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ON THE ZOOGEOGRAPHY OF (*LYNX LYNX* L.) IN 1969, IN ROMANIA

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Rezumat

Asupra zoogeografiei râsului (Lynx lynx L.) din România în 1969

Autorul prezintă date privind distribuţia geografică a râsului (Lynx lynx L.) în România. Analiza este bazată pe datele centralizate ale efectivelor de râs din Carpaţii României obţinute prin evaluarea cinegetică a speciei per district de vânătoare, existentă la nivelul anului 1969, considerat moment important în cunoaşterea zoogeografiei speciei. După câteva consideraţii generale bio-ecologice, este prezentată distribuţia şi densitatea speciei în Carpaţii Orientali, Meridionali şi Occidentali.

Key words : Lynx lynx, zoogeography, Romania

INTRODUCTION

The lynx is a medium-sized feline, with the males of the species weighing 20-27 kg and its females 16-20 kg. The largest continuous area of this species in Europe is found in the Russian Federation and the Scandinavian Peninsula, while elsewhere on the Continent distributions are fragmentary, within various massifs, and not very big populations.

The species started shrinking numerically as man began tampering with its habitat, the lynx being known as very sensitive to such interventions. According to some authors (PROMBERGER-FÜRPAß & IONESCU 2000), the human impact on the geographical landscape is responsible for the extinction of this species, the first among the vertebrates to undergo it.

The lynx is at home in the vast mountain forests mainly the resinous forests full of thickets and rocks situated, as a rule, in hardly accessible places. It is seldom found at heights below 800 m.

An unrivalled predator, the lynx feeds exclusively on animals. It has no other foes but man.

Since the size of its populations had shrank dramatically before 1930, sustained efforts succeeded in having it declared a "monument of nature" (a rare animal in Romania, numbering only 100 specimens in 1933), a status sanctioned in the Journal of the Romanian Kingdom Council of Ministers No. 734/1933. In this way, catching or selling the lynx was banned.

These measures contributed to the species numerical increase up to 500 specimens in 1950 and around 600 in 1954.

Given that the lynx populations of certain mountainous sectors kept multiplying considerably, it started being listed under the game category and by Order No. 637/March 14, 1953 of the Ministry of Forest Economy, hunting it was permitted the year round by special shooting licence from the Bucharest-based Game Economy Direction. However, small numbers were shot down: 38 in 1954, 42 in 1955, 20 in 1956, 30 in 1957 and 28 in 1958 (EMIL, 1976).

In time, as the damage caused to non-predatory game (the deer in particular) was significant, it was decided (1959) to control the lynx populations by annual shootings, the quotas being set for each Regional Forestry Direction apart. And yet, despite drastic measures being taken, very few individuals could be shot because the species is very shrewed and always on the alert. For exemple, of the 50 specimens planned to be hunted in 1959 in the former Baia Mare Region (currently the counties of Maramureş and Satu Mare), no more than 8 were brought down. Beginning with 1962, lynx hunting was permitted only 8 months/year, provided one had a shooting licence.

In 1969 the species numbered 931 members.

MATERIAL AND METHOD

The analysis is based on county level centralised data of lynx effectives obtained by evaluating cynegetic species per hunting district existing in 1969.

The next step was to elaborate a distribution map (fig. 1) and make some regional analyses.

Althrough the lynx is a very active species, controlling large areas, and difficult to observe, yet the data released in the walke of game evaluations, offer a quantitative groundwork, even if not in absolute terms, relevant for our purpose.

