
A Comprehensive Review of Michigan's APR/CWD Experiment

The Concerned Sportsmen of Michigan

Jim Sweeney – February 2021

TABLE OF CONTENTS

Overview	Pg. 2
Experiment Origin	Pg. 2
Experiment Methodology	Pg. 4
Methodology Problems	Pg. 5
Limited Baseline	Pg. 5
Disease Control Permit Bias	Pg. 5
CWD Testing Availability Bias	Pg. 7
Stakeholder Influence	Pg. 7
Underlying Hypothesis	Pg. 8
CWD Gender & Age Variability	P. 13
Adverse Impacts	Pg. 14
Increased Dispersal	Pg. 15
Increased Buck Age Structure	Pg. 16
Mitigation	Pg. 18
DNR Established Harvest Goals	Pg. 19
Possible Alternatives	Pg. 21
Proposed Amendment	Pg. 23
Conclusion	Pg. 23

OVERVIEW

The APR/CWD experiment is a highly controversial study currently being conducted in the core Michigan CWD zone, by the Boone & Crockett Quantitative Research Center of Michigan State University in conjunction with the Michigan Department of Natural Resources (MDNR). Since its inception, concerns have been raised regarding the potential of the experiment causing an adverse biological impact to Michigan's White-tailed deer resource, by facilitating conditions which increase the spread and prevalence of Chronic Wasting Disease (CWD).

Prior to the initiation of this experiment, there was extensive discussion and generally mutual agreement among both supporters of mandatory Antler Point Restrictions (APR's) and opponents of the experiment, of the necessity of building certain safeguards into the methodology of the APR/CWD experiment, in order to mitigate the damage to the resource resulting from the implementation of APR's in a known CWD area. The NRC recognized this necessity, when they authorized this experiment, by including language requiring that annual antlerless harvest goals be met for the continuation of the experiment. Unfortunately, the NRC left the specifics of those antlerless goals to the discretion of the DNR.

Because of the nature of their design the harvest goals established by the DNR do not insure the mitigation of adverse impacts resulting from APR's in areas where disease is a known factor. This has resulted in the experiment creating conditions which are exacerbating the CWD situation in the core zone by increasing both the prevalence and spread of CWD in Michigan. At the request of a number of stakeholders, in recent months the NRC has taken another look at the APR/CWD experiment and there has been discussion about either terminating the experiment, due to the continuing adverse impact, or modifying the included safeguards, which would help mitigate the adverse impact, as had originally been intended.

EXPERIMENT ORIGIN

Mandatory Antler Point Restrictions have been a controversial topic in Michigan for the past twenty years. APR's are popular among many deer hunters, due to their influence in increasing the number of older bucks in the herd with larger antlers. For many years MDNR and the NRC viewed APR's as a social, not a biological, issue. In 2002 the NRC established the stakeholder APR program, which allows proponents of mandatory APR's in specific DMU's, to initiate a process culminating in a DNR conducted survey of hunters who hunted in the area designated in the proposal. Under the guidelines adopted by the NRC, APR's are recommended by the department in a specified area if 66% or two-thirds of survey recipients support their implementation, subject to final approval by the NRC.

Between 2002 and 2019 there have been approx. 20 stakeholder APR initiative surveys conducted in Michigan, some limited to single counties or DMU's and others encompassing large portions of the State. Seven of these surveys have passed and thirteen have failed. To date all of the initiatives which have occurred in the SLP, where the required APR would be 4 pts, have failed with none of them gaining more than 55% support in the required survey.

In 2014 two stakeholder APR initiatives occurred (NLPDMI & SLPDMI) which, when combined, would have encompassed almost all of the Lower Peninsula. Both of these initiatives failed, causing stakeholder groups sponsoring these initiatives to become increasingly frustrated with the Stakeholder APR process.

The issue was further complicated in 2015 with the emergence of chronic wasting disease in the free ranging deer herd in the Southern Lower Peninsula. With the emergence of CWD in Michigan, APR's became a biological, not a social issue. A number of other states, including Missouri and Minnesota, have removed APR's in areas where CWD has been detected, due to the fact that APR's create conditions that exacerbate efforts to control the spread of CWD. At the time CWD was detected in the free ranging deer herd, based on prevailing science, focused harvest of yearling bucks was part of the MDNR CWD response plan. This is the polar opposite of what occurs under APR's, where most yearling bucks are protected from harvest.

Pro-APR stakeholder groups seeking statewide mandatory APR's realized that with the advent of CWD in Michigan their vision was rapidly slipping away. In 2016 a stakeholder APR initiative was slated for the Thumb area but the NRC put that initiative on hold due to the emerging CWD issue, due to the recognized biological threat that APR's pose.

APR proponents came to the realization that, in light of the CWD situation, expanding APR's would have to occur outside of the normal stakeholder APR process by pressuring the NRC to directly implement APR's.

In 2018, leaders from several pro-APR stakeholder groups participated in a "smoke filled backroom" meeting, in conjunction with at least one pro-APR NRC Commissioner and several senior DNR officials. The plan resulting from this meeting focused on establishing APR's in the CWD zone, as a means of furthering the eventual implementation of APR's on a statewide basis, outside of the stakeholder APR program. In addition to the proposed APR/CWD experiment, the plan included a DNR conducted APR hunter survey in the CWD zone, designed to demonstrate the popularity of APR regulations. The strategy was to first get APR's implemented in the CWD zone, under the guise of scientific research targeting CWD, with the anticipation that after being in place for several years APR's would prove so popular among hunters, that the NRC would be reluctant to remove them. If the results of the experiment were ambiguous, the experiment could still be deemed a "success" based on the hunter popularity and that "success" could be leveraged to exert pressure on the NRC to expand APR's the rest of the state.

This unorthodox approach to policy development was the genesis of the APR/CWD experiment. The plan which emerged from that "smoke filled backroom" meeting was introduced by the Chairman of the NRC's Wildlife Subcommittee, as a series of "resolutions", at the August, 2018 NRC meeting. Typically, wildlife regulations are enacted by amending the Wildlife Conservation Order. Resolutions passed by the NRC are simply position statements; they carry no force of law and as such are rarely used. In apparent disregard of the NRC's transparency policy, the content of these resolutions was not shared

with most of the Commission, nor the public, affording opponents the opportunity to comment, prior to meeting at which they were introduced and passed.

Despite the fact that the resolution regarding the APR/CWD statement was simply an NRC policy statement, the DNR moved forward with the experiment prior to obtaining final NRC approval, as if it had already been approved by the NRC. The department expended funds on camera equipment, negotiated site locations with private stakeholders and devoted substantial division staff hours to setting up the experiment during the winter and spring of 2019. During the public discussions leading up to the final NRC approval for the APR/CWD experiment, those expenditures were used to justify the need for approval, the argument being that funds had already been expended by the department (despite the experiment not being approved by the NRC) thus resulting in a waste of resources, should approval be withheld.

The resolutions, which were ultimately approved by the NRC after lengthy debate, called for the establishment of a "CWD assessment zone" in which a study would take place to assess the effectiveness of APR's and other regulations "on the prevalence and spread of CWD, increasing antlerless harvest and decreasing deer populations."

Neither the resolutions, nor the ensuing experiment, originated with the DNR or the Wildlife Division. This policy was conceived of by private stakeholder groups and then adopted by the NRC, with the semblance of contributing to CWD research. The DNR has flatly stated that the proposed experiment will not provide any data which could be used to assess impacts on the spread and prevalence of CWD. As a result this experiment is limited to an assessment of whether or not APR's will influence hunter harvest decisions, resulting in a sustained increase in antlerless harvest and possible demographic changes resulting thereof.

