

MONTANA

Wildlife

JUNE 1957—Montana Fish and Game Department Official Publication



SILVERTIP



Of the estimated 800 grizzlies existing in the United States, Montana Claims over 400. This dwindling game species will persist only so long as there are large wilderness areas to roam in.

MONTANA FISH AND GAME DEPARTMENT

Official



Publication

State of Montana

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Montana Wildlife

Vernon Craig, Editor

TABLE OF CONTENTS

| | |
|--|----|
| Roadside Flora—Guest Editorial..... | 3 |
| 1957 Fish and Game Legislation..... | 4 |
| Game Bird Inventory Methods..... | 7 |
| Use of Aircraft in Fish & Game Management..... | 11 |
| Wild River | 15 |
| Shooting Safety | 21 |
| DDT and Fish..... | 23 |
| Montana Blue Grouse..... | 28 |
| Predators Are Like People..... | 32 |

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Roadside Flora

EDITORIAL

Guest Editorial—By John Willard

Last year, as I drove through one of Western Montana's nicest mountain valleys, the left front hub cap flipped off the wheel, spun across the road and into the borrow pit.

When I climbed out of the car to go after it, the roadside looked as clean as a hound's tooth, grass green and neat along the shoulders, but the bottom of the borrow pit was another story. In the 10 minutes it took to find the lost hub cap, I was treated to one of the sorriest sights in Montana. Every footstep covered a beer can, piece of Kleenex, paper milk bottle, pop bottle, old inner tube, paper sack, paper plate, or what have you.

A wheel barrow wouldn't have held all the junk within arm's length anywhere along this highway. It would have taken a dump truck to pick it all up for a mile.

The amazing thing about it is that someone hauled all this stuff out there, an astounding job of transportation matched only by the callous ignorance of the haulers. This is the age of throw-aways. Everything comes wrapped and sealed in a container made to throw away.

In my childhood of not too long ago, (?) there was an item of thrift in the container business. Every bottle, whether it contained beer or milk, was a thing of value, something to be hoarded and taken to the store to be traded in for a few dimes. Now this is an outmoded way of life. Bottles are boldly marked "Not for reuse," as though even filling one with water would constitute a high crime and punishable under the law. No wonder people are so anxious to get rid of them. Don't even want them in the car for fear it might constitute use and foul them with the law.

Then there is the paper industry. Use of paper has mounted astronomically in the last few years, and what in my boyhood days served only as a writing surface today can be anything from a milk bottle to a portable nose-wiper and glasses cleaner, boxed so that a new one flips up everytime one is used. There are paper cups, paper boxes, paper wrappings and other items of daily necessity, all carefully coated with wax to withstand years of buffeting by the elements and thus becoming a permanent part of the roadside scenery.

And ah yes, the beer can. This noble triumph of engineering science has laid a firm grip not only upon our civilization but upon the byways of rural America for centuries to come. Securely enameled outside and lacquered inside to protect the subtle flavor of the hops, it is as indestructible an item as Fort Knox. A tiny bastion, embattled against the best efforts of wind, weather and little boys playing "Kick the Can," it will be with us forever, a perpetual reminder of the thirst of the traveler.

Added to the galaxy of roadside flora must be the paper or pasteboard carton, usually filled with weather-resistant relics of picnics or car seat lunches such as paper knives and forks, paper cups, paper plates, waxed paper and plastic sandwich bags. Festooned across the tumbleweeds they become the flower gardens of our highways, the putrid petunias of the borrow pit.

That there is a Montana law against such spring and summer sowing of the roadside matters little. Even that it is enforced and that violations are expensive seems only to stimulate the flingers. There must be some hidden joy in seeing a beer can bounce off the blacktop or a pop bottle sail whistling into the wind. The arc of a paper plate must match the flight of the wild duck in the fantasy of the motorist whose car must be tidy at all costs.

Montanans share America's distinction in an outdoor sport that costs \$50,000,000 a year to clean up. It should cause a surge of pride that could be mistaken for a twinge of conscience.

FINAL STATUS OF LEGISLATION CONCERNING FISH AND GAME MATTERS BEFORE THE 35th LEGISLATIVE ASSEMBLY

During the 35th Legislative Assembly a total of 28 bills concerning Fish and Game matters was considered by the Legislative Assembly. Of this number, 18 were introduced in the House and 10 in the Senate. Five of the 18 House bills were passed by both houses and signed by the Governor. Six of the 10 Senate bills passed both houses and were signed by the Governor.

Following is a brief resume of the legislation which was killed, as well as the bills which were passed and have been enacted into law.

House Bills Killed

- H. B. 7**—Introduced by Gray (Sweet Grass)—Provides that any costs incurred by a county in game law violations will be paid out of the Fish and Game fund.
KILLED IN HOUSE FISH AND GAME COMMITTEE SINCE A SIMILAR STATUTE IS IN EFFECT.
- H. B. 53**—Introduced by Gray (Sweet Grass)—Provides amendment to the game farm law which would permit private owners of rare and wild species of geese to operate without having pens covered by wire and with birds rendered incapable of flight.
KILLED IN SENATE FISH AND GAME COMMITTEE.
- H. B. 58**—Introduced by Rieder (by request) (Jefferson)—This bill removes the power of the Fish and Game Commission to limit the number of hours for fishing, or in other words would put fishing on a 24-hour basis.
KILLED IN SENATE FISH AND GAME COMMITTEE.
- H. B. 212**—Introduced by Barnes (Treasure), Allen (Custer), Gray (Sweet Grass)—Would require payment of crop damage caused by wild deer and antelope.
KILLED IN HOUSE FISH AND GAME COMMITTEE.
- H. B. 238**—Introduced by Berg (Park) and Walton (Park) (by request)—Would establish the dates and hours of Park County elk hunting season and take this power from the Fish and Game Commission.
PASSED HOUSE—KILLED IN SENATE FISH AND GAME COMMITTEE
- H. B. 251**—Introduced by Glead (Beaverhead), Goodgame (Lincoln), Strnisha (Ravalli)—Would give Fish and Game Commission authority to regulate importation of fish and fish eggs.
PASSED HOUSE—KILLED IN SENATE FISH AND GAME COMMITTEE.
- H. B. 295**—Introduced by Holtz (Cascade), Morrison, (Cascade), Meagher (Cascade), Conklin (Cascade), Regan (Cascade), Anderson (Cascade)—This bill would provide for transfer of a State school section of land on Smith River to the State Parks Commission. The bill would have given the public access to Smith River for recreational purposes.
PASSED HOUSE. KILLED IN SENATE FINANCE AND CLAIMS COMMITTEE.
- H. B. 330**—Introduced by Holding (Missoula)—Would increase the payment for selling a license from ten cents to fifteen cents.
PASSED HOUSE. KILLED IN SENATE FISH AND GAME COMMITTEE.

- H. B. 359**—Introduced by Gerard (Madison)—Would require public hearing prior to purchasing or leasing any lands for game purposes.
PASSED HOUSE. KILLED IN SENATE FISH AND GAME COMMITTEE.
- H. B. 396**—Introduced by Goodgame (Lincoln)—Would provide for the election of Fish and Game Commissioners.
KILLED IN HOUSE FISH AND GAME COMMITTEE.
- H. B. 426**—Introduced by Gray (Sweet Grass) (by request)—Would provide for payment of investigation and prosecution of game cases by county officials.
KILLED IN HOUSE FISH AND GAME COMMITTEE BECAUSE SIMILAR LAW ALREADY ON STATUTES.
- H. B. 440**—Introduced by Rieder (Jefferson) and Nichols (Ravalli)—Would place 25% of money received from hunting and fishing license, permits, etc., in State Park Fund.
KILLED IN HOUSE FISH AND GAME COMMITTEE.
- H. B. 445**—Introduced by Goodgame (Lincoln)—Would elect the Director of the Fish and Game Department.
KILLED IN HOUSE FISH AND GAME COMMITTEE.

Senate Bills Killed

- S. B. 61**—Introduced by Sagunsky (Madison)—Would add Chukar partridge to game bird list, remove fox from fur-bearer list and add to predator list. Would remove Canadian Lynx and black-footed ferret from predator list.
PASSED BY SENATE. KILLED IN HOUSE FISH AND GAME COMMITTEE.
- S. B. 63**—Introduced by Hagenston (Dawson)—Would enable the Fish and Game Director to appoint as ex-officio game wardens certain Fish and Game Department personnel not working as game wardens but in the field where they might occasionally assist in law enforcement.
PASSED SENATE. KILLED IN HOUSE FISH AND GAME COMMITTEE.
- S. B. 103**—Introduced by Grant (Custer)—Would make the use of water and obtaining of water rights for fish and wildlife a beneficial and legal use of water.
KILLED IN SENATE IRRIGATION AND WATER CONSERVATION COMMITTEE.
- S. B. 160**—Introduced by Reardon (Silver Bow)—This legislation would repeal the assent act to the Pittman Robertson Wildlife Restoration Act, thus depriving the State of Federal Aid funds used for land acquisition, game development projects, investigative projects and management.
KILLED IN SENATE FISH AND GAME COMMITTEE.

