A Proposed

AMERICAN GAME POLICY

To be Discussed at

THE SEVENTEENTH ANNUAL
AMERICAN GAME CONFERENCE

New York City

December 1-2, 1930

This policy has been drafted by a Committee of the 1928 Conference. It vitally affects every sportsman, nature-lover, conservation officer, farmer, lumberman, stockman, educator, and biologist. You are invited to attend the Conference and to help discuss it.

American Game Conference

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Report to the National Game Conference on

AN AMERICAN GAME POLICY

Introduction

Demand for hunting is outstripping supply. If hunting as a recreation is to continue, game production must be increased. Where? How? By whom? For whom? These are the questions with which a game policy must deal.

In the case of ordinary economic products, the free play of economic forces automatically adjusts supply to demand.

Game production, however, is not so simple. Irreplaceable species may be destroyed before these forces become operative. Moreover, game is not a primary crop, but a secondary by-product of farm and forest lands, obtainable only when the farming and forestry cropping methods are suitably modified in favor of the game. Economic forces must act **through** these primary land uses, rather than directly.

It is axiomatic that timber and farm crops must be bought and sold, otherwise they would not be produced at all. Is this also true of game? Some say yes, but the majority adhere to the deep-rooted American pioneer tradition that hunting is a free privilege, and insist that it can be kept so, in spite of the contrary pressure of economic law.

The two opposing schools of thought have so far nullified each other, because the proponents of each have insisted that the two ideas cannot co-exist; that one must prevail to the exclusion of the other.

This Committee contends that they can and should co-exist, each on its appropriate kind of land, and often in close proximity to each other.

We submit that public hunting under the license system is workable for game species inhabiting cheap land which the public can afford to own (or lease) and operate, but that compensation to the landowner **in some form or other** is the only workable system for producing game on expensive private farm land.

We submit that recognition of this principle, and a spirit of mutual cooperation in acting upon it, will bend the two hitherto opposing schools of thought to a new and common direction.

We do not pretend to foresee or prescribe all of the detailed actions necessary to accomplish this. This report, however, segregates certain fundamental moves which have this new and common direction. We urge all factions to cooperate in executing them, and to let experience dictate succeeding steps.

We believe, in short, that experiment, not doctrine or prophecy, is the key to an American Game Policy.

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Seven fundamental actions are recommended (Part A) for adoption by the American Game Conference as an American Game Policy.

An appendix (Part B) presents in additional detail how the seven fundamental suggestions were arrived at by the Committee, and describes such ways and means as are known to it for carrying them out. These particular ways and means are not offered as final. Better ones may be developed by experimentation.

The proposed policy offers no panacea. We urge frank recognition of the fact that there is no panacea; that game conservation faces a crisis in many states; that it is only a question of time before it does so in all states; that the present order is radically unsatisfactory; and that mild modifications of it will not do. We are convinced that only bold action, guided by as much wisdom as we can muster from time to time, can restore America's game resources. Timidity, optimism, or unbending insistence on old grooves of thought and action will surely either destroy the remaining resources, or force the adoption of policies which will limit their use to a few.

COMMITTEE ON GAME POLICY

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(A) GAME POLICY

Need of Game Management

Game can be safely hunted only when the stock on each parcel of land is protected against overkilling and provided with cover, food, and some protection from natural enemies. These provisions constitute game management.

The present system of restrictive legislation cannot prevent overkilling without prohibition of all shooting and never provides cover or food, except by accident. Continual restocking of range not provided with protection, cover, and food is no remedy. Hence in the long run the present system holds out no hope of conserving game, unless it is supplemented by game management on a large scale.

Inducements for Landowners

Only the landholder can practice management efficiently, because he is the only person who resides on the land and has complete authority over it. All others are absentees. Absentees can provide the essentials; protection, cover, and food, but only with the landholder's cooperation, and at a higher cost.

With rare exceptions, the landholder is not yet practicing management. There are three ways to induce him to do so:

1. Buy him out, and become the landowner.
2. Compensate him directly or indirectly for producing a game crop and for the privilege of harvesting it.
3. Cede him the title to the game, so that he will own it and can buy and sell it just as he owns, buys, and sells his poultry.

The first way is feasible on cheap lands, but prohibitive elsewhere.

The second is feasible anywhere.

The third way is the English system, and incompatible with American tradition and thought. It is not considered in this report.

There Are No Other Alternatives

Even if the system still prevalent in most states were effective in producing a game crop, it is increasingly ineffective in maintaing free public hunting on farms, because as hunters increase, trespass becomes a nuisance, and posting follows. Closed seasons, posting, or both, are the inevitable result on farm lands.

The attempt to stave off posting by exchanging free public hunting for free public restocking is insufficient, because it gives the landowner no stake in the welfare of the game. The less the game thrives, the less will be the trespass nuisance he has to endure. Moreover, it is applicable only to species which can be restocked by artificial propagation or by buying the excess wild stock of other states or countries. The end of purchasable wild stock is in sight.

Moreover public restocking of private lands is prohibitive in cost. One license will usually plant just about one bird.

Kinds of Land and Classes of Game

Game land is of two kinds: (A) that which is cheap enough for the public to buy and manage, and (B) that which is too expensive for the public to buy in quantity, and which therefore must be managed by the present owners, or not at all.

Game is of four classes:

I. Farm game, which inhabits Class B land. It thrives best on farms with suitable cover.

II. Forest and range game, which inhabits Class A lands. It thrives best on land partially farmed.

III. Wilderness game, which inhabits very cheap Class A land. It is excluded by farming, or other economic uses.

IV. Migratory game which inhabits both classes of land. It thrives on farms if marshlands are left undrained.

Need of Facts, Skill and Funds

Cover, food, and protection (i. e. management) do not increase game unless they are of the right kind. Game management may be unduly expensive unless skillfully dovetailed with the management of the primary crop.

