

## A CRITIQUE CONCERNING FOREIGN GAME BIRD INTRODUCTIONS<sup>1</sup>

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In 1956, after the federal foreign or exotic game bird program had been underway for about 7 years, Robert Pierce presented some timely thoughts concerning this program to *Wilson Bulletin* readers. At that time he suggested (p. 82) that "the desires and advice of biologists and conservation organizations other than those directly concerned with hunting might well be given consideration by both federal and state agencies." Although the indications may be slow in coming, not all game biologists "directly concerned with hunting" have been in favor of the exotic bird program, and it is my belief that the majority are opposed, feeling that it is a futile diversion of scarce financial and manpower resources. It seems the support of the program has been based on the demand of some segments of the hunting public for more game to shoot, and rather than face the reality that most of our problems can be resolved by more efficient utilization of extant game resources, some members of the wildlife profession have looked to foreign lands seeking species which will supposedly thrive where our native species will not. I believe it is safe to say that many biologically trained administrators officially supporting this program are doing so in conflict with their personal beliefs.

When critics of the exotic game bird program voice an objection to more introductions the proponents point to the success of the Ring-necked Pheasant (*Phasianus colchicus*), Hungarian or Gray Partridge (*Perdix perdix*) and Chukar or Rock Partridge (*Alectoris graeca*) as examples which were highly successful in their "new environment" in North America (Bump, 1951:325). Ignored or overlooked are the histories of dozens of species introduced in substantial numbers which have failed completely. Also forgotten are the many species of native birds shifted to new environments on this continent which have failed to "acclimatize," although there have been some notable successes, as with the Wild Turkey (*Meleagris gallopavo*).

Perhaps a more critical look should be taken at the factors favoring establishment of the three exotic game species which have done so well. First, were they introduced into "new environments"? They were certainly introduced to new geographical environments, but each was preceded by the type of habitat in which they thrived in the Old World. When the first European settlers arrived on North American shores pheasant and Gray Partridge habitat was first introduced to this continent. As the settlers moved westward, turning forests and prairie into fields growing the same grains and weeds grown in Europe for many centuries, pheasant and "Hun" habitat was extended across the continent, finally reaching the Willamette Valley, Oregon, well ahead of the first release of pheasants there in 1881. Neither the pheasant nor Gray Partridge had to adapt or change to thrive in the same ecological niche they had lived in for centuries before their introduction in North America (Westerskov, 1964). Probably neither could have prospered unless agriculture had paved the way.

The story of the Chukar Partridge is essentially the same. This bird is thriving only in the western arid regions similar to its native habitat in Asia, and generally only where it was preceded by its staple food plant, cheatgrass (*Bromus tectorum*). As

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Christensen (1954:12) points out, many tens of thousands of chukars have been introduced into other parts of the nation. When these areas lacked dry, snow-free mountain slopes and cheatgrass, the chionophobic chukars did not become established. Bump (1963:857) recently stressed the fact that the establishment of the Chukar Partridge in Nevada was the result of the release of a very few birds. Which is true—a very few birds in situations which apparently *were identical to their native haunts*. Bump does not point out that chukars failed to become established when released in many other Nevada habitats which differed only slightly from the situations in which successful establishment occurred (Christensen, 1954:16–20). In New Mexico, certainly arid in many places, the release of over 7,600 chukars failed completely, although the birds were released under basically the same conditions of rearing and handling as those which succeeded in Nevada (Bohl, 1957).

Proponents of the introduction of exotic game birds use the term “adaptation” or “acclimatization” quite freely, yet none of the exotic game birds successful in this country at the present time have shown any success in “adapting” or “acclimatizing” to a new environment.

The pheasant and Gray Partridges are still basically birds of small grain farmlands, showing little success in cotton fields or on the western rangelands away from cultivated fields. The chukar occupies a very restricted ecological niche in the arid west, succeeding only in canyons or on mountain slopes where infrequent winter snow is quickly melted enabling them to find cheatgrass and other seeds before starvation takes its toll. Hence these species have shown no adaptability to environments different from those they have long been accustomed to (Formozov, 1946).

Lack of adaptation or acclimatization to new environments is certainly readily apparent in our native species; why should we expect more plasticity in the genetic structure of a foreign species? Gambel's Quail (*Lophortyx gambelii*), after untold centuries in southern Nevada still can exist on only about 940 square miles of the more than 14,000 square miles of Mohave Desert occurring within that state (Gullion, 1960:534). The few successful transplants of these desert quail to other areas have occurred where environmental conditions were essentially the same as in their native habitat.

