

## **RESEARCH ON THE IMPROVEMENT OF PARTRIDGE LIVESTOCK IN THE UPPER BASIN OF CRISUL REPEDE RIVER**

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### **Abstract**

*The paper presents a research on the restoring and replication of partridge livestock in the upper basin of Crisul Repede river, on the hunting fund no. 22 "Ineu", managed by General Association of Hunters and Anglers Romania, Bihor branch (ALVPS Bihor).*

*The need for this research is based on the small number of specimens observed before 2006 as a result of the repetitive scrutiny of this region, given that the biotope is particularly favourable to the development of this species.*

**Key words:** partridge, species, livestock, evolution, reproduction

### **INTRODUCTION**

The numerical decline of the partridge has become an obvious reality all over the world. Available data on hunting statistics show a clear decrease in harvested specimens across Europe as a proportion of the harvest dedicated period. This trend is also confirmed by the data obtained from evaluations carried out more or less regularly in different European countries.

On the basis of known parameters related to the dynamics of populations studied, the overall assessment of this species across the world made before the '50s showed that there were 110 million specimens, while nowadays, the number thereof decreased by more than 80% (Potts, 1986).

Among the various specific causes suggested, a particular attention was paid to the role played by pesticides (Potts, 1970a, 1974, 1986). The effect of pesticides on fauna can be direct, namely, causing mortality through acute intoxication, ingestion or direct contact, or can lead to chronic intoxication that, although not causing death, has other long-term effects on the species. Generally, it leads to an increased risk of mortality due to decreased immunity, lower fertility, etc. By far, however, the most important effect of pesticides is related to the impact thereof on the environmental balance. In the case of partridge and other Galliformes, ecological impacts have mainly led to a decrease in the quality and quantity of entomofauna in agro-ecosystems. This effect becomes extremely serious by the synergy of combined actions of insecticides and herbicides. The direct impact is due to the fact that herbicides destroy entomofauna by

exterminating the plant species that host many insects. In almost all European areas, numerous studies have highlighted the significant decrease of entomofauna due to the use of pesticides (according to Potts, 1986). Significant decrease in entomofauna has led in particular to the decrease of the most important feed source for baby birds, resulting in drastic increases in the mortality rate thereof.

Numerous studies on this topic in different countries have highlighted the essential role of environmental change related to modern farming techniques.

Our research was conducted between 2006 and 2010, on the upper course of Crisul Repede river, the hunting fund no. 22 “Ineu”, on area of 3,000 ha between the settlements of Husasau de Cris and Uileacu de Cris.

The presence of this species for hunting purposes and not only has been reported in this area several decades ago, but this bird livestock has been decreasing as a result of the intensification of farming until the '90s.

Although partridge is specific to the plain and hilly areas, it is well-known that this species does not withstand monoculture farming; intensive herbicide works corroborated with the intervention in the stubble field immediately after harvesting grains which are other two drawbacks that prevent the proliferation of partridges.

## **MATERIAL AND METHOD**

In the inception phase of the research, we set up a few areas to be under scrutiny on regular basis starting from spring as of pairing of species then for the rest of the year less in the period when the vegetation is very developed since the observations are not conclusive in this stage of vegetation development.

The experiment was poly-factorial and included:

Factor A: Areas subject to observations

A1 Effective meadow of Crisul Repede river on both sides of the banks

A2 Plains area dominated by grain farming

A3 Hills area

Factor B Species for hunting purposes – the Partridge

Factor C Research years

In each of the areas surveyed, both the flocks and the individuals of each flock were counted by repeated scrutiny of each area.

For the purpose of data centralization we took into account the respective flocks and the samples counted in October, November, December, but especially the evaluation made in March according to the “M” dedicated sheet.

In the first phase an intensive combat of the raptor species was carried out by shooting and destruction of the nests with eggs, burrows and dens, and shooting of raptors.

Additional food was administered throughout the research during the cold season (November - March).

## RESULTS AND DISCUSSION

Following the observations made, a number samples were evaluated in each counting, according to Table 1 below.