EXPERIMENT METHODOLOGY

The experiment involves several components. Five counties are included in the experiment, Newaygo, Kent, Mecosta, Montcalm & Ionia. These Counties were divided into two groups, the Subject group made up of Mecosta, Montcalm & Ionia and the Control group made up of Kent & Newaygo Counties. APR's were enacted in the Subject group beginning in 2019. The Control group counties do not have APR's in place. The intent is to compare harvest data from the Subject and Control groups, to try and assess whether changes occurring in the Subject group but not in the Control group, can be attributed to APR's.

The second portion of the APR experiment is a camera study, designed to try and measure changes in the demographic make-up of the herd and changes in deer density, occurring both with and without APR's. For this part, the study employs 4 pairs of matched townships, located in Counties both within the Subject group and within the Control group. There are multiple camera sites located in each of these townships. Photo census occurs during a several week period during the summer. The original baseline data was gathered in 2019, when APR's were not in place in any of the 5 counties. The study data is then gathered during subsequent summers, with the data generated during 2020 being the first to be gathered that would potentially be influenced by APR's.

METHODOLOGY PROBLEMS

Limited Baseline – One of the inherent weaknesses of this study is the fact that it employs only a single year of baseline data, used for comparison purposes. Previous comparative analysis of the impact of APR's in Michigan have employed 3 or 5 year baseline periods, designed to flatten the substantial variation that occurs on an annual basis, making it easier to identify possible trends resulting from changes to regulations. There are a variety of variables that influence annual harvests and it is not uncommon to see annual swings of +/- 10% in specific DMU's. Using a single year of baseline data calls into question the validity of any changes which may be observed, as they are being compared to a baseline which may be anomalous.

Disease Control Permit bias – The paired townships utilized in this experiment were carefully selected based on similarities, to try and insure that the only variable which would influence the outcome was the presence or absence of APR's. The camera survey portion of this experiment is designed to measure fine scale changes in herd demographics and density, based on survey locations which are sub-section level and smaller in size. A harvest change of only several deer per sq. mile, in those sections, could impact the outcome of the camera surveys. As a result, it is vital that conditions which could influence harvest decisions remain identical in both the Subject and Control locations, to minimize the influence of variables other than APR's.

For some inexplicable reason, in 2019, the DNR decided to issue disease control permits, designed to encourage hunters to harvest additional antlerless deer, in some but not all of the townships included in the APR/CWD experiment.

APR Experiment in CWD zone

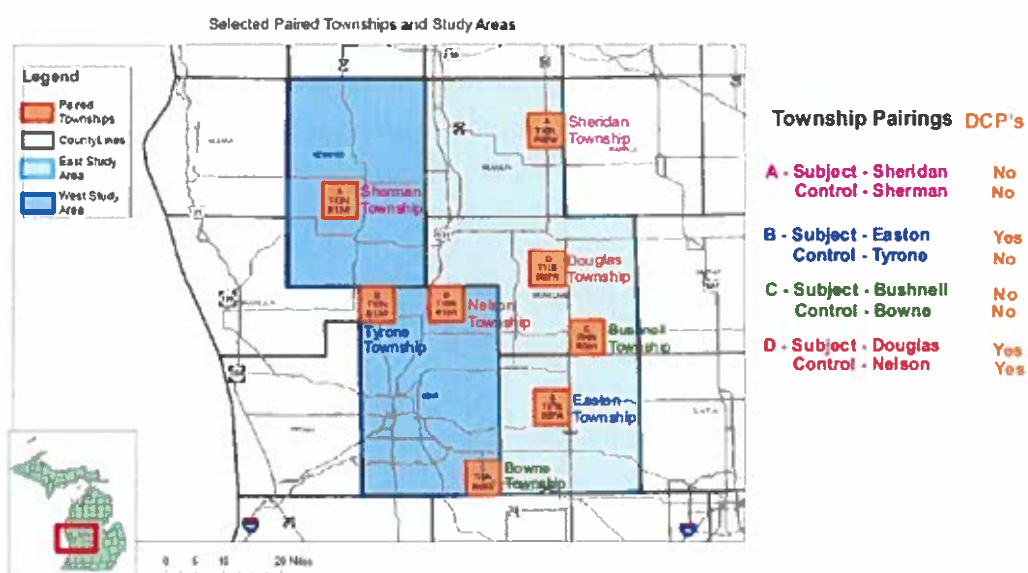


Figure 1

As indicated in Figure 1, no DCP's were made available in township pairing A, they were made available in the Subject township of pairing B but not the Control township, none were made available in either township in pairing C and DCP's were made available in both the Subject and Control townships in pairing D. This asymmetrical application of DCP's introduces another variable which could substantially impact the antlerless harvest in some but not all of the townships included in this experiment.

As an example of how DCP's might impact the antlerless harvest, in 2019, according to MDNR data obtained via FOIA request, in Douglass township, the Subject township in pairing D, there were 14 DCP's, issued for at least 15 different sections, with 80 tags issued. In comparison, in Nelson Township, the Control township in pairing D, only three DCP's were issued, for only 2 sections, with 13 tags issued. The DNR is supposed to record how many of the issued tags are filled but per my FOIA request, I was informed that this did not happen in 2019, so we don't know how many additional deer were killed on these damage permits. These DCP's are section specific, issued for use on specific properties. When asked, the DNR declined to provide the specific section locations of the experiment camera sites in Douglass township or to provide information on how many DCP's were issued for sections where cameras were located, so unfortunately there is no way to assess how large an impact may have occurred, as a result of the removal of additional antlerless deer via DCP's, on properties where the camera surveys are taking place. The only comment from the DNR was the opinion that they "didn't think that the DCP's would change the results" but provided no evidence to support that opinion.

**Disease Control Permits
Douglass Township - 2019**

Township	Section	# Tags
Douglass	12	5
Douglass	12,13	10
Douglass	18	5
Douglass	29,30	5
Douglass	5	5
Douglass	28	5
Douglass	23	5
Douglass	21,27	5
Douglass	11,14,13	10
Douglass	23	5
Douglass	9	5
Douglass	28	5
Douglass	multiple	5
Douglass	35	5
Total		80

Figure 2

The policy of issuing DCP's in the CWD zone underwent another change in 2021, when the DNR decided not to issue *any* Disease Control permits in the counties included in the APR/CWD experiment, thus creating another change in variables from year to year. In addition, DCP's had been issued in some of the study townships during 2018 potentially influencing the baseline data gathered the following summer, introducing yet another variable.

The experiment is designed to measure the impact of a single variable, APR's. By introducing another variable, DCP's, to some but not all of the townships involved in this experiment and doing so for only some of the years that the experiment is being conducted, potentially skews the results. There is no way to filter out the possible impact of DCP's and adjust the data accordingly. The unequal addition of DCP's calls into question the validity of any conclusions which may be drawn from this data set.

CWD testing availability bias –

Just prior to the 2020 deer season, the DNR announced that they had decided to largely curtail CWD sampling and were only going to offer hunters the opportunity to have their deer tested for CWD in select counties and only for the first three days of the firearms season. Of the five counties included in the APR/CWD experiment, CWD testing was only offered in Ionia, Kent & Montcalm counties but not in Newaygo and Mecosta counties. There is little doubt that the opportunity to have deer tested for CWD, particularly in counties in or close to the core CWD zone, will have an impact on hunter harvest decisions, particularly the harvest of antlerless deer. With this change, the DNR has introduced bias from another variable, which will potentially skew the outcome of the study. Most of the deer harvested during the first three days of firearms season are bucks. With antlerless harvest rates the primary metric being measured in this experiment, it is troubling that the DNR would change the availability of deer testing mid-experiment and apply different degrees of testing opportunity to different townships involved in the study. If antlerless harvest rates change in Montcalm county in 2020 compared to 2019, there will be no way to tell if and how much of a role testing availability played in that change. Because CWD prevalence rates are significantly higher in some of the Subject counties than in the Control counties, it is entirely likely that the lack of testing opportunity would have a greater impact on hunter harvest decisions in one set of counties than in the other. Introducing changes in testing availability, both intra-county and from year to year, will greatly reduce the validity of any conclusions that can be drawn from data generated by this experiment.

