PROCEEDINGS
OF THE
28th ANNUAL MEETING
THE MONTANA CHAPTER
THE WILDLIFE SOCIETY

LEWISTOWN, MT
MARCH 1 - 2, 1990

AGENDA

28th ANNUAL MEETING OF THE MONTANA CHAPTER THE WILDLIFE SOCIETY

01-02 March 1990 - Park Inn - Lewistown, MT

March 01

08:00 - 09:00	REGISTRATION, COMMITTEE AND AGENCY MEETINGS
09:00 - 09:15	Welcome and Opening Comments. Mike Aderhold, President, Montana Chapter, and Fritz Prellwitz, President-elect, Montana Chapter.
09:15 - 10:00	Keynote Address. K.L. Cool, Director, Montana Department of Fish, Wildlife & Parks, Helena.
10:00 - 10:30	The National Guard Proposal for Valley County. Terry Hueth, Area Manager, Bureau of Land Management, Glasgow.
10:30 - 11:00	Coffee Break and Discussion
11:00 - 11:30	Livestock as a Habitat Manipulation Tool. Dr. Clayton Marlow, MSU Bozeman.
11:30 - 12:00	Statewide Elk Management Plan. Heidi Youmans. MDFW&P, Helena.
12:00 - 1:30	Sandwich and Salad Luncheon
1:30 - 2:00	Why are the *!?&# Duck Stamps so *!?&# Expensive. Tom Hinz, MDFW&P, Billings.
2:00 - 2:30	Wolf Status Update. Edward Bangs and Joseph Fontaine. USF&WS, Helena.
2:30 - 3:00	Reclamation: Past, Present and Future. Bill F. Schwarzkoph, Western Energy Company, Colstrip.
3:00 - 3:30	Coffee Break and Discussion
3:30 - 4:00	State Wildlife Laboratory. Keith Aune, MDFW&P, Helena.
4:00 - 4:30	Purple Loosestrife: A New Problem for Wetlands. Bill West, USF&WS, Moiese.
4:30 - 5:00	Evaluating Conservation Provisions of the 1985 Food Security Act. Jim Stutzman. USF&WS, Malta.
6:00 - 7:00	Happy Hour and Discussion
7:00 - 9:00	Banquet and Awards. Speaker - Jon Swensen.

March 02

07:00 - 09:00	Business Breakfast
09:00 - 10:00	Coffee Break, Discussion, and Agency Meetings
10:00 - 10:30	Old Growth Forest Management in USFS Northern Region. Angela Evenden, USFS, Missoula.

10:30 - 11:00	Statewide Trends in White-tailed Deer Distribution, Fawn Recruitment and Harvest. Allen Wood, MDSL, Helena.
11:00 - 11:30	The Wildlife Extension Program in Montana. Mike Getman. USF&WS, Lewistown.
11:30 - 12:00	Photo Monitoring/South Fork Grizzly Study. Tim Manley, MDFW&P.

KEYNOTE ADDRESS

K.L. Cool
Director
Montana Department of
Fish, Wildlife and Parks
Helena, MT

Director Cool summarized his first year as Director of the Montana Department of Fish, Wildlife and Parks, including the process by which he was selected by Governor Stan Stephens. Mr. Cool discussed his activities during the year since the Montana Chapter's last Annual Meeting, commented on the direction that he thought his agency and the wildlife resource in Montana were headed in the 1990's, and listed some of the significant accomplishments of the Department.

THE NATIONAL GUARD PROPOSAL FOR VALLEY COUNTY

Terry Hueth
Area Manager
Bureau of Land Management
Glasgow, MT

The Bureau of Land Management (BLM) received a proposal from the Montana National Guard for a 30-year land use agreement which would allow a variety of military training exercises on over 720,000 acres of Federal Lands near Glasgow, in the Valley Resource Area. The Guard's proposal would also require 260,000 acres of private and State lands. This proposal would require two major areas in Valley County to establish a Montana Training Center (MTC). Because of the scope of the Guard's proposal, the BLM requested public comments, concerns and ideas through a public scoping period, including public meetings in Billings, Helena, Great Falls and Glasgow during October, 1989.

The two areas requested in the Guard's proposal have several similar characteristics. The vegetation is a variety of prairie grasses on the public lands with some dryland farming on the state and private lands. Both areas support large and varied wildlife populations (mule deer, pronghorns, waterfowl, sage grouse, sharp-tailed grouse and a variety of nongame species). Livestock grazing is the primary commercial use in both areas. There is some potential for mining and oil and gas exploration and development in both areas. Hunting is the major recreational use of both areas. The Bitter Creek Wilderness Study Area lies within the northern Tactical Maneuver Area and the Burnt Lodge Wilderness Study Area is located roughly 9 miles southwest of the southern Fire and Maneuver Area. The southern Fire and Maneuver Area would contain an Air-to-Air Gunnery Target Area, an Air-to-Air Gunnery Impact Area, a Tactical Air-to-Surface Gunnery Range, and a Controlled Air-to-Surface Gunnery Range.

The National Guard later submitted four additional alternatives for public comment through the BLM's planning process. These included a No Action (Current Management) Alternative, a Scaled Down Alternative, a Maneuver Operations Only Alternative and an Air Operations Only Alternative. The BLM received 267 written responses from the public, containing 562 comments. Comments were received on riparian/wetlands, visual resources, soils/vegetation, cultural resources, recreational resources, minerals and oil-gas, livestock, hazardous materials, air quality, off-road vehicle use, public land access, noise pollution, noxious plants, local and regional transportation systems, public safety, national defense, wildlife, administrative, the environment, economic and social, hydrology and wilderness. After discussing this proposal with the public, various interest groups, Congressional delegations and BLM personnel at various levels, it became evident that the scope of the National Guard MTC proposal would require a separate Environmental Impact Statement (EIS).

Using information from both the public and internal scoping processes, the BLM was able to determine how much and what kind of resource inventory work would be required to analyze the MTC proposal. The public comments were considered by the BLM staff in the development of a Status Report in which the natural resources and social-economic data deficiencies were identified, and approximate costs in time, effort, and finances to secure these data were prepared. The Montana National Guard was provided with copies of the public responses, the comments summary, and the Status Report. BLM estimated that any recommendations that would come from an EIS for the MTC would take 3-5 years to complete.

THE STATEWIDE ELK MANAGEMENT PLAN

Heidi B. Youmans, Special Projects Coordinator
Montana Department of Fish, Wildlife and Parks
1420 E. 6th Avenue
Helena, MT 59620

"High, Wide and Handsome"...."Big Sky Country"....."The Last Best Place".....all of these adages capture the aura of Montana, a very unique and special place. Montana is world-renowned for its bountiful natural resources, scenic settings, natural features and premiere outdoor recreation opportunities. In each of these regards, wildlife is integral to Montana's image. Elk populations in particular, have come to symbolize all that Montana has to offer...even in the mind's eye of people who have never visited our state.

There is increasing appreciation amongst Montanans that elk populations are more than a state asset....that they are a resource of national significance. This awareness was heightened recently by the national attention surrounding acquisition of elk winter range in the upper Yellowstone Valley.

What we enjoy here in Montana might be termed "ELKcellence", and in a discussion of resource planning, the bottom line is, "how can we maintain ELKcellence into the future?"

Public benefits provided by Montana's elk resource include:

- Opportunities to hunt free-ranging elk in natural, rugged habitats
- Opportunities to view and photograph wild elk in scenic settings
- A thriving, multi-million dollar tourism industry that depends in part on elk-related recreation

FWP's elk management program, funded by hunting license and Pittman-Robertson dollars, is oriented toward hunting recreation. While we don't have detailed information on the economic value of elk viewing, we do have good information on the benefits of elk hunting to Montana. A 1985 bioeconomics study conducted cooperatively by FWP, USFS and BLM determined that resident and non-resident elk hunters spend $58.4 million annually to hunt elk in Montana (not including cost license costs). This study also found that elk hunters would have been willing to spend an additional $37.6 million (net economic value) for their Montana elk hunting experience.

The statistics behind Montana's elk management program include:

- A wintering population of approximately 100,000 elk
- 100,000 elk hunters in the field annually

- An annual harvest of 26,000 elk
- 714,500 hunter-days of recreation, annually

To Montanans, "ELK" is a topic which embodies social and cultural traditions, aesthetics, quality of life issues, and our wildlife heritage...values as basic and personal as religion or politics. Wildlife managers are keenly aware that we have a responsibility for managing a very valuable public resource.

The mission of the Montana Department of Fish, Wildlife and Parks is enunciated in the state's legal statues. When broken into its functional parts, it includes:

- To protect and perpetuate elk populations
- To provide the public with elk-related recreational opportunity
- To maintain availability of an array of hunting experiences
- To allocate hunting opportunity to the public, fairly and equitably

A mission is one thing (every organization has one), but carrying out that mission is quite another. Carrying out a mission effectively requires some sort of a planning process. Gifford Pinchot alluded to this when he said, "The most important quality for accomplishing anything is continuity of purpose". In its most basic form, a planning process consists of four basic questions:

- Where are we?
- Where do we want to go?
- How will we get there?
- Did we make it?

Planning is not new to FWP. We started out with SCORP (State Comprehensive Outdoor Recreation Plan) in 1978 and have been through two issues of "Design for Tomorrow", with the most recent published version to expire this year (1990).

The goal of the elk planning process currently underway is to outline an elk management program which will serve the best interest of Montana's citizens and the needs of our elk populations during the 1990s and into the 21st century. Our elk plan will be much more detailed than past species plans have been.

In discussing the elk planning process with the public, we continually find it necessary to revisit two basic questions:

1) Why do we need it?
2) What would happen without it?

WHY DO WE NEED IT?

- Because we have a professional responsibility to prepare for the future

- We need to address complex elk management issues and problems effectively
- We need a decision-making framework to provide perspective and guidance in considering the needs/wants/desires of the diverse publics that we serve

WHAT WOULD HAPPEN WITHOUT IT? (The Null Alternative)
(The flip side of the previous question)

- A tendency toward short-term "crisis management"
- A tendency toward a piecemeal management approach
- Loss of hunter opportunity (shortened hunting seasons, limited entry, waiting period between hunts)
- Increased regulation of the hunting experience (more complicated regulations, assigned hunting areas, assigned time periods to hunt)

The ramifications of the null alternative are more than just speculation: they are the very things that have come to pass in other neighboring western states. Other states thus serve as our "crystal ball" for envisioning the consequences of the null (no action) alternative. Obviously, the elk resource and the public would be short-changed if the null alternative were to come to pass.

OUR VISION OF AN ELK PLAN

Through the planning process, we must continually work to develop a shared vision of the completed elk plan (so that we won't fall into the trap of "the 12 blind men and the elephant").

