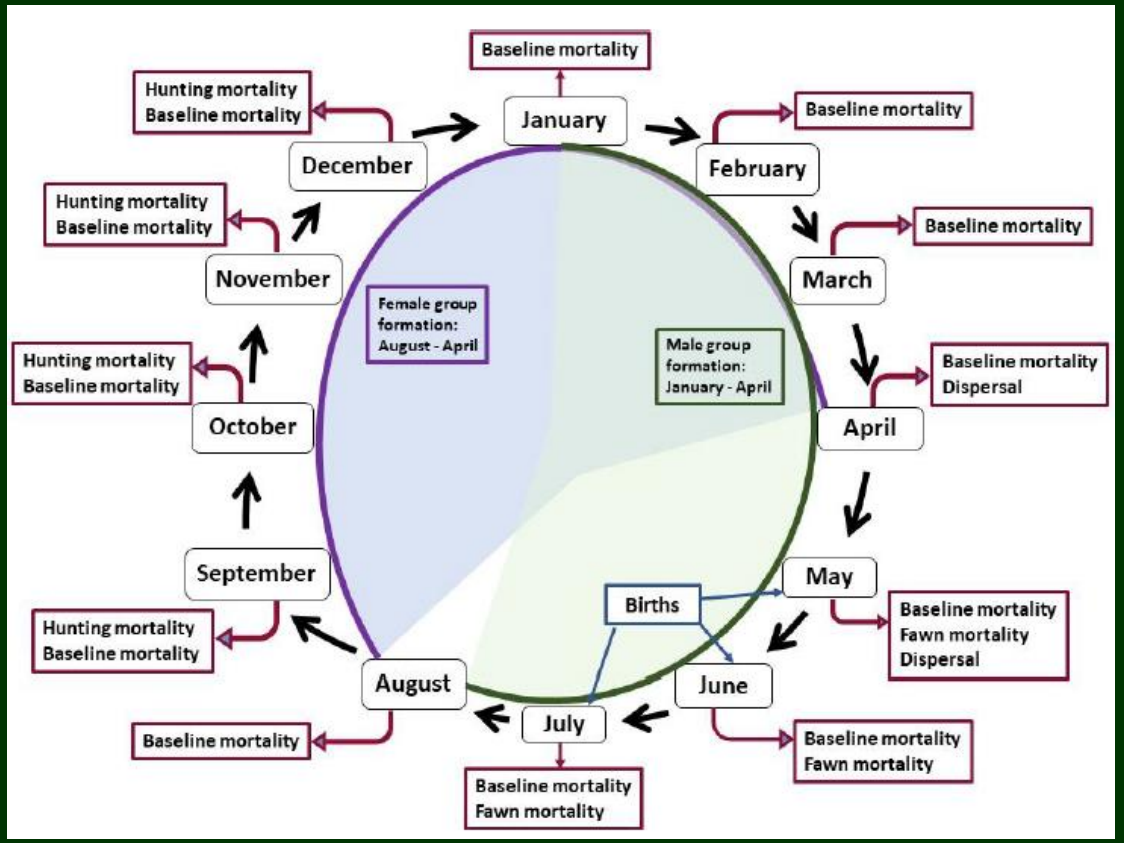
Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES · DNR · MICHIGAN

Asking "smaller" questions





BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife · Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES · DNR · MICHIGAN

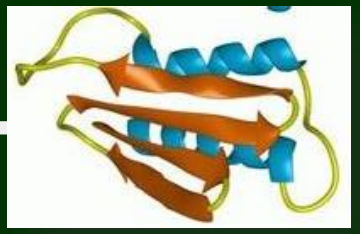
Asking "smaller" questions – ABM

Movement

Published:
Butts et al. 2022

Population

Disease



Including
indirect transmission

CWD Model

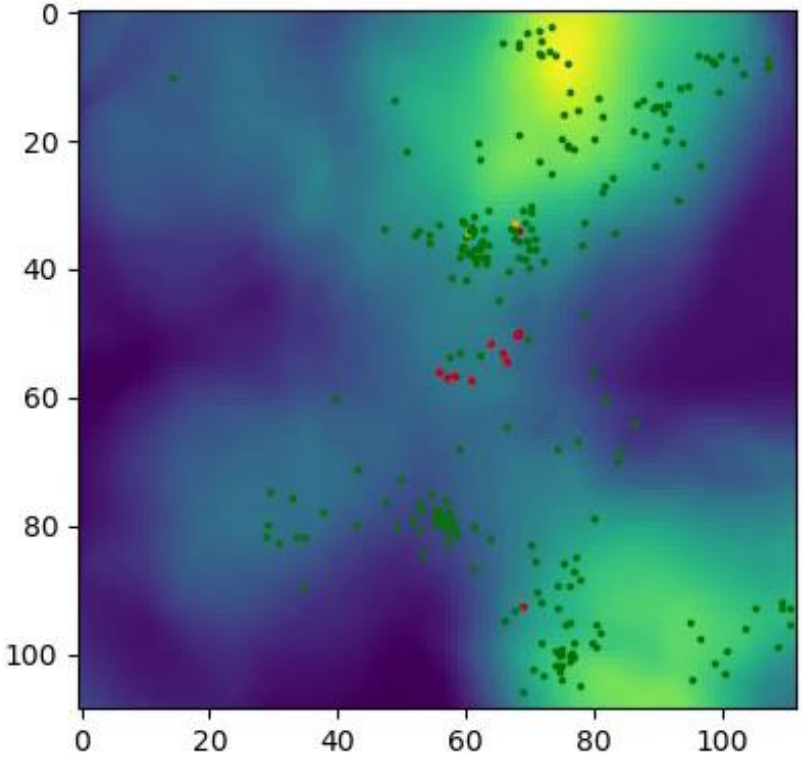
Scale: county-, 30mx30m, day

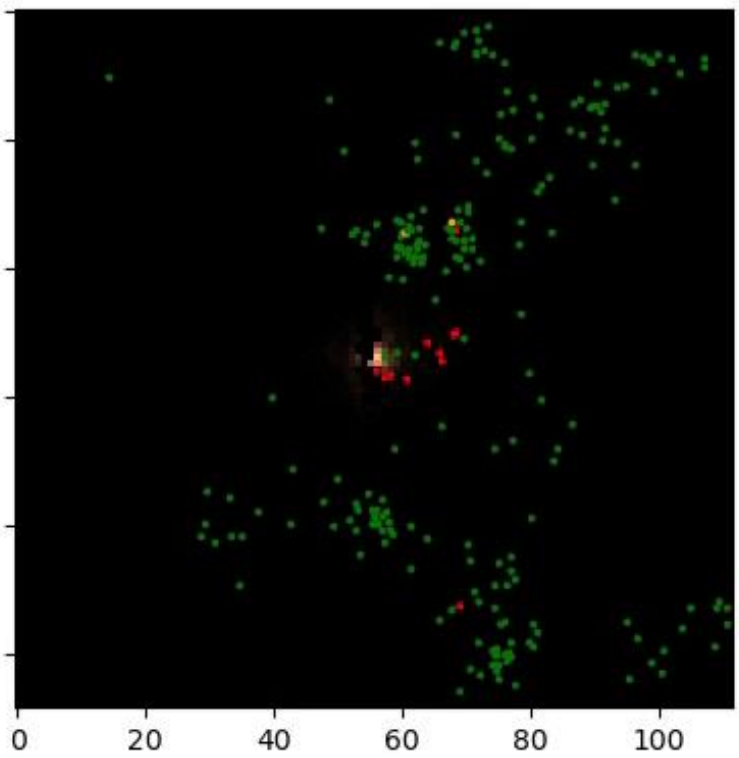
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES · DNR · MICHIGAN





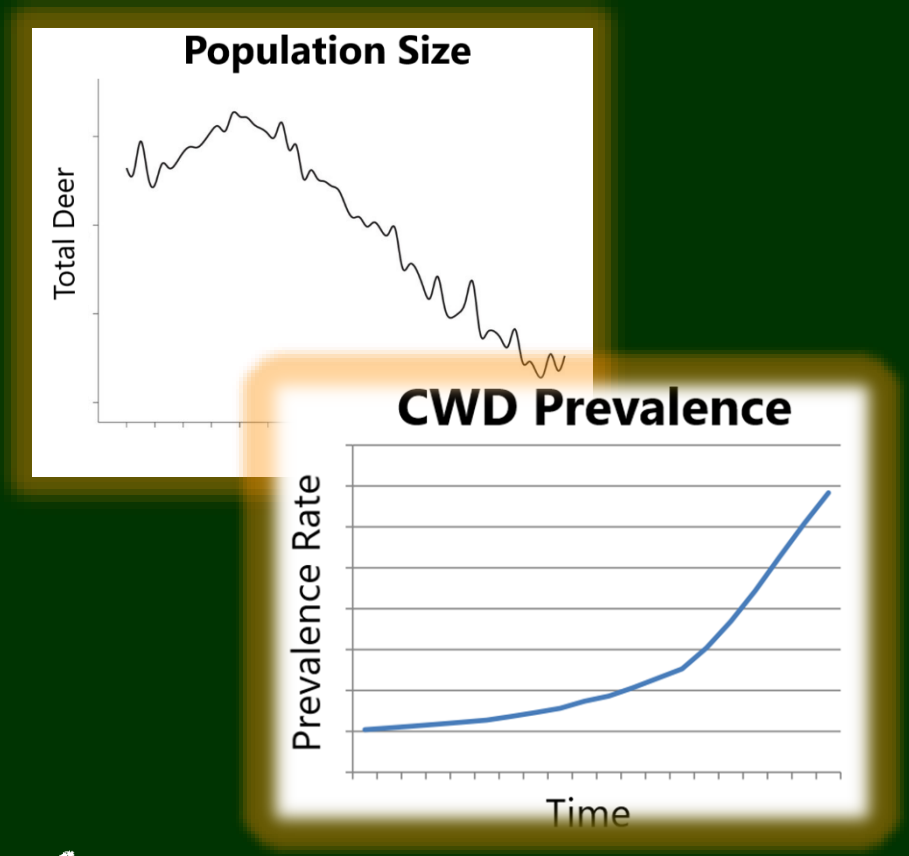
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