House Bills Passed and Signed by the Governor

- H. B. 42**—Introduced by Rieder (Jefferson)—Provides that persons under 18 purchasing their first big game license, must have a certificate of competence. The Fish and Game Department would be responsible for training and issuing such a certificate. Becomes effective January 1, 1958.
SIGNED BY GOVERNOR

H. B. 45—Introduced by Juedeman (Toole)—Provides that state fish and game wardens are authorized to enforce the provisions of Chapter 139, Laws of 1955, which required that suitable life preserving equipment be carried in boats.

SIGNED BY GOVERNOR.

H. B. 203—Introduced by Fish and Game Committee—Reduces beaver permit fee and extends date for trapping.

SIGNED BY GOVERNOR.

H. B. 246—Introduced by Mysse (Rosebud), Holding (Missoula), Nelson (Golden Valley), Strnisha (Ravalli)—Would provide for removal of certain rough fish, when desired by commercial fisheries. Limited to Ft. Peck Reservoir.

SIGNED BY GOVERNOR.

H. B. 371—Introduced by Glancy (Musselshell), Devier (Dawson), Meagher (Cascade)—Provides that the Commission shall issue a free game bird and fishing license to resident citizens of the State who are 70 years of age or over. This law becomes effective July 1, 1957.

SIGNED BY GOVERNOR.

Senate Bills Passed and Signed by Governor

S. B. 17—Introduced by Grant (Custer), Keller (Stillwater), Brownfield (Carter), Minnette (Glacier), Brenner (Beaverhead), Valiton (Powell)—Would extend for two years, the Commission's powers to issue \$20. permits for deer and antelope. Limits one license per non-resident for deer and one for antelope.

SIGNED BY GOVERNOR

S. B. 18—Introduced by Sagunsky (Madison) and Goodwin (Broadwater)—Would permit the Department to open regular and special seasons to control game animals doing damage.

SIGNED BY GOVERNOR.

S. B. 82—Introduced by Brenner (Beaverhead), Robinson (Phillips), Valiton (Powell)—Would empower the Fish and Game Commission to construct or purchase a building suitable for its needs.

SIGNED BY GOVERNOR

S. B. 104—Introduced by Mackay (Carbon)—Would repeal several game preserves established by the legislature and not now needed. Included would be Gallatin, Snowy Mountains, Powder River, Twin Buttes, South Moccasin and Blackleaf.

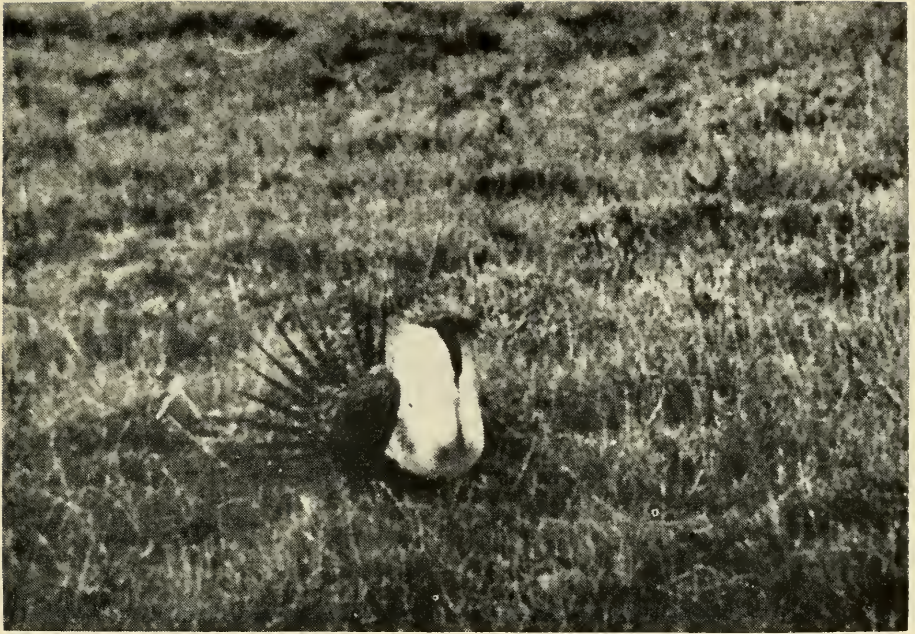
SIGNED BY GOVERNOR.

S. B. 114—Introduced by Valiton (Powell) and Grant (Custer)—Would change requirements for deputy director to include any qualified person with at least one year's experience with the Department. As written at present time, only men who had served as game wardens could qualify.

SIGNED BY GOVERNOR.

S. B. 135—Introduced by Grant (Custer)—Provides for an increase in the amount of per diem allowed each year by the members of the Fish and Game Commission—increase from \$600.00 to \$800.00 for members of the commission and from \$600.00 to \$1000.00 for the Chairman.

SIGNED BY GOVERNOR



A sage grouse defiantly rattles his stiff tail feathers.

—Photo by Reuel Janson

GAME BIRD INVENTORY METHODS

By Reuel Janson, Biologist

In the spring a bird's fancy turns to the subject which (according to Kinsey) a young man has been thinking about all year, namely, courtship. Each species of upland game bird has its own peculiar method of attracting the opposite sex. Male sharp-tailed grouse (often erroneously called prairie chicken) when stimulated by the lengthening daylight hours of spring, congregate in small groups on preferred locations, usually grassy knolls, to perform their annual courtship ritual. The same locations are often used year after year. These

"dancing grounds" are visited early each mild morning during the spring by the male birds. During this daily exercise period, they cackle, hoot, fight, chase each other and perform their characteristic dance. With head lowered, wings out-stretched and tail held vertically, the grouse dance by stamping their feet up and down with the rapidity of a jackhammer. Simultaneously, they vibrate their tails from side to side so that the stiff feathers produce a loud, rattling sound.

At first, these performances are mere dress rehearsals, but by late April, females are attracted to the grounds and promiscuous matings occur.

The performance of the sage grouse on their "strutting grounds" is similar, but instead of dancing, they strut about like turkey gobblers, and alternately inflate and deflate the olive-drab air sacks on their breasts with peculiar plopping sounds.

Sharp-tail dancing grounds are found in extensive grassland areas where grazing has been light enough to allow a cover of rather tall grass to remain. Sharp-tails have been forced out of many areas by intensive wheat farming and over-grazing.

Sage grouse strutting grounds are found usually on grassy flats surrounded by extensive areas of sagebrush. The strutting grounds may be several acres in size and may accommodate up to 100 or more male birds.

The ruffed grouse, a forest species, is more solitary in its courtship habits. The male selects an old rotting log, and standing on it, he thumps his wings against the air so vigorously that he makes a sound like a small gasoline motor just starting up. This performance is called "drumming."

Pheasants are unlike grouse in not having any certain location in which to perform. However, each cock has a territory in which other cocks are not allowed to trespass. Each morning the cock wanders over his territory, usually accompanied by a

harem of from one to ten hens and emits a loud, two-note crowing call at intervals.

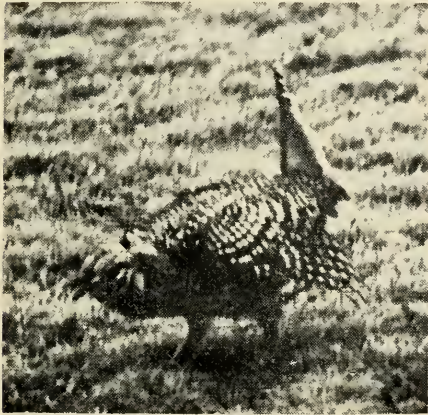
The courtship habits of upland birds are not only interesting to watch, but they also provide a basis for spring census work by game department personnel. Accurate game censuses are desirable partly for setting hunting regulations consistent with game populations, and partly for measuring the effect of various management measures. For instance, if it were desired to find out whether or not intensive predator control affects bird populations, a census would be necessary both before and after the control measures were carried out. When habitat development work is done, game census before and after would be necessary to demonstrate the effect of the work on the game population.

A spring census of a sharp-tailed grouse breeding population is based on the fact that most of the male birds are present on the dancing or strutting grounds early in the morning in the spring. Accordingly, a department observer travels a pre-selected route by automobile from one-half hour before sunrise to approximately one hour after sunrise on April mornings. If there is little or no wind, he locates the dancing grounds by stopping to listen at intervals of from one-half to one mile. The sounds made by the dancing grouse guide him to the dancing grounds. He then tallies the number of male birds present. When this is

done along a route about 15 miles long, the total number of males counted provides an index to the population. If these counts are obtained each year on the same routes, population trends can be accurately followed.