- We envision the elk plan as a dynamic "data bank" which will be regularly updated. (We do not intend to etch a stone tablet which will quickly become obsolete!)
- We envision a decision-making framework which can help us maintain program direction and coordination
- We envision a plan as providing a gauge of progress for attaining goals and objectives.
- We envision the plan as a management tool which will help identify program priorities and address elk management issues effectively.
- We envision the elk plan as a means to keep the public informed.
- We envision the elk plan helping FWP to become more proactive in elk management issues

John Naisbitt stated in Megatrends that "Strategic planning is worthless....unless there is first strategic vision". Thinking long-term and strategically is not a spontaneous human endeavor. Individuals and organizations must discipline themselves in order to look ahead effectively. Most of us are consumed with the immediacy of the present, and therefore focus on the "here and now" or the problem of the moment. This is human nature. When times

get really difficult, we may even find ourselves focusing on the past (the good old days), which is also human nature! It takes discipline and a formal process to focus our attention on the future. It seems that planning is considered by many biologists to be an unnatural act....and certainly not within the realm of what "real" biologists do!

When done without strategic vision, a plan becomes a white elephant, or shelf art....which is then justifiably chalked off as a very time-consuming bureaucratic exercise. In looking toward the future we must emphasize the importance of maintaining broad horizons and good peripheral vision. Our elk management program might be likened to a three-legged milking stool with the legs representing 1) elk population management, 2) management of elk habitats and 3) social and political factors. Together, the three legs provide the footing and foundation for our elk management program. If, due to our lack of attention, any one of those three legs is shorter than the others, our program will be on uneven footing. Bearing in mind that FWP management authority does not encompass management of elk habitats in Montana, it is abundantly clear that FWP must have effective partnerships with the USFS, BLM and USFWS and other federal, state and private land managers in order to have an effective elk management program. Partnerships (intra-agency, interagency, agency/public) are vital to developing and pursuing common goals and objectives which will best serve the elk resource, and the publics which we serve.

The planning process that we're using emphasizes openness, public participation (beginning at the ground floor) and continued opportunity for public review and input throughout the process. As public servants, we serve a very diverse public. Public participation in the planning process is a two-way street. Public participation addresses both the public's right to have input into management of a public resource and our need to receive input from an informed public.

Hubert Humphrey once said, "Instead of worrying about the future, let us labor to create it." A planning process is an effective way to turn "problems" into "challenges" and address them constructively.

CHALLENGES WE FACE

We are managing elk in a changing environment. With the variables in the elk management equation becoming more numerous, elk management becomes ever-more complex and dynamic. Some of the common variables that continually crop up in the management equation include: changes in elk habitat which affect elk security cover and elk vulnerability, changes in land ownership/management/ access and changes in hunter technology. We find with increasing frequency that when we make management adjustments to solve a problem in one hunting district, we all too often create satellite

problems in other areas. We've reached a threshold where there is no more "slack" in the system....we can no longer accommodate such spin-off problems. This heightens our awareness for the need for a comprehensive statewide plan which we can use as a decision-making framework. The problems that we face in elk management and the ramifications of those problems are not readily apparent to the public because the resulting loss of hunting opportunity (through increased regulation) have been compensated in recent years by expanding elk populations.

Other challenging elk management issues include:

- Conflicts between management of elk and management of other resources
- Game Damage on private lands
- Access to elk hunting areas (too much or too little)
- Advances in hunter technology / mobility
- Increased commercialization of big game hunting
- Fewer opportunities to view or hunt mature bull elk
- Maintaining direction and continuity during periods of change

WHERE WE ARE IN THE PLANNING PROCESS

We began the planning process by inviting the public to participate in a scoping process to identify current issues, problems and concerns in elk management. The broad, general issues surfaced by the public were:

- Management of elk habitats
- Elk Distribution
- Hunting Season Recommendations
- Elk population levels
- Game Damage
- Access

Last April, the Department published "Elk Times", a newspaper tabloid presenting statewide goals and objectives and goals and objectives for each of 35 Elk Management Units (EMUs).

ANATOMY OF THE ELK PLAN

For each EMU, there will be a write-up covering:

1) Description of Current Management Situation: (Pertaining to the elk population, habitat, access, annual harvest, type(s) of recreational experience(s) provided, current trends/issues/ problems/concerns

2) Management Goals: (Pertaining to population, habitat, annual harvest, recreation provided and types of hunting experiences provided

3) Management Objectives (measurable targets): population numbers, population composition, habitat required (type/amount/distribution), harvest numbers, harvest

composition, amount of recreation provided.

4) Management Strategies (management actions at the project level): for population, habitat and recreation, access, game damage

THE ELK PLANNING PROCESS:

SCOPING SESSIONS TO IDENTIFY ISSUES

DRAFT GOALS AND OBJECTIVES
Presented in "Elk Times"

(Public Review and Input)

PRELIMINARY DRAFT
Presented in "Elk Times II"

(Public Review and Input)

DRAFT

(Public Review and Input)

FINAL
(To be presented to the Commission for approval)

THE ELK PLAN SCHEDULE

- Formal restart of the planning process — Winter 1990

\\\\\ Public Review and Input \\\\\

- Preliminary Draft Plan (and "Elk Times II") — Spring 1990

\\\\\ Public Review and Input \\\\\

- Draft Plan — Fall 1990

\\\\\ Public Review and Input \\\\\

- Final Plan to the Commission — December 1990

There currently is no blueprint mapping out how elk will figure in Montana's future. With our effort to develop a statewide elk management plan, we are making new tracks in the snow. A species management plan at this level of detail and with such extensive public involvement is unprecedented in the western elk states. Other states are watching closely, hoping that we will succeed. If we do, other states may follow suit.

The kiss of death for any planning effort is to do it strictly internally or to have it written by a select group of "planners". If done in this manner, today's public will do an end-run around it, every time. We will continue to make every effort to ensure that this elk plan will have built-in public knowledge, support, credibility and ownership. The ideal culmination of our planning process would be for Montana's statewide elk plan to be regarded as " the public's plan for the public's elk ".

Reclamation, Past, Present and Future

By: Bill F. Schwarzkoph

Abstract

Reclamation prior to 1967 was non-existant. When coal was extracted by surface mining, only raw spoils were left to heal ever so slowly over time. At Colstrip, Montana, this era lasted from 1923 to 1957. Some remains are still evident today. When surface mining resumed in 1967, the new mine spoils were at least regraded. No attempts were made to salvage soil, and seeding was confined to monotypic stands of introduced grasses. Erosion problems on steep, regraded slopes led to surface manipulations in a stabilization effort. After Montana enacted reclamation laws in 1974, and later when federal laws were enacted in 1979, real progress in reclamation was made. Rules on slope angle, soil salvage and revegetation greatly enhanced reclamation efforts. Research through the 80's led to successful rangeland reclamation that placed land back into production within three to four years after mining. Today, slopes are stable, soils are salvaged and native, diverse stands of grasses, forbs and shrubs are seeded to aesthetically blend into the surrounding landscape. Now, at the doorstep of the 90's, what does the future hold for reclamation? One wildlife issue that has surfaced centers around restoration rather then reclamation. Some mining permits are issued with stipulations to restore "breaks" or "badland" habitat. Proper reclamation of this type would violate basic requirements of state and federal laws regarding stability, slope angle, soil depth, and vegetation cover. Would it be practical or even desirable to restore such features due to their erosionally and unstable nature? Will it really benefit wildlife? On another similar issue, should depressions and sediment ponds be eliminated as the present laws require? Should the land form be regraded to always completely drain? What benefits to waterfowl could be attained by leaving depressions and ponds? These issues are two examples of the challenges that lie ahead for reclamationists and biologists alike. Hopefully, with economics in mind, trade-offs and regulatory flexibility will allow for reclamation that will leave a productive land beneficial for future use by man and wildlife alike.

THE STATE OF MONTANA'S WILDLIFE LABORATORY

Keith Aune

The wildlife laboratory has served research and management within this state since 1955. Its' role has been dynamic developing along with the everchanging needs of the wildlife scientists within the state. It has provided support for wildlife work conducted on many topics not only by the MDFWP but also Federal agencies, Dept of Livestock Research and Diagnostic laboratory, and State Universities.

The major research conducted at the laboratory includes; Toxicology and pesticide studies, Animal nutrition, Food habits studies, Physiological research, Parasite and disease studies, and animal reproduction research. In addition to conducting research the laboratory supports several research programs conducted at universities or by other agencies. Currently skeletal specimens, tissue and blood are being collected for several other research projects involving DNA analysis, functional anatomy, parasites and taxonomy.

The wildlife lab serves management by providing ageing and sexing services for specimens collected from hunter and trapping harvests. Grizzly bears, black bears, mountain lion, bobcat, and a wide variety of furbearers are brought to the laboratory for examination and determination of age and sex.

Since 1955 over 50,000 specimens have been processed through the laboratory. During the processing of animal specimens skeletal materials and hides are salvaged for museum reference collections and educational reference materials. Each year 100's of these skulls, skeletons, and hides are provided to information displays, schools, and museums for a wide variety of educational purposes. Also specimens are retained for our own MDFWP collections and displays. Other reference materials collected include; hair, blood, tissues, and reproductive tracts.

Proper as well as standard techniques are important to the gathering of information from any wildlife specimen collected from the wild. Our laboratory has provided for the standardization of collection and has become a repository for data from many wildlife species. Our grizzly bear mortality and capture records cover the period from 1967-present for both the Yellowstone and Northern Continental Divide Ecosystems. Mountain lion, wolverine, and bobcat collections have been made periodically and data compiled at the laboratory. The laboratory has been the only long term source of information for these species. Blood drawn from wild animals is processed and entered in a data base at the laboratory. A blood serum bank is being developed to provide a historical record of disease in wildlife. Food habits data has been collected from a variety of species and includes data from over 10,000 bears, 5000 ungulate species, 1000 pine marten, 1000's of bird crops and scattered data from coyotes, wolves, mtn. lions, bobcats, fisher, otter, and wolverine.

The laboratory provides other services including statewide radio frequency coordination for telemetry devices and coordination of animal immobilizations.

WILDLIFE RESEARCH LABORATORY
OF THE FISH,WILDLIFE, AND PARKS

Feb. 27, 1990

Thank you for the opportunity to speak to you today about the Montana Dept. of Fish, Wildlife and Parks wildlife laboratory. Today I want to give each person here a complete understanding of the wildlife laboratory's role in this state. To do this I am going to present the history of the lab bringing you up through its present operation.

The History of the Wildlife Laboratory

The wildlife laboratory has served research and management in this state since 1955. Its history has been dynamic developing with the everchanging needs of the wildlife scientists within the state. To fully appreciate the evolution of the laboratory I'm going to break the talk into time windows including the past, present, and future. The past will be broken into 10 year increments so that we can observe the changing role of the laboratory and yet appreciate the consistency in some part of its operations.

The early years of the laboratory span the time from 1955-1964. The great patriarch of the laboratory is Ken Greer. Ken developed the lab and directed it for 30 years. Ken took a basic museum approach to the lab and out of this developed some incredible collections.

The first laboratory was located in a building not far from Lewis Hall on the MSU campus. It was notorious for the strong odor which precipitated through its walls. This lab building was burned down in 1973. During these early years work focused on a variety of areas. The major areas include food habits study and the processing of a myriad of animal carcasses for special anatomical studies and the developing reference collections.

