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Zbigniew A. Krasiński

European Bison

The Nature Monograph

Second Edition

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(with Chapter 4 by Małgorzata Tokarska)

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This book is dedicated to all who have contributed to the preservation and restitution of that master of our wild forest, the European bison. Today, as it has through the Ages, the bison of Europe make their way through the forest. But if they are to persist in the face of changing natural conditions, their species will always need to remain the subject of special care and attention

Preface

We have linked up our whole adult lives with Poland’s Białowieża Forest and its bison king. Following our graduation from the Faculty of Veterinary Science in Warsaw, 1961 saw us starting work at Białowieża. Małgorzata was at the Mammal Research Institute, Polish Academy of Sciences, while Zbigniew was with the Białowieża National Park. And that is how things have remained to this day.

The animal to which we have devoted this sizeable chunk of our lives is a truly fascinating one: huge, mysterious, unbowed and saved from extinction by some miracle. For many years, we have sought to gain a better understanding of its habits, biology and links with the environment. And the tracing of this primordial beast’s efforts to survive in and (re)adapt to environmental conditions has been a source of enormous satisfaction for us.



The monograph’s authors—Małgorzata Krasieńska and Zbigniew Krasieński—in the Hybrids Reserve in 1975. *Photo* from the authors’ archive.

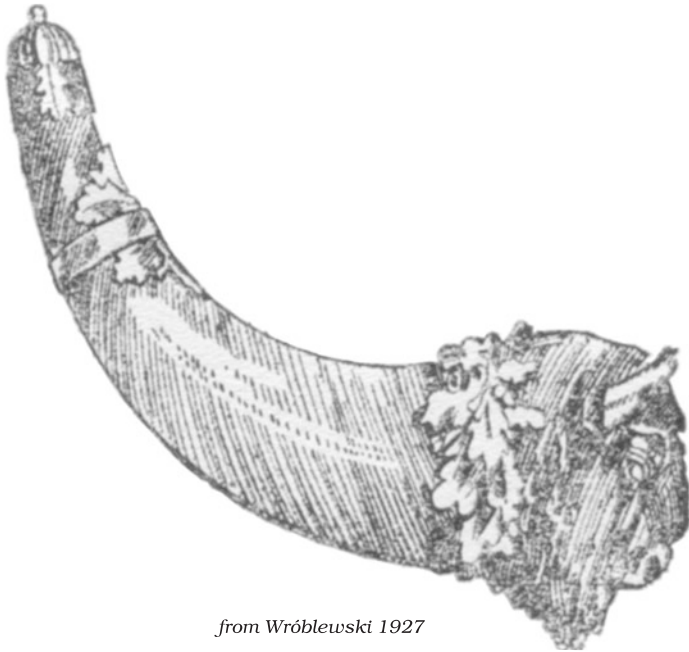
While the European bison is emerging victorious from all this, for now at least, there are dangers on all sides. So one of the leading goals of our activity has been to keep ourselves fully acquainted with the threats in question, and to make sure that action continues to be taken to protect the species. Our work centres on the Białowieża Forest, taking in the whole area cut across by the state border between Poland and Belarus. However, we have also studied the other populations of European bison present in the north–east of Poland. The result of all our work comprises some 200 publications on the subject of European bison.

We should also mention studies devoted to the crossing/hybridisation of the species with domestic cattle. The animal created by way of these experiments was first known loosely as a hybrid, but later came to be termed the “*żubroń*”. It was primarily to this issue that Małgorzata devoted herself over her first 15 years at Białowieża.

Our work has had its moments of danger, there being times when bison have decided to treat us to a swift dose of their horns or hoofs—but they always did this in defence of their independence.

Our greatest wish will have been fulfilled if the publication we offer here helps ensure that the relict animal it deals with will still be there in future for our descendants to see and enjoy, in the tiny scrap of wild nature we have left for it to inhabit.

Acknowledgments



from Wróblewski 1927

We would like to extend our sincerest thanks to all those who supplied advice or assistance at each stage of our research and work on the preparation and assembly of materials. The late and much missed Professor Zdzisław Pucek was the initiator of research on the ecology of the European bison, and it was he who supported us with his invaluable advice through the whole time we were carrying out studies. We also have the most grateful memories of Prof. Kazimierz Krysiak, Anatomist and Founder of the Centre for Research on Bison Anatomy in Warsaw. Then there is Prof. Stanisław Piwowarczyk, whose practical advice was so very helpful to us as we embarked upon our work, Prof. August Dehnel of the Mammal Research Institute PAS at Białowieża and Jerzy Szymczak, M. Eng., Director of the Białowieża National Park at the time we started. We are in turn grateful to Prof.

Aleksander Demiaszkiewicz, for his remarks regarding bison parasites; and to Dr. Joanna Izdebska for help in preparing the table concerning the external parasites of bison. We also have much to thank staff of the Białowieża National Park for, as well as technicians and scientific personnel from the Mammal Research Institute PAS at Białowieża—especially for the assistance they gave and the possibilities for joint work they helped open up. We are also grateful to a host of other colleagues too numerous to mention, who have been carrying out scientific work at various institutions in Poland and abroad, and have thus made it possible for us to engage in joint studies. For many years, our colleagues and friends from the Belarussian part of the Białowieża Forest joined us in implementing research tasks that sought to better understand and protect bison across the entire Białowieża Forest area. More specifically, we would also like to thank Tomasz Kamiński and Tomasz Samojlik, employees of the Mammal Research Institute PAS at Białowieża, for the help they gave us in resolving complicated matters associated with the computer graphics underpinning this book.