Since sage hens are relatively quiet on their strutting grounds, the observer locates these either by scanning the country with field glasses or flying back and forth at a low altitude to spot them. As with sharp-tails, the total count of male birds on several grounds in a certain area or along a certain route, provides an index to the population density and trend.

Ruffed grouse can be censused by traveling roads in forested areas and listening at intervals of about one-half mile for the drumming males. The number heard drumming along a route of a definite length would then be the population index.



Early morning light makes the dancing sharp-tails difficult to photograph.

—Photo by Reuel Janson

Pheasants, also, can be censused by listening counts. It has been established that early in the morning during the breeding season, a cock pheasant crows at an average rate of about one call per two-minute period. Consequently, we have established a number of listening routes distributed in the main pheasant areas in the state. These are traveled by automobile early in the morning by department observers. Each observer stops at mile intervals on his route and listens for a two-minute period at each stop. He counts and records all the pheasant crowing calls he hears during this period. The average number of calls per two-minute stop is then used as the index to the **cock** population. If this is to be used as an index to the total population, the sex ratio must also be known. For instance, a heavily hunted area such as the Fairfield Bench may have a sex ratio of only 15 cocks per 100 hens while a lightly hunted area may have 50 cocks per 100 hens. A crowing count of 15 calls per two minutes on the Fairfield Bench would thus indicate a total population almost as high as that indicated by a crowing count of 50 calls per two minutes in the lightly hunted area. The sex ratio counts used to correct the crowing counts are best obtained in the late winter when the birds are concentrated in certain areas and are easy to count.

Spring counts sample small game populations at their lowest numbers of the year. Further work in late summer or early fall is necessary to de-

termine the number of young produced. These young birds are usually more important to the hunter than are the adult birds since they make up a greater part of the total fall population. This is especially true of pheasants in a heavily hunted area. In the fall of 1956, 94 percent of the cocks taken by hunters on the Fairfield Bench were birds of the year, and the average hunter was able to bag a pheasant in three hours of hunting. Without these young birds, 48 man-hours of hunting would have been required to bag each bird.

The reproductive success of the various upland game species is measured by means of brood counts made early in the morning along established routes in late summer. The number of young birds observed in comparison to the number of hens or adults indicates the success of the hatch. Thus by using a census of the spring breeding population as a base, and combining this figure with the results of brood counts made in late summer, department biologists are able to estimate the supply of game birds available to the hunter.



Gene Sherman, District 3 Warden Supervisor, steps from a Super Cub equipped for both snow and dry landings.

THE USE OF AIRCRAFT IN FISH AND GAME MANAGEMENT

By Gene H. Sherman—Warden Supervisor

In Montana, the airplane plays an important role in fish and game management which, of course, includes law enforcement. Enforcement of the rules is considered just one of the tools in Fish and Game management.

The Department employs one full-time pilot who, in addition to flying, is in charge of the general and maintenance operations for state-owned aircraft. Other department personnel who hold commercial pilots' licenses do part-time flying incidental to regular duties. Fish and Game pilots have been granted a waiver by the CAA for minimum safe altitudes over other than congested areas for the purposes of aerial search and rescue, game surveys, forest patrol, law enforcement, fish stocking and poisoning, and game trapping and herding.

The question has arisen from time to time as to the justification of the state owning airplanes instead of renting them from commercial operators, which is often done. There are three essential reasons for state ownership:

1. **IMMEDIATE AVAILABILITY**
2. **SPECIALIZED EQUIPMENT NECESSARY FOR PARTICULAR JOBS (UTILITY)**
3. **ECONOMY**

IMMEDIATE AVAILABILITY . . .
Most privately owned small planes available during the winter are converted for crop spraying the remainder of the year and are unavailable to the Department. Some of the larger planes available during winter are rented during other seasons by

the Forest Service, and other agencies for fire patrol, spraying, dusting, and chartered trips.

UTILITY . . . The type of airplane which best suits most of our needs is one that operates economically, has ample reserve power for mountain flying and yet is light enough for short field landings and take-offs. The helicopter would meet part of these requirements, but because of high rental cost, the additional services rendered would be unjustified in most instances.

In addition to the aforementioned requirements, our planes are equipped with 2-way police radios, some are equipped with hydraulically operated ski-wheel combinations and two contain built-on tanks for fish planting. This equipment is unavailable on rented aircraft, and installation of fish tanks on such planes would make rental considerably higher.

ECONOMY . . . Operators who own and rent aircraft or automobiles must charge a fee above operational costs if they are to stay in business. It is conceded that a certain amount of flying is necessary if a profit is to be made, thus justifying ownership of aircraft. The amount of flying done by the Department gives this profit margin notwithstanding the availability of aircraft equipped for our particular jobs.

For example, we are able to rent, when available, Piper Super Cubs for \$9.00 per hour without a pilot. A 31 months record of a department-

owned Piper Super Cub 135 revealed an operational cost of \$4.42 per hour. This included gas, oil, maintenance, and rent for a heated hangar. It did not include insurance or depreciation—these two items may be variable. Based on an average cruising speed of 90 mph, the operational cost figured approximately 5c per mile.

I believe it has been demonstrated that department ownership of aircraft is both advantageous and economical. So much for that. The task accomplished with airplanes is the true yardstick for measuring their value.

TRANSPORTATION . . . Since Fish and Game personnel are required to attend many meetings throughout the state and executive personnel from the state office spend considerable time traveling to and from these meetings, transportation by aircraft is an economical timesaver. A trip to Miles City from Helena, which requires 6 to 7 hours one way by automobile, can be made by airplane in about 1½ hours. Instead of officials spending the better part of two days driving to and from a meeting, they can leave Helena late one afternoon, attend evening meetings, and be in Helena early the following morning ready for a day's work. Thus, airplane transportation is not only more economical but enables officials to do a better job of public service. In addition, ski equipped planes more quickly and economically transport personnel into back country where road travel is impossible in the winter.

These are but two of the many examples of the advantages of aircraft transportation.

GAME SURVEYS . . . The department has been making trend counts on elk, moose, bighorn sheep, rocky mountain goats and antelope for the past eleven years. While the counts aren't deemed altogether accurate, when coordinated with hunter kill questionnaires, they provide our best index for arriving at harvest recom-

FISHERIES MANAGEMENT . . .

During the recent rehabilitation of the Marias River where about 1,000 miles of stream were poisoned, the airplane proved its worth in Fisheries Management. Though there was a lot of ground work and many hours of pumping and slugging rotenone into small back waters and streams, the bulk of toxicant was aerially sprayed.

The job of restocking the poisoned areas was also a tremendous one. It



Ralph Cooper, department pilot, displays one type of tank used for aerial fish planting.

mendations. For the past four years, we have been making state-wide beaver cache count surveys. We are able to closely estimate the beaver population on a stream-mile basis. This information is used for setting up trapping quotas in our beaver management program.

The airplane is also widely used in waterfowl management. A census is taken of wintering birds which are located from the air. Many miles of goose nesting areas are flown in order to census nesting geese and their broods.

goes without saying that planting 6,000,000 rainbow trout with the nearest hatchery 100 miles away is a big distribution order. Also, it must be realized that stocked fish could not all be liberated in one spot at the end of the road. Access roads to many miles of stream and shoreline were not present, so again the airplane was called to the rescue and the area was rapidly and efficiently planted by air.

The planting of Golden Trout in some of our high, virgin mountain

lakes was very impractical if not impossible before tanks were installed on department planes. Incidentally, in a few years from now some of those goldens should be whoppers.

LAW ENFORCEMENT . . . The use of the airplane in certain types of law enforcement has proven very valuable. Perhaps number one in importance is the preventive power it seems to possess. Prevention of violations is more pleasant than apprehension and an enforcement program based on that principle will gain far more support in the long run.

This power of prevention did not come about by accident but took considerable effort. The results have helped build the airplane's reputation. In order to evaluate the results, it is necessary to compare present pre-season foot patrols to those before air support existed.

About 15 years ago I started tramping the stream banks looking for people who seemed to think fishing was best when the streams were legally closed. It was not uncommon to find freshly used and discarded worm cans and salmon eggs jars along stream banks while fresh fish entrails floated at the water's edge in many secluded spots. Poachers' boot tracks were a common sight—some practically smoking—some a few days old. Once in a while a culprit was apprehended but the miles of stream one warden could cover on foot was very limited.

