MONTANA *Wildlife*

February, 1957—Montana Fish and Game Department Official Publication

Photo by W. K. Thompson, Director of Information, Education. Montana Fish and Game Dept.

COYOTE

With a cunning that gave them a place in the supernatural lore of Indians and brought the eternal hatred of the sheepman, the coyote has earned a place in the history of the west. It's gray shadow may still be seen slinking through the sage brush. It's wild mournful serenade to the moon is yet heard despite mans relentless and concentrated efforts to destroy "El Coyote".

MONTANA FISH AND GAME DEPARTMENT

Official  Publication

State of Montana

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Montana Wildlife

Vernon Craig, Editor

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EDITORIAL:

FINANCING WILDLIFE

"How is the Fish and Game Department spending the taxpayers' money?"

This is a common question which points out widespread misconception of the department's financial structure.

The Montana Fish and Game Department does not receive any state tax monies but is, in fact, a self-sustaining organization operating with funds derived primarily from hunting and fishing license sales.

The resident hunting and fishing license is the greatest single source of income, while non-resident hunters and fishermen (who represent about 20% of the license holders) supply about 34% of the license income.

Another important financial aid is received through the Federal government from a tax amounting to 11% of manufacturers cost on sports firearms and ammunitions, and a 10% Federal tax on sports fishing equipment. This money is specifically earmarked as to how it can be used, and states must meet certain requirements before they are eligible for reimbursement. Foremost among these requirements are state laws prohibiting the diversion of license receipts for any other purpose than operation of fish and game departments. The money is divided among participating states on an area-license sale basis. No state may receive more than five percent of the total alloted.

All revenue received by the Fish & Game Department is deposited with the State Treasurer who places the money in a special fund. Annually, the Department prepares an operating budget which outlines how the money will be spent. If the Department revenue falls below the budget during the year, the balance must be made up from any surplus in the Fish and Game fund and the succeeding year's operations must be curtailed.

Accordingly, the Fish and Game Department, as well as any other sound business, must carry a substantial reserve as a working balance. Money must be available to finance projects until completion, before Federal reimbursement is available.

The Montana Fish and Game Department is a large organization. Every county has examples of its activities and expenditures of funds for enforcement, habitat development, hatcheries, research, education or management. Yet the important thing to remember is that all costs for these activities are paid from funds provided by those who participate in the sports of hunting and fishing.

Trail fork of Bear Creek with the "Sphinx" and "Helmet" in the background.
—Photo by Bob Cooney.

Madison-Bear Creek Elk Range Acquisition

By Bob Cooney, Wildlife Restoration Division Director, Montana Fish and Game Department

For many years, ranchers have had difficulty with elk wintering in the Bear Creek section of the Madison valley. The Montana Fish and Game Commission has now undertaken a program which they feel will overcome this problem.

On April 15, 1956, the Commission purchased the Warburton ranch, on Bear Creek along the west slope of the Madison Range, above Ennis. Approximately a year before, they had completed the purchase of two foothill sections from the same owner in Bear Creek within the National forest boundary. The purchase of these lands represented a very definite step toward solving the big game problems in that area.

Early each winter elk move up out of the Taylor Fork of the Gallatin drainage, cross Cache Saddle and then drift down into Bear Creek. There they mingle with elk that summer on the Madison slope. With the coming of the more severe weather, the elk then drift onto the foothills just above the ranchlands located on the productive alluvial fan of lower Bear Creek.

Problem

Elk have interfered with ranch activities on Bear Creek in two ways. First, the foothill lands on which they winter were partially in private ownership, and secondly, during the more severe storms of the winter they would actually move out onto the nearby meadowlands and haystacks.

Solution—Acquisition

For many years, it has been the hope of the Montana Fish and Game Commission that it might be possible to purchase sufficient lands in the foothills of the Bear Creek area to provide a winter range for elk. The Warburton property represented a

tract of land, much of which was ideally suited for this purpose. The purchase price was found to be within the scope of the appraised valuation.

Plans are being carried out to immediately dispose of over half of the 2,583 acres purchased. The Fish and Game Commission will retain only that portion of the property definitely needed for wildlife development purposes. The high value agricultural lands included in the acquisition will in that way return to private ownership. The long range plans for the area indicate that an elk proof fence will be constructed along the lower edge of the Game Range. This will prevent the drifting of elk from their range in the foothills onto private lands.

It is expected that an extended hunting season, in the foothills adjoining the acquisition area, will tend to push elk onto the Game Range. The number of elk to be maintained upon this area will depend upon the carrying capacity of the range as shown by actual winter use.

Livestock Permits

The Warburton property at the time of purchase was permitted approximately 415 cattle on the forest. Of these, 385 were grazed on the Gravelly Range, some distance to the west across the Madison River. As a result of the Fish and Game acquisition, these permits have been retired by the Beaverhead National Forest. A substantially larger amount of forage is now available for other permittees utilizing the Gravelly Range livestock unit. Due to the retirement of the Warburton permit, former heavy livestock use will be materially lessened.

An additional permit for 30 cattle and 9 horses was also retired on the Bear Creek unit, just above the acquisition area. In this way additional winter forage for elk has been provided.

Payment in Lieu of Taxes

As with all land acquisitions made by the Fish and Game Commission for wildlife, an amount "in lieu of taxes" will be paid to the county in which the lands are located. This annual payment is determined by the local county assessor and is equal to the taxes paid by neighboring land-owners on lands of comparable value.

The Over-All Objectives

It is not the Commission's hope to run more elk in the area. It is planned, however, to provide adequate forage for those wintering there. It is reasonable to expect that the foraging activities of elk will no longer present a serious problem to the ranchers on Bear Creek and the adjoining foothill lands.

Sportsmen will be assured a reasonable number of elk to enjoy, not only now but in the years to come.

And finally, this provision for elk on Bear Creek does not represent competition with livestock. It rather points out that these two important interests can, by careful planning, live harmoniously together.

DISTRICT FISHERIES MANAGER GIVEN AWARD FOR ACHIEVEMENT IN FIELD PLANNING AND REHABILITATION PROJECT

Nels Thoreson of Belt, Montana, Fish and Game Department fisheries, manager for District No. 4 was presented the Award of Merit for outstanding achievement in field planning and directing of the Marias River rehabilitation project.

Commission Chairman, Ralph D. Shipley made the presentation at a commission meeting in Helena. The award was a bronze grizzly bear statue and a parchment certificate stating that "his work in planning and executing the nation's first major stream rehabilitation program warranted special recognition by the department."

The Marias River project included the poisoning of rough fish in nearly 1,000 miles of river drainage prior to the completion of Tiber Dam. After the carp, goldeye, suckers and other fish life were destroyed, it was replanted with rainbow trout.

Mr. Thoreson mapped the area, prepared field plans and directed the operation which involved daylight to dark work for nearly four months.

Commissioner Chairman Shipley also commended other department employees for their assistance on the project and said it was particularly important to recognize the efforts of these men since Tiber Dam has already developed into one of the nation's finest trout fishing spots.

WHY THE $20.00 PERMIT

By Wes Woodgerd, District Game Manager
Montana Fish and Game Department

There have been almost unbelievable ups and downs in the big game populations in eastern Montana in the last 85 years. Prior to 1872 there were no closed seasons and hunting was completely unrestricted. At that time restrictions were placed on the time of year that animals could be killed and this was followed in 1895 by a regulation on the allowed bag limit. Hunters could only hunt at certain times of the year and were limited to an annual bag of 8 deer and 8 antelope.