Likewise, we are indebted to Karol Zub, who went to great lengths to produce and update the figures for our work, and are eternally grateful to our reviewers—Profs. Bogumiła Jędrzejewska and the aforementioned Zdzisław Pucek, whose suggestions and remarks have had such a major impact on the final shape the Monograph has assumed. We would also like to address our sincere thanks to Dr. James Richards, Translator of the Polish version of the first edition of this book into English and updater of the text for this second edition; as well as Dr. Matt Hayward, for the valuable remarks he made on the first-edition English text.

As we have noted, there is no possible way in which we can list all those with whom we have worked, from whom we have gratefully accepted help, and on whom we have always been able to count, down the years. The best we can do is to offer here our most sincere words of thanks.

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Chapter 1

Introduction

The greater part of this monograph is devoted to the European bison of Poland's Białowieża Forest, being based primarily on the results of our own long-term research carried out there, if also taken account of information relating to other free-ranging herds. In its first part, this study offers concise information on the systematics of the subject species, as well as its contemporary history, genetics and morphology. Particular attention is paid to the formation of the Polish population and changes in its abundance over 60 years, as well as to population structure and mortality. The development of the bison populations inhabiting the Białowieża Forest on the Polish and Belarussian parts are also compared. Further subjects dealt with are reproductive biology, the rhythm characterising activity in the species, habits, diet and social organisation. The issue of the strategy by which the species utilises its environment in turn takes in the population's spatial structure, a characterisation of home ranges of individuals and groups, migration, and biotope selectivity. The final part of the book goes over the principles by which the population has been managed and the threats it faces, obviously with emphasis on the process by which the free-ranging herds in different parts of the world have been reinstated, along with a brief characterisation of the populations of this kind currently in existence. This book is augmented by a timeline of key events and dates associated with the story of the restitution of *Bison bonasus*, Appendices section *inter alia* documenting the reinstatement of bison on the Reserves at Białowieża in the years 1929–1952, as well as supplying statistical data pointing to the development, reproduction and structure of the population of European bison inhabiting the Polish and Belarussian parts of the Białowieża Forest. An issue not dealt with at all here is the origin of the European bison, since the phylogenesis of the species has already been presented: in the monograph entitled *Bison*, published in Russian, in the chapter therein elaborated by Flerov (1979); in the work by Pucek (1986), in the chapter “*Bison bonasus* (Linnaeus 1758)—Wisent”; and in the monograph *Mammals of Europe, Part II (even-toed ungulates)*, published in German. Two other areas not discussed as they have been dealt with in detail elsewhere are the anatomy and physiology of the European bison (see [Chap. 18](#)). A bibliography for the genus *Bison* taking in the publications on the subject up to the year 1950 was compiled by Jaczewski and Korona (1994).

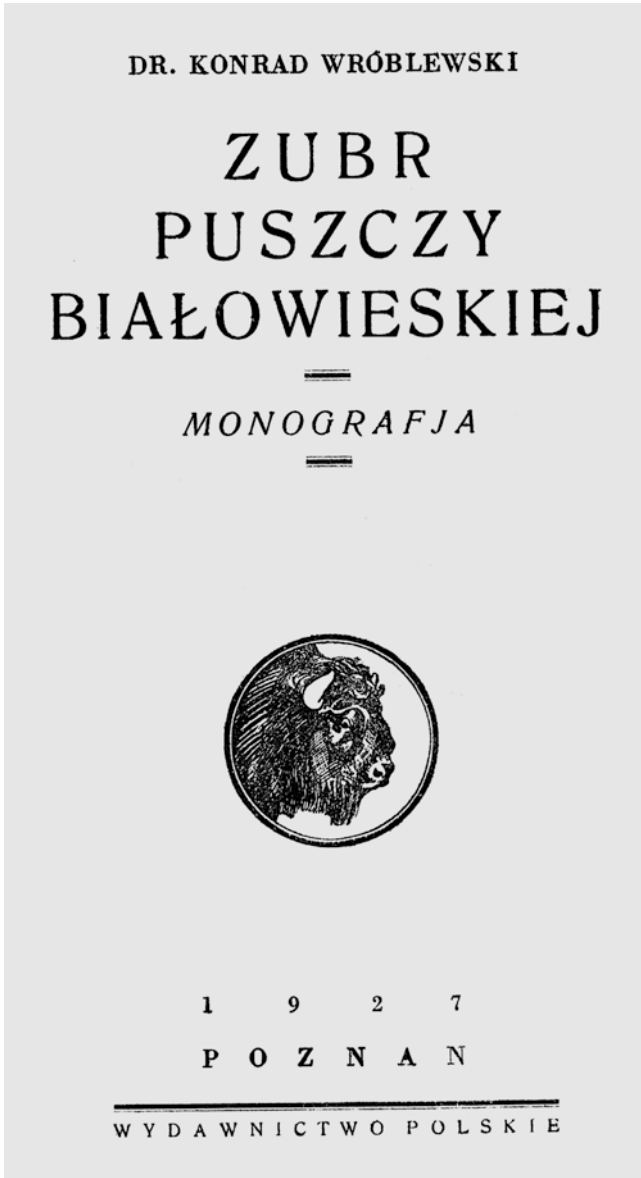


Fig. 1.1 The first book entirely devoted to the European bison living in the Białowieża Forest in the late 19th and early 20th centuries

The world's first reinstated population of Lowland European bison—in the Białowieża Forest—is the subject of unique documentation as to the process by which it formed and developed, and the changes its social and spatial structure has