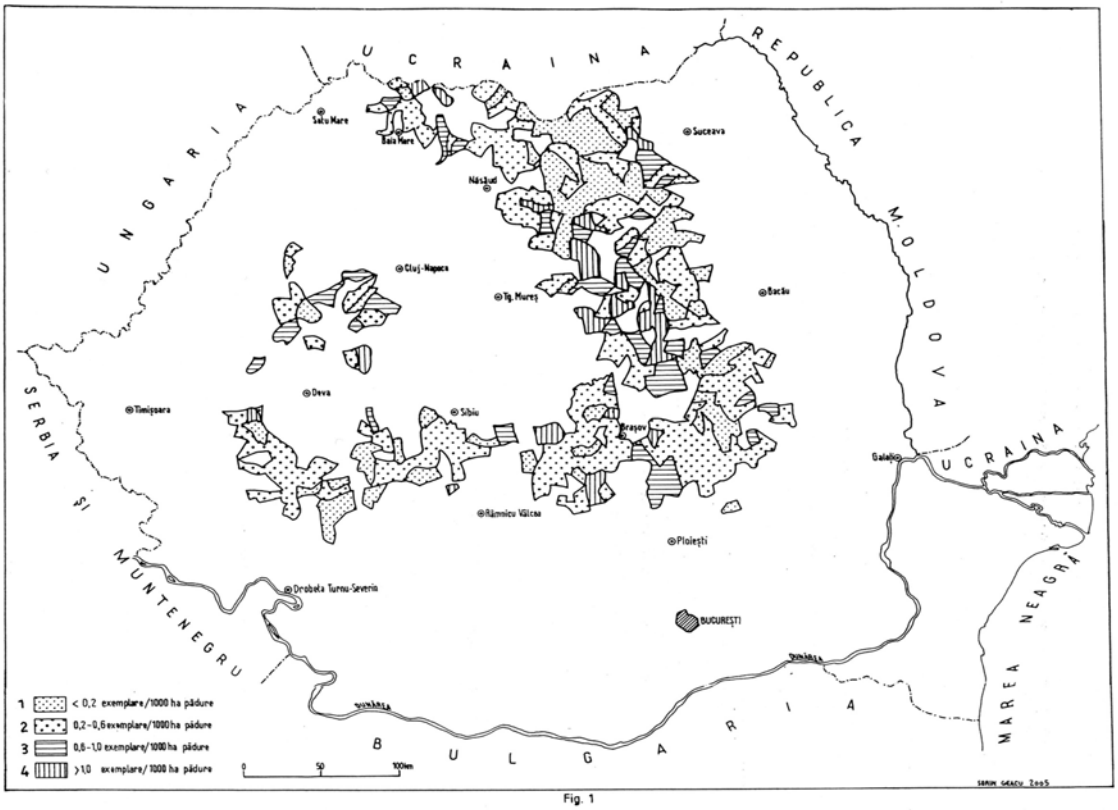

Fig. 1 - The geographical distribution of the Lynx lynx L. in 1969 Romania. **1**. under 0.2 specimens/1,000 forest ha; **2.** 0.2-0.6 specimens/1,000 forest ha; **3.** 0.6-1.0 specimens/1,000 forest ha; **4.** over 1.0 specimens/1,000 forest ha.

THE LYNX IN ROMANIA (1969). GENERAL CONSIDERATIONS

Official records indicate the presence of 931 specimens, most of them in the forests of the Harghita and Suceava counties (132 and 109 specimens, respectively).

The species was found in 25 counties (66% of the total counties in Romania at the time).

A classification of counties, by number of identified specimens (in decreasing order), indicates the following:

- over 100 specimens in 2 counties (Harghita and Suceava);
- 50-99 specimens in 4 counties (Braşov, Covasna, Vrancea and Maramureş);
- 25-49 specimens in 11 counties (Bacău, Bistriţa-Năsăud, Neamţ, Buzău, Prahova, Sibiu, Vâlcea, Caraş-Severin, Mureş, Hunedoara and Alba);
- 10-24 specimens in 4 counties (Timiş, Argeş, Cluj and Dâmboviţa);
- 6-9 specimens in 4 counties (Arad, Bihor, Gorj and Satu Mare).

A classification by *historical provinces* shows that the mountains of Transylvania, Moldova and Bucovina shelterted the largest lynx population (438, 128 and 109 specimens, respectively). Fewer individuals were registered in the forested mountains of Muntenia (95), Maramureş (59), Banat (49) and Oltenia (35), and a symbolic presence (18) in the east of Crişana.

A classification of lynx-populated hunting districts by *physico-geographical regions* reveals that the Eastern Carpathians rank first (659 specimens, i.e. 70.8% of the national stock), far behind standing the Southern Carpathians (188, 20.2%) and the Western Carpathians (84,9%).

The distribution of the 308 lynx-populated *hunting districts* of Romania looked as follows: 208 (67.5%) in the Eastern Carpathians, 76 (24%) in the Southern Carpathians and 26 (8.5%) in the Western Carpathians. In 1969, the year of this analysis, lynx populated hunting districts covered 38,114 km^2 (16% of the country's area), which means that one lynx roamed over 22.5 km^2 in Prahova County and over 193,6 km^2 in Sibiu County (Table 1).

