

Chris Taggart

From: bjhoy@localnet.com
Sent: Sunday, August 1, 2021 3:56 PM
To: Ravalli County Commissioners Office
Subject: [EXTERNAL] New article in Audubon Magazine that should be of interest
Attachments: Ravalli County Study Group Report-2001 copy.pdf

Dear Ravalli County Commissioners and Ravalli County Board of Health,

This is the link to a recent article that was in a recent Audubon magazine concerning effects of an insecticide on deer and other animals.

<https://www.audubon.org/magazine/summer-2021/lax-pesticide-policies-are-putting-wildlife>

I found that many of the grazing animals, including domestic ruminants and equines, that I examined and measured or necropsied all had the same birth defects. My website is (www.judyhoy.com). Click on the PDFs to Download to see the photo documents and the studies. The South Dakota study on WTD and imidacloprid effects, including the birth defects we reported in our studies was based on the first two studies that Bob Hoy and I coauthored along with other biologists. After the SD researchers found the results that they published in Nature, some of the same researchers who worked on the SD study had the spleens of a large number of WTD accident killed and hunter killed in Minnesota tested for imidacloprid. Their results were alarming. I think it is time for MDFWP to recommend that something be done to save the affected wildlife in Montana from imidacloprid and other neonicotinoid exposure (that would be pretty much all vertebrates and invertebrates). Human newborns are being affected as indicated by similar birth defects. The Ravalli County Study Group brought the birth defects and adverse health issues to the attention of the County Board of Health and the County Commissioners several years ago, but none of their recommendations were followed.

Sincerely,
Judy Hoy

Stevensville, MT 59870
1-406-777-2487

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Ravalli County Commissioners

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STUDY GROUP STATEMENT
RE: WILDLIFE DEFORMITIES IN THE BITTERROOT VALLEY
FURTHER INVESTIGATION IS WARRANTED
Submitted April 12, 2001

Bolded notes were added by Judy Hoy in 2019.

Summary

A study group was established with the aide of the U.S. Fish and Wildlife Service Lee Metcalf National Refuge to evaluate whether existing information justifies further investigation into the issue of wildlife deformities in the Bitterroot Valley. Based on the genital anomalies evident in archived specimens of white-tailed deer, the detailed records documenting these variations in dozens of other deer, and the current lack of a rigorously designed scientific study, the group recommends an investigation begin as soon as possible to evaluate the health of the white-tailed deer population in the Bitterroot Valley. Due to the potential for exposure to environmental chemicals, inclusion of ecotoxicological sampling in the study is warranted. Suggested members of the wildlife health cooperative include representatives from the Montana Department of Fish, Wildlife and Parks, the U.S. Fish and Wildlife Service, Ravalli County Public Health Board, Ravalli County Fish and Wildlife Association, an epidemiologist, a local veterinary scientist, and because of the tremendous amount of public interest in this issue, one or more citizens from the Bitterroot Valley. This team would design the research strategy, coordinate data collection, hire consultants, solicit funding, review findings, and communicate with the public. It is critical that any data collection strategy be done within the framework of a well-designed study. Free-ranging wild animals reflect the health of an ecosystem and subtle transitions in health status are often overlooked. A systematic evaluation of wildlife health is warranted to safeguard public health in the light of continued reports of physical anomalies in wildlife.

Study Group Formation

Since 1996, various anomalies have been observed in several species of wildlife in the Bitterroot Valley. These anomalies include, but are not limited to, beak and leg deformities in birds, as well as genital variations in white-tailed deer. In 1999, the United States Fish and Wildlife Service commissioned a report to assess whether pesticides could be the cause of the anomalies, and to seek recommendations for future study.

The report (January 2000), *Potential Effects of Pesticides on Deer and Other Wildlife in the Bitterroot Valley, MT*, by Dr. Anne Fairbrother, concluded that it is highly unlikely that the types of malformations described in the deer result from exposure to the chemicals suspected of being present in the Bitterroot Valley, but without information about timing and magnitude of environmental residues of the pesticides it is not possible to definitively rule out that pesticides may be causing adverse effects in wildlife. The report also stated that prior to ascribing cause-and-effect to pesticides, a systematic approach is needed to investigate the issue.