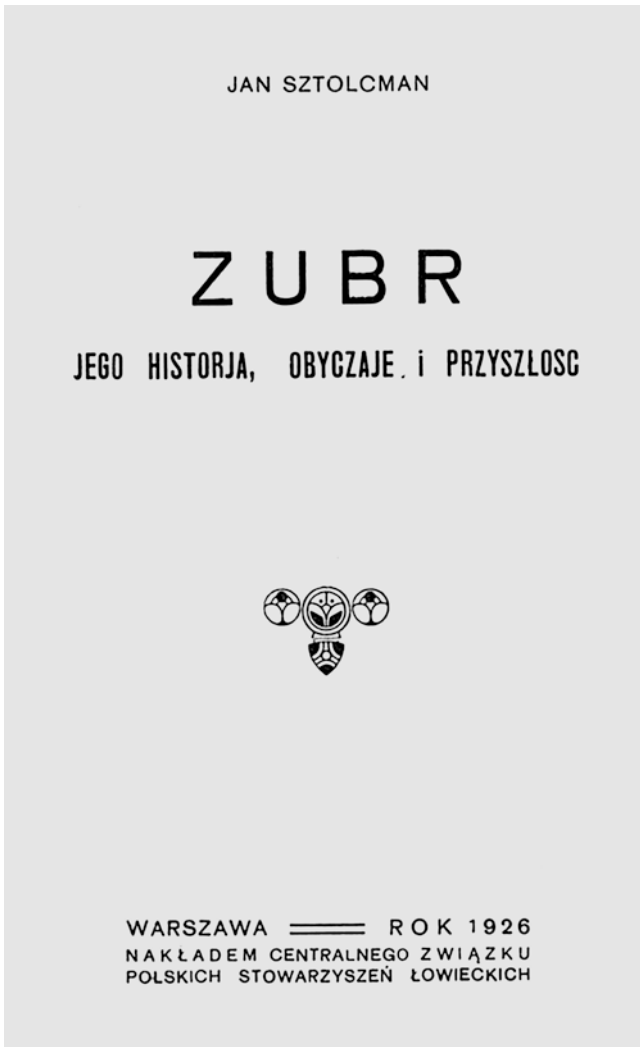


Fig. 1.2 In his book, Sztolcman presented the process by which the bison retreated as civilisation advanced. This ended with the extermination of the last population of lowland European bison in the Forest

undergone over the 60 years of its existence (1952–2012). Over the 40 years of his work at Białowieża NP, one of the authors of the monograph (ZAK), personally engaged in the monitoring of changes in the abundance, age and social structure of the bison population, as well as working on the breeding record, mortality and state of health of the animals, thereby assembling the rich documentation existing as regards this population. In turn, from the mid-1970s onwards, alongside the co-author of the monograph (MK), and a team of workers from the Mammal

Research Institute PAS in Białowieża, he participated in parallel in long-term studies of bison ecology. This work allowed for the compilation of sufficient knowledge to enable the present nature monograph devoted to the European bison to be written.

The life of Lowland bison in their natural environment in the Białowieża Forest was documented as regards the late 19th and early 20th centuries by Karcov (1903) and Wróblewski (1927). These authors' observations offer a source of unique data on the last natural population of bison in the Forest (see colour insert and Fig. 1.1).

In the 1926 book, *Zubr: jego historia, obyczaje and przyszłość* (The European bison: its history, habits and future) (Fig. 1.2), Jan Sztolcman was so concerned for the future existence on Earth of *Bison bonasus* that he recognised that saving of the species might only be achieved through the combined efforts of states, plus the individuals in possession of the handful of bison that survived extermination during the First World War. It was for this reason that he used the occasion of the International Congress of Nature Protection convened in Paris in June 1923 to announce his intention to establish an international organisation that would devote itself to saving the European bison.

It is our hope that this book, going so far in documenting the contemporary 60-year history of the reintroduced bison of the Białowieża Forest, will itself become a recognised source of knowledge on this species successfully reinstated in nature.

Chapter 2

Systematics, Registration and Nomenclature

English: European bison or wisent, Polish: żubr, French: bison d'Europe, German: Wisent, Russian: Zubr,

Order: Cetartiodactyla—even-toed ungulates

Sub-Order: Ruminantia—ruminants

Family: Bovidae—hollow-horned animals

Subfamily: Bovinae

Genus: *Bison* (Hamilton Smith 1827)

Species: *Bison bonasus* (Linnaeus 1758)

European bison are artiodactyls (even-toed ungulates), the order Artiodactyla extending to include several hundred different mammal species. The “even-toed” nature reflects the fact that the last digits of the limbs are divided, ending in a double hoof.

Bison are in the sub-order of ruminants, whose representatives have a four-chambered stomach comprising the three pre-stomach compartments of the rumen, reticulum and omasum, as well as the abomasum serving as the true stomach. It is in the pre-stomach, especially the massive rumen (whose volume in adult bison may exceed 100 L), that plant food is gathered for periodic regurgitation as “the cud is chewed”.

Horn structure qualifies European bison as a member of the cow family in which horns are hollow inside. This is in contrast with less closely-related animals like red and roe deer or moose, whose bony antlers have no empty space inside. The horns of European bison are composed of a bony core (cornual process) and hard sheath of horny material.

Ruminants have 32 teeth, lacking as they do the upper incisors and canines, while their molars with their broad folded crowns are adapted for chewing plant material.

