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WILDLIFE



BULLETIN

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Montana's Wildlife Restoration Program

INTRODUCTION

Sportsmen have indicated a keen interest in the Restoration activities of the Fish and Game Department. The new source of income which has made this work possible was made available to Montana during the spring of 1941, as explained by J. W. Severy in his article "Know Your Department." It has been thought that a brief outline of the work thus far accomplished would be worthwhile at this time.

In drawing up the original program, the Commission placed a considerable amount of emphasis on surveys for the first two years, or during the initial period of the work. This was necessary in order that a reliable fund of basic information might be obtained. Upon this framework, a worthwhile development program is now being built up.

It is often asked just what sort of information is obtained by wildlife surveys. First of all, it is obvious that in order to properly manage any species of wildlife, a great many important questions must be answered. For example: How many of a certain wildlife species are there on the particular range in question? What is the sex ratio? Is this the most desirable ratio? What is the annual increase? How is this annual increase affected by hunter kill, predators, winter loss or parasites and disease? Is distribution desirable or faulty? If faulty, how can it be bettered? In what condition is the forage on which this species depends? If it is degenerating, what can be done to bring it back? If under-used, what can be done to increase the game to the proper carrying capacity of the range? What other types of land use does this area support? What conflicts, if any, exist? Are any adjustments necessary? What development projects may be carried out on this area to better wildlife conditions?

This is only a rough outline of some of the more important questions that a survey must answer concerning any game species on a single area. When this is multiplied by the many species of wildlife, including game

animals, game birds and fur bearers throughout the many sections of the state, it may be seen that the gaining of a complete wildlife survey is a real task.

BIG GAME INVESTIGATIONS COMPLETED

The majority of the work on the big game ranges, which has now been completed, has been carried out during the winter months. This has been found necessary due to the fact that the forage available during this critical period definitely governs the number of game animals that any range will support. In addition, it is far easier



A Prime Bull Elk on winter range near Seeley Lake

to gain accurate information concerning numbers, sex ratio, etc. during the winter when game is concentrated.

During this work more than 25,000 miles have been traveled on foot and snowshoes throughout the winter game ranges of the state. Several thousand additional miles on horseback have added materially to this coverage. Motor toboggans have played an important part in rapidly traversing snowed-in mountain roads. A ski-equipped airplane has also been used at times in getting men into vital back-country areas.

Coverage has been completed on the following big game ranges:

Sun River-Teton
 South Fork of the Flathead
 Middle Fork of the Flathead
 North Fork of the Flathead
 Lincoln County
 Fish Creek-Thompson River
 Bitterroot
 Blackfoot-Clearwater
 Swan Valley
 Madison Valley
 West Gallatin Canyon
 Absaroka
 Little Belt and Crazy Mountains
 Eastern Montana Ranges.

Work on the above listed areas had to do primarily with elk and deer. In addition, special investigations have been made regarding the rarer big game species. These have been:

Sun River-Flathead—Grizzly Bear and Mountain Goat.
 Bitterroot—Mountain Goat.
 Absaroka (Slough Creek-Hellroaring area)—Moose.

BIG GAME INVESTIGATIONS NOW BEING COMPLETED

The survey work undertaken on the big game during the winter of 1943-44 consists of the following projects.

State-wide Big Game Recheck

Two men have spent the present winter conducting a rapid recheck of all the game ranges listed above. In this way it has been possible to keep up to date such fundamental information as numbers of game animals, sex ratio, distribution, condition of forage, etc.

Sun River Mountain Sheep Investigation

A man has spent a year and a half working with the mountain sheep of the state. His headquarters has been located in the Sun River country. An attempt is being made to determine what can be done to bring back the mountain sheep. It is well known to outdoorsmen that this valuable big game species has tumbled from the abundance of 50 years ago to a serious scarcity today. This is a problem that has baffled not only the Montana game department for many years, but also those of other western states.

Wise River-Georgetown Big Game Investigation

This area is extremely interesting from a game management point of view. A fund of detailed accurate information is particularly necessary here, due to the complexity of the land use pattern. The needs of game animals must be carefully correlated with those of various other uses. Hunting regulations must in turn be drawn up with care, as the potential hunting pressure from the nearby centers of population is immense.

UPLAND GAME BIRD INVESTIGATIONS

During the first two summers, a crew covered the entire state in securing badly needed information on game birds. This work included mapping the ranges of the Blue Grouse, Ruffed Grouse, Franklin's Grouse, or Fool Hen, Sharp-tail Grouse, Ptarmigan and Sage Hen, or Sage Grouse, as well as the Chinese Pheasant and Hungarian Partridge. Figures indicating relative abundance and distribution were also obtained.

In addition, much worthwhile material concerning the life habits of the various species, including food, cover and water requirements, flushing distance, etc., was gained. This information has been helpful in the management of the various species of game birds in the state.

CHINESE PHEASANT FOOD HABITS INVESTIGATION

The Chinese Pheasant has earned an important place among the game birds of Montana. Much of the Pheasants' range is found within and directly adjoining agricultural lands. For this reason the question often arises concerning the possibility of crop damage.

Because of the wide interest in this problem, it was decided to undertake a detailed investigation concerning the food habits of the Chinese Pheasant in agricultural areas. The Billings-Hardin unit was chosen upon which to conduct this work for a period of one year. Special emphasis is being placed upon the determination of the economic value of the various food items taken.

The field work will be completed during April, 1944. However, additional laboratory work will be necessary before the final report is made available. It is interesting to note that a rapid check of the information covering the period between May and September indicates that the amount of damage to agricultural crops through the feeding activities of Pheasants was very small. It was apparently more than offset by the benefits derived from the consumption of insect pests and weed seed.