Rumens were collected from 1000's of elk during this period. This began the exhaustive examination of food habits for ruminants which today includes analysis of over 10,000 rumens.

Reference materials were collected, tagged and put in displays for educational use and anatomical studies. These reference materials were an important contribution to the study of wildlife during this era. Mink, otter, beaver, and elk were some of the species emphasized in the early specimen collections.

Study skins were processed and most eventually tanned for sale to the public or distribution to museums, educational institutions and wildlife agencies. The process of salvaging valuable wildlife parts from carcass collections began during this era and

continues to this very day. The overall usefulness of skins collected by this laboratory in 35 years could not be measured. Many of the specimens were loaned to educational institutions. Today we have a collection which is utilized almost every week by educators in the Gallatin and surrounding counties.

Much of the early work conducted in this lab was directed toward developing ageing techniques and then providing reference materials to instruct wildlife biologists. Inumberable ageing boards were constructed by the early lab and still serve as excellent reference material today. The anatomical examination of reference collection materials was important in the development of many ageing techniques used by this lab and by others in the profession. Most of the early ageing work was done on ungulates and furbearers.

During the next ten year period the lab continued building on its biological foundation. During this decade the old facility was burned down and the Roy Huffman building was occupied near the edge of the campus. This probably pleased many students and faculty at MSU.

The laboratory expanded its role into several new areas during this decade. Beginning in this decade special interests evolved in species such as the Mtn. goat, Moose, grizzly bear and mtn. lion. Animal reproduction also became a major interest of laboratory biologists. During this period there was an increased need for reproductive information from wildlife. The wildlife laboratory responded by beginning serious collections of reproductive tracts and fetuses for examination. A wealth of data was collected from many species and the result was a significant increase in our understanding of the reproductive biology of many species.

In 1967 changes in the game regulations required a special trophy license for grizzlies. In response to the need the laboratory began detailed recording of grizzly mortalities in Montana. This resulted in occasional carcasses and skulls which were collected and preserved for study. This was the beginning of grizzly bear studies conducted by the laboratory.

In 1971 Legislature listed the mountain lion as a game animal in Montana. This led to a need for mortality studies for this species also. Each year skulls from hunters were collected and sex and age determinations were made. These collections form the only data base we have regarding this species to date.

The interest in scoring trophy animals and the changing status of many species prompted the laboratory to begin measuring and recording trophy data from Montana Wildlife. This became an interest area for the laboratory biologist that today has significant biological value. Today we are able to look back at records of wildlife and evaluate changes in antler/horn size and development.

Work on the techniques for ageing continued during this decade as well. Much work was conducted on the ageing of lions and bears using skull sutures as an indicator of age. Skeletal collections continued during this decade at an even accelerated pace. Major

skeletal reference materials were collected for species such as goats, grizzly bear, and mtn. lion.
During this decade the wildlife laboratory began making contacts with other laboratories within and outside of the state. These contacts became essential to the operation of the laboratory as special services were needed by the wildlife biologists in the state. Of particular significance was the alliance between the wildlife laboratory and the Veterinary research and diagnostic labs which bloomed during this decade. These laboratories provided the necessary facilities for complete disease diagnosis and the experts for a variety of animal science services.

The third decade of operation for the wildlife laboratory provided further opportunity to expand the functions of the lab. Again the laboratory built on its strengths and added new services. This decade the lab began to seriously examine wildlife disease and parasites within our wildlife resource. The opportunities also included work in wildlife forensics, a need which had been developing within our state. In addition toxicology studies on waterfowl and game birds were developed.

Food habits work was continued but new species were emphasized. Several major bear studies developed during this period and the opportunity to examine food habits of grizzly and black bears was too much for the lab to miss. A computer data base with bear food habits determined by the examination of over 7,000 scats was completed during the decade. No where that I know of is there a comparable data base spanning such a long time period.

Ageing of animals was still a priority in processing specimens in the laboratory. New techniques were developing and the laboratory immediately began coordinating the collection of teeth for ageing by cementum layers. Annually several thousand teeth are sent in for ageing from a variety of species.

During this period an increased interest in furbearers led to expanding lab services to include the processing of many special collections from trapper killed furbearers. A change in the regulations in 1977 required trappers to submit pelts, carcasses or skulls of lynx, bobcat, wolverine, otter, and fisher for tagging. Because of this, many major collections were conducted including bobcat and wolverine. These species required an immense amount of labor provided principally by student laboratory aids and work study students. In a typical year several hundred bobcats skulls, 100-150 mtn. lion skulls, and dozens of fisher, wolverine, otter, and bear skulls or skeletons will be collected and cleaned for sexing, ageing, and anatomical study.

During the period 75-84 cooperative investigations into wildlife disease and parasites expanded. Interest in the etiology and incidence of rabies, brucellosis, trichinella, and echinococcuss surfaced and led to an increased general interest in wildlife disease monitoring.

The wildlife lab also began forensics work during this period. The need by law enforcement was significant and the laboratory had the people with a desire to help. Many enforcement cases have been aided by the work done at this laboratory.

Standardized collection of data was still practiced in the lab. With this effort a collection of mortality data from lions and bears spanning several decades was now available for review and analysis by dozens of wildlife professionals.

The issue of lead shot during waterfowl hunting seasons resulted in the analysis of many waterfowl gizzards to record lead ingestion. The wildlife laboratory provided essential services during the study of this problem.

In summary, The wildlife laboratory has served in many capacities during the last 3 decades. It has processed an incredible number of specimens. For many years the lab has gleaned vital information from what many persons consider waste materials. Much of this information was presented in published form in journal articles, bulletins, and reports prepared by a number of biologists within the state. Over 50,000 specimens were processed in the last 30 years with immeasurable benefits to wildlife.

The Present Wildlife Laboratory

Dan Palmisciano took over the operation of the wildlife laboratory in 1986 after Ken Greer retired from the Dept. of Fish, Wildlife, and Parks. Dan Palmisciano built on the past tradition of excellence in the laboratory. He developed his own style of operation until his untimely death in late 1988. Phillip Schladwieler was acting supervisor during the period from Dec 1988 until Sept, 1989. In Sept, 1989 I began my assignment as laboratory Supervisor.

The wildlife laboratory is currently housed behind the FWP R-3/Research headquarters on the edge of the MSU campus. The new expanded facility has provided additional opportunities for laboratory work. The staff includes the wildlife lab supervisor, laboratory biologist, 3 student aids and work study students. The facility was occupied in 1987 and includes a preparation room, large Freezer, salting drying room, lobby, and office space. A large storage space is available on the second floor of the laboratory.

The work conducted in the lab currently is similar to that discussed for the last decade. Additional work includes expanding the studies of blood serology and pesticides in waterfowl. Forensic work was only recently dropped from the list of duties performed at the laboratory. However, we still provide essential assistance in law enforcement cases as possible.

We have continued with the standard techniques applied in food habits studies in the past. The species emphasized have changed over the last 30 years as furbearers, bears, and lions are the major species examined for food habits. Fewer projects are collecting rumen contents from ungulates in more recent times. Two major data bases are being updated from these studies including the rumen data base with over 5600 entries and a bear food data base with 13,000 entries.

The processing of skeletal material was slowed somewhat during the last few years as the Dermestid bug colony was destroyed in 1986 before the move to the new facility. The reference collection available is quite good and has proved useful for comparison of unknown specimens with cataloged specimens. The grizzly and black bear collection is over 200 and is possibly the largest collection of bear skulls and skeletons in the U.S. An incredible number of mink, beaver, otter, and elk skulls and skeletons exist in the collections.

Recording mortality data and salvaging parts of grizzly bears is still a function of the lab. Formal recording of the mortalities is conducted by the Endangered species biologist. However, the processing of bear carcasses has remained as a function of the lab. The laboratory has developed a computer data base with data from over 1000 mortalities from 1967-89 in the file for both the Yellowstone and NCD. The data base includes all known information including age, sex, date of mortality, parasites, physical condition, stomach contents, necropsy results, location, and cause of death.

The bear mortality data base has improved the ability to analyze mortality information and observed trends in the data. It has been useful in examining how changes in regulations affect mortalities of this threatened species. The information will be important in evaluating management activities and their effects on the bear population in either ecosystem. The information was already used to summarize and evaluate mortalities in the Yellowstone Ecosystem for the last 30 years.

The wildlife laboratory continues to play a significant role in providing material for wildlife education. We have provided a myriad of specimen mounts, ageing boards, study skins, and skeletal materials to schools including elementary, high schools, and universities. More recently we have had an increased interest by museums for specimens. Studies in anthropology, geology, and functional anatomy have been enhanced by specimens provided by this laboratory. Only recently we have provided materials for wildlife agencies and universities in California, Alabama, New York, North Dakota, Colorado, and Montana.

The lab has taken a role in coordination of several activities statewide. These include animal immobilization, blood collection, and radio frequency coordination. Each of these activities requires annual communication, training in procedures, and record keeping.

The lab was recently involved in special Bison studies. The opportunity for specimen collections were exploited in recent years as blood, skulls, and various tissues were collected from bison killed after wandering outside Yellowstone Park.

Ideas for the Future

I have discussed the function of the laboratory over the last 35 year and clearly one can see that it has been dynamic. Given the tradition of this laboratory we hope we can continue to be a dynamic laboratory. With the new facility and some proposed changes in the program we hope to further expand and improve our operation. Here are some ideas and recent developments in our operations that may interest you.

With the proper financial support we hope to develop the upstairs portion of the laboratory into a museum for our reference collection. A new floor plan has been drawn and we hope to build adequate storage shelving to house the world class collections and make them more available to academic study.

We are planning to develop computer data bases for many of the previous data collections. Currently we are working on the grizzly bear mortality, grizzly bear relocation and grizzly bear capture data bases for the Yellowstone and NCD ecosystems. We are appending new data to the furbearer data base and working on developing new data bases for mtn lion, marten and blood collected from wildlife.

With the development of an active museum in Bozeman we anticipate opportunities to enter coop studies with them. Recently we assisted a student working with bear and mink skeletons looking at muscle attachment points. These types of studies will be encouraged.

We hope to expand our role in training the handlers of immobilizing and anaesthetic agents within our agency. We are currently working on video taped training sessions which would make available at all times instructions on proper handling of wildlife. We are working on a standard immobilization form for proper recording of immobilization incidence. Annual summaries of the use of immobilization drugs is our goal. We are collecting narratives from problems in drugs during handling situations as well to quantify the difficulties of various anesthetics.

A data base of all radio frequencies utilized in animal tracking devices in and around Montana was completed recently. The laboratory is acting as the coordinating entity for animal trackers to eliminate frequency crossover with the Public communications system and between wildlife projects. We attend an annual coordination session with the Montana Frequency Coordination Committee. Each year we will send out update requests to research and management projects to report the frequencies each project is using. This information is used to update the file. Projects can call us to find out what frequencies are available in their area to avoid interference. To date we have records of over 1900 radio frequencies used for animal tracking in and near the state of Montana.

