PROPAGATION OF WILD BIRDS

Waterfowl Very Easy to Breed in Captivity—Gallinaceous Species Offer no Great Difficulties—Benefits and Profits from Breeding—Bird Refuges

Review of a Book by

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THERE seems to be among students of nature, nowadays, a widespread desire to assist nature in "running things." The plant lover is no longer content with inspecting the flowers of the field: he wants to grow them in his own garden, often under rigorously controlled conditions. The student of animal life is unlikely to spend all his time in the woods or meadows, as he often did a quarter century ago. If he wants to be in the fashion, zoologically, he is too likely to spend all his time in a laboratory, and he will give preference to animals that can be kept in cages or tanks, for with them he will come as near as possible to seeing everything he wants to see.

For a long time the bird lovers stood out against this passion for breeding, which had taken hold of the botanists and zoologists. Ornithologists continued to pursue their studies in the field, and there was little demand even for commercial breeding.

But in the last ten years, the students of birds, too, have succumbed to the desire to get nearer to nature than a stroll in the woods makes possible. All over the country they are using devices to attract the birds to their own door-yards; and those who possess means are in many cases undertaking breeding experiments on a large scale, sometimes as a commercial, sometimes as a sporting proposition.

So long as it does not lead to a neglect of wild life in its natural environment, the modern naturalist's desire to take up breeding deserves every encourage-

ment. Plant and animal breeders have long been able to get abundant advice in printed form, and bird lovers are now to be congratulated on having a book,¹ "The Propagation of Wild Birds," which seems likely to meet their needs.

Herbert K. Job, its author, was formerly State Ornithologist of Connecticut, and is now in charge of the Department of Applied Ornithology of the National Association of Audubon Societies. Much of the success in rearing wild birds in captivity nowadays is based on Mr. Job's own experiments, and he describes them and others in a business-like way, so simply that no one can misunderstand.

The rearing of gallinaceous birds such as the quail, pheasant and turkey, is probably the most important, and for these, Mr. Job warns his readers, a good deal of room is necessary. "Experiment has shown conclusively that all kinds of wild gallinaceous birds can be kept in health in confinement. Most kinds cannot, however, with safety, be closely confined in *small* quarters, like domestic fowl. Under such conditions they are very susceptible to various diseases, especially of the digestive tract, which are likely to become epidemic. To these the domesticated species have become considerably immune. Some species require more room and range than any others and cannot stand any crowding. Another matter of importance is that the same ground surface must not be used for too long a period continuously."

¹ Propagation of Wild Birds, a Manual of Applied Ornithology, by Herbert K. Job. Pp. 276, illustrated. New York, Doubleday Page & Co., 1915.

CALIFORNIA OR VALLEY QUAILS

The birds which have made a friend of Ruth, daughter of Superintendent Dirks of the State Game Farm of California, belong to a different species from the "bob white" of the East; their plumed heads lend them an air of particular dignity. The California species gathers in large flocks, and has a gentle, confiding disposition which makes it well suited to breeding in captivity. From Job, "Propagation of Wild Birds." (Fig. 9.)

"When one has decided to raise birds, the question is how to secure breeding stock. In the case of various foreign species, notably pheasants and the gray or Hungarian partridge, these are readily purchased. With native species, however, the case is different. Most States have forbidden the shipment and sale of native game. There is an occasional game commissioner or chief warden who grants special permission to secure a few birds for propagation only.

"Though there is a real difficulty at present, the problem will undoubtedly soon be solved. Laws are being passed in various States to encourage, under proper supervision and regulation, the propagation of game as an industry. Many people are now making small beginnings, and before long will have

breeding-stock for sale. The high prices for live birds will for some time to come make it more profitable to sell them for breeding than for food purposes, except with such common species as the ring-necked pheasant and the mallard."

A start could often be made with birds taken in the hunting season slightly wounded in the wing. Sometimes permission has been given to take a few eggs, which can then be hatched under a bantam. It is also possible to secure some birds, particularly quail, from Mexico, and contrary to expectation these have proved quite hardy in New York State.

Breeding the native quail or bobwhite on a large scale is decidedly to be recommended, the author says, in view of the value of the bird to agriculturists as well as to sportsmen. The problems

in connection with it have been pretty thoroughly worked out; "the main thing has been to learn what precautions are necessary to avoid the outbreak of epidemic diseases."

Privacy is of primary importance with this bird. "They are exceedingly secretive in habits, particularly in mating and breeding, and skulk nearly all the time under cover, unless convinced that no observer is near."

AVOID OVERCROWDING

"In a 5 or 6 acre enclosure at the Clove Valley Club I saw 2,000 young pheasants raised without danger. But quails would certainly not stand anything like that amount of herding. We do not yet know how far we can go with numbers and crowding, and this is to be worked out. Till this is done, it is well to be cautious with the rearing-field system, using, preferably, fields of moderate size and more of them. For the present, I should not try to keep more than half a dozen broods in a field of half an acre. For other broods it will be safer to scatter the coops in the open about the estate, preserve or farm."

