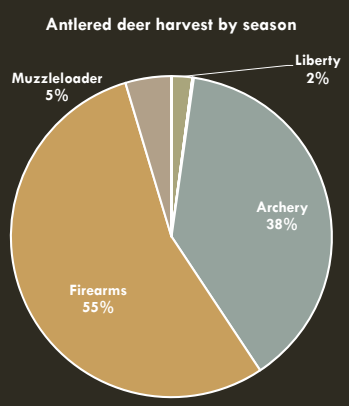
DEER REGULATIONS

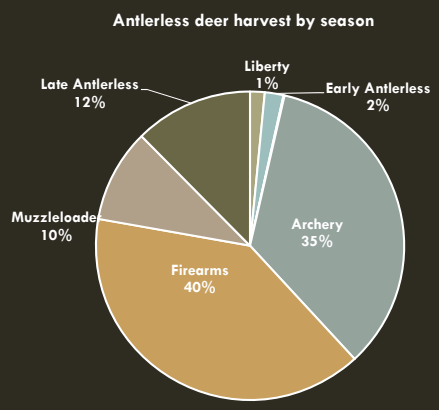
NRC Meeting
May 9, 2018

LENGTH OF SEASONS

SEASON IMPACT AND LENGTH

2016 antlered/antlerless harvest by season





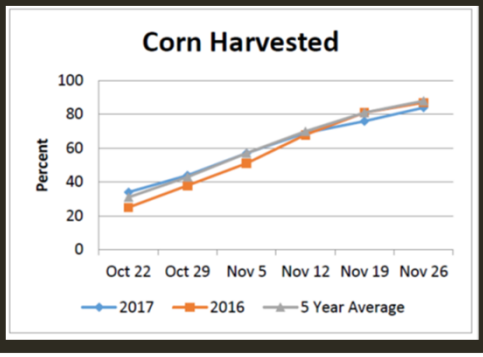
Michigan Deer Harvest 2000-2016

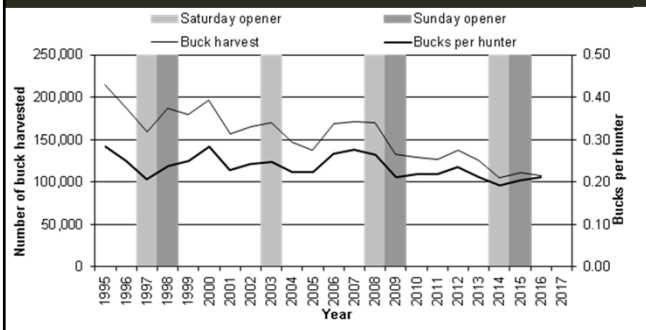
Year	Antlered	Antlerless	Total Harvest
2000	285,911	248,463	534,374
2001	235,271	222,718	457,989
2002	241,304	230,573	471,877
2003	254,473	240,772	495,245
2004	229,654	222,151	451,805
2005	218,057	195,554	413,611
2006	265,711	184,962	450,674
2007	267,429	209,166	476,595
2008	248,533	232,105	480,638
2009	215,120	220,916	436,036
2010	212,341	199,958	412,299
2011	212,791	203,930	416,721
2012	222,640	191,364	414,004
2013	203,057	175,737	378,794
2014	178,228	144,139	322,367
2015	191,608	137,073	328,681
2016	196,233	145,054	341,287

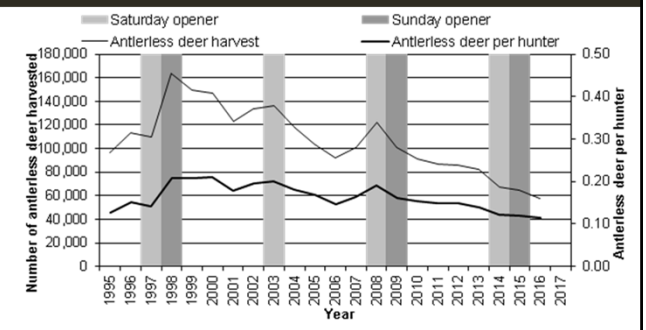
POTENTIAL SEASON CHANGES

Considering changes to Firearms season

- November 15

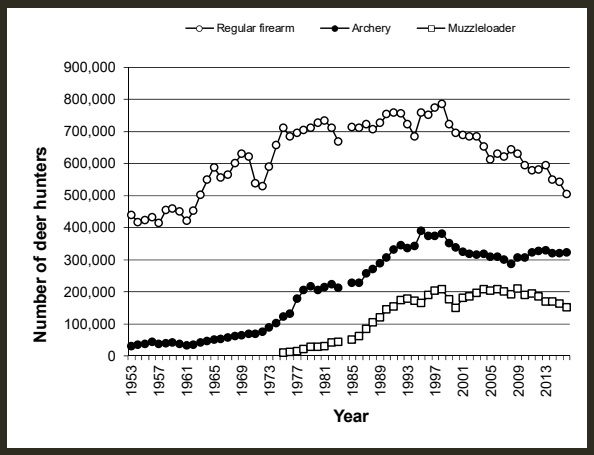






POTENTIAL SEASON CHANGES

Options for adjustments to Muzzleloader/Independence Hunt



Number of deer harvested in each season of the 2016 Michigan deer hunting season.