FUR RESOURCE INVESTIGATION

The North Fork of the Flathead area was chosen as a typical fur management unit. Here intensive work has been carried out to determine ways of developing the potentially important fur resources, not only in this area but throughout the entire state. The result in increase in fur bearers, marten in particular, has been very encouraging.

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Development in Fish Culture



Rainbow Trout raised from fry in a "Live Car."

The Sportsmen of this State are no doubt aware that the problem of feeding the many millions of fish which are produced each year in Montana's hatcheries has become a problem of major importance. There has been times when it was very doubtful if sufficient feed could be acquired to maintain a full production schedule as outlined in our planting program.

It has been a known fact that if young trout could be fed upon natural feed; such as the various forms of plankton which are usually abundant in any well fertilized body of water, such trout would make a growth far superior to those of comparable age which were raised in our hatchery rearing ponds.

This problem was attacked by the Superintendent of Fisheries early this spring with a view to giving it a practical application and the first experiment which was completed shortly after the first of October has proven to be a complete success.

For this experiment a frame four feet square and twelve feet deep was covered with one-eighth inch hardware cloth. This box was then suspended in a vertical position in a small lake in Loncoln County. On June 15 one thousand small Rainbow Fry were released in this enclosure. These Fry were introduced from the Libby hatchery at a time when they had just started to swim and were given no artificial feed of any kind.

This enclosure allowed these thousand fish a space of approximately four feet square and twelve feet deep in which to swim about and secure any plankton which might be swimming through the one-eighth inch square mesh and from the experiment just concluded it was found that this size enclosure would undoubtedly have accommodated several thousand more with still ample amount of food drifting through the screen to supply all of the fish therein.

Upon counting out these fish on the first of October the largest were found to average four inches in length with an average size of over three inches for the majority. This represents a growth rate comparable to any of our best hatchery rearing ponds under forced feeding conditions and is considered very satisfactory in view of the fact that this 'Live-Car,' as it was termed, was left suspended in the lake throughout the entire summer from June 15 to October 1, with practically no attention aside from a weekly cleaning of the screens so that the smaller forms of plankton might be able to swim through without interference from excessive marine growth. Our findings from this experiment also indicated that by the use of bronze or copper screen the tendency for algae to collect would be minimized to such an extent that even this attention could be dispensed with except in rare intervals of two or three weeks.

It was also found that even better growth rates could have been obtained had this Live-Car been fitted with a double slot so that after the fish had attained the length of approximately two inches, a one-fourth inch mesh could have been inserted and the one-eighth inch mesh removed. This would have allowed the larger forms of marine life such as young shrimp and nematodes to swim through very readily, thereby offering an additional source of food which was not available with the one-eighth inch mesh.

The highly satisfactory results of this experiment have erased the worry and apprehension which we have had as regards the possibilities of obtaining sufficient supplies of fish food for future operations. It also opens up the possibilities of installing such Live-Cars in many of the small lakes or suitable ponds which are scattered all over the State and which can be not only supervised by the hatchery personnel but can also be sponsored by the many Rod and Gun clubs who would care to take an active interest in the rearing of trout right in their own community.

However, before such units are stationed in any lake, the Department would have to determine whether sufficient concentrations of plankton were available. In the event that such a body of water was found to be somewhat deficient, it would be a comparatively simple matter in most cases to build up the potential supply by the process of artificial fertilization.

Blue prints and plans for the construction of these Live-Cars are being drawn up and will be available in the near future to any club or individuals who might be interested in carrying on such a project as a club or individual enterprise.

It is no exaggeration to state that if this new phase of fish culture is developed to its proper proportions, the output can not only equal but probably far exceed the combined production of all our hatchery rearing ponds at this time.

Know Your Department

By J. W. Severy

The Restoration Division

The Restoration Division is now completing its third year as a unit of the Montana Fish and Game Department. It was organized following the passage by the State Legislature of the Assent to the Wildlife Restoration Act in 1941.

By this Act which Congress passed in 1937, funds flowing into the Federal Treasury from a 10 per cent excise tax on sporting arms and ammunition are now made available to the states to aid in the restoration and development of their wildlife resources.

The amount of money made available varies with the states, as it is based upon their relative size and the number of hunting licenses sold in each. Montana ranks eighth among the states in apportionment. The amount made available to Montana for the 1944 fiscal year is \$27,474. However, in normal times, this state would receive approximately \$80,000 per year from the U. S. Treasury.

The wildlife restoration work is financed to the extent of 75 per cent by these funds appropriated by Congress and 25 per cent by the States. Thus Montana should carry on in a normal year over \$100,000 worth of wildlife restoration projects at a cost to the Department of between \$25,000 and \$27,000.

The scope of the restoration activities in Montana has been wide, as it covers all phases of wildlife development

with the exception of fisheries. Work is now being carried on in connection with big game, game birds and fur bearing animals.

The state selects its own projects and outlines them. They are then submitted for approval to the Fish and Wildlife Service since they are responsible for seeing that the work outlined is substantial in character and that it will lead to the betterment of conditions for wildlife. When the projects are approved, the state plans all details, hires all personnel, buys all equipment and supervises the projects. All equipment or lands purchased under this Act becomes the sole property of the state. At intervals the state files claims for the reimbursements of 75 per cent of the cost of such projects from the restoration funds in the U. S. Treasury.