The forested area of lynx-related hunting districts, included 27,650 km^2 of forests (43.8% of the then forest area in Romania), each specimen benefiting by 9.9 km^2 of forested area in Harghita County and 99.8 km^2 in Sibiu County (Table 1).

Table 1. Surface-area / lynx specimen per county in 1969 (total area and forested area)

County	Harghita	Suceava	Braşov	Covasna	Vrancea	Maramureş	Bacău	Bistriţa-Năsăud	Neamţ
Specimen/km^2 total area	24.6	50.0	32.6	45.4	27.9	44.3	49.9	42.9	65.0
Specimen/ km^2 forest	9.9	34.0	16.9	25.9	19.5	27.5	37.2	24.1	47.7

County	Buzău	Prahova	Vâlcea	Caraş-Severin	Mureş	Hunedoara	Alba	Timiş	Argeş
Specimen/km^2 total area	47.7	22.5	47.1	39.1	46.3	55.1	49.3	22.9	76.4
Specimen/ km^2 forest	34.8	14.2	34.3	26.8	33.2	31.9	33.1	17.9	49.5

County	Cluj	Dâmbovița	Arad	Bihor	Gorj	Sibiu	Satu Mare
Specimen/km^2 total area	33.9	28.2	33.1	62.2	81.7	173.0	29.3
Specimen/ km^2 forest	20.6	15.6	19.1	37.6	64.0	99.8	11.8

Optimal lynx densities were put at 0.2 specimens/1000 forest hectares (ALMĂŞAN & POPESCU 1964; TEORAN 1981).

1. **The lynx in the Eastern Carpathians**

The Eastern Carpathians cover the largest forested area in Romania, stretching out from the northern border with Ukraine to the Prahova Valley in the south. The lynx prefers the resinous mesophilous forests (the richest in Romania), but also the foliated ones (a mixture of oak and beech), mixed forests being more numerous in the Gutâi, Ţibleş, Maramureş, Obcinele Bucovinei, Vrancea Mountains and in the Curvature Carpathians. The species was identified in 208 cynegetic districts grouped by county as follows: 38 in Suceava, 26 in Harghita, 22 in Maramureş, 21 in Covasna, 17 in Neamţ, 16 in Braşov, 15 in Bacău, 14 in Vrancea, 12 in Buzău, 11 in Bistriţa-Năsăud, 9 in Mureş, 5 in Prahova and 2 in Satu Mare.

In 1969, most specimens (7-17) lived in 12 (5.8%) hunting districts: Colibiţa in the Bârgău Mountains, Bistriţa-Năsăud County (17 specimens), Ţibleş, Maramureş County (10 specimens), Budila in the Întorsurii Mountains, Braşov County (10 specimens), Neculele, Vrancea County (10 specimens), Măgheruş, Harghita County (10 specimens), Mânăstirea Humor in the Obcinele Bucovinei, Suceava County (9 specimens), Teleajen, Prahova County (8 specimens), Valea Nărujei, Vrancea County (8 specimens), Voroneţ, Suceava County (7 specimens), Chiojdeni, Buzău County (7 specimens), Telejenel in the Siriu Mountains, Prahova County (7 specimens) and Gârcin, Braşov County (7 specimens).

A number of 4-6 specimens were identified in 61 hunting districts (29.3% of the total), most of them (24) in the counties of Harghita; 10 in Suceava, 7 in Vrancea, 6 in Covasna, 3 in Mureş, 2 in Bistriţa-Năsăud, 2 in Prahova, 2 in Neamţ, 2 in Buzău, 1 in Maramureş, 1 in Bistriţa-Năsăud and 1 in Satu Mare.

Out of these 61 districts we would mention Păltineţ (Prahova County), Tărlung (Braşov County), Bodoc and Petriceni (Covasna County), Condratu (Vrancea County), Ciobănuş and Asău (Bacău County), Bistra and Răstoliţa (Mureş County), Bălan, Vlăhiţa and Căliman (Harghita County), Breazău and Bâsca Mare (Buzău County), Galu (Neamţ County), Tihuţa (Bistriţa-Năsăud County), Strâmbu-Băiuţ (Maramureş County) and the following

districts in the Suceava County: Drăgoiasa, Iacobeni, Suha Mare, Suha Mică, Brodina, Brodinoara etc.