Season	Number of deer harvested		
	Antlered	Antlerless	Total
Liberty	**4,113**	**2,227**	**6,339**
Early Antlerless	**0**	**2,840**	**2,840**
Independence	**270**	**142**	**412**
Archery	**75,438**	**50,103**	**125,541**
Firearms	**107,329**	**57,513**	**164,843**
Muzzleloader	**9,083**	**14,195**	**23,278**
Late Antlerless	**0**	**18,035**	**18,035**
Total	**196,233**	**145,054**	**341,287**

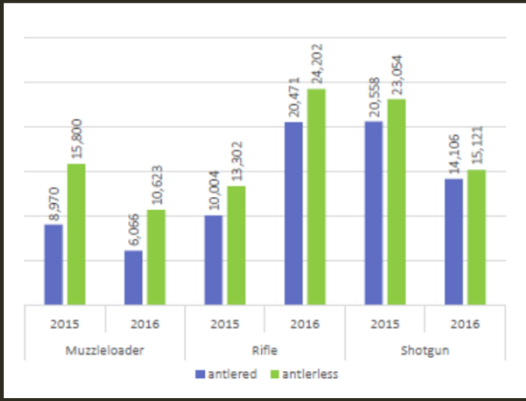
POTENTIAL SEASON CHANGES

Expanding equipment opportunity (IN)

Equipment	Number of deer harvested (% of total harvest)						
	2011	2012	2013	2014	2015±	2016±	% Difference 2015 vs 2016
Bow	26,715 (21%)	27,580 (20%)	24,288 (19%)	22,375 (19%)	20,320 (16%)	17,014 (14%)	-16.27
Shotgun	54,683 (42%)	51,815 (38%)	46,458 (37%)	41,947 (35%)	43,612 (35%)	29,227 (24%)	-32.98
Muzzleloader	33,571 (26%)	29,488 (22%)	24,935 (20%)	23,657 (20%)	24,770 (20%)	16,689 (14%)	-32.62
Handgun	1,028 (1%)	1,086 (1%)	937 (1%)	844 (1%)	917 (.7%)	604 (.5%)	-34.13
Rifle	11,930 (9%)	17,827 (13%)	18,846 (15%)	19,527 (16%)	23,306 (19%)	44,673 (37%)	91.68
Crossbow	1,091 (1%)	8,452 (6%)	10,171 (8%)	11,723 (10%)	11,844 (9%)	11,270 (9%)	-4.85
Total	129,018	136,248	125,635	120,073	124,769	119,477	-4.24

*Values within this table do not exactly equal those tallied by season (Table 1) due to the fact that multiple equipment types can be used during the firearm season.

±Totals include State Park Reduction Hunts



Data supplied by Indiana Department of Natural Resources

POTENTIAL SEASON CHANGES

Data from 8-day January CWD hunt indicates ~300 deer harvested across 14 open townships

- Translates to about ~0.6 deer per square mile

Approximately 74% of harvest was female

Approximately 84% of the harvest was antlerless (includes button bucks)

ANTLERLESS QUOTAS

DEER BIOLOGY AND MOVEMENT

Rural Southern Michigan

- Generally higher fawn survival relative to northern deer
- Dispersal distances longer in fragmented habitats vs contiguous habitats
- Migratory behavior/yarding behavior apparent, though less than northern deer

DEER BIOLOGY AND MOVEMENT

Urban Southern Michigan

- Tendency for smaller home ranges than rural counterparts
- Generally increased survival than rural counterparts
- Tendency for increased deer densities

DEER BIOLOGY AND MOVEMENT

Upper Peninsula Michigan

- Generally lower deer densities
- Increased volatility in year to year survival
- Increased migratory distances

RISK OF OVERHARVEST?

Understand the relationship between deer hunter effort and declining deer density*

- Accelerating effort for deer hunters likely hinders agency efforts to reduce overabundant deer populations
- Potential source of hunter perceptions of unrealistically reduced deer herds