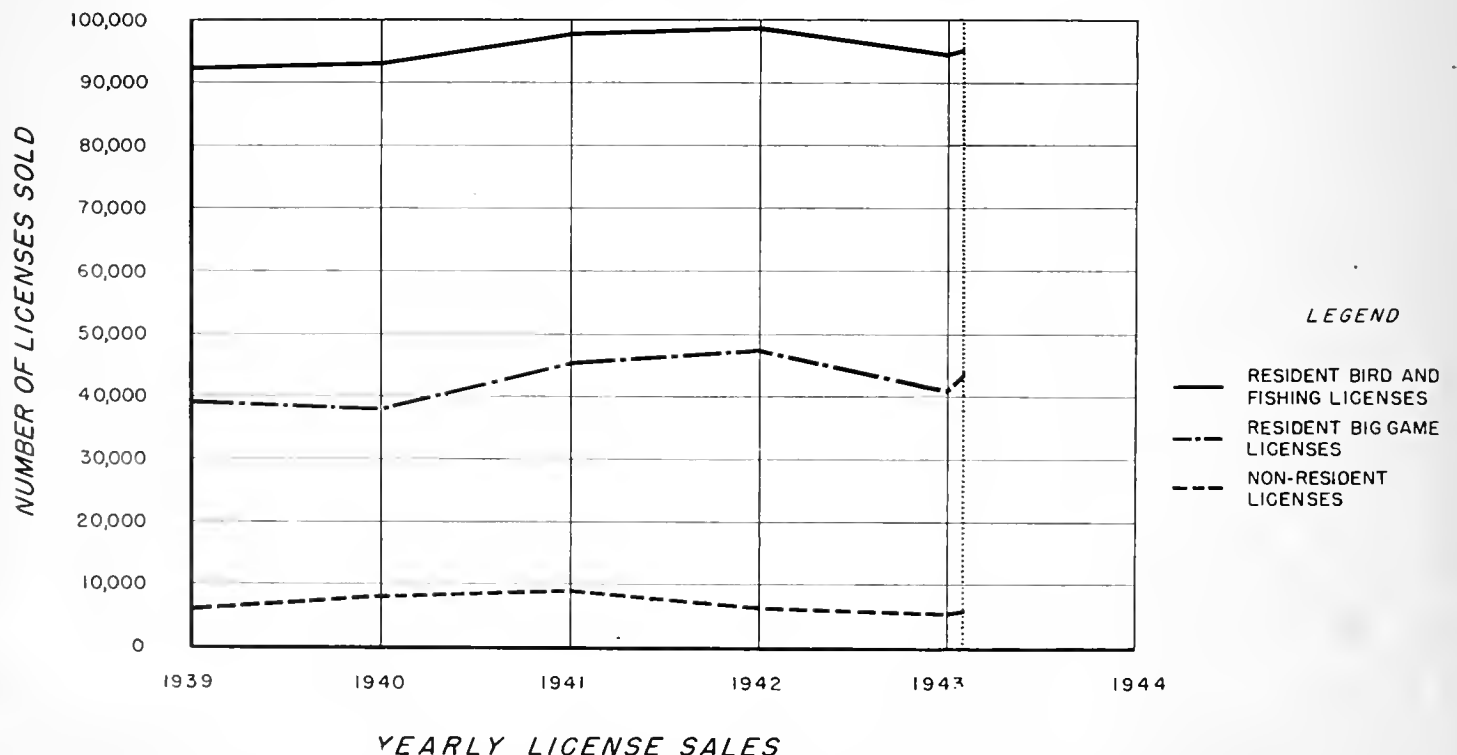
The wildlife restoration work, together with other activities of the Department has been curtailed as the war emergency has become more acute. The savings resulting from the reduced activities are, however, added to a reserve fund with which to meet the tremendous demand upon the Department as soon as the war is over.

A short progress report concerning the activities of the Restoration Division of the Department appears elsewhere in this bulletin.

Work with Other State Departments

The activities of the Fish and Game Department are meshed with the activities of several other state depart-

COMPARATIVE LICENSE SALE TREND
TO FEBRUARY 1, 1944



ments. Licenses are handled as commercial paper in a bank under the eyes of the State Banking Department.

The Board of Examiners must approve all contemplated purchases which in the normal procedure are routed through the State Purchasing Department. All books and accounts are audited by the State Auditor. By law, the Attorney General and his staff serve as legal counsel for the Commission and the Department.

Consequently, the affairs of the Department are—and must be—conducted upon a thoroughly businesslike basis.

The Job of Wildlife Conservation

The game statutes directly and indirectly charge the Fish and Game Department with the responsibility of conserving wildlife. As the frontier advanced westward in this country, the initially bountiful supplies of wildlife became all too small for increasing human populations.

Even in colonial times game laws became necessary in some of the colonies. Acts limiting seasons and bags began to appear about 1700. From that date to this, fish and game laws have rested on the assumption that when there is not enough wildlife to satisfy everyone, regulation helps to give **all** an equal chance at taking what surplus there is.

Game laws and regulations, therefore, are not simply to protect various wildlife species, but also to protect the right of the individual who wishes to hunt and fish. Too many citizens still have the philosophy that obedience to the fish and game laws and regulations is something for the other fellow. A law enforcement personnel in a state of this size can never—no matter how capable and efficient—do away with infractions of the game laws and regulations. That responsibility rests with the individual citizen in the long run.

A Complex Problem

Conservation as applied to wildlife has many fields of activity. In the long run it should provide more, rather than less, for the hunter and fisherman. Conservation, however, is not limited to regulating seasons and bag limits.