With the influx of the homesteader and the plowing of the prairies, the numbers of big game animals in eastern Montana continued to dwindle. The lowest point in the antelope population was reached about 1923 when the total number in Montana was estimated at 3,000.

Conditions gradually grew better for the big game animals in eastern Montana with more stringent game laws, game preserves, the construction of numerous stock watering reservoirs and the gradual return of much of the prairie grassland through abandonment of submarginal farms. In 1946 the antelope population was estimated to be at 22,000 and a trapping and transplanting program was initiated through the Wildlife Restoration Division. Antelope were trapped in areas of concentration and moved into suitable but unoccupied habitat. They increased rapidly until in 1953 the population was estimated at 66,000 and complaints of damage to agricultural crops were being received. The antelope herds were beginning to overflow their economic niche.

This brief history of the antelope populations in eastern Montana might be repeated for deer. They fell and rose together. Both mule and white-tailed deer were trapped in western Montana and released into suitable sites where they reproduced rapidly and soon all suitable habitat was filled to the capacity compatable with other interests. This story does not hold true for other species of game animals that the early travelers found to be abundant on the eastern Montana prairies. The badlands big horn sheep became extinct in 1915, elk were forced to adapt themselves to timbered mountainous terrain and the buffalo were preserved as zoo animals. The prairie chickens are gone from the Montana prairies and the sage hen and sharp-tailed grouse found dancing and strutting in the spring are only remnants of the original flocks that meant so much to the Indians who once occupied these lands.

We like to reminisce at times and dream of what the prairies must

have looked like when covered with the various species of wild game but a moment of sober thought will make us realize that these animals had to give way to make way for us. There is a point beyond which this idea of the restoration of wildlife cannot go. Animals to be transplanted successfully must be released into suitable habitat. Buffalo and elk could no longer be allowed to roam the prairies and the grassland has been so modified by grazing and plowing that the prairie grouse are existing at the carrying capacity of the habitat. Short hunting seasons are allowable on these birds because the annual reproduction increases their numbers beyond the capacity of their present homes. The surplus produced if not cropped by the hunter would be eliminated by nature.

Fortunately it was possible to fit certain numbers of deer and antelope into the present economy. The population numbers must be rigidly controlled and kept within boundaries that are compatible with all of man's economic interests. The human population in eastern Montana is relatively sparse and to maintain the necessary control of big game animals it was necessary during the fall hunting season of 1955 to allow more than one deer and antelope per resident hunter and to call for help from hunters in our neighboring states. Non-resident hunters were allowed to purchase special deer and antelope permits for $20.00 each. They were quick to take advantage of our offer. A total of 3,375 antelope permits and 2,308 deer permits were sold. Most of these permits were purchased by capable hunters and a large percentage of them were interested in trophy animals. Nineteen percent of the deer kill in District Seven was made by non-resident hunters and they killed 24 percent of the total number of antelope taken. The success of these hunters was considerably higher than the residents. They apparently devoted themselves to the hunt while here and attained a success of from 94 to 100 percent.

Most of the non-resident hunters were from the Mid-west and almost all of the ones contacted in the field were highly pleased with Montana hunting conditions. The ranchers on whose land they hunted were also well pleased and are almost unanimous in declaring that the non-resident was, in general, more courteous and considerate than the resident hunter.

The successful use of the $20.00 permit during the past two years definitely shows the value of this "tool" in managing wildlife in certain areas.

The Deep Sleep

By Vernon Craig
Information and Education Assistant

As late autumn storms send waterfowl scurrying from summer nesting grounds, many northern residents, as well as birds, hurriedly pack their bags and head south for the winter. We, earthbound and less fortunate, retreat within bundles of warm clothing in an effort to escape the cold bite of winter.

For many animals there is still another retreat—the mysterious deep sleep of hibernation. So-called cold blooded (poikilothermic) animals, such as frogs, snakes and insects, do not possess the mechanism to maintain a constant body temperature and must necessarily spend cold months where they will not be frozen. In early fall these creatures creep into holes, crevasses, logs and mud where they remain in a sluggish condition, reactivated by the warmth of spring.

Many warm blooded (homoiothermic) animals also hibernate. Ground squirrels and woodchucks are among the first to enter their sleeping chambers where they remain in deep slumber throughout the long winter

When hibernating, the body temperature of these deep sleepers is much lower than during summer periods—often near the same temperature as that of their surroundings. Body functions become much slower, heartbeat slows down and breathing is reduced to a small fraction of that required by an active animal. Blood circulation becomes so diminished that a deep cut, or removal of a squirrel's toe will result only in a slight oozing of blood.

Much later in the fall or early winter bears cease their wanderings and den up under brush piles, stumps or in caverns where they sleep—but much more lightly than the ground squirrel or woodchuck. Bruin may be awakened at any time without a great deal of agitation.

Other animals are lighter sleepers still. Skunks (primarily females), badgers, raccoons and chipmunks are driven into a state of semi-hibernation only by severe cold or storm and reappear when mild weather again prevails.

What organic machinery brings about hibernation? What stimulus or stimuli triggers the mechanism?—are

the questions that still remain to be answered. Even though a state simulating hibernation has been artificially induced, the ability to hibernate is inherent, and we humans can but envy the deep sleepers.

A friend delights in relating a yarn about an aged prospector who, faced with spending the long winter within the confines of his small cabin, decided to give hibernation a try. For several days he gorged himself, then in bed beneath all available blankets, he concentrated on hibernation. But the flesh refused to be commanded and after a two-day battle of mind and matter, discomfort and body requirements drove the old gentlemen from his bed.

Opinions vary as to factors that induce hibernators to seek winter quarters. In preparation for the winter's slumber, hibernators store up great quantities of fat and then fast for a short time immediately before retiring. As much as one-half of the total body weight may be lost before any further food is consumed.

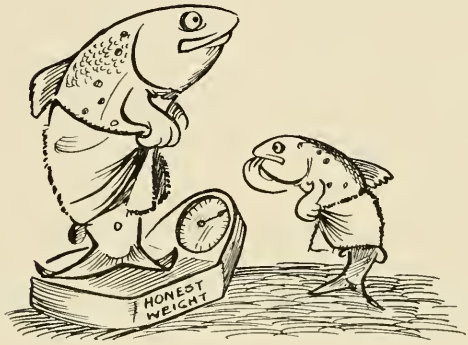
Though cold is a contributing factor to hibernation, it apparently is not the sole factor, for some animals disappear while temperatures are still warm. Further, if cold becomes severe in the sleeping chambers, some protective device usually arouses the animals. If they fail to be aroused they may freeze to death. Wood chucks and ground squirrels disappear when the sun is high and warm. Sleeping exhibited by some animals under hot and dry conditions is often referred to as aestivation.

Lack of food is another theory advanced to explain hibernation, but we still find lush green vegetation long after the whistled alarms of woodchucks are no longer heard.

As the earth warms under spring suns, the sleepers begin to stir. The squirrel moves a little, his eyes open, there is a gasping for air and violent body tremors. Soon he is above ground again busily scampering about and tending to domestic affairs. It will be but a short time until he again enters his burrow for another deep sleep.

What Makes a Fish Hatchery?