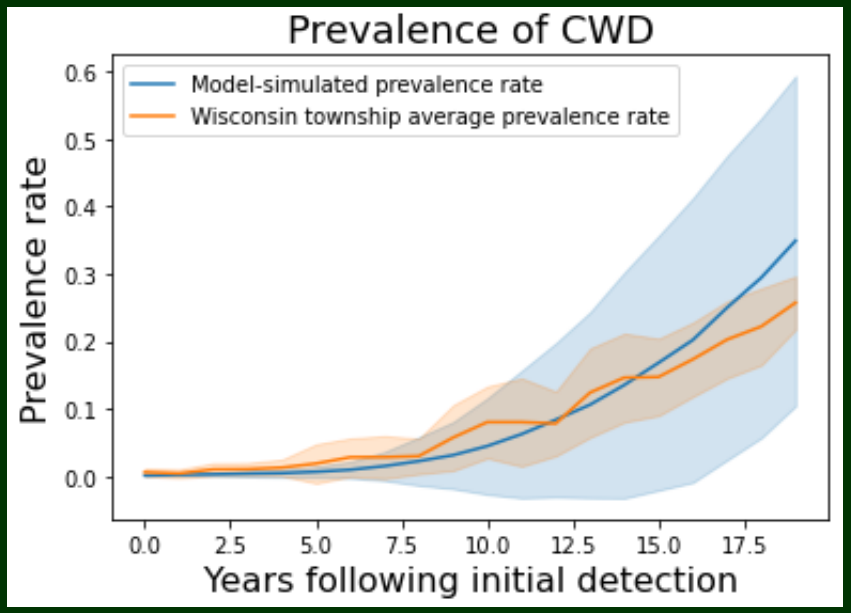
Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES · DNR · MICHIGAN

Asking "smaller" questions – Output





BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

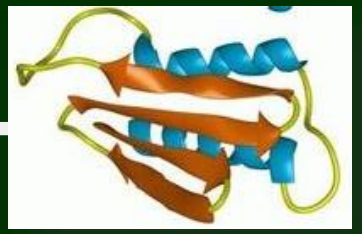
DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

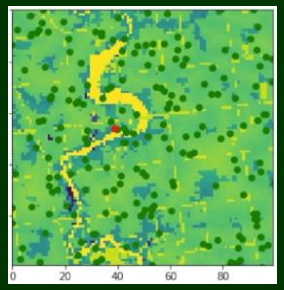
Asking "smaller" questions – Management

Movement

Population

Disease

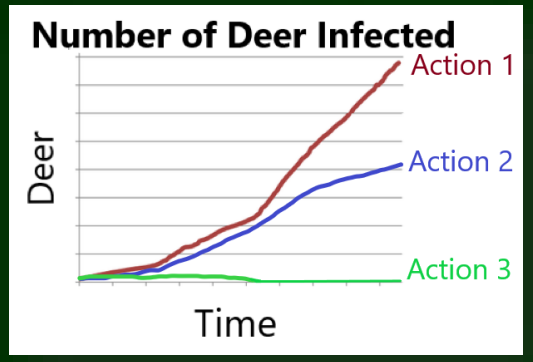




+

Management action!

CWD Model



BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

Informing Modeling Efforts

- Movement Study
- Behavior Study
- APR Camera Study

Movement Study - Year 5 of 5

BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

Movement Study - Quantifying

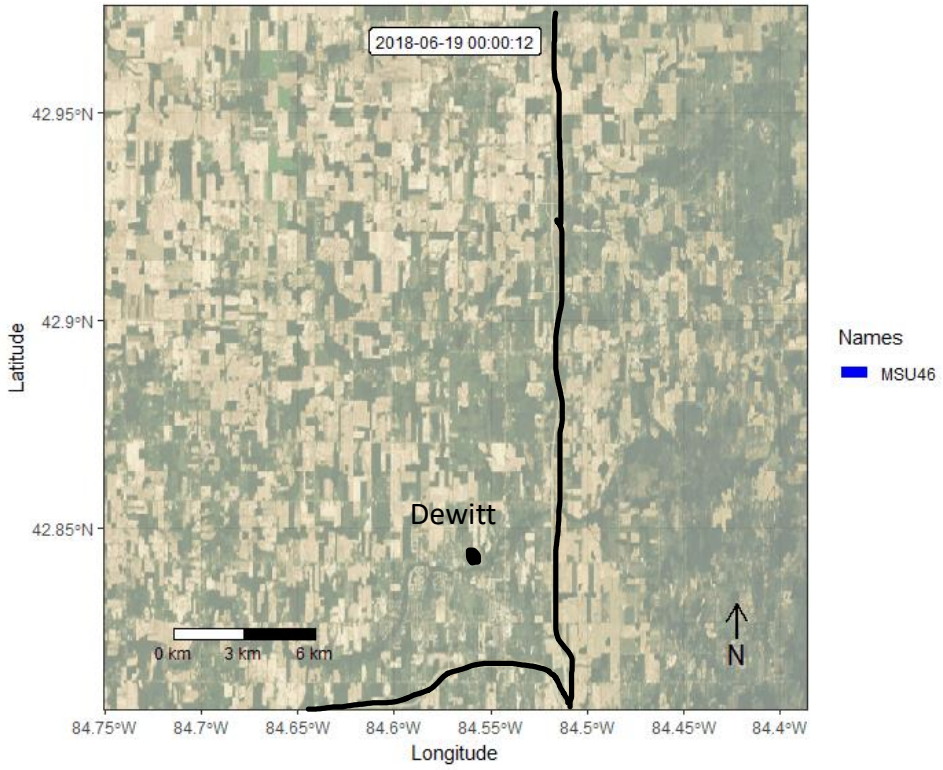
- Dispersal Rates and Distances
  - Context matters
- Exploratory Movements
- Resource Selection
  - Across an urban suburban gradient
  - Context matters
- Contact structure
  - Among collared deer

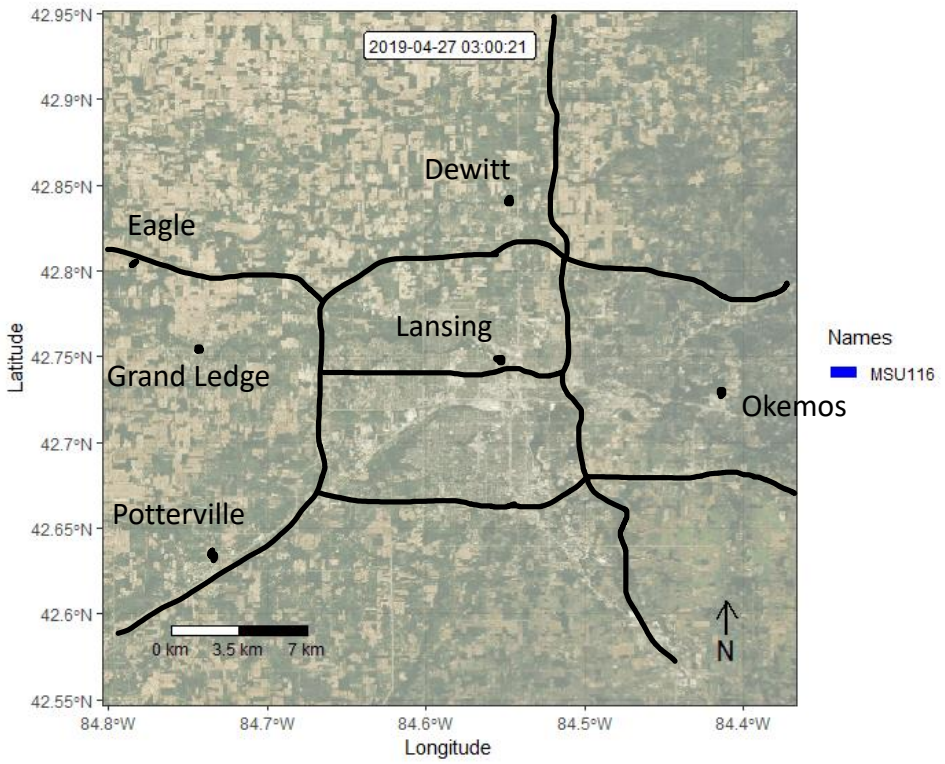
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN





BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

Behavior Study - Year 2 of 3.5

Boone & Crockett Quantitative Wildlife Center

Department of Fisheries and Wildlife, Michigan State University

MICHIGAN STATE UNIVERSITY

Department of Natural Resources, Michigan DNR

Behavior Study - Objectives

- Quantify rate of direct physical contact at baited sites, food plots, and the natural landscape
- Identify what landscape characteristics are influencing where deer are congregating
- Calculate accumulation rates of feces in various habitats to better understand the potential for indirect disease transfer
- Improve abundance estimates in areas that are difficult to survey from the ground