The genus *Bison* includes large and massive herbivorous mammals once present across the two continents of Europe and North America. The genus first appeared several million years ago in the Pliocene (at the end of the Tertiary) in South and East Asia. In the Pleistocene Ice Ages of the Quaternary, the genus

extended its range into other parts of Asia and Europe (Flerov 1979). Shapiro et al. (2004) estimate that *Bison* first entered eastern Beringia from Asia during the middle Pleistocene between 300,000 and 130,000 years ago, subsequently spreading southward into central North America between 130,000 and 75,000 years ago. The final separation of *Bison* living in North America and Asia occurred when the ice sheets retreated a little over 10,000 years ago, the land linking Asia and North America previously giving way to what is today the Bering Strait.

The genus is today represented by two species—the European bison or *Bison bonasus* (L.) and the (North) American bison (or popularly “buffalo”) *Bison bison*. Further differentiation took hold across the huge areas inhabited by the latter species, the conditions of the treeless prairie favouring the emergence of the prairie bison *Bison bison bison* (Linnaeus), as distinct from the forest bison *Bison bison athabascae* Rhoads 1897, which evolved in forested areas of the northern part of what is today Canada.

A similar situation occurred in the European bison; the Lowland or Białowieża bison (*Bison bonasus bonasus* L.) being one subspecies, while the Caucasus boasted another, the mountain or Caucasian bison, *Bison bonasus caucasicus* Turkin et Satunin 1904 (Fig. 2.1).

When Europeans discovered America in the late 15th centuries, the prairies still teemed with bison. It is estimated that there were some 50 million individuals there. At the same time, the species’ European relative was already so rare that action was being taken to ensure its protection through limits on hunting. Alas, this activity did nothing more than delay the process of retreat before an advancing human civilisation. What is more, the process of extermination on both sides

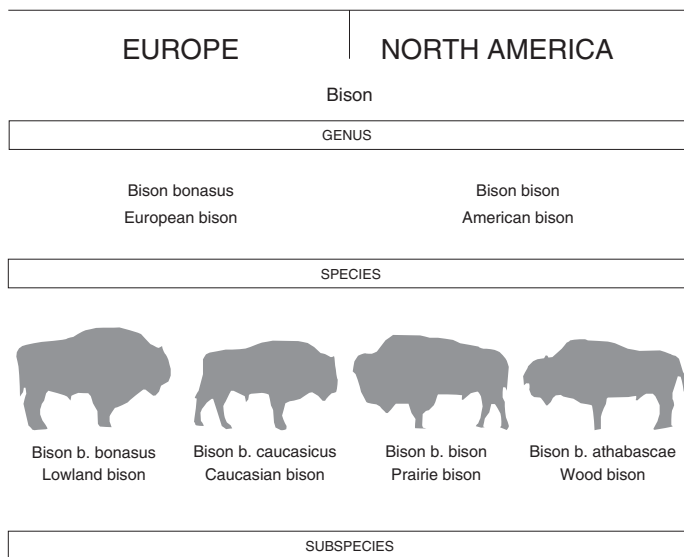


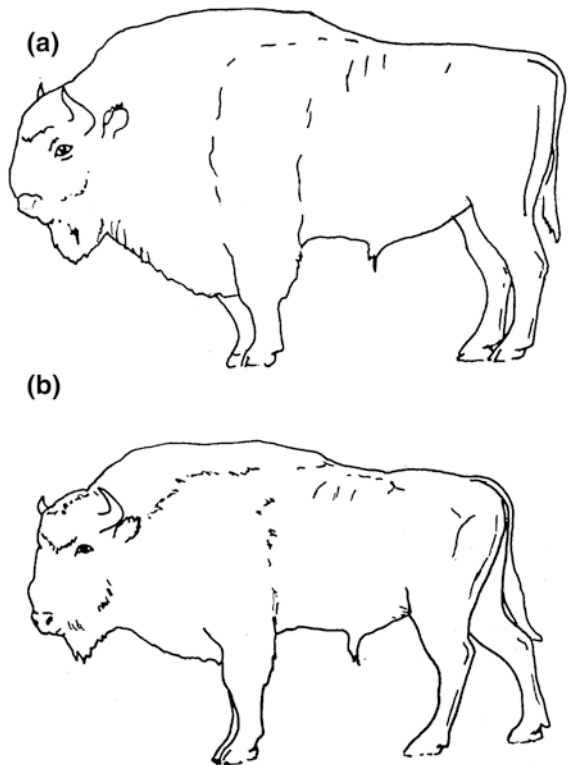
Fig. 2.1 The systematics of the genus *Bison*. Source Krasniński (1999a)

of the Atlantic ensured that, by the beginning of the 20th centuries, both species were literally on the verge of extinction. How lucky it is, then, that we do not have to imagine what these animals looked like, on the basis of drawings and descriptions—as we do with that other extinct bovine, the aurochs. Yet even here, our optimistic outlook needs to be tempered by harsh reality. The Caucasian bison subspecies did not make it, and neither—in the true sense—did the forest bison of North America. Ultimately, the former subspecies was brought down to just a single individual, while the vast territories once occupied by the latter were subject to the import of more than 6,000 prairie bison in the years 1925–1928, ensuring that the genetic makeup of the two American forms was subject to irrevocable mixing.

2.1 The Species and Its Subspecies

The Lowland (Białowieża) bison, *Bison bonasus bonasus* (Linnaeus 1758) (Fig. 2.2). In historical times, this still occupied forested areas of western, central and even south-eastern Europe, as far east as the River Don (Heptner et al. 1966).