By Vernon Craig
Information & Education Assistant



Trout in 63° spring water growing over an inch per month—an amazing growth rate reported for Rainbow reared in a California hatchery! The three words "63°F spring water" helps explain such growth.

Culturists agree that of all factors affecting the success or failure of a trout hatchery, the water supply is of paramount importance. Unfortunately, few properties of a water supply can economically be man-controlled.

Water Temperature

Unlike humans, fish and other so-called cold-blooded animals have no mechanism to maintain a constant body temperature. Accordingly, their temperature is very near that of the water in which they live. There are rather definite upper and lower limits that fish and other animals can survive. We call these extremes the limits of tolerance, for example: the upper limit of temperature for Eastern Brook trout is around 75°F. Brown trout can stand up to near 81°F, and Rainbow, the most tolerant of the three, may survive temperatures near 83°F.

Somewhere within the range of tolerance there is an optimum, or ideal, temperature most suited for fish growth. As the water becomes colder, body activities slow down and growth is retarded.

Considering the close relationship between water temperatures and fish growth, it is evident that a hatchery water supply of proper temperature and consistency of temperature is a primary requisite.

Since fertile spawn, or eggs, are living organisms they are also effected by temperature. In one study it was found that at 40.5°F it requires about 100 days for Rainbow eggs to hatch, while at 52°F it takes only

about 28 days. Optimum temperatures for fish growth are not necessarily the best for egg incubation. It has been found where fish must be both hatched and reared, 48°F to 52°F is a desired water temperature range for Rainbow, the primary hatchery trout. Even slight variances, (one or two degrees), has a marked effect on egg and fish growth.

Water Volume

Obviously, with more available water, a greater number of fish can be accommodated. Of equal importance is the consistency of flow, for fish production is restricted by minimum rather than maximum available water. The water supply location, in relation to hatchery installations, is also important. Water can be manipulated more easily if the supply is situated at an elevation adequate to insure good pressure at the point of use.

Chemical Properties

Since hatchery fish are not dependent upon natural foods, the degree of water acidity or alkalinity (which affects food production) is not as important as under wild stream or lake conditions. Of greater importance is the amount of dissolved oxygen contained.

Under ordinary conditions, the minimum oxygen requirements for trout is around four parts per million of water. Fortunately, this is one of the very few water factors which may be controlled by exposing large surfaces to the air (aeriating) in spray or by running through a series of troughs. Excess nitrogen often found in spring water may also be removed through aeriation. Excess nitrogen often causes the fish disease called "popeye".

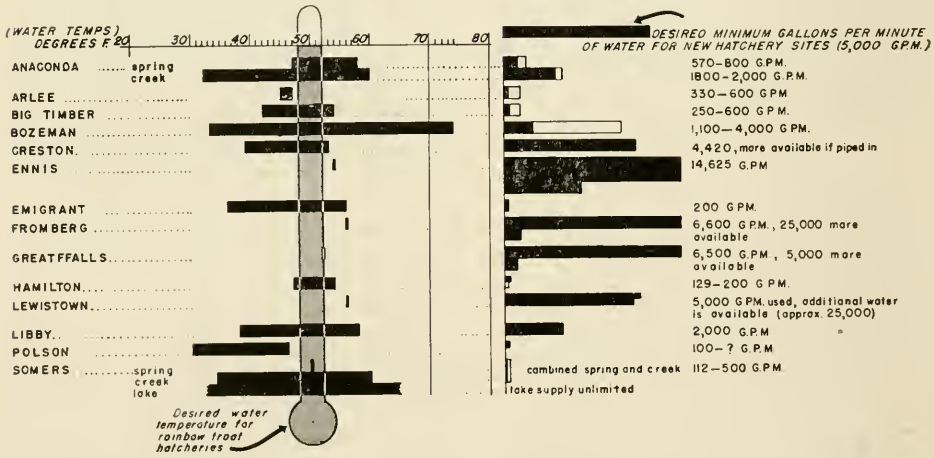


Table 1. Water temperatures in degrees Fahrenheit, and water volumes in gallons per minute for most Montana fish hatcheries.

Diet

Fish diet, it is generally conceded, is next in importance to water supply for rearing healthy fish. Artificial fish foods fall into three major categories: 1 Fresh meats, 2 Meat meals, 3 Plant meals.

Because of the comparatively low protein and vitamin content of horse muscle meat, this one-time staple of hatchery fish foods has been largely replaced by visceral meats and commercially prepared fish foods which contain scientifically prepared ingredients necessary for healthy growth. Seven to eight pounds of horse meat are required to produce one pound of trout, compared to three pounds of visceral meats such as liver, lungs and spleen of beef or hogs. Trout raised on visceral meats are healthier because of the high vitamin contents in these products.

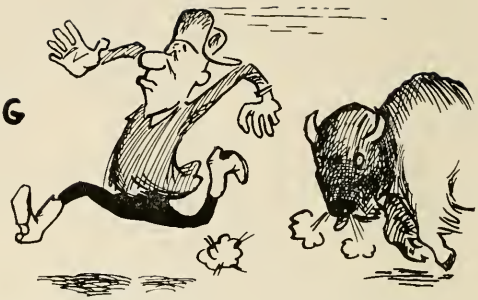
Healthy growth does not indicate necessarily, an extremely rapid growth. Too often, rapid growth produces flabby, sluggish fish which are no match for more vigorous wild trout with which they must compete when planting time arrives.

A look at the preceding chart will demonstrate that water temperatures and volumes vary considerably among different Montana hatcheries. One would expect, then, that the pounds of fish which could be reared over a given period of time would also vary with hatcheries. Such is the case.

In recognition of this, the Fisheries division of the Montana State Fish and Game Department is perfecting a "Fostering System" that will coordinate production among the trout hatcheries. Basically, the plan is this —Rainbow trout hatched and reared in warm water stations, where growth is rapid, will be removed to cold water stations after reaching a certain size. This being accomplished, it is expected that no ponds will be non-productive every other year as is now the case where cold-water stations hold fish two or more years before a catchable size is reached and warm-water stations would not have to tie up pond space with over-size trout.

For example, Lewistown hatchery has catchable size fish any time after December. Some will weigh a pound if kept in the hatchery until June or July. When fish at such stations average around eight per pound before the planting season begins, space is being wasted. By putting them in cold water stations, space at the warmer stations could be used to produce that many more catchable fish, and several fish (up to near one dozen) could be produced at the same price as one weighing a pound.

BUFFALO BRANDING BEE

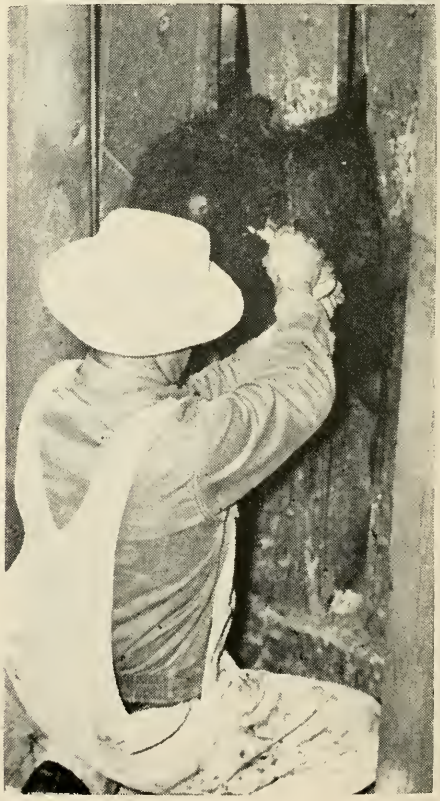


Photos by Ken Thompson and Hector LaCasse, Montana Fish and Game Dept.