In June 2000, colleagues and other interested parties convened to discuss the report. At this meeting it became clear that there was still a difference of opinion about the legitimacy of claims of wildlife anomalies. There had been no comprehensive coordinated approach to obtain appropriate specimens for analysis. The result was fragmented sources of data. In order to evaluate the claims of wildlife deformities and determine whether the available information justifies follow-up investigation the study group assembled in August 2000 to begin review of existing data and correspondence.

Study Group Members

This document states the findings of the study group established with the aide of the U.S. Fish and Wildlife Service Lee Metcalf National Wildlife Refuge to evaluate whether further investigation might be necessary to safeguard public health in the light of continued reports of physical anomalies in wildlife. The study group includes William Hadlow, D.V.M., veterinary pathology; Donald Maclean, M.D., Ravalli County Board of Public Health; Linda Dworak, D.V.M., Ph.D., place-based medicine; Ira Holt, Ravalli County Fish & Wildlife Association; Judy Smith, Ph.D., molecular biology and community health; and Ted Kerstetter, Ph.D., animal physiology.

Findings

Over the last 5 months group members reviewed existing data, observed archived specimens, searched the literature, preformed several interviews, and met intermittently to coordinate responsibilities and share findings.

We examined more than one dozen archived white-tailed deer specimens collected by Judy Hoy. These specimens revealed prognathism, as well as, genital anomalies including testes oriented cranio-caudal (the left testicle positioned cranial to the right testicle) along the ventral midline, shallow or nonexistent scrotal sacs, and teats shifted cranially towards the umbilicus. We agreed that obviously Judy Hoy's observations are real but what it all means is hard to tell.

Dr. Hadlow discussed these findings with Dr. Gary Wobeser of the Canadian Wildlife Cooperative in Saskatoon and author of Investigation and Management of Disease in Wild Animals (1994). While Dr. Wobeser has not seen a high incidence of the genital anomalies, he has seen prognathism, yet had no hard numbers as to the frequency of occurrence.

The 1996-1997 records from Judy Hoy contained measurements and drawings of the genitalia on white-tailed deer collected (**Note #1**) along the roadside in Ravalli County. A preliminary review of this data revealed: abnormal testicle placement in >67% (18/27) of yearling bucks and 70% (16/23) of bucks greater than one year old; abnormal teat placement in 17% (5/29) of yearling bucks and 23% (5/22) of bucks greater than one year old; and scrotal absence in 16% (5/30) of yearling bucks and 22% (5/22) of bucks greater than one year old. There are scientific limitations of this preliminary assessment (**Note #2**): measurements of control animals are not included and no reference measurements were taken, the sample population is biased to road-killed deer, and the ages of the deer may not have been established by rigorous enough criteria. Nonetheless, the evidence suggests that, even with a conservative interpretation, reproductive malformations have occurred in the male deer population. The fact that the malformations were not observed until 1996 (**Note #3**) suggests that an introduced environmental factor could be responsible. Such factors may be pesticides, inert ingredients, pesticide breakdown products, industrial contaminants, infectious agents, nutritional, or a combination of the above.

(*1 Note: Game Warden Bob Hoy, a biologist, collected the accident-killed deer as part of his job. While collecting the carcasses, Bob Hoy observed the teats were forward of normal on both sexes and that there was no scrotum or a misaligned hemiscrota on males. Judy Hoy measured the deer and recorded the data. JH)

(*2 Note: measurements of all male deer, normal and abnormal were taken, some deer were killed by other than vehicles, not that how a deer dies has anything to do with whether it has a birth defect. It is easy to determine the age of deer until they are over 5, when it gets more

difficult. The age of the deer was established by tooth eruption and wear. It is not difficult to determine whether a deer is over one year of age or less. No deer born prior to 1995 had a birth defect. JH)

(*3 Note: Multiple birth defects, except for the reproductive malformations first observed in April 1996 on a yearling male deer born in 1995, were first observed on a number of wild and domestic animals in spring of 1995. In spring of 1996, young birds with an underdeveloped upper bill began being observed. JH)

Also, in 1996-1997, the Montana Department of Fish, Wildlife and Parks examined deer carcasses from both Ravalli and Gallatin counties with the assistance of veterinary pathologists at the state diagnostic laboratory in Bozeman. Detailed necropsy reports are available and reported no significant findings. The conclusion was made that no abnormalities in the Ravalli County white-tailed deer population were occurring relative to the Gallatin County deer. This study lacked a coordinated sample collection strategy and epidemiological analysis. A more rigorous scientific study is needed that documents findings in comparison with a control population. **(Note below.)**