Summarizing, Mr. Job advises that quail can be successfully bred as follows:

"1. Secure breeding stock in the late fall or early winter either by purchase or by capture of a small stock by permission of the authorities.

"2. Keep these through the winter in a wire enclosure with simple shelter from storms and cold winds.

"3. In April separate the pairs, having each pair in a small pen by itself. Some can remain in the larger pen together, if there are not enough small pens.

"4. Hatch out the eggs and raise the young with bantams. Do not attempt incubators and brooders.

"5. Put the breeders back into the large pen together by the latter part of July, unless they wish to incubate.

"6. In late fall or early winter catch up what young are desired. The rest can be left wild to breed naturally next summer. Feed regularly under shelters throughout the winter, to hold them on the land, as also by planted areas of

grain left standing for them. In severe winter weather coveys might be shut up and cared for, and let go again."

The grouse family, including the "partridge" and ptarmigan of the North, the "prairie chicken," the heath-hen, etc., offers another attractive field. These birds become very tame in domestication—in fact, the tameness of young

YOUNG QUAIL WATCHING A FLY

Quails are usually reared in captivity from eggs incubated by bantam hens. Except for the possibility of certain contagious diseases, quail breeding offers no great difficulties, and is of great benefit from an agricultural as well as a sporting or commercial standpoint. From "Propagation of Wild Birds," by Job. (Fig. 10.)

which are hatched and bred in captivity is so great as to render them almost helpless under natural conditions, until they have had a chance to learn the ways of the wild.

THE WILD TURKEY

For many reasons, the wild turkey has attracted a number of breeders. It is not so near extinction, in a state of nature, as most people think, but it

YOUNG REDHEAD DUCKS IN MANITOBA

In order to learn, under the most favorable conditions, how to rear wild ducks in captivity, Mr. Job made two expeditions to Northern Canada. This photograph shows some of the young redheads, hatched in incubator from eggs found in nests in the woods, and then brought to maturity in brooder. Among the American wild ducks, he has found the redhead one of the easiest to raise, owing to its hardiness and docility. From Job, "Propagation of Wild Birds." (Fig. 11.)

deserves to be increased. Mr. Job declares that many of the birds now killed in the woods are hybrids with the domestic turkey, and that much of the breeding stock sold under the name of wild turkey is really of mongrel origin. The differences between the two forms are, of course, slight. The birds are easily domesticated, and when not crowded they appear to be little more difficult to rear than is the ordinary barn-yard turkey.

But the pheasant family, in Mr. Job's opinion, is preëminently the species for would-be propagators to begin with. It is more easily raised than any other game bird of the gallinaceous group, it is wonderfully hardy, and it has much commercial value. "At present indications it seems likely to become one of the principal game birds of America."

Methods are much the same as for quail. The birds will stand a good deal of crowding, though not so much as poultry. The large and brilliant birds are an attraction to any estate;

furthermore they are distinctly profitable.

"It is a pleasant way for young people to make a little money on the side by raising a few game birds or waterfowl. With hardly any expense, on the average farm, a boy could have a few broods of pheasants roaming around and growing up. What little work there is will seem more like sport, and the watchfulness required is good training. After buying the original breeding stock, the expense is very light. Little apparatus is required, and the birds are small eaters. Ring-neck stock will probably cost \$5 to \$6 per pair in the late fall. A cock and four hens, say, might cost from \$10 to \$15. These should lay at the very least 120 eggs, which are worth usually 25 cents each, or more than double the cost of the original stock. If even a moderate number of young are reared and sold, the undertaking would considerably more than pay.

AN EXHIBIT "TO ENCOURAGE THE OTHERS"

Crows are often a pest to game breeders, because of their fondness for birds' eggs, and their tendency to destroy young birds. Although they do some good, the game breeder usually regards them as more of liability than an asset. A Connecticut farmer has killed a number of them and hung them on a tree as a warning to their brethren. From Job, "Propagation of Wild Birds." (Fig. 12.)

"The demand for live pheasants from the many that are beginning to breed them is so great that there is an almost unlimited market at present for them alive. When this demand is finally met, there is still an enormous field for sale for food purposes as wild game."

One of the difficulties which every breeder has to face is the activity of small animals which, however valuable they may be from some other point of view, are to the bird breeder merely "vermin."

WAR ON VERMIN

"A popular fallacy," Mr. Job remarks, "is that all it is necessary to do to increase bird life is to set apart a tract of wild land as a refuge, and prohibit trespass and shooting. At the start there are probably few birds, and after ten years there might not be any more. One reason is that the average

wild land abounds with destructive vermin. Hawks and owls, which are the principal natural check upon the smaller mammals, have been so reduced in numbers that rats and other vermin abound. True they kill some birds, but they eat more of the enemies of the birds. Because we have upset the balance of nature, we have to help restore it by checking the abnormal increase of vermin." Practical suggestions for destroying these pests are given.

But if the breeding of gallinaceous birds offers no unsurmountable problems, waterfowl are still easier to rear, according to the author.