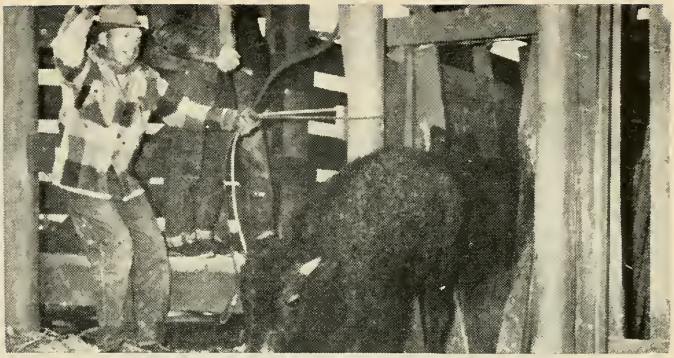
An annual event at the Bison Range is the roundup, with branding and vaccinating of calves and selection of surplus animals for herd reduction.

John Swartz, manager of the Bison Range, directs operations. Buffalo are rounded up on the 18,500 acre reserve and herded by horseback into a maze of lanes and corrals. Skilled and experienced horsemen do the job since Buffalo are fast and can be treacherous.

A squeeze chute holds the calf firmly while skilled veterinarians check and vaccinate.



Calves are branded with a number, designating year of birth. A "6" was placed on this year's crop. They are vaccinated for "brucellosis," tested for T.B. and released.



Each year a few animals are sold for exhibit purposes to zoos, parks, and private show herds. Surplus buffalo from the annual increase are butchered and sold to applicants for meat. This is done by drawing names due to the large demand.

Back to the range. Buffalo waste no time leaving the corrals once they have been designated for return to the open range. The main herd is maintained at about 400 animals which is the estimated range capacity. In this herd, the nation has preserved for posterity, an important segment of our history, for the buffalo played a prominent role in the making of America.

THE NATIONAL BISON RANGE
MOIESE, MONTANA

The National Bison Range, as the name implies, is a Federally owned refuge maintained by the Fish and Wildlife Service of the U. S. Department of the Interior for the protection and preservation of a representative herd of American bison. It is located in the Flathead Valley of western Montana and the headquarters at Moiese are in the northwest portion of the range.

Approximately 23 miles of heavy, big-game type fence surrounds the entire area of 18,540 acres of mountainous grasslands and timber.

Within this range, there is a series of additional fences and gates dividing the area into pastures and providing facilities for herding and corralling the animals when necessary. For the visitors' viewing, a small representative group is held in an exhibition pasture at the refuge headquarters.

The history of this range began officially on May 23, 1908 during Theodore Roosevelt's administration. At that time, funds were appropriated for the purchase of certain lands from the Indians and for the construction of a fence to enclose the range. Final selection of the site was made later in the year. For several years previous to this, there had been considerable public demand to protect the few bison remaining in the country and the American Bison Society, organized in 1905, led a campaign that resulted in the final establishment and stocking of the National

Bison Range. This society is credited with having raised more than $10,000 by popular subscription to buy the first animals that were placed on the range in 1909.

The heritage of this herd dates as far back as 1873 when Walking Coyote, a Pend d' Oreille Indian captured a few calves on the plains east of the Rocky Mountains and brought them to the Flathead valley. Descendents of these animals comprised the famous Pablo-Allard herd, part of which later became the Conrad herd at Kalispell. It was from this latter group that the American Bison Society purchased the original 34 bison for this refuge. Other donations were made from the Goodnight herd in Texas in 1909 and from the Corbin herd in New Hampshire in 1910.

Bison are among the largest members of the family Bovidae which includes cattle, sheep and goats. A mature bull will often weigh from 2,000 to 2,500 pounds while an adult female ranges from about 800 to 1,200 pounds. They generally breed during July and August and produce single calves. Bison, at all ages, are extremely hardy animals. They never become truly domesticated and are unpredictable, charging and goring a man or horse without provocation. Because of this element of danger, it is necesary to restrict public travel from the main part of the range.

The Moiese range probably has the only living albino in America at the present time. "Big Medicine" was born in 1937 and still presents a picture for thousands of visiting photographers each year. It is said that likely no more than 10 or 11 white buffalo or albino bison skins have ever been seen by white men.

Besides providing a preserve for buffalo, the Bison Range also supports representative populations of other big-game animals native to this region including Rocky Mountain elk, mule deer, white-tailed deer, Rocky Mountain bighorn sheep and pronghorn antelope.

In addition to these big-game populations of the Bison Range, there is found an interesting variety of birds and small mammals, including ring-necked pheasants, Hungarian partridge, chukar partridge and dusky grouse. Common, medium and small mammals occurring on the range include coyotes, bobcats, badgers, skunks, cottontail rabbits, Columbian ground squirrels, chipmunks and others.

Montana's 1955-56 Fur Harvest

By Fletcher Newby, Fur Biologist
Wildlife Restoration Division

Encouraged by favorable prices and liberal regulations during the 1954-55 trapping period, Montana trappers looked forward to 1955-56 seasons with optimism. This hopeful outlook was supported by continuing prospects of good prices at the beginning of the 1955-56 period. Eager trappers flocked to streams and marshes on the November 10 opening of muskrat and mink seasons. On November 11, however, record breaking cold swept over the state. Ice formation progressed so rapidly in some areas that trappers were unable to tend many of their traps. The month-long average temperature for the state was 12.3 degrees below normal; the lowest since 1896. Temperatures during December were not as extreme but were the coldest since 1951. Ice jams and flooding further complicated trappers' problems. Trapping conditions in general were much poorer than during the unusually warm fall of 1954. (See Figure 1.)

It can be readily appreciated that this deep-freeze cooled the ambitions of many trappers and made life miserable for those who decided to "tough it out." Mink, muskrat and beaver harvests were seriously influenced by this difficult fall weather. Marten trappers were not affected by the freeze-out but even they had to contend with snowfall about double the long period average.

Weather conditions in March and April, 1956, were much better for trapping but by then fur markets had weakened considerably. Beaver prices fell to a record low (see Figure 2) and many consignments were held in storage in hope of some recovery in the market. Muskrat prices did not decline, but on the other hand, did not show the usual 20 per cent increase for well-furred spring pelts

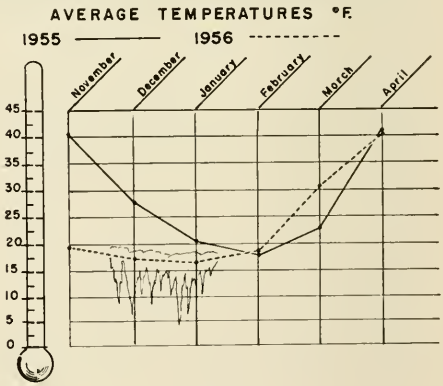


Figure 1.