Fig. 2.2 **a** Bull 45 PLEBEJER. A sketch from a photograph taken at Pszczyna and included in *Das Zuchtbuch* of 1932. Source Krasiński (1994a). **b** Bull 100 KAUKASUS. A sketch from a photograph taken at Stellingen near Hamburg and included in *Das Zuchtbuch* of 1932. Source Krasiński (1994a)



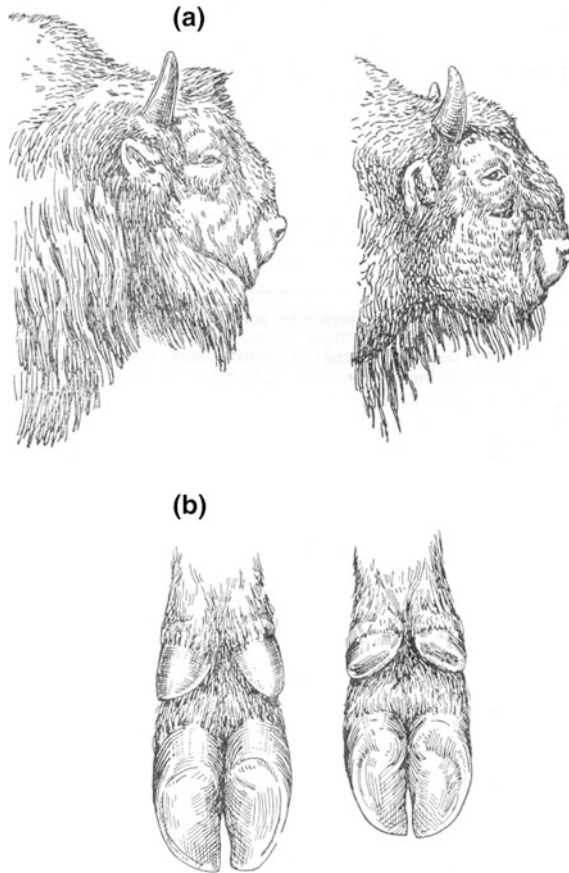


Fig. 2.3 Differences in the structure of the heads and hooves of the lowland European bison *Bison bonasus bonasus* (a) and the Caucasian European bison *Bison bonasus caucasicus* (b). Source Flerov (1932). **a** Białowieża bison, the largest living representative of genus *Bison*, average height at the withers of a bull c. 1.85 m, larger than in the Caucasian bison. Hoofs elongated, hair across the body almost *straight*, hair at the front of the body relatively long, colouration paler than in the Caucasian bison, grey–brown with a hint of *ochre–brown*. Tail covered in long hairs. Source Flerov (1932) **b** Caucasian bison, height at withers about 1.6 m, smaller than the Białowieża bison. Hooves short, high and rounded. Hair over whole body frizzy, hair at front of body considerably shorter than in Białowieża bison, colouration darker, *brown–grey* with a touch of *chocolate* colour. Tail covered with short hair and with a bunch at the end. Source Flerov (1932)

The Caucasian (mountain) bison, *Bison bonasus caucasicus* Turkin et Satunin 1904 (Fig. 2.2) was a resident of the forest zone of the northern arc to the main ridge of the Caucasus Mountain massif plus foothills. On the southern arc of the ridge, bison were only present in the western area, up to the border with Abkhazia. There are thought to have been some 2,000 bison of this subspecies in the 19th century. However, war in the Caucasus plus the colonisation of foothill

areas by the Cossacks combined with the development of cattle rearing, the felling of forest and hunting, were to force bison back into the area between the Belaya and Laba rivers (Heptner et al. 1966). By the 1890s, there were just 442 European bison in the Caucasus Mountains (Kulagin 1919). However, game protection extended to the species by the Tsar at that time succeeded in bringing the decline in numbers to a halt. Unfortunately, a further slide towards extinction progressed rapidly at the beginning of the 20th century, the situation worsening still further in 1919, thanks to an epizooty carried by domestic cattle. By 1920, there were just 50 animals, and even the creation of the Caucasus Reserve in 1924 could do nothing to save this form of the European bison. The last Caucasian bison was killed here in 1927 (Bashkirov 1939; Nemtsev et al. 2003). Differences between the Białowieża and Caucasian bison are presented in Fig. 2.3.

Certain authors, like Flerov (1979) and Pucek (1986), recognise a third subspecies known as the Carpathian bison, *Bison bonasus hungarorum* Kretzoi 1946. This form was described by the Hungarian researcher Kretzoi on the basis of a small piece of neurocranium from a single adult male in the collection of the National Museum in Budapest. The collection has not survived, falling victim to destruction in the course of the 1956 Hungarian Uprising. The bison in question lived in the Carpathians and Transylvania (a historical region of central Romania). Szalay (1913) wrote that this subspecies became extinct in 1790, although some sources say 1762 (Nahlik 1991). Since there are no reliable data as to when the Transylvanian bison might finally have disappeared, a general reference to the second half of the 18th century is more appropriate. There is also a lack of distinguishing features sufficient to justify the separating off of the bison living in Transylvania as a separate subspecies. A likeness of this bison included in Jickeli (1927) hardly serves to resolve this matter (Fig. 2.4).

2.2 Breeding Lines

2.2.1 The Lowland or Białowieża Line

The descendants of the still-extant Lowland bison derive from the last natural population present in the Białowieża Forest in the 19th century. Slatis (1960) determined that there had been seven founders of the population of Lowland-line bison: four males: M 15 BEGRÜNDER, M 45 PLEBEJER, M 87 BILL and M 147 BISMARCK, and three females: F 16 PLAVIA, F 42 PLANTA and F 89 BILMA (Table 2.1). That said, it should be noted that 3 of the founders, i.e. F 16 PLAVIA, M 15 BEGRÜNDER and M 147 BISMARCK left only one descendant—the female F 524 BESTE. This is why Belousova (1993) considers today's European bison to have descended from just five founders, i.e. F 42 PLANTA, M 45 PLEBEJER, M 87 BILL, F 89 BILMA and F 524 BESTE. This last female was described by Belousova (1993) as a “pseudo-founder”.