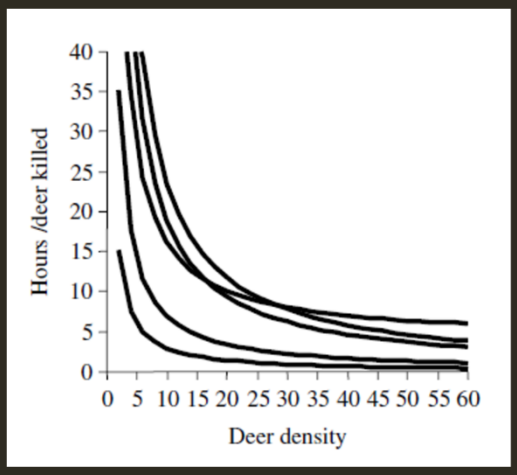


Image from Van Deelen and Etter 2003

* Van Deelen and Etter 2003

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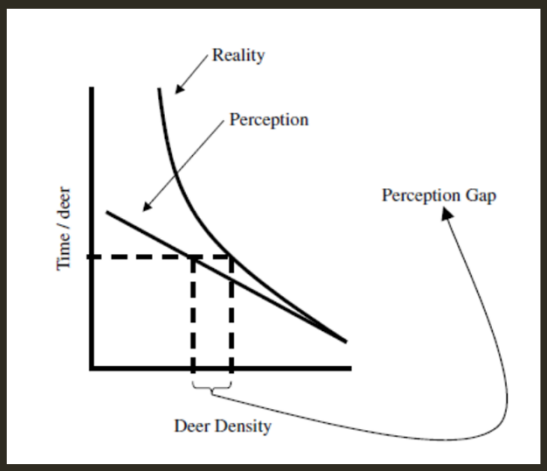
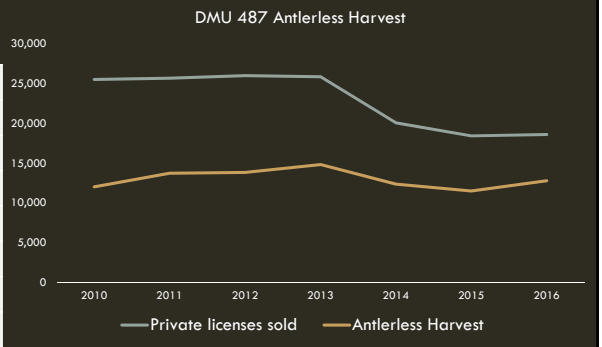


Image from Van Deelen and Etter 2003

* Van Deelen and Etter 2003

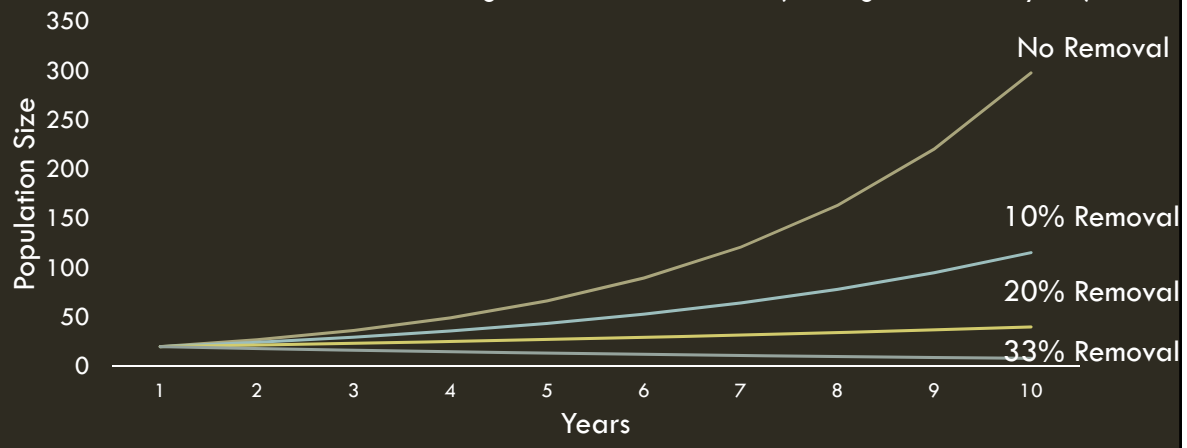
ANTLERLESS HARVEST WITH UNLIMITED LICENSES

Year	DMU	Quota	Private licenses sold	Antlerless Harvest	Buck Harvest
2010	487	72,100	25,528	12,017	9,904
2011	487	72,100	25,685	13,735	13,519
2012	487	30,000	26,010	13,836	13,532
2013	487	30,000	25,875	14,825	15,357
2014	487	30,000	20,072	12,356	13,896
2015	487	30,000	18,432	11,505	15,264
2016	487	30,000	18,611	12,788	15,449

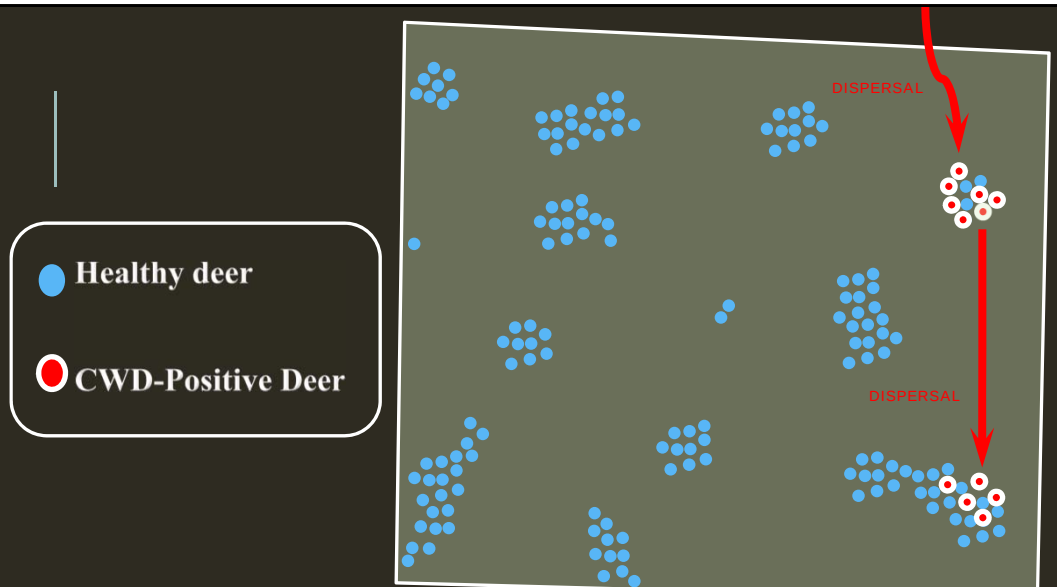


HOW MANY DOES TO REMOVE?