Harvesting of the fur crop usually involves 1,300-1,500 people each year. Earnings may range from a few dollars to thousands. Seasonal workers often add to their income at times of the year when other forms of employment are scarce. Many farmers and ranchers supplement

their earnings by trapping during the off season for agricultural activity. School boys frequently obtain spending money from a few traps set along the creek around home. Recreation as well as remuneration is apparently a motive for trapping effort by many people. This is suggested by the fact that over a hundred different occupations are listed by trappers. Trapping enables lovers of the outdoors to roam the woods and follow the streams at times when hunting and fishing opportunities are restricted.

Successful results of the 1954-55 period and promise of good prices increased sales of trapping licenses from 1,467 in 1954-55 to 1,696 in 1955-56. Most trappers made an effort to use their licenses but the severe fall cold made successful operation difficult and poor spring prices discouraged any great recovery of interest.

Four species—beaver, mink, muskrat and marten—produced 93 percent of the pelts and 97 per cent of the income in the 1955-56 period. Mink and beaver harvests declined 28 and 30 percent respectively, while spring reopening of the western and central Montana muskrat season was largely responsible for a 33 per cent increase in the muskrat harvest (see Figure 2). Marten trappers were pei-

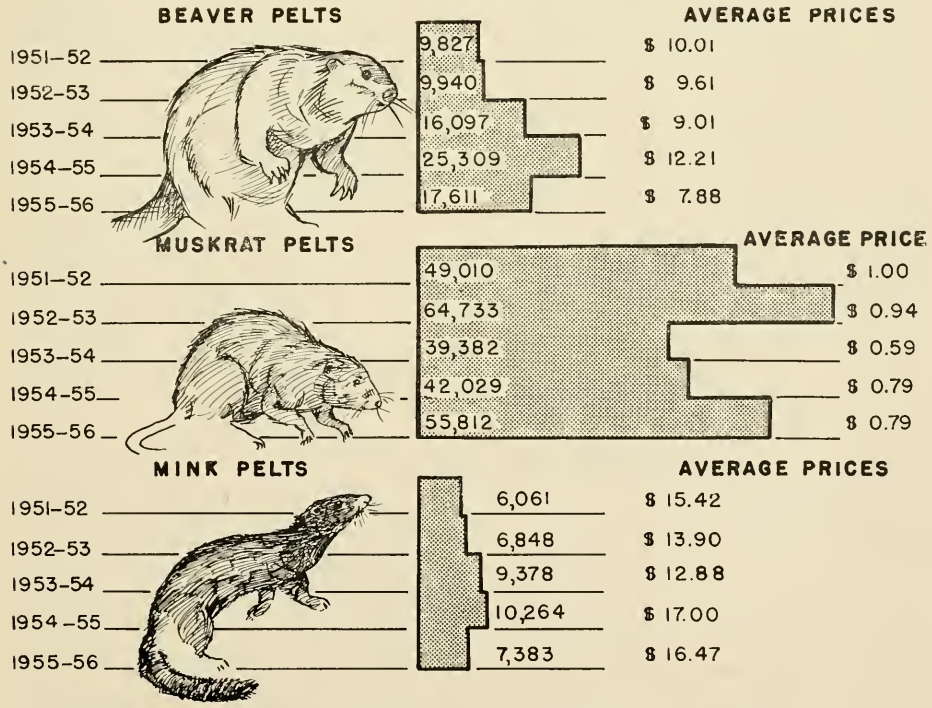


Figure 2. Five year comparisons of harvest and average prices Montana beaver, muskrat and mink.

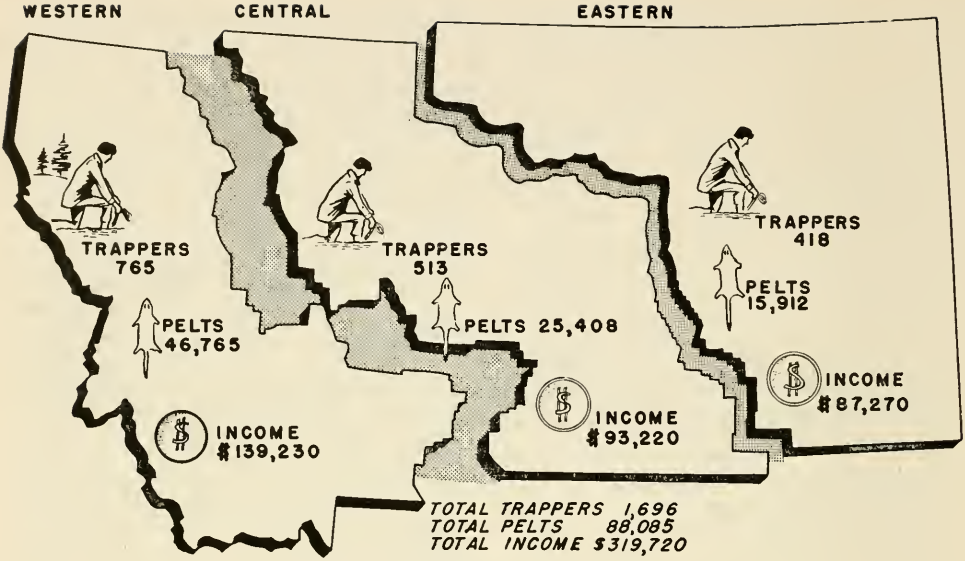


Figure 3. 1955-56 Montana fur harvest.

mitted the first open season in three years. Trapping activity, as usual, was greatest in western Montana (see Figure 3).

The $320,000 total value of the fur take was very near the $332,000 average for the past five periods. It exceeded total values for 1951-52, 1952-53 and 1953-54 but was 39 per cent below the $552,000 valuation for the 1954-55 take.

Beaver

A glance at Figure 2 shows that although the beaver harvest fell 30 percent, it remains well above harvests made before establishment of the general open season in 1953.

The fall portion of the beaver harvest was less than one-half what it should have been if weather conditions had been as favorable as in the fall of 1954. Poor spring prices caused additional decline in the beaver harvest. Lack of enthusiasm on the part of trappers was understandable and the season closed with less than the desired harvest in all areas. Response to weather and market conditions varied in different parts of the state (see Table 1). Reductions in the beaver harvest were planned for some areas. Total numbers of beaver permitted to trappers were reduced by 10 percent in western Montana. In central Montana several areas which were "No Limit" in 1954-55 were given restrictive quotas for the 1955-56 period. "No Limit" seasons were in effect both years in eastern Montana. No reduction in take was desired in this region but the 1955-56 catch was only half that of the previous season. Beaver from eastern Montana brought the poorest prices of any area in the state. This combined with difficult fall trapping

TABLE 1. Montana Beaver Harvest

Region	Harvest 1954-55	Harvest 1955-56	Decrease Number	Decrease Percent
Western	8,661	7,306	1,355	16
Central	7,796	5,819	1,977	25
Eastern	8,852	4,486	4,366	49
Montana	25,309	17,611	7,698	30

and the dollar royalty fee which further reduced incentive, produced an unfortunate situation. Continued heavy harvests are needed in this region to hold agricultural conflicts at tolerable levels.

Mink

A record number of mink trappers was expected but the final tally showed that fewer trappers caught mink than in the 1954 season. The average catch dropped from 10 to 7 and the end result was a 28 percent lower mink catch. (See Table 2.)

Fall weather conditions were apparently the sole cause of the drop in the mink catch. Prices for mink pelts remained good throughout the season.

