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THE LYNX, *Lynx lynx* (LINNAEUS, 1758) IN SERBIA

Извод: РИС *Lynx lynx* (Linnaeus, 1758) У СРБИЈИ. Аутор у овом раду износи нове податке о рису *Lynx lynx* (Linnaeus, 1758) у Србији прикупљене током теренских истраживања у периоду 1980–2000. Подаци су прикупљени на основу посматрања, налаза трагова, налаза убијених или на други начин настрадалих јединки и анкете локалног становништва. Имајући у виду реткост и начин живота ове врсте дати су сви прикупљени подаци о распрострањености и бројности, станишту, исхрани, интра-и интерспецијским односима и проблемима заштите за период током последње 2–3 деценије. Такође, дат је у дискусији и закључцима сумарани преглед савремене распрострањености и бројности, трендови субпопулација, генералне биологије и главних проблема заштите ове недовољно проучене и угрошене врсте у Србији, а на основу података датих у овом раду и библиографији.

Кључне речи: рис, статус, биологија, Србија.

Abstract: In this paper, the author presents new data on lynx (*Lynx lynx*, Linnaeus, 1758) in Serbia, collected during research work in the period 1980–2000. The data have been collected through observation, findings of tracks, findings of killed or dead animals and information provided by local population. Taking into consideration rarity and way of life of this specie, all collected data on distribution and numbers, habitats, feeding, intra- and interspecies relations and problems of protection are presented for the period of last two to three decades. In addition to that, Discussion and conclusion present a summary overview of contemporary distribution and numbers of the species, trends of subpopulatfon, general biology and the main problems of protection of this insufficiently studied and endangered species in Serbia, and on the basis of data presented in this paper and bibliography.

Key words: lynx, status, biology, Serbia.

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INTRODUCTION

The lynx, *Lynx lynx* (Linnaeus, 1758) is endangered species in Serbia and Europe (Savić et al. 1995), Breitenmoser et al. 1999). During the last several decades, it has been studied extensively, although insufficiently (Mirić, 1981, Mirić & Paunović, 1992, 1994, Milenković 1985, Hadži-Pavlović 1997).

The author collected numerous data on lynx in Serbia in the period 1980–2000. Having in mind insufficiently studied endangered species the author communicates the results of his studies on the status and biology of the lynx in Serbia.

MATERIAL AND METHODS

The main material in this paper are data collected during fieldwork studies in the period 1980–2000. Some of the data presented relates even to the earlier period. Mainly, those are data not presented in the literature so far, or those that supplement existing data Mirić, 1981, Hadži-Pavlović 1997, and others).

Following methods were employed, considering low abundance and the life-style of the lynx: 1. observation and trace records by specialists and persons well informed of the species (hunters or other experienced persons); 2. preserved remnants (taxiderms, skin, skulls, etc.); 3. records from the local inhabitants.

The author visited all known locations of lynx in Serbia (and in FYR Macedonia). The network of field associates was also organized for the data collection. There were certain problems observed by Mirić (1981) during data collecting: 1. data on killed or captured animals or their remnants are kept secret from the public, because of the high fines; 2. data collected from the local people are often incomplete, unclear and sometimes can not be verified. Scarce data on the lynx, author decided to present even unverified data, with the remark in the text, and the question mark in the map.

RESULTS

The data on the Balkan lynx, *Lynx lynx martinoi* on Kosovo and Metohija and in the Raška County

The wide area of the Šar planina Mt.

Ljuboten. The data of Mirić (1981) confirm this area as a habitat of the lynx until 1974–5. According to Mr. Aca Nikolić, the last traces of the lynx were found during the winter 1975–6. There are no recent data. The lynx probably disappeared from the area.

