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PERFORMANCE UPDATE

DIVISION OF NATURAL RESOURCES DEPARTMENT OF COMMERCE

AUDIT OVERVIEW

The Division of Natural Resources Has Made Progress In Incorporating Deer-Vehicle Collisions and Other Deer-Related Damage into Its White-Tailed Deer Operational Plan; However, the Agency Should Establish the Reduction of Deer-Vehicle Collisions as a Specific Goal and Use Deer-Vehicle Data as a Measure to Assess the Effectiveness of That Plan



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EXECUTIVE SUMMARY

Pursuant to Chapter 4, Article 2, Section 5 of the West Virginia Code, the Legislative Auditor conducted an update to the performance review of the Division of Natural Resources (DNR) issued in January 2011, as part of the Agency Review of the Department of Commerce. The objective of this report is to determine the level of compliance the agency has met on each of the recommendations from the previous report. The DNR is in planned compliance with the first recommendation, partial compliance with the second recommendation, and is in full compliance with the last two recommendations

Report Highlights:

Issue 1: The Division of Natural Resources Has Made Progress in Incorporating Deer-Vehicle Collisions and Other Deer-Related Damages in Its White-Tailed Deer Operational Plan; However, the Agency Should Establish the Reduction of Deer-Vehicle Collisions as a Specific Goal and Use Deer-Vehicle Data as a Measure to Assess the Effectiveness of Its Deer Management Plan.

- Out of the four recommendations in PERD's 2010 performance review, the Legislative Auditor finds that the agency is in planned compliance with the first recommendation, partial compliance with the second recommendation, and is in compliance with the last two recommendations.
- In its response to the recommendations from the 2010 agency review, the DNR, in cooperation with the West Virginia Department of Transportation, initiated a formal study of deer-vehicle collision rates in West Virginia and an analysis of available mitigation techniques, their costs, and potential funding sources.
- The DNR has made significant improvements to address deer-human conflicts in its current five-year (2011-2015) White-Tailed Deer Operational Plan, but it still does not use performance measures to determine the effectiveness of its new goals and objectives.

PERD's Evaluation of the Agency's Written Response

The Office of the Legislative Auditor's Performance Evaluation and Research Division received the Division of Natural Resources' response to the draft copy of this compliance review on November 14, 2014. The agency response can be found in Appendix D. The DNR concurs with PERD's evaluation of the agency's level of compliance with recommendations 1, 3, and 4 from the 2010 performance review and the new recommendation 3 from this report. However, the agency disagreed with the evaluation of its compliance with recommendation 2 from the 2010 agency review, and with recommendations 1 and 2 from this report. Furthermore, the agency disagrees with PERD's evaluation of DNR's interpretation of the five statements regarding the deer-vehicular collision study that was completed in response to the 2010 performance review.

- a. **The agency's response to PERD's evaluation of its compliance with Recommendation 2 (2010):** DNR continues to maintain that DVCs are not an adequate measure of the agency's handling of deer-human conflicts, and states that it will continue to use deer harvest data as its performance measure for its deer management plan.

PERD's Evaluation: PERD agrees with the agency that deer harvest data is an appropriate performance measure for the biological aspects of the program, but harvest data alone does not adequately measure the agency's management of the sociological issues with deer-human conflicts. Deer-vehicle collisions are a wildlife issue that the DNR must address, since DVCs are the reflection of the DNR's deer management program. PERD therefore maintains that the DNR should develop performance goals and measures related to the reduction of DVCs.

- b. **The agency's response to PERD's evaluation of DNR Statement #1:** *[D]eer-vehicle collisions rank very low in terms of highway safety when compared to other factors....*

The DNR believes that PERD's analysis regarding Statement #1 is in agreement with its own and requested that the discussion be removed from the report.

PERD's evaluation: PERD did not remove its analysis on statement #1 because the DNR's Statement #1 gives the impression that the finding from RP-291 is that DVCs are not a significant highway safety issue, when the actual finding is that DVCs rank low for awarding funds for DVC mitigation projects.

- c. **The agency's response to PERD's evaluation of DNR Statement #2:** *West Virginia does not rank as the number one state for deer-vehicle collisions, when considering the rural nature of the state...*

The DNR contends that its statement is accurate and takes issue with the methodology employed by State Farm Insurance Company in its annual state-by-state calculation of DVC rates. Additionally, the DNR believes that the RP-291 concludes that State Farms analysis is invalid, since it does not consider the rural nature of states as part of its calculation.

PERD's evaluation: The DNR's statement misrepresents the RP-291 results by indicating that West Virginia is not ranked first in the nation when considering the rural nature of the state. The RP-291 found that West Virginia ranks first in most normalized measures and it ranks 5-11 when the rural nature of the state is measured. To focus only on the rural nature of the state which is still high, and ignore the other rankings appears to be minimizing the problem.

- d. **The agency's response to PERD's evaluation of DNR Statement #3:** *[D]eer-vehicle collision numbers published in the press often do not reflect the actual number of crashes in the state....*

The DNR states that PERD has misunderstood how the results of the State Farm study are presented, then goes onto to discuss why the study's results are invalid without addressing how PERD's understanding of the study's results are incorrect. Then, the DNR states that PERD is incorrect in stating that West Virginia remained first in all normalized data.

PERD's evaluation: The DNR's response does not address PERD's point in its discussion of Statement #3. PERD's point is that the State Farm projection does not claim to be an actual number, but an estimate based on driver data. As to the statement regarding West Virginia's ranking, PERD is quoting from the RP-291 report. PERD made one change to this section of the report following the agency's response to the draft. PERD stated that it assumed the DNR was referencing the State Farm study in Statement #3. The statement has been changed to reflect that the DNR confirmed PERD's assumption.

- e. **The agency's response to PERD's evaluation of DNR Statement #4:** *[F]unding for additional projects of this nature would be very difficult, because deer-vehicle collisions are not a major human safety concern when compared to other highway safety factors....*

The agency addressed PERD's evaluation of this statement by pointing out that none of the projects discussed in RP-291 dealt with white-tailed deer in the eastern United States.