To select the right kind of management and to apply it skillfully requires biological facts and men who can advise the landowner how to apply them. The facts must be discovered and the men trained. In short, game management must be recognized as a distinct profession and developed accordingly.

All these actions will require large additional funds, both public and private.

Need of Cooperation

The public, not the sportsman, owns the game.

The public is (and the sportsman ought to be) just as much interested in conserving non-game species, forests, fish, and other wild life as in conserving game.

In the long run lop-sided programs dealing with game only, songbirds only, forests only, or fish only, will fail because they cost too much, use up too much energy in friction, and lack sufficient volume of support.

No game program can command the good-will or funds necessary to success, without harmonious cooperation between sportsmen and other conservationists.

To this end sportsmen must recognize conservation as one integral whole, of which game restoration is only a part. In predator-control and other activities where game management conflicts in part with other wild life, sportsmen must join with nature-lovers in seeking and accepting the findings of impartial research.

Program

How can all the foregoing characteristics of the land, the game, the landowner, the sportsman, and the public be knit together into a feasible and effective program of game restoration?

A detailed program cannot be predicted far in advance. The Committee is convinced, however, that any program must begin with seven basic moves or actions. If these are adequately started, experience may be trusted to guide the more distant future.

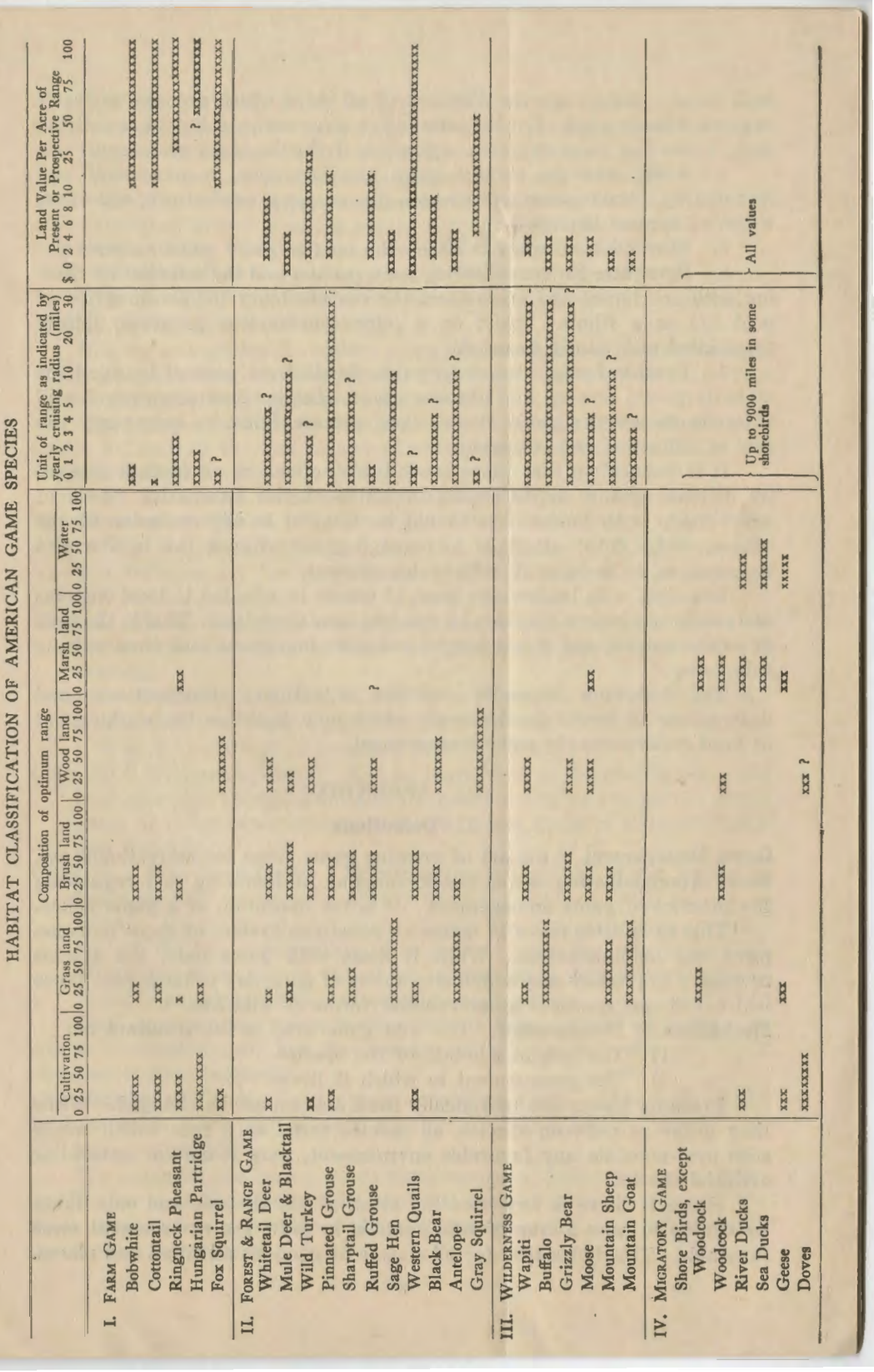
The seven basic actions now needed are:

1. **Extend public ownership and management** of game lands just as far and as fast as land prices and available funds permit. Such extensions must often be for forestry, watershed, and recreation, as well as for game purposes.