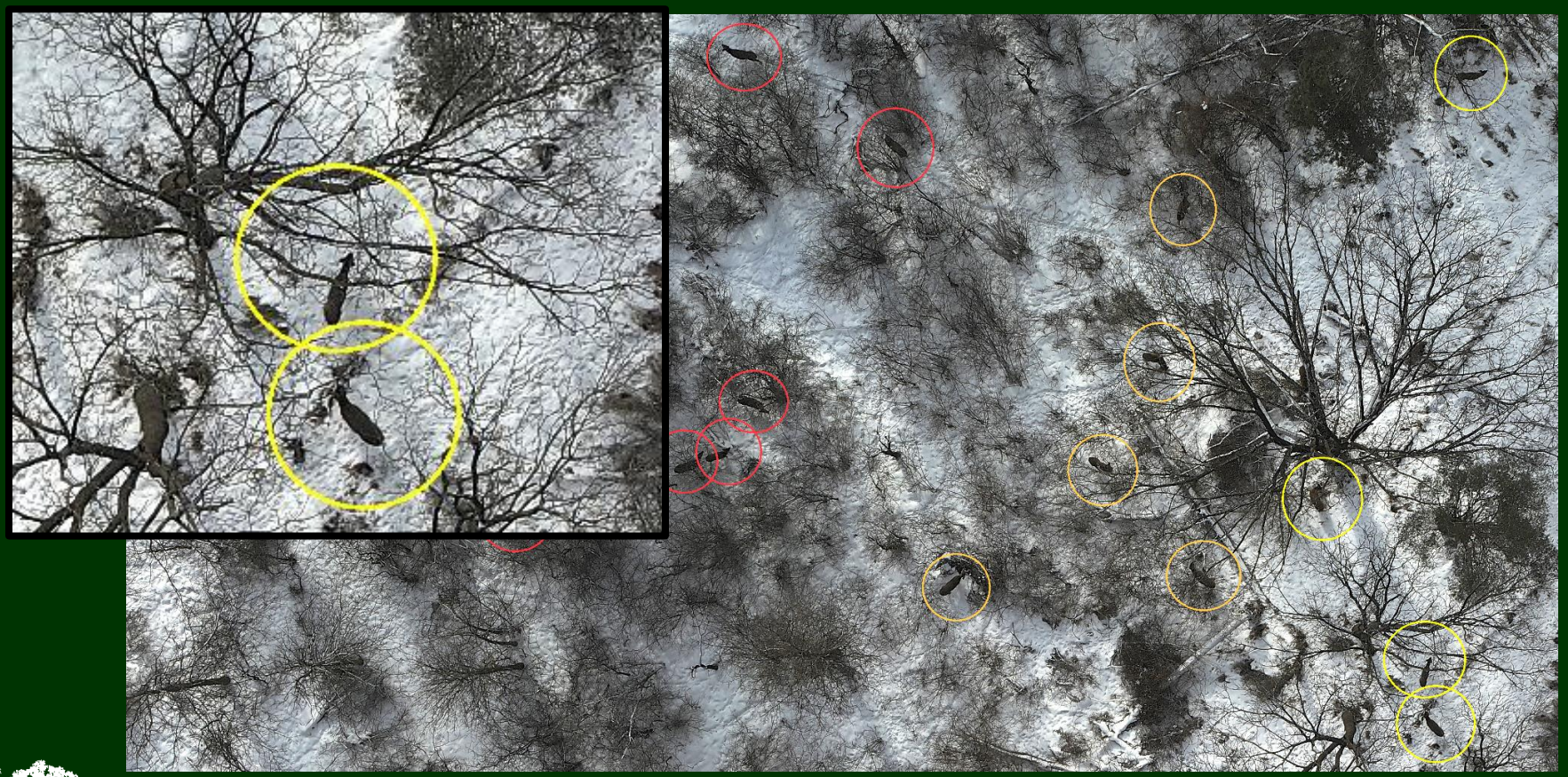
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

Behavior Study - Drones



BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES · DNR · MICHIGAN

APR Study - Year 4 of 5

BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES · DNR · MICHIGAN

Objectives

- Develop and evaluate population estimation method
- Determine the impacts of APRs on the population and harvest
- Link population estimates and harvest to possible outcomes for CWD

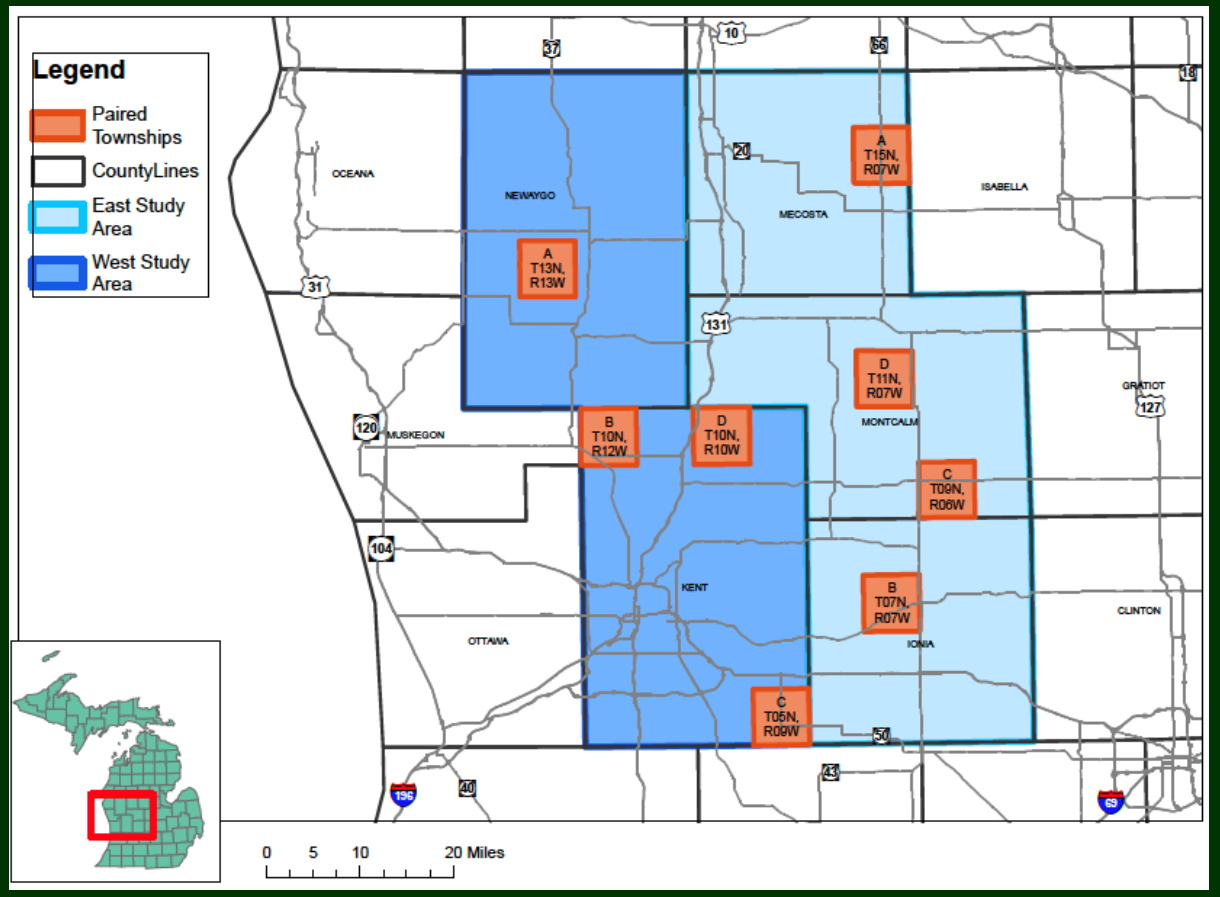
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

APR Study Area



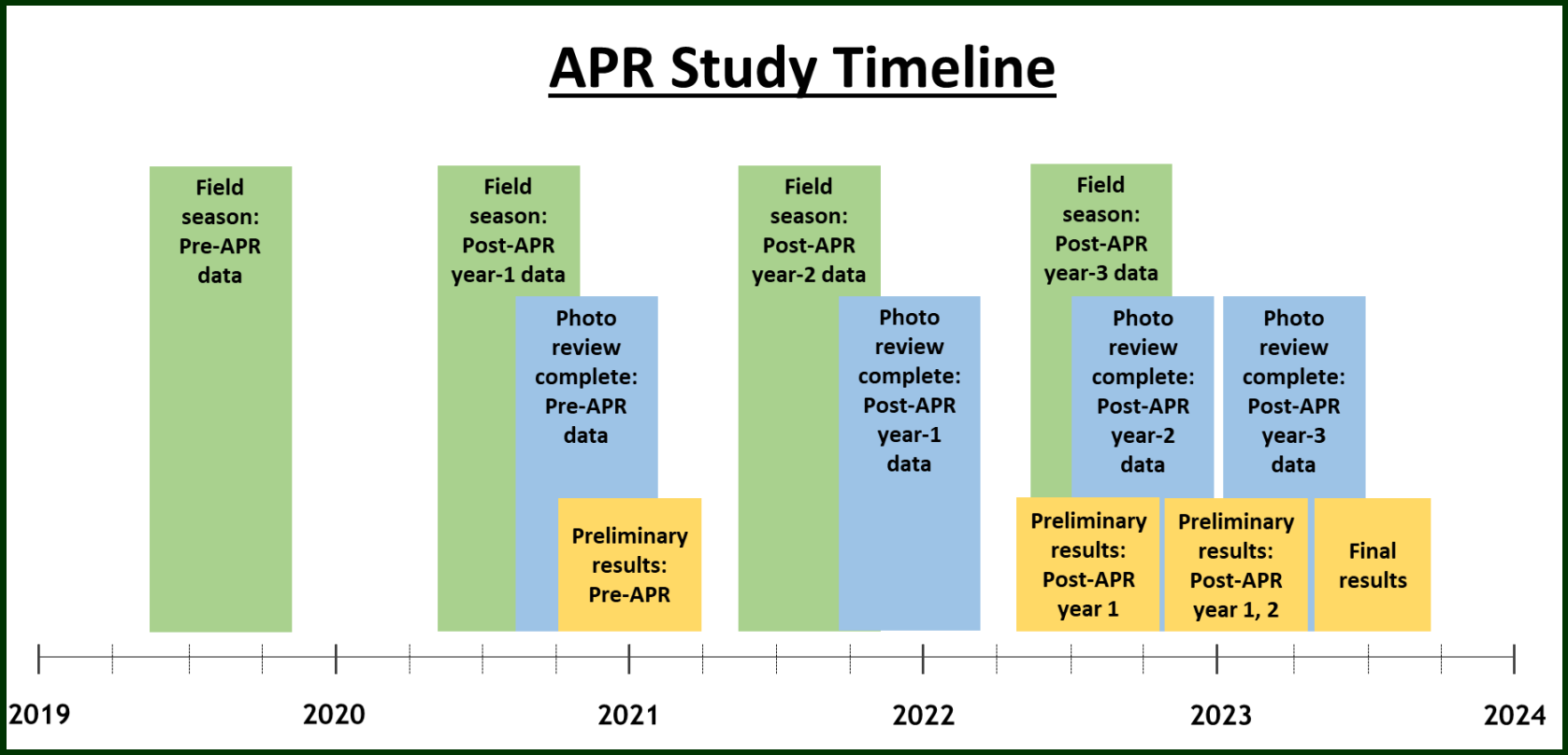
BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

APR Study - Timeline



BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES • DNR • MICHIGAN

Greater partnership context

- MDNR
- DNR/MSU Joint Wildlife Disease Initiative
- Pittman-Robertson Wildlife Restoration Act
- Hal and Jean Glassen Memorial Foundation
- Michigan State University
  - AgBioResearch
  - Extension
  - College of Ag and Natural Resources
- Safari Club International
- Boone and Crockett Club

BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES • DNR • MICHIGAN

Thank You

www.michigan.gov/deer

www.bcqwc.org

BOONE & CROCKETT QUANTITATIVE WILDLIFE CENTER

Department of Fisheries and Wildlife • Michigan State University

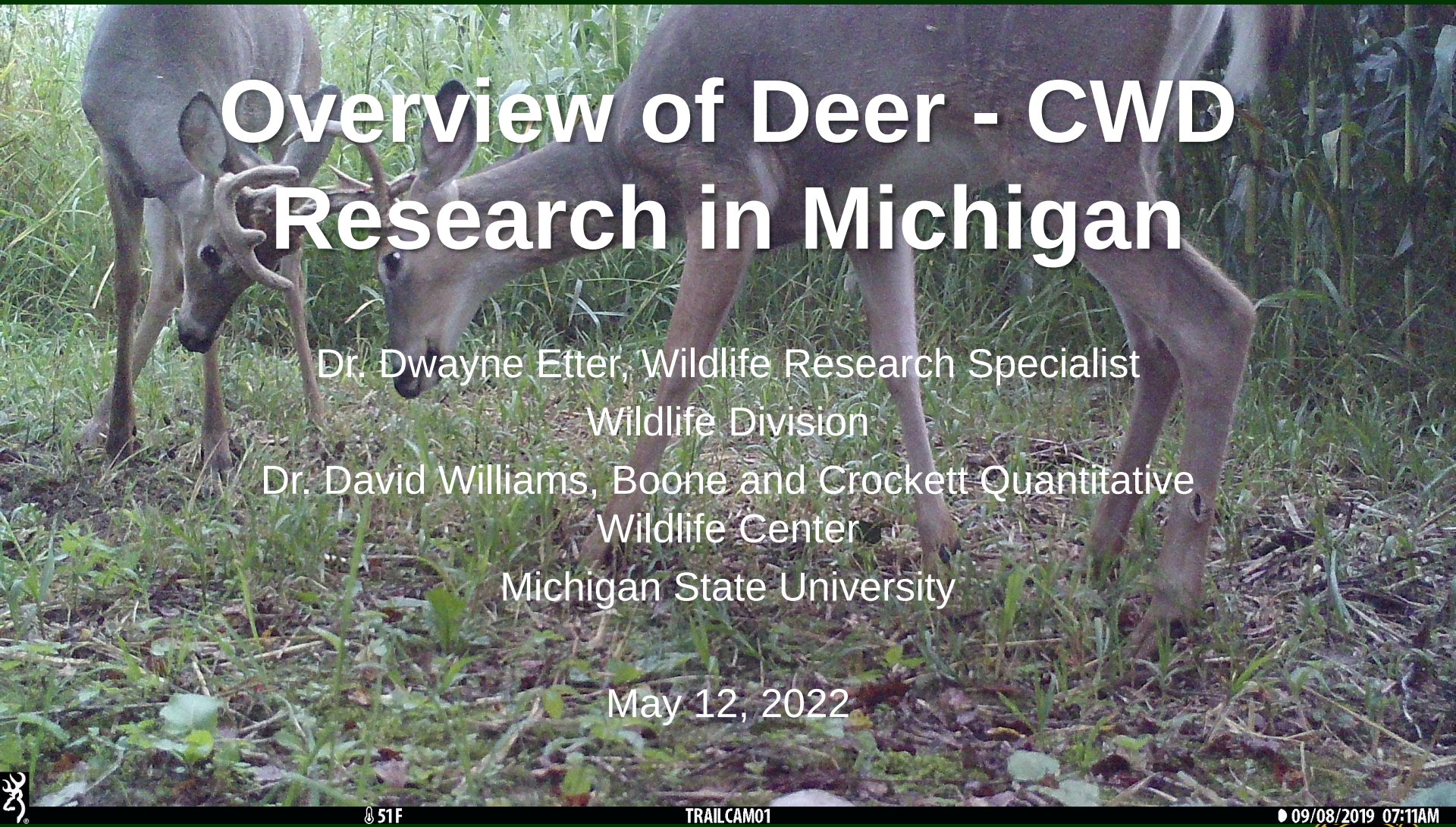
MICHIGAN STATE UNIVERSITY

DEPARTMENT OF NATURAL RESOURCES DNR MICHIGAN

Overview of Deer - CWD Research in Michigan

Dr. Dwayne Etter, Wildlife Research Specialist
Wildlife Division
Dr. David Williams, Boone and Crockett Quantitative Wildlife Center
Michigan State University

May 12, 2022



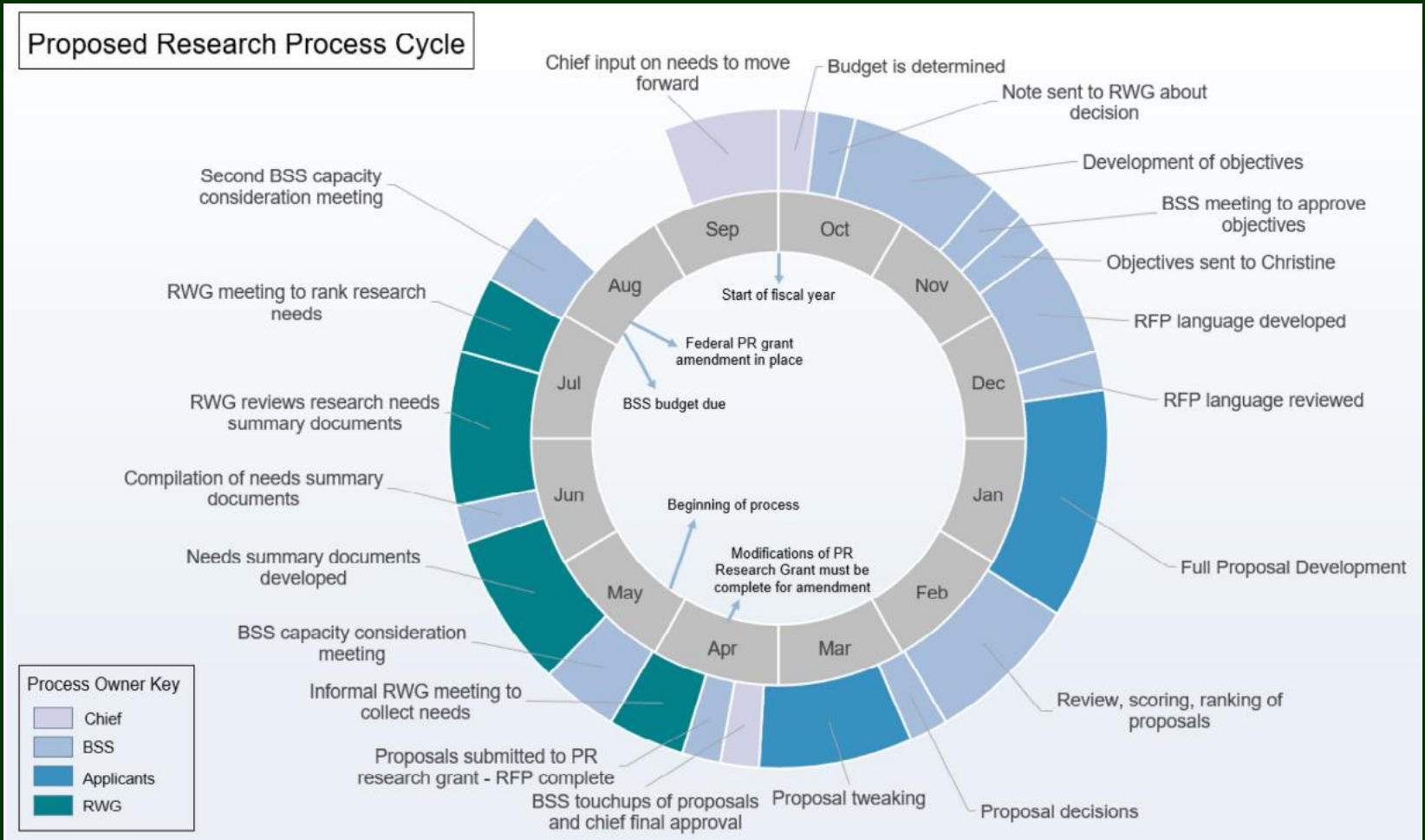
Overview

- Division Research Process
- Resources and Partnerships
- Funding Sources
- Deer-CWD Data Sources
- Deer research projects

Need for Research

- Science based organization
- Informs wildlife management
- Informs decision-making process