Muskrat

Fall muskrat trapping froze out to a great extent along with mink and beaver trapping. Western and central Montana normally have only a fall muskrat season while eastern Montana has a season nearly six months long. Spring muskrat seasons for western Montana are avoided in normal years because experience has shown that active spring muskrat trapping usually results in the accidental and illegal trapping of too many mink. This can be damaging when the fall harvest of mink has been all that the population will stand without reducing the breeding stock. Because of the relatively small 1955 catch of mink, it was felt that spring trapping of musk-

TABLE 2. Montana Mink Harvest

Region	Harvest 1954-55	Harvest 1955-56	Decrease Number	Decrease Percent
Western	4,196	2,688	1,508	36
Central	3,180	2,134	1,046	33
Eastern	2,888	2,561	327	11
Montana	10,264	7,383	2,881	28

rats would not endanger the welfare of mink populations. In spite of a slow market, spring reopening of the muskrat season in western and central Montana increased the muskrat harvest by 30 percent. Most of this increase occurred in southwestern Montana. Little response was shown in the northwestern and north central portions of the state.

Weather conditions limited the fall muskrat take in eastern Montana as in other portions of the state. Although muskrat trappers in this region have nearly six months in which to do their trapping, 60 to 80 percent of the total catch is usually made in the fall. Trapping in the spring of 1956 was as light as usual and the season closed with a catch about half that of the previous year. (See Table 3.)

Marten

Western Montana produced nearly all the marten harvest although marten do occur in various parts of central Montana. Low prices averaging $8.00, kept interest low in most areas. Marten trapping was most active in the northwestern part of the state where networks of logging roads provided easy access to marten country. The marten catch in this area actually exceeded the mink catch. Trappers here were very successful, taking as many as 80 marten per trapper.

Other Fur Animals

Otter appear to have extended their range and have become more numerous under the protection given them since the last open season in 1949. This increase has made it possible to plan for annual open seasons on a limited basis beginning in the 1956-57 period. This current season is primarily aimed at legalizing sale of otter caught accidentally in beaver traps. It may be possible to liberalize the present restrictions in succeeding seasons.

Market demand for fox and other long-haired furs has been very low for several years. As a result, trapping for these animals has been much reduced. In addition, effective coyote control programs have greatly lessened coyote competition

TABLE 3. Montana Muskrat Harvest

Region	Harvest 1954-55	Harvest 1955-56	Increase or Decrease Number	Increase or Decrease Percent
Western	18,016	34,727	+16,711	+93
Central	11,153	14,930	+ 3,777	+34
Eastern	12,860	6,155	— 6,705	—52
Montana	42,029	55,812	+13,783	+33

with other predator populations. These factors appear to have contributed to significant increases in fox, bobcat and skunk populations in various parts of the state.

Bounties are often suggested as a method for control of predator populations. Careful examination of bounty systems in this state and in many others shows that the disadvantages of the bounty system far out-weigh the advantages. Most bounties are set too low to interest enough people in hunting and trapping of predators to effectively reduce the predator population. Most bounties of this type are paid for animals which would be taken anyway, accidentally, in sporting hunting, or in protection of property. Bounties which are high enough to attract many hunters and trappers invariably lead to fraud. Many examples of such abuses are on record. These include such tricks as importation from out of state and release of females. Costs of high bounties usually become so excessive that they have to be discontinued to prevent bankruptcy of the sponsoring agency. Another fault of bounties is that they do not encourage concentration of effort against individual livestock and game killers. They do not relieve depredations at times when control is most needed. In short, bounties are a complete waste of money as far as **control** of predators is concerned. This is demonstrated by the fact that many states have had bounties for over a hundred years and the bountied animals are as abundant as ever or more so. There are instances of states paying a quarter of a million dollars annually without reducing predator populations.

Future Outlook

Trapping activity depends to a considerable extent on market conditions. Trappers naturally concentrate on the fur animal which will give them the highest dollar return. This must be taken into account in the setting of trapping seasons. Excessive pressure on a given species can be avoided by increased restrictions while, on the other hand, interest in low-priced pelts can be stimulated by more liberal regulations. An example of the latter case is the present beaver situation. Prompt action by the Montana Fish and Game Commission and the 1957 Montana Legislative Assembly can do much to increase interest in beaver trapping. Such action is presently contemplated.

Ideally, seasons should be set so that an adequate annual crop of prime pelts is taken under rules and regulations which assure the maintenance of a satisfactory breeding stock. Management based upon facts gathered by careful study, without reference to sentiment or prejudice will insure that the people of the state will continue to reap the benefits to be derived from the fur resource of Montana.

CONSERVATION EDUCATION AWARD

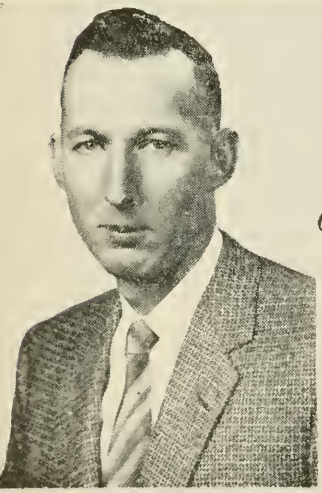
Thaddeus Wojciechowski, extension agent for Lincoln county, was selected as one of the nation's leaders in Conservation Education for 1956. This honor, in the form of an Award of Merit, was made by the American Association for Conservation Information.

The award was given Wojciechowski in recognition of a program he has developed in Lincoln County schools for the purpose of increasing knowledge and appreciation of Montana's natural resources among the state's younger people.

His education plan incorporates the assistance of various resource agencies such as the State Fish and Game Department, the U. S. Forest Service and the U. S. Soil Conservation Service. Each six-weeks period features one phase of natural resources. As an introduction to the subject of study the responsible agency presents a three-hour course to stimulate interest and present facts.

This project is now in its fourth year under Mr. Wojciechowski's guidance and has the enthusiastic support of Lincoln county educators who cooperate fully by incorporating resource material into regular courses of study.

The national award was presented to Wojciechowski at the annual extension service meeting in Bozeman in December. Presentation was made by Ken Thompson, Director of the Information and Education division of the Montana Fish and Game Department. The department is a member of the American Association for Conservation Information.



American Association

for

Conservation Information

Award of Merit

1956

for outstanding contribution to conservation education in Montana

Thaddeus Wojciechowski

W. T. Cobb
President

John Blackburn
Vice-President

Edward F. Dolder
Secretary-Treasurer

A BARRIER TO GOOD HUNTING

Senator J. S. Brenner

President of Montana Stockgrowers Association

Editor's Note: (This article is part of an address given by Senator Brenner at the annual meeting of the Montana Wildlife Federation in Helena. It has been reprinted because of the significance of his observations on landowner-sportsmen relations.)

Much has been said and written about the relationships between sportsmen and landowners. Certainly it is a vital problem to both groups and one that must be resolved if the sport of hunting is to continue in Montana as we have known it in the past.

In spite of intemperate and ill ad vised remarks on both sides, I still think that if you scratch a rancher you will find a conservationist. You mostly won't have to dig very deep either. The very nature of his life and work makes him that way. When game was scarce and preservation was the problem, it was often the ranchers who paid to transplant game and it was ranchers that protected the scarce species. They made their outfits into game preserves and patrolled them. Contrary to popular belief, they were not private hunting grounds either, but real spots for the preservation and protection of game. It was this real interest that made ranchers aware of overpopulations perhaps a little earlier in the cycle. Ranchers, of course, should be more aware of over-use of the range than the average person and that has led to some misunderstanding between rancher and sportsman. I doubt if you will find many land hogs among the ranchers. They just plain don't like to see anything starve itself out nor do they like to get starved out themselves by an influx of hungry game.

