Oregon State
GAME COMMISSION BULLETIN

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Producing Oregon's Big Game Crop

By ROBERT U. MACE, *Chief Biologist*

Annual crops of deer, elk, and antelope are produced and harvested in Oregon and immeasurable values are attached to such harvests. The Oregon Game Commission is charged with maintaining the big game resource for the citizens of the state. Big game production is a business and must be managed on sound business principles.

Value of Big Game Crops

Hunting in Oregon is big business. Approximately 170,000 deer hunters and 25,000 elk hunters participate each year in harvesting big game crops. Although the value of the meat computed on the basis of butcher shop prices represents a sizable figure, this is but a portion of the total economic worth of the crop. Each sportsman expends considerable money in the purchase of equipment, transportation, food, and accessories essential for big game hunting. This wealth is distributed throughout the state and contributes directly or indirectly to the welfare of the entire population.

In evaluating big game crops, recreational worth must be considered. Although no dollars and cents price tag can be placed on recreation, it is of utmost value. Few sportsmen would be willing to part with the privilege of hunting at any price. Recreation derived from big game hunting promotes the physical, mental, and spiritual well-being of Oregon's citizens.

Information

A continuous supply of reliable information is essential for the proper administration and production of big game crops. In order to serve as a basis for regulation and management, such information must be secured on a state-wide basis. The Game Commission maintains a staff of trained personnel stationed throughout Oregon for the purpose of observing and recording conditions affecting all big game herds, as well as other game and fish species. Information is secured systematically each year and compared with past conditions to determine the status of the crops.

Of primary importance is a determination of the trend in big game populations. It is necessary to know whether game herds are increasing or decreasing in order to practice proper management. The percentages of males, females, and young in each big game herd indicate the rate of annual production and the effects of harvests. A measurement of mortality by weather, predators, malnutrition, crippling and other factors also is essential.

Of equal importance to information on

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SUPERVISORY MANAGEMENT DISTRICTS

Concurrent with recent expansions in several activities of the Oregon Game Commission's program, the establishment of district headquarters throughout the state is underway.

Two district headquarters have so far been established, one in La Grande and one in Bend. The La Grande office is to provide administrative facilities for the northeastern part of the state in connection with all aspects of the Game Commission's field operations, both for fisheries and game. The area covered from the La Grande office includes Wallowa, Union, Baker, Umatilla, Morrow, Gilliam, Wheeler and parts of Grant, Sherman and Jefferson counties. The administrative area of the Bend district embraces Central Oregon, consisting of the Deschutes and Klamath drainages, and including the counties of Klamath, Deschutes, Crook, Jefferson, Wasco and parts of Lake, Sherman and Hood River.

It is expected that three additional dis-

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A well managed program based on facts is essential to insure perpetual production of big game crops.

☆ THIS AND THAT ☆

Disappointing to thousands of dippers and sight-seers was the non-appearance of the spring smelt run in the Sandy river. This has happened nine times during the past 30 years, 1947 being the last year in which no run occurred. Not enough is known about the smelt to account for the irregularity of their appearances but it has been suggested that if stream conditions are not right in the tributaries, the fish might be remaining in the main Columbia to spawn.

* * *

Archers shot 59 deer and one elk during the 1949 hunting season according to final tabulation of the returns from the 788 archers issued permits, of whom 657 actually went hunting. The Tillamook Burn archery area furnished 45 deer, the Mt. Emily Reserve 8 deer and 1 elk, and Canyon Creek Reserve 6 deer.

* * *

Slightly more than 5,000 mature pheasants were included in the spring release completed by the end of March. The birds were liberated as breeding stock in sections of the state having a high reproductive potential.

* * *

Squaw Lakes in Jackson county, which the Commission heretofore has refused to stock because of inaccessibility to the general public without payment of fees, will now be planted with trout. An agreement has been reached with the owners granting free access to the lakes for purposes of fishing.

* * *

Two hundred and fifty tagged fish were liberated prior to the opening of the season in Mill Creek (Marion county) fishing in which, by legislative act, has been set aside for juveniles under 18 years of age. Cooperating with the Game Commission in a management program for this stream are the Salem Izaak Walton League, Salem Lions Club and the Salem Fur, Fin and Feather Club (junior sportsman club). The youngsters fishing the area are being asked to make reports concerning any recovered tags. A map of the area with information and material was prepared and is being distributed through this organization.

* * *

The stream clearance crew completing its job on Cedar Creek in Lincoln county reported it to be one of the most difficult yet encountered on the coast. The work has been done in conjunction with the Fish Commission.

* * *

Six acres of wheat have been planted by the Habitat Improvement crew on the reserve area adjacent to McKay reservoir in Umatilla county. This will not be harvested but will be left for a winter food supply for both waterfowl and upland birds.

Oregon State Game Commission Bulletin

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APRIL MEETING OF GAME COMMISSION

The regular quarterly meeting of the Oregon State Game Commission was held April 21 in Portland.

Bids were received for construction projects at six trout hatcheries, and awards totalling $110,325.00 were made as follows:

Teller Construction Company, $16,765, for nursery ponds and additional water system at Wizard Falls Hatchery.

Robert C. Wilson, $15,500, for a new dwelling and hatchery building at Willamette Hatchery.