Brezovica. According to A. Nikolić a poisoned lynx was found near Štrpce during the action of wolf poisoning in 1965. He also obtained data from accidental by passers that a lynx has been observed for several times, always in the night, in the vicinity of the tourist settlement below the locality Stojkova kuća, during the winter of 1982–3. It is supposed that the animal was attracted by the food, meat and bone lefto-

vers. It is his opinion that the specimen inhabits Čardačište locality, earlier known to be the permanent residence of the lynx (Mirić, 1981). The opinion of Mr. Stanko Nikolić (pers. comm. 1997) was that the lynx left the area after the construction of the tourist settlement in '80s and moved to the locality Durlov potok or to Jažinjačko Lake. Dr. R. Aleksandrov testified to spot the lynx in the beech forest and rock near Durlov potok, below Stojkova kuća (1900 m a. s. l.) in the fall of 1992.

Suva River. The author spotted the trace of lynx and food remnants (medium-sized mammal bones) in the area of the upper stream of the river, near Prevalac, in a small cave, on July 6, 1980. The animal resided for a certain period in the valley — a gorge covered by beech forest, 1200 m a. s. l.

Prevalac Jažinačko Lake. Mr. Aca Nikolić recorded traces and excrements of the lynx in the locality Gine Vode, in '80s. Excrements contained feathers of *Turdus viscivorus*, quite frequent in the area, and small dark-brown hair, from micro mammals, probably small rodents Gamekeeper, Ratomir Stanojević from Sevce, found the traces of lynx in the forest between Prevalac and Jažinačko Lake, in the spring of 1992, the area earlier known to be inhabited by lynx (Mirić 1981).

Gornje Selo — Pavlov kamen. A driver from Niš, Aleksandar Bogajčević, spotted a lynx near Miljockov stan, below Pavlov kamen (below Bistra) in June, 1991. The animal suddenly appeared and quickly disappeared in the nearby rocks and bushes, 1800 m a. s. l. Slavko Jovanović found traces of lynx in the snow above Gornje Selo (1.5 km from Bistra) on December 13, 1998. Traces led through a beech forest with small rocks, 1450 m a. s. l.

Dančovo. A forester, Isljam Osmani from Ljubinje, claimed that a lynx was spotted in the summer 1992, in the huge forest complex Dančovo (beech forest belt on 1200–1700 m a. s. l.).

Ošljak. A hunter, Slavko Jovanović from Prizren, traced the lynx in the deep snow, from Popovo prase to Ošljak, on March 11, 1978. The trace led through the thick and old coniferous forest, but it was not possible to follow it all the way, because of the heavy snow. Aca Nikolić used to find lynx excrements on a dry rocky terrain of the south part of Ošljak during '80s. It is also a habitat of *Alectoris graeca* and *Lepus europaeus*, a source of food for lynx.

Author detected a lodge and fresh traces of the lynx in the snow, in Čerenačka reka, on April 20, 1987. While he was climbing up the steep slope, Dragan Ivanović from Paraćin, briefly spotted a lynx on the rock above the lodge. The animal probably left the lodge, disturbed by the author. The lodge was settled in the small cavity in the limestone, in the forest at 1370 m a. s. l., on the steep slope covered by old beech forest and whitebark pine trees *Pinus heldreichii* on the limestone. The place was silent, not often visited by people. Near the lodge, under the rock, some leftovers from the food were found: a part of the lower jaw of juvenile *Rupicapra rupicapra balcanica*, several bones that probably belonged to *Lepus europaes*, and possibly a part of the bone from the wing of *Tetrao urogallus* (?), and there were some bones that were not possible to identify. A hunter, G. Savić from Sevce, found the traces of lynx in the same area, during the winter 1993–4.

Kodža Balkan. Mr. Mikelj Gegaj from Brezovica shot an adult male on Ostrovica, March 10, 1979 (Fig. 1). On this occasion, he spotted three animals, after he heard the animal he shot. Aca Nikolić stated that there were 2 to 4 animals resided in the area *Ostrovica - Kodža Balkan* during '80s, and that the area was one of the main localities of the lynx in the wider area of Šar planina Mt. There he detected feathers of *Alectoris graeca* in excrements of the lynx. It is opinion of Stanko Nikolić that lynx resided in Rusenica during 1997. A hunter and former gamekeeper, Agim, shot a lynx during the chase on the wild boar in the area of Koriška River, between Ljubidžda and Koriša villages, on January 18, 1998. The animal was in the preparation by taxidermist, when Slavko Jovanović sought to take a picture for the documentation.