"The simplicity of the keeping of wildfowl is one of the delightful surprises in store, though it must be borne in mind that there will be failure unless certain fundamental principles are carried out. About all that is needed is a little pond or brook, especially in a

ROYAL TERNS FLOURISH UNDER PROTECTION

Breton Island, off the coast of Louisiana, has been set aside as a refuge for wild fowl, and is patrolled by the National Association of Audubon Societies, who take care that nothing shall interfere with the natural breeding of the birds. This photograph shows royal terns during the breeding season. Many such reservations have been established in all parts of the United States during recent years. From Job, "Propagation of Wild Birds." (Fig. 13.)

quiet, sheltered place and with some marshy ground, perhaps a simple, open-front poultry shed, and a cheap wire fence. The food also is simple and easy to provide. It is easy to maintain the birds in health, when properly handled, for they are hardy, and seldom have epidemics comparable to those of the gallinaceous birds, though similar disasters may occur if the water is allowed to become foul and stagnant and reasonable sanitation is not observed. The young also are comparatively easy to rear."

"Anyone who has even the facilities of a city back yard, with a cement basin and a little shrubbery, could have a few pairs of pinioned wild ducks which would breed in happy contentment. F. N. Manross, of Forestville, Conn., has a little artificial basin under the windows of his factory, surrounded by some thick, low shrubbery and a wire fence. There a pair of beautiful wood ducks, regardless of noise or human presence, each year raise a brood of young, and furnish their owner

delightful distraction from business cares. A steam pipe keeps the water partly open in winter, and there they live the year round, with no shelter other than shrubbery and a small box. In another part of the yard he has a couple of pairs of Canada geese, originally wild, which live there in perfect contentment."

WILD GEESE EASILY TAMED

"It is a surprise to many who consider wild geese the type of inherent wildness that in reality they are tamed more readily than almost any other wild bird, even than ducks, submitting even in shorter time and becoming more absolutely familiar. This is notably true of the common wild goose or Canada goose. Wing-tipped geese which are captured will in a short time become so tame that they will hardly get out of the way.

"It is a curious anomaly, however, that while the Canada goose, as a species, breeds readily in captivity, all the other species of native wild geese

are very hard to breed, notwithstanding the fact that they all become perfectly tame."

Most of the wading birds are hard to breed, for various reasons, one of which is the amount they eat. Mr. Job describes his experience with a woodcock which weighed 6 ounces and consumed daily from 8 to 12 ounces of earthworms. Several boys spent their spare time digging worms for the bird, but after a month Mr. Job became disgusted and liberated him. As he says, the idea of feeding a whole flock of woodcocks staggers the imagination.

The same objection prevents the breeding of herons or egrets for their plumes. "The enormous appetite of herons for fish would make the thing commercially unprofitable even if herons were induced to breed in captivity. E. A. McIlhenny, of Avery Island, La., is experimenting now with herons in a large flying cage, to see if they will breed in captivity. He says that each bird eats $1\frac{1}{2}$ pounds of fish a day, on the average, and it has cost \$12 per year to feed each bird."

Cranes are readily kept in confinement, and it is becoming fashionable to have them on country estates. They are expensive, however, and do not breed.

BIRD REFUGES

One aspect of breeding which deserves note is the establishment of refuges and protected colonies. "A splendid movement, which has gathered momentum in the past few years, is the establishment of reservations on tracts of marsh and swamp land, unsuited to human occupancy, where wildfowl can gather and feed in winter and be safe from molestation. Well known already are the Ward-McIlhenny tract in Louisiana and that of Marsh Island, donated by

Mrs. Russell Sage. Latterly comes the vast tract under the Rockefeller Foundation adjoining the above in this great marsh region. Together these comprise some 500 square miles, and extend for 75 miles along the coast. Already ducks have begun to breed there in considerable numbers, according to Mr. McIlhenny—the blue-winged teal, gadwall, black duck, and mallard, and probably others in time will join them. Similar measures should be taken, even if on a smaller scale, in every state of the Union. The wildfowl should also be protected on their breeding grounds, wherever these are located. Some breed in the United States, but most of them in the northwest provinces of Canada, and it is ardently to be hoped that through treaties with our neighbors, both on the north and south, a comprehensive continental protection and conservation of this important and valuable asset may be made possible."

There are already, Mr. Job notes, nearly sixty protected areas set aside in various parts of the country by the Federal Government, as water-bird breeding colonies. The National Audubon Society undertakes the work of policing them, and also guards various other rookeries which are not national reservations. Thousands of individuals are doing similar work on their own land.

The concluding portion of Mr. Job's book is given over to a description of means by which the smaller wild birds can be attracted and induced to remain around houses and on farms. To many readers, this is likely to be the most valuable and interesting part of the book. In this, as well as in the preceding sections, the author wastes little time on generalities, but gives detailed and specific directions for meeting each individual problem that is likely to arise.

Eugenics in the Colleges

Perhaps Kalamazoo College, in Michigan, can claim to have taught eugenics as long as any college in the United States. Professor W. E. Praeger, of the Department of Biology, writes that it has been a part of the curriculum for nine years. There has been a special course in genetics for the past three years; before that the subject was part of the course entitled Theoretical Biology. Lectures in eugenics are also given in the course on hygiene, required of all freshmen.