Fig. 2.4 A Carpathian bison. *Source* Jickeli (1927)

In Poland, Lowland-line bison receive names beginning with the letters PO (PORANEK, POCIESZNA, etc.).

To be distinguished within the Lowland line is the Pszczyna line, to which pure Lowland bison are assigned. These derive from 4 (1, 3)¹ bison brought to the Pszczyna forests in 1865 from the Białowieża Forest. They were obtained by the owner of an estate in the Upper Silesia region of Poland from Tsar of Russia Alexander II—in exchange for 20 red deer supplied. These bison were held in a large enclosure close to the locality of Pszczyna. The bison kept here obtained names beginning with the letters PL—from the German name Pless for Pszczyna. The bull PLISCH, originating from Pszczyna and brought into Białowieża in 1936, is the founder of almost the entire population of bison now resident in the Białowieża Forest.

2.2.2 The Lowland-Caucasian Line

Not a single pure-blood representative of the Caucasian European bison made it through to modern times, although one specimen of this subspecies caused a

¹ Throughout this book, the names of bison are preceded by a large letter F in the case of females or an M in the case of males, plus a pedigree number.

Table 2.1 Founders of the contemporary world population of the European bison

No.	Sex M, F	Pedigree No	Name	Year of birth–death	Place of birth	Main place of breeding
1	F	42	PLANTA	Ca 1904–1931	Pszczyna	Pszczyna (von Pless)
2	M	45	PLEBEJER	1917–1937	Pszczyna	Pszczyna (von Pless)
3	M	87	BILL	1913–1929	ZOO Budapest	From: 1916 ZOO Stockholm
4	F	89	BILMA	1913–1939	Białowieża	From: 1916 ZOO Stockholm → From: 1935 Białowieża
5	M	15	BEGRÜNDER	1903–1919	ZOO Berlin	ZOO Berlin
6	F	16	PLAVIA	1906–1932	Pszczyna	From: 1919 ZOO Berlin
7	M	147	BISMARCK	1925–1934	ZOO Schönbrunn (Austria)	From: 1927 ZOO Berlin From: 1928 ZOO München
8	M	100	KAUKASUS	1907–1925	Caucasus	From: 1908 Stellingen near/Hamburg From: 1922 Boitzenburg (von Arnim)
9	F	96	GATSCHINA (GATCZYNA)	1911–1932	Białowieża	From: 1916 Scharbow (von Beyme) From: 1924 ZOO Poznań From: 1931 Białowieża
10	F	95	GARDE	1907–1922	Białowieża	From: 1909 Stellingen near/Hamburg From: 1922 Boitzenburg (von Arnim)
11	F	35	PLEWNA	1912–1922	ZOO Frankfurt	ZOO Frankfurt
12	F	46	PLACIDA	1918–1926	Pszczyna	From: 1921 Scharbow (von Beyme)

Data from: Groeben (1932), Slatis (1960), Krasieński (1994a) and Olech (1989). The Lowland line comes from: 7 founders (Nos 1–7), the Lowland-Caucasian line from: 12 founders. M male. F female. *Source* Krasieński and Krasieńska (2007)

certain amount of consternation at various European breeding centres. A male from the free-ranging Caucasian population called **KAUKASUS** (pedigree no. 100) was brought to Germany in 1908, where it mated with captive females of

the Lowland subspecies. Bison descending from KAUKASUS are thus kept separate and assigned to the so-called Lowland-Caucasian line. The animals of this line are descended from all 12 founders of identities determined by Slatis (1960) (Table 2.1). The bison of this kind bred in Poland received names starting with the letters **PU** (PUMA, PUSZCZAN, etc.). Today, the central part of the Caucasus is inhabited by a population of European/American bison hybrids deriving from 5 hybrid European bison brought there from Askania Nova in 1940 (Heptner et al. 1966). It is not permissible for these to be included among pure-bred European bison.

The convention in Poland is to draw a distinction between the European bison of the Lowland and Lowland-Caucasian lines, in accordance with the wish that pure-blood Lowland-line bison be retained. Any crossing will result in the loss of the genes of the five founders characteristic for the Lowland line (Olech 2006). In the European Bison Pedigree Book, bison of the Białowieża line are listed in bold print.

2.3 The European Bison Pedigree Book

During the International Congress of Nature Protection held in Paris on June 2, 1923, Polish delegate Jan Sztolcman (1854–1928)—an explorer, academic and Deputy Director of the State Zoological Museum in Warsaw—announced his “Appeal concerning the necessity of saving the Wisent”. In response, the Congress passed a resolution expressing the wish to establish a society forthwith, between those countries on whose territories European bison were still present. The inaugural sitting of the International Society for the Protection of the European Bison took place on August 25–26, 1923 in Berlin (Figs. 2.5, 2.6). Its President was Kurt Priemel, Director of the zoo at Frankfurt-am-Main, while the Society’s Board included Władysław Janta-Pończyński of Poznań. Private individuals and institutions also joined up. Collective membership was taken out by the US-based American Bison Society, upon which the European Bison Society was in fact modelled. From the Polish side, those signing up included the Polish Hunting Society in Warsaw, and Poznań Zoo, as well as Sztolcman himself, Urbański and Wróblewski from Bydgoszcz. It was in fact Poznań Zoo plus Janta-Pończyński and Urbański (Head of the bank in Poznań) who would initiate the purchase—for the not-insignificant sum of 11,000 Deutschmarks—of the first two bison known as F 96 GATCZYNA² and M 101 HAGEN (see Footnote 2), these being transferred to Poznań in 1924. The first goal of the Society was to compile a register of all surviving European bison. This census (Das Zuchtbuch) was published in 1932, under the editorship of Gerd von der Groeben, in the journal *Berichte der*

² Throughout this book, numbers given in brackets describe the numbers of bison by gender, with males first, followed after a comma by females.