Nerodimske-Jezeračke forests. According to Aca Nikolić, 2–3 animals inhabited this area during '80s. Zvonko Cvetković from Gnjilane stated that a colleague of his, Zoran Ašujić from Uroševac, spotted a lynx above Jezerce village in the fall, 1995. The animal was on the tree, in the beech forest, section 35–36, 800–900 m a. s. l. The area was populated by roe deer and wild boars before the war activities that took place there in March-June, 1999.

Prizrenska Bistrica Gorge. Nebojša Pleskonjić, electrician from Prizren, spotted a lynx in the front light of his car, on the road through the gorge, in the late fall of 1990. The animal quickly returned to Lokvički potok, toward Drven grad. Slavko Jovanović obtained a reliable information that the lynx was seen in the area of Vrbički creek, during the night, in the fall of 1997. In addition, the traces were recorded on the place where it crossed the creek.

Restelica. According to hunters, one animal was seen on several occasions on Kadijin kamen, Jelak, Near Restelica, in 1988.

Koritnik

A mountaineer, Rade Ristić from Paraćin, spotted a lynx on the rocks in 1959. Mejdin Seljmani stated that a hunter from Vranište, Vehap Vehapi, shot a lynx on Viljan locality, in '60s. The case was reported to the police, and the hunter destroyed the evidence. A hunter, Amza Ćemo from Rapča, reported that frontiers from a post near Rapča, captured a juvenile specimen in the forest in '70s, and gave the animal to a zoo garden in Skopje. The same data was reported by Mirić (1981). The same hunter reported that an adult animal was trapped and shot near Krstec village, in 1983. A hunter, Alija Selimović, claimed that there were 2 animals regularly seen on Koritnik, and supposed that there were 6 specimens present, during 1986–7. Slavko Jovanović has seen a skin of a juvenile male shot near deserted frontier post "Mandić", in November 1995. The animal was shot during the chase on the wild boar. Mejdin Seljmani heard that hunters killed a female in 1996, on the north slopes of Koritnik Mt. There were two specimens seen together on that occasion, according to hunters. Slavko Jovanović stated that there was a juvenile specimen shot near frontier post "Stojanović" on Žurska bačila. Hunters skinned animal, and the rest of the animal was discarded. Slavko Jovanović saw an adult female shot in November, 1997, between frontier posts "Stojanović" and "Mandić" on Koritnik Mt. The animal was killed during the

chase on the wild boar, only 100 m away from the locality where juvenile male was shot 2 years ago. The animal was prepared by taxidermist and a photo is a part of author's documentation.

Paštrik

Aca Nikolić testified that the last lynx in this area was shot in 1970. Slavko Jovanović obtained data from a hunter who traced a lynx in the northeast Paštrik, in winter 1977–8. Traces led through the oak forest, above Zjum village. There are no recent data. The area was subjected to heavy military actions in March–June, 1999. It is possible that the lynx disappeared from the area.

Prokletije Mt. (from Juničke Mt. to Istočke Mt.)

A hunter Luka Otašević shot an adult male on Crni potok locality, near Ereč village (between Đakovica and Junik), in the winter of 1984. The animal was found in the shrubs, in the forest, at 600 m, where it has never been seen before. The hair of the roe deer was found in the stomach. During the fight, the lynx severely injured 6 hunt dogs. The skin and the scull were preserved, and it is kept in the restaurant of this hunter in Đakovica. The author saw and photographed the remains of this lynx in 1995.

Slobodan Bakić spotted a lynx in the forest, near Dečanski stanovi, moving towards Albanski potok in the fall, 1985–6.