Although the conifer-needle eating Blue Grouse (*Dendragapus obscurus*) is scattered sparingly throughout the higher mountain ranges in Nevada, where bristlecone and limber pine (*Pinus aristata* and *P. flexilis*) are of limited occurrence, this bird has not been able to adapt itself to a diet of either pinyon pine (*P. monophylla*) needles or Utah juniper (*Juniperus osteosperma*) foliage, and thereby occupy a vacant ecological niche covering about 15,000 square miles in that state. Nor have Sage Grouse (*Centrocercus urophasianus*) learned to subsist on the fleshy leaves of the abundant chenopods such as *Sarcobatus*, *Atriplex*, and *Grayia*, a feat which would allow them to thrive without competition on many thousands of square miles of cold-desert scrub in the Great Basin.

In northern Minnesota despite centuries of exposure to the climate of the boreal forest, the Ruffed Grouse (*Bonasa umbellus*) remains largely at the mercy of the climate, the numbers from one year to the next being largely dependent upon the vagaries of the winter weather (Gullion, 1964). These chionophiles have not adapted very well to northern Minnesota weather conditions.

Under current consideration is an additional introduction of European grouse into Lake States forests. One of these, the Capercaillie (*Tetrao urogallus*) is largely dependent upon the needles of Scots pine (*Pinus sylvestris*) through the most critical part of the winter (Seiskari, 1962:31), and this pine is of very limited distribution in North America. I don't believe we can expect this species to do as well feeding on

some other pine. Bump (1963:863) makes the ambiguous statement, "Captive capercaillie . . . accepted without difficulty white pine . . . and jack pine . . . as food." This is comparable to Nagel's 1945 food study of the Chukar Partridge in Missouri wherein he listed a number of food items utilized by chukars before they disappeared completely from the state—none of the items listed included the foods essential to this species' survival in the arid western areas where it is now established. We also know that Ruffed Grouse will readily feed on dyed, shelled corn (Gullion, 1961) but Ruffed Grouse do not thrive in the cornfields of southern Minnesota.

Another bird, the Black Grouse (*Lyrurus tetrix*), being largely dependent upon the catkins of birches (*Betula verrucosa* and *B. pubescens*) in the Old World might have better success in the extensive paper birch (*B. papyrifera*) forests of northern Minnesota (Helminen, in litt., 1964). However, it should be remembered that birch is widely regarded as a "weed tree" among foresters, and is being routinely eliminated from areas under intensive forest management in favor of the long-needle pines (which are not utilized by any wildlife species on a preferred basis).

According to Seiskari (1962) both Black Grouse and Capercaillie have very specialized habits and habitats, and by Bump's standards (1951:319) should "automatically be eliminated" from consideration for introduction.

One further point in regard to these European grouse: The object of their introduction is to provide more hunting than provided by native species, yet at their better densities on native European ranges these two species of grouse about equal the density of our native Ruffed Grouse when at *low population levels* (Seiskari, 1962:82; Jenkins, in litt., 1964; Helminen, in litt., 1964). These grouse, too, are subject to the same type and degree of population fluctuations, and would indeed be scarce at their low points (Siivonen, 1952).

In recent conversation with Arnie Belsaas, responsible for game management in one of Norway's five regions, I learned that Capercaillie are so difficult to hunt in their native haunts that special seasons are set to take advantage of a brief 2-week period of intensive arboreal feeding in the fall, and on their display grounds in the spring. Such a bird would hardly meet the needs of American grouse hunters.

When more thorough food habits and ecological studies have been made I believe biologists will find that all resident game birds living in harsh environments, whether arid or boreal are able to survive due to very specialized habits and habitats. Koskimies (1955) stresses this point in discussing the feeding habits of European herbivores, as I have done (Gullion, 1956:34-35) for the quail living on the deserts of southern Nevada. Most of the areas in North America lacking resident game birds are just such harsh, semidesert, or boreal forest habitats, having limited or specialized food resources.

In 1951 Bump said (p. 317) that introductions would be into "other coverts which never were fully occupied by native game birds . . . possessing the characteristics requisite to survival in the face of today's intensive hunting pressure," yet in at least one state virtually all of the introductions have been made into areas as fully stocked by native species or earlier established exotics, as the habitat would carry. According to Christensen (1963:15) the bulk of Nevada's releases of 2,300 Gray Francolins (*Franco-linus pondicerianus*), 600 Black Francolins (*Franco-linus francolinus*), and 2,000 Common Sandgrouse (*Pterocles exustus*) were made into the agricultural valleys supporting the highest densities of native Gambel's Quail in the state (Gullion, 1960). The foods taken by these introduced species placed them in direct competition with the native species, in an area where the food resource is a limiting factor. Fortunately for the native quail these exotics have apparently disappeared completely.