(Note: wild ruminants in all western states and western Canada had the same birth defects, thus finding a “control population” would have been extremely difficult. For example, at present (2018) many male bison have short or no scrotum and/or misaligned hemiscrota in Yellowstone National Park and the National Bison Range. JH)

We were contacted by Dr. Charlotte Quist, a pathologist from the Athens Diagnostic Laboratory at the University of Georgia College of Veterinary Medicine who studies wildlife health. She advised us that routine toxicology testing is often not sensitive enough to detect causative agents, giving false negative results. Dr. Quist reiterated that there is a lot to be gained from a well-planned study of readily available animals, such as wildlife killed on the road. She offered her expertise to help plan future studies, including sample collection, storage and testing.

While studying this project we were interested in reviewing the pesticides that had been used in Ravalli County over the last decade and how this might correspond to the wildlife reports. We wanted to determine what types of pesticides had been applied when and where, and in what quantities. What we learned was rather distressing – this information is not available. The Montana Department of Agriculture collects records of pesticide use and sales only every five years. This information is compiled into a statewide summary by chemical classes after which the individual records are destroyed. Currently, there is absolutely no way to trace the local effects of pesticides on human or wildlife health. **(Note below.)**

(Note: the study group was also informed about the same birth defects being observed on multiple domestic animals as well as on the human newborns and wildlife all beginning in 1995. They were shown specimens and photos of affected domestic animals. JH)

While the implication of pesticide exposures and disruption in calcium-signaling are intriguing, we simply could not find enough hard evidence to confirm this conclusion. We did, however, find much literature supporting the potential for pesticide and some vegetation to cause such effects. There is a lack of knowledge about the effects of chemicals on wildlife and there is variability in how different species of wildlife may respond to any specific compound. However, it is known that at key time intervals during fetal development, extremely small amounts of endocrine-disrupting compounds can cause permanent anomalies in organ systems.

To rule-out pesticides as causing estrogenic or anti-androgenic effects is not possible. Neva Hassanein from the Environmental Studies Program at the University of Montana informed us that it was not until the passage of the 1996 Food Quality Protection Act that Congress mandated that pesticides be assessed for their ability to disrupt the endocrine system. The screening and testing methods for endocrine disruption are still being developed. As a result, few pesticides have been tested adequately for endocrine effects. **(Note below.)**

(Note: at present, in 2019, many pesticides (umbrella term) have been tested and many have been found to be serious endocrine disrupters. Besides being an endocrine disrupter, a Vitamin A (retinol) disrupter, and a patented antibiotic, Roundup is a patented mineral chelator, thus exposure causes serious mineral deficiencies and multiple other extremely unhealthy effects on exposed animals, particularly newborns. JH)

In the past ten years there has come about a profound understanding that fetal development can be disrupted by extremely small concentrations of xenobiotic compounds. These compounds mimic or antagonize several naturally-occurring hormones which, in turn are essential in “guiding” normal development. Unfortunately, it is a distinct possibility that chemicals are involved in the observed anomalies. Thus, we are not prepared to rule-out exposure to environmental toxins as a causative factor in the changes occurring in the wildlife.

Recommendations

After evaluating the available information we believe there is sufficient documentation to justify further investigation and integrated analysis. We support the establishment of a wildlife health team to design the research strategy, coordinate data collection, hire consultants, solicit funding, review findings, and communicate with the public. Because of the tremendous amount of public interest in this issue, one or more trained persons from the Bitterroot Valley would be very important components to this team.

A cooperative effort between the Montana Department of Fish, Wildlife and Parks, the United States Fish and Wildlife Service, and the public sector through citizen inclusion creates a unique framework for soliciting funds through grants. Already in the valley, some private citizens are developing a strategy to begin this work. Establishing cooperative effort now allows the opportunity for the synergy that comes from cohesive working relationships and alleviates the conflicts and delays that arise through a lack of involvement.