PERD's evaluation: The DNR did not provide any evidence in its response to counter PERD's evaluation of Statement #4. The DNR does not explain how any of the factors it mentioned would prevent the agency from successfully pursuing a similar collaborative project here in West Virginia. Just because the researchers did not report on any similar DVC-related collaborative projects in the eastern United States, like those noted in six western states, does not rule out the possibility of similar collaborative projects being completed. Furthermore, one of the recommendations from RP-291 is that a collaborative organization should be formed here in West Virginia. PERD therefore, disagrees with DNR's statement regarding PERD's assessment and has not made any changes to its evaluation of Statement #4.

- f. **The agency's response to PERD's evaluation of DNR Statement #5:** *[O]ther states are not conducting the additional practices outlined in the 2010 Performance Review of the West Virginia Division of Natural Resources.*

DNR strongly objected to PERD's comments and analysis of this statement and requested that the discussion of this statement be removed from the report. DNR believes that the survey results from other state wildlife and transportation agencies included in RP-291 shows that West Virginia's DNR is not doing anything different in terms of managing deer-human conflicts that the surrounding states are doing.

PERD's evaluation: After discussing the DNR's issues with PERD's evaluation of Statement #5 at the exit conference, PERD agreed to clarify that it was specifically discussing the efforts of other states' wildlife management agencies to work with other transportation agencies within their states as discussed in their deer management strategies and in the responses from the RP-291 survey. PERD recognizes that DNR expanded its deer management plan to address deer-human conflicts, and commends the agency for its work thus far. PERD however, also believes that the agency can, and should, do more to address DVCs and that it should take encourage other stakeholders to organize and participate in an ongoing work group.

- g. **Updated Recommendations 1 and 2:**

1. *The Legislative Auditor recommends that the DNR use performance or outcome measures related to deer-human conflicts to assess the effectiveness of its White-Tailed Deer Operational Plans.*
2. *The Legislative Auditor recommends that the DNR incorporate in its deer operational plans more specific goals that intend to reduce deer-human conflict measures, such as deer-vehicle collisions in the state.*

PERD's evaluation of DNR's issues with these two recommendations: DNR took issue with these two new recommendations and those statements are contained in Appendix D of this report. These issues reflect similar statements made by the DNR's in its response to PERD's evaluation of the agency's compliance with Recommendation 2 from the 2010 agency review. PERD's response to the agency's evaluation in bullet a (see above) addresses the DNR's issues with developing performance measures and goals related to DVCs. Therefore, it was not necessary to include a separate evaluation here.

Recommendations

1. *The Legislative Auditor recommends that the DNR use performance or outcome measures related to deer-human conflicts to assess the effectiveness of its White-Tailed Deer Operational Plans.*
2. *The Legislative Auditor recommends that the DNR incorporate in its deer operational plans more specific goals that intend to reduce deer-human conflict measures, such as deer-vehicle collisions in the state.*
3. *The West Virginia Division of Natural Resources should continue working with the Division of Highways to improve the collection of roadside deer carcass data and the West Virginia State Police and other law enforcement agencies to improve the quality of data regarding deer-related accidents in its vehicle crash reports.*

ISSUE1

The Division of Natural Resources Has Made Progress In Incorporating Deer-Vehicle Collisions and Other Deer-Related Damage into Its White-Tailed Deer Operational Plan; However, the Agency Should Establish the Reduction of Deer-Vehicle Collisions as a Specific Goal and Use Deer-Vehicle Data as a Measure to Assess the Effectiveness That Plan.

Recommendation 1 (2010)

The Legislative Auditor recommends the Division of Natural Resources improve its collection and measurements of deer damage data related to crop damage and forest damage.

Level of Compliance: **Planned Compliance**

The Division of Natural Resources (DNR) indicates that it collaborated with a doctorate candidate from West Virginia University to research, as part of a dissertation, deer herbivory across the state. The DNR believes that the dissertation should provide useful information that will address the recommendation to improve deer damage data collection and measurements of crop damage and forest damage. Since the DNR was unable to provide the results of the dissertation at this time, PERD determines that the DNR is in planned compliance with this recommendation.

Since the DNR was unable to provide the results of the dissertation at this time, PERD determines that the DNR is in planned compliance with this recommendation.

Recommendation 2 (2010)

The Legislative Auditor recommends that the Division of Natural Resources should utilize the various deer-damage statistics, including deer-vehicle collision data, as performance measures to determine their appropriate levels, and to determine the effectiveness of the agency's deer management policies.

Level of Compliance: **Partial Compliance**

As will be discussed under Recommendation 3, the DNR has developed goals, objectives and strategies to manage deer damage as part of its current five-year White-Tailed Deer Operational Plan (Plan); however, the agency does not use performance measures to determine if it has achieved these goals and objectives. Without performance measures, the DNR is not assessing and reporting on the effectiveness of the Plan. The DNR's deer management goals should be tied to achieving certain

...the DNR has developed goals, objectives and strategies to manage deer damage as part of its current five-year White-Tailed Deer Operational Plan (Plan); however, the agency does not use performance measures to determine if it has achieved these goals and objectives.

statistics or measures that reflect the outcomes of the Plan, and report these outcome measures either at the conclusion of each five-year plan or during their implementation.

Levels of crop and forest damage, and the number or incident rate of deer-vehicle collisions (DVCs) are the most appropriate outcome measures that the DNR can use to assess its management of the sociological impact of deer. While the DNR states that there are several factors that influence DVCs that are beyond its control, the DVC rate is still an outcome measure of its deer operational plan. Within the deer management plan for the State of Michigan is the goal to “*Reduce Deer-vehicle Collisions on Michigan Roads.*” This goal is specific and it identifies the measure (deer-vehicle collisions) by which to determine if the goal has been achieved. The state of Maryland also has in its deer management plan a specific objective to, “*Reduce deer-vehicle collisions across Maryland as measured by the number of vehicles registered in the state compared to the frequency of reported deer strikes.*” **These are the types of specific goals and outcome measures that the DNR should incorporate into its Operational Plan.**

Levels of crop and forest damage, and the number or incident rate of deer-vehicle collisions (DVCs) are the most appropriate outcome measures that the DNR can use to assess its management of the sociological impact of deer.