Doe harvest needed with growth rate of λ=1.35 (35% growth each year)



Adapted from Dr. Bronson Strickland, Mississippi State University



INCREASED HARVEST→REDUCED CWD?

HISTORIC HARVEST IN AFFECTED AREAS (STATEWIDE RANK)

Antlered	Montcalm	Mecosta	Newaygo	Kent	Ionia
2013	4642 (4)	4434 (6)	5102 (2)	4088 (8)	2901 (28)
2014	5258 (1)	3655 (8)	5029 (2)	4249 (4)	2512 (31)
2015	5710 (1)	4335 (5)	4545 (4)	3645 (13)	2894 (27)
2016	5486 (2)	4407 (5)	5800 (1)	4172 (7)	2718 (27)
2017					

Antlerless	Montcalm	Mecosta	Newaygo	Kent	Ionia
2013	4473 (2)	3466 (12)	4374 (4)	3732 (9)	2590 (28)
2014	4382 (1)	2929 (10)	2697 (14)	3200 (7)	2409 (24)
2015	4278 (1)	2400 (22)	2978 (10)	2852 (13)	2315 (24)
2016	4777 (1)	2693 (17)	3791 (4)	3693 (7)	2139 (31)
2017					

AERIAL SURVEYS

Provides population estimate

Important in understanding localized distribution of deer in CWD areas

- Can better inform management decisions and impacts
- Tested this year with preliminary results pending

Survey routes established in Montcalm and parts of Kent/Mecosta

- Results forthcoming (small sample size)
- Increased effort planned for future years

ANTLER POINT RESTRICTIONS

DATA FROM NORTHWEST 12

Established in 2013 after survey supported implementation

Reevaluated in 2017 with sunset clause removed after survey showed 77% support

Analyzed by Boone and Crockett Quantitative Wildlife Center, Michigan State University

- Yearling buck harvest trends
- Antlerless harvest
- Hunter retention

Antler Point Restriction Research

Rebecca Cain, Dr. David Williams, Dr. William Porter

Boone and Crockett Quantitative Wildlife Center at
Michigan State University

Research Question

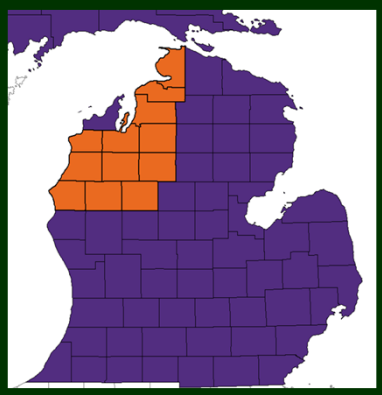
How have harvest outcomes changed in the NW12 since APR implementation?