In spite of a costly 10-year program of foreign bird introductions into Nevada, involving several thousand birds of 12 species (including at least three species transplanted from other parts of the United States—Christensen, 1963:63), the 1957 statement (Gullion and Christensen, 1957:137) that "approximately 68,000 square miles (62 per cent) of the 110,500 square miles in the state are not occupied by any upland game bird on a permanent-resident basis" is still valid. My prediction is that it will remain so until a bird is found which can survive on the fleshy leaves of a few Chenopodiaceae such as *Atriplex*, *Grayia*, and *Sarcobatus* and the irregular seed crops of a miscellaneous group of crucifers, composites, borages, and knotweeds; or upon the needles of pinyon pine and the foliage and fruit of juniper.

Bump and Bohl (1964:3-4) list 16 game birds obtained through the Foreign Game Importation Project, plus four species obtained by various state agencies through independent sources. Of these 20 birds (some are races of the same species), only several geographical races of the Ring-necked Pheasant, the Black Francolin, and the so-called Turkish Chukar, a race of the Rock Partridge, appear to have shown much promise to date.

The form of the pheasant which has been most successful is a hybrid between a Western and Eastern Iranian Pheasant (*P. c. talischensis* × *persicus*), presently established in Virginia (Allen, 1963). Other forms of the Ring-necked Pheasant which show some promise include the Japanese Green Pheasant (*P. c. robustipes*), also established in Virginia and possibly Tennessee; the Afghan White-winged Pheasant (*P. c. bianchii*), showing some potential in Missouri and Oklahoma; the pure strain of the Eastern Iranian Pheasant in Missouri and Iowa; and the pure strain of the Western Iranian Pheasant in Virginia, Kentucky, and Tennessee.

Among the other species the Turkish race (*A. g. cypriotes*) of the Rock Partridge shows promise in California and New Mexico; and the Black Francolin shows possibility of establishment in Louisiana and maybe three other southern states.

On the other hand, the Gray Francolin which was "showing promise in . . . Nevada" in 1963 (Bump and Bohl, 1964:3) had evidently failed by 1964. Blair (1942:18) once was satisfied that the chukar would become established in Minnesota where, in spite of apparent early successes following the release of some 85,000 birds (Christensen, 1954:12), the species now persists only on a few mine dumps in the northern part of the state near Ely, where they consistently have been provided with supplemental food supplies. The failure of the widely released Japanese Migratory Quail (*Coturnix coturnix*) was particularly dramatic. This program was not connected with the federal program.

Particularly disturbing is the reestablishment of expensive game farm programs which are being justified in many states for the purpose of rearing these imported species to give them more adequate trials.

There is abundant evidence that if an exotic species is going to succeed in a new environment it will do so following the release of a relatively small number of individuals. This has been true of the establishment of Ring-necked Pheasants and Chukar Partridges, as well as European Starlings (*Sturnus vulgaris*) and the House Sparrow (*Passer domesticus*). If the release of a few dozen or 100 or 200 healthy individuals of a species fails then the release of many thousands has not proven anymore effective in assuring establishment.

After watching the conduct of the exotic bird program for nearly a decade and a half one can only conclude that the majority of the wildlife biologists who have felt it was a waste of resources have been basically correct. In some states the introductions of

exotics is being pushed when utilization of an abundant established wildlife resource is either nonexistent (as in states extending protection to Mourning Doves (*Zenaidura macroura*), Bobwhite Quail (*Colinus virginianus*), and hen pheasants—cf. Harper, 1960), or barely touching current annual production (the Chukar Partridge and grouse on many western ranges, and Ruffed Grouse in Boreal forest regions—cf. Eng, 1962). Perhaps the most unhappy aspect of the exotic program is that the search for a cornucopia of imported game birds diverts scarce resources and attention away from the research necessary for developing sound management practices leading to better handling of existing native and exotic upland game bird resources. After more than 35 years of research game biologists still do not know enough about our native Ruffed Grouse to be able to manage it successfully.

The Hamerstoms (1963:885) neatly summarize this whole matter by saying of the exotic program, "Aldo Leopold (1938) said that 'it has depleted the game funds of 48 states for half a century, and has served as a perfect alibi for postponing the practice of game management.' To this, another quarter century can now be added."

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