

C. General Discussion

Jan ŻABIŃSKI

Dr. K r a s i ń s k i, dealt at length with the necessity for and methods of additionally feeding European bison living in freedom at the present time. I am approaching this matter as a doctor of philosophy, quite simply from the logical point of view. The whole of his statement is based on a fundamental error which has in fact lingered on for over fifty years. It is a strange thing that up to the present people in Poland have failed to understand that the purposes of protection of the European bison were different in 1929 from what they are now. At that time when Poland had only just begun to deal with that matter, there were only three animals in Poland, *i.e.* 10% of all the specimens of European bison then existent in the world. The main aim was, indeed, to »facilitate« life for European bison in order to obtain as rapidly as possible the largest possible number of progeny. To have allowed even one animal to die would have been a real misfortune. Nowadays, however, when there are at least 500 European bison in the world, and we in Poland have over 200 of them, it is the time to realize that methods of protecting the species must be changed. Today the most important thing is to maintain the European bison in existence without distorting either its morphology or mentality. We made this mistake during the period from 1929 to 1952, but made it of necessity, fearing to risk the life of the invaluable few specimens extant. It is therefore with a certain kind of horror I listened to Dr. K r a s i ń s k i speaking about supplementary feeding the free-living herd of European bison without even mentioning that this is an evil (now not in any way necessary) and maintaining in these animals the acquired mental traits of the domestic animal. As long as we continue to use these methods we shall not be justified in saying that we have restituted the former European bison in the primaeval forest, but only that we have stocked it temporarily with domesticated representatives of this species. I shall therefore conclude what I have to say with the paradox that I, who have been working on protection of the European bison for almost fifty years, shall only be able to consider that we have satisfactorily carried out the task we undertook when we have introduced normal shooting of the European bison as of every other game animal. I do not mean to say that even one cow bison which is capable of giving us young should be killed. We have heard from the articles, however, that the sex ratio of the European bison born is 1:1, and every breeder knows that one bull bison is capable of covering 4—5

females. A certain number of bulls can therefore be allotted for shooting, of course with the reservation, that this must be initiated in one centre specially chosen for the purpose. I am convinced that this loss will continue to exert a beneficial effect on the mentality of these animals, when they cease to be something left completely undisturbed, something which lives in the forest under other laws than those applying to the remainder of game animals.

Zdzisław RAABE

It seems to me that the statement made by Dr. Żabiński contains certain points which are capable of rousing and animating further discussion. The first of these points, in my opinion, is the question of purposely aiming at a return to the wild state of this species. We have to deal with two partners in this case: the European bison, which we would like to see completely wild, and the primaeval forest, which is not wild. Under such circumstances is it possible to ensure the balance desired? Is it not essential, since the forest is no longer in its wild state, to continue human intervention in the European bison's affairs to compensate for certain deficiencies? As far as the mental state of these animals is concerned we are somehow not worried about what it experiences since the red deer and other animals, also wild, cope with human intervention without acquiring complexes.

The second matter, which has frequently been raised, is the question of the sex ratio in herds of hoofed animals. It is true that one bull bison is capable of covering several cows and fertilizing them, but to leave this possibility to one male only leads to great impoverishment of the genotype of the population. Even if we assume that one bull dominates in a given season, a second bull, being in reserve, will replace it the next season.

The third matter is that of shooting, that ritual butchery which has been proposed to us here. Most certainly we are all of us fairly alive to the question of money in a negative sense. But it is not only this which is in question here — such money would in no case be devoted to scientific matters relating to the European bison, and its breeding, but would be paid to a totally different body, while research on the European bison would gain nothing by it. On a national scale such sums are negligible.

I think that these are the three points about which we might find ourselves at variance.

Leon ZANIEWSKI

The about 200 individuals of the European bison living in Poland are not sufficient to warrant plans being prepared for shoots of these animals, especially as our knowledge of this species is as yet insufficient and further research is required. One of the many problems which is now ripe for solution, in view of the needs of science and practical work, is the remote-controlled immobilisation of the European bison. Several of us are working on this problem, but each of us is working independently and we are scattered in various institutes. I propose the formation of a committee composed of these persons, within the framework of the European Bison Research Centre, in order to facilitate a more rapid and most appropriate solution of the problem.