Most hunting districts (135, 64.9 %) held no more than 1-3 lynx specimens.

Highest densities (specimens / 1,000 forest ha) were recorded in 17 districts: 3.6 in Câmpulung la Tisa (Maramureş County), 3.3 in Crizbav (Braşov County), 2 in Zetea (Harghita County), 2.2 in Tuşnad (Harghita County), 1.6 in Budila (Braşov County), 1.6 in Bixad (Satu Mare County), 1.3 in Sencsed (Harghita County), 1.3 in Valea Rea (Harghita County), 1.2 in Ţibleş (Maramureş County), 1.1 in Păuleni (the Ciuc Mountains, Harghita County), 1.1 in Mânăstirea Humor (Suceava County), 1.1 in Voivodeasa (Suceava County), 1 in Voşlăbeni (the Gurghiu Mountains, Harghita County), 1 in Colibiţa (Bistriţa-Năsăud County), 1 in Năneşti (Maramureş County), 1 in Mădăraş (Harghita County) and 1 in Negreşti (the Oaş Mountains, Satu Mare County).

Densities of 0.6-1.0 specimens/1,000 forest hectares, had 31 hunting districts: 10 in Harghita County (e.g. Lacu Roşu, Rezu Mare, Uzul, Pilicske, Praid), 4 in Prahova County (e.g. Telejenel, Păltineţ, Crasna), 3 in Covasna County (e.g. Cormoş, Bodoc), 3 in Vrancea County (e.g. Coza, Neculele), 3 in Suceava County (Suha Mică, Voroneţ, Bogdăneşti), 2 in Braşov County (e.g. Gârcin), 2 in Maramureş County (Budeşti and Strâmbu-Băiuţ in the Ţibleş Mountains) and each in Buzău (Breazău), Bacău (Slănic), Mureş (Răstoliţa) and Neamţ (Dreptu) counties.

Densities of 0.2-0.6 specimens/1,000 forest hectares were found in 99 hunting districts: 15 in Suceava County (e.g. Negrişoara, Drăgoiaşu, Valea Putnei, Rarău, Suha Mare, Dragoşa, Argel, Brodina, Solca, Baia), 14 in Maramureş County (e.g. Făina, Repedea, Câşla, Pietrosu, Huta, Cavnic, Băiţa), 10 in Braşov County (e.g. Valea Bogăţii, Teliu, Timiş, Tărlung, Poiana Mărului, Veneţia), 9 in Vrancea County (e.g. Valea Nărujei, Lepşa, Macradău, Condratu), 8 in Bistriţa-Năsăud County (e.g. Romuli, Tihuţa, Rodna, Anieş), 8 in Buzău County (e.g. Gura Teghii, Bâsca Mare, Siriu, Vintilă Vodă), 8 in Covasna County (e.g. Vârghiş, Miko, Barcani, Zagon), 7 in Neamţ County (e.g. Secu, Fundu Tarcău, Gura Tarcău, Borca, Galu), 7 in Bacău County (e.g. Caşin, Dofteana, Pralea), 6 in Harghita County (e.g. Homorod, Mihăileni), 5 in Mureş County (e.g. Niraj, Bistra, Bradu), 1 in Prahova County (Starchiojd) and 1 in Maramureş County (Racşa).

The lowest densities (under 0.2 specimens/1000 forest ha), had such hunting districts as: Dornişoara, Coşna, Putna in Suceava County, Săpânţa in Maramureş County, Lunca Ilvei in Bistriţa-Năsăud County, Bisericani and Magazia in Neamţ County, Căldări in Vrancea County, Camenca in Bacău County, Sebeş in Mureş County, Valea Nehoiului in Buzău County, Oituz and Ghelinţa in Covasna County (the Vrancea Mountains), etc.

2. **The lynx in the Southern Carpathians**

The Southern Carpathians, the most imposing range in the Romanian Carpathian Chain, extend between the Prahova Valley in the east and the Timiş-Cerna-Bistra Corridor in the west. Compared to the Eastern Carpathians, forests occupy smaller surfaces, which explain why the lynx was seen only in 74 hunting districts: 14 in Hunedoara County, 11 in Argeş County, 10 in Vâlcea County, 9 in Sibiu County, 8 in Braşov County, 8 in Caraş Severin County, 6 in Gorj County, 4 in Dâmbovița County, 3 in Alba County and 1 in Prahova County.