Now a large area can be readily observed from the air. Poachers may

easily be spotted in the brush and radio-directed wardens can await their men at a convenient spot. After a few arrests were made in such a fashion, the word seemed to get around among early fishermen. Tracks along stream banks before fishing season became far less numerous.

The same story applies to pre-season hunters. Some poachers have been apprehended when an unexpected plane landed in the middle of their happy hunting ground. The airplane has also been used on several night patrols. The word apparently got around and jack-lighting became far less frequent.

Montana is a big state and the wardens have a lot of area to cover. The program of prevention is really emphasized when a few airplanes are used.

Among some of the other department plane uses are prevention of game damage, predator control and search and rescue.

As you know, there are tricks to all trades. This applies to the use of airplanes in fish and game work which in itself is a do and learn trade. It pleases me to say that we have satisfactorily worked out some of the preliminary problems which go with the use of airplanes. We find new approaches to different phases from time to time, but taking all things into consideration, the airplane is a great and valuable instrument in our game management program.



Two boatmen drift through wilderness on a wild river.

Wild River

From a Letter by Dr. John Craighead, Leader, Montana Cooperative Wildlife Research Unit

Dear Ken:

I have your letter requesting that I express myself concerning the proposed impounding of the Middle Fork at Spruce Park.

I am happy to take this opportunity to present some of my thoughts and views in the hope they will prove of value to readers of Montana Wildlife. The views I have propounded are strictly personal and not in any way to be construed as representing the official position of the U. S. Fish and Wildlife Service.

The problem of impoundment is becoming ever more acute in the Northwest. Some years ago the emphasis was on down-stream impoundments and in general conservationists did not oppose such dams largely because it was evident to all concerned that they increased the usable water for certain purposes and thus were necessary to our growing economy. Those conservationists who realized that the storing of water for irrigation, flood control, power production, and industrial use was frequently in con-

flict with the use of water and watersheds for wildlife and recreation were not sufficiently well organized to bring their thinking before the public in a clear and forceful way.

Nevertheless many citizens did recognize that the construction of dams without a thorough land and water use survey, which would consider all the varied private and public interests, was basically unsound. We still recognize this approach as unsound and many conservationists have become even more alarmed now that impoundments threaten the headwaters of the Columbia River system and some of the finest recreational land left in the U. S. Since much of this land lies in Montana, the problems are ones that Montanans should recognize and be prepared to solve.

I have been particularly concerned about the effects that dams may have on some of these remaining wild regions of Idaho and Montana. **Rivers and their watersheds are inseparable and to maintain wild areas we must preserve the rivers that drain them.**

The Spruce Park Dam has been of special interest as this area is close to home and the proposed dam will have widespread effect on the area between Glacier Park and the Bob Marshall Wilderness Area.

The Spruce Park Dam is just another case where the Corps of Army Engineers has made long range plans and the conservationists are in the unenviable position of having to hastily accumulate biological data at the last minute. In the past, conservationists have been continually on the defensive with regard to impoundments. This is unfortunate since it places us in the light of obstructionists rather than defenders of the public interest whenever a new dam is proposed. We are in this regrettable position with regard to Spruce Park.

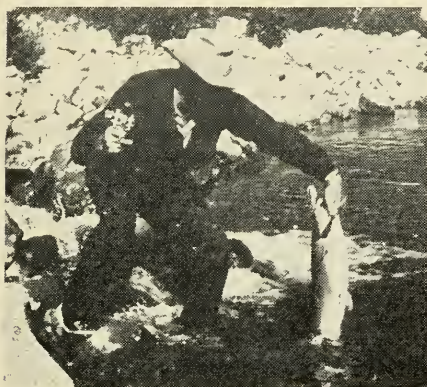
Until conservationists and the recreational industry propose clear cut objectives for the disposition of local and regional water resources, it appears that about all we can do when a dam is proposed is to hastily gather data to evaluate any given situation. This may suffice for the present but it will hardly carry us through to victory in the future.

Last summer I took a five-day raft trip down the Middle Fork with Clifton Merritt, some interested sportsmen from Kalispell, and members of the Montana Fish and Game Department. I have rafted most of the large fast-water rivers of the mountain west. My interest in the Middle Fork trip was to make a personal evaluation of its recreational potential. There is no doubt in my mind that this is one

of the most scenic "wild" rivers in the Northwest; one which conservationists should strive hard to save. The country is ideal for pack trips and the river offers a "white water" float trip of unsurpassed beauty. The scenery is superb, fish and wildlife are abundant and in every direction the outdoorsman meets the challenge of primeval country.

Although it would be highly desirable to have detailed biological and ecological information on the Middle Fork River and surrounding country, and eventually this must be obtained, I do not believe a lack of this should now prevent us from stating our case strongly. In fact, I think we may be imposing severe handicaps on our efforts by allowing ourselves to be pressured into attempting to obtain hasty quantitative biological data, and assigning to this an inadequate dollar value in order to justify preservation of wild areas. It is essential to preserve intact a few of the "wild" rivers of this region for recreation and education of future generations. Any outdoor pursuit which brings a man into intimate contact with natural scenery, natural forces and the unaltered web of life is highly educational. The right to experience this should be as inalienable as freedom of worship. To preserve it is a trust falling to each succeeding generation. The aesthetic and recreational values of a river are so very easily destroyed—far more easily destroyed than similar values of hill and mountain country. There are numerous examples and no specific data is nec-

essary to prove this point. One dam with the accompanying roads would largely destroy the natural beauty of the Middle Fork and would have a tremendous effect on the fish and wildlife and future recreational possibilities. The sport fishing would suffer severely, but the fundamental loss will not be in animal species or populations but in natural beauty and wilderness. There appears to be no way to compromise exploitation of an area with preservation of the values of a virgin country.



A big bull trout comes from the clear water of a wild river.

It is my belief that we should strive to keep intact some wild rivers on the basis that they are essential to our way of life; that they have far-reaching educational and recreational potential and that, therefore, no single group or interest should impound a "wild" river or open it up with roads until a thorough land use survey has been made which would take into account forest and watershed values, the wildlife and recreational potential, educational and aes-

thetic values, and, of course, the value of the water for irrigation, power, and flood control when impounded. Perhaps even more important is the need to evaluate these areas not solely in terms of the present, but in terms of 50 to 60 years from now. In other words, values determined from comprehensive land use surveys made at the present time should be projected 50 years ahead and these values then used to formulate and determine our present action. This task will require the cooperative efforts of all conservation organizations.

Recreational values of areas such as the Middle Fork are not readily recognized or evaluated at the present time, but there is little doubt that they will be proclaimed and placed at a premium in the future. There is ample evidence of this all through the eastern and central states and on the west coast. The question is whether increased power, more industry, more material things will be of greater needs to a population continually increasing, than recreational areas that relieve the tension and stress created by population density. Most certainly we will need both.

Recreational areas such as State and National Parks, National Forests and Wildlife Refuges furnish mass recreation and the value and need of these is generally recognized. The necessity of wilderness areas for high quality recreation is not so generally endorsed and yet these areas are vital to a well-rounded outdoor recreation program.

We have reason to be concerned about our wilderness rivers. When one attempts to enumerate the number of "wild" rivers still left in Montana, one arrives at the startling fact that already they are a rarity. I can think of only one Montana river I would place in this category and that is the Middle Fork of the Flathead. The South Fork of the Flathead has been dammed by Hungry Horse and although the upper portion lies within the Bob Marshall Wilderness area, it is nevertheless not a completely wild stream. The same is true of the Sun River that flows out of the Bob Marshall Wilderness area on the east. It has a large impoundment and others are planned. Roads parallel both sides of the North Fork of the Flathead. The lower reaches of the Middle Fork are in contact with roads but the upper portion is still wild.

Perhaps a reasonable approach is to sharpen our wilderness objectives. We must not only continue to protect existing wilderness areas as such, but focus attention to wilderness rivers—the most fragile portion of wilderness country. In the case of the Middle Fork, we should emphasize the wilderness character of the river itself, making it clear that we are dealing with one of the few remaining wild rivers—a species now close to extinction. Our objective would be to hold this small area intact for high quality recreation. A place where our children and their children can seek adventure, testing themselves against the wilderness.

The fact that the Middle Fork drainage ties in with Glacier National Park and with the Bob Marshall Wilderness area is also a strong argument for preserving it. A dam on the Middle Fork and the inevitable roads would be a threat to the Grizzly bear in Montana and a dam would adversely affect elk winter range and the spawning runs of Cutthroat and Dolly Varden. A high dam, such as proposed, would virtually eliminate the spawning runs of Dolly Varden and prevent seasonal migration of Cutthroats. Efforts to artificially propagate Dolly Varden have been unsuccessful and the Cutthroat is not readily reestablished. The impoundment would favor the increase of rough fish with eventual deleterious effect on the game species.