Slobodan Bakić registered traces near slaughtered roe deer in Beleški potok, in the winter, 1975–6.

According to the statement of Slobodan Bakić, one specimen inhabited the area between Lovski potok and Raški do in 1995.

Slobodan Bakić registered traces of lynx near slaughtered *Rupicapra rupicapra balcanica*, in Čvrljski potok, in April 1982–3. A gamekeeper Muharem Šabani from Streoc, observed a lynx on the heights of Veternik (Krš Čvrlja) hunting chamois in 1985. When a group of chamois spotted a lynx, at first they watched it in alarm, and then scattered in panic in the surrounding rocks. At the same place, a gamekeeper watched a lynx, hunting male chamois in the fall of 1990. He compares lynx's behavior to a domestic cat. When chamois spotted a lynx, it ran away in large leaps.

A driver Miodrag Milić, from Peć, saw a lynx at the entrance to Rugovska gorge, in the fall, 1986. He saw it clearly in the front lights of his car, about 9 AM, when crossing the road. Slobodan Bakić found a traces of lynx near Balkan chamois in Rugovska gorge, in the winter, 1994–5.

Slobodan Bakić testified that one specimen probably inhabited forest near Belopać in 1982–3.

According to a hunting supervisor, Krsman Trboljevac from Zubin Potok, one lynx was killed in Oklanička glava, in the fall, 1994. It was shot on limestone rocks in coniferous forest, at 1500 m a. s. l. The animal was shot by a shepherd, who did not know which was the animal. He sold the skin in Tutin, where he found out that it is a protected animal, and then destroyed it, because of high fines.

Slobodan Bakić, hunting administrator from Peć, claimed to have reliable information that a lynx was shot near Vrelo village in January or February, 1996. A forester, Radoš Betić from Istok, heard a long time ago that a lynx was trapped near Žakovo village, on the slopes of Istočke Mt., in '70s (?). The data is unreliable, for after several checking it could not have been confirmed.

Crni vrh — Jeleč Grad

According to Todor Nikolić from Novi Pazar, lynx is very rare at this locality. He also claimed that one specimen has been shot in Kluna, in 1988.

Additional incomplete data on Balkan lynx

Zoran Ivanović from Paraćin saw a taxiderm of lynx, owned by a hunter Đoka Ivanović from Peć, in 1965–6. Animal was shot somewhere near Dečani, in '60s.

According to Luka Otašević from Đakovica (data acquired in 1995) a taxiderm of a lynx was kept by a hunter Zečević from Peć. Date and locality are unknown.

Miljan Šoškić from Andrijevica stated that Avro Šoškić from Podgorica shot a lynx somewhere on Prokletije Mt. (Rugovska gorge?) many years ago (1960–70?). Then he saw two animals resting on a rock. Killed animal was taken by taxidermist.

Hunters from Dečani, Milinko Bulatović and Milivoje Đurković, stated: certain Šaban trapped a lynx in 1960, near Belaj in Dečanska Bistrica gorge (exact date unknown); live lynx has been trapped in the area of Dečanska Bistrica and transported to zoo garden in Skoplje, in 1963; one lynx was shot by late hunter Branko Bulatović from Dečani, near Pobrđe village, Kosmanić locality, in 1968.

Slobodan Bakić from Peć stated that a dead male lynx was collected on the 5th km of the road between Rugovska gorge and Miliševac in 1973. Milorad Tošić transported the animal to a "museum" in Belgrade. It is probably the same male described by Mirić (1981) which has been found dead in Rugovska gorge, on 4th km in 1971 (?), and now it is in Inđija.

Note: similar unreliable or detailed data described Mirić (1981) for this area. Those were probably same cases, concealed from public, or the sufficient data were unavailable.