MDNR request for statistically rigorous answers

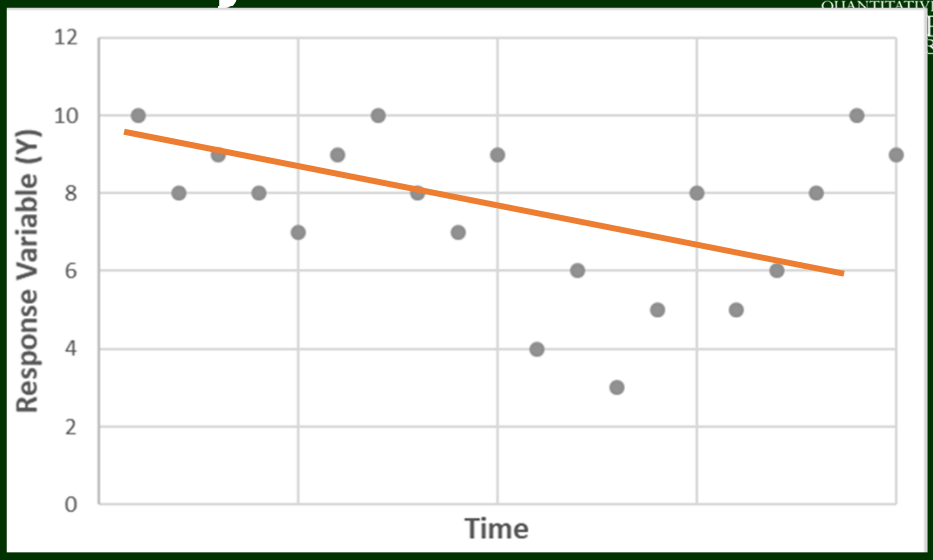
Harvest data gathered for NW12 counties

NW12 is an Experiment

- it is possible to test hypotheses using harvest data



Trend Analysis



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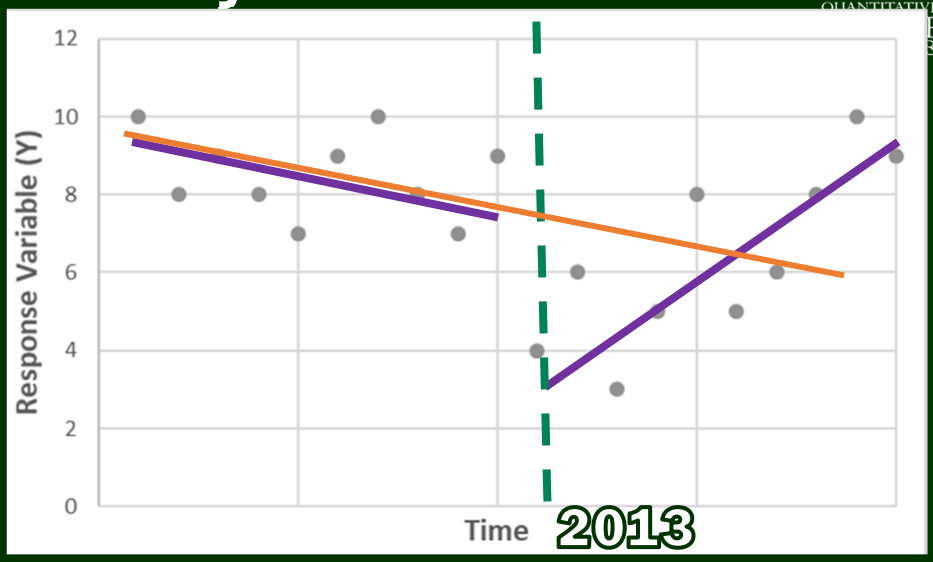


Research Findings

Data support the hypothesis that APR caused a decrease in harvest of 1.5 year old males

- The proportion of 1.5 year olds in the male harvest decreased leading to a greater proportion of the 2.5 and 3.5+ age classes in the male harvest

Research Findings

Data from the NW12 do not support the hypothesis that APRs caused an increase in antlerless harvest.

- Harvest data provide evidence for a change in antlerless trends in 2007 and suggest that the antlerless population has been increasing since 2007.

Research Findings

Data from the NW12 do not support the hypothesis that APRs caused an increase in hunter numbers where implemented

- Harvest survey data in the NW12 suggest a decline in hunter numbers
- This decline was similar to the rate of the decline hunter numbers in surrounding 12 counties

Summary

Question: How have harvest outcomes changed in the NW12 after APR implemented?

Method: 2-Part Trend Analysis

Hypothesis	Supported by Data?
Decreased harvest of male yearlings*	Yes
Increased antlerless harvest	No
Increased number of hunters	No

*Over the 4 years of APR management, numbers of 1.5 yr old males in the harvest decreased, 2.5 yr old males in the harvest were stable while numbers of 3.5+ yr old males in the harvest increased.

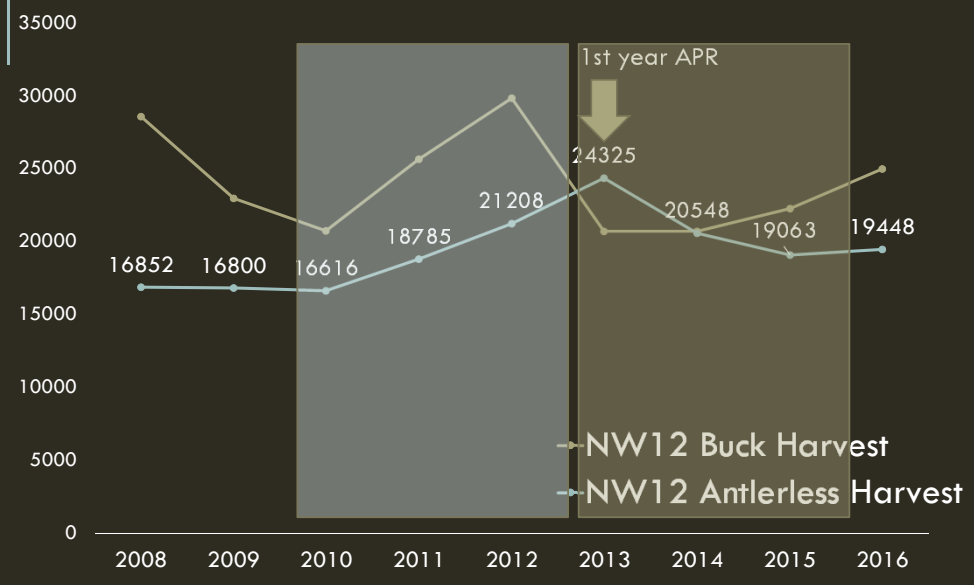
Thank you

HARVEST DATA (AS PRESENTED IN MAY 2017)

Antlered Deer	2010-2012 Average	2013-2015 Average	Difference
DMU 487	12,318	14,839	20.46%
Not Restricted	26,653	26,045	-2.28%
NW 12	25,380	21,203	-16.45%

Antlerless Deer	2010-2012 Average	2013-2015 Average	Difference
DMU 487	13,196	12,895	-2.28%
Not Restricted	24,241	20,260	-16.42%
NW 12	18,870	21,312	12.94%

NW12- YEAR BY YEAR DATA



SPECIAL LICENSES/DISCOUNTS

IMPACT OF PREVIOUSLY DISCOUNTED LICENSES

DNR offered discounted licenses in 5-county TB affected area ($3.50)
- Also dramatically expanded licenses and seasons