Developing Division Research Needs



Division's Research Section

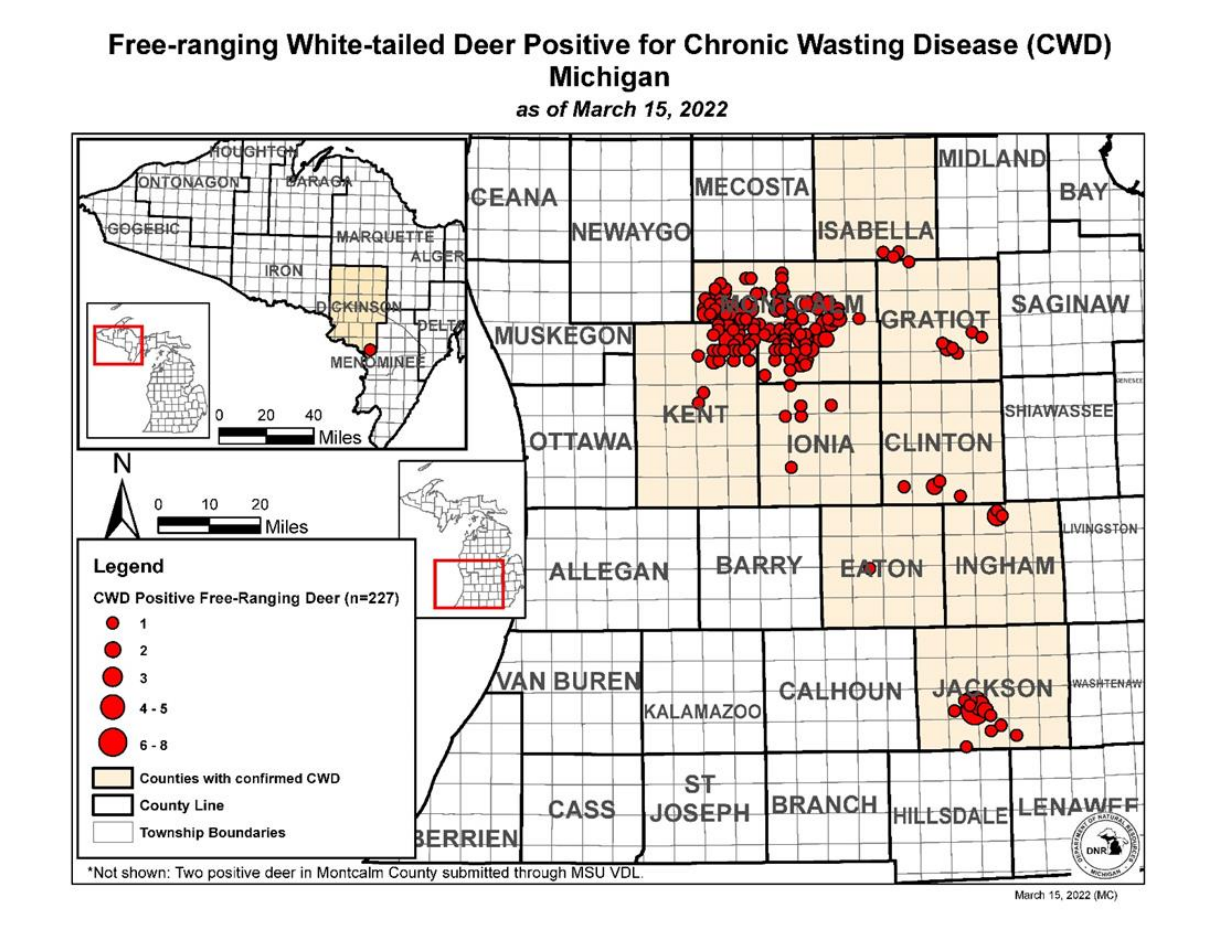
- Section Supervisor
- Research Specialists (3)
- Research Analyst
- Research Technicians (2)
- Research Assistant
- Support Staff




Research Partners

- Federal
- State
- Tribal governments
- NGOs
- Universities
  - Boone and Crockett Quantitative Wildlife Center, Michigan State University

CWD detections in free-ranging deer through March 2022



Deer and CWD Research

- NC1209: North American Interdisciplinary Chronic Wasting Disease Research Consortium (CWD-research.com)
  - CWD is distributed widely in North America, affects multiple cervid species, and does not respect jurisdictional boundaries. Research across multiple disciplines is needed to fully address the complexities of CWD and acquire the knowledge needed to limit or eliminate its spread. Supported by the USDA, this multistate effort coordinates CWD research across jurisdictions involving academia, state and federal agencies, Tribal Nations, and non-governmental organizations.

Deer and CWD Research Funding

- Pittman-Robertson Funds
- DNR and MSU Joint Wildlife Disease Initiative
  - One time appropriation for $5.3M for wildlife disease research (Michigan PA 207 of 2018)
    - https://www.canr.msu.edu/research/chronic-wasting-disease
- Additional Federal funding sources
- H.R. 5608 Chronic Wasting Disease Research and Management Act
  - $70 million annually in CWD funding, split evenly between management funding to be granted out to state wildlife and agriculture agencies and tribal nations, and funding for CWD applied research grants administered by the USDA

Michigan Supported CWD Research

- Influence of deer harvest regulations on antlerless harvest, abundance, and sex and age composition
- Field animal side testing and improving laboratory diagnostic sensitivity
- A standardized, high throughput genetic resource to inform white-tailed deer population and disease management
- Composting deactivation of CWD prions
- Multistate CWD strategic planning initiative
- Employing collaboration and innovation to develop CWD education and outreach
- Assessing drivers of spread and transmission of chronic wasting disease in Michigan deer
- Mechanistic understanding on environmental behavior, bioavailability and persistence in chronic wasting disease prions
- An agent-based approach for surveillance and management assessment of CWD
- Optimizing CWD surveillance: Regional synthesis of demographic, spatial, and transmission risk factors
- Inactivation of CWD prions by peroxymonosulfate and hypochlorous acid
- Quantifying factors affecting chronic wasting disease transmission among deer
- Evaluation of deer population parameter estimates and implications for CWD management

Commonly Collected Data Used for Deer - CWD Research

- License sale records
- Deer harvest survey
- Harvest registration
- Disease testing
- Collected road kills
- Deer culled by USDA
- New online registration

Some Joint DNR – MSU CWD Research Projects

Dynamics of an Intensively Managed White-tailed Deer Population

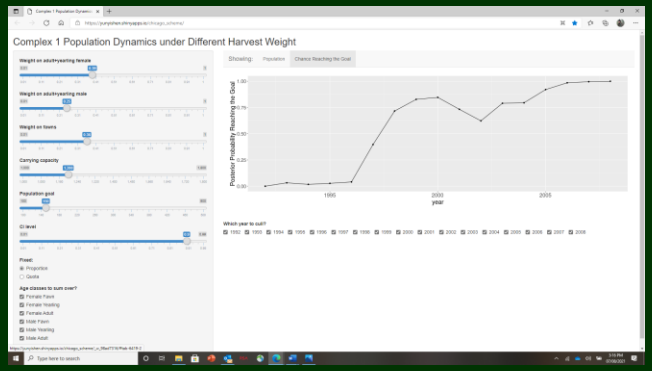
- Evaluation of changes in deer reproduction, survival to intensive culling (3,950 deer removed from 7 sq. miles over 17 years).
- Modeling the population level effects of shifting deer harvests to specific sex/age classes.
- Implications for controlling overabundant deer and managing hunted populations.

Partners:

Dr. Gary Roloff and Dr. Steven Gray (MSU)

Dr. Tim VanDeelen and Yunyi Shen (UW-Madison)

Dr. John Humphries (USDA)



Blood Tracking Big Game with Dogs

Law Enforcement Division

Acting Assistant Chief David Malloch

Current Approval Process

- Handler must have dog complete a tracking test by a department approved organization (United Blood Trackers).
- Carry a valid Concealed Pistol License.
- Receive written authorization from DNR-LED.

Current Process

- Only the licensed hunter may dispatch and tag the wounded deer, elk, or bear.
- Dogs must be on a lead.
- Tracker's information and accompanying hunter's license information must be provided to the DNR's Communications Section prior to each tracking activity.

Requested Changes
Tracker to Dispatch Wounded Animal

Statutes that would require updating:

- 324.43510 - states a person cannot carry or transport a firearm unless they have a hunting license (does not prohibit under CPL law).
- 324.43513 - states a person may carry or possess a firearm without a hunting license if it is enclosed in a case and unloaded.
- 324.43516 - states that you cannot carry or possess a handgun during firearm season unless the individual has a valid deer license (does not prohibit under CPL law).
- 324.43588 - states that a person is guilty of a misdemeanor if the person takes or possess a wild animal without a license.

Requested Changes
Off Lead Tracking

Statutes that would require updating:

- 324.73102 - states a person can retrieve a hunting dog on another person's property without a firearm.
- R299.924 - states that on department managed lands you cannot have a dog unless it's on a leash in a designated day use area.
- R299.927 - states that at State parks and recreation areas dogs must be on a leash not more than 6 ft in length.

Requested Changes
Tracking Test

- Test the tracker and not the dog.
- Tracker must posses a valid hunting license.
- Tracking test every 3 years.

Comparison

	MI	MN	WI	IL	IN	OH	PA
Only licensed hunter may dispatch wounded game.	X	X		X		X	X
Dog must be on a leash.	X	X	X	X	X	X	X
Certification required.	X			X			
No weapon allowed while tracking.			X		X		

Certified Trackers

2022 – 2 (As of 5/1)

2021 – 30

2020 – 22

2019 – 21

2018 – 17

2017 – 19

2016 – 17

2015 – 19

2014 – 15

Questions?

Thank you!

Parks and Recreation Division
Land Use Orders of the Director

LUOD Nos. 2, 3, 4, and 5 of 2022

Background

- The Parks and Recreation Division reviews its Land Use Orders to determine whether any updates are necessary due to operational needs, statutes and/or clarifications to existing Land Use Orders. From the review the following LUODs are being offered for information:
- LUOD 2 of 2022 – Dark Sky Preserve operating hours
- LUOD 3 of 2022 – Operational updates North Higgins Lake SP and Ralph A. MacMullan Conference Center
- LUOD 4 of 2022 – Equestrian campground use certain SPs
- LUOD 5 of 2022 – Boating Access Site operations

LUOD 2 of 2022

- Michigan has been a leader in the conservation and preservation of night sky viewing.
- Since the dark sky preserves are located within state parks.
- Expand the open hours of the state parks where a designated, signed, dark sky preserve is located.

LUOD 3 of 2022

- Operational consistence of Boating Access Use between North and South Higgins Lake SPs by establishing the same requirements that exist at South Higgins to North Higgins SP BAS.
- Beach access Ralph A. MacMullan Conference Center.

LUOD 4 of 2022

- Camping at an equestrian campsite.
- Concerns of conflict by users.
- At least one horse per campsite: Brighton, Fort Custer, Ionia, Ortonville, Pontiac Lake, Waterloo and Yankee Springs Recreation Areas.
- Prohibit the use of electric skateboard in state parks, consistent with statute.
- Prohibit the launching of an unmanned aircraft from state land and undertaking a prohibited activity identified the current LUOD.
- Reference to the administrative rule prohibiting use of state land for a commercial purpose without securing a permit.

LUOD 5 of 2022

- This LUOD reflects the following:
  - Acquisition of the Union Lake South Boating Access Site and the allowed and prohibited activities at this site;
  - Addresses the Lexington Boating Access Site due to trailer parking issues;
  - A prohibition of dogs at Bolles Harbor Boating Access Site;
  - Allows for fishing activities at Bolles Harbor Boating Access Site; and,
  - Prohibit the use of electric skateboard at BAS, consistent with statute.
  - Prohibit the launching of an unmanned aircraft from state land and undertaking a prohibited activity identified the current LUOD.
  - Reference to the administrative rule prohibiting use of state land for a commercial purpose without securing a permit.

Questions

Thank you!