Cross-breeding between the European bison and domestic cattle requires further investigations and would appear necessary primarily from the practical point of view. There is a question which in my opinion should be included in further

research in this field. According to Karcov (1903) the Polish farmer, Leopold Walicki, obtained a fertile male, a F_1 hybrid, by cross-breeding the European bison with cows of the Schwytz breed. This the first case up to the present of a fertile male F_1 in hybrids of the genera *Bos* × *Bison*. Study of the table of Walicki's hybrids in Karcov's study (1903) gives rise to doubts as to the accuracy of dates and in consequence even partly to the actual work by Walicki, or rather to its results. The dates of birth of some of animals are open to question: of European bison — 1846, of the male hybrid F_1 — 1848 and its son F_2 — 1850. This list shows that males slightly more than a year old — the European bison and hybrid F_1 successfully covered females, which in the light of recent research appears improbable. This question therefore requires further study. I should like to refer to the fact that Fortunatov (1924) in comparing the craniological measurements of the European bison and some breeds of cattle made the following statement: »I personally consider that the craniological measurements of the Swiss breeds of cattle: the Schwytz and Simental, are more similar to the European bison than to the grey Ukrainian cattle. It would be desirable to elucidate this question by means of new experiments in cross-breeding European bison with Simental cattle«.

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Kazimierz KOWALSKI

I should like to deal here with the problem of the European bison's future from the slightly broader aspect of the problem of extinction of animals in general. Contrary to the assumptions often voiced earlier on as to the »senescence« of animal species, it is today generally accepted that the extinction of a given species is due to changes unfavourable to its living conditions. If the aurochs became extinct in Europe, and the European bison was very close to extinction, while other species of forest mammals maintained relatively numerous populations, then it is clear that the conditions prevailing in Europe became particularly unfavourable to the above two species. Thus although we have succeeded in saving the European bison from extinction it would appear doubtful whether it will become fully possible under present conditions to restore it to a state of »wildness«. If today we allowed free play to these influences, as was at one time the case before full protection of the European bison was initiated, they would most certainly lead to the extinction of this species. It seems that under the conditions prevailing at the present time in Europe the European bison can only be maintained by means of active protection, as a »semi-domesticated« animal, that is dependent for its survival on man.

The present European bison breeding centre — Białowieża — lies not far from the northern limit of the natural range of this animal, which never penetrated beyond Latvia or Lithuania, that is, the zone of the range of deciduous forests. The European survival has been maintained at Białowieża not because the conditions there were particularly favourable to it, but because it was less persecuted there for various reasons than it was elsewhere. It is therefore most probable that as a place for breeding European bison we have an area at our disposal in which

the conditions are far from optimum. We do not know whether a large European bison population would be able to live under conditions of this kind without the possibility of, for instance, making seasonal migrations to the south, if it were not for man's active assistance.

For a species with a »normal« large living area it is natural that when climatic conditions are particularly unfavourable it dies out in the peripheral habitats, which are resettled later on by the individuals which survived under the optimum conditions. If a species such as, e.g. the European bison is limited to small areas, it may then prove essential to assist it artificially to survive through pessimum periods.

It seems to me that further research on the European bison will make it possible to determine the minimum human assistance essential for the survival of this species. There can be no doubt that some degree of assistance will be necessary.

With regard to the question of shooting the European bison, we shall certainly be faced by this problem when the number of individuals becomes so high that the means necessary to care for them exceed our possibilities. The present number of European bison is surely as yet a long way from this. The difficulty in saving a species close to extinction is primarily due to the fact that the genetic pool of a small population is far poorer than that of a large population. In the event of unfavourable conditions occurring there is little chance in a small population of finding individuals especially well adapted to withstanding such conditions. From this aspect each individual representing a separate genotype, whether male or female, is of great breeding importance and it is impossible to assess the value of an individual solely by whether it is required as a reproducer. On this account the definition of any number of males as »superfluous« to future breeding would not appear justified from the genetic standpoint.

Zbigniew JACZEWSKI

It is difficult for me to express my views on the supplementary feeding of European bison as I have not made any particular observations of free-living herds. Supplementary feeding has, *inter alia*, the disadvantage of tending to tame animals. It is true that game is supplied with supplementary food, but this does not tame such animals on account of hunting. Two factors: shooting and supplementary feeding, to a some extent cancel each other out.