Initial response for increased antlerless harvest waned over time
- 2002 lapsed hunter survey showed 28% hunt elsewhere while 26% felt deer numbers were too low

Hunter harvest exceeded 50% antlerless deer in 1998-99
- SAK showed decreasing deer populations

Hunter harvest now falls short of 50% antlerless deer
- Trends showing increasing population

DISEASE CONTROL PERMITS

Original application for removal of deer in close contact with livestock in TB endemic area

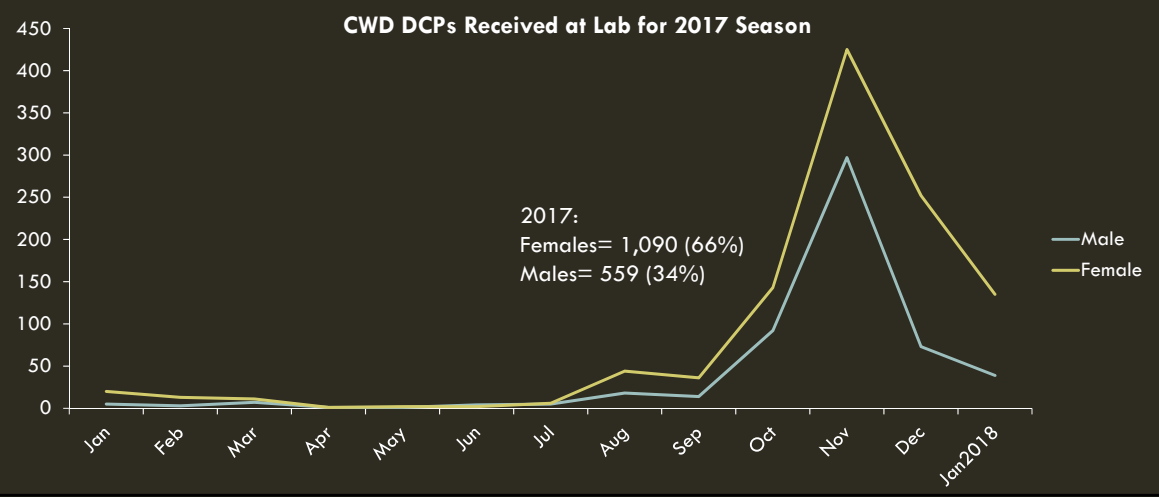
Free permits issued in CWD areas since 2015

Impacts on population reduction?

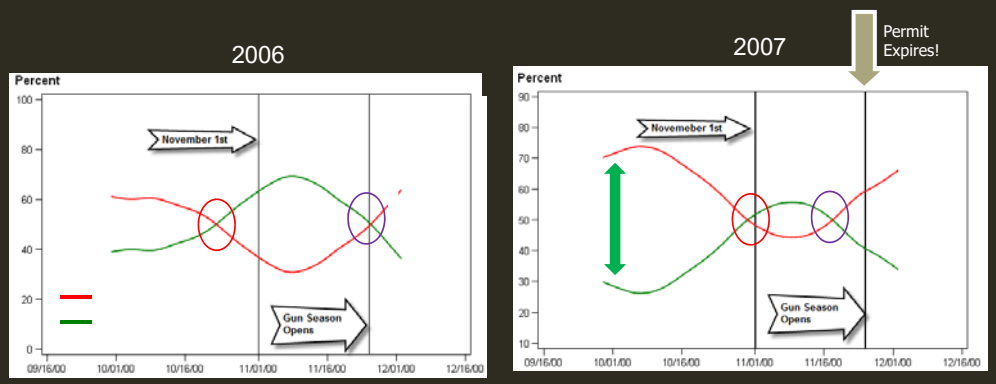
Applicability over a large area
- Impact on overall harvest?
- Impact on license sales?

DISEASE CONTROL PERMITS

Of 1,089 Landowners in 2017:
-25% purchased antlerless licenses
(92% previously purchased in 2015 or 2016)
-75% did not buy antlerless licenses
(55% previously purchased in 2015 or 2016)



EXPIRED ANTLERLESS LICENSES (OH)



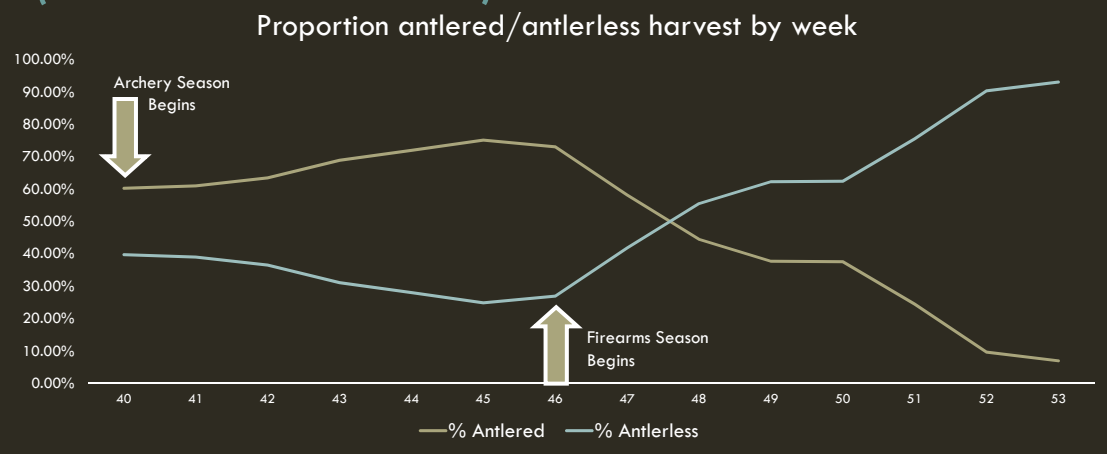
Harvest shifts back to **ANTLERLESS** deer 7-10 days earlier than it did in 2006