Stakeholder influence -

One of the more troubling aspects of the design of the APR/CWD experiment is the integral role that certain stakeholder groups played, both in the initial design & implementation and in exerting ongoing influence on the results of the experiment. This influence includes advocating for regulatory changes which have the potential to further skew the outcome of the experiment.

Over the last decade, two pro-APR stakeholder groups, QDMA and MUCC, have invested a substantial amount of effort and resources into developing and promoting QDM deer Coops. Deer Coops serve an important purpose for these groups, both in providing tangible examples of the results of coordinated implementation of QDM principles, as well as spreading the QDM "message", which in turn results in increased membership and political clout.

The core tenet of QDM, the protection of yearling bucks, has a detrimental impact on CWD mitigation efforts. This biological fact poses a significant threat to stakeholder groups who are dependent upon the continued expansion of APR's to facilitate continued growth in membership and dues revenue.

Concern over this biological reality was the driving force behind these stakeholder groups pushing for an "experiment" designed to generate data which could be used to contradict the best available science and which could be used by pro-APR stakeholder groups to continue to justify the policy of protecting yearling bucks and creating greater numbers of older bucks in the herd, despite the overwhelming amount of scientific data contradicting this policy.

Stakeholder involvement has potentially skewed the outcome of the experiment in several distinct ways. First, the locations for the camera survey portion of the experiment were not randomly selected; their selection was facilitated by stakeholders, introducing selection bias. It is likely that many of these locations, particularly in Montcalm County, are located within the boundaries of QDM Coops. Research by Anna Mitterling, former DNR Deer Coop Coordinator, has documented that antlerless harvest trends are substantially different on deer Coop properties than on non-Deer Coop properties. Selecting properties for camera locations, which already have a propensity for higher rates of antlerless harvest, could skew data so that it is not representative of what influence APR's may have on the vast majority of property in Michigan, which are not part of QDM Coops. This could result in potentially inflating the relative amount of impact actually resulting from an APR regulation. In a move lacking transparency, MDNR has refused FOIA requests for disclosure of the locations of the camera survey locations.

Another concern is the degree of influence which QDMA exerts on facilitating experiment results. The experiment is supposed to measure the impact of APR's on increasing antlerless harvest. If the results of the experiment are made public during the course of the experiment, it provides stakeholder groups the opportunity to influence the outcome in a manner which would not occur if results were not revealed until after the conclusion of the experiment. When notified that experiment results are not meeting stated goals, stakeholder groups, utilizing social media, can mobilize hunters for the express purpose of influencing the outcome of the experiment.

"The DNR has also set a goal of 1.1 antlerless per antlered deer as determined by the annual Hunter Harvest Survey.....If we don't hit this ratio or better during the experiment, this approach may be judged to have been a failure, we are likely lose APR's and harvest goals and go back to the old, failed regulations." QDMA MI Facebook Page – December 16, 2019

Specifically to facilitate this mobilization, QDMA has successfully lobbied the DNR and the NRC to initiate a completely new deer harvest reporting system, which will go into effect in 2021, potentially influencing the study results. This system will provide a running tally of harvest results, allowing interested stakeholder groups to exert additional pressure on their members, which will skew the outcome of the experiment, should the total harvest tally be below required goals prior to the conclusion of the season.

UNDERLYING HYPOTHESIS

The justification originally offered for the APR experiment is that should the underlying hypothesis is found to be valid, that APR's could prove to be an important tool in helping to fight CWD. This hypothesis has three distinct components, all of which would have to occur synergistically in order for there to be any potential positive impact in terms of CWD mitigation.

The first component is the assumption that an APR will result in a sustained increase in antlerless harvest by redirecting harvest pressure away from antlered bucks to antlerless deer. The second component is the assumption that increased antlerless harvest will result in lowering deer populations. The third component of the hypothesis is the assertion that reducing deer populations in areas where CWD is present will help reduce the spread and prevalence of CWD. Only the first component is being directly studied in this experiment, the second and third components of the hypothesis will remain untested and invalid, regardless of whether or not the experiment is terminated or allowed to continue. Let's examine each of the components of the APR/CWD experiment hypothesis individually.

#1: Do APR's result in a sustained increase in antlerless harvest?

This, according to the DNR, is the primary question being studied by this experiment. The DNR has suggested that moving forward with the experiment to completion could provide insight as to whether an APR will change hunter harvest choices (specifically antlerless harvest) in a sustained manner. Concluding the experiment will not provide any indication of whether the second and third components of the hypothesis will occur.

"I believe the biggest take away from the current field study is to see if hunters behavior can truly be changed by incorporating an APR regulation, and can that behavior be sustained." **Chad Stewart – MDNR Deer Specialist – Private Communication**

The question of whether or not APR's will cause an increase in antlerless harvest is not a new one. It was specifically addressed several years ago when the NRC engaged the Boone & Crockett Center to analyze 9 years of data from the NW12 in Michigan. That data-set is significantly larger and more comprehensive than the one being generated by the APR/CWD experiment. The NW12 analysis used a 5 year averaged baseline, where the APR/CWD experiment uses a single year of data for a baseline. One of the specific questions the NRC asked MSU to analyze was whether the APR's in the NW12 resulted in an increase in antlerless harvest. The response to this question, from the Boone & Crockett center, was a definitive "NO!"



Figure 3

This response confirmed what the DNR already knew, as they had previously done an internal analysis of the NW12 data which the DNR's deer specialist had already provided to the NRC during an APR slide show presentation, as shown in Figure 4.



Figure 4

The DNR's NW12 data showed a small increase in antlerless harvest during the first year after enacting APR's but antlerless harvest dropping below pre-APR levels in subsequent years.

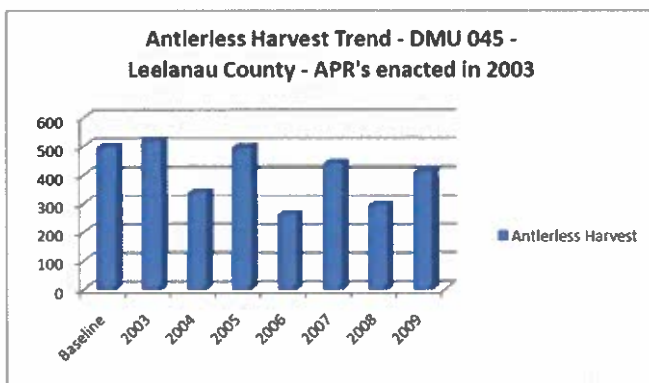


Figure 5

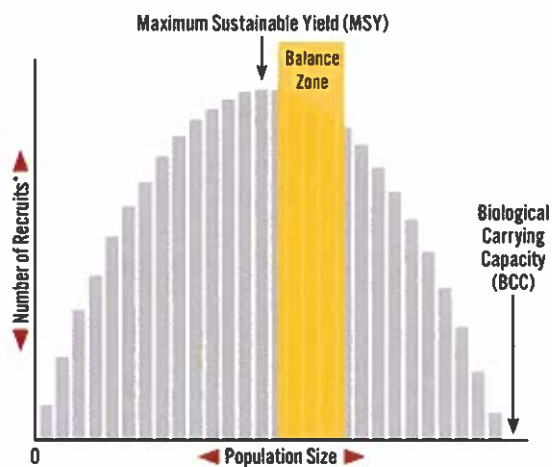
The same pattern had been previously documented in Leelanau Co. (DMU 045) which was one of the earliest mandatory APR counties in Michigan, where the similar pattern of a slight increase in antlerless harvest occurred during the first year of APR's but was not sustained in following years, when the antlerless harvest trend declined.