Deer Harvest Reporting

Chad Stewart, Deer Management Specialist
Wildlife Division
May 12, 2022

Data Driven Management

- Effective management for deer needs:
  - Total annual harvest
  - Type of animals harvested (buck, doe, fawn)
  - Location of harvest
  - Season/timing of harvest
- Additional useful information
  - Age structure
  - Hunter attitudes

Online Harvest Reporting System

Michigan.gov DNR HOME | CONTACT DNR

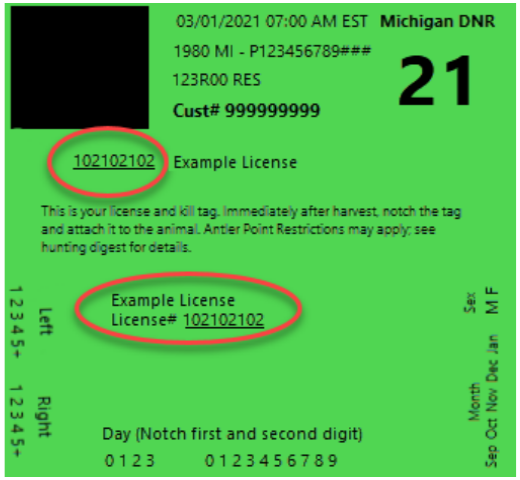
Licenses & Permits
DEPARTMENT OF NATURAL RESOURCES

Helpful Links Helpdesk: 517-284-6057

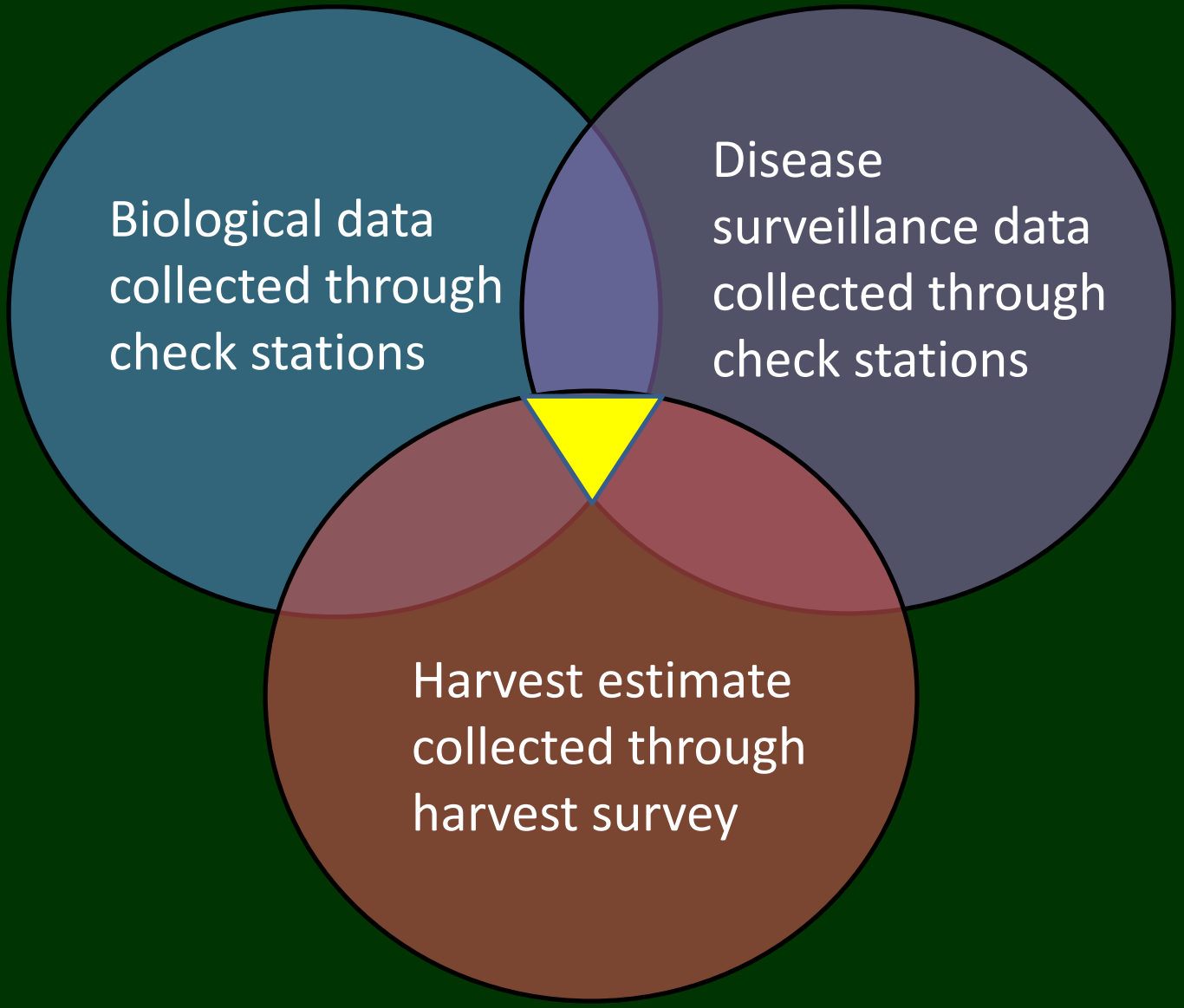
To report a harvest, please enter your DNR license number and date of birth and click Begin Report. If you do not have your license number, you can login to eLicense, then click on the **Harvest Report** tab to see available and completed reports.

Your DNR license number is underlined on your license to the LEFT of the product description.

On kill tags, the license number will be underlined and listed on the bottom half of the tag as well.



Deer Season Data Collection



Biological Data

- Historically collect:
  - Age of harvested deer
  - Antler point configuration on bucks
  - Beam diameter
- Less emphasis in recent years
- Skewed recently due to philosophy change

Biological Data

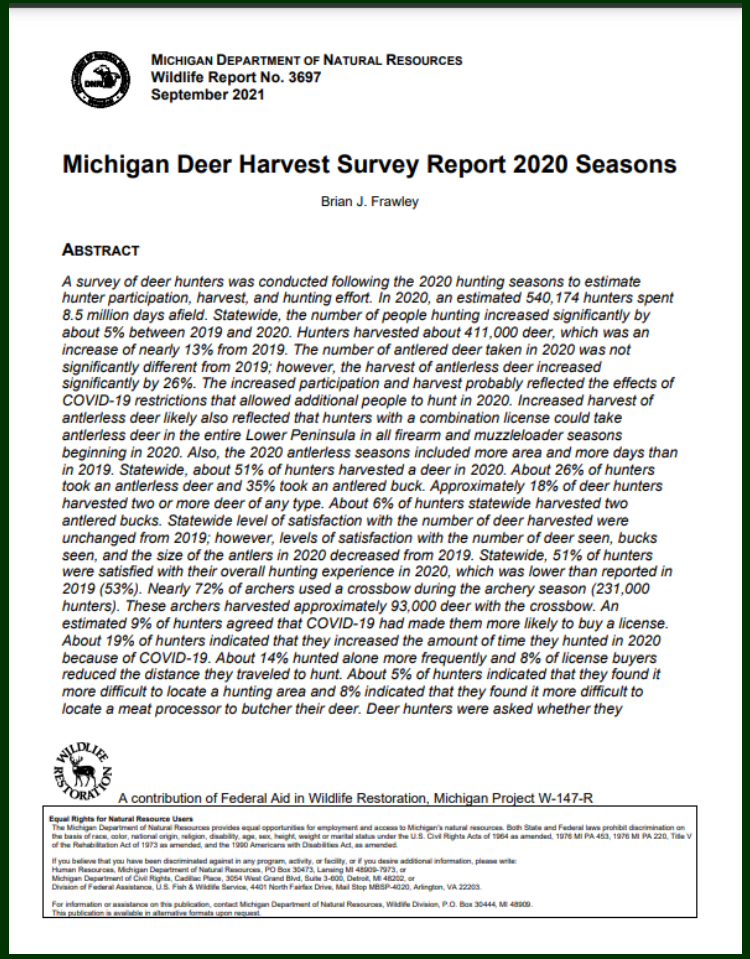
- Online harvest system will:
  - Account for all reported harvested deer throughout the year
  - Reference historical deer check information from previously collected data to provide buck age estimates
- Staff will also have an opportunity to develop more partnerships with processors for age data

Disease Surveillance

- Mandated to reach surveillance goals for Bovine TB, as outlined by USDA MOU
- Desire to improve surveillance across the state for CWD

Historical Harvest Estimates

- Conducted through post-season survey of randomly selected hunters
  - 2000-74% response rate
  - 2020-44% response rate



MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Wildlife Report No. 3697
September 2021

Michigan Deer Harvest Survey Report 2020 Seasons

Brian J. Frawley

ABSTRACT

A survey of deer hunters was conducted following the 2020 hunting seasons to estimate hunter participation, harvest, and hunting effort. In 2020, an estimated 540,174 hunters spent 8.5 million days afield. Statewide, the number of people hunting increased significantly by about 5% between 2019 and 2020. Hunters harvested about 411,000 deer, which was an increase of nearly 13% from 2019. The number of antlered deer taken in 2020 was not significantly different from 2019; however, the harvest of antlerless deer increased significantly by 26%. The increased participation and harvest probably reflected the effects of COVID-19 restrictions that allowed additional people to hunt in 2020. Increased harvest of antlerless deer likely also reflected that hunters with a combination license could take antlerless deer in the entire Lower Peninsula in all firearm and muzzleloader seasons beginning in 2020. Also, the 2020 antlerless seasons included more area and more days than in 2019. Statewide, about 51% of hunters harvested a deer in 2020. About 26% of hunters took an antlerless deer and 35% took an antlered buck. Approximately 18% of deer hunters harvested two or more deer of any type. About 6% of hunters statewide harvested two antlered bucks. Statewide level of satisfaction with the number of deer harvested were unchanged from 2019; however, levels of satisfaction with the number of deer seen, bucks seen, and the size of the antlers in 2020 decreased from 2019. Statewide, 51% of hunters were satisfied with their overall hunting experience in 2020, which was lower than reported in 2019 (53%). Nearly 72% of archers used a crossbow during the archery season (231,000 hunters). These archers harvested approximately 93,000 deer with the crossbow. An estimated 9% of hunters agreed that COVID-19 had made them more likely to buy a license. About 19% of hunters indicated that they increased the amount of time they hunted in 2020 because of COVID-19. About 14% hunted alone more frequently and 8% of license buyers reduced the distance they traveled to hunt. About 5% of hunters indicated that they found it more difficult to locate a hunting area and 8% indicated that they found it more difficult to locate a meat processor to butcher their deer. Deer hunters were asked whether they