The Legislative Auditor determines that the DNR is in partial compliance with Recommendation 2 because it has developed strategies to improve the quality of deer damage data that can be used for creating outcome measures. These strategies are listed in DNR’s current Plan as stated below.

- *DNR will continue to collaborate with the DOH [Division of Highways] to develop a notification system for reporting road kill deer to obtain accurate deer/vehicular collision data at the county level.*
- *DNR will coordinate with the WVOIC [West Virginia Office of the Insurance Commissioner] to obtain projected deer/vehicular collision data at the county level.*
- *Incorporate data relating to deer/human conflicts into the determination of county harvest management objectives.*
- *Conduct human dimensions surveys with landowners to evaluate public opinions of deer population levels to guide management decisions and to measure program success.*

The Legislative Auditor determines that the DNR is in partial compliance with Recommendation 2 because it has developed strategies to improve the quality of deer damage data that can be used for creating outcome measures.

An additional strategy not listed, but should be added, is collaborating with the State Police to improve the recording of DVC

data collected by law enforcement agencies on crash report forms. The researchers who conducted the DVC study, discussed in Recommendation 4 below, suggest that these data could simply be improved by replacing the free-form text box included on the current crash report form with a check-box for the species of animal involved in the crash and by providing law enforcement officers with additional training to ensure location information is accurately recorded. **Working with the DOH and the State Police to improve the accuracy and sufficiency of DVC-related data does not satisfy the recommendation; however, improving the quality of those data would enable the DNR to better measure the effectiveness of its management of DVCs within the Operational Plan.**

Recommendation 3 (2010)

The Legislative Auditor recommends the Division of Natural Resources create objectives, performance goals, and strategies, in addition to hunting, to reduce the various forms of deer damage across West Virginia.

Level of Compliance: **In Compliance**

PERD evaluated the information regarding data collection methods in the 2011-2015 West Virginia White-Tailed Deer Operational Plan (Plan), and has determined that the agency has complied with Recommendation 3 from the 2010 performance review. More specifically, the Plan has been expanded from the previous edition to include a greater emphasis on the agency's responsibilities regarding deer-human conflicts. In the 2006-2010 edition, for instance, the agency's goal related to sociological impacts is vague, and its objectives are limited to deer harvests from hunting. The goal related to deer-human conflicts in the current Plan however, includes objectives, and strategies that specifically address to how the DNR will work with the diverse groups of stakeholders impacted by these conflicts (see Appendix C for the complete list of strategies). The goal and the objectives are listed below to show the change in emphasis made between the previous and current Operational Plans:

2006-2010 White-Tailed Deer Operational Plan

Goal: Maintain white-tailed deer populations at levels compatible with biological and sociological conditions; and meet projected use by providing a diversity of deer hunting opportunities.

PERD evaluated the information regarding data collection methods in the 2011-2015 West Virginia White-Tailed Deer Operational Plan (Plan), and has determined that the agency has complied with Recommendation 3 from the 2010 performance review.

The goal related to deer-human conflicts in the current Plan ... includes objectives, and strategies that specifically address to how the DNR will work with the diverse groups of stakeholders impacted by these conflicts.

Operational Objectives - 2010:

- Adjust buck hunter (gun) success to one deer harvested per three and one-half hunters statewide.
- Maintain a buck harvest (gun) of 71,377.
- Harvest an estimated 54,589 antlerless deer as normal part of controlled herd stabilization in selected counties.
- Maintain an archery harvest of 29,531.
- Increase muzzleloader harvest to 13,490.

2011-2015 White-Tailed Deer Operational Plan

Goal: Manage the white-tailed deer population at levels compatible with sociological carrying capacity that are not above biological carrying capacity as defined by habitat and biological data.

Objective A: To provide practical population management solutions and alternatives for landowners, city and local governments and homeowners associations facing deer/human conflicts.

Objective B: Increase efforts to collect data relating to deer/human conflicts at the county management level to evaluate deer impacts.

The current Operational Plan specifically addresses the human side of deer-human conflicts.

The emphasis of the goal in the current Plan has changed in three ways. First, the goal in the current plan is to manage the deer population, rather than simply maintain a certain level. Second, the strategies the agency is using to manage the deer population is now defined by the biological and sociological carrying capacities, which are the number of deer that an ecosystem and society can maintain. Third, replacing the hunting objectives from the previous Plan with ones that focus on managing deer-human conflicts shows that the DNR has accepted that its role in managing white-tailed deer must include activities beyond setting bag limits and monitoring hunting harvests. In other words, the current Operational Plan specifically addresses the human side of deer-human conflicts. It does so by including ways the agency plans to improve

communication and collaboration with stakeholders, which will likely lead to greater public buy-in to the agency's programs and goals (e.g., crop damage permits, urban deer hunts, and increasing access for hunting on private lands), as well as improve data collection in the future. Some of the notably strategies included in the current Plan, that if successful should be advantageous to fulfilling this goal, are:

- *Work with the DNR Law Enforcement Section to evaluate the effectiveness of the crop damage system and provide recommendations for its improvement.*
- *Review current legislative rules pertaining to wildlife crop damage and implement recommendations to improve utility and efficiency.*
- *Collaborate with the WVU Extension Office and other agencies on development of educational materials relating to crop damage, deer harvest management and other timely issues.*
- *Collaboration with the DOH and Federal Department of Transportation on road construction projects utilizing methodology to reduce deer-vehicular collisions.*

In addition, the Legislative Auditor recommends that the DNR incorporate in its Operational Plan more specific goals that are tied to measures for reducing deer-human conflict, such as deer-vehicle collisions in the state. Furthermore, the measures specifically stated in the goals should be reported as a way to show the effectiveness of the plans.