Notice in 2007 that the harvest composition remains dominated by antlerless deer for an additional 2 weeks!

Notice in 2007 how the harvest shifts back to antlerless deer ahead of the expiration date of the permit. Notice that in 2006 that the shift didn't occur until the gun season opened.

Notice the height difference in the curves in 2007.

MICHIGAN HARVEST COMPOSITION (CHECK STATION DATA)



HARVEST INCENTIVES/BAG LIMITS

ONE BUCK RULE

Michigan-historically ~4% of hunters report harvesting a second buck

Indiana

- Transition from 2 bucks to 1 buck (2002)
- 2 bucks split by season
  - 1 archery
  - 1 firearms/muzzleloader
- Minimal impact on antlered harvest
- Unknown impact on antlerless harvest given other variables

Table 5. Sex and age structure of the Indiana deer harvest between 1987-2013, as determined from check stations and online registration.

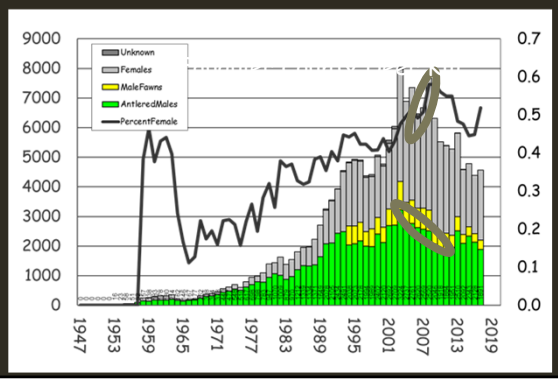
	Adults		Fawns		
Year	Males (%)	Females (%)	Males (%)	Females (%)	Total
1992	43,508 (46)	25,387 (27)	14,262 (15)	12,157 (13)*	95,314
1993	44,424 (44)	27,704 (27)	14,751 (15)	14,335 (14)*	101,214
1994	50,812 (45)	32,466 (29)	15,487 (14)	13,651 (12)*	112,416
1995	47,098 (40)	40,946 (35)	16,398 (14)	13,287 (11)*	117,729
1996	47,315 (38)	39,913 (32)	17,307 (14)	18,551 (15)*	123,086
1997	42,537 (41)	35,163 (34)	14,039 (13)	13,198 (12)*	104,937
1998	44,955 (45)	30,711 (31)	12,257 (12)	12,538 (12)*	100,461
1999	46,371 (46)	30,474 (31)	11,645 (12)	11,129 (11)*	99,618
2000	44,621 (45)	31,986 (32)	11,072 (11)	11,046 (11)*	98,725
2001	48,357 (47)	31,806 (31)	11,230 (11)	11,770 (11)*	103,163
2002	**47,177 (45)**	**35,357 (34)**	**11,291 (11)**	**10,603 (10)***	**104,428**
2003	49,533 (46)	36,303 (34)	10,262 (10)	10,887 (10)*	106,986
2004	54,743 (44)	41,749 (34)	12,501 (10)	14,065 (11)*	123,058
2005	52,488 (42)	44,286 (35)	13,030 (10)	15,722 (13)*	125,526
2006	49,097 (39)	45,257 (36)	13,688 (11)	17,339 (14)*	125,381
2007	49,375 (40)	44,514 (36)	13,313 (11)	17,225 (14)*	124,427
2008	50,845 (39)	46,666 (36)	13,083 (11)	19,154 (15)*	129,748
2009	52,878 (40)	48,222 (36)	13,040 (10)	18,291 (14)*	132,431
2010	53,007 (40)	49,911 (37)	13,367 (10)	17,719 (13)*	134,004
2011	50,717 (39)	45,931 (36)	13,058 (10)	19,312 (15)*	129,018
2012	45,936# (34)	54,983 (40)	15,911 (12)	19,418 (14)*	136,248
2013	46,240# (37)	46,229 (37)	14,100 (11)	19,066 (15)*	125,635

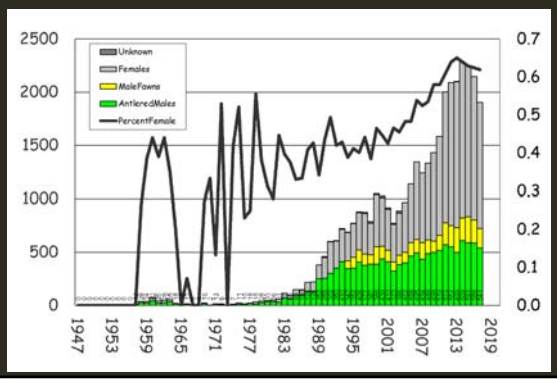
EARN-A-BUCK

Wisconsin (Earn-A-Buck)