A contribution of Federal Aid in Wildlife Restoration, Michigan Project W-147-R

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Wildlife Report No. 3697
September 2021

Michigan Deer Harvest Survey Report 2020 Seasons

Brian J. Frawley

Table 7 (continued). The number of deer harvested in Michigan by hunting season, 2019-2020.[a]

Season and Area	Antlerless				Antlered Bucks				Sexes Combined			
	2019 Harvest	2020 Harvest	95% CL[b]	Change from 2019 to 2020 (%)	2019 Harvest	2020 Harvest	95% CL[b]	Change from 2019 to 2020	2019 Harvest	2020 Harvest	95% CL[b]	Change from 2019 to 2020
All Seasons												
West UP	5,733	5,899	848	2.9	21,063	19,742	1,505	-6.3	26,807	25,665	1,835	-4.3
East UP	160	955	341	495.9*	4,735	3,245	566	-31.5*	4,899	4,204	666	-14.2
NE LP	20,520	22,817	1,825	11.2	27,038	23,419	1,654	-13.4*	47,557	46,232	2,668	-2.8
NW LP	30,481	40,040	2,593	31.4*	32,437	32,178	1,968	-0.8	62,910	72,192	3,601	14.8*
Sag. Bay	26,271	33,744	2,437	28.4*	34,080	38,735	2,197	13.7*	60,349	72,479	3,692	20.1*
SW LP	24,235	33,563	2,595	38.5*	35,270	38,344	2,234	8.7	59,507	71,907	3,891	20.8*
SC LP	34,488	41,728	2,777	21.0*	41,470	47,392	2,505	14.3*	75,953	89,119	4,216	17.3*
SE LP	10,562	12,506	1,385	18.4	15,133	16,331	1,437	7.9	25,696	28,841	2,255	12.2
UP	5,893	6,854	914	16.3	25,798	22,987	1,608	-10.9	31,706	29,869	1,952	-5.8
NLP	58,821	71,213	3,367	21.1*	68,168	64,725	2,769	-5.1	126,978	135,906	4,789	7.0
SLP	87,737	113,185	4,585	29.0*	117,261	131,674	4,135	12.3*	204,994	244,863	6,984	19.4*
Statewide	152,451	191,252	5,819	25.5*	211,228	219,387	5,260	3.9	363,678	410,639	8,753	12.9*

[a]Harvest estimates do not include deer taken with DMA permits. An additional 9,557 deer were taken with these permits.
[b]95 confidence limit for the 2020 estimate. *P<0.05.

Online Reporting DOES…

- Provide near real-time information on how the season is progressing
- Show regional and county/DMU trends throughout the season
- Provide more information on timing of harvest
- Provide more information on type of deer being harvested

Online Reporting DOES NOT...

- Give us more than a minimum harvest
  - Without an understanding of reporting rates, harvest numbers should be considered only a minimum harvest

Harvest Estimation

- The Department will utilize BOTH harvest reporting and post-season surveys to offer the best elements of both techniques
  - Expedience of online harvest reporting
  - Accuracy and statistical power of post-season harvest surveys

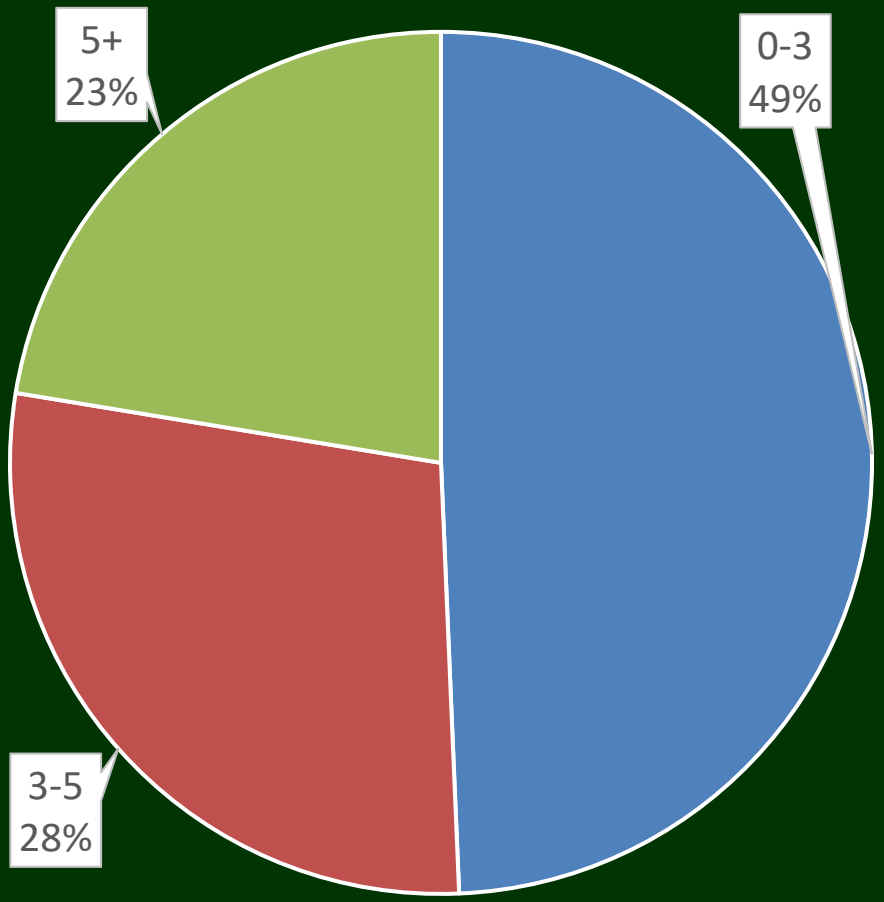
State	Required reporting of harvest?	Methods offered for reporting harvest	Time to report harvest?
Illinois	Yes	Online, phone, check station	Day of harvest by 10 pm
Indiana	Yes	Online and phone	48 hours after harvest
Iowa	Yes	Online, phone, mobile app, text	Day after harvest/recovery by midnight
Kentucky	Yes	Online and phone	Day of harvest by midnight
Minnesota	Yes	Online, phone, vendor	48 hours after harvest and prior to processed
Missouri	Yes	Online, phone, mobile app	Day of harvest by 10 pm
New York	Yes	Online, phone, mobile app, postcards	7 days after harvest
Ohio	Yes	Online, phone, mobile app	Day after harvest by noon
Pennsylvania	Yes	Online, phone, mobile app, postcard	10 days after harvest
Wisconsin	Yes	Online, phone, mobile app	Day after harvest by 5 pm

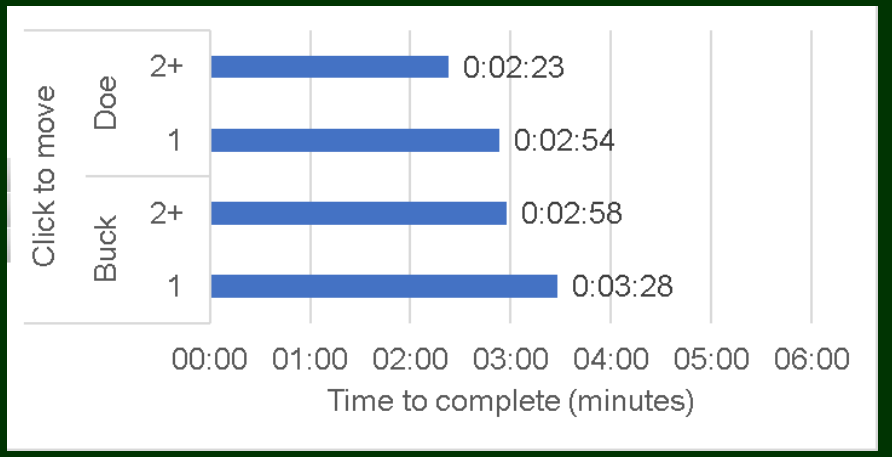
Michigan's Harvest Reporting

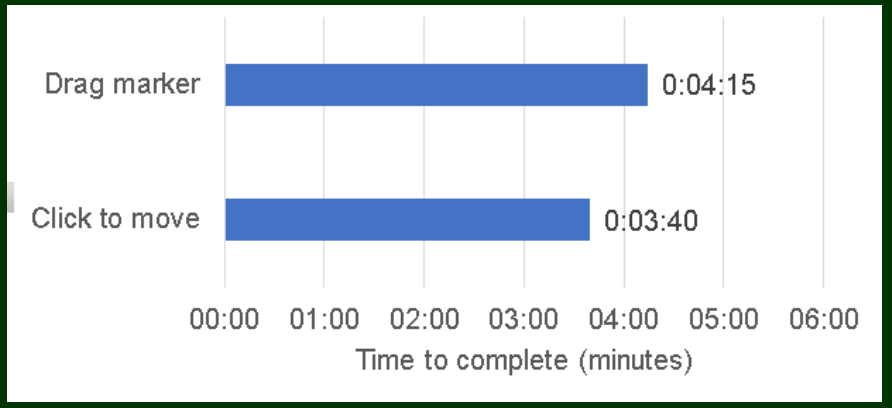
- Online harvest reporting
  - Mobile app in development
  - Assistance with harvest reporting is permitted
  - Emphasis on developing partnerships to assist with harvest reporting
- 72-hour window to report harvest
  - Commitment to partnerships and assistance with reporting, like at CSC's
    - Longer reporting times associated with reduced compliance in other states