The DNR initiated a collaborative funding effort with the State Farm Insurance Company, the U.S. Fish & Wildlife Service's Federal Aid in Wildlife Restoration Program, and the West Virginia Department of Transportation to research deer-vehicle collision data, mitigation techniques, and funding sources for mitigation implementation.

Recommendation 4 (2010)

The Legislative Auditor recommends the Division of Natural Resources initiate research related to reducing deer-vehicle collisions, crop damage, and forest damage created by deer in West Virginia.

Level of Compliance: In Compliance

The actions taken by the Division of Natural Resources in response to Recommendation 4 is commendable. The DNR initiated a collaborative funding effort with the State Farm Insurance Company, the U.S. Fish & Wildlife Service's Federal Aid in Wildlife Restoration Program, and the West Virginia Department of Transportation to research deer-vehicle collision data, mitigation techniques, and funding sources

for mitigation implementation. On August 25, 2014 the West Virginia Department of Transportation's Research & Special Studies Unit within the Division of Highways released the report, *RP-291 – Evaluation of Deer-Vehicle Collision Rates in West Virginia and a Review of Available Mitigation Techniques* (RP-291).¹ The study was conducted by the Rahall Transportation Institute at Marshall University, the Western Transportation Institute at Montana State University, and West Virginia University. This project reviewed police crash reports involving deer carcass data compiled by the West Virginia Department of Transportation from 2008-2012. The report also provides a summary of DVC mitigation measures and funding mechanisms.

PERD identified several recommendations from the report worth highlighting and have included those below. Also, the DNR referenced five findings from the report; however, PERD believes the agency's interpretation of each of those findings is inaccurate in varying degrees. To ensure the study's findings are accurately presented, PERD has addressed each of DNR's statements and provided evidence from the study to support PERD's analysis of the findings mentioned by DNR.

Significant Recommendations from *RP-291 – Evaluation of Deer-Vehicle Collision Rates in West Virginia and a Review of Available Mitigation Techniques*

The report made several recommendations related to steps the State can take to reduce the number of DVCs, most notably:

- The collection of DVC data from the West Virginia Department of Transportation's maintenance crews' deer carcass data and the West Virginia State Police's Crash Reports should be improved to ensure accuracy and consistency.
- The new technology that DOT is currently incorporating should be utilized to ensure better data analysis and to identify DVC hotspots throughout the state.
- The State should conduct a pilot study at one or more of the three hotspots with the highest DVC rates identified in the report to experiment and measure the effectiveness of the proposed mitigation techniques.

On August 25, 2014 the West Virginia Department of Transportation's Research & Special Studies Unit within the Division of Highways released the report, RP-291 – Evaluation of Deer-Vehicle Collision Rates in West Virginia and a Review of Available Mitigation Techniques (RP-291)...This project reviewed police crash reports involving deer carcass data compiled by the West Virginia Department of Transportation from 2008-2012. The report also provides a summary of DVC mitigation measures and funding mechanisms.

¹ The final report is available on the Rahall Transportation Institute's website at: www.njrati.org/research/research-projects/.

While none of these recommendations pertain specifically to the DNR, it relies on the data collected by DOT and the State Police when setting its harvest goals. The DNR also has a vested interest in reducing DVC rates as the state's wildlife management agency. Therefore, the DNR should encourage both the DOT and State Police to incorporate the respective recommendations into their policies and practices as well as coordinate with the DOT in seeking funding for implementing the mitigation study discussed in the third recommendation.

PERD's Evaluation of the Division of Natural Resources Interpretation of the Findings from RP-291 – Evaluation of Deer-Vehicle Collision Rates in West Virginia and a Review of Available Mitigation Techniques

In its response to the engagement letter to this update, the DNR referenced five findings from RP-291– *Evaluation of Deer-Vehicle Collision Rates in West Virginia and a Review of Available Mitigation Techniques* (RP-291), but in reviewing those statements, the Legislative Auditor noted inaccuracies in the agency's interpretation of those findings. PERD has addressed its issues with each of the DNR's statements, with supporting documentation from RP-291, below:

DNR Statement #1: “[D]eer-vehicle collisions rank very low in terms of highway safety when compared to other factors....”

Correctly stated, the RP-291 report concludes that DVCs do not rank high enough in the value of damage to give priority to fund highway safety projects with the primary focus of reducing DVCs. According to the researchers, the Highway Safety Improvement Program is the most appropriate and available source that the State could apply to for funding of mitigation projects. However, the researchers note that:

...projects that qualify for this funding are prioritized by their benefit-cost ratios, where the benefits are derived from expected reductions in the crashes. Therefore, these funds are primarily allocated to locations that experience a high number of crashes that result in fatalities and injuries.

In other words, the methodology used to determine funding priorities for highway safety prioritize projects that will result in a reduction in the number of crashes resulting in serious injury and/or death. DVCs primarily result in property damage; therefore, a project specifically related to DVC mitigation would not rank high in the final scoring for potential funding awards. The researchers also recommend developing partnerships between public transportation agencies, natural resource management agencies, and private wildlife-related entities as an alternative, but viable funding source. They support this recommendation by discussing

In its response to the engagement letter to this update, the DNR referenced five findings from RP-291– Evaluation of Deer-Vehicle Collision Rates in West Virginia and a Review of Available Mitigation Techniques (RP-291), but in reviewing those statements, the Legislative Auditor noted inaccuracies in the agency's interpretation of those findings.

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other states that have used similar strategies to secure funding for DVC mitigation projects from alternative sources.

DNR Statement #2: *“West Virginia does not rank as the number one state for deer-vehicle collisions, when considering the rural nature of the state....”*

This statement misrepresents the actual finding from the report regarding national DVC statistics. The various state-by-state comparisons discussed in both PERD’s 2010 performance evaluation and in RP-291, which includes the annual State Farm Insurance information, find that drivers in West Virginia have the highest probability of being involved in a deer-vehicle collision. Even when the data are normalized by removing the urban portion, the researchers of RP-291 found that:

West Virginia still ranks first in all normalized comparisons that were drawn from the national data, except roadway mileage, before removing the urban portion of the normalizing data. When removing the large urban areas from all states, West Virginia’s ranking drops, but is still in the top 5-11.