We are hoping to build a lab room for radio collar and neckband construction activities in the state. We currently provide the equipment and tools for collar construction. Our plans are to modify part of the upstairs to create a work space for such

activities.

The laboratory provides for coordinated blood collection statewide. We recently planned some expansion in this area. The hope is to collect blood from regions and subregions for blood chemistry backgrounds. This would require collections for analysis within 48 hours. However we feel this could help in disease and stress diagnosis by looking for abnormalities in blood chemistries. In addition we are going to build a serum bank for historical reference in disease monitoring. Some serum from blood will be saved in a freezer from projects as they are made available. A master data base for blood parameters will be created and updated as blood is collected from various research and management activities. In addition to blood we have harvested tissue from carcasses for heavy metal and DNA studies on Coyotes, Marten, and Bears.

We are anxious also to improve our reporting of wildlife disease. We hope to develop a disease report form for biologists to keep a trackable record of occurrence of disease within the state's wildlife populations. A standard form will parallel that used by the state dept of livestock for reportable disease's. We hope to build a computer file so that incidence and occurrence records would be accessible. We are currently working closely with the parasitologists in Vet research to continue examinations for GI parasites in Mtn. lion and Grizzly bears. Also we will continue providing tongue and meat samples for trichinella studies. We hope to produce a fact sheet pamphlet on trichinella for public distribution.

The laboratory at Bozeman has been keeping special mortality records for Grizzly bears and lions for quite some time. We hope to compile and record similar data from the Rocky Mountain Wolf. We recently started a recording of wolf mortalities including photographs in the record as we do with the grizzlies. This mortality recording system has proven invaluable for bears and likely will be needed for wolves also.

We are interested in continuing the work we started with monitoring wildlife in Yellowstone National Park in the 1960's. We recently conducted necropsies and disease tests on coyotes in Yellowstone. We feel that further work could be warranted in the park especially in light of the potential spread of disease to areas outside of the park.

The lab is currently collecting pine marten carcasses statewide. Approximately 800 carcasses will be dissected to collect muscle tissue, stomach and colon contents, and reproductive tracts. Each animal will be sexed and aged. Several animals will be fully necropsied for background histological and anatomical information. Some skeletal collections will be made.

We are going to analyze the marten reproductive tracts as well as grizzly, otter, fisher, wolverine, and others this winter to update the reproductive data collected in past years. Counts of corpora lutea will be made as well as inspections to find placental scars.

We have proposals pending to continue the examination of waterfowl for pesticides. With acceptance of the proposals we could begin collections of bird wings for testing. We have a collection in the freezer as well for such testing.

The wildlife laboratory has served the research and management needs of the state exceptionally well in the past. Although the fruits of this type of work are often hidden they are truly immeasurable. We hope that our lab can continue to serve the needs of wildlife professionals in this state by building on the previous tradition of excellence.

ABSTRACT: We've Got Trouble, Right Here in River City
Purple Loosestrife in Montana Wetlands. by Bill West

Purple Loosestrife (Lythrum salicaria) is an aggressive European plant that is invading Montana's wetlands, is replacing valuable wetland plants, is eliminating food and shelter for wildlife and is choking waterways. After many years of problems in the East and Midwest, this plant is at the forefront of marsh management discussions. There are no natural checks and balances on this plant in North America. It can represent up to 50% of the biomass of a wetland. The plant is very permanent once established. The impact has been disastrous. Muskrats seldom build huts with it or eat it. Marsh wrens seldom nest in it and over water nesting ducks will not or can not weave nests in it.

Loosestrife is now on an island in the Missouri River near Great Falls and in Lake and Flathead Counties west of the divide. A committee of several concerned groups was formed in Lake county to battle the problem near the Ninepipe National Wildlife Refuge. Local nurseries may still sell it as an ornamental but this will soon be prohibited by state noxious weed law.

It has pink-red flowers with tall showy spikes, four-sided stems, opposite leaves and dense spiralling rows of dark brown seed capsules. Plants can be up to seven feet tall. Look for it in late June to early September during any field work. It grows anywhere cattails will grow, wetlands, stock ponds, river banks or ditches. It spreads from cultivated sites. Seeds float for 48 hours then sink. They can remain viable for 50 years. Seeds are carried in the feathers or fur of wildlife. Roots and broken stem pieces have been known to sprout.

Methods of control include digging and pulling if you can get all of the plant and return to the site annually for five years. For more than 100 plants the best control is the herbicide glyphosate (trade name RODEO) at a 1% solution sprayed from a SOLO backpack sprayer. This will usually give 100% kill. Wicking with RODEO works well at a 25% solution rate but is very labor intensive and the high percent solution is more dangerous to handle. 2,4-D is only effective on seedlings. Biological control organisms will be available soon, but control may take several years.

Farmers and ranchers have little economic incentive to control the plant. Rodeo is a relatively expensive chemical. Funding and control efforts will have to be the responsibility of wildlife professionals. You know we have a lot to loose if this plant does to Montana what it did to New York, Wisconsin and Minnesota. You have been alerted. It is a natural resource problem. We need to address the problem before it becomes too "BIG". Organize local support; do something; keep your eyes open. Supervisors give your people time to address the problem. Professors tell your students. Field people don't avoid your responsibility.

There is a poster display for any group that wants to use it.

EVALUATING THE CONSERVATION PROVISIONS OF THE 1985 FARM BILL.

Jim Stutzman Abstract

Historically, Federal Farm Programs have had a significant impact on farmland wildlife populations, soil erosion and wetland conservation. This paper examines the impacts of the Conservation Provisions of the 1985 Farm Bill on natural and wildlife resources in Montana. Three provisions; the Conservation Reserve Program (CRP), Swampbuster and Sodbuster are evaluated. CRP has reduced soil erosion in Montana. Benefits to wildlife are less clear. Monotypic grass seedings in many CRP tracts greatly reduced the potential wildlife values of CRP. No Swampbuster violations have been recorded for Montana. This suggests that enforcement of Swampbuster by USDA has been ineffective and wetland destruction is still occurring. The Sodbuster Provision has not stopped the conversion of highly erodible, native prairie to cropland. Over 56,000 acres of native prairie were broken between 1986 and 1989 in five Montana Counties. The destruction of native prairie adversely impacts ground nesting birds, wildlife winter range, and a number of non-game wildlife species.

OLD GROWTH FOREST MANAGEMENT IN THE FOREST SERVICE NORTHERN REGION

Angela Evenden and Wendel Hann[1]

The Northern Region of the Forest Service is in the process of developing definitions, conducting an inventory, identifying values, and developing management strategies for old growth forests. The Northern Region includes National Forests and Grasslands in Montana, northern Idaho, North Dakota, and northwestern South Dakota. A regionally coordinated approach to old growth is being developed to provide for ecologically based old growth management and to meet National direction for the Forest Service.

The Northern Region is defining old growth forests using an ecological approach, with public participation from federal and state agencies, the scientific community, and interested publics. Definitions and descriptions are based on ecological data specific to the kind of ecosystem. Habitat type groups are used to stratify ecosystem variation into types that have similar old growth communities. Interdisciplinary teams have been formed for several different geographic areas across the Region to conduct this analysis. A Regional interdisciplinary team has been formed to provide coordination and maintain consistency.

Once definitions and descriptions have been developed for the various types of old growth forests in the Region, the interdisciplinary teams will identify resource values for the different types. Resource values include such values as; habitat for old growth dependent animal species, recreation, aesthetics, timber production, wildlife, and watershed protection. The interdisciplinary teams will also coordinate development of strategies to evaluate landscape level relationships of old growth forest management, including patch size, shape, and juxtaposition. Strategies will also include silvicultural implications for managing old growth stands and methods for assessing risk from wildfire, insects, and disease.

1/ Authors are ecologists with the Ecology Group; Range, Air, Watershed, and Ecology Staff; Northern Region USDA Forest Service, Box 7669 Federal Building, Missoula, MT 59807.

STATEWIDE TRENDS IN WHITE-TAILED DEER DISTRIBUTION, FAWN RECRUITMENT AND HARVEST

Alan K. Wood
Montana Department of State Lands
2705 Spurgin Road
Missoula, MT 59801

Gary L. Dusek
Montana Department of Fish, Wildlife and Parks
P. O. Box 67
Kalispell, MT 59901

and

Richard J. Mackie
Department of Biology
Montana State University
Bozeman, MT 59717

Abstract: Data on white-tailed deer were compiled from each of seven administrative regions of the Montana Department of Fish, Wildlife and Parks to illustrate statewide trends in distribution, fawn recruitment and harvest. Whitetails apparently expanded their range over the last several years. Rates of fawn recruitment, as indicated by postseason fawn:adult ratios, varied widely but were generally lower in western Montana compared to most of eastern Montana. Four patterns of harvest were evident in the seven administrative regions during 1960-1988. Recent harvests range from record high to long-term low levels. Harvest data indicated statewide deer declines in the mid-1970's and did not support assumptions of density-dependent responses to forage-based carrying capacity. Fawn recruitment should be considered along with adult mortality if either are to be used for deer management.

White-tailed deer have received little recognition as a distinct wildlife species in Montana; they were typically managed together with mule deer. Postseason classifications have been routinely conducted in only 4 of 7 Department of Fish, Wildlife and Parks (DFWP) administrative regions prior to 1978. Also, harvest surveys during this time reported only total whitetails harvested, antlered and antlerless components of the harvest were not differentiated until later. Even today, number of days spent afield by whitetail hunters has not been determined perhaps because of the "generic deer" season.

This approach to deer management resulted from a variety of factors, one of which may be the lower abundance of whitetails compared to the more ubiquitous mule deer. From 1960 through 1988, whitetails averaged only 29% (range 17-44%) of the statewide annual deer harvest. A long tradition of generic "deer" hunting also may have contributed to this broad-based approach to deer management in the state. Despite this lack of recognition, or perhaps because of it, whitetails seem to be doing rather well in Montana. Harvest trends support a consensus among biologists that whitetail populations have recently expanded both in numbers and distribution. Near record high harvests of whitetails have been achieved in each of the 7 DFWP regions within the last 6 years.

We consolidated regional data from DFWP records and interviews with area biologists to identify trends in distribution, fawn recruitment and harvest. We report past and present status of whitetail populations in Montana. Cause-and-effect relationships are left to individuals wishing to explore these trends in more detail.

DISTRIBUTION

Allen (1971) reported whitetail distribution prior to 1941 and for 1970. In 1978, detailed maps of statewide white-tailed deer distribution, excluding national parks and indian reservations, were developed by DFWP. Regional distributions were summarized in the Montana Statewide Comprehensive Outdoor Recreation Plan (Anon. 1978).