If there is to be more rather than less for the hunter and the fisherman, it is necessary to know the life habits and requirements of the individual species. Only with more knowledge than we now have will it be possible to so manage the individual species as to bring its population up to the maximum compatible with its habitat. Some species once abundant are now rare. If we are to bring about their increase, we must know more about them than we now know.

An example of such a species would be the big horn sheep. Other species, while comparatively rare, have enough of a population to permit limited hunting. Among such would be the mountain goat, the grizzly bear and some of our native grouse. Possibly none of these species can be brought back to the numbers which once represented them, because man has so changed their original environment. But, the lover of wildlife wants these species "brought back" to the greatest degree possible.

Need for Reliable Information

Other species seem less disturbed by the activities of man; in fact in some areas they have developed populations which interfere with the economies of man. Elk, deer and perhaps the ring-neck pheasant would occasionally fall in this group. Here we must learn enough about the individual species to bring about better distribution of their populations. We must handle them so that they will make more efficient use of their natural areas and yet not conflict too much with other activities important to the state.

All of these needs require the work of experienced and trained men if our problems are to be solved. It is for this reason that the wildlife restoration program is so important to Montana. Under this program it has been possible to study the distribution of the various big game species throughout the state and to learn something about the factors which determine that distribution.

The distribution and relative abundance of the native upland game birds—our various species of grouse—is now known. Only a start has been made in this type of work; there are years of study ahead before many of the problems can be solved. The same years of study lie ahead that lay ahead of the livestock industry in the 90's in bringing it up to its present high state of development. But already enough has been learned to lead to a better and more intelligent handling of game in many areas.

Among our many problems is that of better distribution of the populations of those species which are in fair abundance. Domesticated animals are fairly easily "handled." That is not the case with wild game. If it were easily handled it would be neither "wild" nor "game." At the present time better distribution of big game is being attempted through planned salt distribution, flexible handling of hunting seasons, critically surveying our refuges and modifying boundaries in some cases, the creation of new closed areas and the abandoning of others.



Motor toboggan used on winter game patrols



Mule Deer caught in trap which was baited with alfalfa hay

MONTANA'S WILDLIFE RESTORATION PROGRAM

(Continued from Page 2)

TRAPPING AND TRANSPLANTING

Mountain Goats

The range of mountain goats is quite limited within the state. Several ranges east of the Continental Divide present ideal conditions for this interesting species and yet support none. It is believed the intervening low lands have acted as successful barriers, preventing the natural drift of goats into these areas.

Trapping and transplanting appears, therefore, to be the only practical way by which their range may be materially expanded. To date there have been 38 mountain goats live trapped and moved into the Crazy Mountains and Beartooth Ranges.

Mountain Sheep

Mountain sheep were abundant and widely scattered over the mountainous and badland sections of the state during pioneer times. Their numbers dwindled sharply during the years of settlement. The Audubon or Badland sheep became entirely extinct by 1915. Early hunting, coupled with an apparent susceptibility to disease, has brought about the serious scarcity which now exists. It has been determined that not over 1,000 head of mountain sheep may now be found in the state.

The trapping of a limited number of mountain sheep from ranges where they are still found and their movement to desirable new areas seems to be one of the most promising methods of building back the numbers of this very desirable game animal. The trapping and transplanting work of necessity must be spread over several years time so that the remaining small groups will not be seriously disturbed.

To date 14 mountain sheep have been captured in the Sun River area and moved to the Gates of the Mountains. Early reports indicate that they were once very abundant in this area.

Mule Deer

This deer, commonly spoken of in Montana as the Blacktail, has become quite abundant throughout the game ranges of the western portion of the state. Several apparently ideal ranges in eastern Montana, however, are almost, if not entirely, devoid of deer. It is, therefore, planned to move sufficient deer from western Montana into these depleted areas to form a nucleus from which huntable sized herds may be developed.

Slightly over 100 head of deer have thus far been trapped and moved from congested winter range areas to the Bull Mountains south of Roundup and the badlands near Glendive.

Beaver

Although beaver often become a nuisance in agricultural areas, their presence in the mountains is distinctly beneficial. Here their ponds and dams not only tend to regulate the spring run-off, but also materially improve conditions for fish life.

It has been found that during the summer months beaver may be quite easily live trapped. They are then transported by truck or pack horse into the mountains for release along desirable streams and lakes. It has been possible through the use of Wildlife Restoration funds to move approximately 400 beaver.

Chinese Pheasants

Between 2,000 and 3,000 pheasants have been trapped in heavily populated sections of the Milk River valley and moved into areas where brood stock is badly needed. These wild trapped birds taken during the winter months are found to be particularly hardy and adaptable.

Sage Hens—(Sage Grouse)

Large sage brush areas in central and western Montana that once supported an abundance of sage hens were entirely depleted of this species of game a number of years ago. Fortunately sage hens have once more become abundant in many portions of eastern Montana. Due to natural barriers, such as mountain ranges, it is questionable if they will spread naturally back onto all of their former range.

Because of the slowness plus the uncertainty of this natural expansion, it was decided to investigate the possibilities of trapping and transplanting. During the fall of 1942, 242 of these big grouse were trapped in Carter County and moved into several very desirable ranges in Lewis and Clark, Granite, Silver Bow, Ravalli and Madison counties.

LIVE TRAPPING SEASONAL

The trapping and transplanting of various species of wildlife has been found to be distinctly seasonal.

Mountain goats are caught during the later winter and early spring. At this time they crave salt which has been used as bait to entice them into strongly built wire pen-type traps. This is also true of mountain sheep.