We suggest the Montana State Diagnostic Laboratory in Bozeman, and Montana Fish, Wildlife and Parks work together to collect more baseline information by thoroughly reviewing all carcasses that come through the laboratory. In addition, we suggest a site for necropsies and sample collection be established in the Bitterroot Valley in order to obtain samples as soon as possible and avoid constraints due to freezing and transporting carcasses. One possibility for data collection is to station trained observers at all hunter check stations in the fall. It is extremely important that any data collection strategy be done within the framework of a well-designed study. **(Note below.)**

(Note: None of the suggested actions were ever taken by the study group, other private citizens or the suggested government agencies. This was primarily because of continuing adamant refusal by government agencies, such as the Montana Department of Fish, Wildlife and Parks, the Montana State Health Department, the State Agricultural Department, the Ravalli County Health Department and the Governors of Montana from 1996 to present to do anything to save the

newborns (human, wild and domestic). Judy and Bob Hoy worked with scientists and researchers and eventually coauthored two studies concerning the birth defects on wild and domestic animals, one in 2002 and one in 2011. After those studies were published in peer reviewed journals, Judy Hoy and two researchers, Dr. Stephanie Seneff and Dr. Nancy Swanson, coauthored two more studies in 2015 and 2016, also published in peer reviewed journals, concerning the effects of specific pesticides on human newborns and humans in general; both studies were generated by the birth defects and health issues found on western Montana wild and domestic animals of all kinds, both vertebrate and invertebrate. JH)

Given the potential consequences of environmental chemicals on public health, particularly at the scale of use in an area like Ravalli County with its large agricultural component and federal lands, we suggest that the wildlife health team open dialogue with the Montana State Department of Agriculture about restructuring the record-keeping system to allow for retrospective epidemiological studies. Information about each chemical species used and all inert ingredients are critical to investigate health complaints as well as the effectiveness of weed control strategies.

Rather than focusing on a specific cause of the observed anomalies, we suggest implementing a protocol that establishes a baseline for wildlife health and allows for continued monitoring of wildlife health.

Additional Considerations

The health of our communities is directly related to the health of the natural environment. Just as the quality of the air and water impact human health, man-caused impacts on the land affect the health of the natural landscape. The tremendous buffering capacity of nature and expanse of the natural landscape can obscure any evidence of ill-health until dramatic proportions are reached. Given the multitude of man-caused changes, identifying sentinels of environmental health is helpful. Similar to the use of the canary in the coal mines, in which canaries were carried into the cavernous depths of the mine shafts, their acute death indicating toxic air than man was not yet feeling, so too do wildlife serve, albeit in a less purposeful manner, as sentinels of environmental health.

Undeniable alterations have been noted in birds and mammals in the Bitterroot Valley since the mid-1990s. The cause of the changes is unknown. In the case at hand, anatomic variations in the genitalia of white-tailed deer, in some instances very subtle, have indeed occurred. The question remains, are these changes simply variations of normal or do they represent a significant alteration in genetic stock. A more plausible hypothesis may be that the anomalies are due to exposure to vegetative or chemical environmental toxins. Despite the premature emphasis on pesticides as the sole cause of the anomalies in wildlife, the careful observations by the public must be taken seriously. **(Note below.)**

(Note: the only known toxins that had greatly increased in use anywhere near Ravalli County from 1994 through 2000, the time of the investigation for this report, were a fungicide, Chlorothalonil used on potato fields for potato blight in states upwind of Ravalli County, Imidacloprid registered for use in 1994 and excessively applied, both in upwind states and Ravalli County after that date and Roundup on Roundup Ready crops in Ravalli County and in states upwind. Most importantly, newborns of humans, many individuals of multiple wild and domestic mammals, wild and domestic birds, as well as amphibians and reptiles were all observed with the same or similar developmental malformations in that time frame. It was not just white-tailed deer that were being affected, as this and other reports seem to suggest.)

If, in fact, chemicals are part of the equation perhaps it is time to *shift* from the idea that one chemical is causing the anomalies, and instead consider that our surroundings contain toxic *cocktails* that are constantly shifting and changing. As such, our most prudent and thoughtful action would be to eliminate the continued contribution of toxins we know are harmful.