Teller Construction Company, $33,759, for ten concrete nursery ponds at Fall River Hatchery.

R. and M. Construction Company, $3,675, for construction of bridge at Hood River Hatchery.

Teller Construction Company, $30,678, for construction of ponds, earth dams and installation of additional water system at Bandon Hatchery.

Henry Den-Herder, $9,948, for ponds and pipeline at Butte Falls Hatchery.

A contribution of $200 was made to the

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WINTER PHEASANT FEEDING EXPERIMENT

In the September 1949 issue of this bulletin, an article was published describing the results of a winter pheasant feeding study conducted at the Corvallis Game Farm using kale and waste seeds from cleaning plants instead of the usual wheat and pellet ration. It was found in that test that pheasants could be held over on that ration satisfactorily even under the most rigid weather conditions. It developed, however, that the kale did not last long enough to warrant the expensive procedure of planting it on each successive year. This process, although effective in producing excellent birds, raised the cost of the operation above that of the usual method of feeding birds; whereas, by feeding waste seed alone savings of from 50 to 75 percent of the winter feeding cost could be made in comparing costs with the regular ration used.

The same 100x100-foot plot was seeded to a grass turf in the summer of 1949 and was used to re-run the experiment this winter using the same number of pheasants and feeding just waste seed.

Eighty-five hens and 15 cock pheasants were weighed and released in the study area on September 16, 1949. These birds came from the same lot as were put in the regular holding pen. The 100 experimental birds were fed on a ration of waste seeds from September 16 until February 20, 1950, or a period of 157 days. During this period temperatures dropped as low as ten degrees below zero and an aggregate of 51.75 inches of snow fell. The birds were weighed when the test started; again on January 4, 1950, and finally on February 20, 1950, when the study was concluded. Each time a representative sample of birds from the regular holding pen was weighed to secure comparative data. The following table gives the weights for the various dates:

PHEASANT FEEDING STUDY WEIGHTS

Date	Weed Seed Pheasants		Reg. Ration Pheasants	
	Hens	Cocks	Hens	Cocks
Weighed	Av. Wt., Lbs.		Av. Wt., Lbs.	
Sept. 16, 1949	1.85	2.43	1.85	2.43
Jan. 4, 1950..	2.04	3.01	2.08	3.21
Feb. 20, 1950.	2.02	2.76	2.01	2.75

From the comparisons above, it can be seen that from the time the experiment started until the time of the next weighing in January the birds on both rations made a substantial increase in both weight and size. This was expected as they had not yet reached their full growth when placed in the feeding pen in September. The weather up until that time had been comparatively mild and did not induce heavy feeding among these pheasants.

When the last weights were taken at

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WARNER VALLEY WILDLIFE SITUATION

Warner Valley, located in Lake County approximately thirty miles east of Lakeview, is one of the sump-type, highly alkaline valleys common to the high desert country of Southeastern Oregon. Originally, the 170,000-acre valley was one of the best waterfowl nesting areas in Oregon and an important link in the Pacific Flyway system. In its present condition, the wildlife values have been reduced but not destroyed. The valley has been more or less isolated from centers of human population and markets by distance and conditions of existing roads. Consequently, its agriculture has been almost entirely livestock production, which is fairly compatible with wildlife. Recent road improvements have changed the economic aspect of the area in that agricultural products other than livestock have become profitable. This is bringing on reclamation projects, stream diversions and human molestations that are far less compatible with the maintenance of wildlife resources than the livestock operations of the past.

Development of this area is inevitable. If developments are for agriculture alone with no consideration for wildlife, a valuable and irreplaceable unit of wildlife habitat will be destroyed and a link in the Pacific Flyway system will be weakened. With proper considerations for habitat development and maintenance, wildlife values not only can be maintained but improved without material reduction in the agricultural output. Throughout North America, reclamation interests are draining marshes for agricultural purposes and fish and game interests are converting privately owned lands back into marshes for wildlife purposes. This is a very opportune time to combine the forces of agriculture and game into a well coordinated and carefully planned program.

The most important factor affecting both agriculture and game is water. The water supply has varied from 308,000 acre feet in 1910 to 24,800 acre feet in 1931 with a 26-year mean of 113,000 acre feet. This terrific variation creates a very unstable farming community and presents a difficult but not impossible problem in game habitat development, maintenance and management.

The wildlife program for this valley would be basically stabilization and control of water. Under the present conditions, much of the available water is wasted on shallow lake beds and alkali flats through evaporation. Late flood waters cause considerable flooding of nests and many of the good nesting areas dry up too early for best protection of the young. Under management, water would be diverted from the alkali flats and shallow lake beds to the channels, deep lakes and potholes until a certain

"I can read everything but the top two lines."

level is reached. After the desired level is reached, the late flood waters would be "sumped-off" to one or more of the North Warner lakes to prevent damage to nests and water controls.

Warner Valley lands are in three types of ownership. There are approximately 55,000 acres of privately owned land, 68,000 acres of federal land, 34,000 acres of state land under the jurisdiction of the State Land Board and 12,000 acres of lake-bed land regarding which there is a question of ownership. Not all of these lands have sufficient game potential to warrant much consideration by game interests. The 55,000 acres in private ownership are mostly wild hay meadows and grain lands and are so operated at the present time that they are not completely incompatible with game interests. The state and federal lands have a fair wildlife use at the present time and a very high undeveloped potential.