Overall, the researchers found that West Virginia ranks highest among all states for DVCs for half of the measures reviewed in the study, including: total number of registered vehicle, licensed drivers, and vehicle miles travelled. While excluding the urban data lowered West Virginia’s rank, the researcher’s question the validity of removing those statistics, “since one could argue that completely removing urban statistics is biased because those individuals living in a city also drive out of city limits.” Regardless of whether West Virginia is first or eleventh, or if the numbers are based on totals or adjusted for the rural nature of the state, deer-vehicle collisions are a wildlife management issue that should be addressed by the DNR.

DNR Statement #3: *“[D]eer-vehicle collision numbers published in the press often do not reflect the actual number of crashes in the state....”*

RP-291 does not specifically mention the reporting of DVC numbers in the media, but it does reference the national studies conducted annually by State Farm Insurance Company and the Insurance Institute for Highway Safety. The agency confirmed in its response to this report that it is referring to the State Farm study in the quote above. The DNR is misunderstanding how the results of the study are presented. State Farm publishes its estimates for the likelihood of a driver hitting a deer within each state, as well as the change in that probability from the previous year. Since 2007, State Farm has identified West Virginia as the state with the greatest likelihood of a driver being involved in a DVC. What

The various state-by-state comparisons discussed in both PERD’s 2010 performance evaluation and in RP-291, which includes the annual State Farm Insurance information, find that drivers in West Virginia have the highest probability of being involved in a deer-vehicle collision.

While excluding the urban data lowered West Virginia’s rank, the researcher’s question the validity of removing those statistics, “since one could argue that completely removing urban statistics is biased because those individuals living in a city also drive out of city limits.”

the researchers actually say in RP-291 is:

Motorists in West Virginia are certainly at a higher risk of being involved in DVCs than most states.... West Virginia is not in the top 10 of the total number of DVC estimates. However, West Virginia ranks first in all normalized comparisons...

Unfortunately, there is not a valid and reliable measure for performing state-by-state comparisons, although vehicle miles traveled is the most logical. The rankings and estimates should be used for informational purposes only and not for decision-making purposes in absence of other data for implementing DVC mitigation.

Although the researchers did not find a valid and reliable measure for performing state-by-state comparisons, the fact the West Virginia remained first in all the normalized totals — including vehicle miles travelled — indicates that DVCs were and continue to be a significant problem in the state. Even if this information is only used for informational purposes, this and the annual study done by State Farm are useful indicators of trends in DVC rates between states and over time.

DNR Statement #4: *“[F]unding for additional projects of this nature would be very difficult, because deer-vehicle collisions are not a major human safety concern when compared to other highway safety factors....”*

Although the researchers did not find a valid and reliable measure for performing state-by-state comparisons, the fact the West Virginia remained first in all the normalized totals — including vehicle miles travelled — indicates that DVCs were and continue to be a significant problem in the state.

As previously mentioned, the researchers found that reducing accidents that result in fatalities or serious injuries takes priority in the selection of federal funding for highway safety projects; DVCs infrequently result in these types of tragedies; therefore, highway safety projects with the primary goal of reducing DVCs are a lower priority for funding. However, the researchers discuss the efforts other states have taken to source funding for these types of projects, and furthermore state that: “Experience in other states demonstrates that creating partnerships with allies that mutually benefit from DVC mitigation creates opportunities to tap individual, organizational, foundation and non-transportation agency sources of support.” They also recommend:

To attract the widest variety of funding from federal, state, local, and private interests it is recommended to: (a) convene a working group of allies to focus on DVC mitigation and seek priority projects that are attractive not only to WVDOT, but to others, (b) assure there are knowledgeable people that are familiar with what is needed for competitive grants to succeed with private

foundations and corporations, and (c) contemplate assigning a WVDOT employee as a coordinator for a working group to facilitate meetings, communications, joint activities and fundraising.

While the method of procuring funds suggested above requires a greater effort than simply relying on existing funding sources, the recommendation provides a potential solution based on similar experiences in the six western states: Arizona, Colorado, Montana, Utah, Washington, and Wyoming. Each of these projects is discussed in RP-291. A similar group was established as a technical advisory committee during the research and writing phases for RP-291; However, following the completion of the final draft of the report, the technical advisory was disbanded. As the recommendation above suggests, the technical committee could be reconvened (or a new one formed) to keep the stakeholders involved in continuing to work together on this issue.

DNR Statement #5: *[O]ther states are not conducting the additional practices outlined in the 2010 Performance Review of the West Virginia Division of Natural Resources.*

The research in RP-291 actually shows that although wildlife agencies and transportation agencies in other states typically do not coordinate on DVC related projects, there are several examples of instances where coordination occurred on specific projects. The researchers conducted telephone interviews with state transportation and wildlife personnel from the bordering states regarding their policy, practices, and the procedures used in the mitigation of DVCs. The researchers summarize their findings from those interviews by stating that:

No new mitigation measures were identified through the interviews that were not already discussed in the literature review. It appears that the role of natural resource management agencies is to control deer population size through public hunting. The implementation of roadside mitigation measures depends on the transportation agencies.

The research in RP-291 actually shows that although wildlife agencies and transportation agencies in other states typically do not coordinate on DVC related projects, there are several examples of instances where coordination occurred on specific projects.

Even if the implementation of roadside mitigation measures are largely dependent on the transportation agencies, the survey responses from wildlife agency officials from surrounding states indicate that their agencies have/do collaborate with transportation agencies on DVC mitigation projects. Kentucky's Big Game Coordinator stated, in his response, that coordination happens in areas where many DVCs occur. Virginia's representative from the Department of Game & Inland Fisheries stated that it cooperated with the Virginia Department of Transportation on mitigation projects, but its primary function on those projects was limited to an advisory role. Finally, Maryland's representative from the Wildlife & Heritage Service stated that it too coordinates with the Maryland transportation agency, the State Highway Administration (SHA). It does so by sharing a deer-vehicle collision database and by identifying safe crossing opportunities for wildlife on SHA fencing projects.