In my own county of Beaverhead, in a span of 25 years, deer have increased from a rarity to being ever-present; antelope from non-existent to commonplace; moose from a myth to a menace, and elk from a planted and protected few (we planted them) to a dangerous pest. They have all changed their habits noticeably in an even shorter period of time. Ten years ago, for instance, the deer would all migrate to Idaho shortly after the first snowfall and not return until spring. Now they are steady year around customers. Moose once were steady denizens of our meadows, now they are more likely to be found in the hills. It is only quite recently that elk have found the haystacks in our area and have become an expensive luxury for us. With all of these changes, I don't see a great amount of difference in the feed or forage for domestic stock except in a few places where the elk have damaged the grass early in the spring.

Hunters' habits have changed, too, and those changes have probably done more damage to the range than has the game increase. We have sold a lot more licenses in recent years, but I think we have fewer hunters than ever. Too many men expect to do their shooting from a cushioned seat. They don't get as much game, but it is actually frightening to see the damage their tracks can cause. A wheel track off a ridge this fall can become a washout next spring. A jeep in a field can cause a lot more damage to the land or to grain or hay than a whole herd of game. So the real competition is between men, not animals. The foundation was, I suppose, laid by the vocal extremists we have in both our groups, but the feeling remains.

It complicates the very real problems we are facing today in wildlife work and related fields. Both sides are touchy and inclined to throw rocks without even aiming.

I have almost been shot several times. I have been hit by a car on a mountain road on my own property and had my top horse killed under me. I have lost valuable horses and cattle to careless gunfire. To show how unexceptional these cases are, I might add that at least two of the ten members of our Stockgrowers Executive Committee have had cattle shot in open fields this year. No doubt, the culprits in all of these cases were carrying valid hunting and fishing licenses, so we are naturally inclined to include them as "sportsmen." It is common knowledge that thinking sportsmen are as anxious as we landowners to put a stop to these abuses. It must be most unpleasant and tiresome for real sportsmen to be classed with these irresponsibles. To be insulted and threatened on account of the wanton and malicious is hard to take. I know.

I post my ranch. I do it for two reasons. First, I want to know who is on my property and I want to be

able to guide them to where they have the best chance of success with the least danger of hurting my business. Second, a lot of us have the idea, right or wrong, that a "No Trespass" sign may relieve us of some liability in case a hunter is injured on our land. In these days of eager lawyers and generous juries it is possible for a man to lose his outfit in a lawsuit over a broken leg. I have worked for years for some changes in our game laws and for changes, consolidations and improvements in our laws governing public lands. So, at times, I am a game hog and a land grabber and a generally undesirable citizen. The shoe pinches both ways.

It all points to the tremendous job of education that faces us all. I had thought and hoped that we were gaining ground, but at times I doubt it too. I was over in the central part of the state awhile back attending a meeting. Not once, but several times, I got almost the same answer to my inquiry as to where was Joe or Tom or Slim. The answer was always that he thought he had better stay home and protect his outfit. "Hunting season, you know." That is a bad feeling to have anywhere. I have been in Southeastern Montana lately, too. Down there it surprised me how many times I heard comment on how much nicer the out-of-state-hunters were and what a pleasure it was to have them. That even seemed to hold true for the one who mistook a coyote for an antelope and then went to the nearest ranch to offer to pay for killing the man's dog. No one can ever convince me that outsiders are nicer people or better people than Montanans, so what has gone wrong with our relationship. Ranchers and sportsmen share a love of the out-of-doors and of wildlife. Where they don't consume the very food off the table, I do not believe that most ranchers object to furnishing the main habitat for game animals, and they certainly want an adequately controlled harvest of the game. We all get along smoothly and happily in our everyday contacts until the subject of hunting is mentioned. Then the blowup begins. I can point to only one reason, and that is a mutual and almost studied ignorance and misunderstanding.

I think that I can best illustrate by a personal experience. A few years ago I was riding down to look at the steers that I had all shaped up and ready to go to market. Long before I got to the field I could see a big cloud of dust and cattle running in all directions. Now, range cattle hate and fear a man on foot, and the sight of one will often set them off for hours. I knew what to look for and went hunting for the fisherman in the willows. When I told him that the ranch was posted, and asked him to leave, he was most indignant. He protested loud and long that he had not caught any fish and that I was a glutton to want to keep them all and so on. I never did get a chance to break

into his tirade to explain that he could have all the fish on the ranch as far as I was concerned. He was hostile, and I never got it through his head that, whatever his intentions, his presence in that particular place was costing me money in running condition and pounds off my steers. He would not believe me when I tried to tell him that I could have sent him to a much better fishing spot where he would not be costing me a large part of my years' income. Distrust is hurting us all, and I fear it is mutual.

A lot of ranchers have been bumped in a lot of ways, not only in competition for feed, but by sportsmen. A lot of sportsmen have been insulted and accused and have lost a day's recreation or worse because of a rancher's experience with someone else. Enough of that sort of thing has happened so that the rancher looks with jaundiced eye on anything that the sportsmen propose and the sportsmen are out to knock off anything that the ranchers try to do. Our experience with the recodification and revision of the game laws two years ago certainly proves that joint effort by our various organizations is not only possible, but is also very productive of progress for all of us. We have proved that we can both be trusted when we have a base of mutual understanding. We had better exploit this discovery.

I ask you to remember one thing, one fundamental difference between us that is basic. When you go out to hunt or fish and you have trouble with a rancher, usually the most that is at stake is your day's recreation. But when a rancher has trouble caused by hunting or fishing on his place, it is destruction to his property, it is fire, or loss of livestock, or open gates or broken fences that can cost days of expensive labor. It is an economic loss and it can possibly be a big one. It often makes a man feel as if he is fighting for his very existence, and a man in that frame of mind can be downright unreasonable. Ponder that fact and be patient.

Beaver, Sportsmen, Machinery Create Wood Lake

A CASCADE COUNTY WILDLIFE ASSOCIATION PROJECT

Many decades ago, a colony of beaver dammed Wood Creek, creating not only a habitat for themselves, but also, a body of water suitable for trout. In time, all of the willows, aspen and cottonwood were cut and eaten. With the food supply depleted, the beaver migrated to new areas.