The data on the Carpathian lynx, *Lynx lynx carpathicus* in East Serbia and Banat

Đerdap National Park. A gamekeeper, Dragoljub Grujić, claimed to see a lynx eating *Capreolus capreolus* near Pecka (smaller gorge near Veliki Štrbac), in the fall, 1988. Zoran Milovanović, biologist from Donji Milanovac stated that a young female was found killed on the road near Golubinje, in the night July 17/18, 1996. The animal was hit by a car while crossing the asphalt road through Đerdap gorge (see Fig. 2). Data are published (Hadži-Pavlović 1997).

Vicinity of Blizna village. According to the result of the survey of local people, one lynx was killed in the vicinity of Blizna, near Majdanpek, in the fall, 1995. The area is known to be a habitat of the lynx (Mirić & Paunović 1992, Hadži-Pavlović 1997).

Lazarev canyon — Malinik-Jelen kamen — Dobromirov krš — vicinity of Bogovina. Dragan Pavičević, entomologist from Belgrade, spotted a lynx in Sečanj, above Lazarev canyon on Malinik, May 1, 1987. The animal ran fast over the rocky terrain and vanished in lilac bushes, at 600 m a. s. l. Police inspector and a hunter, Miki Simović from Podgorac, reported a story of his friend who saw two animals playing near Jelen kamen on Malinik, in the summer of 1992. Zoran Ivanović from Paraćin, saw traces of lynx in the snow below Klencuš peak, in the upper stream of Klencuš river (900 m a. s. l.), in December 1994. A hunter, Miki Simović, observed a lynx near Dobromirov krš in July 1997. The animal appeared in the evening, from the forest and entered the plum orchard. He clearly saw animal through the optics of a weapon. He also heard earlier from people and hunters that the lynx was often seen between Lazarev canyon (Mikuljska river) and Bogovinski krš, in 1997. Later, he heard a story of his colleague who saw a lynx near Mikulje, beginning of July, 1998. A gamekeeper observed traces of lynx at the end of the Lazarev Canyon, that disappeared at the end of the canyon on Strnjak locality, December, 1996. It is opinion of the gamekeeper that the lynx attacked chamois in Lazarev canyon, in the fall or winter, 1997. Author recorded freshly slaughtered and partly eaten roe deer in Lazarev canyon, near Vernjikica cave, November 1990. It is possible that the predator was lynx, according to the pattern. Ivan Stefanović from Jagodina spotted a lynx in the front light of his car, standing by the road between Boljevac and Bogovina, in the beginning of March, 2000.

Brezovica. One lynx was killed by mistake, instead of wolf, near Brezovica, one night in September 1997. Tomorrow, only the head was found, while the body was eaten by wild boars or wolfs. Author saw and photographed damaged skull.

Radovanska river gorge. Saša Miletić, forest technician from Paraćin discovered two roe deer slaughtered by lynx, in the beech forest, by the road in the upper part of Radovanska river, in the winter of 1994–5. There were characteristic teeth marks of the lynx on the necks of roe deer. A gamekeeper Boban Vasiljević from Podgorac acquired data on a lynx seen in Radovanska river gorge, below the fishpond, in the night of January 31, 1997. He was seen in the front lights of a car, eating a roe deer, and then vanished towards rocks. S. Vasiljević also stated that a lynx was seen in Radovanska River Gorge, during wild boar chase, by the end of January 1999. The animal was chased by hounds, but they never attacked it, which is considered to be a strange behavior. The lynx passed by hunters at 20 m distance, and disappeared in the beech forest and rocks. Traces of this lynx were found in the snow, in the place where a hunter saw it, by a gamekeeper. A gamekeeper saw a lynx resting on a rock in Radovanska river gorge, in February 1999. A hunter saw a lynx passing by him in oak forest near Vrelska kosa, above gorge, in the fall, 1999. A hunting official, Zoran Veličković from Boljevac, spotted a lynx and traces of other four animals in the bushes above the gorge in January, 2000. Author detected traces on the snow on a forest road near Gajina mlaka and in the clearing in the upper part of Radovanska river on March 21–22, 2000. It was probably the same specimen.