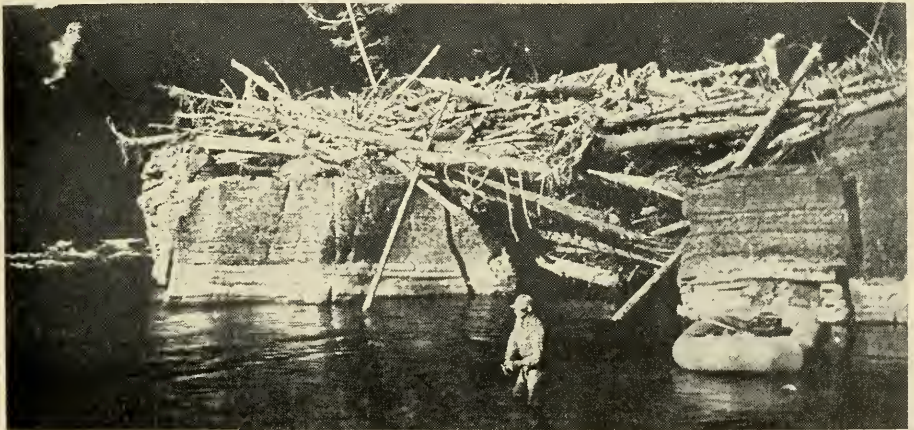
Because it probably will be physically impossible to gather adequate biological data before some action is taken, I think we are justified in drawing heavily from studies made in neighboring areas which are in many cases almost identical to the Middle Fork country. For example, information obtained from tagging studies of Bull trout on the North Fork of the Flathead could well be used in defense of the Middle Fork. The basic biological situation is the same; likewise, data gathered on the marten in Glacier Park and the beaver throughout the Flathead River drainage could well be used specifically in defense of the Middle Fork wildlife since there appears to be very little difference in basic marten or beaver habitat throughout the area.

From our knowledge of elk winter ranges in the South Fork and in the Sun River area, we would state almost without qualification that the winter elk range on the Middle Fork is vital, that any reduction in this range would have an effect on the elk population. Although no intensive long term studies have been made of the Grizzly, we know from studies of Robert Cooney and others that the fundamental requirement is a wild area, and certainly the opening up of the Middle Fork would greatly decrease the Grizzly range. In a similar way it would adversely affect the mountain goats of the area.

At the present time it is impossible to tell whether Kalispell, Polson, and Missoula will, in the future, become industrial centers. If this should occur, then there is little likelihood that we could hold all of our wild regions inviolate and we probably should not seek to do so. There is, however, good indication that these

cities will never be large industrial areas and that a major Montana industry is and will continue to be outdoor recreation. I use this in its broadest sense. Moreover, there is strong indication that the recreational industry, now ranking third in Montana, will continue to grow. The demand for wild areas will increase and these areas must serve not just a state or local area, but the nation. As I see it, the job of the conservationist is to assure that these areas are held intact until public thinking matures and crystallizes, then our generation or following ones can make wise decisions based on adequate information.

Possibly the first task of conservationists today is to develop a system for evaluating upstream drainages and to classify these according to their potential as recreational areas of the future. We might tentatively place Montana's upstream drainages into four categories:



The lack of man's interference is reflected in the primitive nature of the landscape.

1. Wild river,
2. Semi-wilderness rivers,
3. Semi-exploited rivers,
4. Exploited rivers.

We might go further and define **Wild rivers**, as those that are inaccessible except by trail and that are free of impoundments. These streams and their watersheds are essentially virgin. **Semi-wilderness rivers** would constitute those accessible by road but where the watersheds were still largely in virgin condition. The **semi-exploited river** would be easily accessible by road and close to urban areas. It would be characterized by heavy land use on its watersheds, but the upper reaches still unimpounded.

The **exploited river** would fall into a group characterized by impoundments, artificial channeling and dyking, and exhibiting varying degrees of pollution. The lower reaches of most Montana rivers would fall into this category.

From the conservationist's viewpoint it would be desirable to encourage increased use of downstream areas for impoundments and to continue to harness those rivers already exploited, striving to keep intact the few remaining wild and semi-wilderness rivers.

I do not believe that we should make a stand by trading one river or dam site against another. This becomes a political football in which fundamental issues are readily confused and when this is done the peo-

ple whose task it is to make recommendations through democratic procedure cannot sort out the facts or issues involved. Our approach should be positive and clear to all interested users of land and water. If Montana's rivers should be surveyed and classified according to their recreational values, then we would have stated objectives and standards to maintain. These objectives could eventually be integrated into the development plans of the entire river system. Competing interests would know where conservationists stand and the people could decide with a minimum of confusion where their interests lay. Such information is essential if the State and Federal agencies responsible for the management of our land and water are to administer them in the best interests of all the people. If it is found to be in the public interest to harness these wild rivers, then I do not think conservationists will stand in the way of economic progress. If, however, exploitation is found not to be in the best public interest, then we have preserved a fragile thing of beauty, giving other generations an opportunity to know the wilderness, and make possible an educational and spiritual experience for future Americans that no man-made institution can synthesize.

Sincerely,

JOHN J. CRAIGHEAD,
Leader, Montana Co-
operative Research Unit.



These are the men who helped make a shooting safety program in Helena Junior High School.

Pictured left to right: Dave Lane, Bernard McGinley, G. V. Erickson (Principal), Bob Joanson, Spencer Russell. Vally Swan not pictured.

SHOOTING SAFETY

By Frank Dunkle, I. & E. Assistant

Montana's 1957 legislature enacted into law House Bill 42. This law calls for all young Montanans between the ages of 12 and 18 to present a certificate of competence in order to secure a 1958 big game hunting license. All youngsters between 12 and 15 years of age must take a course in hunting safety, but those 15 to 18 years would not be required to take the course if they hunted during the 1957 season. In a nutshell, it will be necessary for Montana youth to study proper gun handling **before** they go into the field.

After this shooting safety law was passed, Montana legislature designated the Montana Fish and Game Commission as the responsible agency for this program. The Department has decided to use the basic National Rifle Association Hunter Safety Course. This five hour course of in-

struction embraces the many phases of safe gun handling at home, in the car and in the field. Other topics such as hunter courtesy and sportsman-farmer-rancher relations are discussed. Instruction continually reminds the students at marksmanship is not the basis of the course—safe gun handling is! A safe gunner can develop his marksmanship—the unsafe or careless gunner may not live to do so.

Of course many problems concerning the development of a system of instruction for the young people were discussed. Early in the planning stage it became obvious that all instruction could not be handled by Department people alone. A great deal of help is going to be needed from sporting groups, civic groups and schools. Most of the instructors will be people like you—people interested in young people and in hunting.

The Montana Fish and Game Department and the National Rifle Association have entered into an agreement whereby all Hunter Safety instructors will be certified through the Fish and Game Department. In the near future, there will be Instructor courses available to interested persons.

Here is how the shooting safety instruction program is working in Helena. It is operated through joint agreement between the Helena Jr. High School, the Helena Wildlife Association and the Montana Fish and Game Department.

Within the Jr. High program there is an activity period each Tuesday and Thursday afternoon, which was utilized for shooting safety instruction. During each semester a group of young people were instructed in safe gun handling. The Helena Wildlife Association furnished all supplies necessary for the course, including student handbooks, cards, patches, 20 rounds of ammunition per student and rifles for instruction purposes. Five teachers from the school took the instructor course presented by the Fish and Game Department. These young men then conducted the shooting safety course during the activity periods. Also six Saturdays were utilized to allow all of the young people to fire on the range. During the last week of school, the Jr. High had an Awards Day—here all the

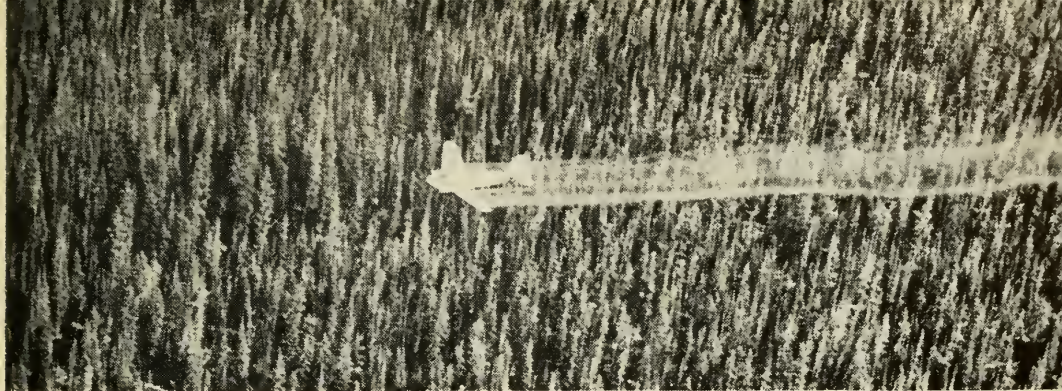
young people were presented the Safe Shooting Certificates. Such a program could not have been possible without the cooperation of the Helena Wildlife Association, Mr. G. V. Erickson, principal of the Jr. High, and the enthusiastic instructors.