Plans for the reclamation of the 8,000-acre North Crump Lake Marsh have brought about considerable concern by wildlife interests. The Game Commission's investigation of this proposed project has disclosed that although the project will destroy about 1,800 acres of fair nesting area and 6,600 acres of brooding area, the diversion of water from an area of high evaporation loss can be beneficial to wildlife if consideration for the use of the salvaged water on other state and federal lands are included. Restoration procedures including the use of this water in Petri Marsh, South Crump Lake Marsh, and Fischer Lake area on State lands and in the lake beds and pothole areas on federal lands in North Warner would then compensate for the losses previously mentioned. The proposed game management program is in accord with this reclamation program *providing* adequate restoration facilities are made available. This would require setting aside by executive order certain federal lands for wildlife use, management and development of the previously mentioned areas on state lands and the acquisition of all water above the present adjudicated rights. The executive order for the federal lands has been requested, the State Land Board has been advised of our plans and needs, and water rights will be applied for when the wildlife lands become available upon which to file.

Recent proposals for drainage of Petri Marsh have caused considerable alarm. This marsh differs in composition from the North Crump Lake Marsh to such an extent that its loss through reclamation would be irreparable. Game interests consider Petri Marsh to be indispensable to wildlife, especially so after the North Crump Lake Marsh project is installed. The wildlife program proposed for Warner Valley is basically the development of waterfowl nesting facilities and the maintenance of the habitat as an important link in the Pacific Flyway. Open hunting areas would be provided for the public. However, it is doubtful that a controlled hunting system such as that at Summer Lake or Sauvies Island would be necessary in the near future because of the size of Warner Valley and its distance from centers of dense population.

Development of Warner Valley is underway and unless the needs of wildlife are recognized and allowed another "Duck Factory" will be closed.

Winter Pheasant Feeding Experiment

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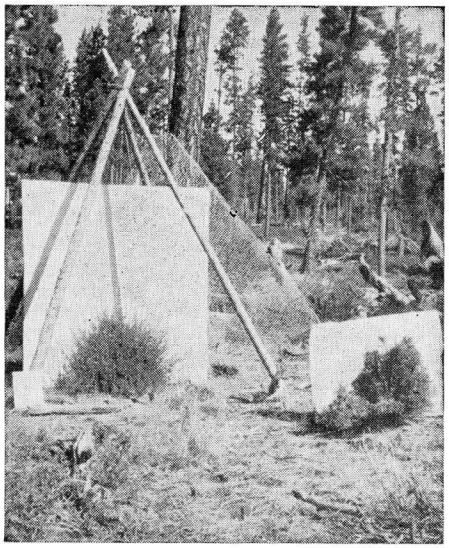
the close of the study 47 days later on February 20, 1950, both groups of birds were in poorer flesh than they had been in January although still in good condition. This is also considered natural, and is attributed to the very severe weather conditions that existed during this latter phase of the study period. Most of this time temperatures were at freezing or below and part of the time dropped below zero. The fact that both groups lost weight during this time indicated the common effect of weather influence.

During both these feeding tests, conditions were ideal from the research angle. The past two winters have been two of the most severe in the history of western Oregon. Under such conditions the experimental ration proved to be highly satisfactory in carrying breeder pheasants through the winter. No conditions of maladjustment occurred among the birds and only one hen was lost in the experimental pen through predation.

The tests have been carried far enough to determine that a substantial saving of money probably amounting to several thousand dollars annually to the state can be made by following this practice. This procedure would likewise make possible the winter holding of hens for spring releases instead of during the fall, therefore, insuring better reproduction. The holding cost would be extremely practical.

A mole can move an object thirty-two times its own weight.



A protected plant and an exposed plant demonstrate clearly the extent of forage utilization on deer summer range.

PRODUCING OREGON'S BIG GAME CROPS

(Continued from Page 1)

the animals themselves is factual data on food, water, cover, and other environmental features upon which the big game herds are dependent for survival. Adequate food at all seasons of the year is probably the most important single factor controlling the annual crop.

Producing Big Game Crops for Harvest

In producing big game crops many practices are employed. All possible measures to perpetuate sustained annual harvests are investigated but many have proved impractical or unsound. It is important to discuss the reasons why various management procedures are or are not effective.

Hunting regulations are easily applied and prove valuable in producing big game. By closing the season, it is possible to protect vulnerable breeding herds where the removal of any animals is inadvisable. Big game species are polygamous, one male being sufficient for several females, and surpluses of males are produced. Such surpluses can be harvested under appropriate regulations, thus protecting the females without materially affecting production. By protecting spikes, or yearlings, hunting regulations serve to insure the preservation of adequate males for future breeding purposes.

Refuges and closed areas are similar in effect to hunting restrictions on seasons and bag limits. The major refuges in Oregon were established by the Legislature during a period when big game numbers were low. Such refuges were effective in protecting game herds, particularly mule deer, to the extent that populations increased beyond the ability of winter food supplies to maintain them. Legislative refuges proved inflexible with time and the Game Commission authorized hunting in order to harvest surplus animals. Temporary closures are more effective in management than permanent refuges. Such closures are established on ranges where information reveals that protection is necessary and are subject to prompt revision as circumstances require.