Deer may be most easily trapped during the severe portion of the winter by the use of alfalfa hay as bait to

entice them into panel built pens 8-9 feet in height. Chinese pheasants are also taken during the winter when food is least available and they, therefore, more readily enter small wire traps baited with corn and other desired grains.

Sage hens are driven into a winged trap by careful herding with a pickup truck. This work may be only carried on successfully during early fall after the chicks have reached almost full size and prior to the forming of large winter flocks.

Beaver are live trapped during late July, August and September. If trapped earlier, the young are too immature to stand travel, whereas if trapped later they are not given sufficient time to prepare their lodges and food caches for the coming winter.

RESERVOIR DEVELOPMENT

The more arid portions of Montana, lying principally east of the mountain ranges, have been vastly improved by the development of water reservoirs. These have been constructed by the State Water Board, the Soil Conservation Service, the Grazing Service and other public agencies, as well as by private individuals.

By lease, 24 of the more desirable of these reservoirs have been turned over to the Fish and Game Department for their improvement as wildlife habitat. All of the reservoirs contained sufficient water for wildlife, but necessary food and cover were either lacking entirely or were extremely scarce.

The first step in development has been to fence desirable portions of the shore line of each reservoir to protect them from trampling and grazing by live stock. Within these enclosures food bearing shrubs have been planted. These consist of Russian olive, caragana, rose, buffalo berry, wild plum, etc. In this way, ideal food and nesting areas are being developed, not only for upland game birds, but also shore nesting ducks. In no case have the fenced areas been so extensive as to prevent free access to the reservoirs by livestock for drinking purposes.

In addition to the establishment of shrubs and shore line plants, a desirable variety of aquatic vegetation, such as cat tails, bull rushes, sego pond weed, duck potatoes, wild rice and others have been planted in the water areas themselves. This will provide an abundance of food for ducks and also ideal nesting sites. This development of vegetation, particularly at the upper end of the reservoirs, will unquestionably lengthen their life, due to the effect of the vegetation in desilting the water which runs into the reservoirs.

The reservoirs thus far developed vary from several acres to several square miles in size.

POSTING

A project has been set up providing for the reposting, where necessary, of all game preserves and closed areas. This will be an important aid to sportsmen in locating the boundaries of these closures.

PURCHASE OF WILDLIFE AREAS

It is possible to purchase parcels of land through Restoration funds which are found to be of particular

importance to the development of wildlife. It is a policy of the Fish and Game Commission that, when any such purchase is contemplated, all interests would be consulted and that no such purchase would be made that would upset the local economy of the area affected.

It is also required that the Governor of the state must approve any contemplated purchase.

Upper Gallatin Game Range Unit

Negotiations are being carried out for the purchase of approximately 6,000 acres of winter elk range in the Upper Gallatin Canyon. This land belongs to the N. P. Railroad and lies within the Gallatin National Forest. It is located within the boundary of the winter range of the Gallatin elk herd. It has been leased to no one since 1918 and has been used since that time exclusively for elk.

Hemphill Tract

The Fish and Game Department is negotiating for 125 acres of land belonging to Mr. I. L. Hemphill lying west of Utica, on the upper Judith River range. This small tract is desired as its purchase will block out an area of slightly over 1,000 acres that was purchased in 1940. It will thus be possible to economically fence and manage the unit for the betterment of wildlife conditions in that area.

Dry Lake-Golden Valley County

Negotiations are being made to purchase a dry lake bed and a narrow marginal strip about the shore line, the total of which is slightly over 1,000 acres. The area is located 2 miles north of Ryegate. It is possible through the cooperation of the Montana Water Board to flood this lake bed and thus form an excellent feeding and nesting area for waterfowl.

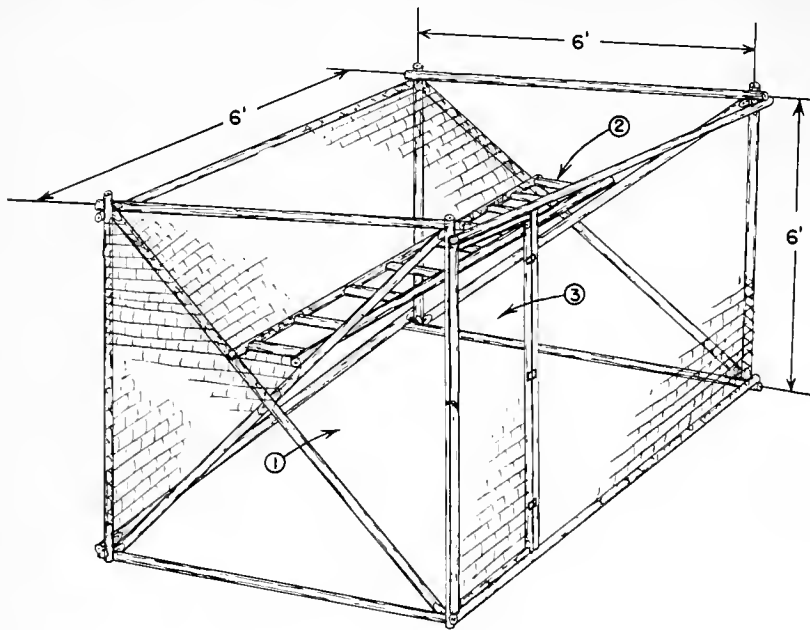
The tract is decidedly sub-marginal in character due to the present scanty vegetative growth and entire lack of water. The lands adjacent to the proposed purchase area will be materially improved due to the presence of a permanent body of water.