While the researchers recognize that these types of projects are not common, they recognize the potential benefits that they provide. They go on to suggest that:

*In general there seems to be no high level coordination between transportation agencies and natural resource management agencies. Better coordination may lead to more population size reduction efforts through hunting in areas with high DVC numbers. **It may also lead to a shift to more effective mitigation measures as wildlife managers may be better informed about wildlife behavior and management tools than most engineers** [emphasis added].*

So while coordination between wildlife and transportation agencies currently is not the norm, other states have begun to recognize the benefits.

So while coordination between wildlife and transportation agencies currently is not the norm, the survey results from RP-291 shows that states have begun to recognize the benefits that coordination provides to both types of agencies. Transportation agencies are responsible for ensuring roadways are safe and wildlife management agencies are responsible for ensuring animal populations are maintained below a threshold that is tolerable to both the environment and society. Deer-vehicle collisions affect the ability of both agencies to meet their responsibilities. Therefore, it is important that the DNR and DOH begin working together on managing DVCs. Neither agency has all the required expertise to deal with this issue alone, but through collaboration the two agencies can bring together the people with the required knowledge to address the problem.

Conclusion

The Legislative Auditor commends the Division of Natural Resources for the progress in responding to the recommendations from the 2010 DNR Performance Review. There is a clear change in emphasis in the agency's current deer operational plan towards mitigating deer-human conflicts in the state. However, more progress is needed as is indicated by this update. An appropriate and effective management plan involves having specific and measurable goals, and reporting the measures to determine the effectiveness of the plan. The DNR should continue to move further in the direction of establishing specific goals for reducing DVCs and other deer-damage incidences in the state, and use DVC data and other outcome measures as means for assessing the effectiveness of its deer operational plans.

The DNR should continue to move further in the direction of establishing specific goals for reducing DVCs and other deer-damage incidences in the state, and use DVC data and other outcome measures as means for assessing the effectiveness of its deer operational plans.

Updated Recommendations

- 1.. *The Legislative Auditor recommends that the DNR use performance or outcome measures related to deer-human conflicts to assess the effectiveness of its White-Tailed Deer Operational Plans.*
2. *The Legislative Auditor recommends that the DNR incorporate in its deer operational plans more specific goals that intend to reduce deer-human conflict measures, such as deer-vehicle collisions in the state. .*
3. *The West Virginia Division of Natural Resources should continue working with the Division of Highways to improve the collection of roadside deer carcass data and the West Virginia State Police and other law enforcement agencies to improve the quality of data regarding deer-related accidents in its vehicle crash reports.*

Appendix A
Transmittal Letter

WEST VIRGINIA LEGISLATURE
Performance Evaluation and Research Division

Building 1, Room W-314
1900 Kanawha Boulevard, East
Charleston, West Virginia 25305-0610
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John Sylvia
Director

October 21, 2014

Frank Jezioro, Director
West Virginia Division of Natural Resources
324 Fourth St.
South Charleston, WV 25303

Dear Director Jezioro:

This is to transmit a draft copy of the Compliance Update for the Division of Natural Resources. This report is scheduled to be presented during the November 17-19, 2014 interim meetings of the Joint Committee on Government Operations and the Joint Committee on Government. We will inform you of the exact time and location once the information becomes available. It is expected that a representative from your agency will be present at the meeting to orally respond to the report and answer any questions the committee members may have.

If you would like to schedule an exit conference to discuss any concerns you may have with the report, please notify us as soon as possible to set up a date and time. In addition, we need your written response by the close of business on Thursday, November 6th in order for it to be included in the final report. In your response, please state whether or not you agree with our analysis of your agency's level of compliance for each recommendation. For any that you disagree with, please provide an explanation. Also, if your agency intends to distribute additional material to the committee members at the meeting, please contact the House Government Organization staff at 340-3192 by November 10th, 2014 to make arrangements.

We request that your personnel keep the report confidential from anyone outside your agency until it has been accepted by the committees. Thank you for your cooperation.

Sincerely,

Handwritten signature of John Sylvia in blue ink.
John Sylvia

Enclosure

Joint Committee on Government and Finance

Appendix B

Objective, Scope and Methodology

The Performance Evaluation and Research Division (PERD), within the Office of the Legislative Auditor, conducted this compliance review of the Division of Natural Resources (DNR) as authorized under the authority of the Legislative Auditor, Chapter 4, Article 2, Section 5, of the *West Virginia Code*. The purpose of the DNR, as established in *West Virginia Code* §20-2-1, is to protect the wildlife resources for the use and enjoyment of all the citizens of this state. All species of wildlife shall be maintained for values which may be either intrinsic or ecological or of benefit to man. Such benefits shall include (1) hunting, fishing and other diversified recreational uses; (2) economic contributions in the best interests of the people of this state; and (3) scientific and educational uses.

Objective

Determine DNR's level of compliance to each of the four recommendations made in the Legislative Auditor's January 2011 agency review.

Scope

The scope of this review focused on the recommendations made in the January 2011 agency review and the extent to which the agency has responded to these recommendations. The scope was limited to the activities documented in the agency's response to the entrance letter for this review, the White-Tailed Deer Operational Plan, and *RP-291 – Evaluation of Deer-Vehicle Collision Rates in West Virginia and a Review of Available Mitigation Techniques*.

Methodology

This report contains information provided by the DNR to PERD regarding its response to the four recommendations made in the January 2011 agency review. PERD staff attended a presentation given by the authors of the study, *RP-291 – Evaluation of Deer-Vehicle Collision Rates in West Virginia and a Review of Available Mitigation Techniques*, at the DNR headquarters in South Charleston on July 9, 2014. This review also required communication and correspondence with the Division of Highway's Research & Special Studies Section. Upon review, the information from the agency's response and the supporting documentation was determined to be appropriate, sufficient, and accurate to meet the objective of this review.

