

# DISTRIBUTION AND ECOLOGY OF BROWN BEAR IN ROMANIA

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Simionescu (1938) wrote: "Here, at us, thanks God! they hide in the high mountains, from the Retezat and Godeanu to Maramures. They are more numerous in the Rodna and Calimani mountains." Almasan and Vasiliu (1967) reported that brown bears (*Ursus arctos*) in Romania are found (Fig. 1) on about 2.8 million ha., occupying the whole range of the Carpathians from Maramures to the East of Banat and in the Apuseni mountains.

Cotta and Bodea (1969) estimated a population of 4,050 bears or about 1.25 bear per 1,000 ha: "It is an animal devoted to the place it lives in and to its habits. In the years when in the beech zone there existed a

beech nut fructification, the bear changed its place a little, in day time it was in its shelter, in the thicket, and at night time it went into the old forest for food and to the brook for water. Generally, the bear follows the paths if it isn't disturbed."

Negrutiu (unpubl. data): "Romania has the second largest estimated bear population in Europe after Russia." Bear distribution in Romania occurs on about 2.8 million ha. mainly in the Carpathian mountains. In this area, a well-balanced number is about 4,800 individuals. The present estimate in this area is 6,800 bears (Table 1).

Continuing with the distribution of the bears, we

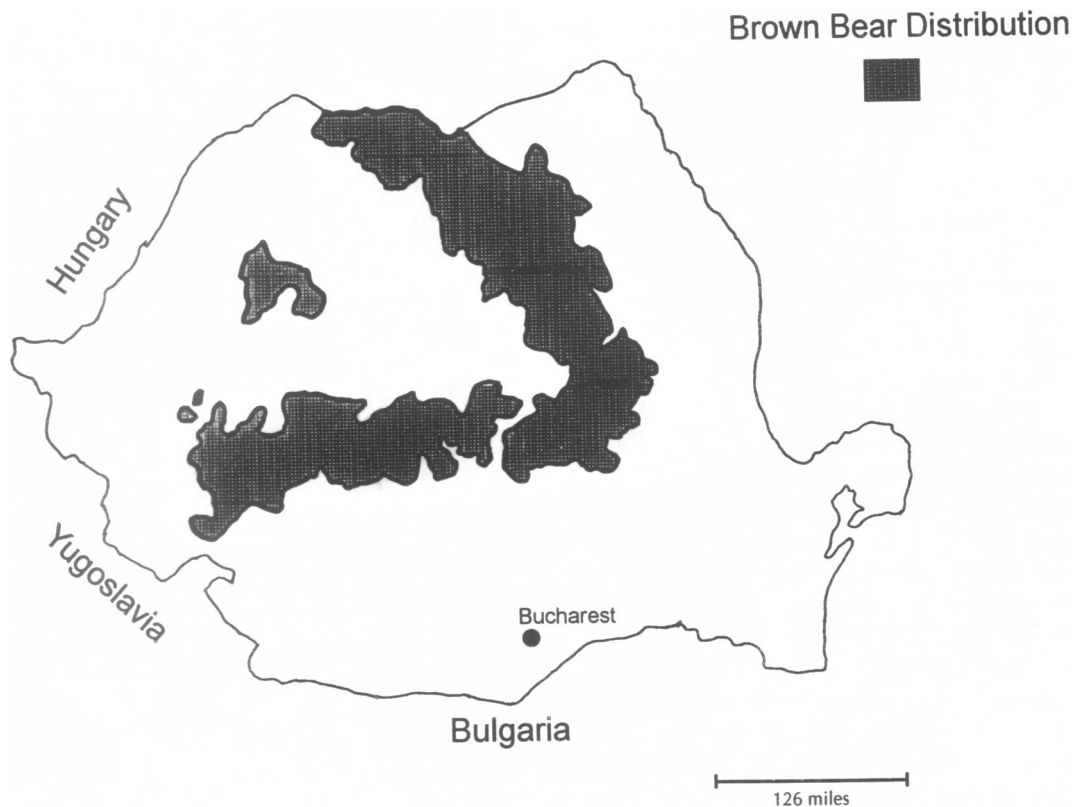


Fig. 1. Brown bear distribution in Romania.