Trap for capturing Mule Deer on the north end of the Crazy Mountain Range near Lenep

MAGPIE TRAP

AS USED BY THE FISH AND GAME DEPARTMENT



DESCRIPTION

THE TRAP IS OF LODGEPOLE CONSTRUCTION COVERED BY 1 1/2 INCH CHICKEN WIRE.

MAGPIE ENTRANCE LADDER SHAPED ② AND OF 8 INCH SQUARES PLACED APPROXIMATELY 3 FEET FROM GROUND.

A WIRE STRETCHED FULL LENGTH ABOUT 4 INCHES DIRECTLY CENTERED BENEATH LADDER OR WIRES 8 IN. LONG HUNG BY EYE-HOOKS AROUND EACH OPENING HELPS PREVENT ESCAPING OF BIRDS.

BIRD ARE REMOVED THROUGH SIDE DOOR ③

SUITABLE BAIT IS STREWN OVER GROUND ①

Magpie Control . . .

Periodically, in this State, attention is brought to bear upon the number of magpies which seem to fluctuate from year to year. We have had a very favorable winter for our game animals and game birds, unfortunately, the magpies have had an easy winter also. From all indications and reports, these pests are more numerous than they have been for several years.

Because the magpie is a notorious egg robber and predator, he is condemned by ranchers, farmers and sportsmen alike. The need for some organized effort to control this pest is evident.

The State Fish and Game Department is operating several magpie traps such as the one illustrated. Poison has also been furnished to Deputy Game Wardens. However, poisoning magpies is a costly and tedious way to eliminate these birds since poison must be carefully handled and watched to prevent poisoning other birds and animals which are beneficial. The shooting of magpies by sportsmen and others interested in their control has been curtailed due to the lack of ammunition.

The construction and operation of magpie traps is, therefore, the best solution to reduce their numbers. Sportsmen's organizations and other interested groups are urged to have a number of traps constructed and placed in

operation, in cooperation with farmers and ranchers if possible. Magpie campaigns have been put on by sportsmen's groups in the past whereby a bounty or prize has been offered for the number of magpie eggs collected. This small bounty or price has enlisted the aid of young boys and Boy Scout groups and has proved successful.

M'CARRAN BILL

Senate Bill 1152, which provided for federal control of wildlife on federally owned lands, has been buried by its author. Concerted action by sportsmen, stockmen and interested individuals who believe in State Sovereignty helped the Senator decide that the bill was not wanted.

The first successful introduction of the Ringneck Pheasant in North America was made in Oregon in 1880. Since that time, acclimatization has taken place and this pheasant is found in many areas throughout North America.

It will take approximately 100 tons of horse meat and 50 tons of hearts and livers and 20 tons of rough fish such as carp and suckers to feed the fish that will be raised in the 12 fish hatcheries in the State of Montana during the coming season.

Montana Moose

Montana ranks third among the states in numbers of moose. Minnesota and Wyoming are first and second with Maine fourth.

These big fellows are rather widely scattered over the mountainous game ranges of the state. The most, however, are found in the following areas: the Absaroka, the North Fork of the Flathead, the South and Middle Forks of the Flathead, the Sun River, the Wise River-Bighole area, and the Rock Creek, Gallatin, Madison and Bitterroot ranges.

Slough Creek-Hellroaring Area

The heaviest moose population in the state is found within the Slough Creek, Buffalo Fork and Hellroaring drainages in the Absaroka National Forest, just north of Yellowstone Park.

The Commission assigned a two-man crew from the Restoration Division of the Department to spend several months during the summer of 1943 in the area. Between 250 and 300 moose were found inhabiting this picturesque and remote section. It is thought that the region became stocked by moose overflowing from the northern portion of Yellowstone Park during the years from 1925 to 1930.

By 1935 the important browse species, particularly the willow, began to show the detrimental effect of heavy game use coupled with the drought existing at the time. Range conditions have improved with the increased precipitation of recent years. The willow growth, however, is still retarded on several of the important meadows due to heavy use by both moose and elk. The moose are year around residents, whereas the majority of elk leave these ranges during the severe winter months.

An important point in regard to the sex ratio of the moose herd was brought out during the detailed investigative work. It was determined from the animals actually seen that 60 per cent were bulls and 40 per cent were cows. These figures were based on adult moose only. This obviously indicates a marked surplus of bulls. The calves made up 15 per cent of the entire herd which is believed to represent a satisfactory increase, particularly in the light of the predominance of males.

Due to the conditions that have been found to exist in this unit, it appears that a small annual take by hunters of mature bulls would materially aid conditions in that area. This type of management would tend to better balance the sex ratio and, therefore, increase the productivity of the herd. It would also leave more critically needed winter forage for the younger classes which are the most susceptible to winter loss.

It is unlawful in the State of Montana for any person to have in his possession salmon eggs or any imitation thereof, or to use salmon eggs or other fish spawn as a bait or lure.

Duck Migration Late . . .

The open season last fall on migratory waterfowl was a disappointment to many of the hunters throughout the State. Due to mild weather and lack of freezing conditions and snow in Canada the northern flight did not take place during the normal period.

Joe L. Schmitz of Brockton, Montana writes that several thousand ducks were feeding in his fields recently and they arrived on January 23, 1944, whereas in the past they have generally arrived during November and stayed until late in December. Observations similar to this have been made in many places throughout the State.

Many sportsmen's organizations have requested the Fish and Game Commission to recommend to the Fish and Wildlife Service that next year's season be extended so as to close at a later date.

New Licenses . . .

The 1944 fishing and hunting licenses will be on sale at all license dealers the latter part of April. All 1943 fishing and hunting licenses expire on April 30.