2. **Recognize the landowner as the custodian of public game on all other land,** protect him from the irresponsible shooter, and compensate him for putting his land in productive condition. Compensate him either publicly or privately, with either cash, service, or protection, for the use of his land and for his labor, on condition that he preserves the game seed and otherwise safeguards the public interest. In short, make game management a partnership enterprise to which the landholder, the sportsman, and the public each contribute appropriate services, and from which each derive appropriate rewards.

3. **Experiment** to determine in each state the merits and demerits of various ways of bringing the three parties into productive relationship with

HABITAT CLASSIFICATION OF AMERICAN GAME SPECIES



each other. Encourage the adoption of **all ways which promise to result in game management.** Let the alternative ways compete for the use of the land, subjecting them to public regulation if this becomes necessary.

4. **Train men** for skillful game administration, management, and fact-finding. Make game a profession like forestry, agriculture, and other forms of applied biology.

5. **Find facts** on what to do on the land to make game abundant.

6. **Recognize the non-shooting protectionist and the scientist** as sharing with sportsmen and landowners the responsibility for conservation of wild life as a whole. Insist on a joint conservation program, **jointly formulated and jointly financed.**

7. **Provide funds.** Insist on public funds from general taxation for all betterments serving wild life as a whole. Let the sportsmen pay for all betterments serving game alone. Seek private funds to help carry the cost of education and research.

It is imperative that these seven basic actions be no further delayed by debates among sportsmen as to which of the alternative forms of relationship with landowners should be adopted **to the exclusion of the others,** or by futile attempts to manage game without the landowner's cooperation, or to hunt it without his consent.

Relations with landowners must of course be adapted to local customs and conditions before they can be put into local operation. This is the task of local agencies, and it is a bigger and more important task than writing this policy.

The following appendix contains definitions, classifications, and descriptions of recent developments which may facilitate the working out of local experiments in game management.

(B) APPENDIX

I. Definitions

Game Management is the art of growing game crops for recreational use. **Game Administration** is the public function of fostering and regulating the practice of game management. It is the execution of a game policy.

This committee seeks to define an American system of game management and administration. While it deals with game only, the actions necessary to produce and administer a crop of game are in large part those which will also conserve other valuable forms of wild life.

Mechanism of Management. The wild game crop is the resultant of:

(1) The breeding habits of the species.

(2) The environment in which it lives.

Breeding habits are biologically fixed and cannot be changed. While they differ as between species, all species breed at a rate which would soon over-populate any favorable environment, were it not for natural or artificial checks.

Hence if there is any breeding stock at all, **the one and only thing we can do to raise a crop of wild game is to make the environment more favorable.** This holds true for all classes of game at all times and places.

Game management is the control of food, cover, hunting, predators, disease, and parasites as a means of making environments more favorable and thus producing more adequate wild game crops.

It also includes the artificial propagation of game in captivity.

Restrictive Legislation is Not Management. Control of hunting is already well developed, in so far as the public, through legislation on seasons and bag limits, can do it. Control of the other factors, however, is not developed at all, neither is there any control of the total annual kill from each unit of land. Daily bag limits obviously do not limit the total amount of the kill to the capacity of the land.

Our present attempt to restore game by the control of hunting seasons and bag limits alone has failed, except where the other environmental factors have accidentally remained favorable.

The present problem centers on how to provide favorable environments for each of the four classes of game, and to restrict the kill to the productive capacity of the land.

II. Classes of Game and Land in Relation to Management

Classification of Species. American game is of four classes. Each class differs from the others in its characteristics, and hence in its requirements. These differences are fixed and largely delimit any possible program of action.

Class I. **Farm Game:** Non-migratory species which can be grown on farms, and therefore suitable for production as a by-product of farming.

Class II. **Forest and Range Game:** Non-migratory species compatible with forestry or livestock-growing, and therefore suitable for production as a by-product of managed forests and ranges.

Class III. **Wilderness Game:** Species harmful to or harmed by economic land uses, and therefore suitable for preservation only in special public game or forest reservations, or in wilderness areas in National Parks and Forests.

Class IV. **Migratory Game:** Migratory species which, in the course of their seasonal movements, always leave the land on which they were raised. By virtue of this fact, private incentive and even state incentive for the conservation of migratory game is weak or lacking. Migratory game can be raised on private lands, but requires special public regulation for its conservation and welfare.

The accompanying table further defines these classes of game, the species composing each, and the characteristics of each species on which the classification is based.

Classification of Lands: Land Values and Game Yields. The value of the land for crops other than game is greatest in Class I, less in Class II, and still less in Class III.

The potential per acre yield of game seems to follow the same order.

The ratio of the value of the potential game crop to the value of the other crops, however, probably follows the reverse order; i. e., it is greatest in Class III and least in Class I.

This is why Class I and II game must usually be a by-product, rather than the primary crop of the land on which it grows. Class III may be a primary crop.

Class IV occupies land of such widely divergent values that no general statement can be made. The potential per acre yield is very high.

Who Will Raise Game Crops? Most of the acts constituting management are of such a nature that they can be performed in conjunction with farming or forestry, without separate expense. Moreover, they fall due at all seasons and all hours. This is why the landholder can practice management more efficiently than absentees. A few acts, such as replanting, can be practiced by absentees with nothing more than the landowner's cooperation, but even these can never succeed against his wishes, or by his mere passive assent.

Who raises game crops is therefore a question of **who owns or can acquire the land.**

Farm land cannot be acquired in large blocks for game alone, because the ratio of game crop to land cost is too high. Thus $100 land raises about 25¢ worth of quail yearly, whereas $25 land (or even cheaper) will do as well.

The initiative in farm game management therefore lies with the farmer. Others can encourage him by legislation, by fact-finding, and by paying for either the shooting privilege or the measures necessary to make the land produce shooting.