Without a sustained increase in antlerless harvest, the first component of the APR/CWD experiment hypothesis is essentially invalidated.

#2: Will increasing antlerless harvest lower deer populations?

The second component of the APR/CWD experiment hypothesis is the assumption that increased antlerless harvest will result in lowering deer populations. While on the face of it, because does are the ones who have fawns, it seems to make sense that killing more does will result in fewer fawns being born the following year. But unfortunately, deer biology and herd dynamics are not that simple.

The fact of the matter is that there are a number of factors which influence deer reproductive rates, including but not limited to, food & nutritional availability, cover and climate, to name just a few.



**A "recruit" is defined as a fawn that survives to 6 months of age and becomes part of the fall deer population.*

Figure 6

As deer populations increase, reproduction rates decrease. This is a concept called density dependence. The highest reproduction rate, known as maximum sustainable yield, occurs when populations are at approximately 50% of BCC. Biological carrying capacity (BCC), refers to the maximum population that can be sustained by the environment. When the population reaches BCC, then reproductive capacity is substantially reduced. In White-tailed deer, this is reflected by fewer fawn does reproducing, adult does having fewer fawns and increased numbers of does spontaneously aborting prior to giving birth.

Conversely, as deer populations are reduced from BCC, then reproduction rates increase, due to more doe fawns being bred, more adult does having twins and triplets and decreased over-winter mortality.

Without knowing what the relative deer population is to start with and where it is in relation to BCC, there is no way to predict whether changes in antlerless harvest will actually result in a decrease or an increase in the overall population. MDNR stopped estimating deer populations a number of years ago. Given this uncertainty, the second component of the APR/CWD experiment appears to be indeterminable. Whether increased antlerless harvest due to an APR will result in lowering the deer population in a given area depends on where the herd is relative to BCC, when the experiment begins. It is very possible, if the population is close to BCC when the APR's go into effect, that increasing the antlerless harvest will have the reverse effect of what is desired and will result in actually increasing the deer population.

#3: Will reducing deer populations in areas where CWD is present reduce the spread and prevalence of CWD?

The third component is the assumption that reducing the deer population in an area where CWD is present will have a limiting impact on the spread and prevalence of CWD.

CWD is primarily a frequency dependent disease. There are two primary types of communicable diseases, density dependent and frequency dependent. An example of a density dependent disease in humans would be Covid19. In density dependent diseases, all of the individuals in the group have an

equal chance of catching the disease. The potential for transmission is increased depending on population density. For example, if you are mingling with a group of others, without masks, the potential for someone catching Covid19 is increased proportionally with the number of people in the room, hence the public health advisory to limit the size of groups. If there are 5 people in the room, the relative risk is lower than if the density in the room increases to 100 people.

Now let's replace Covid with a disease like Hepatitis B. Unless you share blood or other bodily fluids with another person, you are not going to catch Hepatitis B regardless of whether there are 5 or 100 or 1,000 other people in the room. You have to engage in a specific act which causes the transmission via bodily fluids. The frequency with which that specific act occurs is what determines the risk of transmission, not the density of other people in the room.

We believe that the primary transmission of CWD to be due to either direct or indirect sharing of bodily fluids containing Prions or by the ingestion of soil or plant material on which Prions have been deposited. As a result, removing infected deer from the herd, specifically those who carry and are shedding Prions, becomes much more important than simply reducing the overall population of the herd, most of which are not infected with the disease.

In a May, 2018 presentation to the NRC, Dr. Dan O'Brien of MDNR stated *"Once CWD is established in an area, all methods tried to date have failed to eradicate the disease. Current evidence suggests that in those situations, Cervid density reduction is no longer likely to be helpful."*

Because antlered bucks are statistically more likely to have CWD than antlerless deer, efforts to increase antlerless harvest, at the expense of decreasing antlered buck harvest, are likely to have a negative impact on efforts to control the spread and prevalence of CWD and will almost certainly result in increased herd prevalence due to dilution. In terms of disease, dilution refers to removing increased numbers of deer who are more likely to be healthy (antlerless deer) while leaving greater numbers of higher prevalence deer (antlered bucks) who are more likely to be infected, thus increasing the average herd prevalence rate. Focusing harvest on male deer while leaving lower risk antlerless deer in the herd *dilutes* the average prevalence resulting in lower average herd prevalence.

Several academic studies have cautioned against regulations, (referring to APR's) that redirect harvest pressure from antlered bucks to antlerless deer.

"Some harvest strategies—for example, those promoting an abundance of mature males—might exacerbate Prion transmission and contribute to exponential growth of epidemics." Miller et al., - *Hunting pressure modulates Prion infection risk in mule deer herds – Journal of Wildlife Diseases 56 (4) 2020.*

"We encourage jurisdictions to consider how recent trends in Cervid management may be contributing to disease emergence. Modeling suggests harvest-based control of CWD may be most effective when focused on male deer (Jennelle et al. 2014, Potapov et al. 2016), perhaps because infection rates among adult male deer tend to be higher than among adult females (Miller et al. 2000, Grear et al 2006, Rees et al. 2012). Conversely, then, harvest strategies intended to increase male:female ratios or adult male age

structure could inadvertently facilitate CWD persistence." - Miller, M. W., and J. R. Fischer. 2016. *The First Five (or More) Decades of Chronic Wasting Disease: Lessons for the Five Decades to come*. *Transactions of the North American Wildlife and Natural Resources Conference* 81: in press.

CWD GENDER & AGE VARIABILITY

Supporters of APR's have repeatedly claimed that the doe population poses the greatest threat, in terms of spreading disease, because there are greater numbers of adult does in the herd than adult bucks. This is an incorrect and overly simplistic view that fails to take into consideration the substantial gender variability in CWD prevalence and the way that gender prevalence variability impacts CWD mitigation efforts.

Data from many other states, as well as sampling data from Michigan, indicates that there is both a gender and age variability for CWD prevalence, similar to what has been found for Bovine Tuberculosis prevalence, in deer.

In terms of age variance younger deer tend to have lower CWD prevalence, which increases with age, peaking at around 2.5 years of age and then declining slightly in older deer. Fawns of both sexes tend to have almost zero prevalence, the next lowest category are yearlings, which are 1.5 year old deer.

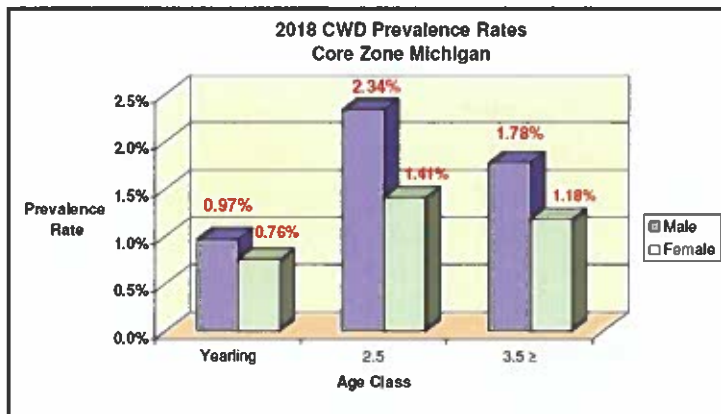


Figure 7

Figure 7 also shows that there is a gender variance for CWD prevalence. Again, fawns of either gender have almost zero prevalence for CWD, which is why they are not included in this graphic but as the age classes advance, variability emerges, in which adult male deer have a substantially higher prevalence for CWD.