On some ranges predators, particularly coyotes, may jeopardize the crops of big game available for harvest. Where competition with the hunter for the crop is of importance, predator control is justified. Predation is heaviest among the young animals from the time of birth until the end of the first winter. In the case of pronghorn antelope, observations revealed that coyotes were partially responsible for low fawn survival during the early 1940's, necessitating a closed season in 1946. Coyote control programs were subsequently initiated on antelope ranges, particularly on the fawning grounds. The effectiveness of these controls was substantiated by increased fawn survivals. Increased antelope crops permitted an open season during 1949 when 929 antelope hunters harvested 586 mature bucks.

In the production of big game, mineral requirements must be considered. Although natural salt licks are present on some ranges, such sources are many times inadequate. The greatest demand for salt and other minerals exists in the early spring during the period when the animals consume large quantities of green forage. Spring salting programs are carried out in all districts where information reveals that a need exists. Due to the inaccessibility of spring ranges, airplanes are used to distribute salt. Before this work is conducted, plans are prepared in order to insure proper distribution and prevent interference with established salting programs carried out by livestock men. In addition to furnishing a necessary requirement in the diet, salting is utilized to influence an earlier migration of big game from problem wintering areas and to effect a more equitable distribution of the animals.

Availability and proper distribution of water sources are important environmental factors to consider in the production of big game. Development of water, in conjunction with salting, is employed to encourage better distribution of big game on summer and fall ranges. This is particularly true in the more arid sections of southeastern Oregon where water is a limiting factor. Pronghorn antelope and, to a lesser degree, mule deer, are the species most affected. Water developments are mainly in the form of earth reservoirs constructed to trap excess runoff water and retain it for big game use throughout the dry summer months. Developments are constructed on a cooperative basis by the Game Commission and the public land administrative agency concerned.

Big game animals will generally occupy habitat which provides essential requirements for their livelihood. In certain instances where ranges are isolated and natural distribution does not occur, trapping and transplanting is an effective management procedure to further increase the available crop. Before transplants of big game are made, the requirements of the game species and the environmental features of the proposed site must be considered. Failure to do so results in a waste of time and money.

Trapping and transplanting is applicable in the case of native big game forms and those which are not currently present in the state when a study of conditions reveals that success can be anticipated. Favorable conditions for trapping are limited, the procedure is expensive and the venture is precarious and difficult at best.

On some ranges of the state, big game animals are not compatible with other economic interests, particularly agriculture. Successful production of big game in such areas should be based upon recognition and control of game damage so that conflicts are reduced to a minimum. Each damage situation must be handled as an individual problem. Control is ex-

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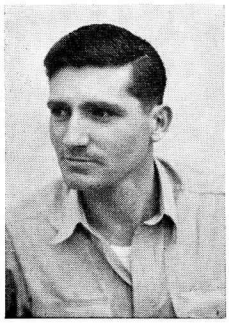
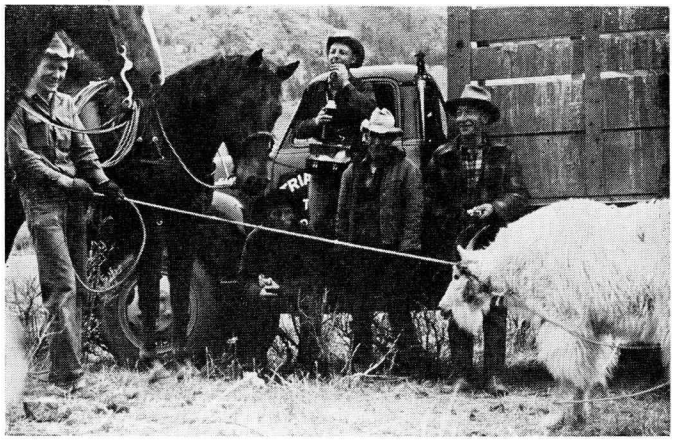
ABOUT THE AUTHOR



Long-legged Bob Mace (see picture page 6), chief biologist in charge of big game for the Oregon State Game Commission, has no trouble covering elk and deer ranges when the course of his duties calls him into the field. Mace, a graduate of Medford High School and of the Fish and Game Management course at Oregon State College, is well equipped by training and experience for his job. Prior to his graduation in 1942, he was hired by the Grazing Service to do range survey work at Burns. After he finished college, he joined the Soil Conservation Service as a junior range conservationist in New Mexico.