The new Montana Sportsman's license also will be available at all license dealers at that time. This license is a combination of the Resident Bird and Fishing License and the Resident Big Game License. It signifies that the holder has more than a commercial interest in fish and game.

The 1944 fishing and hunting regulation pamphlets, listing the open and closed season dates, closed streams, closed areas and bag limits throughout the State will be combined in one pamphlet this year and a limited supply will be available at your license dealers.



Bull Moose in the Slew Creek-Hellroaring country, Absaroka Wilderness Area

Notes on Spawn Taking

The following article is an endeavor to give a brief sketch of the activities and the methods employed in the taking of the many millions of eggs which are necessary to maintain all of Montana's Fish Hatcheries operating at full capacity.

Under the present procedure most all of the eggs which are used at the State Hatcheries are gathered from wild stock, the only exception at the present time being a few eggs which are taken from brood stock held at the Lewistown Hatchery. The theory has often been advanced that such eggs when taken from wild stock are inherently more adaptable to their natural habitat when released from the hatcheries after rearing. In addition to this, such egg collections can be made at a much lower cost to the Sportsmen as this eliminates the necessity of maintaining a large number of brood fish which must be fed throughout the entire year and as a consequence would be subject to infestations of parasites or bacteria, with the possibility that such entire stock might be wiped out in a short time.

Spawning Stations

The areas where the eggs are collected are known as Spawning Stations and as a rule are not located near any of the existing State Hatcheries. At the present time the Department is operating Spawning Stations at Alvord Lake near Troy, from which Eastern Brook eggs are collected and at Ashley Lake northwest of Kalispell, where Native egg collections are made. The Rainbow eggs are collected from several sources, namely, Bitter Root Lake, Lake Ronan, the Madison River, South Fork of the Madison River and Duck Creek, a tributary to the Madison River, and Willow Creek Reservoir near Harrison. The Spawning Stations on the Madison River, South Fork and Duck Creek are also used for the collection of Loch Leven eggs in the fall of the year.

Handling Eggs

One thing uppermost in the fish culturist's mind after the eggs have been taken from the brood fish is to transport them to the Hatchery as soon as possible where they may be placed in the water for incubation.

In transporting the eggs to the Hatcheries they are placed in trays or small cloth-lined containers which hold several quarts each. These are in turn placed in a case which may be packed with ice or snow and in these containers they may be hauled by truck for several hundred miles without any apparent damage. Upon arrival at the Hatchery, they are placed in large containers or tempering vats so that the temperatures of the hatchery water and the eggs themselves may be gradually brought to the same degree. After this they are placed in baskets or trays, depending upon the procedure used by each individual

hatchery, and a constant flow of water is maintained around them. The length of time required for hatching, of course, depends upon the temperature of the hatchery water itself. Some of the hatcheries, where water temperatures are consistently high, are capable of turning out fry within three weeks after collection, but we also have stations with consistently low temperatures where the hatching process may require almost two months.

There has been considerable publicity in recent months on the matter of obtaining what might be termed Early Rainbow eggs and for those who have not acquainted themselves with the reasons for this, the following is a brief explanation.

Early Rainbow Eggs

It is very desirable to obtain Rainbow eggs as early as possible for use in those hatcheries which have consistently low temperatures, due to the fact that if such eggs can be introduced into those hatcheries during the winter months of December or January, they have the opportunity of hatching and being ready for transfer to outside ponds in the early spring. This in turn clears the hatchery and allows room for the later eggs which would come in from the average spawning fields during the months of April and May. The eggs thus hatched from these late spawning species are usually held in the hatchery until those fish which have been rearing in the outside ponds have been distributed. Then those fish which were in the hatchery are transferred to the same outside ponds to be fed and reared throughout the winter and will be released the following spring as yearling trout and will have attained a size of five to eight inches. In brief, it allows the hatchery with limited space to raise a double crop in one year.

For a number of years in the past, the Department has been fortunate in obtaining Rainbow eggs during



Taking spawn on the Madison

The Northern Yellowstone Elk Herd

The hunter kill from the nationally famous Yellowstone elk herd was light during the past season. This was in line with the big game kill over most of the ranges of the state. Due to the unusually mild winter that prevailed, the game remained high and widely scattered.

The following tabulation indicates the hunter kill from the Northern Yellowstone elk herd for the past ten years. During this period, it may be noted that there have been four relatively mild winters, at least in regard to conditions effecting big game. The hunter kill during these periods was comparatively light.

1934-35	2,567	1939-40	122
1935-36	2,282	1940-41	273
1936-37	256	1941-42	2,071
1937-38	3,586	1942-43	6,464
1938-39	2,910	1943-44	125

It appears, due to light snow, abundance of available range and resultant widely scattered location of the elk herd, that a count will not be practical this spring. However, because of the fact that a very excellent count was obtained last winter when conditions were ideal for such work, it is possible to quite accurately compute the present number.

Kill by hunters (1942-1943)	6,464
Elk taken within the Park	691
Elk died from gunshot wounds	75
Total	7,230

the winter months from Eastern sources. However, due to the high feeding costs involved and the scarcity of feeding materials, many of the Eastern producers are being forced to suspend operations, and we have been seeking some other source of Rainbow eggs. It was with this thought in mind that an experiment was conducted on the Madison River last fall. It was noticed that a considerable quantity of Rainbow were accompanying the Loch Leven on their annual spawning run. While these Rainbow were not sufficiently developed for spawning at the time, it was realized that if they could be held in waters whose temperatures were not too low they might develop sufficiently to allow egg taking at a comparatively early date.