One of the more robust data sets available, concerning CWD gender variance, is from Wisconsin. Figure 8 shows gender prevalence variability in one of the core areas in Wisconsin, where adult male prevalence rates are about twice those of adult females. This graphic uses data from 2014, when adult male prevalence rates were around 30%. In this same unit in 2019 adult male rates are approaching 50%. Montcalm County, the core area of the APR/CWD experiment currently has adult prevalence rates similar to what are depicted for 2008 in Figure 8.

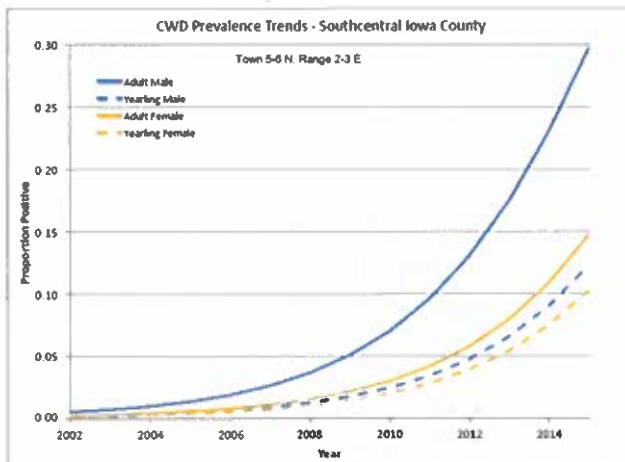


Figure 8

It's important to understand and acknowledge CWD gender prevalence variability, when examining the efficacy of CWD mitigation strategies. The famous quote from George Orwell, that "some animals are more equal than others" is particularly relevant when talking about CWD. Not all deer are created equal when it comes to CWD prevalence. It is well established that older male deer have the highest prevalence rates for CWD. This variance needs to be taken into account when crafting mitigation policies.

It is also important to note that harvest regulations in Michigan are not based on gender. We do not have "buck" or "doe" licenses. Our system employs antlered and antlerless licenses. APR proponents like to portray the harvest trade-off which occurs under APR's, as harvesting fewer yearling bucks who have a lower prevalence rate than "older" does, which they claim will result in a net reduction in the number of diseased deer. What this ignores is that there is no license for just "older" does and also no easy mechanism for hunters to differentiate between older does, yearling does, button bucks or female fawns, all of which collectively make up the antlerless harvest category. Roughly 30% of the antlerless harvest is made up of fawns of both genders, which have almost zero CWD prevalence. Yearling does make up another 20% – 30% of the antlerless harvest and they have a lower prevalence rate than yearling bucks. So in order to calculate the actual impact of replacing yearling buck harvest with antlerless deer, you have to calculate the average CWD prevalence for the antlerless cohort, as a whole. In 2018, in Michigan's core zone, yearling buck CWD prevalence was around 1%, the antlerless cohort prevalence rate was around .9%, so contrary to claims made by QDMA, reducing yearling buck harvest and replacing it with antlerless deer harvest results in about a **10% decrease** in the efficiency of removing diseased deer from the herd.

ADVERSE IMPACTS

APR's create conditions which have an adverse impact on the resource, when implemented in areas where communicable diseases, such as Chronic Wasting Disease or Bovine Tuberculosis, are present. With disease present in the herd, APR's have two distinct adverse impacts on the resource; increasing the geographic spread of CWD and increasing the average herd prevalence for the disease.

IMPACT 1 – Changes in Dispersal

"In applied ecology, the study of dispersal is fundamental to understanding such problems as the spread of diseases, invasions of exotic species, and escape of genetically modified organisms (Bullock et al. 2002). Dispersal has been suggested as a primary means of spreading disease among populations, and dispersal distance is an important parameter in many mammalian disease spread models" Duane R. Diefenbach, et. al. **Modeling Distribution of Dispersal Distances in Male White-Tailed Deer** - *Journal of Wildlife Management*

The age class and gender of deer which are protected by APR's and which are prevented from being removed from the herd are yearling bucks. Sometime between the age of 12 months to 18 months, bucks engage in a process known as dispersal, in which they leave their natal range (the area in which they were born) and migrate anywhere from 1 – 20 miles. After this dispersal period ends, they establish an adult range, in which they generally stay for the rest of their lives. Approx. 75% of yearling males engage in dispersal, the average distance being 4 – 5 miles, depending on the type of habitat in which they live. While some yearling females also disperse, the numbers are much, much lower, somewhere in the range of 12%, so the potential threat posed by female dispersal vs. male dispersal is significantly lower.

Unlike bucks, most does establish adult home ranges in the immediate area surrounding where they were born.

"Differences in movement and dispersal between male and female white-tailed deer may also be a significant component of CWD distribution across the landscape, especially in areas where animals do not show seasonal migrations. Between 50% to 80% of yearling males disperse distances of 10 to 30KM, depending on habitat characteristics. (Long et. Al. 2005), whereas less than 20% of females disperse (Rosenberry et. al. 1999) Infected yearling males are therefore more likely to spread CWD into new areas." - Michael R. Hutchings - **Management of Disease in Wild Mammals**

From a disease mitigation standpoint, dispersal poses a substantial problem when trying to limit the geographic spread of disease. This problem is specifically compounded when regulations such as APR's prevent yearling bucks from being harvested. Absent APR's, a majority of yearling bucks are harvested either prior to dispersal or within a short time after having dispersed. In 2018, 20% of the male deer testing positive for CWD in Montcalm County were yearling bucks. By implementing regulations that protect most yearling bucks from being harvested until they are at least 2.5 years old, the potential for infected yearling bucks dispersing and then spreading CWD in areas where deer had not previously been exposed to CWD, is dramatically increased. The best available science indicates that focusing harvest pressure on yearling male deer will help to limit the geographic spread of CWD, by limiting the impact of dispersal.

"Although yearling males have low chronic wasting disease prevalence rates, they may be infected before dispersal due to variable incubation times. Managers should increase yearling male harvest and

consider removing young males in areas of higher forest edge." **White-Tailed Deer Movements in a Chronic Wasting Disease Area in South-Central Wisconsin** – Lesa h. Skuldt et .al, *The Journal of Wildlife Management*.

Missouri Department of Conservation Biologist Jason Sumners provided the basis for Missouri's decision to remove APR's in the CWD outbreak area;

"According to Sumners, the reason for the regulation change is that management strategies such as antler-point restrictions, which protect yearling males and promote older bucks, have been found to increase prevalence rates and further spread the disease. Sumners explained that yearling and adult male deer have been found to exhibit CWD at much higher rates than yearling and adult females so a reduction in the number of male deer can help reduce the spread of CWD. He added that the movement of young male deer from their birth range in search of territory and mates is also a way of expanding the distribution of CWD." **MDC online - Missouri Department of Conservation**

In Michigan, increasing the number of yearling bucks who disperse from within Montcalm County to areas with low or zero CWD prevalence, which is a direct result of the APR experiment, is the exact opposite of what is recommended by the best available science in regards to mitigating the spread of CWD. Instead of focusing harvest pressure on yearling bucks, the experiment is protecting approx. 70% of yearling bucks from being removed from the herd, which inevitably will result in increases in diseased yearling bucks dispersing, thus exacerbating the geographic spread of CWD in Michigan.