**Table 1. Distribution of brown bears in Europe (Negrutiu, unpubl. data.).**

No.	Country	Year	Population estimate
1.	Albania	1979	130
2.	Bulgaria	1979	850
3.	Czechoslovakia	1979	700
4.	Finland	1985	450
5.	France	1978	20-80
6.	Greece	1981	100
7.	Italy	1983	60
8.	Poland	1976	300
9.	Norway	1982	230
10.	Romania	1991	6,800
11.	Russia	1979	23,000
12.	Spain	1979	300
13.	Sweden	1976	600
14.	Yugoslavia	1979	2,600

would like to give you some information about Romanian areas where the bear populations are represented in a great number and from where we have observations continued for several years (Tables 2-4).

### BEAR HABITATS IN THE CARPATHIANS

In the past, when forests occupied about 70% of the territory, the bears' distribution was greater than today. Timber harvest, roads through the forest, tourists, extent of human settlements, human attitudes, and hunting have restricted bear distribution. So, today we have areas without a single bear, and habitat islands with only a few individuals. Generally bears populate vast forests which are relatively undisturbed and where people come very seldom. At night and especially in autumn it has been observed that bears leave the vast forests to obtain food, in orchards and on lots tilled with maize or corn. Ion Simionescu, president of the Romanian Academy between 1941-44, professor of the University in Jassy and Bucharest, prepared "The Romanian Fauna" published 1938, and wrote: "There is no other mammal known better by people than the bear. There are peasant's children who don't know how to milk a cow but they had seen the Carpathian bear in front of their house."

Since then, the biological situation of the bear has changed in Romania. Almansan and Vasilinu (1967) published a descriptive study about brown bears.

**Table 2. Distribution of brown bears in the Carpathian Mountains of Romania 1990 (Negrutiu, unpubl. data.).**

No.	County	Population estimate
1.	Arges	350
2.	Bacau	260
3.	Bistrita-Nasaud	360
4.	Brasov	350
5.	Buzau	435
6.	Covasna	860
7.	Harghita	1,076
8.	Hunedoara	550
9.	Maramures	360
10.	Mures	420
11.	Suceava	350
12.	Vilcea	300
13.	Vrancea	400

Since then there were only some short studies and descriptions about bears published (Cotta and Bodea 1969).

The period between 1970 and 1989 was a time when everything about bears was held a secret. Under the communist system, the main reason for this secret was that Ceausescu had the only right to hunt bears in Romania. During all this time, there were very few licenses issued for shooting bears and only in such cases when bears produced irreversible human and economic damages. The statistics about the bear population were kept in safes as state secrets at the forest service offices of each county. Only the forest managers and the accredited security officers were informed of this data. Only the most reliable forest and political specialists were allowed to know about bear reproduction and population status. Finally, it is

**Table 3. Population estimates and density of brown bear in Harghita County 1987-91.**

Year	Population estimates	Density for 1,000 ha of forest
1987	1,023	5.1
1988	1,155	5.8
1989	1,185	5.9
1990	1,076	5.4
1991	960	4.8

**Table 4. Distribution and population estimates of brown bears in Mures county 1988.**

No.	Forest Service District	Surface in ha.	Optimum estimate
1.	Ocolul Lunca Bradului	33.170	65
2.	Ocolul Valea Gurghiu	39.100	85
3.	Ocolul Rastolita	13.700	75
4.	Ocolul Reghin	3.980	5
5.	Ocolul Sighisoara	28.099	17
6.	Ocolul Singeorgiu de Padure	1.813	3
7.	Ocolul Sovata	17.482	55
	Total	137.344	305

Ocolul = place of the forest.

time for the specialists in biology, too, to know and study the data. As a result, we can now give an account about Romania's bears. On the basis of the statistics about the bears in the Harghita, Gheorghieni, Gurghiu, and Calimani mountains we'd like to show you the present situation of this species in this part of the Carpathian's chain.

## BEAR FORAGE IN THE CARPATHIANS

It is omnivorous, with prevailing vegetation elements. In spring it grazes, in summer it eats berries in the forest: raspberry, blackberry, and bilberry. In autumn it feeds on beech nuts and acorn, as well as on wild apples, pears, and sometimes fruit in orchards, causing some damage. In the Carpathians, another food consists of the *Sorbus aucuparius* fruits. Sometimes bears graze on the pastures surrounding the sheepfolds. In addition, we can add mushrooms, roots, oats, and maize. Larvae of ants, worms, and other insects are also important foods. Honey from wild beehives and apiaries is consumed sometimes, causing great losses.