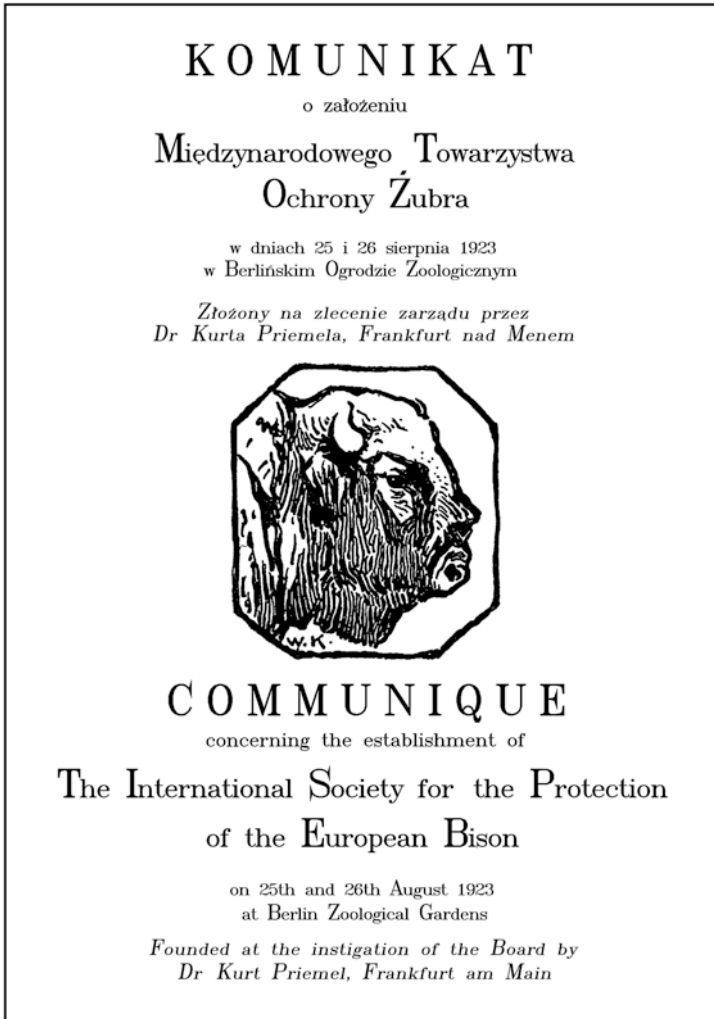


Fig. 2.5 The communiqué on the founding of the International Society for the Protection of the European Bison

Internationalen Gesellschaft zur Erhaltung des Wisent, in five volumes (Fig. 2.7). This first census gave a total for the end of 1924 of 66 (33, 33) European bison. Careful checking led to the striking off the list of several more animals whose origins were uncertain, leaving a final total of just 54 animals (29, 25) (Olech 2009). The Pedigree Book distinguished the Białowieża line and within it the Pszczyna line and Białowieża-Caucasian line. Also designated were zoo-reared bison belonging to the two lines. The first pedigree number was assigned to PLANET, who had been born in 1881 in Pszczyna, at the menagerie of the Duke von Pless;

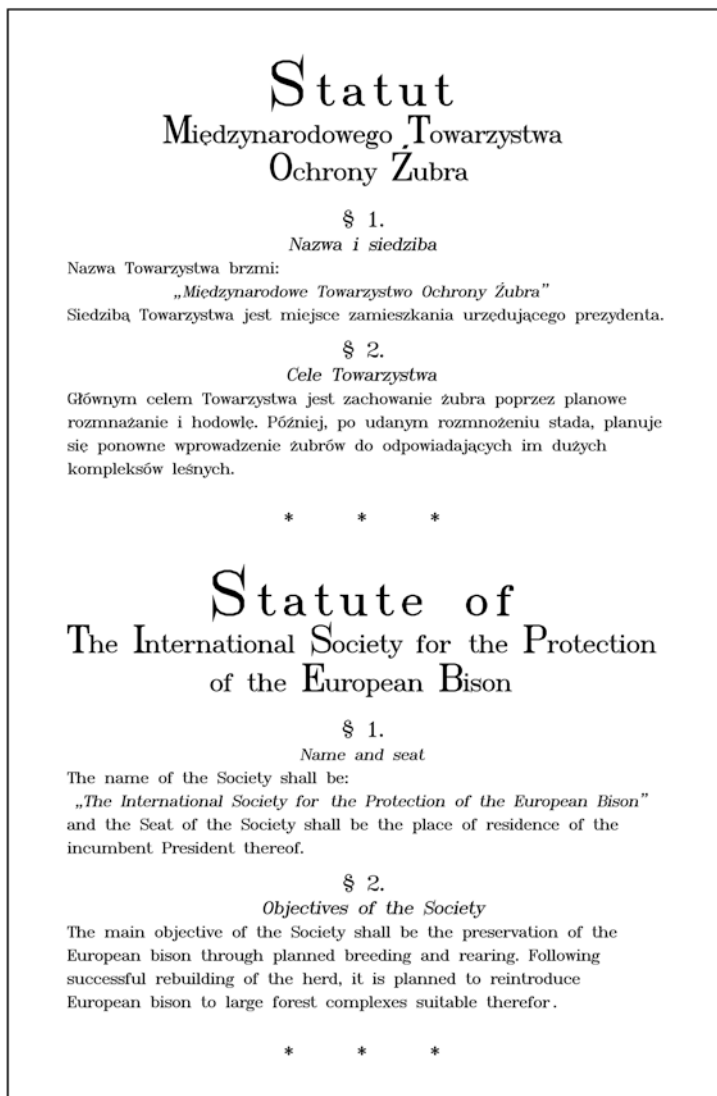


Fig. 2.6 The first two paragraphs of the Statute of the International Society for the Protection of the European Bison