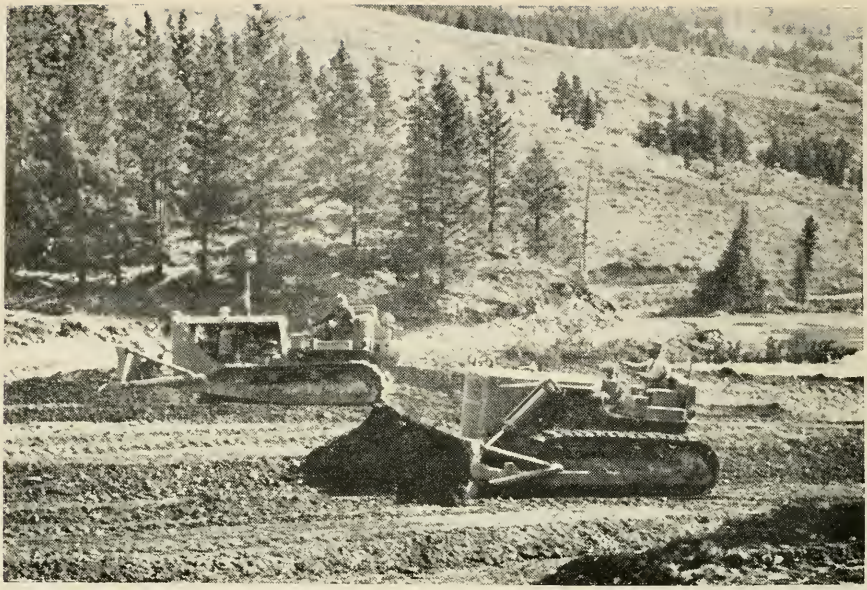
In recent years, fishermen have attempted to keep the old dam from washing away by hauling rocks and materials by hand, and thus, buttressing the work of the beavers.

Some sportsmen even dreamed of a larger and more permanent structure that might create more and better fishing. Dreams became a reality in 1954, when the Cascade County Wildlife Association undertook the project.

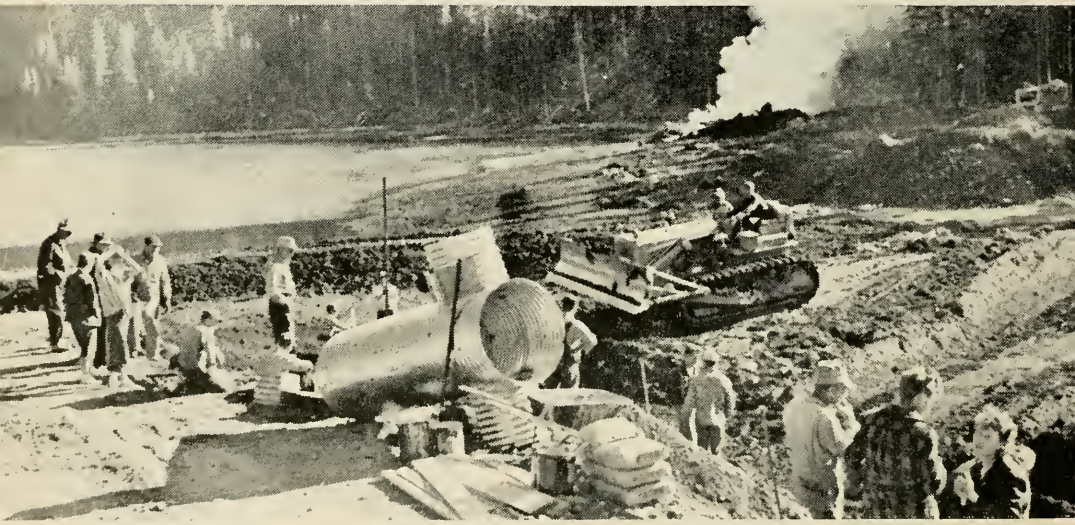
Some of the 75 Trout (mostly Brown) removed from the existing lake before construction began. The trout, averaging 5 1/2 pounds, were given to the Orphan's Home in Great Falls. Native trout were released.

During a lakeside meeting, June 3, 1954, with representatives of the Association, the Montana Fish and Game Department and United States Forest Service, it was decided that the dam height could ideally be raised five feet. Also, installation of a lake drain to facilitate future management was planned.

The Association advanced $500.00 to purchase drain materials, and sporting-goods stores, service stations, lumberyards, and individuals contributed $450 in cash and $250 in supplies. Heavy equipment and trucks were furnished by local persons.



Carl Milrinke on his D-8, and Hubert Shone on Golie Bros. D-6 dozer push in fill material.



A week-end work party makes preparations for drain installation.

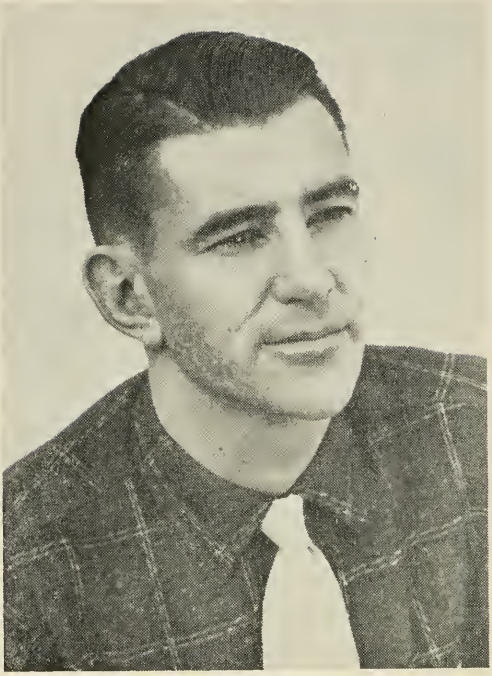
The drain goes into place; 66′ of 24″ pipe and a 36″ standpipe were installed.

Work began September 23, 1956, and the project was nearly complete 18 days later. Most of the work was done by club members with other help coming from some of the summertime residents of the area. The lake was increased from 17.5 to 21.2 acres, and the water volume increased 300%. Nineteen hundred feet of road was relocated and graveled.

It is expected that, with the new-face-lifting, Wood Lake will afford some good native trout fishing in 1957. The thought is to furnish a lot of pan-size fish, not just a few large fish.

The Cascade County Wildlife Association project is a good example of what progressive clubs can do to further their own sport with permanent developments for wildlife.

The completed dam is marked by a white line of riprapping in the distance.



GEORGE HOLTON
Chief Fisheries Management Biologist

On February 15, 1957, George D. Holton assumed the position of Chief Fisheries Management Biologist for the Montana Fish and Game Department.

Mr. Holton, a native of Illinois, received his Bachelors degree in zoology from the University of Wisconsin, and continued his formal education at Montana State College where he received a Masters degree in Fish and Wildlife Management under the guidance of Dr. C. J. D. Brown.

After leaving college, George went to West Virginia where he was a leader of a Fisheries research program for nearly two years. For the preceeding three years, he has been Supervisor of Fisheries Field and Research Operations for the Wyoming Game and Fish Department.

—Photo by W. K. Thompson.

WHITE-TAILED DEER

Montana has two species of deer; the mule deer and the white-tailed deer. Whitetails, as they are often called, frequent the brushy river bottoms over almost the entire state. However, they are most abundant in the mountainous section of northwestern Montana.

It is estimated that 69,000 whitetailed deer live within the boundaries of the state. They provide a fine sporty type of big game hunting, being extremely alert, and the waving "flag" or snowy white tail has caused buck fever in many hunters.

Young are usually born early in June and twins are most common.

Like other male members of the deer family, bucks shed their antlers in the winter. A new set begins growth from two to six weeks after the old ones are lost. Antlers grow rapidly, nourished by a network of blood vessels known as "velvet." In late summer, the "velvet" is rubbed off and the hard insensitive antler growth is complete.

In addition to being a fine trophy animal, the whitetail deer is excellent eating. Like other grazing animals, it can eat itself out of house and home if not properly harvested. Winter time losses, due to starvation, are definite indications of too many deer.

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