Some forest and range land is cheap enough to be acquired for game purposes by the public or by others. On the remainder, however, the initiative, as in farm game, lies with the owner, who is usually a lumberman or stockman.

Wilderness game lands must in large measure be owned and managed by the public. Most wilderness areas are still in public ownership. The rest can be acquired cheaply.

Migratory game uses everything from waters already public, to expensive private farms. Its capacity for concentration, however, often makes public acquisition of even the most expensive farmlands feasible. while the lack of incentive for conservation, and the danger of drainage, makes the large-scale public acquisition necessary.

In short, the farmer must take the initiative in raising Class I game, the public is solely responsible for Class III, while the initiative in Class II and IV must be partly public and partly private.

Game, Land, and Population. It is estimated that 6 per cent of the population hunts in America, whereas 1 per cent of the population hunts in England. The number of licensed hunters in America is constantly increasing.

III. Analysis of the Farm Game Problem

Organizing Farmers and Sportsmen

Needs of Farm Game. The management measures most needed for farm game are slight modifications of farm practice to provide cover and food

control of those predators known to be injurious, and regulation of the kill.

Voluntary regulation of total annual kill on each farm **will tend to be practiced as a matter of self-interest,** once the farmer has been induced to invest land and effort in a deliberate attempt to produce a game crop. This voluntary regulation of kill will be particularly effective on farms, because the unit of ownership is small enough to allow of its thorough enforcement by the landowner himself.

The farmer who hunts is now deterred from practicing game management because he is expected to share his game crop with the public, free of charge, and at the risk of damage to his other property.

The farmer who does not hunt is now deterred by the same reasons, only he lacks even the reward of harvesting part of the crop himself.

The obvious need is for some new relationship between sportsman and farmer, which carries with it the mutual respect and cooperation characteristic of any effective partnership enterprise.

Farmer-Sportsman Relationships. Ways to Organize. Forms of Compensation. Sportsmen can establish working relations with farmers as:

Private individuals (preserves).
Closed groups (clubs).
Public groups (associations).
Collectively through governmental agencies (public shooting grounds).

Farmers can establish working relations with sportsmen as:

Individuals.
Neighborhood groups or pools.

Compensation to landowners for the privilege of hunting may take the form of:

Cash rental per acre (lease).
Cash payment per head of game killed, toll system.
Cash payment per man-day hunted, toll system.
Payment of part or all the taxes on the land.
Service payment by hiring patrol to protect landowner's property.
Service payment by installing food, coverts, and refuges.
Service payment by restocking game.

Regulation vs. Inaction. Each possible combination of these alternatives has advantages and disadvantages. None is perfect.

The committee contends that it is better to have several systems competing with each other, under state supervision, for a chance to practice management on the now idle farms, than to continue the futile attempt of the state to practice absentee management on farm land which it does not and cannot own, for the benefit of a huge group whose conduct it cannot control.

Criteria of Sound Landowner Relationships. Tests rather than theory should be relied upon to determine what constitutes workable relationships.

We suggest the following criteria for judging what is worth testing:

1. The landowner's compensation should be in proportion to his crop, so that he will have a personal incentive to improve the range and prevent overkilling of the seed stock.

2. The landowner should determine the number, and if possible the names, of those allowed to hunt, so that responsibility for abuses can be fixed and the proposed total kill enforced.

3. The operating unit should be large and centrally managed so that neither the sportsman nor the individual landowner will be burdened by the necessary routine of asking and giving permission to hunt.

4. Each operating unit should be responsible to the state for the condition of protected and non-game species, for sensible predator control, for law observance, and for such other public interests as are involved. The state must retain the power to close the unit, or otherwise enforce care of the wild life which is its property.

As a necessary foundation for any sound relationship, each state should have:

1. Trespass laws making it illegal to hunt on enclosed, inhabited, or improved lands without the consent of the owner. (States should cooperate in the enforcement of such laws on groups of holdings which are practicing management under state supervision or license, and which are open to public hunting on reasonable terms).

2. The states should make a more determined effort to eliminate irresponsible hunters through a system of examining license-applicants for fitness, and by denying renewals of license to law-breakers.

Seed vs. Land and Care. Many sportsmen contend that the landowner should allow free public hunting in exchange for the seed stock which the public plants on his land.

This contention is sound when applied to fish because the seed grows in public water, and usually without further cultural care or cost.

It is partially sound when applied to game which receives no care, does no damage, and requires no modifications of the landowner's agricultural practices.

As already pointed out, however, these conditions rarely obtain. Future management must rely more on modifying the condition of the land, and less on continual replanting. These modifications of the land contributed by the landowner outweigh the value of any seed contributed by the public. No one would claim ownership of an agricultural crop on the grounds of having furnished the seed. No one would expect any crop from merely planting seed. Seed is a small and sometimes negligible item in the total investment of land, labor, and materials necessary to raise any crop.

Another defect in the exchange of shooting for seed is that it is applicable mainly to exotics like pheasants, and to this extent fails to solve the more important problem of native game.

For these reasons, the furnishing of seed alone is rarely a sound way of compensating landowners for the shooting privilege.

Recent Developments in Farmer-Sportsman Relationships

The **Texas Shooting Preserve Statute** (1924?) and Trespass Law (1929) are the most important practical experiments so far undertaken in paid shooting on farms. A state license is required to sell or lease shooting,

renewable on condition that the licensee has enforced the laws and kept a record of the hunters and their kill. Furthermore, protection against trespassers is not extended to those who charge over 25¢ per acre for $4 per man-day. The kill on these preserves has doubled without damage to the stock (American Game, June 1930).