Hunting safety courses for our young hunters will go far toward reducing the tragic accidents that take place each year. Had past hunters followed a few basic rules, no hunting trip would have been marred by death or pain. Instructors will be needed through the State if the young people are to be trained by the fall of 1958. If you are interested in such a program, write to the Information and Education Division, Montana Fish and Game Department, Helena. Remember—Help train a girl or boy in safe hunting and gun handling and you may save a life!



Award Day at the Helena Junior High School where 132 students received shooting safety certificates.

—Photo by Hector LaCasse



—Photo by U. S. Forest Service

DDT AND FISH

By Geogre D. Holton, Chief Fisheries
Management Biologist

Nearly 750,000 pounds of DDT will be sprayed from airplanes onto Montana forests this summer. The purpose—to control spruce budworm. Such famous fishing areas as the Beaverhead, Big Hole and Madison River drainages will be included.

Will DDT spraying wipe out trout?

It is certainly poisonous to fish but **serious** kills have not often occurred during forest spraying. Whether or not there is a **serious** kill depends upon a number of factors. Amount of DDT drift into the streams from surrounding areas, water temperatures, volume and swiftness of the stream and numerous other variables are important in determining danger to fish life. For example, it has been found that only 0.16 parts per million of DDT will kill rainbow trout when they are confined in this amount for fifty-four hours. Yet the rainbow can survive a dose 200 times as strong for

fifteen minutes. Fortunately, exposure time is usually short when streams are sprayed.

Last year a study was undertaken by the Montana Fish and Game Department, U. S. Forest Service and the U. S. Fish and Wildlife Service to determine the effects of spraying and how to adjust the spray program to minimize damage to fish and other aquatic life.¹

Several streams were studied in watersheds sprayed with DDT. There was no kill of trout held in cages during the spraying and for three days following. Stream census with electric shockers did not show any immediate losses of wild fish in the spray areas, however, insects that live on the stream bottom, such as immature forms of may flies, stone flies, caddis flies and midges, were drastically affected. Reductions of over ninety percent of the volume of these insects were common in areas

¹ The Fish and Game Department's studies of DDT's effects on fish and other aquatic life are supported by Federal Aid in Fisheries Restoration funds under Project No. F-21-R.

affected by the spray. These are important trout foods. By fall, insects had begun to recover from the July spraying but still represented only a small fraction of their normal volume. Midges made the most rapid comeback. Examinations of trout stomachs later in the summer showed they were eating midges and land insects.

It is not known if trout had enough to eat before facing the rigors of winter. This year's study should shed light on this question and show if water insect populations have returned to normal a year after spraying. There are still many questions regarding DDT spraying; for example, are grayling and whitefish more easily killed with DDT than trout, and are cutthroat more effected than other kinds of trout?

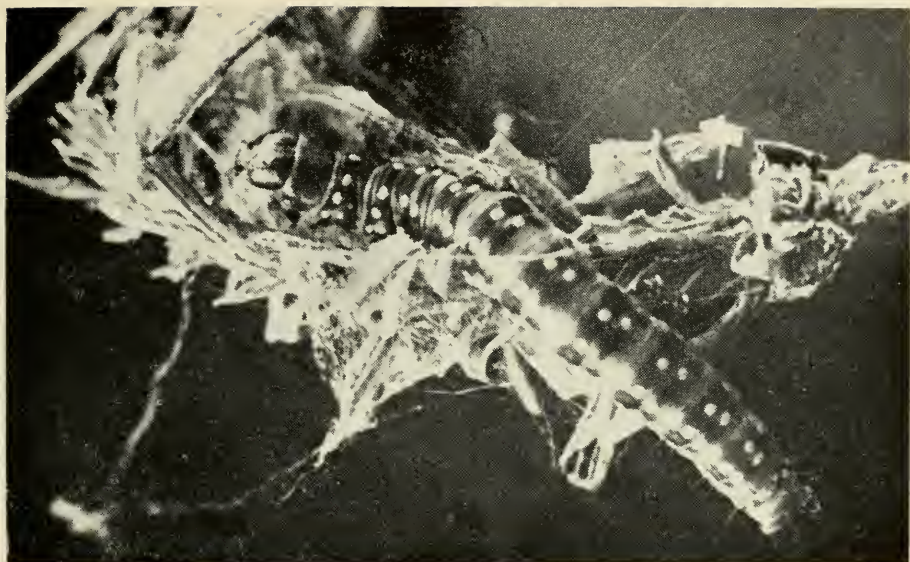
Studies on the Miramichi River in New Brunswick, Canada, showed spraying with only one-half the dose used in Montana caused severe losses of young **salmon**. Fry-of-the-year were virtually wiped out. How about young **trout**? They hatch just about the time spraying occurs.

It has been found in the laboratory that a diet of DDT-killed insects may prove deadly to songbirds when followed by a period of partial starvation. Does this apply to fish. They gorge themselves on DDT-killed insects and the poison has been found in their fat. It may be that stream bottom insects contain harmless amounts of DDT and only land insects which have been directly sprayed are dangerous.

Eighteen days after spraying, DDT accumulated in stream bottom plants killed goldfish when plants and goldfish were placed in the same bowl. This discovery in a Pennsylvania study brings up the question: how long does DDT remain in the water, in bottom sand and silt, and in plants living in the water; and how long does it stay deadly?

It has been found that DDT becomes attached to tiny soil particles in the water. Would it protect fish and water insects if finely divided clay were added to the water or some other means used to temporarily make the water muddy during spraying?

The villain in this battle to save forests without losing fish is a small moth with a wing-spread just under one inch. However, the **adult** is harmless. It is the **young** or **caterpillar** stage that damages such trees as spruce, true fir and Douglas fir. In Montana, Douglas fir forests are mainly affected. Caterpillars feed on tender young needles which are just starting to grow. The spruce bud-form is native to Montana. Normally, their numbers are kept in check by natural controls such as insect enemies, birds and unfavorable weather. It is believed epidemics start when weather is ideal for the development of the caterpillars but unfavorable for the development of their enemies. Then havoc results! An individual tree may be infested with thousands of caterpillars. When new needles have been destroyed from four to seven



Spruce budworm caterpillar. During an epidemic there are thousands on a single tree. Actual size $5/8$ to $3/4$ inch long.

—U. S. Forest Service Photo

successive years, the trees die. Surviving trees are so weakened that they may fall victim to other insects or diseases. At best their growth rate is slowed.

Aerial spraying—the only mechanical control known at this time—is aimed at a nine-five percent kill of caterpillars. To be effective it must be done **after** the worms become active in the spring but **before** they form pupal cases which protects them from DDT. There is only a two-week period during which budworms are vulnerable to spray. This period varies with seasons and elevations. The proper time to spray must be determined by studies for each area by biologists.

The Forest Service would very much like to have a more specific

weapon against spruce budworms than blanket spraying with chemicals. Researchers are working on biological controls, that is, disease and parasites of the budworm that can be introduced. Future programs will rely more heavily on these controls as well as on improved methods for detecting new budworm outbreaks so they may be checked before spreading over large areas. Healthy, rapidly growing trees suffer less than slow-growing mature and over-mature trees. Accordingly, an important approach is through improved forest management techniques. This will be employed as forests are more intensively managed and used.

In the immediate future, however, the outlook is for increased use of chemicals to control forest insects.



Douglas fir trees during an attack of spruce budworm. Tree tops are losing their needles and turning brown.

—U. S. Forest Service Photo

DDT spraying will be used in Montana not only for spruce budworm but also for other needle-eating insects such as the tussock moth and black headed budworm, a close relative of the spruce budworm. In fact, 5,000 acres of Glacier National Park are to be sprayed this summer for control of black headed budworm.

It is our feeling, based on the best information we have, that forest spraying with DDT at the present rate of one pound per acre, will lead to fish kills under some circumstances. There should be recovery in a few years. Even if all the young-of-the-year fish were killed for one year, it might not be worse than natural disasters which sometimes occur. If necessary, rainbow, brook and brown trout populations can be rebuilt with hatchery fish.

We, of course, would be concerned about repeated spraying. This would prevent recovery of fish and aquatic insects. Poisons may accumulate on stream and lake bottoms.