Putting food out on permanent feeding places may also have an unfavourable effect by reducing animals activity and their natural tendency to search for natural food. This could be counteracted to some degree by placing food on the snow in different places each time.

It would be desirable to try as far as possible to crossbreed the European bison with different breeds of cattle. The results of such a crossing could be different depending on the used breed of cattle. Apart from theoretical questions, such investigations might also serve practical purposes. Walicki carried out his experiments for the purpose, *inter alia*, of obtaining strong working oxen. With the present mechanised era this purpose is of course no longer valid, but the question of meat and hide production remains. It would be interesting to investigate the taste properties of the meat of hybrids. I have myself found out, both from literature and personal experience, that the meat of hybrids may be superior in quality to that of the initial species, for instance cross-breeding of domestic pigs with wild boars produces very tasty meat.

Zbigniew KRASIŃSKI

When considering the question of whether free-living wisents should or should not be supplied with supplementary food it is necessary to bear in mind the changes which have taken place in the Białowieża Primeval Forest, and which are irreversible, and especially its considerable colonisation. During the period after the release of the first wisent into the Forest, when they were not as yet supplied with additional food, they approached human habitations and even entered farm enclosures in their search for food. The wisents which do not now approach the special feeding places come close to Białowieża and other villages in the forest, and eat hay even from areas close to farm buildings. The fact that there is less bark-stripping from trees where supplementary feeding has been introduced is also of importance.

Tadeusz TAWORSKI

In addition to the female hybrid »Żukawa« referred to in the articles by K r a s i ń s k a and P u c e k, F_2 hybrids were also obtained in the Zoo at Płock, the fathers of which were respectively »Puer« and »Puszkasz« and mother the above-mentioned »Żukawa«. These matings produced the hybrid »Żukr« (born April 21st 1960) (father the wisent »Puer«) and in 1963 his half-sister »Żukrawa«. Both animals have been kept up to the present in the Płock Zoo. The Płock experiments took a different direction to those made at Białowieża, since we were anxious to obtain an animal most similar in appearance to the wisent. This aim was fully achieved as both F_2 hybrids — particularly »Żukr«, scarcely differ at all to the average onlooker from a pure-bred wisent.

Zdzisław PUCEK

There are two further aspects of the problem of regulating the number of wisents. In the first place it must be remembered that there are no more than 250 individuals of pure lowland breed (Białowieża) of the European bison in the world, that is, the subspecies *Bison bonasus bonasus* (Linnaeus, 1758). The whole of the remainder (approximately 600 head in 1966) were cross-bred with the Caucasian species. According to the IUCN regulations, species whose numbers fall below 2000 heads are threatened by extinction. In the case of the wisent, and in particularly the pure lowland breed, we are still far from exceeding this critical number. These animals must continue to be protected from the extinction which still threatens this species, and therefore all suggestions that a certain number should be allocated for game purposes should be rejected.

Wisents living in forest ecosystems often greatly changed by man will undoubtedly adapt themselves to these new conditions. Zablocki (1965) has recently written in greater detail on this subject. The changes brought about in forests are, however, so far-reaching that they make continual human intervention and care of free-living wisents, including their supplementary feeding in the winter, essential.

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Janusz GILL

In connection with the necessity at present under discussion for ensuring wisents the greatest possible enrichment of their hereditary characters, the need for extensive research on the physiology of this species is evident. For this purpose the following are essential: a research centre, a research team well grounded in physiology and of course material. The investigations hitherto carried out are as yet insufficiently documented, chiefly on account of the scanty material. Arrangements should therefore be made to ensure planned supply of wisents for systematic research, especially as up to the present several laboratories have made use of each animal available for experimentation and research has therefore proceeded in various directions. The material, however, has consisted only of adult males, while we know scarcely nothing of the physiology of young and female wisents, especially those in calf and producing milk. Despite the great demands for breeding purposes it would therefore be extremely useful if a certain number of females could be allocated for research, in order to obtain at least basic data.