IMPACT 2 – Increased buck age structure

A primary change that occurs as a direct result of APR's is a substantial increase in the average age of bucks within the herd. As previously mentioned, the best available science, both from outside Michigan and from the DNR's sampling data within the CWD zone in Michigan, demonstrates that as bucks increase in age, prevalence rates for CWD increase dramatically to a level much higher than what occurs in the female cohort.

"Our results show that the probability of infection increased with age and that adult males were more likely to be infected than adult females. The increase in male prevalence with age is nearly twice the increase found in females. We concluded that CWD is not randomly distributed among deer and that differential transmission among sex and age classes is likely driving the observed patterns in disease prevalence." - **Demographic patterns and harvest vulnerability of chronic wasting disease infected white-tailed deer in Wisconsin**. Daniel A. Greer et. al. *The Journal of wildlife management*

From a disease mitigation standpoint, increasing the herd buck age structure is the exact opposite of what sound CWD mitigation policy should be trying to achieve, which is lowering the average age, resulting in a reduction in the average herd prevalence rate.

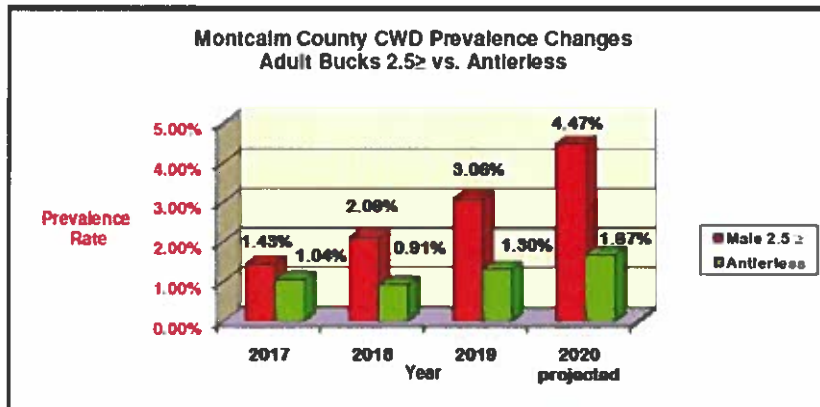


Figure 9

The long term impact of APR's in Montcalm County will result in an increase in the number of ≥ 2.5 year old bucks in the herd. Figure 9 shows the changes in CWD prevalence occurring in Montcalm County, the epicenter of Michigan's CWD outbreak. Unfortunately, the DNR's decision to radically reduce the level of CWD sampling in Montcalm County will likely result in a data set that is insufficient to accurately measure the change in prevalence which will occur between 2019 and 2020, which would be the first year of sampling data that could potentially be used to gauge the biological impact of the APR's implemented in the APR/CWD experiment. The data shown for 2020 in figure 9 is projected based on the average rate of increase which occurred prior to the implementation of APR's. It is likely that the actual prevalence rate in Montcalm County in 2020 will be higher, due to a substantial increase in the number of male deer ≥ 2.5 year old, resulting from APR's.

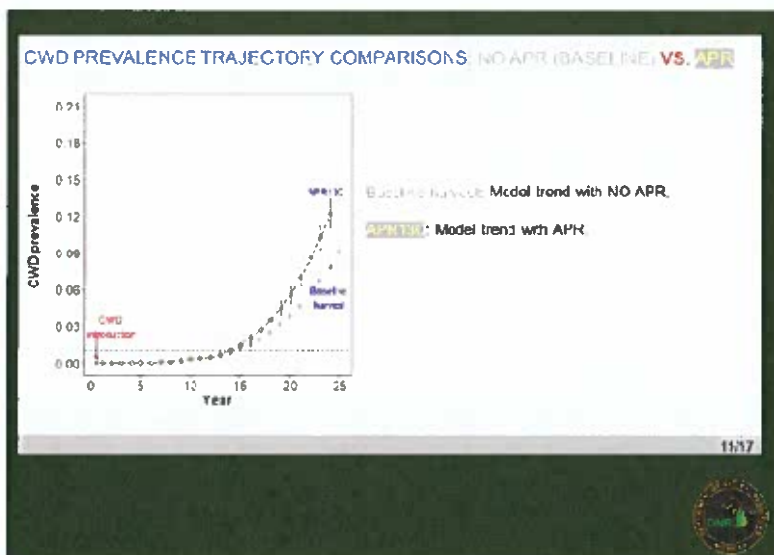


Figure 10

The probability that an adverse impact is occurring due to the APR's implemented in the APR/CWD experiment was confirmed by Dr. Dwayne Etter (MDNR), in a presentation to the NRC during the summer of 2020, which included a graphic showing the projected impact of APR's in the CWD zone, predicting that CWD prevalence rates will increase at a faster rate with APR's, than if APR's were not in place.

MITIGATION

Since the APR experiment in the CWD zone was first proposed, it was universally accepted that the experiment would decrease the antlered buck harvest, which would result in a decrease in the overall harvest, when compared to the prior year when APR's were not in place. Reducing the number of deer harvested meant that fewer numbers of diseased deer would be removed from the herd on an annual basis, which would result in an adverse impact to the resource. The most effective way to reduce the geographic spread and lower the prevalence rate of CWD is to remove as many diseased animals from the herd as possible, to limit the frequency with which healthy deer come into contact with infected deer. In order to limit this adverse impact, proponents of the experiment suggested that substantially increasing the antlerless harvest would create an antlerless harvest offset, which could potentially lessen or eliminate the adverse biological impact resulting from protecting 70% of the yearling bucks from harvest.

In a letter to the NRC, biologist Kip Adams, of QDMA, suggested implementing an antlerless harvest quota to offset the decrease in antlered buck harvest occurring from the APR's;

"We feel realistic antlerless harvest goals based on prior antlerless harvest can be established, and would help produce an increased antlerless harvest. For example, the 3-year average harvest for the three counties listed above was 9,344 deer. An increase of 3,000 antlerless deer, offsetting the expected decrease in yearling buck harvest, would equal a 32 percent increase. That is a substantial number, but is doable, when combined with APR's, target antlerless goals, and a strong educational campaign explaining the need." *Michigan 3 county APR Study – Kip Adams, QDMA, submitted to NRC, July 2018.*

In an August 2019 presentation to the NRC, Chad Stewart of MDNR projected that the decrease in yearling buck harvest, resulting from APR's, would be more substantial than Kip's prediction, thus requiring an even larger increase in antlerless harvest (38% or 4,500 antlerless deer), in order for the required offset for disease mitigation to occur.

In July of 2019, after the conclusion of a public comment presentation regarding the potential negative impacts of the proposed APR experiment, Commissioner Schlaybaugh asked me if I had done any estimating in regards to the level of increase in antlerless harvest needed to provide the required offset. My response at the time was that the required increase in antlerless harvest necessary for an offset would be in the 35% to 40% range but that was specific to Montcalm County.

Whether the needed increase is 32% or 40% or somewhere in between is open to debate. Regardless of the exact number, it's important to acknowledge that prior to the implementation of the experiment, virtually everybody involved in the discussion, including the DNR, recognized that the imposition of APR's in the core CWD zone would have an adverse biological impact on the resource, unless there was some kind of adequate offset included, which could potentially mitigate the harm to the resource resulting from the experiment.