Our chief concern at present is for native cutthroat trout and grayling. We feel they may be more susceptible to DDT poisoning than other game fish. Stream cutthroat are yet to be domesticated so they can be easily raised in hatcheries. The grayling sanctuary in the Red Rocks area is the last stronghold of stream inhabiting grayling in the United States. If lost, neither of these fishes can be replaced. The Red Rocks area is the site of a heavy infestation of spruce budworms. The Forest Service has postponed spraying there while we try to determine the extent of danger and care to be taken to protect the grayling.

This is only one of the precautions the Forest Service is taking on behalf of fish. Contracts with the spray plane operators cost \$20,000 extra this year because of requirements for slower planes which can more accurately spray in critical areas, and because of additional observation planes to insure even coverage and prevent local over-dosage. In addition, care will be taken to fly around rather than over lakes. When possible, streams will not be used as boundaries for areas assigned to individual planes since this might result in double spraying. Advantage will be taken of the weather so wind currents will cause as little drift as possible into critical areas.

The spruce budworm epidemic is not a simple problem either from the viewpoint of the U. S. Forest Service or the Montana Fish and Game Department.

More is at stake than just the timber ruined by insects. Spruce budworm-killed trees are a serious fire

hazard; across the continent large areas have burned following insect epidemics. Then there is recreation—nobody wants to camp in a dead forest! In fact, if fires follow the insects, the very watersheds may be at stake—this ties directly back to our fish. Without adequate cover to hold moisture and feed it gradually to the streams, flooding would be more severe and low water more extreme. Stream beds would become loaded with silt from eroding watersheds.

Forest Service personnel feel DDT spraying is the best control method they now have. Since occasionally serious fish kills have been associated with DDT spraying, the Fish and Game Department is cooperating with the Forest Service and other agencies in studying the effects of forest spraying in Montana. The information gained will be used to adjust the spray program to minimize the damage to fish and other aquatic life.



Studies are underway to determine effects of DDT spraying on fish.



Montana Blue Grouse

By Fred L. Hartkorn, Biologist

The blue or Richardson's grouse (*Dendrogapus obscurus richardsonii*) is found over most mountainous portions of Montana. Although during the summer and in remote areas they show little fear of men and will usually "tree" when flushed, in areas where they have been subjected to considerable hunting they demonstrate a high degree of ability to escape the hunter by flushing unexpectedly and rocketing through the timber or power-diving down the

mountain side. Under the latter conditions, they provide very sporty wing shooting for those nimrods with the stamina and enthusiasm to hunt their high, ridge-top habitat. But the reward is worth the effort, as the blue grouse is second to none in terms of palatability.

The blue is the largest of the timber grouse. Adult males often weigh over two and a half pounds and the young will usually weigh over two pounds at the time of the hunting

season in September. Although they are predominantly gray colored, they derive their name from the blue-gray plumage on the breast. They possess a high degree of protective coloration and form and it is nearly impossible to see a blue grouse perched high among the fir branches with its relatively long neck extended and appearing to be just another limb.

Blue grouse are present over a wide altitudinal range in Montana—ranging from 2,000 feet near Troy to 9,000 feet or more on the higher peaks elsewhere. High blue grouse population densities have been observed in parts of Mineral, Sanders, Ravalli, Lewis and Clark, and Meagher counties. Their range corresponds closely to the range of the fir trees—Douglas, grand and alpine—which are their chief source of winter food.

The female blue grouse usually builds a nest at the base of a tree or clump of brush with a southern exposure in the foothill canyons and lays an average of seven eggs which usually hatch in mid-June. Nature apparently takes her toll of young grouse very early, as the broods observed in July and August during the past ten years in Montana have averaged only 3.3 young. When one approaches a blue grouse with a young brood, the hen will usually feign injury in a vigorous fashion to attract attention from the young. The young mature rapidly and by late September the males are often larger than their mother.

In late summer, they gradually migrate to the high ridges where they usually remain during the fall and winter. This upward movement is possibly correlated with ripening of huckleberries at higher elevation as the season progresses. Their preferred late summer habitat seems to be ridges in the south and west exposures with a semi-open stand of ponderosa pine or Douglas fir and an understory of huckleberry. Blues frequently congregate on high mountain parks where they feed on grasshoppers in the late summer; however, during dry fall seasons, such as experienced in 1952, they are often found along creek bottoms and hay meadows on the forest edge until late in the season.

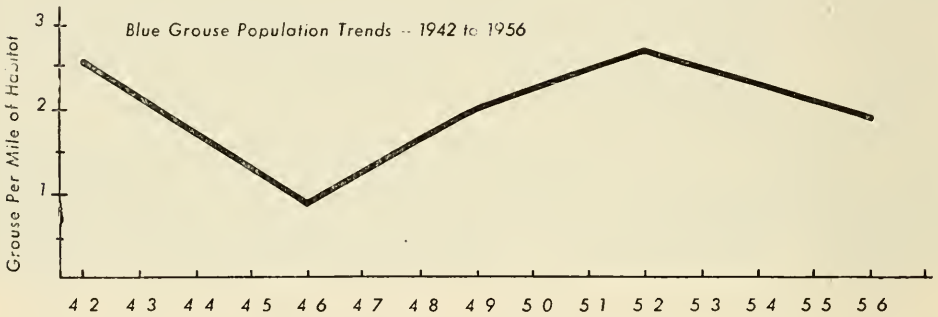
Their summer and early fall diet is mostly berries, seeds, and insects, whereas, they subsist almost entirely on conifer needles during the winter and early spring. Green vegetation gradually replaces the conifer needles in the diet as spring advances.

Census work and questionnaire returns indicate that blue grouse populations have fluctuated considerably during the past 14 years. Older residents of western Montana and Forest Service personnel of various areas report that, in their opinion, blue grouse were more abundant 20 or 25 years ago than they have been during the past fourteen years. These grouse have made up approximately 45 percent of the mountain grouse harvested by hunters in western Montana from 1949 to 1956.

Since young grouse do not molt the outer two primary wing feathers, but adults do, it is possible, with practice, to determine their ages by the shape of these feathers. If the two outer wing feathers are relatively pointed, the bird is young, or less than a year old. If they are rounded, similar to the other primaries, or if they are in a stage of growth, the bird is an adult, or more than one year old. Of the 674 blue grouse aged during the past four years at

known. Possibly more hens perish during the breeding season than cocks, a factor suggested in the case of other game birds, which have more adult males than females when both sexes are hunted on an equal basis.

The upward trend in blue grouse numbers since 1946 could possibly be attributed in part to the reduction in coyotes in recent years. However, considering the reported increased



hunter checking stations, 459 or 68 percent were young birds.

The sexes of blue grouse can be determined by plumage variations. Females have brownish mottled central tail feathers while the tail feathers of males are nearly solid black. Broods of young blue grouse checked during past years have been half males and half females. However, of the 153 adults checked, only 40 (26%) were females. Whether adult males are more vulnerable to hunting or there are fewer adult females than males in the fall population, is not

known. Possibly more hens perish during the breeding season than cocks, a factor suggested in the case of other game birds, which have more adult males than females when both sexes are hunted on an equal basis. The upward trend in blue grouse numbers since 1946 could possibly be attributed in part to the reduction in coyotes in recent years. However, considering the reported increased numbers of bobcat and other predatory species in the past few years, probably the cumulative predator pressure on grouse has remained about the same in past years. We have no positive assurance that predation is adverse to the welfare of the grouse or that their population would be higher over a period of years if predators were eliminated. Possibly the most practical method of reducing predation is to more completely utilize the prey species—in this case, blue grouse—by hunting them in the fall.

Land use trends in recent years have, in general, been beneficial to blue grouse. The number of sheep and cattle grazing on the mountainous portions of the national forests have been lower and their grazing has been strictly regulated to prevent damage to these watershed areas in recent years. Consequently adequate ground forage is usually present for protected nesting sites, as well as the seasonal food requirements of the blue grouse. Timber removal on the national forests has, in recent years, been on a basis of selective or small block-cutting, which by producing semi-open areas is favorable for blue grouse. This is another example of where good land management is good game management.

The Forest Service has found it unnecessary or have been unable to keep many of their trails open in recent years. This restricts blue grouse hunting in some areas; however, newly created forest access roads have made it possible to get into more areas by car each year and the advent of the "jeep" has made it possible to drive to high open blue grouse habitat areas formerly reached only on foot or horseback.

The management of blue grouse is closely coupled with the management of all the mountain grouse species. The fundamental objective of grouse survey projects is to provide information that will form a basis for and improve the management of grouse so that maximum harvests

consistent with existing populations can be made by Montana hunters. These projects include: (1) periodic censuses of representative grouse areas over the State to gain population trend information, (2) checking returning hunters at established points to gain population trend information, on relative hunter success and grouse bagged, and (3) analysis of records of grouse observed in the field.