There is tremendous difficulty inherent in detecting toxic substances causing acute high dose episodes, let alone those substances present in chronic intermittent low doses. Such work requires knowing the agent(s) suspected as well as knowing the path of the chemical agent, its breakdown products, and any inert ingredients in the environment, plants, soils, and body. These factors become even more complicated when multiple agents are present. Without knowledge of the underlying mechanisms involved to delineate a cause-effect relationship, any association between hormone alterations and the reported anomalies from field studies is only circumstantial. Because of normal variations in physiology associated with age, gender, diet nutritional status, season and general health, findings must be interpreted with caution. Studies should be designed to control for these variables. Ecotoxicological investigations need to be included in the wildlife health field research studies.

A complicating factor in the case at hand is that the functional affects of dietary and environmental substances can be elicited by very, very, very low doses. Effects of exposure can be evident yet the causative agent may not be detected because it is present at levels below detectable limits. Also, unknown yet real synergy occurs between substances where one compound can actually enhance the effects of another. It is important to note, however, that methods are now becoming available capable of detecting astonishingly tiny amounts of chemicals. **(Note below.)**

(Note: The Hoys had snow water collected in March 1999, in their yard, tested for Chlorothalonil by Energy Labs in Billings, MT, at least 5 months after it was extensively sprayed on potato fields in Idaho, Washington and Oregon. Chlorothalonil had never been used and was not being used in Ravalli County at that time according to the Ravalli County Extension Agent, Rob Johnson, who was consulted. The lab found 0.43 ppb of Chlorothalonil and two very similar chemicals that were not identified in the melted snow water, stated by the lab to be metabolites or a metabolite and Hexachlorobenzene, a banned fungicide, said to often be a contaminant in Chlorothalonil or added to Chlorothalonil prior to application. It was suggested by the lab that this addition often took place on potato farms. Since the amount of both of the unidentified chemicals exceeded the amount of Chlorothalonil, one of them may have been Hexachlorobenzene. Because such a large amount of Chlorothalonil and the other similar toxins were in the snow five months after the potato fields were last sprayed, one must ask how much was in the rain during the months that Chlorothalonil was being sprayed two or three times a week on each potato field. In a study of Chlorothalonil's effects on the life found in fresh water habitats, done at the University of South Florida by Jason Rohr, the only life that remained after only 0.1 ppb of Chlorothalonil alone was added to the water, was algae. All vertebrate and invertebrate species were killed by the 0.1 ppb of Chlorothalonil, as well as all the one-celled organisms that live in fresh water. JH)

Ideally, what we would have is adequate documentation of anomalies caused including not only a detailed anatomical description of each anomaly, but also some idea of its prevalence. What we have in this case, primarily, are careful observations by the public, which alone are not enough. Determining the prevalence of anomalies existing today, however, may not accurately reflect what was happening in the population in the past. The anomalies that occurred four years ago

could have resulted from a 'point in time' exposure when factors converged just right to induce the changes. **(Note below.)**

(Note: In summer of 1994, Chlorothalonil, a fungicide, which suddenly began being used in massive amounts on potato blight in states upwind of Montana was not much used prior to 1994. Chlorothalonil, containing cyanide, has been found to work synergistically with herbicides, especially Roundup/glyphosate, 2,4-D, Dicamba, and others, and with insecticides called neonicotinoids, especially Imidacloprid, causing faster death to all vertebrates and invertebrates tested with simultaneous exposure. Whatever caused the new types of birth defects on human and other animal newborns to suddenly occur in 1995 had to affect the pregnant females in summer of 1994 and during the winter prior to spring of 1995. The birth defects are still occurring and some have increased in prevalence since 2014, especially the male reproductive malformations/genital anomalies. It was the extent of the male reproductive malformations between 1995 and 2001 that prompted the Study Group to study the reported health issues and issue this report. JH)

Conclusion

We recommend a follow-up investigation be performed to evaluate the health of the white-tailed deer population in the Bitterroot Valley. This recommendation is based on the genital anomalies evident in archived specimens of white-tailed deer, the detailed records documenting these variations in additional deer, and the current lack of a rigorously designed scientific study. To link pesticides to any of this issue is premature. However, due to the potential for exposure to environmental chemicals, inclusion of ecotoxicological sampling in the study is warranted.