It is a fact that bears sometimes attack domestic animals such as sheep, horned cattle, horses, donkeys, and pigs. In winter, bears that do not enter dens may catch wild boars, roebucks, and stags, especially at the end of wintertime, when wild boars and the cervidae are weakened and ill. Bears scavenge carrion too. In spring, bears may cause significant depredation among sows with young pigs (*Sus scrofa*).

We feel that some of the livestock depredation and damage to crops and beehives could be alleviated by continuous bear-feeding programs in selected areas. Revenues from trophy hunting could defray some of the costs of this type of program.

## REPRODUCTION CHARACTERISTICS

Bears reach sexual maturity at the age of three years and the females are reproductively active for 12-14 years. Litter sizes are usually 2 and sometimes 3 cubs at 2-3 year intervals. The proportion of the female bears in the whole population is 20-40%. Breeding occurs between April and July, when the female may be followed by one or more males; fights among males have been observed. Generally, the bears are solitary. Females usually wean cubs at 2 years, though sometimes at 3 or 4 years. They give birth in dens in January-February and the cubs open their eyes 28-35 days later. Cub size at birth is 20-25 cm. in length and 400-500 g. in weight. Estimated cub weights are 25-50 kg. as yearlings, and about 100 kg at 2 years of age.

## DENS

Dens occur in rock caves, dug in the slope of a hill, tree hollows of large diameter trees, and on piles of felled trees. Locations are preferably on the southern aspects of the mountains, and near water. Dens are lined with moss, leaves, hay (dried grass), or branches of fir trees. Here the bear stays for 2-3 months a year, depending on the length of the winter and thickness of the snow. Pregnant females enter dens earlier than males. Males enter the dens later, and may not den at all if they find food (acorn, beech, nut, etc.) or the snow isn't deep. Typically bears den in places that are remote and difficult of access. Dens and denning areas may be used for several years if the bears are not disturbed.

## BEHAVIOR

In their relation with people, bears are considered a peaceful animal. They typically attack people in only 3 cases: (1) if the bear is injured; (2) if the female bear has cubs and defends them; (3) and in defense of carrion.

Generally females are tolerated at feeding sites even by the strongest bears. Bears are aggressive when they are taken by surprise at feeding, when they are hurt, surrounded by dogs, and generally when they feel danger. Females with cubs are aggressive and protective of their offspring.

## MORPHOLOGY

Certain characteristics for brown bears in Romania were summarized in 1967 by Almasan and Vasiliu (Table 5). Average body lengths for males and females were reported at 217.7 and 167.5 cm, respectively

(Table 5). Average body weights for males and females were 268 and 214 kg respectively (Table 5). Hair color varies a great deal from gray to yellow brown, to dark brown to almost black. White collars on the neck or chest have been observed on younger bears. With old individuals we have noticed a lightening of the hair color and even white hairs on the head. The length of the hair depends on the individual, location on the body, and season. During summer, hair is generally 4-6 cm long, while in wintertime it grows up to 10-14 cm long. The density varies also depending on season and location on the body. Thus, at the bear's armpits the hair is sparse, while on its back it is the thickest.

In October 1987, in the Calaimani Mountains, in Deda-Bistra, Fleserea at a altitude of 780 m, we observed 48 bears that were very different from one another in weight as well as in color from 2 hunting stands. We could not identify two identical individuals.

### BEAR HUNTING IN ROMANIA

In Romania, bear hunting is prohibited between 1 January and 15 March. The main hunting seasons are in autumn and spring. In Romania, bear hunting at den sites is strictly prohibited by law. Bears are shot by driving them and from stands near the paths that are used by the bear. In both cases, hunters are on observation platforms. The observation platforms are built of beams and timber on pillars, about 2 m in height. The little house built especially for this purpose has an opening for viewing and shooting. In the Ceausescu regime these observation houses were utilized in conjunction with bait such as fruit, food flour, carrion, etc. This method was used especially in spring to harvest bears (Table 6).

During the Ceausescu regime, bears were valued as trophies and hunting was limited. Bears must be protected and managed carefully to maintain the best populations from the genetic point of view and a population that will offer trophies as well as important values for tourists and hunting.