As regards cross-breeding the wisent with other species or breeds of ruminants I am in favour of extensive investigations, especially those aimed at selection of suitable species and breeds for cross-breeding. This matter has in addition to the biological, also a practical aspect. Necessity dictates that a search for sources of animal protein should be made in all directions. Different breeds of cattle have different capacities for synthesis of protein and fat, and others, such as buffalo — far lower food requirements than cattle. It would therefore be desirable to attempt to make use of these different properties in cross-breeding with the wisent.

Tadeusz SZCZĘŚNY

The problems to which research on the wisent has hitherto been devoted are of considerable practical significance, and the Ministry of Forestry attaches great importance to them. The protection and breeding of wisents raise a large number of problems which have to be solved. No ready made instructions can be expected in such matters, but it appears that resolutions will be undertaken as the result of this symposium which will provide, in the light of what has been done so far, a guide to the directions and scope of future research, which is so important and urgent as an aid to the solution of these problems by the Ministry of Forestry and Nature Protection official bodies. Certain conflicts of an economic nature have arisen in connection with the state of breeding which we have attained. The foresters in charge of the Białowieża Primaeval Forest complain that the wisents destroy it. Would an attempt at liquidating or mitigating this conflict solely by limitation of the number of wisents, especially males, be the only correct way of doing this?

If we agree with Dr. Żabiński that we must stop intervening in the life of wisents in the Białowieża Primaeval Forest, we must remember that this cannot apply to supplementary feeding but equally, and perhaps primarily, to quantitative regulation of the sex ratio. This does not mean that we intend to proceed in this way at once.

What we have so far succeeded in doing for the purpose of preserving the wisent, which includes allocating a certain number of wisent for scientific research, is an important achievement and we must not waste it. We should like to preserve this line until science is able to give a reply as to what future steps must be taken with regard to the wisent, whether its numbers should be limited by

regulating the sex ratio and also whether free-living wisent should be given supplementary food.

If we say that the wisent has in a certain sense been restored to the fauna of Poland, we must remember that this is a very relative statement, as the species is still threatened by many dangers. One of them is the mistaken view of evaluation of the wisent in terms of foreign currency to be obtained by permitting shoots of these animals. It should clearly be understood that in this kind of comparison the wisent will always lose, and foreign currency win. Our aim however is to do what we can to preserve this species. It therefore appears to me that such evaluation of the wisent greatly complicates and renders difficult the proper solution of the current problems of its future breeding. We desire that research on the wisent should make it possible to determine what conditions must be created, so that while aiming at preserving this species it would also be possible to ensure it a proper place in the forest ecosystems of the Białowieża Primeval Forest. The wide range of research on the wisent should take into account the practical requirements which, on account of the conflict between the views of foresters and supporters of protection of the species are increasingly urgent. The source of the conflict lies in the fact that the Białowieża Forest is considered an important base for timber production, whereas from the standpoint of nature protection and the zoologist it is at the same time the only area in which under Polish conditions it is at the same time the only area in which under Polish conditions it is possible to speak of preserving the wisent to the extent made possible by the capacity of this habitat.

The research carried out at Białowieża on cross-breeding has not been sufficiently discounted in favour of the wisent. It would be worth while extending such research, with the intention of utilising the results obtained in practical breeding and production. This would provide arguments that the breeding of wisents, in addition to the most essential advantage implicit in preservation of a vanishing species for science and culture, also has its real practical advantages. The research initiated in this field by Professor Dehnel is of enormous importance in forming a correct view of this question.

We maintain very close co-operation with our Soviet colleagues with regard to the breeding of wisents in the Białowieża Primeval Forest. The state of some degree of caution, in the sense of not interfering in the life of these animals, should be maintained until such time as we obtain an answer to the problem as to the directions in which its continued restitution should take. We are bound to do so by the bilateral agreements reached.

We must, however, remember that research on the wisent, if it is to be of any practical importance to us, cannot be planned for too long a period, as the existing conflict creates unnecessary friction and an undesirable atmosphere.

The studies undertaken by the Mammals Research Institute of the Polish Academy of Sciences, with the participation of the Białowieża National Park and the National Council for Nature Conservancy, should be intensively continued. It is to be hoped that the Polish Academy of Sciences will duly appreciate this problem and facilitate their expansion to the necessary degree.