In 1988, we returned 1978 maps (1:250,000 scale) to DFWP biologists and asked each to update white-tailed deer distribution over their area of responsibility. Biologists were also requested to code all occupied areas into 1 of 4 density categories; <5, 5-15, 15-30 and >30 deer/mile^2. Estimates were aided by mapping average densities over the last few years and by extrapolating from several areas where more intensive population monitoring had been conducted. Density categories were used to subjectively rate habitat potential by multiplying the amount of area in each category by the midpoint of the corresponding density range. Potential for the >30 category was calculated by multiplying area by 40. These calculations were made only to quantify habitat potential because habitats characterized by one

density are not equivalent to habitats characterized by other densities. These calculations are not intended to represent population estimates.

White-tailed deer generally expanded their distribution and became increasingly abundant east of the divide from 1940 to 1970. Distributions also expanded west of the divide but populations were reported to have declined (Allen 1971).

Whitetails have apparently continued to expand their distribution since 1978 (Table 1). Data indicating a large increase in occupied habitat in Region 6 and a reduction in Region 7 are misleading. These apparent anomalies resulted from a change in regional boundaries between Regions 6 and 7, rather than from large changes in distribution. Whitetails maintained or slightly expanded their distribution in Region 7.

Table 1. Percent of each region occupied by whitetails, 1978 and 1988.

	Region						
Year	1	2	3	4	5	6	7
1978	76	56	12	30	9	14	36
1988	100	67	20	50	23	66	28

White-tailed deer currently occupy 47% of the state's land area excluding indian reservations and national parks (Fig. 1). However, deer remain locally concentrated across the state. Whitetails occur in low densities (<5 deer/mi^2) over most of the area they occupy (Table 2). Only 26% of the occupied habitat exceeds a densities of 5 deer/mile^2. In contrast, 68% of potential white-tailed deer in the state occur at densities exceeding 5 whitetails/mile^2 (Table 3). Concentrations become more apparent when contrasting high-density habitats with total available land area (Table 4). Only 12% of the state is occupied by whitetails at densities exceeding 5/mile^2.

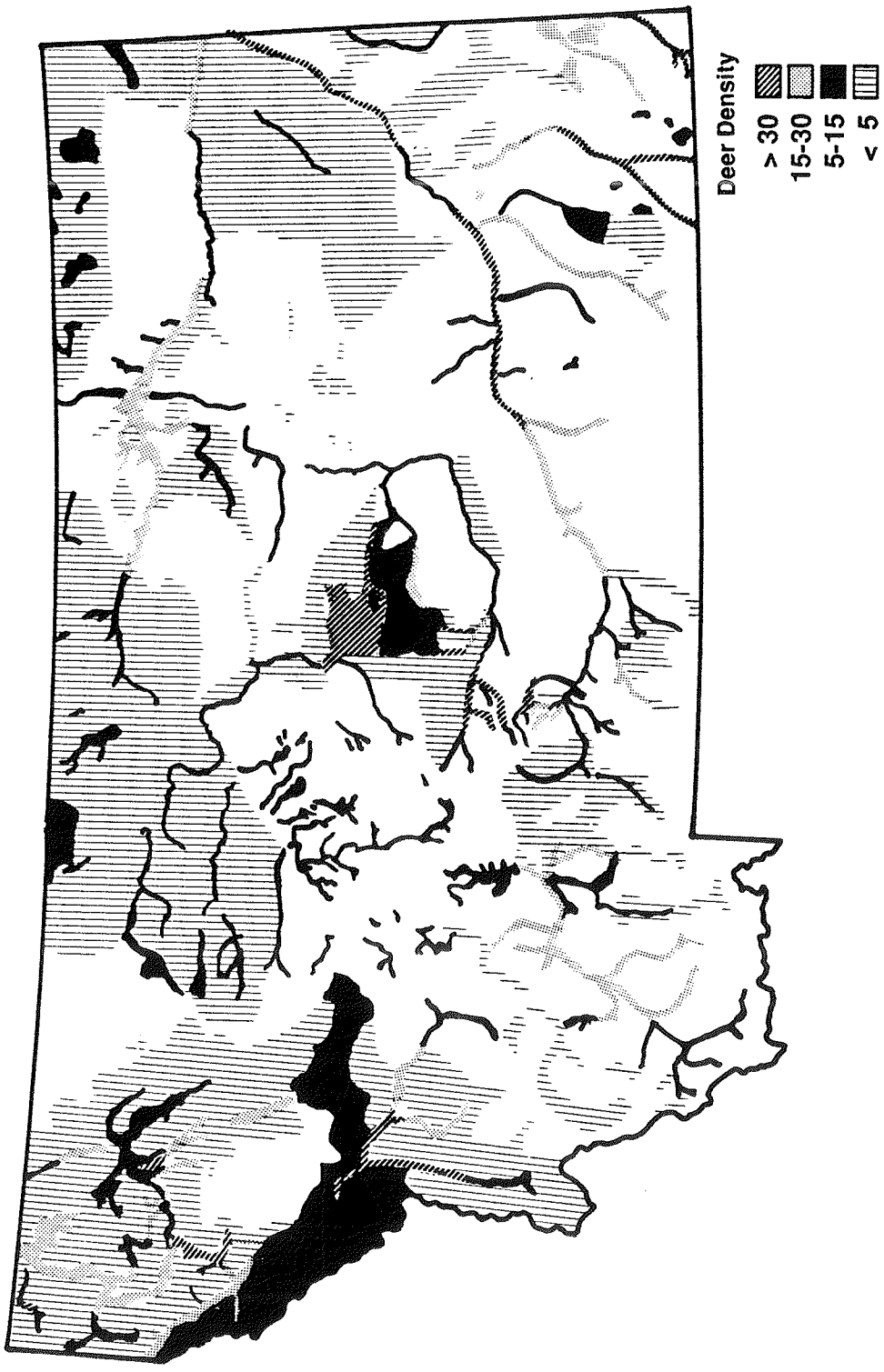

Figure 1. Density and distribution of white-tailed deer in Montana, 1988.

Table 2. Percent of total whitetail habitat occurring in each density category and region, 1988.

Region	Density Category (per mi^2)			
	<5	5-15	15-30	>30
1	76	15	8	1
2	45	50	3	2
3	70	15	15	0
4	73	21	0	6
5	64	23	7	6
6	88	10	2	0
7	77	9	7	7

Table 3. Potential whitetail populations (area x midpoint density) in each density category and region, 1988.

Region	Density Category (per mi^2)				Total	Mean density
	<5	5-15	15-30	>30		
1	24,060	18,900	24,413	4,600	71,973	5.7
2	7,235	32,460	3,578	5,760	49,033	7.6
3	6,490	5,670	12,105	0	24,265	1.3
4	22,458	25,280	833	28,960	77,531	3.2
5	5,225	7,480	4,950	8,120	25,775	1.8
6	34,785	15,400	7,538	0	57,723	2.4
7	16,055	7,800	12,758	22,600	59,213	2.0

Table 4. Comparison between percent of each regional area occupied by whitetails at >5 deer/mi^2 and percent of potential population at densities of >5 deer/mi^2, 1988.

	Region						
Percent	1	2	3	4	5	6	7
Area	24	37	6	14	8	8	6
Population	67	85	73	71	80	40	73

FAWN RECRUITMENT

There are several inconsistencies in estimates of postseason herd composition within and among regions. Postseason herd composition surveys were often heavily biased by surveys conducted in special study areas or areas of local concentration. Effort was often inconsistent with numbers classified in a single region during a given year ranging from 19 to 4,002 deer. Counts also were conducted from December through April and actual survey dates were often not reported. We report data from 1960-1961 through 1988-1989 that were based on at least 100 total animals classified as fawns or adults. Only averages and measures of variation in each region are considered.

Postseason fawn:adult ratios were lower west of the Continental Divide compared to eastern Montana, with the exception of northeastern Montana (Region 6) (Table 5). Whereas average recruitment tends to be higher in eastern Montana, there was potential for very low (20-30 fawns:100 adults) and very high (>100 fawns:100 adults) rates of fawn recruitment throughout the state. Contrary to what might be expected, variability in fawn recruitment rates, as measured by the coefficient of variation, do not differ widely across the state (Table 5).

Table 5. Summary statistics of post-season (Dec-Apr) fawn:100 adult ratios of whitetails in each region, 1960-1989.

Region	No. yrs.	Mean	Range	S.Dev.	C.V.[a]
1	24	43	21-67	10.1	23.4
2	29	49	29-104	13.7	28.0
3	6	58	30-76	15.1	26.3
4	25	69	35-102	15.5	22.5
5	16	70	45-104	13.4	19.2
6	12	48	24-83	16.4	34.0
7	24	67	31-93	17.0	25.4

[a] C.V. - Coefficient of variation = s.dev./mean * 100.

HARVEST TRENDS

We made two adjustments to harvest statistics reported by DFWP. Prior to 1978, deer harvests were reported as antlered and antlerless for both species combined. We estimated each of these components for white-tailed deer by applying proportions reported for both species to the total whitetail harvest. We also added deer that were classified as "status unknown" to appropriate totals based on the relative proportion of antlered and antlerless deer. This may have biased harvest estimates prior to 1978, particularly where whitetails comprised only a small portion of the total harvest or where antlerless hunting regulations differed between species. However, our approach provides the only available estimate.

Trends in buck harvest may be particularly useful because regulations governing antlered deer have been more consistent than those for antlerless deer. Thus, fluctuations in buck harvests should more closely reflect changes in population size than antlerless and total harvests. This is particularly true in riverine and nontimbered upland habitats in eastern Montana where buck harvests were closely correlated with population size in both deer species (Dusek et al. 1989, Wood et al. 1989).

Potential densities were not good predictors of actual harvest but did reflect relative harvest levels. Average regional harvests of antlered whitetails were poorly correlated with potential whitetail populations listed in Table 3 ($r=0.36$, $p>0.25$). However, rankings of these variables were highly correlated (Spearman's rank correlation coefficient, $r_s=0.93$, $p=0.003$). Regional harvest statistics are reported in Table 6.

Table 6. Mean and range of total, antlered and antlerless whitetail harvests in each region, 1960-1988.

	Total		Antlered		Antlerless	
Region	mean	range	mean	range	mean	range
1	6,320	3,209-11,692	4,043	2,187-8,120	2,277	753- 3,605
2	3,258	1,177- 7,757	2,261	942-5,664	997	5- 2,093
3	1,829	497- 5,826	1,209	343-3,062	620	7- 2,961
4	5,389	2,237- 8,339	3,538	1,432-5,509	1,851	379- 4,093
5	1,751	584- 4,374	1,158	380-2,518	593	78- 1,869
6	3,980	2,191- 6,687	2,540	1,407-4,265	1,440	250- 3,184
7	5,620	2,622-21,292	3,089	1,563-5,841	2,531	559-16,608

Four patterns of harvest are evident among the 7 administrative regions. Regions 1 and 2 have experienced generally increasing buck harvests since 1981. These regions reported record high harvests of both antlered and antlerless whitetails in 1988, exceeding 29-year averages by approximately two-fold (Fig. 2 and 3).