Free-ranging wild animals reflect the health of an ecosystem. Subtle changes in population density and demographics, parasite loads, immunity, nutritional status, infectious and toxic diseases, and behavior are all indicators of health. Currently, alterations in wild populations are primarily exposed by rapid population declines or acute outbreaks of disease and die-offs. Subtle transitions in health status are usually overlooked. Yet it is the subtle changes that can serve as early indicators of threats to the ecosystem such as influxes of biological vectors, chemical dispersion, reduced water quality, loss of vegetation, and/or disruption of the interface between wildlife and humans, domestic livestock, or game farm animals.

Detecting subtle changes requires strategies for data collection and analysis that are specifically designed for the region. The strategies are two-fold including baseline health status information and long-term monitoring / surveillance programs that compare new information to the baseline.

Any study must be scientifically valid with the ultimate responsibility for oversight, planning and implementation falling to an agreed upon wildlife health cooperative. The cooperative would also establish the timeline for the study. Suggested members of the wildlife health cooperative include representatives from the Montana Department of Fish, Wildlife and Parks, the United States Fish and Wildlife Service, Ravalli County Public Health Board, Ravalli County Fish and Wildlife Association, a local veterinary scientist, and two local citizens with experience in the issues. Since we are dealing with very precious sample sources, procedures must be reviewed and approved in advance of the work. A write-up of procedures used should be included in the data reports so it is possible for independent readers to judge the quality of the results.

Submitted April 12, 2001

(Note: The following was hand written on the back of the report and were notes as to what was available and what should be done and by whom. No one ever did anything else. The study group disbanded, the Ravalli County BOH decided the 2002 and 2011 peer reviewed studies by the Hoys and their colleagues were not credible in spite of this report. The MDFWP still refuses to do anything, including the basics like looking at the animals to determine if they have birth defects or even admitting that obvious developmental malformations are present when they see them. They refer to the developmental malformations/birth defects/anomalies as “normal variations” even when the defect is responsible for the death of the affected animal.

In 2012, Senator Max Baucus asked the EPA to do testing and to look into the birth defects on the human newborns and the other animal newborns. The Director of the Denver Office of the EPA, James Martin, called someone in the Helena Office of the Montana Department of Fish, Wildlife and Parks and was told that the white-tailed deer in Ravalli County were fine. The EPA did nothing and nothing has been done by government agencies since, even though the birth defects on human newborns have increased, with heart defects since becoming the number one birth defect on newborns in the United States. It is number 3 on the wildlife. If autism continues to increase in human newborns at the present rate, 1 of every 2 newborns will have autism by 2025. JH)

THE FOLLOWING WERE HANDWRITTEN NOTES ON THE BACK OF THE STUDY GROUP STATEMENT GIVEN TO THE HOYS.

Task Force Qualifications: 5 of 6 are professionals in area of life science.
2 DVM's 1 MD 2 Ph.D. level scientists

Archived Specimens

Origin – fetal development time window of sexual organ development.

Possibilities

Interference with development processes, which are normally controlled by hormones – e.g. estrogen, testosterone

Genetics – e.g. inbreeding – unlikely **(Note below.)**

(Note: Very true, because humans, amphibians, birds and mammal don't get inbred in the same time period and all have the same birth defects happen in their newborns in the same spring. JH)

Most plausible explanation is interference with normal hormonal control of development by xenobiotic chemicals that interfere with endocrine system, especially sex hormones and thyroid hormones.

Health Board

Take steps to initiate complete records of pesticide applicators, public and private.
Consider participating in process of sample collection and analysis for xenobiotic

chemicals: herbicides – especially organochlorines, dioxins and PCB's

SUBSEQUENT COMMUNICATION BETWEEN THE HOY'S AND THE DIRECTOR OF THE MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS, AFTER A MEETING IN MISSOULA BETWEEN PEOPLE ON THE STUDY GROUP, OTHER INTERESTED PARTIES, THE HOYS, THE MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS BIOLOGISTS AND THE VETERINARIANS PAID TO REPRESENT THE MDFWP AT THE MEETING IS BELOW.