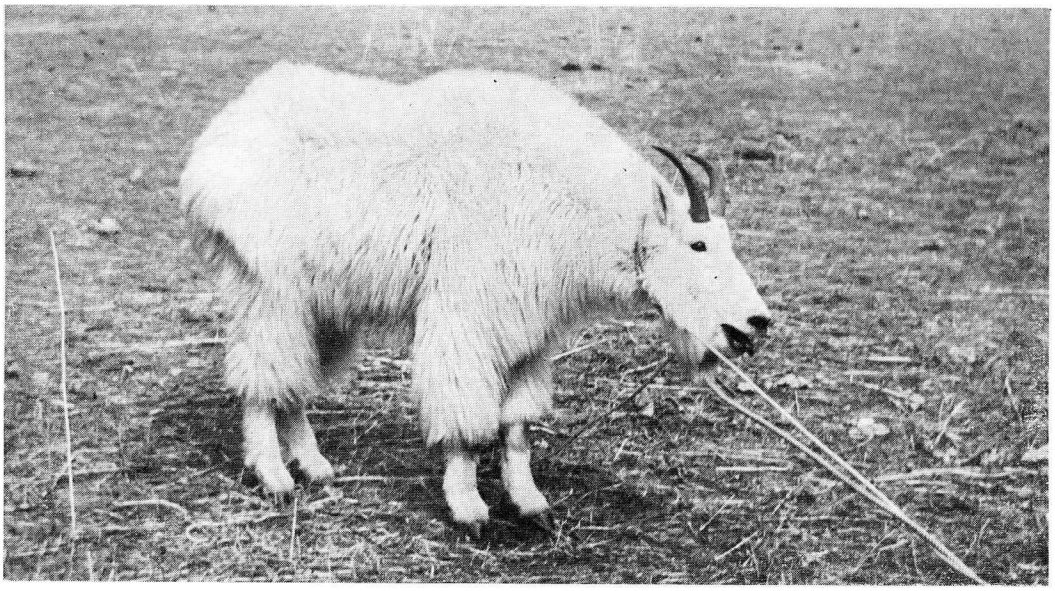
Three of the war years were spent with the Navy and upon his discharge in 1946, he began work with the Oregon Game Commission. His first assignment was on the interstate deer study project and later, because of his range experience, he was brought into the Portland headquarters to help in the big game section. In January, 1948, he was appointed to his present position, which brings him face to face with the complex problems of big game management.

MOUNTAIN GOATS COME TO OREGON



Fourteen local rancher buckaroos assisted Oregon game men with the trapping and loading of goats.

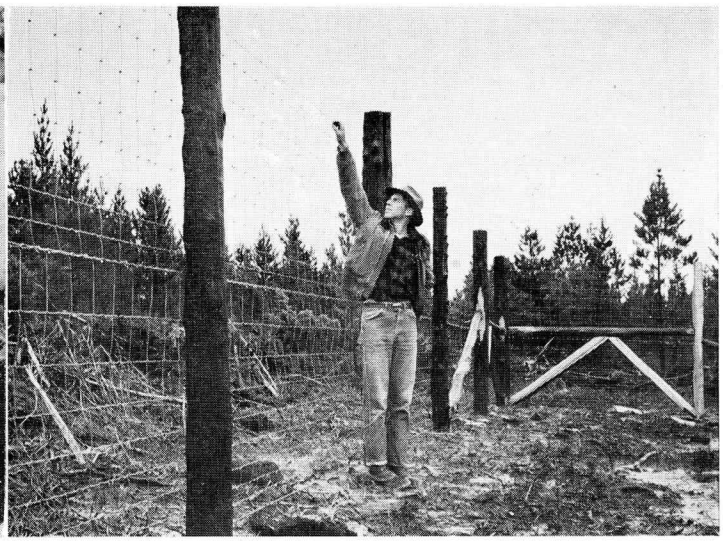
Goats were transported to head of Wallowa Lake and released on the east slope of Chief Joseph Mountain.
(Photo by L. D. Bailey, U. S. Forest Service)



The six goats trapped during March in the Chopaka Mountains of Washington state near the Canadian border and hauled to Wallowa county constitute the first known introduction of this species in Oregon. There is no evidence indicating that the animals ever existed in this state. The Game Commission plans additional transplants next year.

After the goats had been driven into the trap, they still had to be brought down the steep mountainside to the nearest road about one mile away. The kid in the picture on the left managed very nicely riding horseback. The mature goat on the right, however, demonstrates the sliding, pulling and hauling involved with the older animals.

An intimate knowledge of the causes of winter game losses aids the game manager in planning future crops.



A deer-proof fence is a practical solution to eliminate the problem of high value agricultural crop damage.

PRODUCING OREGON'S BIG GAME CROPS

(Continued from Page 4)

tremely difficult where agriculture is practiced on, or adjacent to, natural deer, elk, and antelope ranges where continuous conflicts can be anticipated as long as crop production is continued. Successful control necessitates a recognition of responsibility by all concerned, including landowners, sportsmen, and the Game Commission.

Some standardized methods of damage control have been developed but cannot be applied in all cases. When a few animals are involved, the offenders can be removed under permits issued by the Commission pursuant to legislative authority. Such removal is effective where little possibility exists for an influx of additional animals.

In the case of high-value crops of limited acreages where continuing damage can be expected, the most economical and effective solution involves the construction of game-proof fences. Provision of adequate fences through cooperation between the Commission and concerned landowners will result in controlling damage so that agricultural and big game crops can be produced compatibly.

Where damage occurs on haystacks located adjacent to winter ranges, protection can be afforded by means of lumber panels loaned for that purpose by the Commission.

On ranges where big game populations exceed available food supplies and damage cannot be controlled by other methods, populations can be balanced and damage alleviated by means of controlled hunting seasons aimed at removing surpluses of animals.