Annual harvest of white-tailed deer in regions 3 and 5 have increased since the mid to late 1970's. Although harvests have declined recently, they remain well above long-term averages. Antlered and antlerless harvests in both regions remain higher than any prior to 1983 (Fig. 4 and 5).

Harvests in Regions 4 and 6 have fluctuated since 1960 with no consistent pattern. Buck harvests in both regions have remained at or slightly above long-term averages since 1980, with the exception of the Region 4 antlered harvest in 1984. Total harvests have fluctuated near long-term highs since 1985, a result of near-record high antlerless harvests (Fig. 6 and 7).

Region 7 harvests of whitetail bucks peaked in 1974 and approached that peak again in 1983. They have declined sharply since 1983 and reached all time lows in 1988. Total and antlerless harvests have followed similar trends although they remain near to slightly below long-term averages in 1988. The most striking feature of Region 7 harvest trends is the 1984 harvest. The antlerless harvest in 1984 was approximately 3 times larger than any previous antlered or antlerless harvest and exceeded the 4-year total antlerless harvest since 1984 (Fig. 8).

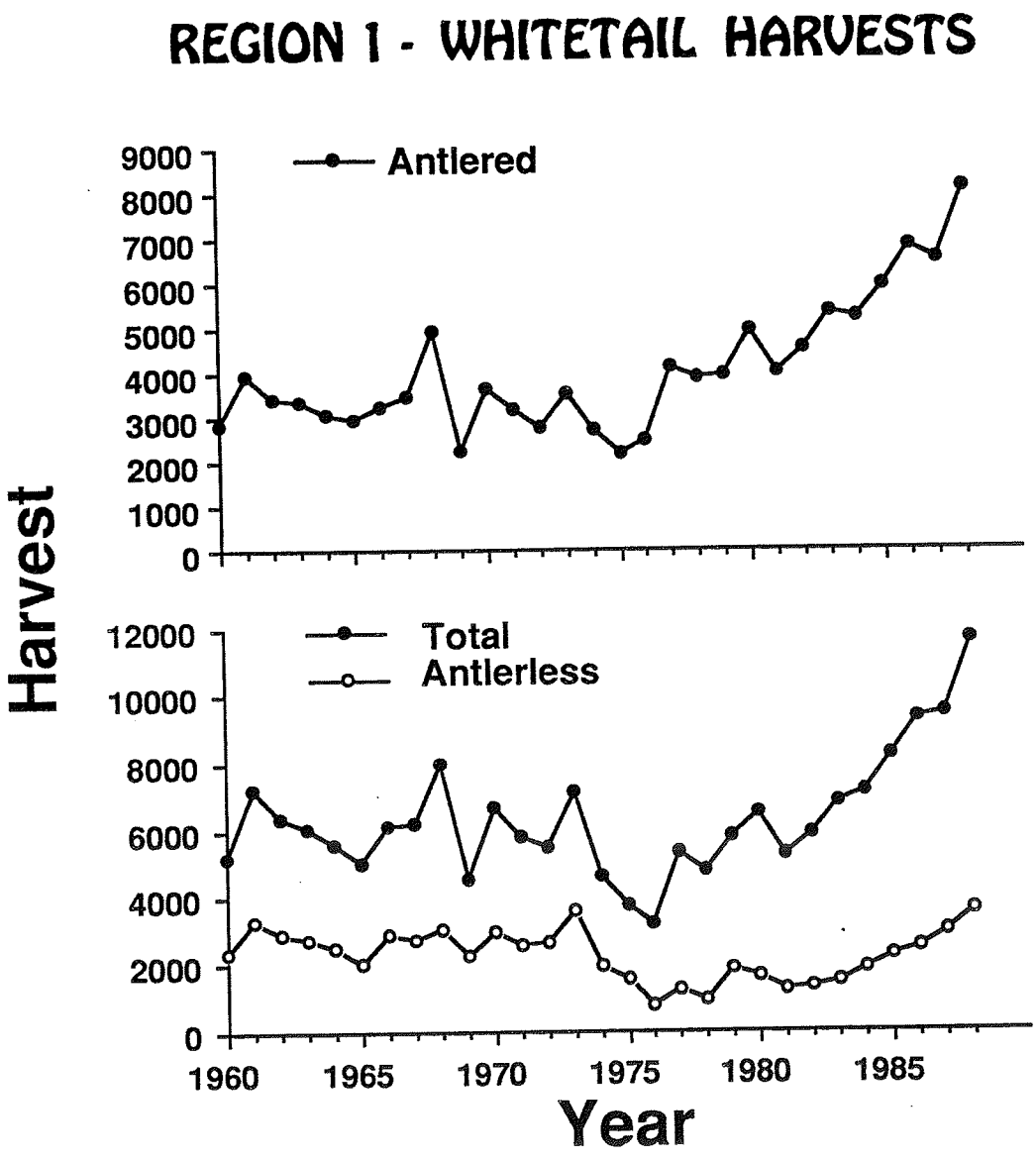

Figure 2. White-tailed deer harvests for Region 1, 1960-1988.

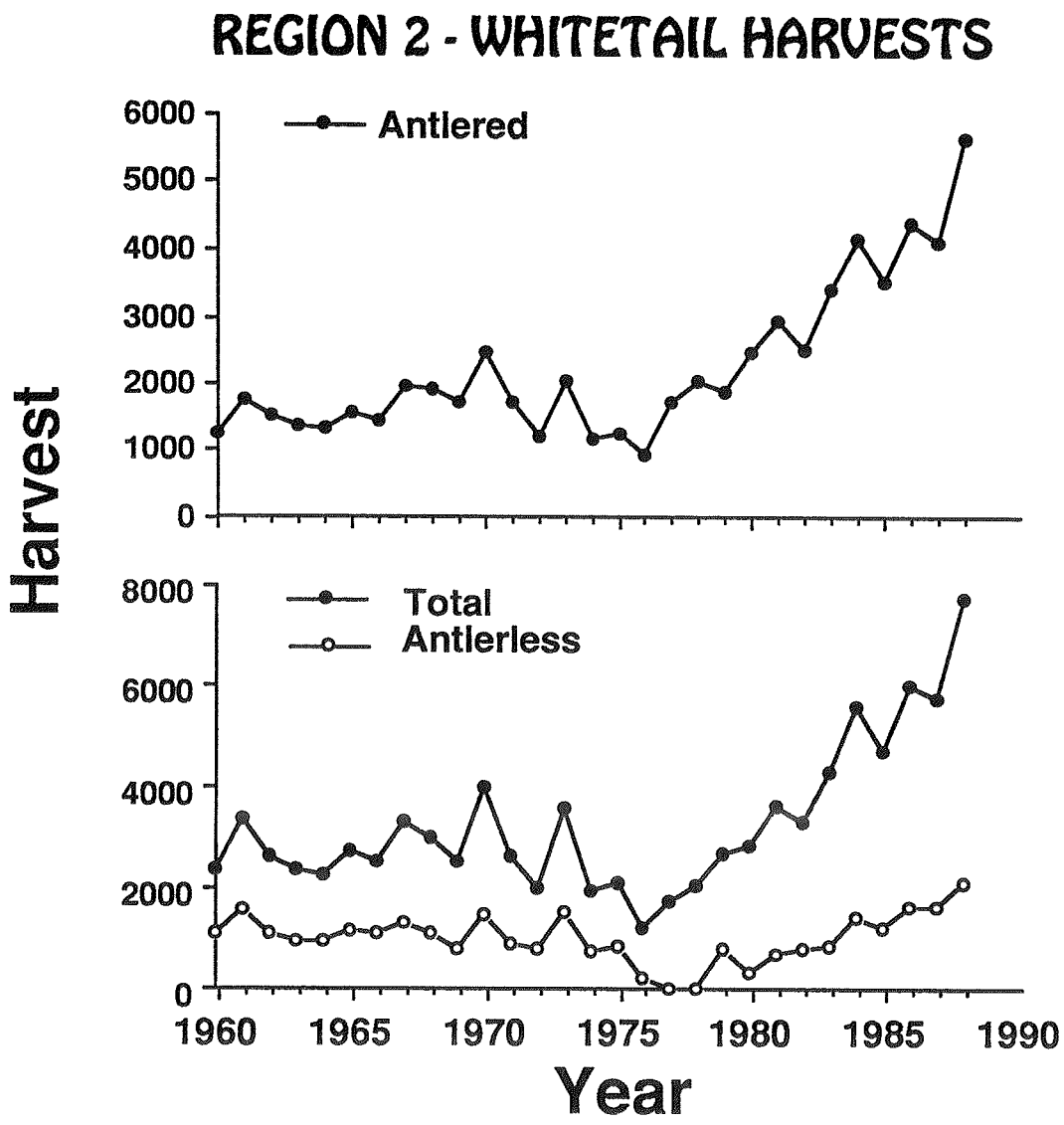

Figure 3. White-tailed deer harvests for Region 2, 1960-1988.