Another recent development is the **Michigan "Shooting Preserve Statute"** (Public Acts 249, 1929), which constitutes public recognition of a distinction between managed and unmanaged lands, with preferential privileges for the former. It authorizes regulated kill of pheasants, under a special long season, on licensed shooting preserves. To qualify for a license the owner or leasee must release twice the proposed kill under supervision of a warden. Renewal of license is contingent on satisfactory operation of the licensed area.

The **"Williamston Plan"** for pooling farm shooting privileges and controlling trespass through group action is possibly the most significant recent development, because it represents the **farmer's own solution** of the problem of trespass (and perhaps ultimately the problem of management). The farmers of Williamston township, Ingham County, Michigan, have pooled their shooting and issue tickets to each farmer-member representing the number of (pheasant) hunters his land can carry simultaneously. A member can keep, give away, or sell his tickets as he pleases, but is responsible to his neighbors for seeing that no ticket falls into the hands of an irresponsible person. The Ingham County Chapter of the I. W. L. A. now proposes to finance food and cover improvements throughout Ingham County, paying the individual farmer in cash for the food and cover agreed upon for his individual farm. A system of refuges will be laid out to conserve the seed stock. The city sportsmen will still be dependent upon receiving the courtesy of a ticket from some farmer friend, but when he gets a ticket there will (if the management is skillful) be **something to hunt and a place to hunt it.** (Michigan I. W. L. A. pamphlet "A Four-Point Game Program").

A farm pool nearly identical with the Williamston pool, but lacking the proposed management scheme, has been in effect in the Ahtanum Valley, Washington, since 1927.

Connecticut Plan. The state of Connecticut pays farmers a flat rate (10¢ per acre) for public hunting rights on lands surrounding its game refuges. It restocks these lands annually (with pheasants) and polices them against abusive conduct or damage by hunters. It does not regulate the number of hunters or the total kill, or give the farmer whose lands produces a large crop of game any higher reward than one whose land produces a small crop. Nevertheless the statistics indicate a considerable productiveness (kill twice as large as the releases). Crowding is said to regulate itself.

(The Committee doubts whether this plan would work where the farmer must be given an incentive to restore cover, or without heavy annual restocking. However, it represents a great advance over any and all schemes which leave the landowner out of account.)

Pennsylvania Plan. The state of Pennsylvania leases its auxiliary (farm game) refuges from farmers at a nominal rate. The owners of the immediately surrounding land agree to allow public hunting (with permission) in consideration of the service they receive from the state in the form of: (1) state patrol, (2) restocking, (3) laws regulating the conduct of hunters. The state does not regulate the number of hunters or the total kill, or give the farmer whose land produces a large crop any more service than one whose land produces a small crop. Nevertheless, the statistics, as is well known, show a large crop as compared with other states. They also show heavy annual restocking.

(The Committee doubts whether this plan would work where the farmer must be given an incentive to restore cover, or without heavy annual restocking.

These doubts should not be confused with the Pennsylvania system of publicly-owned refuges and shooting grounds for forest game, which are the model for our recommendations on that class of game.)

IV. Analysis of the Forest and Range Game Problem

How Different? There is an essential difference between forest game and farm game in the means available for getting management measures into practice. Forest and range lands are often sufficiently low in price to permit of public ownership. Public ownership often is necessary in any event to conserve timber, watershed, and recreational values. It already exists to some extent.

Another difference is that most forest and range lands are still used destructively, i. e. the primary "crop" is not yet a crop at all, but results from destructive exploitation of the remnants of a virgin resource. Cropping the game may help to bring about cropping the wood and grass.

A major obstacle to the cropping (as distinguished from the exploitation) of forests is the lack of current revenue to pay taxes and fire protection during the initial stages of forestry. Game responds to management much more quickly than forests. The game revenue, therefore, can help carry forestry enterprises, especially where quail, deer, turkey, or other non-cyclic species produce a dependable annual crop.

Management of forest and range game boils down to getting:

(a) Public acquisition of the greatest possible area of forest, watershed, and game lands, and the practice of game management and public shooting on all of them.

(b) Facts on how to modify silviculture and range management to produce a game crop, and how to make it help carry the primary crop.

Recent Developments in Forest and Range Game. The McNary-Woodruff Act authorizes the extension of National Forests, but the actual appropriations are as yet meagre in relation to the need.

There are a few vigorous state, county, and municipal acquisition programs, but most states are doing little or no acquisition, in spite of the

fact that reversions through tax delinquency present a splendid opportunity to acquire large acreage at little or no expense.

The McSweeney-McNary Act authorizes a research program for forest and range game, but actual appropriations so far suffice only for three out of several dozen needed investigations.

State research on Class II game is thus far dormant in most states.

There is as yet no action (as distinguished from plans) for the relief of overgrazing on the unreserved public domain — the largest and worst abused public game range on the continent. Sage hens, antelope, and other valuable species depend primarily on this area.

V. Analysis of the Wilderness Game Problem

Wilderness species, like other game, will stand hunting where the environment is ample and favorable. Their environment, however, has been increasingly unfavorable, for the reason that it has consisted largely of the accidental remnants of wilderness not yet appropriated for economic use.

The salient point bearing on the future is the so-called "Wilderness Idea." This postulates that wilderness remnants need not be accidental and temporary, but may be purposeful and permanent; that the recreational value of the remaining wilderness is far greater than its economic value; that it should therefore be acquired by the federal government or by the states, and permanently dedicated to those special forms of outdoor recreation requiring a wilderness environment.

Such a dedication means primarily the exclusion of motor roads.

A few wilderness areas have been officially established in National Forests and Parks, and these should be rapidly extended. There is an inevitable tendency for such wilderness areas to shrink, even after they are officially set aside. They can never expand, hence the system should be large and well-distributed, and should look to the future as well as the present need.