Acting on this theory, these Rainbow were transported to the traps on the South Fork of the Madison whose waters are principally spring fed and maintain a consistently higher winter temperature than the waters of the main Madison. The theories on this proved to be correct and on February 15, the first collections of Rainbow eggs were made, and other collections are being made at regular intervals of about one week apart. From the number of Rainbow which were held over for this experiment, it now appears that it will be possible to collect

Cooperative count, February 28th and March 1st, 1943, after the above listed kill	8,235
Winter loss from natural causes	872
Elk in herd spring of 1943	7,363
Calf crop at 20% of herd	1,472
Size of herd fall of 1943	8,835
Hunter kill 1943-1944	125

Present approximate size of herd8,710*

*This figure does not take into consideration the expectant 20% increase from the coming spring calf crop which will be added to the herd prior to next year's hunting season.

There is one very important point that should be taken into account when reviewing the above figures. This being: that the carrying capacity of the winter ranges upon which the herd depends has been computed at between 7,000 and 8,000 head. In other words, for the first time in a great many years the herd has been brought into balance with the amount of forage available on the critical winter ranges. All of us realize what this means. The specter of calamitous winter loss which stalks relentlessly across over-used winter ranges, is gone. We need no longer dread a repeat of the winter of 1899 when 5,000 elk perished. Or the never-to-be-forgotten winter of 1919 when the loss on the crowded winter ranges was estimated at 10,000. The waste during that single winter being approximately three and one-half million pounds of meat.

This, then, is the Northern Yellowstone Elk Herd, seen and enjoyed by thousands. It is truly a priceless heritage.

approximately 2,000,000 eggs which will be sufficient for the early seasonal requirements at our hatcheries.

Strenuous Work

Much could be said on the spawning activities as carried out during those seasons of the year when climatic conditions are most severe and the hardships which the personnel are often forced to undergo for the collection of such eggs. It was found necessary this winter even though it was a comparatively favorable one to employ the use of a motor toboggan for the transportation of feed and the eggs which were taken to the nearest highway that had been plowed open.

Anyone who has ever visited West Yellowstone during this season of the year needs no additional information as to the possibilities of the elements, and it was noted that the last collection was made with the temperature at 4 degrees below zero with a prevailing strong wind and snow. This in itself it enough to dampen the enthusiasm of anyone but the most confirmed fish culturist who, although conditions be adverse and unfavorable, is usually determined that the hatcheries shall not go without their whole quota of eggs for the coming season's operations.



WILLIAM J. DORRINGTON, Deputy Game Warden

WITH THE WARDENS

William J. Dorrington, Deputy Game Warden now stationed at Conrad, Montana, began work for the Fish and Game Department in July, 1909. The first district assigned to him was the area north of the Dearborn River to the Canadian line which was then Teton county with headquarters at Choteau, Montana.

The main mode of travel at that time was by saddle horse or spring wagon and the occasional use of the railroads. At that time Deputy Game Wardens received an annual pass over all railroads in the State. In those days before the common use of automobiles it would frequently take Bill two or three weeks to patrol parts of his district which then even included the area which is now Glacier National Park east of the Continental Divide. It was necessary for him to enter Canada and return into the States to reach the Belly River and Waterton Lakes area which are now in the Park. In case of an arrest in this area, he would have to return to the States through Canada with the violator and would have to secure the aid of a Mounted Police to escort him through Canada back into the States. The nearest Justice of the Peace was at Cut Bank, Montana, which took several days to reach.

Mr. Dorrington left the employ of the Department in December, 1914, for a period of eleven years during which time he was Ranger and Chief Ranger of Glacier National Park and Manager of the Park Saddle Horse Company. He returned to the Department in 1925 and worked at the Somers Fish Hatchery. Shortly thereafter Bill was transferred to Libby as Deputy Game Warden for that district. In 1941 he was transferred back home on the range to Shelby, Montana, and in 1943 moved to Conrad to be more centrally located in his present district which is a small part of the original area assigned him back in 1909.

Mr. Dorrington is a member of the Masonic Lodge and an honorary member of the Montana Cowboy association.

* * *

John R. Cook, Deputy Game Warden stationed at Glendive, Montana, reports that ice fishing in Fort Peck Reservoir has great possibilities as a major attraction for Northeastern Montana fishermen.

Perch are being caught through the ice weighing up to a pound and a half, which is considered very large for this specie in Montana. Good sized Rainbow trout are occasionally taken from the Reservoir, also ling which weigh up to five pounds.

FISH AND GAME VIOLATIONS

In January, 20 arrests were made for violation of the Fish and Game laws. Fines imposed totaled \$735.00.

There were 26 arrests in February and fines imposed totaled \$947.50.

FORMER EMPLOYEES NOW IN THE ARMED FORCES

J. P. Campbell	Bob Brink
A. A. O'Claire	Robert Casebeer
C. N. Lindsay	Wm. E. Schultz
R. H. Lambeth	Julius K. Stinson
Lester Newman	Burke Thompson
J. Thompson	Forest Keller
Waldo Vangsness	Ed Furnish
C. E. Willey	Bill Thompson
Don Brown	Ken Thompson
Donald Wright	Gene Sherman
Ben Whale	

Migratory birds which winter south of the equator return to the Arctic for summer. There is little or no migration to the Antarctic.

The antelope is the only hollow-horned animal which sheds the outer shell of its horns each year.

The Shrews are the smallest of all mammals in size and weight. They belong to the order of insect-eaters.

Montana's song bird is the Meadow Lark.
Montana's flower is the Bitterroot.



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