February 12, 2002

Dear Ms. Hoy:

This is in response to your correspondence of January 11. It is not that Fish, Wildlife and Parks (FWP) doesn't believe there are deformities in wildlife. FWP relies on the expertise of the biologists and other experts (pathologists and veterinarians, etc.). That is why FWP biologists were asked to meet with the Ravalli County Wildlife Study Group, Dr. Layton and Dr. Roffe to review the findings of the recent studies on deformities to determine what course of action should be taken in the future. It was reported to me that there was disagreement on many aspects of the described deformities. Unfortunately only two representatives of the Ravalli County Wildlife Study Group were present and one had to leave the meeting early. At the conclusion of the meeting it was understood that the state representatives did not feel that the meeting was a successful interchange and did not provide helpful guidance for future action.

It was FWP's understanding at the conclusion of the meeting in Missoula that the Wildlife Study Group was responsible for follow-up meetings with state representatives. John Vore, FWP wildlife biologist in Hamilton or John Firebaugh, wildlife biologist in Missoula are the contacts for future actions regarding this issue.

Sincerely,
M. Jeff Hagener
Director

The Director of the MDFWP, Jeff Hagener, said he thought the Study Group was going to do studies, but though the Study Group told the Ravalli County Board of Health (RCBOH) that studies should be done to determine what was causing the birth defects, they, nor the MDFWP ever did any. Only two members came to the meeting, which the Hoys made arrangements for in Missoula, MT. The Study Group had nothing to do with arranging that meeting and the Hoys were not members of the Study Group. The Study Group initially formed to determine if the birth defects the Hoys were reporting were actually present or if they were not present as the MDFWP personnel stated in their Ravalli County White-tailed Deer Survey report issued in 1997. The Ravalli County Study Group, which included a member of the RCBOH did present their findings to the RCBOH in April of 2001, soon after their report was issued.

- **The following is the report on that meeting, which was in the Ravalli Republic Newspaper, written by Rod Daniel, staff reporter and an Associated Press article that was in the newspapers.**

NEWSPAPER ARTICLES CONCERNING THE RAVALLI COUNTY STUDY GROUP REPORT

Scientists call for study of wildlife abnormalities

Rob Daniel Staff Reporter

The Ravalli County Board of Public Health heard a recommendation Thursday from a group of valley scientists who believe the high percentage of genital malformities noted over the last several years in the male white-tailed deer population warrants an investigation.

Dr. Ted Kerstetter, an animal physiologist, presented the recommendations of a six-member study group established with the help of the Lee Metcalf Wildlife Refuge.

The group began meeting in 1999 to assess whether pesticides could be the cause of documented abnormalities such as beak and leg deformities in birds as well as genital variations in white-tailed deer and to seek recommendations for further study.

In addition to Kerstetter, the study group includes William Hadlow, V.V.M., veterinary pathology; Don Maclean, M.D., Ravalli County Board of Public Health; Linda Dworak, D.V.M., Ph.D., plant-based medicine; Ira Holt, Ravalli County Fish and Wildlife Association; Judy Smith, Ph.D., molecular biology and community health.

Kerstetter said that two-thirds of the male white-tailed deer observed through archived specimens from wildlife rehabilitator Judy Hoy exhibited genital abnormalities.

"These abnormalities are real; they are not made up," he said. "A chilling number of deer observed (in the Bitterroot) exhibit these abnormalities."

He said that in mammalian development there is a time, when sexual differentiation takes place and that the process is guided by hormones.

"When the (sexual differentiation) process goes wrong, it's almost always related to hormones," he said. "A possible explanation (for the abnormalities) is hormonal interference from the environment."

Kerstetter said the study group supports establishing a wildlife health team to design the research study, coordinate data collection, hire consultants, solicit funding, review findings and communicate with the public. Their recommendation is based on the genital anomalies evident in archived specimens of white-tailed deer, detailed records documenting these variations in additional deer, and the current lack of a rigorously designed scientific study.

Kerstetter noted the Montana Department of Agriculture keeps no useable records on the use of pesticides in individual counties. He said the study group suggests the wildlife team open a dialogue with the Department of Agriculture about restructuring the record-keeping system to allow for retrospective epidemiological studies.

"(A detailed scientific study) is the only way we know of to approach this problem," Kerstetter said.

The Board of Public Health took no action on the recommendation.

In other action:

- Health Board member Don Maclean resigned, leaving an opening on the board. Citizens wishing to apply to fill the vacancy can contact the Ravalli County Board of Public Health.
- A joint meeting between the Ravalli County Weed Board and the Board of Public Health has been scheduled for Tuesday, May 8 at 8 p.m. at the court-house.