The foregoing conditions, boiled down to a program, call for:

(a) A vigorous expansion of life-history research on wilderness species under the McSweeney bill or otherwise.

(b) Acquisition of winter range to balance the summer range.

(c) Dedication of a more ample system of federal wilderness areas by both the Park Service and the Forest Service.

(d) Acquisition of the best remaining wild private lands in each region not yet provided. The objective should be a publicly owned wilderness area within two days travel of each centre of population.

(e) More intelligent support of the wilderness idea by those conservationists who have a national, rather than local, point of view. (Local support means "booster" support. The booster spirit and the wilderness idea are incompatible and mutually exclusive propositions.)

(f) Universal adoption of limitation of kill on wilderness species (i. e.) regulating the number as well as the season of removal.

VI. Analysis of the Migratory Game Problem

How Different? The problem of inducing conservative management of migratory birds differs from that of all other game in two fundamental (and counter-balancing) respects, both arising from a single outstanding biological characteristic:

(a) The extreme mobility of migratory species diffuses the penalties of local abuse, and the rewards of local care, over the whole continent.

(b) Their extreme mobility (combined with their tolerance of concentration) enables them, more than any other game, to benefit from refuges for breeding or resting.

It is obvious strategy to overcome the great weakness (a) by the most vigorous possible action on (b).

Major Needs. The first salient point of a management program is:

(a) **A Continental System of Refuges.**

The whole history of migratory game birds in this and other countries shows a surplus of effort to attract and hold more than the local share of the common crop, and a deficit of effort to enlarge that crop. The same motives of self-interest which make for local conservation of other game, make for local exploitation of migratory game.

The federal Migratory Bird Law and International Treaty were of course premised on this fact. Legislative enactments, however, do not repeal the laws of human nature, as is evidenced by the niggardly cooperation of most states in enforcing and extending those enactments.

(b) **Better State Cooperation in Migratory Bird Management.**

By cooperation is meant that the states should: (1) Assume their full share of law-enforcement; (2) Supplement federal refuges by a much larger system of state, county, and municipal refuges; (3) Assume the entire burden of establishing public shooting grounds around refuges and elsewhere; (4) License and regulate private clubs and commercial preserves to reduce abusive practices and induce (or if necessary, compel) them, where conditions allow, to install refuges, rest hours, and other progressive practices; (5) Reclaim or create marshlands on a large scale; (6) Help with fact-finding work; (7) Compile and publish an annual record of the total kill by species, and of the total kill on each preserve or club.

The recent evidence that wheat farming is invading the best remaining breeding grounds on the Canadian prairies suggests the third salient point, namely:

(c) **More International Cooperation in Migratory Bird Management.**

The Canadian treaty recognizes, and to a certain extent fills, this need with respect to restrictive legislation. There is an even greater need, as yet unfilled, for international action in **preserving and restoring and improving habitats.** Land purchases to prevent drainage of Canadian breeding

grounds, and control of nesting mortality on them, are international betterments **deserving of international financing and support.**

The execution of all of the foregoing proposals must rest on a foundation of biological fact. Those facts are only in part available. Our knowledge of migratory birds is still largely rough preliminary knowledge of groups of species, rather than detailed knowledge of the status and requirements of individual species.

Diseases of unknown cause still take a large recurrent toll. Discovering their cause might readily reveal cheaper or surer control measures.

Huge areas of second-class marshlands and waters are practically idle as breeding and resting grounds, and must be improved. How? Huge areas have been deteriorated by carp, and must be improved. How? All these unanswered questions call for:

(d) **More Fact-Finding.**

This should include not merely the life history of each species, but a quantitative evaluation of each factor determining its abundance, and possible means for controlling it.

Fact-finding should include the evaluation of the toll taken by human as well as wild enemies. For instance, the toll by hunting (including both kill and cripples) is undoubtedly affected by the equipments and methods used by hunters. These equipments are continually growing in complexity and deadliness. There is a grave question whether some of them do not constitute competitive evils, i. e., they are adopted by sportsmen, not because they represent better sport, but because they represent the only means of competing with other hunters.

In the past, the answer to questions of what equipments and methods are unduly destructive has been sought wholly from opinion unsupported by evidence.

Some of such questions may possibly be answered in part by controlled experiments, and these are the legitimate province of fact-finding agencies.

Status of Action on Migratory Game. At this moment there is a dangerous tendencey to assume that the newly passed Norbeck-Andreson Act is a solution of the migratory bird refuge and research problem. It is only a start, since it does not set up a program for state, county, municipal, and private action. Federal action cannot do much more than set up at strategic points a few samples of what states, counties, municipalities, corporations, clubs, and private landowners should undertake throughout the continent.

The slow spread of refuges as a means of improving duck-club holdings is especially notable. If waterfowl clubs do not of their own volition set aside refuges in their own interest, the public interest clearly demands that they be put under state regulation and forced to do so, under pain of closure.

VII. Controversial Issues

This report refers frequently to the process of mutual nullification

which follows the abstract debate of controversial theories, as distinguished from the process of mutual education which follows actual tests.

Some sample controversial issues are given in the following captions together with a few indications of the approach which the Committee believes would result in a workable solution.

The Predator-Control Issue. The word predator-control as here used does not include rodents or exotic species.

There can be no reasonable objection to predator-control as such. Justifiable differences of opinion arise over the questions of where, when, what species, and how much control.

Such differences will never wholly disappear, because differences in human interests and viewpoints will never disappear. It is clearly the trend of actual experience, however, that the **grounds for difference shrink as new facts become available** through our expanding knowledge of ecological relationships.