"I can foresee scenarios where APRs could be kept in a known disease area with similar risk to non-APRs regulations, provided other outcomes are achieved (possibly a certain % decline in overall deer

numbers, and perhaps some other variables as well)." Chad Stewart, MDNR Deer Specialist, private communication.

When the APR experiment was finally approved by the NRC, the actual wording in the WCO authorizing the experiment made specific reference to a termination provision (paragraph 2,) which also made specific reference to department established harvest goals (i). Unfortunately, at the time the amendment was passed, it did not include a specific definition of *what* those harvest goals actually were.

3.101j Deer hunting in deer management units 034, 054, and 059, antler restriction, sunset.

Sec. 3.101j (1) Notwithstanding any other provisions of this order, except sections 3.101e and 3.101g, in deer management units 034, 054, and 059, an individual shall not take an antlered deer unless the deer has at least 1 antler with 4 or more antler points each 1 or more inches in length.

(2) This section shall be rescinded if either of the following occur:

(i) The department established antlerless annual harvest goals are not achieved for deer management units 034, 054, and 059; or

(ii) The department provides information gathered by the study that management objectives for the study are achieved. History: Am. 7, 2019, Eff. July 12, 2019.

DNR ESTABLISHED HARVEST GOALS

Even prior to the NRC implementing the APR/CWD experiment, the Wildlife Division of the DNR had indicated reluctance in coming up with a specific antlerless harvest quota or offset, which could insure that the damage to the resource caused by the imposition of APR's was limited. They clearly stated this reluctance to the NRC when Chad Stewart stated that it was the department's preference to avoid a harvest goal.

Why didn't the DNR support the idea of a harvest goal? According to Chad Stewart, the Wildlife Division was uncomfortable with a specific harvest goal for several reasons. One is that assigning a specific antlerless goal would create the perception that if that goal was achieved, that doing so would A; result in a reduction in the deer population and B; result in a tangible reduction in the prevalence rate of CWD, neither of which is supportable, based on what we currently know. While it is certainly true that establishing a specific antlerless harvest goal would not automatically result in a decrease in the deer population and would not automatically help mitigate the spread of CWD, it is also abundantly clear that preventing the harvest of 70% of the yearling bucks in the herd, without an offsetting increase in antlerless harvest, will almost certainly result in an increase in the size of the deer herd and will almost certainly result in both an increase in the number of higher prevalence older bucks in the herd and in the number of infected yearling bucks dispersing, thus exacerbating efforts to contain the spread and minimize the prevalence of CWD in Michigan's core CWD zone.

As an alternative to a specific harvest goal, instead the DNR established a harvest ratio of 1.1 antlerless deer to 1 antlered buck, in the three Subject counties of the experiment. The DNR's logic behind using a ratio is that it could be clearly measured from harvest data and that it could be easily applied across all

of the years of the study. When questioned about the efficacy of the proposed ratio of 1.1:1 by an NRC Commissioner, Chad Stewart freely admitted that the ratio had been "pulled out of thin air and was simply a starting point". There was nothing scientific about that ratio and there was absolutely no indication that it would provide an offset that would actually mitigate the negative impact resulting from the APR's included in the experiment. Despite this lack of mitigation, the DNR established the ratio as the harvest goal specified in WCO 3.101.j

The primary biological problem resulting from substituting a harvest ratio for an actual "hard number" harvest goal, is that a ratio does not provide any assurance that the overall level of harvest will be maintained or increased, which would be the required outcome for mitigating the negative impact of the APR's.

This MDNR graphic, shows the actual harvest that occurred in the three subject counties in 2018 and the projected decrease in the antlered buck harvest that would occur due to APR's.

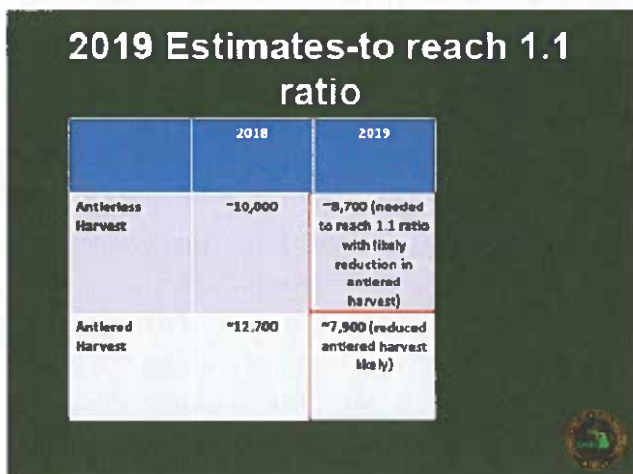


Figure 11

Based on the DNR ratio, Figure 11 indicates that only 8,700 antlerless deer would need to be harvested, in order to be in compliance with the proposed ratio. Despite being in compliance (which would allow the experiment to continue) a 13% reduction in the antlerless harvest would occur in addition to the 38% reduction in antlered buck harvest that was projected to result from APR's. So instead of the 32% increase that Kip Adams of QDMA had suggested as necessary to offset the decrease in antlered buck harvest to avoid an adverse biological impact, instead a 27% reduction in the total harvest could occur, yet the termination provision that was envisioned by the NRC as necessary to protect the resource, would not be activated. Using the ratio established by the DNR as the harvest goal, as specified in WCO 3.101j, circumvents and undermines the entire purpose of that termination provision, designed to stop the experiment to prevent ongoing harm to the resource, should the safeguards (antlerless harvest goal) specifically built into the experiment, not be reached.

Creagh amendment –

Since the start of this experiment, stakeholders have been contacting the NRC, voicing concerns about the negative impact to the resource that is occurring as the result of implementing APR's in the CWD zone and asking them to take another look at the experiment, to either end the experiment or put in place adequate safeguards that would prevent it from going forward unless specified outcomes are achieved.

In October of 2020, Commissioner Creagh put forth an amendment to WCO 3.101j for consideration, which would use prevalence rates as the metric for determining the continuation of the experiment.

Proposed amendment;

Immediately terminate the APR study in deer management units 034, 054, and 059, if the CWD prevalence rate in the APR townships is higher than the prevalence rate in the non-APR townships.

While the intent of this amendment was laudable, the fact is that based on the DNR's current sampling plan, measuring changes in CWD prevalence on the micro scale that would be necessary to evaluate the impact that is proposed to be measured in this amendment, is not possible. After being informed of that by the DNR and subsequent discussion, Commissioner Creagh withdrew this proposed amendment.

Revised Creagh amendment –

After withdrawing the amendment offered at the December meeting, Commissioner Creagh indicated he will be offering another amendment to WCO 3.101j, which would require that the APR's implemented as part of the experiment be automatically terminated after the conclusion of the third year of the experiment. While this clarification is certainly helpful, in that it insures that the APR restrictions will only be in place for the original duration of the experiment, it fails to address the fact that, in the mean time, given the absence of any mitigating offset, the APR experiment continues to cause damage to the White-tailed deer herd in Michigan.

POSSIBLE ALTERNATIVES

While considering the APR issue, it is helpful to take a look at the harvest data from the two areas included in the experiment, for some insight into what impacts these regulations are actually having.