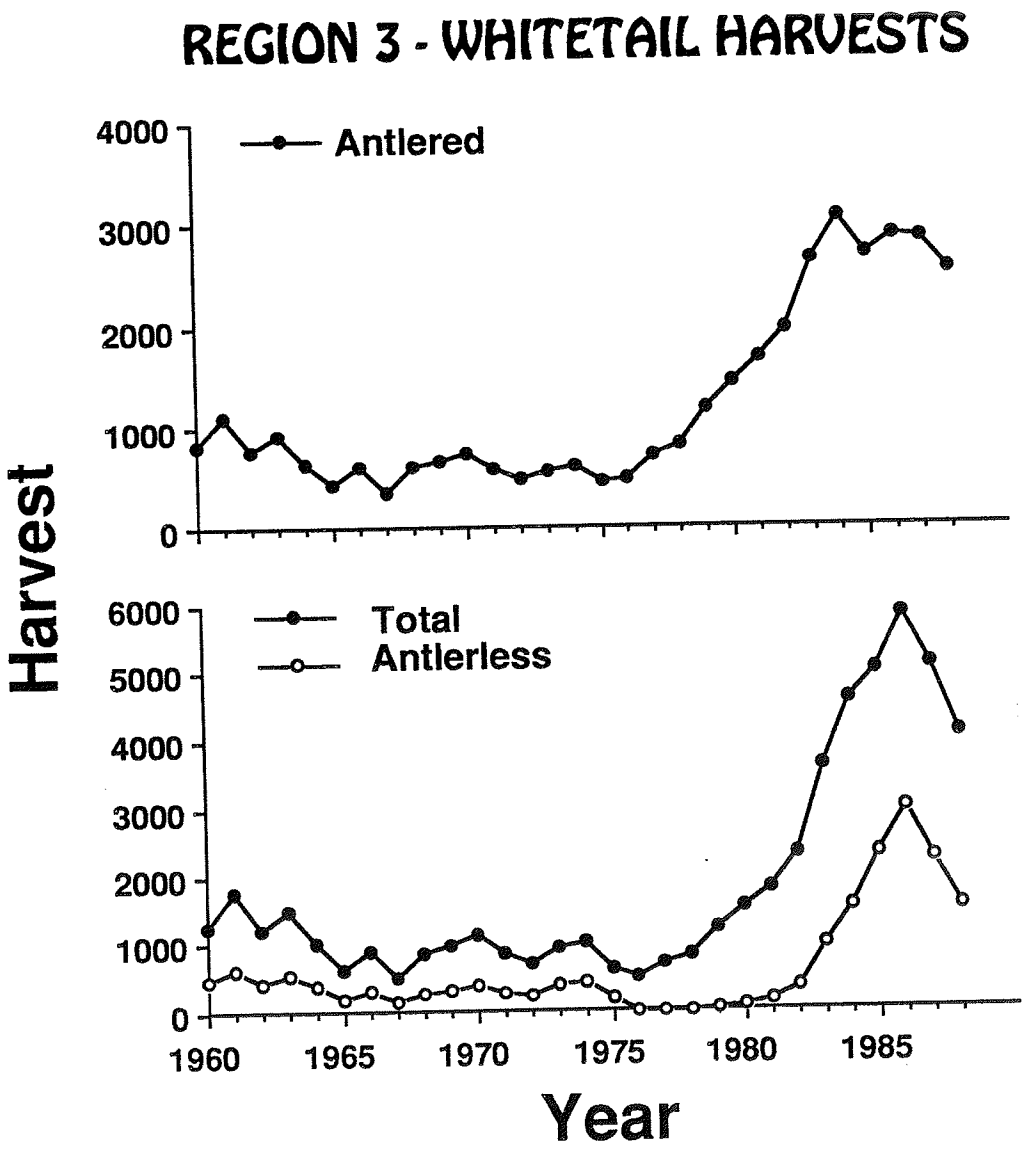

Figure 4. White-tailed deer harvests for Region 3, 1960-1988.

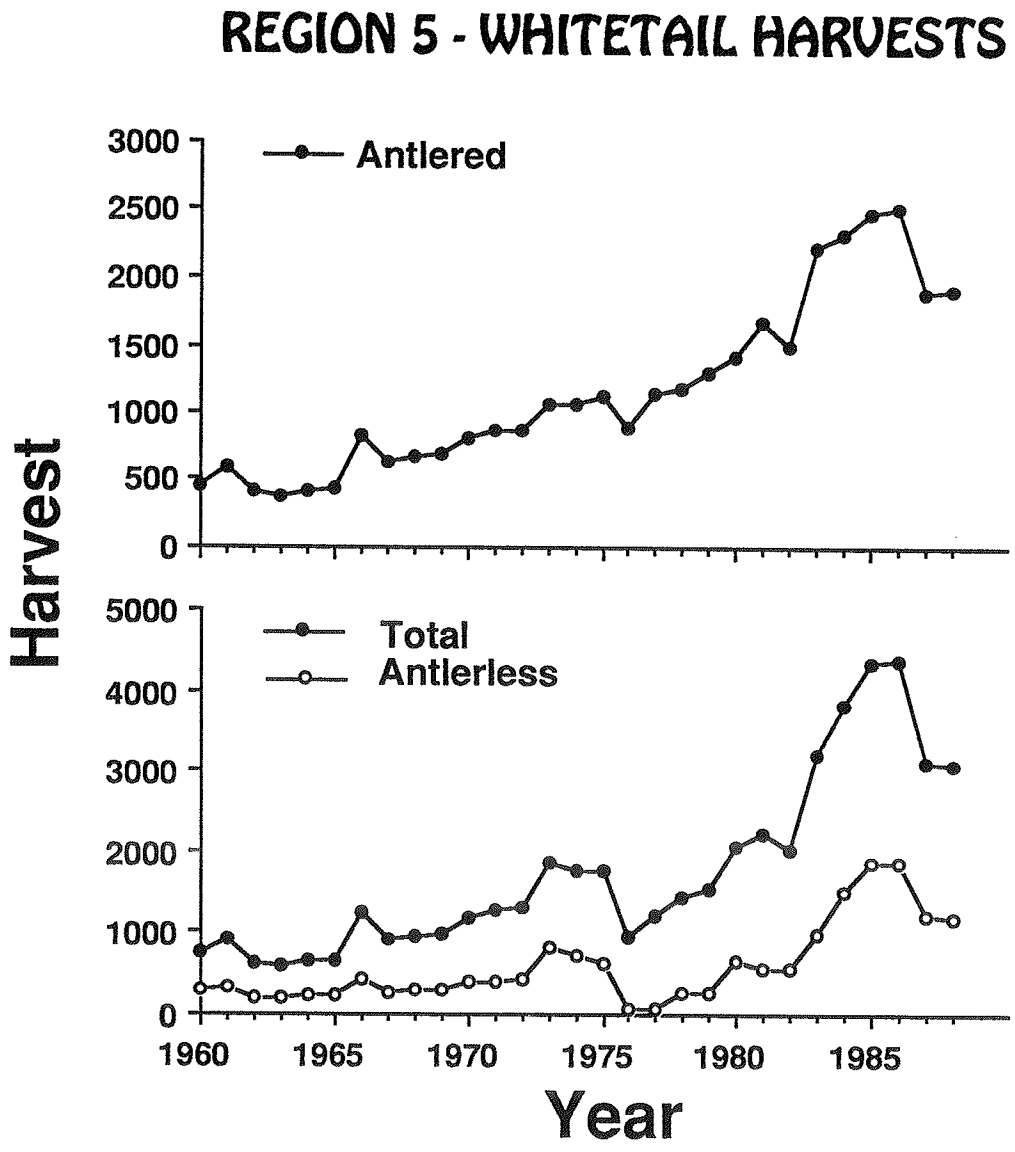

Figure 5. White-tailed deer harvests for Region 5, 1960-1988.

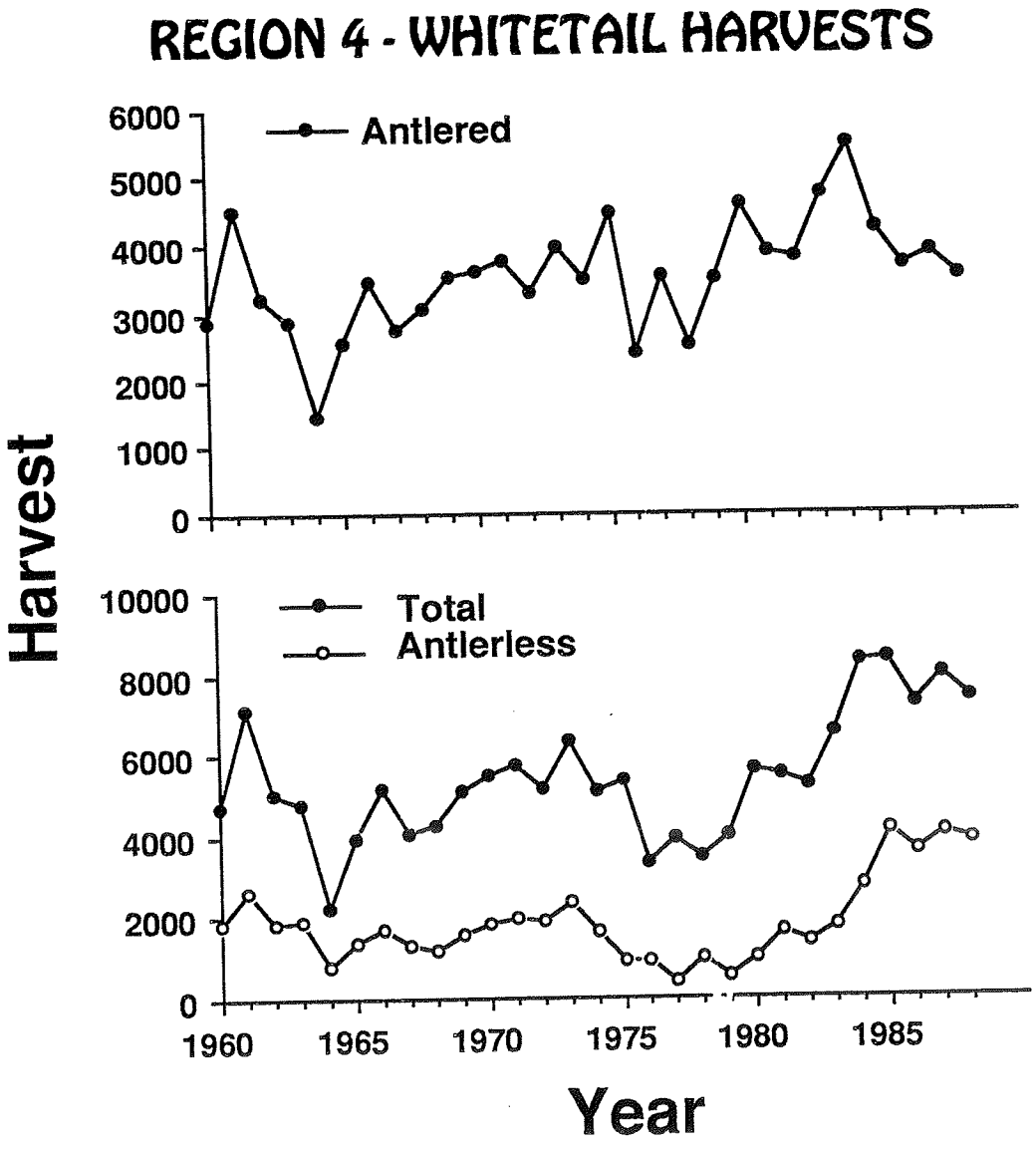

Figure 6. White-tailed deer harvests for Region 4, 1960-1988.