It is futile to maintain that there should be no predator-control until these relationships are all determined by research, because complete understanding will never be attained. It is believed, however, that mutual recognition of something like the following standards would make for greater harmony among conservationists, and sounder practice by public agencies and private owners:

1. All policies, laws, rules of practice, advertisements, or other public pronouncements for or against predator-control should differentiate between species (as distinguished from larger generic groups).
2. No public agency should practice control in any region without establishing adequate fact-finding service in that region.
3. No predatory species should be exterminated over large areas.
4. Each public agency engaged in predator-control should seek periodic review of its policy and operations by some independent scientific body without administrative or financial interest in control **work.**
5. Rare predatory species, or species of narrow distribution and exceptional biological interest or aesthetic value should not be subjected to control. Where such species occur on private land, or interfere with private enterprise, it is the duty of public agencies to recommend appropriations to either buy out such lands or interests, or to compensate the owners for damage.
6. Use of poison, bounties, national advertising, organized competition, or other methods unlikely to discriminate between species or between varying local conditions should be resorted to only in emergency or under careful safeguards.
7. Predator-control operations based on adequate local research, safeguarded as to method and degree of control, and otherwise evidencing a regard for sound biology and the public interest **should be praised and held up as examples,** not only by sportsmen but also by protectionists.

The Excess Game Issue. Where the available range cannot be expanded there is nothing more harmful (short of extermination of a species) than to allow the indefinite continuance of overstocking, especially on arid lands. It is imperative that the non-scientific protectionist be made to realize that an overgrazed range may take longer to recover than a decimated herd of game; that excess population always ends in disease, starvation, or new enemies; and that prompt control is always more humane than delay. In every important case so far of record, control has lagged 5 to 10 years behind discovery of overstocking, due primarily to sentimental objections.

"Protection" vs. Management. Underlying the foregoing issues is the fundamental question of whether game should be killed at all.

If the cessation of legalized hunting offered a sure means of perpetuating all classes of game in abundance, it might be the part of wisdom to fall back on it as a last resort. The opportunity to see and study game is just as valuable as the opportunity to shoot it, and half a loaf is better than none.

It is a biological and economic certainty, however, that farm game tends to disappear, even under complete protection, without deliberate and purposeful provision of cover and feed.

It is also a biological and economic probability that migratory game would tend to be seriously reduced, even under complete protection, without artificial offsets to the drainage of marshlands.

It is furthermore probable that universal prohibition of hunting could not be enforced without large funds.

Where are the funds for habitat-control and law enforcement to come from, if not from the privilege of harvesting the excess game crop?

Native vs. Exotic Species. That native species should be given preference in management is a self-evident principle of game esthetics.

It is an equally evident fact that there is an unreasoning human instinct to try exotics, often quite regardless of their probable success or their effects on native wild life.

It is academic to discuss those opposing forces in the abstract. The real questions are: Where will exotics succeed? Where is it justifiable to resort to them? What policies should govern when they are found to interfere with native species? Our belief is that:

1. Success with the species so far tried is much more limited than is generally supposed. Public funds should not be spent on large-scale plantings until experiments have indicated success.
2. It is justifiable to resort to exotics only where the environmental changes necessary to restore native game are too expensive, or where cyclic fluctuations make native game undependable and unresponsive to management.

3. Whenever material interference with native species is shown, native species should promptly receive the benefit of differential seasons, of public areas kept free of exotics as far as possible, and all other advantages which management can devise for their benefit.

VIII. Fact-Finding and Education

Trained Men. The first requirement of any undertaking is leadership. Proposals of the kind herein listed will become reality, not so much by writing new policies, as by training new minds.

The present man-power of the game conservation movement is almost wholly self-trained and accidental. The administrative man-power is usually without science, and the scientific man-power is usually without experience in management or administration. Moreover, the supply of man-power is short, as evidenced by the large number of men without either science or experience holding responsible administrative positions.

Three kinds of training are required: (1) scientific training for research, (2) technical training for administration and private practice, (3) vocational training for field workers.

Research Men. The quickest way to meet the dearth of trained scientific leaders is to take selected men who have already received thorough training in natural science, and offer them additional training in applying their science to specific game management problems. All of the industries affected by the game supply have an opportunity to benefit themselves and also the public by financing fellowships for such training. This also offers a fundamentally sound way for wealthy private citizens to advance the game conservation movement.

Administrators require the same training as research workers, but less of it, and with more emphasis on game policy, economics, and land management. Schools of game administration are thus far lacking.

Field Workers. Vocational training to produce skillful game wardens and game keepers is just as necessary as scientific training to produce leaders. It should be equivalent to the "short courses" for the farmers already developed in many agricultural colleges, and to training camps for forest rangers. Such short courses serve not only to produce new men, but also to stimulate the development of field officers already in service.

The financing and organization of training should be undertaken jointly by the state conservation departments and universities, with the technical guidance of the U. S. Biological Survey.

Fact-Finding. National leadership in fact-finding is the natural function of the U. S. Department of Agriculture, especially its Bureau of Biological Survey. The immediate need is for the large-scale expansion of the Department's game research appropriations. These should be used not so much to perform the fact-finding job for the whole country, but rather to help states and local agencies perform it. The anti-federal bias which accounts in part for the excessive difficulty of financing federal work on game in the past, might be dispelled if it were understood that

such work is aimed to stimulate local activity, and does not constitute a mere extension of federal functions.

In addition to formal research projects conducted by scientific workers, there is great need for the systematic collection of useful statistics and observations by state conservation departments and by individual sportsmen, naturalists and hunting clubs.

Public Education. The public now knows of only one way to conserve game: restrictive legislation.