Most numerous specimens (5-10) had 11 (14.9% of total) districts: Valea Radului, Braşov County (10), Sebeş, Braşov County (10), Runcu-Brăteiu, Dâmbovița County (7), Poiana Mărului, Caraş Severin County (6), Boia, Vâlcea County (6), Valea Ialomiței, Dâmbovița County (6), Cârțişoara, Sibiu County (5), Răşinari, Sibiu County (5), Gura Râului, Sibiu County (5), Râul Mic, Alba County (5) and Breaza, Braşov County (5).

Only 2-4 specimens in each of the 41 (55.4%) districts: 8 in Hunedoara County (e.g. Retezat, Măgureni, Câmpu lui Neag, Parâng, Petroşani, Uricani), 8 in Vâlcea County (e.g. Cheia, Brezoi, Câineni, Obârşia Lotrului, Latoriţa, Voineşiţa), 8 in Argeş County (e.g. Braha, Râul Târgului, Cetăţeni, Izvoru Dâmboviței, Rucăr), 5 in Caraş Severin County (e.g. Mărul, Fundu Cernei, Râu Lung, Râu Alb), 5 in Sibiu County (e.g. Tălmaciu, Lotrioara, Râu Vadului, Sălişte), 3 in Braşov County (e.g. Bârsa, Moeciu), 2 in Gorj County (Bistriţa, Sohodol în Munții Vâlcan), 1 in Alba County (Canciu) and 1 in Prahova County (Valea Cerbului).

And no more than one in each of the 22 (29.7%) hunting districts: 6 in Hunedoara County (e.g. Zănoaga, Râu Şes, Valea Streiului, Bilugu), 4 in Gorj County (e.g. Bumbeşti, Sadu), 3 in Argeş County (e.g. Dâmbovicioara), 2 in Dâmbovița County (e.g. Gemenea în Munții Leaota), 2 in Braşov County (e.g. Zărneşti), 2 in Caraş Severin County (e.g. Obârşia Bistrei in the Țarcu Mountains), 1 in Alba County (Prigoana), 1 in Sibiu County (Suru in the Cindrel Mountains) and 1 in Vâlcea County (Ştevia).

There were 4 hunting districts with top lynx densities: Valea Radului, Braşov County (2.2 specimens / 1,000 forest ha), Runcu-Brăteiu, Dâmbovița County (1.8), Breaza, Braşov County (1.8) and Sebeş, Braşov County (1.4).

In 3 hunting districts: Râul Mic (Alba County), Cetăţeni (Argeş County) and Cârțişoara (Sibiu County), densities ranged between 0.6 and 1.0 specimens.

In 51 districts valued registered 0.2-0.6 specimens / 1,000 forests hectares: 11 in Hunedoara Couny (e.g. Retezat, Râul Şes, Marginea, Măgureni, Câmpu lui Neag, Parâng,

Petroşani, Uricani), 8 in Caraş-Severin County (e.g. Poiana Mărului, Fundu Cernei, Obârşia Bistrei, Mărul), 8 in Argeş County (e.g. Lereşti, Râul Târgului, Rucăr, Izvoru Dâmboviţei), 8 in Vâlcea County (e.g. Cheia, Brezoi, Câineni, Voineasa), 7 in Sibiu County (e.g. Răşinari, Tălmaciu, Lotrioara, Râul Vadului, Sălişte, Gura Râului), 4 in Braşov County (e.g. Moeciu, Râul Mic, Bârsa), 3 in Dâmbovița County (e.g. Valea Ialomiței, Gemenea), 1 in Alba County (Canciu) and 1 in Prahova County (Valea Cerbului).

Lowest densities (under 0.2 specimens) were recorded only in 16 districts, e.g.: 6 in Gorj County (e.g. Bistrița, Sohodol, Bumbeşti, Sadu), 3 in Hunedoara County (Zănoaga, Valea Streiului, Voievodul), 2 in Vâlcea County (e.g. Latorița in the Parâng Mountains), 2 in Argeş County (e.g. Dâmbovicioara) and one each in Alba (Prigoana), Sibiu (Suru) and Braşov (Zărneşti) Counties.