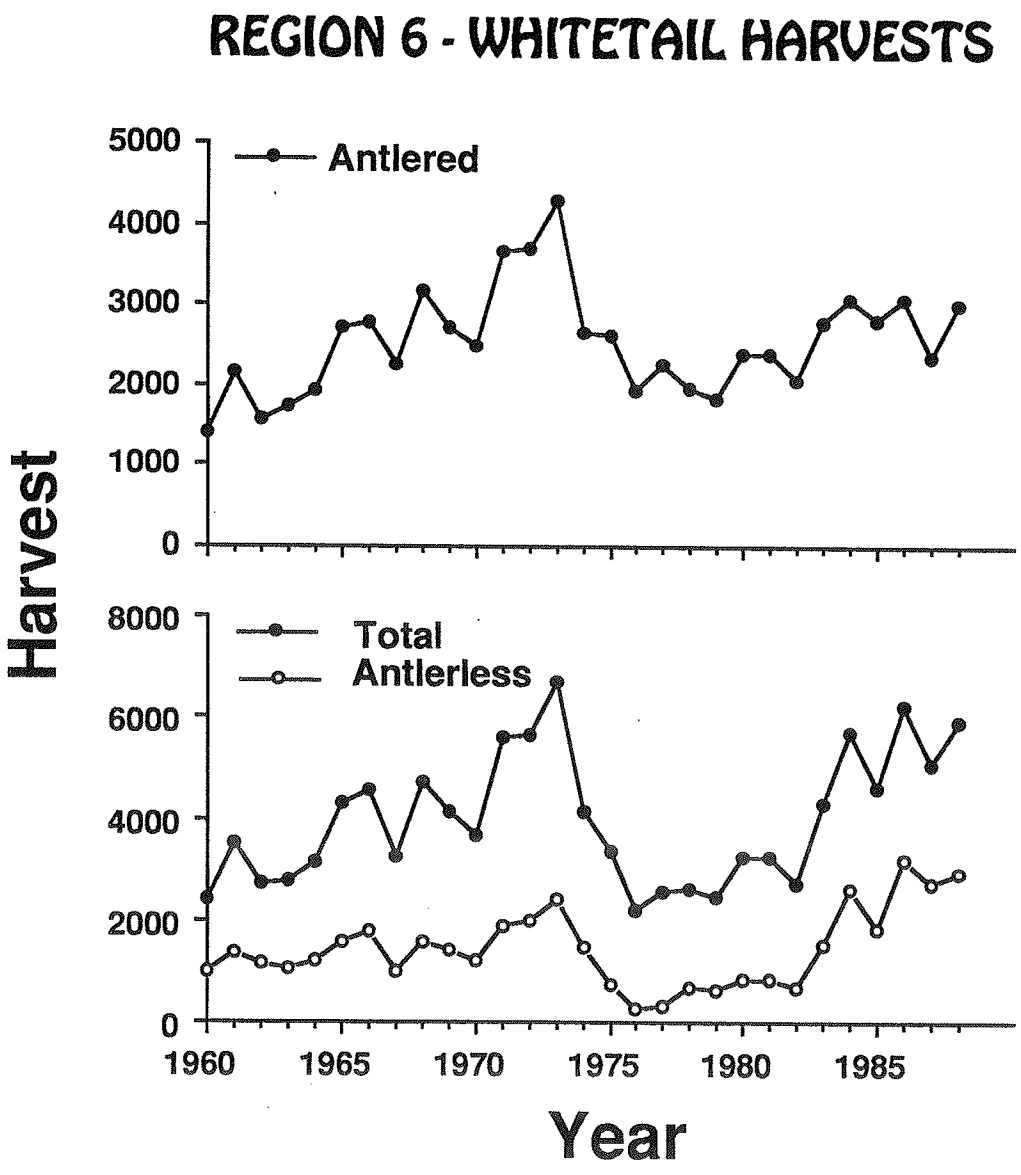

Figure 7. White-tailed deer harvests for Region 6, 1960-1988.

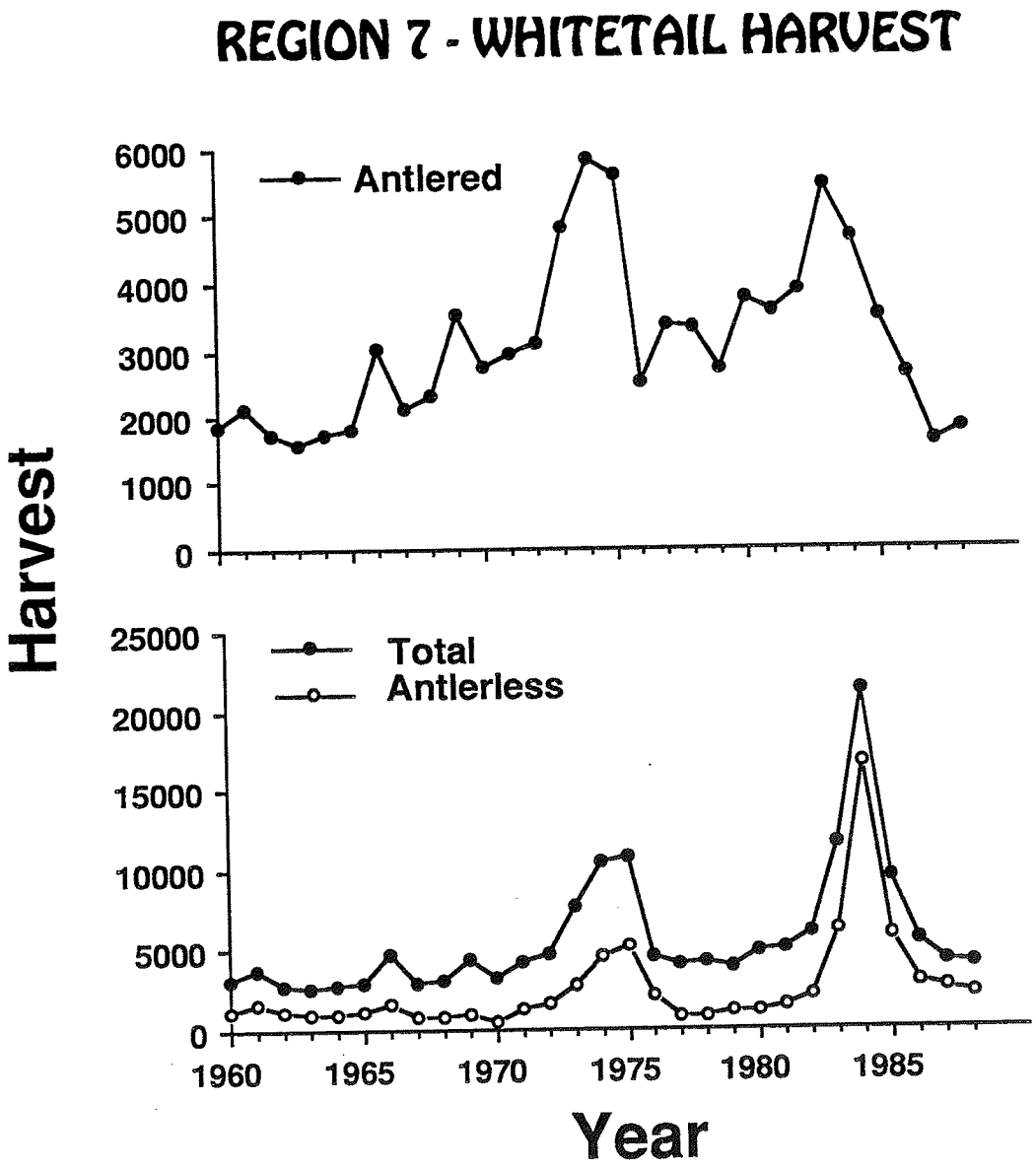

Figure 8. White-tailed deer harvests for Region 7, 1960-1988.

DISCUSSION

Availability of long-term data on Montana's white-tailed deer is limited and restricted by various constraints. However, it appeared that whitetails expanded their distribution since 1940. Harvests of antlered males, which may reflect population trends, are at all time highs in western Montana, have leveled off near all time highs in the south, fluctuate around long-term averages in the north, and have dropped to long-term lows in the southeast. Harvest data support the perception of statewide declines in deer populations during the mid 1970's. Buck harvests were consistently low across the state, though they were at record lows only in the west.

Harvest data also demonstrated risks associated with management regimes that assume density-dependent responses to a forage-based carrying capacity. Such a management regime assumes that increased harvests of antlerless deer lower deer densities resulting in increased herd productivity and thereby increase buck harvests. Buck harvest trends occasionally follow those of antlerless deer. However, recent increases in antlerless harvests in Regions 4, 6 and 7 resulted in stable to declining buck harvests. Similar trends in buck and doe harvests seem to indicate increasing populations rather than compensatory responses.

Fawn recruitment rates are generally lower in western Montana compared to the rest of the state. However, variability in annual fawn recruitment was comparable across all regions. Thus, inherent fluctuations in fawn recruitment rates can't account for the four different harvest trends.

Results of past studies suggested that population increases followed years when fawn recruitment exceeded a certain level and population declines occurred when recruitment fell below this threshold (Mackie 1970). However, such a simplistic relationship has been shown inadequate for application in harvest management (Hamlin and Mackie 1989). Such a relationship depends on constant adult mortality over time which has not been documented in eastern Montana. Compensatory population responses seem uncertain and do not provide a reliable management tool (Mackie et al. 1990). Thus, fawn recruitment must be considered along with adult mortality if either are to be used for deer management.

LITERATURE CITED

Allen, E. O. 1971. White-tailed deer. Pages 69-79 in T. W. Mussehl and F. W. Howell, eds. Game management in Montana. Mont. Dep. Fish and Game Fed. Aid Proj. W-3-C.

Anonymous. 1978. Montana Statewide Comprehensive Outdoor Recreation Plan. Mont. Dep. Fish and Game, Helena.

Dusek, G. L., R. J. Mackie, J. D. Herriges, Jr., and B. B. Compton. 1989. Population ecology of white-tailed deer along the lower Yellowstone River. Wildl. Monogr. 104:1-68.

Hamlin, K. L. and R. J. Mackie. 1989. Mule deer: population ecology in a fluctuating environment. Montana Dep. Fish, Wildl. and Parks, Fed. Aid in Wildl. Restor., Job Compl. Rep., Proj. W-120-R.

Mackie, R. J. 1970. Range ecology and relations of mule deer, elk and cattle in the Missouri River breaks, Montana. Wildl. Monogr. 20:1-79.

———., K. L. Hamlin, D. F. Pac, G. L. Dusek, and A. K. Wood. 1990. Compensation in free-ranging deer populations. Trans. No. Am. Wildl. and Nat. Resour. Conf. In press.

Wood, A. K., R. J. Mackie, and K. L. Hamlin. 1989. Ecology of sympatric populations of mule deer and white-tailed deer in a prairie environment. Mont. Dep. Fish, Wildl. and Parks Tech. Bull., Helena. 97pp.

The Wildlife Extension Program in Montana

Mike Getman, U. S. Fish and Wildlife Service, Charles M. Russell National Wildlife Refuge, Lewistown, Montana

Abstract

The Wildlife Extension Program is administered by the U. S. Fish and Wildlife Service to provide technical assistance and funding to landowners for increasing waterfowl production on private land. Projects on private lands are emphasized since 95 percent of the ducks in the continental U. S. are produced on private land. Water has been identified as the limiting factor for the production of waterfowl in Montana. This program is directed to wetland restoration, repair of existing reservoirs, and the construction of new reservoirs. Landowners participating in this program retain all rights to control access and hunting on their property.

Implementation of this program began in 1988. During the last two years, over 195 wetlands and reservoirs have been built or repaired. There are six steps necessary for a project - landowner contact, site inspection, project design, landowner commitment, project approval and funding, and project construction. An ideal situation consists of a reservoir two to three acres in size with a maximum water depth of seven feet or less, and with suitable nesting cover nearby. Projects of this type are generally built at no cost to the landowner.

Breeding pair counts conducted in 1989 on several projects in the Lewistown area showed an average of 2.2 indicated pairs per wetland acre and confirm that these projects are providing important breeding pair habitat. For comparison, densities were 3.1 in northcentral Montana in 1987 and 2.2 in the Prairie Pothole Region during the 1950's and 1960's.

1990 MDFWP
Gary Dusek
218 Fairview
Kalispell, MT 59901