### FOLK BELIEFS ABOUT BEARS

According to folk beliefs, each bird or beast of prey is man's enemy. So taking this statement into consideration, the bear, too, is among men's enemies. This point of view has been bequeathed from generation to generation because of the losses caused by bears in agricultural products (maize, corn, potatoes, etc.) or domestic animals (sheep, cows, horses, etc.) and to these comes a list of human victims. So most mountaineers became the enemies of bears. These people, mainly shepherds, breeders, and farmers, invented some methods for their protection. Shepherds living in the mountains, even during the Ceausescu regime when there were severe laws to protect bears, used lethal methods to kill bears.

### HUMANS AND BEARS IN THE ROMANIAN CARPATHIANS

In the range of the Carpathians, the people live in the same surroundings as the bear, so their common feature is interaction. First is the fight to survive, and the complex but limited biological activity to maintain the populations. Historically, certain people have fought against bears. The daily activity of the people in the Carpathians is to fell trees for building houses and gathering fire wood, and this leads to the loss of bear habitat. During the 45 years of communism when nobody cared about the future, the deforestation caused great losses of bear habitat. There was also considerable foolish grazing of animals in the chain of the mountains that negatively affected bears and their habitats. As a result, bears drew near human settlements. Thus the bears living in the outskirts of settlements were more likely to encounter people (see "The Sarmas Event").

We biologists and the public have the duty to elaborate an ecological strategy for a peaceful co-existence for the protection and management of the bears. We would like to ask all our colleagues to contribute their knowledge, advice, and possible material help to the restoration of the ecological balance in the Romanian bear populations.

**Table 5. Brown bear data from Romania (Almasan and Vasiliu 1967).**

	Body length (cm)		Tail-length (cm)		Height at shoulder (cm)		Weight with the viscera (kg)	
	Males	Females	Males	Females	Males	Females	Males	Females
Maximum	257	200	1.2	1.1	135	118	440	303
Average	217.7	167.5	1.08	1.05	110	90	268	214

**Table 6. Brown bears in the Mures County (1981-91) from records of the "Romsilva" Forestry Service.**

Year	Optimum population estimate	Number of specimens	Cause of death
1981	385	11	9 Ceausescu-hunter 2 Unrecorded
1982	435	7	4 Ceausescu-hunter 3 Unrecorded
1983	433	8	8 Ceausescu-hunter
1984	390	5	4 Ceausescu-hunter 1 Unrecorded
1985	425	9	8 Ceausescu-hunter 1 Control
1986	356	8	Unrecorded
1987	395	4	Unrecorded
1988	420	6	6 Ceausescu-hunter
1989	410	1	1 Control
1990	420	11	11 foreign hunters
1991	420	18	15 foreign hunters 3 Control

## THE SARMAS EVENT

By Ioan Micu, László Kalabér

A. Summary: 5 people attacked by a bear; two of them died instantly and the other three were transported to hospital.

B. The date when this happened: 25 August 1989 between 1100 and 1330.

C. The place where it happened: Harghita county, the Subcetate commune, Pr. Musca-Parhaita's forest.

D. The implicated persons:

1. Rusu Vasile, 7th grade pupil, living in Subcetate, 14 years old. Deceased because of the injuries.

2. Urzica Petru, pensioner of the railway, living in Subcetate, 61 years old. Deceased because of the injuries.

3. Bordea Petru, pensioner of the railway, living in Subcetate commune, 60 years old. Hurt badly, put in the clinical hospital in Tg.-Mures.

4. Popa Stefan, teacher, living in the Subcetate commune, 49 years old. Hurt, but not seriously.

5. Mariusiac Liviu, non-commissioned officer, assistant of the chief post officer in the Subcetate commune, 40 years old. Hurt but only slightly.

E. Eye Witnesses:

1. Finat Ioan from Subcetate No. 154

2. Cotfas Ioana from Subcetate No. 415

3. Dobrea Ileana from Subcetate No. 447

4. Sandu Costel from Subcetate No. 345

5. Cotfas Maria from Subcetate No. 378

6. Cosarca Doina from Subcetate No. 364

7. Cotfas Ioan from Subcetate No. 152

F. Weather conditions:

Clear sky. Droughty period of time. High temperature, over 30°C. A very intense solar radiation.

G. The description of this event:

On August 25, 1989, at about 11 o'clock the sky was clear with an intense solar radiation and the inhabitants of the Subcetate commune were at work in the fields.