Of primary importance in big game production are adequate food supplies throughout the entire year. A knowledge of nutritional requirements is necessary in determining the adequacy of big game diets. Food shortages are most critical during the winter months, particularly in eastern Oregon. Here successful production of mule deer is dependent upon the availability of an ample supply of shrubs which furnish needed protein. In addition to supplying protein, shrubs remain available for use by deer during periods when crusted snow conditions render other classes of forage plants inaccessible. Elk are able to subsist on grass through the winter months and can be produced where quantities of such forage is available.

Because of deep snows in eastern Oregon, deer are forced to concentrate during the winter months at lower elevations. Generally, winter ranges are characterized by shallow soils and low moisture supplies, resulting in poor forage growth conditions. Vegetation is consequently sparse, limiting the numbers of livestock and big game that can be produced.

Opinions are expressed in regard to the possibility of the Game Commission purchasing all big game winter ranges in eastern Oregon. Such a program might be feasible on some areas. However, much of the winter range is privately owned and is essential for maintenance of livestock. Purchase for the exclusive use of big game would seriously hamper the livestock industry and affect the economic stability of many communities. In addition to being extremely expensive, purchase of all such ranges would not materially improve wintering conditions for big game. Problems are most apparent in the case of mule deer which depend upon adequate shrubs for browse during the winter months. Removal of all livestock would have little effect upon browse plants which are utilized lightly by these animals during the spring and early summer grazing season and competition becomes serious only if use is continued throughout the late summer and fall. On the other hand, deer feed mainly upon the shrub species and serious conflicts with domestic livestock are limited to the use of green grass and weeds for a short period during the early spring before migration to high summer ranges. It is evident, therefore, that most efficient use of range forage resources can be obtained by permitting proper use by both game and domestic animals. A limited degree of competition must be accepted by all concerned if maximum benefits are to be derived from ranges used by big game during the winter and livestock during the spring and fall.

A great deal of research has been conducted in the field of artificially improving big game ranges by means of reseeding. In order for plants to become established, it is necessary that the ground be prepared before seeding. The rough, steep, and rocky condition of most winter ranges limits the area which can be tilled to an extremely small percentage of the whole. Protection from grazing is essential on reseeded ranges if a stand of grass is to be secured. Livestock can be controlled by fencing but this is impractical in the case of big game.

Reseeding shrubs offers little hope for success since deer use cannot be controlled and young plants are consumed before they have an opportunity to become established. It is quite evident that reseeding operations are subject to limitations as long as grazing animals continue to utilize the range. As a general rule, natural plant species have demonstrated an adaptability to the environment on any particular range and will reseed and prosper if not abused by overgrazing.

The possibility of providing artificial supplements in the form of hay and pro-

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GENERAL PROGRAM OF OREGON STATE GAME COMMISSION

In the April issue of the *Bulletin* there was included a statement of general policies recently adopted by the Oregon Game Commission. An outline of the program for carrying out these policies is now presented.

PROGRAM

The program embodying the general policies adopted by the Oregon State Game Commission employs all available methods for achieving the highest sustained use of the game and fisheries of the state, limited only by the financial resources of the department.

GAME RESOURCES

I. MANAGEMENT SHALL BE BASED UPON FACTS

The program will utilize the following procedures:

1. Field agents to maintain continuous vigilance on all available habitat to determine population trends, carrying capacities and limiting factors for all game species.
2. The Oregon Cooperative Wildlife Research Station to design and test techniques for measurements and management of Oregon's game resources and undertake other basic research problems confronted by the Commission.
3. Information from other agencies, groups or individuals will be received at scheduled public hearings and given careful consideration along with factual data secured through the Commission's programs.

II. COOPERATION SHALL BE MAINTAINED WITH OTHER AGENCIES AND GROUPS

(See Policy)

III. IMPROVEMENT OF HABITAT SHALL BE VIGOROUSLY CARRIED OUT

Since wildlife is a product of the soil and the vegetation that grows thereon, maintenance of optimum game populations is directly dependent upon conditions prevailing on the land. Maintenance or development of suitable habitat is dependent upon land use and is, therefore, under control of the landowner or land-administering agency.

Improvement of habitat for wildlife is necessarily a long-range program. Cooperative working agreements with interested agencies and groups are a sound approach to the problem, but they are of limited application. The Commission can develop plans and procedures which can be demonstrated on relatively small areas; but on the large, practical scale most improvement must result from the activities of enlightened landowners. Private landowners generally cannot be expected to carry on wildlife habitat improvement practices unless there is some economic incentive.

1. Cooperative agreements with responsible conservation or landowning groups is often a desirable procedure and they may be entered into as opportunity arises.
2. Educational information will be disseminated to the public at every opportunity. Values other than wildlife habitat will be emphasized.
3. An economic incentive to the landowner is the best insurance for the success of a recommended practice. Examples of such mutually beneficial practices which will be encouraged are: planting of fence line hedges and windbreaks; planting for erosion control; developments of springs and farm ponds; and fencing of woodlots to prevent grazing.
4. The scope of the Game Commission habitat improvement activities shall be:
   a. To test practices and develop plans for the improvement of wildlife habitat for all game species.
   b. To direct attention to the desirability of establishing such practices and, wherever possible, point out any multiple-use values.
   c. To participate financially in the development of certain cover, food or water improvement projects on public as well as private lands when such projects are approved by the Commission.
   d. To provide technical assistance in the matter of habitat improvement to anyone upon reasonable request.
   e. To provide materials, such as plants and seeds, under certain limitations, to cooperating landowners.
   f. To establish demonstration areas for the purpose of testing practices and demonstrating recommendations to the public.