Legal hunting has little effect on timber grouse populations. This conclusion is based on studies in Montana and other States where it has been observed that grouse numbers have not increased in areas where no grouse hunting was permitted, and in areas where hunting was permitted, relatively good populations of grouse existed. In their timbered mountainous habitat, probably less than 10 percent of their range is ever covered by grouse hunters. Thus, a relatively long mountain grouse season appears justifiable in western Montana.

Considering the observed ability of the blue grouse to become wild after being hunted, the inaccessibility of much of its habitat, and the trend toward management of the mountainous forest lands in a manner favorable to grouse, it seems probable that blue grouse are in no danger of extermination and there should be "blue bombshells" on the ridges to test the shooting skill of many future generations of Montana sportsmen.



Predators Are Like People

By Werner Nagel

Werner Nagel is a staff member of the Missouri Conservation Commission and is nationally recognized for his writings on natural resource philosophy. At the same time he is a well qualified wildlife biologist. This article is a condensation of a Missouri Conservation Commission bulletin "Predator Control: How and Why." It is reprinted here by permission.

A PREDATOR is any creature that has beaten you to another creature you wanted for yourself.

This is a pretty accurate description of the way many people think about predators. It's a personal view, however, and though it **is** true it isn't the **whole** truth. From a broader view, predation is a way of getting food—that is, by killing and eating living creatures. Many animals, including people, get all or part of their food

this way. If they did not, they could not live. Thus predation is a natural and necessary way of life.

The personal view is more common. It covers animals that cost you money by eating a creature that belonged to you, or animals that take game, fish or songbirds in which you're specially interested. It **doesn't** include animals that eat creatures you don't care about. In short, your views on predators depend mostly on your personal experiences with them.

This personal definition allows an animal to be considered a predator at one time and not at another, to some people and not to others. Take a red fox for example: a farmer seeing a fox kill one of his chickens knows very well this fox is a predator. A rabbit hunter who sees a fox catch a rabbit knows this fox is a predator, too. In both cases, the fox beat the man to a creature he wanted for himself.

But other people's experiences give them entirely different views. To the fox hunter, Reynard is a wonderful sporting animal that offers thrilling chase. To the nature lover, the red fox is one of earth's most beautiful, intelligent creatures. The trapper remembers that red fox pelts were once valuable, and may be again. The eating habits of the foxes don't interfere with the main interests of these men, so to them foxes aren't predators.

There's another angle: a man seeing a fox digging out field mice may think of this as predation, but he's bound to realize that this fox is doing some farmer a lot of good.

Poultry-thief, rabbit-eater, sporting animal, beautiful creature, fur-bearer, destroyer of destructive rodents—the fox is all of these and more. What he is to you depends on your experience with him. What he **really** is, though, equals the sum of all of those different aspects.

We used foxes as an example because there are so many strong views about them. The same things can be said of any creature that kills to eat:

fish, cats, dogs or hunters, according to whether or not they beat us in taking something we want ourselves. Mostly, though, we used "predator" to mean wild birds or mammals; on those, views differ according to our interests. All views are "right" but none are the complete animal, the broad view that gives the whole story.

Taking the broad view has its pitfalls, too. It might seem we could set down in one column all the good things about a species, in another column all the destructive things, then treat the species accordingly. But this measurement doesn't work. It could work only if every individual of the species were exactly like every other individual in its eating habits and values. They aren't: individuals in a species differ in what they eat and in how they eat, much as humans do. Some are mighty fine to have around; a lot you hardly notice one way or another, and some are downright bothersome. You can't manage all individual animals of a species the same way, any more than you can treat all people the same way. In taking the broad view we have to consider differences between individuals as well as between species.

We must not carry the comparison of animals with humans too far—we tend to do just that in taking predators and their acts personally. There are reasons for this. One is that predators are most like us in their eating and actions—and dispositions. Another reason is that from childhood

on we're soaked in fairy tales and other literature in which animals act, talk and think like humans.

Great-great-grandpa probably had personal tussles with predators. Panthers were once common, with a nasty habit of swiping the family calf, and of joining hobgoblins to follow late travellers home from the tavern. So early settlers took big predators personally—and, if old stories are true, big predators sometimes took an early settler personally.

Now that most people never see bear, timber wolf or panther, you'd think old horror stories would die out. But they haven't died even in the Midwest, where conflicts with great beasts have given way to pale triumphs over smaller hawks, brought down with guns more powerful than those gran'pop used to slay a grizzly. Today's predators are small and shy, they'd be most happy if we'd just go away and leave them alone.

But we aren't going to leave them alone, as long as some of them beat us to another creature we want for ourselves. In fact, we're going to try to kill the predators that bother us, and if they're really bothering us, that's natural. We can be right, though, without kidding ourselves. After all, automobiles probably kill more chickens than foxes do; worms kill more lambs than coyotes take; more calves die of "scours" than predation. Also, if we didn't make chickens easier for predators to catch than their wild food, they wouldn't catch so many. (It's often easier to do



something about predators than about our own carelessness.) It is true that when a predator makes a habit of killing our poultry the most practical thing is to get rid of him as effectively as possible. But when a predator is not bothering us, the best thing is to let him alone—so he can give us those other interests and values he has. That's justice, and that's sense.

Killing predators to control damage is a necessary but very small part of good management. Much more important is the fact that most predators are of value to us most of the time. Of the many creatures—fish, mammal, bird—that make all or part of their living by killing and eating other creatures, only a few individuals of a few species ever become bothersome to us. **Yet every wild creature hunts, or is hunted—kills or is killed.** Man does that when he raises livestock, or hunts and fishes, or kills to protect his flocks. From the one-celled bits of life sought by minnows to the creatures hunted chiefly by man, no living thing escapes the shadow of this struggle. Predation is a universal law of life.

We couldn't live without this natural counterbalance to the great reproductive power of most creatures. It is nature's insurance that no one species will crowd out all others and over-run the earth. We need this insurance; the **reproductive** power of most wild species is too great for us to control; the **destructive** power of any species out of control is too great for us to stand.

Predation is also nature's way of getting rid **usefully** of weak, stupid, stunted and diseased individuals. Through predation, the unfit are killed before they can breed or spread disease, and their death is not a waste because it provides food for those that are strong. Culling by predation maintains the sporting qualities that make hunting and fishing worthwhile.

This is the real meaning of predation: the normal and necessary working of a law that benefits all life. Men are not harmed by this law when it is working in a natural balance. When we upset this balance by destroying natural cover and food in converting land and water to our own use, predation can turn on us as a destructive force. The important thing to remember is that only by understanding the principal of normal predation can we control the damage when predation is not normal. When we know why something happens, it's easier to keep it from happening again.



There are two ways of handling damaging predation: we can avoid damage by providing protection for animals in which we're interested; when this isn't enough, we can reduce damage by killing the predators that are doing it.

Avoiding predator damage is the best control, when we can do it. Using land so that plenty of good natural food and cover is left keeps more predators busy in their own back yards—and out of ours. Good poultry fences and tight barns are direct protection that few farmers fail to provide. Taking the annual production by hunting and fishing for predators that are game, food, or fur-bearing species keeps them from becoming too numerous for their normal food supply. Controlling tame predators—dogs and cats—keeps them from needless killing of creatures we want for ourselves. All these things are helpful in avoiding predator damage.

Sometimes these methods aren't enough—or we don't carry them far enough. Then we reduce predator damage we can't avoid by killing the animals that are actually causing it. The farmer has every right to destroy any predator that is molesting his flocks and herds.

Trappers do not explain how to control all predation; there are too many kinds. The hawks, owls, foxes, coyotes and weasels are by no means the only animals that can cause us damage: the very creatures these "predators" feed on may cause us the most trouble. These include rabbits, deer, crows, sparrows, mice, insects—all of which may damage us by feeding on something we want for ourselves. Whether or not we call them so, they are predators as are coyotes and hawks. The mice alone cause us far greater loss than do the meat-eaters; the insects far out-class mice as destroyers of property and profit.

The point is this: though we emphasize a few animals as "predators," that's just a personal viewpoint. Actually **any** kind of bird or mammal may be destructive when it becomes over-abundant or out of place, and the vegetation-eaters are most destructive of all. The very creatures maligned as "predators" are actually our lowest-cost insurance against this kind of destruction. Only when they turn to destroying property themselves is it good business to "cancel" this insurance—and then only the destructive individual itself. Anything else will not profit us and, most often, can do us only harm.



Bighorn lambs are born from mid-May through June. Ewes and their lambs generally cluster together away from the other sheep. The lambs become agile at an early age and when but a couple of weeks old can race top-speed over rough terrain. Ewes generally mature at 2½ years, while rams require 3½ years or more.

—Photo by W. K. Thompson

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