Panel recommends probe of deformed animals

- By the Associated Press
- May 13, 2001

MISSOULA (AP) — A panel of private health and medical professionals says reports of wildlife deformities in the Bitterroot Valley deserve further investigation despite a federally commissioned report that cast doubt on their presence.

The group organized last June after the U.S. Fish and Wildlife Service commissioned a report by Oregon veterinarian and toxicology specialist Anne Fairbrother. She concluded that it was highly unlikely that chemical pesticides caused the types of deformities described in white-tailed deer by longtime Stevensville wildlife rehabilitator Judy Hoy.

The private group was formed to evaluate Hoy's fragmented evidence and try to determine whether it warranted follow-up investigation.

It was composed of William Hadlow, retired veterinary pathologist from the Rocky Mountain Laboratory in Hamilton; Donald Maclean, retired physician; Linda Dworak, veterinarian; Ira Holt, Ravalli County Fish and Wildlife Association; Judy Smith, molecular biologist; and Ted Kerstetter, who has a doctorate in animal physiology.

For five months, the group reviewed data, observed white-tailed deer specimens collected by Hoy, researched related literature and conducted interviews.

"We agreed that obviously, Judy Hoy's observations are real, but what it all means is hard to tell," the group's report says. The Montana Department of Fish, Wildlife and Parks examined about 30 deer carcasses from the Bitterroot in 1996 and 1997 and found no significant problems. But the study group concluded that FWP's study "lacked a coordinated sample collection strategy" and analysis.

In its written report, issued in April, the group recommends further investigation of possible wildlife abnormalities.

"We support the establishment of a wildlife health team to design the research strategy, coordinate data collection, hire consultants, solicit funding, review findings and communicate with the public," the group's report says.

The study group suggested that members of this “ wildlife health cooperative” should include representatives from FWP, U.S. Fish and Wildlife Service, Ravalli County Public Health Board, Ravalli County Fish and Wildlife Association, an epidemiologist, a local veterinary scientist and one or more citizens from the Bitterroot Valley.

In addition, the group recommends sampling for toxic chemicals in the environment. So far, no action has been taken on the group's recommendations.

It should be noted that the Ravalli County Board of Public Health never took any action and no wildlife health team was ever established. In 2002, Dr. Ted Kerstetter assisted Robert Hoy, Judy Hoy and Dr. Douglas Seba in publishing a peer reviewed study concerning the birth defects on the Ravalli County white-tailed deer. Dr. Kerstetter wrote the study, with Dr. Seba’s help, using the data collected by the Hoys over a 5-year period.

[Hoy JA, Hoy RD, Seba D, Kerstetter TH (2002) Genital Abnormalities in White-tailed Deer (*Odocoileus virginianus*) in West- central Montana: Pesticide Exposure as a Possible Cause. J Environ Biol 23:189-97. <http://www.ncbi.nlm.nih.gov/pubmed/12602857>].

A long term (15 year) study addressing the underdeveloped facial bones was published in 2011 using measurements collected between 1996 and 2010. Those birth defects began being observed in the same spring (1995) as the reproductive malformations on males on a high prevalence of individuals of multiple grazing animals, many individuals of multiple bird species and reported on human children throughout the United States.

[Hoy JA, Haas GT, Hoy RD, Hallock P (2011) Observations of Brachygnathia Superior in Wild Ruminants in Western Montana, USA. Wildl Biol Pract 7(2): 15-29. <http://dx.doi.org/10.2461/wbp.2011.7.13>]

A third study was published in 2015, concerning birth defects and health issues affecting newborn children and humans of all ages, based on what was being documented in the wild and domestic animals.

[Hoy], Swanson N and Seneff S. The High Cost of Pesticides: Human and Animal Diseases. Poult Fish Wildl Sci. 2015; 3:132. doi:10.4172/2375-446X.1000132 <https://www.longdom.org/open-access/the-high-cost-of-pesticides-human-and-animal-diseases-2375-446X-1000132.pdf>].

The Montana Governors, the Montana Department of Fish, Wildlife and Parks, the Montana Department of Health and Human Services, the Ravalli County Commissioners and the Ravalli County Board of Health have all been kept up to date on the birth defects on the wild and domestic animals, including the birds. Most never reply to updates or inquiries.