We conducted this review in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Levels of Compliance	
In Compliance	The Division of Natural Resources has corrected the problem(s) identified in the 2010 agency review.
Partial Compliance	The Division of Natural Resources has partially corrected the problem(s) identified in the 2010 agency review.
Planned Compliance	The Division of Natural Resources has not corrected the problem(s), but it has provided sufficient and appropriate evidence that it is in the planning stages of resolving the problem(s).
In Dispute	The Division of Natural Resources does not agree with either the problem(s) identified or the proposed solution(s).
Non-Compliance	The Division of Natural Resources has not corrected the problem(s) identified in the 2010 agency review.
Requires Legislative Action	The recommendation was directed to the Legislature for statutory amendment.

Appendix C

The 2011-2015 White-Tailed Deer Operational Plan Sociological Goal, Objectives, and Strategies

Goal: Manage the white-tailed deer population at levels compatible with sociological carrying capacity that are not above biological carrying capacity as defined by habitat and biological data.

Objective A: To provide practical population management solutions and alternatives for landowners, city and local governments and homeowners associations facing deer/human conflicts.

Strategies

- Work with the DNR Law Enforcement Section to evaluate the effectiveness of the crop damage system and provide recommendations for its improvement.
- Review current legislative rules pertaining to wildlife crop damage and implement recommendations to improve utility and efficiency.
- Develop and distribute a deer population management guide for landowners, local governments and homeowners associations.
- Facilitate hunting on lands owned by private entities, local governments and homeowners associations through a proactive public relations effort including news releases, popular articles, pamphlets, and open house meetings.
- Develop methodology to track landowner hunter participation.
- Monitor crop damage complaints and provide technical assistance to private landowners regarding deer damage.
- Conduct human dimensions surveys with landowners to evaluate public opinions regarding deer populations to help guide management decisions and measure program success.
- Provide technical assistance to State Parks and federal agencies regarding implementing deer harvest management strategies on their properties.
- Continue cooperative efforts with the West Virginia Municipal League to provide educational information addressing deer/urban conflicts.
- Collaborate with the WVU Extension Office and other agencies on development of educational materials relating to crop damage, deer harvest management and other timely issues.
- Collaborate with the WV Division of Forestry working through the Forest Stewardship Committee to provide consultant foresters with appropriate training and educational materials regarding sound deer harvest management.

Objective B: Increase efforts to collect data relating to deer/human conflicts at the county management level to evaluate deer impacts.

Strategies

- DNR will continue to collaborate with the DOH to develop a notification system for reporting road kill deer to obtain accurate deer/vehicular collision data at the county level.
- DNR will coordinate with the WVOIC to obtain projected deer/vehicular collision data at the county level.
- DNR will continue to track deer crop damage permit data to evaluate deer damage to gardens and cultivated crops at the county level.

- Incorporate data relating to deer/human conflicts into the determination of county harvest management objectives.
- Conduct human dimensions surveys with landowners to evaluate public opinions of deer population levels to guide management decisions and to measure program success.

Appendix D Agency Response



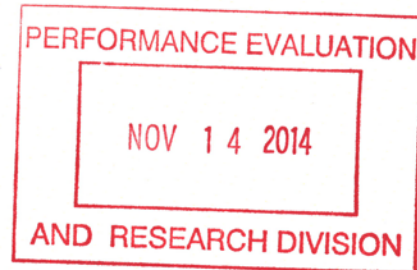
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November 13, 2014

Earl Ray Tomblin
Governor

Frank Jezioro
Director

Mr. John Sylvia, Director
West Virginia Legislature
Performance Evaluation and Research Division
Building 1, Room W-314
1900 Kanawha Boulevard, East
Charleston, West Virginia 25305-0610



Dear Mr. Sylvia,

Pursuant to your request, this letter is to notify you as to whether or not we concur with the draft Compliance Update prepared by the Performance Evaluation and Research Division (PERD) for the West Virginia Division of Natural Resources (DNR). This update is being conducted in response to the Legislative Auditor's request for the PERD to conduct a compliance update regarding the recommendations made in the 2010 agency review of the DNR. Listed below, please find our responses to each the recommendations identified by the PERD in their draft Compliance Update.

Recommendation 1

1. Partial Compliance

Response: The DNR agrees it is partial compliance with this recommendation, because the Ph.D. candidate has yet to submit the finalized dissertation to West Virginia University.

Recommendation 2

1. Planned Compliance

Response: As noted in the DNR's initial response to the PERD, we will continue to use deer harvest data as a performance measure for the state's deer management program. These are specific goals with objectives and outcome measures. The DNR has incorporated numerous additional data into its outcome measures. As noted in the 2011–2015 White-Tailed Deer Operational Plan, we have taken considerable steps to

Mr. John Sylvia
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incorporate not only biological considerations but also sociological parameters. However, to create outcome measures that are largely not influenced by the DNR's policies or include measures that lack precision and accuracy is misleading to the public and is not a scientific process. The examples from the Maryland and Michigan deer plans are taken out of context, and neither state uses deer vehicle collisions any different than the current West Virginia White-Tailed Deer Operational Plan. We have discussed this issue with the respective Deer Project Leaders in Maryland and Michigan, and we can provide you with their contact information if needed.

The DNR will continue to work with the West Virginia State Police and the West Virginia Division of Highways to improve its deer vehicle data collection. In addition, we will work with other state agencies, municipalities and other identities to address deer human conflicts.

Recommendation 3

1. In Compliance

Response: The DNR agrees that we are in compliance with this recommendation. However, we do not agree that deer-vehicle collisions should have more specific goals than already included in the 2011–2015 White-Tailed Deer Operational Plan.

Recommendation 4

1. In Compliance

Response: The DNR agrees that we are in compliance with this recommendation. However, we disagree with some of the PERD's interpretations and findings from **RP-291 – Evaluation of Deer-Vehicle Collision Rates in West Virginia and a Review of Available Mitigation Techniques**. To ensure that the study's findings are accurately and scientifically presented, the DNR has addressed each of the PERD's statements and provided evidence from the study to support the DNR's analysis and interpretation of the findings mentioned by the PERD.

DNR Statement #1: "Deer-vehicle collisions rank very low in terms of highway safety when compared of other factors . . ."