while the second went to BELLONA, born in 1883 at Berlin Zoo. The first volume also included all of the European bison that had played a part in the reintroduction of the species (Table 2.1; Slatis 1960; Krasiński 1994a; Olech 1998). The two next volumes of the Pedigree Book—for the years 1933 and 1937—were compiled and published in the same edition of the aforementioned journal by Erna Mohr of

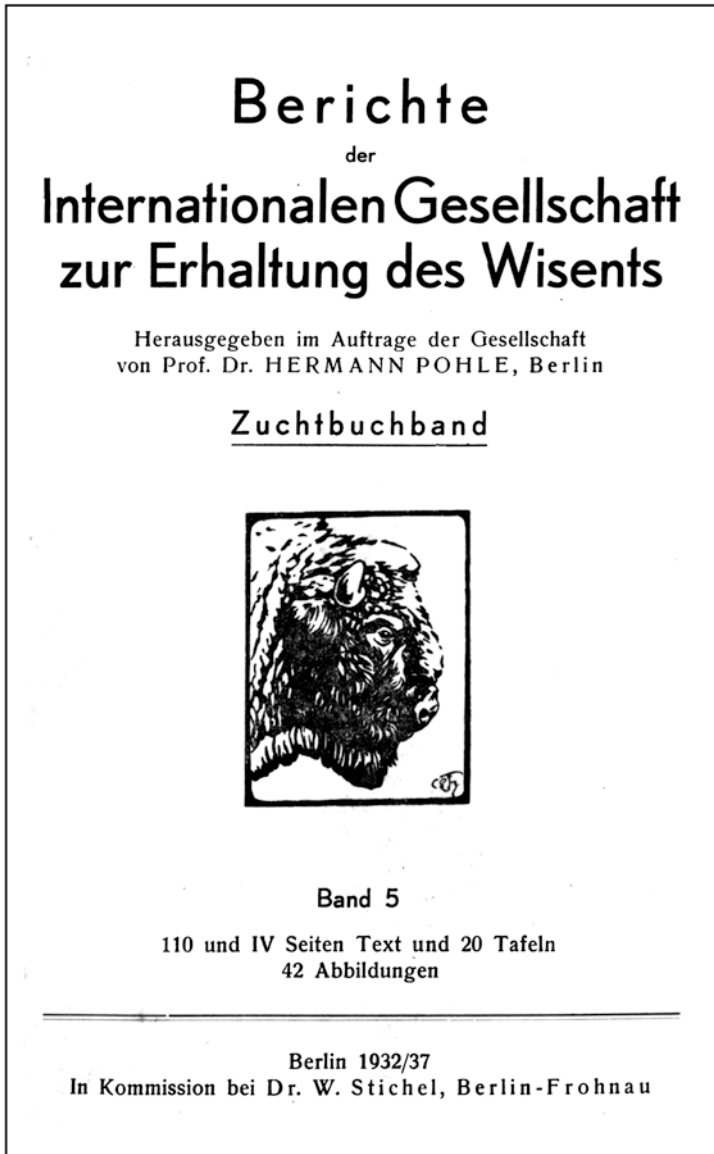


Fig. 2.7 The first editions of the European Bison Pedigree Book 1932/1937 (das Zuchbuch). Editors G. von Groeben and E. Mohr

Berlin, who was to become so renowned for her services to the species' reintroduction (Fig. 2.8).

An enormous amount of work on the post-war publication of the Pedigree Book was done by Jan Źabiński (1897–1974), Director of Warsaw Zoo,

Fig. 2.8 The Bison reserve at Białowieża in September 1937. Dr Erna Mohr of Berlin and Bull M 163 BORUSSE. *Photo from the authors' archives*



a renowned expert and a well-known populariser of nature (Fig. 2.9). Jan Żabiński worked together with Erna Mohr in establishing and verifying the pedigrees of the European bison that came through World War II, publishing the first post-War edition of the Book. The last book under Żabiński's editorship was in turn the 1973 one.

The early post-War years saw data on bison from Western Europe being accumulated by Erna Mohr, and then they were submitted to Editor Żabiński (Pucek 1984). Likewise, the pedigree data for the European bison on what was then Soviet territory were collected together by Mikhail Zablocky (1956), a scientific worker at the Main European Bison Breeding Centre (Priokskij Zapovednik) (Fig. 2.10). He passed this on to the editorial office for the European Bison Pedigree Book through to the 1960s (Zablocky 1965; Pucek 1984). The years 1974–1986 denoted regular changes of address for the editorial office, the actual Editors of the Pedigree Book in this period being: Krysiak, Woliński, Pilarski and Giergiel. Such regular changes made contacts with breeders more difficult, and volumes began to come out less regularly. However, the locating of the editorial office in Białowieża National Park and the conferment of the editorial task