At the mouth of Musca Creek, at the place called Parhaita's forest, the 14 year old child, Rusu Vasile, tended three cows belonging to Popa Stefan from the Subcetate commune.

At this site, there is a patch of forest about 3.6 ha, surrounded by meadows and tilled agricultural fields. The forest consists of 65 year old spruce-firs with small openings and patches of very thick fir regeneration between 5 and 20 years old, 0.5 m to 5-10 m, in height. There is a field of about 4-5 acres tilled with oats, which at this time was almost ready for harvest. Bear sign had been observed and bears were feeding in the fields at night.

The young Rusu Vasile noticed that one of the cows went into the woods, and followed her. A short time later, he was heard crying: "Help! The bear!" Bordea Petru who was working nearby, heard the cries and ran to that place shouting: "Where are you Vasilica?"

Meanwhile, other villagers who had been nearby came to the edge of the forest. Among them was Cotfas Ioana. Of all those present, only Bordea Petru had something (his scythe) in his hand. The others were standing by passively, with more of an attitude of onlookers than of persons who had rushed to help.

Bordea Petru was shouting, and the bear left the woods, attacked and injured him. His injuries included several lacerations and an open fracture of the femur. Bordea Petru was abandoned by the bear due to the villager's shouts (Cotfas Ioana). After the bear went back into the forest, Petru was put into a cart and transported to the Subcetate commune and later to the hospital in Toplita.

Meanwhile, messengers were sent into the commune for help, because the first victim (Rusu Vasile) had not been found. Amongst those who arrived were Popa Stefan and Marusiac Liviu (assistant chief post officer). They conferred to decide how to

find the injured child and drive away the bear. Trying to investigate from the edge of the forest, they were suddenly attacked by the bear. The bear attacked Popa Stefan and hit him in the abdomen. Then the bear saw Marusiatic Liviu and charged him. Liviu fired his revolver and the bear withdrew into the woods. About that time Finat Ioan arrived armed with a pitchfork. He was called there because of his experience with bears.

Near the site where Bordea Petru and Popa Stefan were injured by the bear, Marusiatic Livinu, Finat Ioan, and Urzica Petru tried to establish a plan. They decided that they had to look for the child and this mission was accepted only by them. The men entered the wood and went down the road that crosses the lot. Behind them (but at a certain distance) came other villagers, too, who knew about the event. Coming up to the road, which crosses the wood, the three men went down one by one in the following order: Marusiatic Livinu, Finat Ioan, and, about 10 m behind them, Urzica Petru. Suddenly Marusiatic Livinu and Finat Ioan, who were near the road noticed the bear about the time it saw them and charged at Marusiatic Livinu, who shot. In the moment of the attack, Marusiatic Livinu crouched and ended up under the bear's belly and between its legs. The bear roared furiously and whirled round over Marusiatic Livinu, moving to the left and right on its front paws. During this time Marusiatic Livinu had not moved at all and the bear left him behind, passing by Finat Ioan, who held his pitchfork against it. The bear looked back at Marusiatic Livinu who lay there without any motion and noticing Urzica Petru (who was in a white shirt) stared at him sniffing. That moment Urzica Petru went downward parallel to the road, probably to avoid the bear. The bear came down the road moving parallel to the road up to Urzica Petru.

The bear killed Urzica Petru by fracturing the spinal column and inflicting other severe lesions. After

this last incident the bear moved through the wood parallel to Musca Creek in a north, north-east direction for about 2 km. The bear stopped in a thicket where it was shot some 2 hours after the tragic events. The bear was shot by 4 hunters of the Harghita County Association for Sportive Hunters and Anglers. There is no doubt about the bear's identity, because the carcass contained the bullets fired from the revolver.

#### Data From Carcass

- Hour of the shooting: 15.10 h
- Total gross weight: 310 kg
- Unskinned length: 2 m
- Unskinned circumference: 1.55 m
- Length of the fur: 2.10 m
- Width of the fur: 1.60 m
- Weight of the fur: 38 kg
- Weight of the skull (gross): 10 kg
- Size of the skull: 36 × 23 cm
- Age of the bear: about 15-20 years
- Sex: male

Investigations by the Veterinary and Sanitary Inspectorat of the Harghita county concluded that the bear was not rabid.

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