Three additional ideas must now be firmly planted in the public mind: (1) that the basic thing the public can do for Class I and II game is to compensate the landowner for raising it; (2) that the basic thing the public can do for Class III and IV game is to buy land and practice game management on it; (3) that for all classes of game the public must undertake fact-finding.

Much machinery lies ready at hand for the execution of this educational program. Some of it, such as the public schools and the press, is already being employed. The enormous and powerful machinery for agricultural extension has so far not been employed. This includes not only the agricultural high schools and the county agent system, but also the farm press. These agencies, being already geared up to the agricultural colleges, can effectively disseminate the facts discovered by the colleges through game research.

The sporting magazines and conservation associations are the natural agencies for undertaking the education of the sportsmen themselves. So far they have, with rare exceptions, tried to cater to existing ideas rather than to stimulate thought on new ones. Unpopular changes, such as breaking down the fallacy of free-for-all shooting on private farm lands, are seldom or ever discussed.

In urging a larger educational machinery, it is sometimes assumed that all its parts must preach identical and prearranged doctrine, and that central authority is necessary to formulate such doctrine, and to see that it is not departed from. Such a machine would be dangerous, un-American, and undesirable. The only reason for centralized educational machinery is to exchange experience and secure funds. Local agencies, such as universities, are competent to formulate their own policies, and these will be reasonably conformable to each other if each is brought into active contact with the others, and with the facts as they exist on the ground.

IX. Organization and Finance.

Reorganization of Conservation Departments. Policing was originally the sole function of game officials. While this function must continue, it is being rapidly overshadowed in importance by their new function as public leaders of a highly technical form of applied biology. Organization must change to fit this new function.

The minimum requirements of a properly organized state conservation department are believed to be:

(a) Sufficient freedom from political overturns and high enough salaries to compete for the services of the ablest executives and research experts.

(b) Sufficient freedom from political influence to entrust the department with full power to lay down its own policies, and with full regulatory powers in matters of open and closed seasons, land buying, operation of landed properties, and other acts necessary to put those policies into effect.

(c) Sufficient stability to allow of following a given policy through at least a decade.

(d) Close coordination between game, forestry, and agriculture in research, administrative, and educational work.

No particular form of organization meets these requirements in and of itself. The attitude of the public, the governor, and the legislature counts for more than the form of organization. Nevertheless, given the right attitude, there is such a thing as a best form for a state conservation department.

One form which may not be the best, but which seems to be working well is that long since adopted by industrial enterprises. It has two essential parts: (1) a policy-making body; (2) a chief executive appointed by and responsible to it.

The policy-making body (called in industry the Board of Directors) is usually called the Commission. It is essential that its members serve without pay (so that job-hunters will not seek appointment) and that they be appointed by the governor for staggered or over-lapping terms (so as to avoid sudden reversals of policy). **It is vital that they appoint their own chief executive officer.** If this vital point is compromised, the whole idea breaks down.

The chief executive officer should direct and be responsible to the Commission for all the work, including the selection of the personnel. He should, ideally, be a technical man with administrative ability, but in any case he should be inclined to use technical men to head up the various lines of technical work.

Coordination of forestry, game, fish, and parks, and other related activities, is necessary. Some states get coordination by setting up two or more of these activities under a single commission, with a single chief executive officer, called Director of Conservation.

It is idle to expect efficiency from any form of organized state leadership unless the salary scale is comparable to that of an industrial enterprise of like magnitude. **This is so far nowhere the case.** Adequate salaries are often blocked by rigid Civil Service procedures, and by law standards of pay and performance existing in other state departments. Few governors receive what capable directors of conservation ought to get. The political rewards incidental to other state offices make it exceedingly difficult to get fair salaries for non-political game officials.

All regulatory powers should be vested in the Commission. All executive responsibility should lie with the executive. The most frequent cause of failure in the Commission-Director form of organization is for the Commission to let political interests dictate the selection of an incompetent Director, and then attempt to offset his deficiencies by themselves meddling in executive detail. This is always fatal.

The conservation department should look to the state university or agricultural college or scientific societies (including medical centers) to do its game research. These institutions are not yet contributing to the stock of usable facts about game, because they have seldom been asked to do so.

The conservation department should look to the sportsmen's organizations and other public bodies for criticism of its policies, legislative backing, and cooperation in public education.

Finance. A dollar or two a year may have sufficed as the average sportsman's contribution to the job of policing the remnants of the virgin game supply, but it is unthinkable that the present job of creating an entirely new mechanism of game production can be accomplished on such slender means. Game licenses must be pushed upward and additional revenues must be found.

It goes without saying that in no case should the sportsmen tolerate diversion of a single dollar of state game license funds for general state purposes.

We believe that the **public should help bear those costs which affect the public interest.** Thus research work, purchases of marshlands, forest refuges, winter feeding stations, general law enforcement, and general educational work **do not benefit shootable game alone nor sportsmen alone.** They benefit wild life as a whole and the public as a whole. They are public betterments, and hence proper as general treasury liabilities.

On the other hand sportsmen, through licenses or otherwise, should pay all the "sport betterments" which deal with something to shoot, such as game farms, game plantings, predator control, public shooting grounds, etc.

Some new activities, such as regulation of clubs and preserves, can be made to carry their own cost by licensing them. Moreover, it seems fair that small fees, in addition to the usual hunting license, should ultimately be charged against those who use special public game lands, in order to help defray the costs of their acquisition and management.

No license system, however, can carry the whole load laid out in this program. Federal and state treasuries most contribute to the "public betterments" aside of the game program, to make up for the great sums of game license income diverted to other work in the past in almost all states.

Moreover private funds on a large scale, such as are obtained for public health and education, must carry much of the cost of fact-finding and training.