APR/CWD Experiment Harvest Data

Control Counties - no APR's	2018	Harvest Ratio D/B	Per Hunter	2019	Change Actual	Change Percentage	Harvest Ratio D/B	Harvest Per Hunter
Hunters	29,519			28,878	(641)	-2%		
Antlerless	7,792		0.26	8,259	467	6%		0.29
Antlered	8,941		0.30	10,021	1,080	12%		0.35
Combined	16,733	0.9:1	0.57	18,280	1,547	9%	0.8:1	0.63

APR Counties	2018	Harvest Ratio D/B	Per Hunter	2019	Change Actual	Change Percentage	Harvest Ratio D/B	Harvest Per Hunter	CWD offset needed	Offset Deficiency	Percentage Increase needed
Hunters	33,204			32,237	(967)	-3%					
Antlerless	10,108		0.30	11,309	1,201	12%		0.35	3,419	2,218	20%
Antlered	12,823		0.39	9,598	(3,225)	-25%		0.30			
Combined	22,931	0.8:1	0.69	20,907	(2,024)	-9%	1.2:1	0.65			

Figure 12

Figure 12 shows the actual harvest which occurred in 2018, when there were no APR's in any of the 5 counties included in this experiment and in 2019 when APR's had been implemented in three counties. The Non-APR counties are in yellow and the APR counties are in blue.

In the non-APR counties, in 2019, there was a 6% increase in antlerless harvest, a 12% increase in antlered buck harvest and a combined 9% increase in the total harvest.

In the APR counties, in 2019, there was a 12% increase in antlerless harvest but a 25% decrease in antlered harvest, leading to a 9% decrease in the combined harvest. This difference is directly attributable to the APR's implemented as part of the experiment.

This results in an 18% disparity in overall harvest, between the two sets of counties, attributable to APR's.

Based on the offset theory, in order to completely mitigate the impact that reducing the antlered harvest had, APR's would have needed to increase the antlerless harvest by 32%, which is co-incidentally the same percentage that Kip Adams of QDMA had suggested to the NRC as a "substantial but doable" antlerless harvest goal, when advocating for realistic harvest goals as part of the APR experiment methodology.

As you can see, the actual increase in antlerless harvest under APR's was only 12% and did not even come close to providing adequate mitigation, it was off by 20% of what would have been needed to insure that the experiment did not result in an adverse impact to the resource.

There is absolutely no evidence to suggest that in 2020 or in 2021, should the experiment be allowed to continue, that the needed offset harvest will be achieved, either.

There is no question when looking at the harvest data from the 3 subject counties, in comparison to what has occurred in the 2 control counties included in this experiment, that the APR's have, at a minimum, resulted in a substantial and significant decrease in the overall deer harvest in the counties with APR's.

When considering which metrics could be used to measure for an offset, as previously mentioned, CWD prevalence can't be used, since the DNR's sampling capability is not granular enough to provide the needed data. Overall population trends also have to be ruled out, as the DNR stopped making deer population estimates almost a decade ago.

The only data which is currently consistently gathered on an annual basis, which could provide a basis for formulating an offset, is harvest data. This data is composed of three different categories, antlerless, antlered and combined.

The most relevant figure of the three, in regards to the potential negative impact of CWD, is the total harvest figure. Increased antlerless harvest, by itself, will not insure an adequate safeguard, unless the required offset is achieved.

It's hard to argue, however, that decreasing the total number of deer harvested, would be a good thing, in terms of mitigating the impact of disease and it certainly appears that APR's are causing exactly that.

While APR proponents can equivocate that just because the overall harvest in the APR counties went down (likely causing the deer population to increase) that we can't be sure that it had an adverse impact, the fact of the matter is that there are almost no credible biologists who would be willing to say with a straight face, that regulations resulting in increasing deer populations in areas where CWD is present are a good thing that is likely to benefit the resource and help in efforts to mitigate the geographic spread of the disease and limit prevalence rates.

So if we are looking for a reasonable, measurable metric that can be utilized in a termination provision, per WCO 2.101j, it seems that overall harvest totals would be a key metric that would at least give some indication of whether or not the overall population in the APR counties is likely to increase as a result of the regulations. If the counties with APR's are resulting in a stable or increased overall harvest compared to the 2018 baseline number, then we could infer that APR's are not changing conditions in a manner that would be likely to have a negative impact. If, however, the APR's are resulting in a decrease in the overall harvest, compared to 2018, then the experiment should be terminated. To that point, we would offer the following amendment to WCO 3.101j;

PROPOSED AMENDMENT

3.101j Deer hunting in deer management units 034, 054, and 059, antler restriction, sunset.

Sec. 3.101j (1) Notwithstanding any other provisions of this order, except sections 3.101e and 3.101g, in deer management units 034, 054, and 059, an individual shall not take an antlered deer unless the deer has at least 1 antler with 4 or more antler points each 1 or more inches in length.

(2) This section shall be rescinded if either of the following occur:

(i) The department established antlerless annual harvest goals ~~are not achieved for~~ **of an antlerless to antlered harvest ratio of 1.1:1 is not achieved in** deer management units 034, 054, and 059; or

(ii) ~~The department provides information gathered by the study that management objectives for the study are achieved.~~ **The 2020 annual cumulative total deer harvest falls below the 2018 harvest total, in deer management units 034, 054 and 059.**

If both of those criteria are met, then the likelihood of the experiment having an adverse impact is sufficiently reduced to merit allowing it to continue to conclusion. If neither or only one of those two metrics is achieved, however, it should be terminated.

CONCLUSION

It is almost universally accepted that applying APR's in areas where CWD is present, in the absence of any mitigating offset, will cause an adverse impact to the resource. Simply reaching a harvest goal based on a ratio of antlerless to antlered harvest will not prevent an adverse impact, unless the total number of deer being removed is greater than what occurred prior to APR regulations being implemented.

The NRC is charged with making decisions based on sound scientific management principles. This experiment was originally designed to employ safeguards which would prevent harm to the resource if certain harvest goals were not achieved. The Commissioners, who voted to include those safeguards, did so knowing that including a termination clause could result in the premature termination of the APR/CWD experiment. They included this termination clause anyway, knowing full well that terminating the experiment could be perceived by some as wasting some of the funding allocated, as it would not be possible to generate as robust a data set as might occur should the experiment run its full length. Nevertheless, safeguards were included despite the possibility of early termination, because in the judgment of the NRC, the importance of protecting the resource from harm superseded the potential reduction in value of the results of this experiment caused by early termination.

As has been pointed out in this overview, there are a number of flaws in the methodology of this experiment, such as the introduction of additional variables like DCP's and the availability of CWD testing, which are likely to significantly impair the validity of the results.

Allowing the experiment to continue, based on the perception that it would be a waste of funding to terminate it prematurely, essentially monetizes harm to our natural resources. Without knowing the magnitude of the adverse impact which is occurring, there is no way to rationally weigh whether the harm that is occurring is justified by the relative loss of value for the funds invested in this experiment.

It does beg the question, though, how much of an adverse impact is acceptable to save some money? We have already spent \$3 million+ dollars on CWD sampling and mitigation efforts in Michigan, which certainly indicates that the disease is perceived to pose a substantial threat. Should CWD eventually be discovered to be zoonotic, the potential negative economic impact of the disease will be magnified substantially. If having APR's in the CWD zone, as the result of this experiment, causes the prevalence rate to increase at a higher rate than if they had not been in place, as was indicated by Dr. Etters MDNR modeling, should the relatively low cost of eliminating the final year of experimental data still enough of a reason to allow it to continue?

Based on all of the available evidence, it seems that the reasonable course of action for the NRC at this point is to either terminate the APR/CWD experiment, or at a minimum, amend WCO 3.101J to include mandatory safeguards that would terminate the experiment should specific offsetting outcomes not be achieved. We would urge the NRC to address this issue and make a decision based on sound science, to stop further damage to the resource from occurring. Kicking the can down the road by allowing this experiment to continue unchecked, without adequate safeguards, would be a dereliction of the NRC's duty to make management decisions based on sound science and could ultimately cause irreparable harm to Michigan's White-tailed deer resource.