First Year's Data

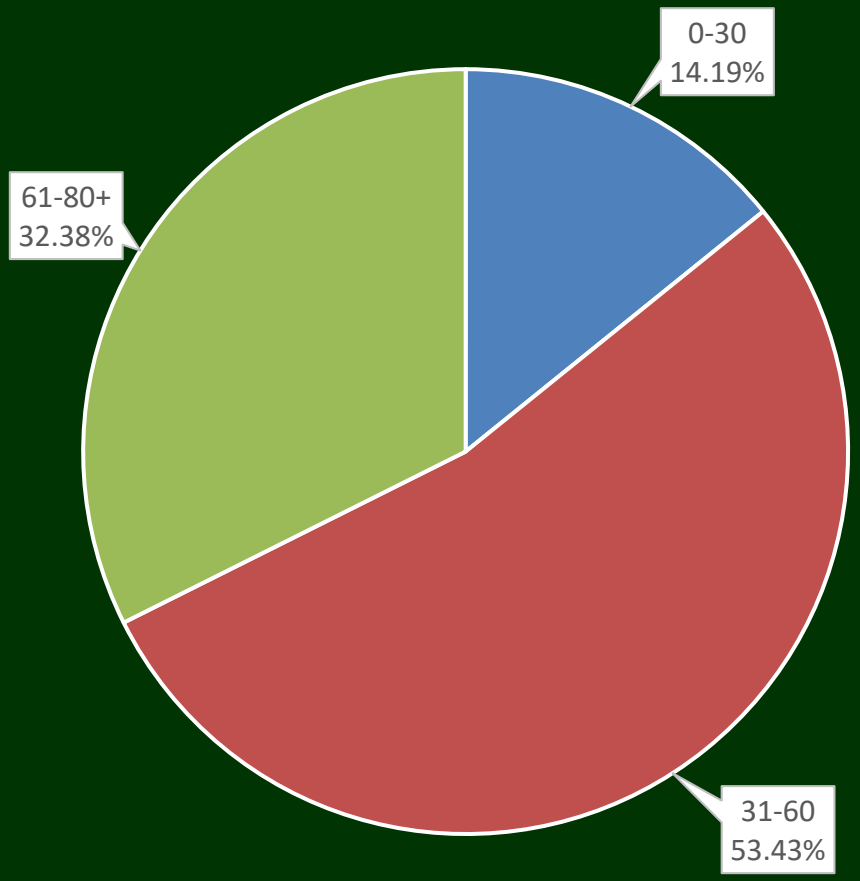
Minutes Per Report



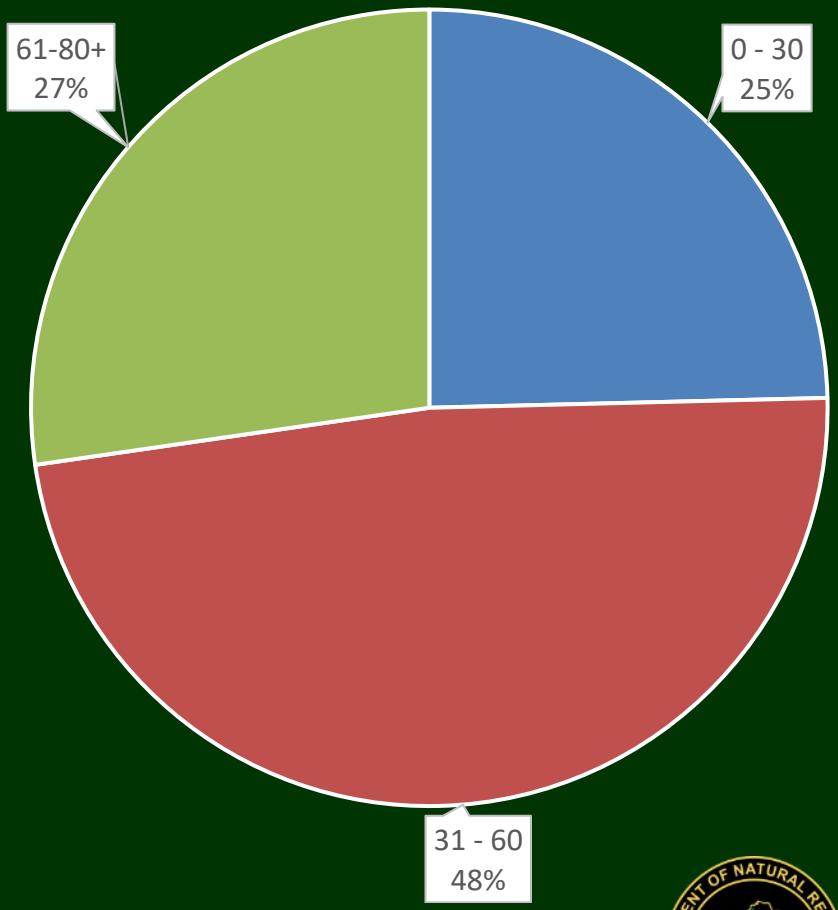




Harvest Reports Submitted by Age



Deer Customers by Age



Dashboard

2021-2022 Deer Harvest Report Dashboard DRAFT

To report your harvest, visit michigan.gov/dnrharvestreport

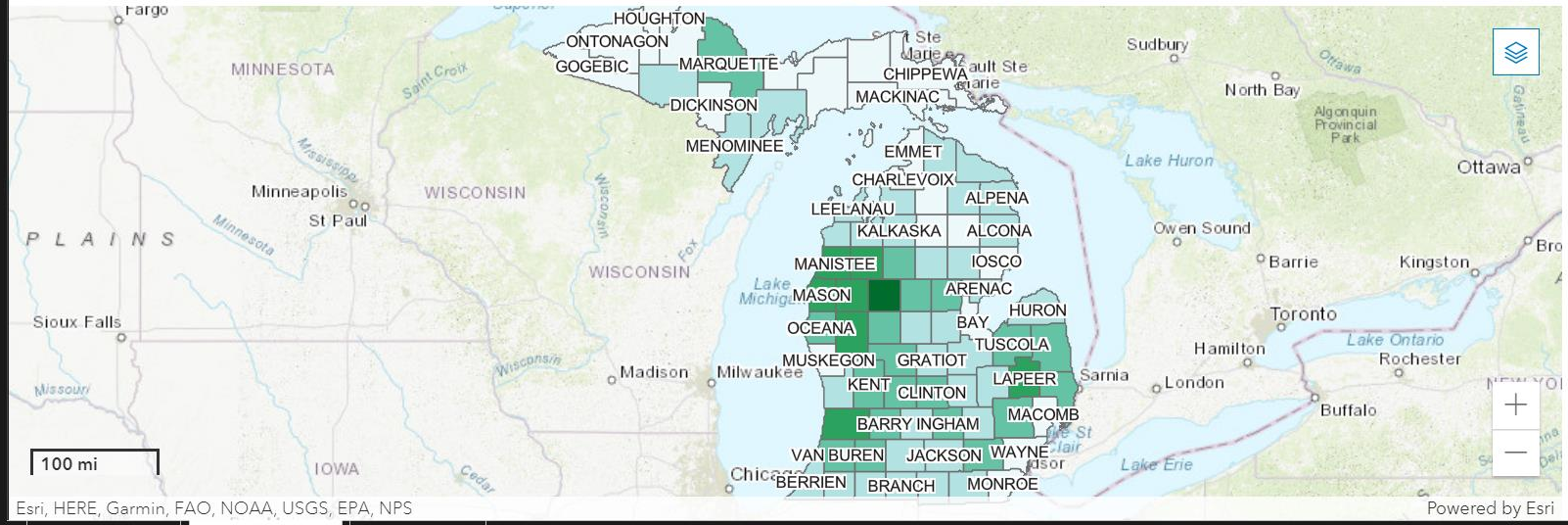
Select Deer Type
All

Go to a simpler, phone-friendly dashboard

Deer Harvest Total: 6,861

Total regular deer: 6,839
Total DMAP Deer: 22

Total harvest by county



County Data | County Map | DMU Data

Dashboard

2021-2022 Deer Harvest Report Dashboard DRAFT

To report your harvest, visit michigan.gov/dnrharvestreport

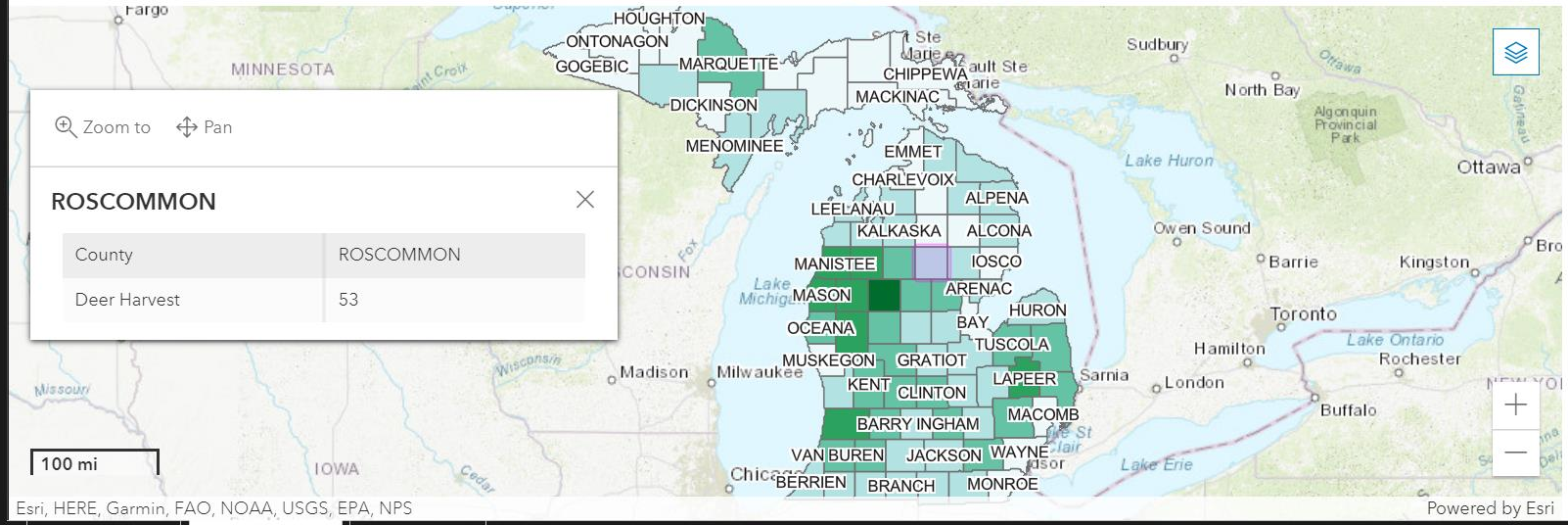
Select Deer Type
All

Go to a simpler, phone-friendly dashboard

Deer Harvest Total: 6,861

Total regular deer: 6,839
Total DMAP Deer: 22

Total harvest by county



County Data | County Map | DMU Data

Thank You

www.michigan.gov/deer