IV. PUBLIC SHOOTING AREAS SHALL BE MAINTAINED

The Commission proposes to enter into cooperative agreements with landowners or other agencies for the purpose of providing public access for hunting and fishing whenever conditions warrant such action.

V. BIG GAME SHALL BE MANAGED TO ASSURE THE HIGHEST SUSTAINED UTILIZATION

To assure continued high level of production of big game in eastern Oregon, the Commission will:

1. Cooperate in programs for rehabilitation and improvement of problem game ranges.
2. Lease or purchase critical winter ranges where competition by other uses are a hazard to maintenance of big game herds when doing so will not unduly interfere with the economy of any particular community, district, or the state.
3. Effect a more equitable distribution of big game animals by protecting under-stocked ranges, salting, developing waters, etc.

The Commission recognizes that it is not practical to attempt to produce or maintain big game animals on agricultural lands; however, invasions of agricultural lands can be frequently expected and the Commission's program will be to control such depredations by the following methods:

1. Apply mechanical and chemical repellents.
2. Assist landowners in fencing high-value crops and haystacks where continuous problem can be expected and removal of animals is impractical.
3. Harvest offending animals by special seasons or permits to complainants.
4. Continued search for new methods of control.

VI. UPLAND GAME SHALL BE MANAGED TO ASSURE THE HIGHEST ANNUAL UTILIZATION

The following procedure will be applied to assure maintenance of small game species, a fuller utilization of the available habitat and a maximum of recreation for the public.

1. Continue artificial propagation and release of game birds for the purpose of:
   a. Stocking depleted coverts in suitable habitat.
   b. Salting heavily hunted areas and public shooting grounds.
   c. Introducing new species.
2. Game birds or animals will not be released on private shooting preserves.
3. Improve characteristics and vigor of pheasants by procuring breeding stock from native habitats and selectively breeding for desired characteristics.
4. Introduce those exotic species that appear after thorough investigation to have potentialities and will not conflict with other land uses.
5. Trap and transplant valley quail, Hungarian partridge and other native or established exotics that do not have an equitable distribution over the available habitat.
6. Maintain a system of refuges in heavily hunted areas.
7. Design hunting seasons and methods that will harvest only known surpluses, be most compatible with landowners, and provide a maximum of recreation without hazard to resources.
8. Enter into cooperative agreements with landowners to increase game production and provide access for public to hunt.
9. Increase quantity and productivity of habitat by providing essential requirements of small game where practical.
10. Recognizing that high densities of small game species may cause damage to agricultural crops, the Game Commission will hold species at compatible levels by adjusting the annual harvest.

VII. MIGRATORY BIRDS SHALL BE MANAGED ON THE BASIS OF THE CONTINENTAL PACIFIC FLYWAY

(See Policy)

VIII. FURBEARERS

(See Policy)

IX. PITTMAN ROBERTSON PROJECTS

The program shall generally proceed as follows: In the acquisition, development and maintenance of:

1. Waterfowl nesting, resting, and feeding areas.
2. Public shooting grounds.
3. Big game winter range.

Special investigation projects may be undertaken as Federal Aid projects from time to time when it is determined that the designated research unit is unable to assist.

GAME FISH RESOURCES

X. MANAGEMENT SHALL BE BASED UPON FACTS

In general regulation shall be accomplished by:

1. Competent field staff to maintain continuous vigilance on all available waters to determine population trends and composition, limiting factors, and general conditions of each fishery of the state.
2. Adequate and continuous research directed at determining additional facts, and the development and use of techniques applicable to a practical fishery program.
3. Inventory and development of all game fish resources now present to maximum production and the development of any additional fisheries found possible through investigation.
4. The spiny-rayed fisheries shall be developed in those waters adapted to such species and in a manner in which the salmonoid fisheries will not be endangered.
5. Information from other agencies, groups, or individuals will be received at scheduled public hearings and given careful consideration along with factual data secured through the Commission program.
6. An aggressive program of survey and development of all waters of the state, including newly created impoundments, shall be carried out to utilize every possible unit of habitat for fishery production.

XI. MAINTENANCE AND IMPROVEMENT OF HABITAT

The general pattern of achieving to the highest degree possible this objective shall, in general be:

1. Continuation and expansion of existing and potential activities such as lake rehabilitation, a fishways and screen program for barriers and diversions, appropriate physical stream improvement, and such other procedures now or potentially available to the improvement of individual fisheries environment.
2. Active encouragement, support, and assistance to those other agencies primarily concerned with problems associated with the water resources, and such other agencies engaged in related resource management which may directly or indirectly affect our waters.
3. Active participation in the development of a basic water policy for the state which recognizes fishery production as one of the important uses of our waters.
4. Maintenance of research directed at developing additional techniques applicable to fish habitat improvement and the testing of presently available tools as to their validity in various areas of the state to the end that the most economical use of funds shall be achieved.

XII. FISH PROPAGATION

(See Policy)

XIII. FISH LIBERATIONS

The distribution of hatchery reared fish to the various waters of the state shall be made equitably under the following criteria:

1. Type and volume of water in relation to available species.
2. Current population, trend, and composition of fish present.
3. Angling pressure and accessibility of water.
4. Natural capacity of each water to support releases made therein.