The DNR recognizes that every deer vehicle collision is a concern to West Virginia residents and non-residents that travel through the state. The PERD response further states the same conclusion found in the RP-291 and DNR's Statement #1. Stated in a different way, deer-vehicle collisions result in very few injuries and/or deaths and therefore would rank very low in terms of highway funding projects. The DNR suggests

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that this statement be removed from the report because it does agree that deer-vehicle collisions are very low in terms of highway safety.

DNR Statement #2: “West Virginia does not rank as the number one state for deer-vehicle collisions, when considering the rural nature of the state . . .”

This statement does not misrepresent the findings from the RP-291. It states that when considering the rural nature of West Virginia it does not rank first in the nation in deer-vehicle collisions. In addition, the RP-291 states that State Farm Insurance “. . . estimates are also based on the state in which the insured individual resides, not in the state where the crash was reported.” This important discovery in the RP-291 further demonstrates how the present data that compares one state to another (i.e., State Farm Insurance data) is not representative. Furthermore, the RP-291 states “Any national DVC rankings and estimates should be used for informational and public education purposes only and not for decision-making purposes. The state-to-state ranking methods based on normalized rates (rather than total counts) do not adequately account for various factors that would actually cause state-to-state variations.”

DNR Statement #3: “[D]eer-vehicle collision numbers published in the press often do not reflect the actual number of crashes in the state . . .”

The DNR was referring to the State Farm Insurance Company’s reports. However, it is the PERD that is misunderstanding how the results of the study are presented. First, State Farm Insurance calculates its numerator (i.e., deer hit) based upon where the driver lives and not where the actual deer was hit; thereby, violating a simple principle of statistics. For this number to be valid each state would have to hit the sample percentage of deer in corresponding states. Second, you must consider the rural nature of West Virginia when examining these data. Without considering the rural nature of the state it is misleading to the public and the state’s citizens. The PERD states that West Virginia remained first in all normalized totals, but this is not true. When considering the rural nature of West Virginia it ranked as low as 12th in deer-vehicle collisions. To draw a conclusion that you are more likely to hit a deer in West Virginia than any other state is spurious.

DNR Statement #4: “[F]unding for additional projects of this nature would be very difficult because deer-vehicle collisions are not a major human safety concern when compared to other highway safety factors . . .”

The DNR made a true statement that the PERD interprets incorrectly in their response. Yes, some western states used large partnerships to develop deer-vehicle collision projects. However, the PERD fails to note these projects deal almost exclusively with western wildlife species that differ significantly from white-tailed deer in an eastern

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deciduous forest habitat. Without considering the biology of the species and increased safety concerns regarding collisions with an elk or moose, these western states may also experience funding difficulties. The RP-291 could not locate one example of an eastern cooperative project, particularly one that would have a large, landscape-level influence on deer-vehicle collisions.

DNR Statement #5: “[O]ther states are not conducting the additional practices outlined in the 2010 Performance Review of the West Virginia Division of Natural Resources.”

The DNR strongly objects to the PERD’s comments and analysis with respect to this statement. As noted in the PERD’s response, there was an appendix in the RP-291 that included responses from other states to the survey. The responses from the other states are nearly identical to the information contained in the 2011–2015 White-Tailed Deer Operational Plan and the practices and policies enacted by the DNR. To infer that the surrounding states are doing something different, better or more effective than the DNR is a false statement. We suggest that the PERD remove this statement from their response. The DNR collaborates with other state wildlife agencies through the Northeast and Southeast Association of Fish and Wildlife agencies on deer management and specifically deer conflict issues. We will continue work with other agencies to ensure that our staff continues to use the most up to date and scientifically based methods to reduce deer conflicts. In addition, we will work with other West Virginia agencies to address deer conflict issues.

Updated Recommendations

1. *The Legislative Auditor recommends that the DNR use performance or outcome measures related to deer-human conflicts to assess the effectiveness of its White-Tailed Deer Operational Plan.*

Response: As noted in the DNR’s original response, we will continue to use deer harvest data (e.g., the buck and antlerless deer harvest figures per square mile) as a performance measure for the deer management program. Other sociological data (e.g., deer/vehicle collisions, crop damage, survey data, etc.) will continue to be utilized by agency biologists in the establishment of deer population objectives and appropriate hunting regulations.

2. *The Legislative Auditor recommends that the DNR incorporate in its deer operational plans more specific goals that intend to reduce deer-human conflict measures, such as deer-vehicle collisions in the state, and that such measures be reported as a way to show the effectiveness of the plans.*

Response: The DNR will continue to monitor deer-human conflicts. Deer-human “conflicts” are influenced by numerous parameters that are beyond the control of the

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DNR or other state agencies. We will continue to monitor deer-human conflicts and adjust harvest and/or population objectives to show the effectiveness of our White-Tailed Deer Operational Plan.

- 3. The West Virginia Division of Natural Resources should continue working with the Division of Highways to improve the collection of roadside deer carcass data and the West Virginia State Police and other law enforcement agencies to improve the quality of data regarding deer-related accidents in its vehicle crash reports.*

Response: The DNR will continue to work with the West Virginia Division of Highways, West Virginia State Police and other agencies to improve the quality of deer-vehicle collision data.

The DNR has done a tremendous amount of work in response to the 2010 performance review of the agency. Where applicable and possible, we have adequately addressed the concerns identified in the performance review. It is not in the best interest of the state, the agency, its citizens or the wildlife resources that we manage to have PERD suggest or recommend unrealistic goals or expectations. The DNR has made significant strides in managing the state's white-tailed deer resource. We will monitor and adjust deer densities throughout the state to levels that are compatible with both biological and sociological parameters. Throughout this complex and challenging process, we will continue to use the best available data and scientific methodologies designed to achieve deer management objectives that ultimately benefit the state's citizens.

Once again, thank you for the opportunity to provide these comments on the draft Compliance Update prepared by the PERD for the DNR. Should you have questions after reviewing our response, please feel free to contact me.

Sincerely,



Frank Jezioro
Director

FJ/cr



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