- Adopted EAB in 2003 shortly after establishing CWD Eradication Zone
- Wisconsin Act 50 (2011) prohibited Earn-A-Buck from future implementation

Virginia (Earn A Second Buck)





BAITING AND FEEDING

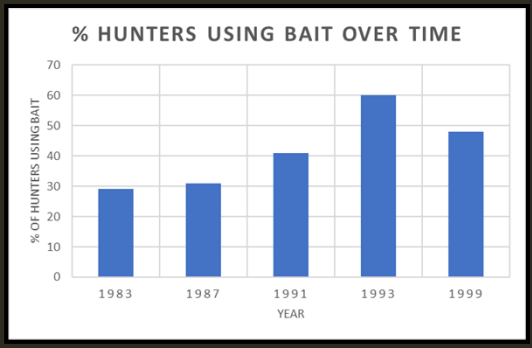
BAITING AND FEEDING DEFINED

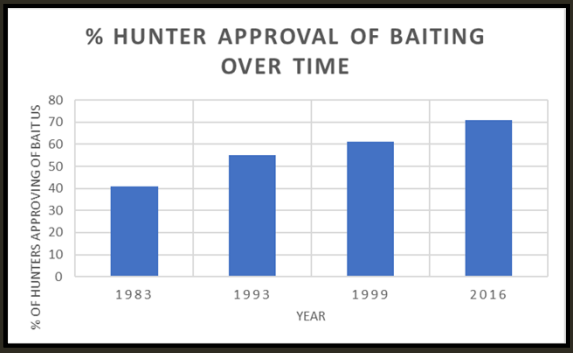
- Baiting and feeding defined
  - WCO 3.100 & MCL 324.40102
- Purposes for supplemental feeding and baiting
- Rules for baiting in Michigan
  - WCO 3.100

BAITING IN MICHIGAN

- Baiting popularity
  - Increased substantially since 1980s—71% approve of bait use
  - More common among bowhunters than firearm hunters
  - More common in the UP than in the rest of the state
- Hunter-reported reasons for baiting
  - 72% report it's more exciting because they can watch more deer
  - 63% reported that they do it because they believe they have a better chance to harvest a deer over bait

BAITING IN MICHIGAN





BAITING AND HUNTER HARVEST LEVELS

- Little evidence of impact on overall harvest
  - Negligible impact on overall harvest in MI, WI
  - Negative impact in SC across 7 years of data
  - Positive impact in Greenwich, CT for bowhunters in urban context for population control
- Once CWD established, research suggests that its spread may not be halted through hunter harvest

BAITING, FEEDING, AND CWD

- Risks associated with congregating wildlife
  - Probability of direct contact, contaminating food source, contaminating environment
- Hypothesis that disease immunity may be higher with supplemental feeding not supported
- Management practices aimed at increasing carrying capacity (e.g., feeding) cause diseases to persist and spread and are expected to do so in the case of CWD

HUNTER RESPONSE TO BAITING BANS

- Studies show support for baiting bans when herd health jeopardized
  - Support for management actions based on perceived effectiveness of those actions
  - Importance of public involvement in decision making
    - Wisconsin example

HUNTER RESPONSE TO BAITING BANS

- Changes in hunter behavior in response to baiting bans in NELP for bTB
  - 50% of bowhunters and 31% of firearm hunters in the reported hunting less because of the baiting ban, 22% stopped hunting in the area altogether
  - Survey of hunters who purchased antlerless licenses in 1998 but did not in 2001 after the ban was established, only 20% reported the ban contributed to decision
  - Declines in antlerless harvest and firearm season participation in bTB area similar to statewide declines

BAITING AND FEEDING MANAGEMENT OPTIONS

- Options discussed
  - Status quo
  - Working group recommendations
  - Single bite bait
  - Expand baiting ban
- Alternative methods of provisioning food or limits on food amounts do not eliminate risk

BAITING AND FEEDING: SUMMARY & CONSIDERATIONS

- Baiting is popular and has economic value
- Evidence suggests baiting increases disease risk through congregation of deer
- Little evidence for baiting increasing overall hunter harvest
- Bans may impact hunters differently due to geography or method of take

REDUCING DEER DENSITIES: ALTERNATIVES TO HUNTER HARVEST

CWD MANAGEMENT

- In some areas (including Michigan), increasing localized deer harvest (and in effect reducing deer densities) has proven effective at maintaining low prevalence of CWD.
- Simulated models have demonstrated that reducing prevalence of CWD can be achieved through harvesting specific sex and age classes of deer (selective harvest).

CWD MANAGEMENT

- Recreational hunting alone typically is not effective at reducing and maintaining lower deer densities over time.
  - Hunter satiation
  - Hunter selection
- Professionals continue to remove targeted sex and age classes of deer even as densities are substantially reduced.

SAMPLE COLLECTION

- In some areas (including Michigan), samples collected by culling have proven more effective than hunter harvested samples for detecting CWD positive deer.

PROS AND CONS

- Meeting harvest and sampling goals and objectives
  - Additional data collection
- Access
- Public and stakeholder acceptability
- Cost

THANK YOU