XIV. RESEARCH

(See Policy)

ALLIED ACTIVITIES

XV. GAME LAW ENFORCEMENT

A continued study of existing and proposed game laws is being vigorously pursued for the purpose of recommending the repeal of obsolescent statutes and the simplification of present and proposed legislation.

XVI. PUBLIC RELATIONS

Under the program, public relations activities shall embrace the fields of information and conservation education to the end that a substantial contribution will be made by the Game Commission to a better understanding, appreciation and utilization of fisheries and game resources. Among the important methods of achieving this, the following will play an important part:

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P. O. BOX 4136
PORTLAND 8, OREGON

Supervisory Management

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tricts will be established in the near future.

The problems and duties of fish and game management, like all natural resource management, has in recent years developed into a highly complex series of operations and functions, and it is the purpose of the Commission in establishing district facilities to make possible the most efficient and modern methods of handling the sustained use of our fishery and wildlife resources. In addition, the predicating of the field program upon resident personnel engaged daily in the necessary tasks of management assures a much closer and more precise knowledge of the status of the resources.

Will Brown, formerly district game agent at Grants Pass, has been appointed district supervisor at La Grande for the northeastern district. Brown was with the Game Commission prior to the war, leaving the department as a reserve officer to serve in the Army during the war, where he participated in several of the European campaigns and in the Aleutians. He returned to work with the Oregon Game Commission in the capacity of district game agent at Grants Pass and has had a wide experience in the field of game management. Brown is a graduate of the Department of Fish and Game Management at Oregon State College.

L. M. Mathisen, supervisor for the Bend District, likewise worked for the Commission before the war, leaving during the early part to enter the armed service. Upon returning from the service, Mathisen was stationed on the Lower Umpqua in connection with the Umpqua River program and has had a wide experience in the original stream and lake survey program followed by participation in several of the rehabilitation projects subsequent to that time. Mathisen is also a graduate of the Department of Fish and Game Management at Oregon State College.

April Meeting of Game Comm.

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KEEP OREGON GREEN ASSOCIATION as an aid to protection of game habitat.

Representatives of several sportsmen's groups were present to discuss the Warner Valley situation.

PRODUCING OREGON'S BIG GAME CROPS

(Continued from Page 6)

tein concentrates for big game during the winter months is often raised. Artificial feeding may be justified for short periods during severe winters when snow conditions prevent utilization of vegetation otherwise abundant enough to support the animals. Most programs aimed at sustaining big game populations each winter on ranges where natural forage is inadequate have proven impractical in Oregon as well as in other western states. Hay and other artificial substitutes do not provide the balanced diet essential for the maintenance of big game. Domesticating the animals by means of a bread line decreases sporting value from the standpoint of hunting. The most important argument against artificial feeding is that such a program contemplates maintenance of big game herds in excess of natural food supplies. Since artificial substitutes cannot adequately provide a balanced diet, over-use of shrubs and other plant species continues unabated. The eventual result is a destruction of plant cover and the acceleration of soil erosion. Decreases in big game as well as other wildlife species closely parallel the loss of soil and plant cover.

Production of big game crops on winter ranges where important forage species are limited is dependent upon balancing the number of animals with the available food. This can best be accomplished by removing animals in excess of the food supply. Sportsmen are best qualified to effect such removals. Failure to grant sportsmen the privilege of harvesting surplus big game crops results in wasteful losses by malnutrition and other manifestations of over-grazed ranges. Big game management must anticipate food shortage problems by granting sportsmen the privilege of removing animal surpluses, thus beating Nature's harvest by malnutrition to the draw.

Big game in Oregon represents an important resource. The Game Commission is charged with administering this resource to the end that harvestable sustained crops are produced. In order to manage the resource on a business-like basis, all factors affecting big game species over the state as a whole must be considered in the light of continuous and reliable information.

Many practices are employed in the production of big game crops. It is necessary to understand the reasons and objectives of management as well as the limitations which render certain procedures impractical. Only by recognizing facts and planning management on the basis of such facts are we to realize full returns from Oregon's big game crops.

The young of big game animals, such as this antelope kid, are vulnerable to predation by coyotes and must be protected.

(Ed. Continuing the big game story, a second article by Mr. Mace entitled "Harvesting the Big Game Crop" will be published in the June *Bulletin*).

General Program of O.S.G.C.

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1. Press releases.
2. Publications and brochures.
3. Visual aids.
4. Public contact and talks.
5. Cooperative juvenile education projects.
6. Displays.
7. Radio.
8. Printing mat service.

XVII. POLLUTION CONTROL
(See Policy)

XVIII. ORGANIZATION

To predicate the management of a natural resource upon on-the-ground stewardship of species which manifest constantly changing conditions it is considered essential to have an administrative organization equipped to conduct the most modern methods of management.

In order to operate in an economic manner, maintain accurate knowledge of the conditions of the resource, provide a public service and to exercise the functions of the department with dispatch, administrative headquarters based upon ecological zones of the state shall be maintained. These shall represent the Commission in the respective localities and provide an administrative vehicle for coordinating the various functions in the respective districts.