3. The Lynx in the Western Carpathians

This range, which comprises the Banat Mountains and the Apuseni Mountains, was more intensely populated with human settlements than the provious two Carpathian sectors. The last lynx individual was signalled in the Apuseni Mountains in 1932; subsequently it seemingly immergrated from the Țarcu Mountains (Southern Carpathians), the first specimen being captured in the Bihor Mountains in 1954/1955. The following year it was seen in the Gilău Mountains. In March 1956, traces of lynx were found around the Valea Largă hunting park in the north of Hunedoara County. At the end of April 1956 and in February 1957 a female and a male lynx, respectively were caught here. In November 1957 the first traces of lynx were discovered in the Iara Valley (Cluj County). In February 1958 they trapped a 28 kg lynx in the Huda Valley, a tributary of the Iara. In 1960, lynx were for the first time detected in the Pădurea Craiului Mountains, their number steadily increasing up to 1965.

In 1969, the area registered the lowest number of individuals in Romania, they occurring only in 26 hunting districts (rich in mixtures of leafy and resinous forests): 6 in Alba County, 5 in Cluj County, 4 in Timiş County, 4 in Bihor County, 3 in Arad County, 3 in Caraş-Severin County and 1 in Alba County.

Most specimens were seen in 3 districts (11.5% of the total): Luncani in the Poiana Ruscă Mountains, Timiş County (10), Valea Belişului, Cluj County (6) and Vulturi-Feneş, Alba County (6).

A number of 2-5 individuals were recorded in each of the 19 (73.1%) hunting districts: 4 in Alba County (Poşaga, Lupşa, Ocoliş, Arieş superior), 4 in Cluj County (Someşu Cald, Someşu Rece, Băişoara, Valea Ierii), 3 in Bihor County (Drăgan, Pietroasa, Biharia), 3 in

Timiş County (Nădrag, Surduc-Tomeşti, Poieni), 3 in Caraş Severin County (Oţelu Roşu, Ruşchiţa, Stârna) and 2 in Arad County (Lunca, Luncşoara).

And only one specimen in each of the 4 (15.4%) districts existing in the counties of Arad (Treaşi in the Zarand Mountain), Bihor (Valea Iadului), Alba (Roşioara) and Hunedoara (Bulzeşti in the Bihor Mountains).

Highest *densities* registered the hunting districts of Vulturi-Feneş, Alba County (1.1 specimens/1,000 forest ha) and Luncani, Timiş County (1 specimen).

Another 8 districts: 3 in Arad County (Treasi, Lunca, Luncşoara), 3 in Cluj County (Someşu Cald, Băişoara, Valea Belişului) and 2 in Alba County (Lupşa, Ocoliş) hosted between 0.6 and 1 specimen per 1,000 forest hectares.

Between 0.2 and 0.6 individuals were found in 12 districts: 3 in Bihor County (Drăgan, Pietroasa, Biharia), 3 in Timiş County (Nădrag, Poieni, Surduc-Tomeşti), 2 in Alba County (Poşaga, Roşioara), 2 in Caraş-Severin County (Oţelu Roşu, Stârna), 1 in Cluj County (Someşu Rece) and 1 in Hunedoara County (Bulzeşti).

Lowest densities (under 0.2 specimens) were recorded in the following hunting districts: Valea Iadului (Bihor County), Valea Ierii (Cluj County), Arieş superior (Alba County) and Ruşchiţa, Poiana Ruscă Mountains (Caraş Severin County).

CONCLUSIONS

A carnivorous animal "par excellence", the lynx is a valuable trophy of the Romanian Carpathians and of the country's fauna, generally, part of the ecosystems' balance. With the growth of its effectives over the 1930s – 1960s, it began spreading also to lower-altitude forests, as seen in the year analysed herein (1969), such as Tisău (the Buzău Subcarpathians), Pralea and Jariştea (the Vrancea Subcarpathians), Baia (the Moldavian Subcarpathians), Săpânţa (close to Sighetu Marmaţiei town), Vlădeni (the Perşani Mountains) and Treaşi (the Zarand Mountains).

In our view, data on the 1969 distribution of the lynx in Romania represent an important moment in the zoogeographical knowledge of this species, moreover so as Romania is ranking now second in Europe (after the Russian Federation) as regards the size of the lynx population.

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