*Table 1*

Samples evaluated			
No	Observation year	Market no	Samples evaluated
1	2006	5	15
2	2007	5	48
3	2008	5	180
4	2009	5	400
5	2010	5	560

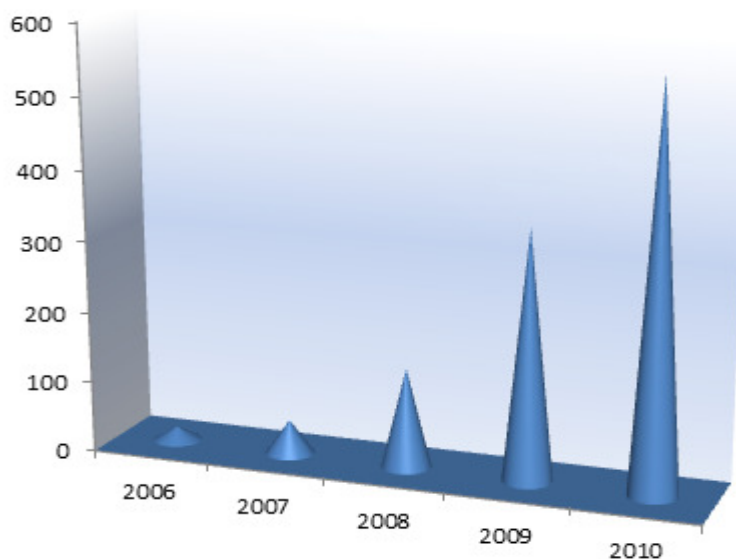


Fig. 1. Evolution of the number of Partridge samples by observation years

Thus, in the first year of the research (2006) we encountered sporadic flocks with a reduced number of samples (i.e. 3-6); during the next year the differences were not significant; however, slight gains in the number of sample were registered in particular at the edge of the plains and hilly areas.

Moreover, in spite of all efforts to combat the raptors, their suppression was not possible.

In 2007, we had the first concrete results especially in the hilly area where in the case of 2 flocks consisting of 4-5 individuals each per 1,000 ha we found the presence of 4 other flocks counting 8 to 10 individuals.

The results were very satisfying, but the phenomenon did not replicate in the agricultural crops area, despite the fact that the monoculture decreased in terms of farm land occupation degree.

However fewer flocks appeared in the Cris river meadow.

Under these circumstances, we got in touch with those farmers - owners of the farm lands concerned and we reached a consensus i.e. to leave  $\leq 1$ m wide grass trips between the large parcels cultivated with grain.

Another problem concerned the delayed intervention in the stubble field or in-the-field incineration of surplus straw after the grain harvesting.

We were quite surprised to see the presence of two large flocks at the end of September on a "forgotten" plot of straw, and we found several species of insects in the place where the partridge samples fed themselves.

There is another problem related to provisioning the protein, especially for baby birds and young samples.

In areas populated by many flocks, surviving the cold, low temperature, snowy season is accomplished with a minimum mortality ratio, sometimes even 0%, that's because of the way the birds' habit to heat up one each other by rotation.

During 2008, the natural increase was maintained within the limits of the previous year, with the remark that around 20 flocks counting an average of 7-9 individuals per family occurred.

The year 2009 was somewhat disappointing due to the fact that, following the more careful and repeated evaluations, carried out on purpose, there was found a very small annual increase exemplified by under-populated flocks.

The first prerequisite that preceded the observations was the one related to the climatic conditions during the nesting period and especially the egg hatching consisting in heavy and cold rains (over 25 l/ m<sup>2</sup>) falling in short periods of time.

We did not took into account the cold winter temperatures even if thresholds of -20°C have been reached, as the flocks were large and healthy, and benefited from food. The above statements were confirmed by

observations during pairing; these observations revealed enough pairs to perpetuate the species to a satisfying natural growth.

However, the decreasing in the number of samples was noticed during the spring 2010 evaluation.

The sufficient number of pairs and favourable weather conditions led to a substantial natural increase, which created a new problem, namely overcrowding in the researched area knowing that the pairs need a quite large area for living and considering especially the territorialism manifested by the bird pairs during the mating season.

This has led to the spread of partridge samples in the forested hilly areas where there had been no specimens of this species subject to evaluation in the past.

## CONCLUSIONS

Restoring the partridge livestock is directly linked with the intensification of agriculture.

Extensive monoculture makes it virtually impossible to build nests and secure laying of eggs

Use of insecticides has led to the destruction of entomofauna the latter being the main source of protein for baby birds

Entomofauna has been also destroyed due to herbicides, since the weeds served as a shelter for insects.

The intervention at soil level immediately after harvesting has been another way of destroying the partridge source of food both from the point of view of the seed weeds and the entomofauna hosted by the straw left to decompose.

Reducing the number of raptors had a positive impact on flocks, especially on hens.

Crop rotation and maintaining some unprocessed fields between crops may have been influenced the most restoration of partridge populations.

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