Resava and Beljanica. A hunter Radiša Rajić from Strmosten shot a female lynx between Resavska cave and Suvaja-Kločanica gorge, in the fall of 1992. The animal was found in the shrubs on the rocks. He claimed to preserved the skin, but did not produce it from the fear of possible sanctions. A hunter Radivoje Obradović from Strmosten stated that a shepherd Stevan Tomić from Strmosten saw a lynx on a tree in the forest above Lisine waterfall, near Sokolica (Beljanica) in 1994. He claimed the lynx slaughtered 3–4 sheep, before it was probably killed by hunters. A hunter Sveta Ilić from Resavica claimed that hunters from Sladaja saw a lynx on the rocks on Beljanica in the fall of 1998. He also informed on story of hunters that a lynx was seen in the upper part of Resavska gorge (above Ravna river) in the fall of 1999.

Resavica Gorge. An archeologist, Predrag Vučković from Paraćin, heard a story from a shepherd who saw unknown beast, probably lynx in Resavica gorge, in 1983. It was resting at the entrance of a cave in the part of gorge towards Barbušina. This data is not possible to confirm, although it is likely that the area is inhabited by lynx.

Vicinity of Senjski Rudnik and Sisevac. Zoran Stevanović from Paraćun communicated o story of his late father who saw a lynx between Senjski Rudnik and Ravanica Monastery, in June-July, 1990–1. The animal suddenly jumped from the tree in front of his motorbike and disappeared in the forest. Author detected fresh traces of lynx, at the entrance to a cave in Ravanica Gorge, April 19, 2000. Safet Musić from Ravna Reka saw a beast described as a lynx on Donji Bigar — Muška voda, in the area of Jablanica river, in the fall of 1997. The animal was on a tree in the forest. According to Vitomir Rudolf, a forester from Senjski Rudnik, beech forest prevail in this locality, partly with shrub. There are shallow hollows in the limestone, suitable for lynx lodgings. A number of roe deer and deer spend winter there, and there are numerous populations of rodents and small mammals, a source of food for lynx. A hunter, Zoran Savić from Paraćin, followed traces of one or two animals on several occasions at Panjevačka kosa (below Pasuljanske livade — behind Stenka and Debelo brdo) and on the route Mihajlova jama — Stenka (on two locations) during the winter of 1998–9. The other set of traces he followed led through a rocky terrain covered with shrub, and through an oak and beech forest, in the length of 5 km. He found excrements with rodent hair and probably hares.

Vicinity of Bošnjane village. Dejan Savić from Paraćin spotted a lynx in front lights of his car, slowly crossing a road in the deep snow, near Bošnjani, close to Paraćin, 190 m a. s. l., in January 1991.

Jelenak — Javorak — Torovište. A hunter, Vlada Drenovaković from Paraćin, saw a lynx in Jelenak (between Javorak and Torovište), one evening in July, 1986. The animal appeared in the dusk, on a clearing, set for a moment and immediately disappeared in the forest (800 m a. s. l.). A hunter, Neša Radaković from Paraćin, stated that a lynx (male, probably) was shot between Javorak and Brezovica, in the end of June or beginning of July, 1993. He thought that a hunter has kept the skull as a trophy. He also heard a story from hunters that lynx traces were found in the mud near Torovište (900 m a. s. l.) in the summer of 1995. A forester, Dragan Urošević from Krivi Vir, acquired some data from a shepherd who saw a lynx drinking water for cat-

tle, in the middle of a day, in Tri bunara locality, on Torovište, summer 1996–7. Predrag Jovanović from Paraćin saw a lynx late in the night in the front lights of his car, on a rock near Prevalak (between Torovište and Javorak), November 1999. The animal quickly disappeared in the shrub and forest.

Čestobrodica — Straža — Krivi Vir. Mountaineers Ljuba Planček and Dr. Vukman Čović from Belgrade, saw a female and juvenile lynx on Čestobrodica (towards Vis), on September 23, 1998. The animals were in the shrub, at the edge of a deciduous forest (beech, mixed forest), at 650 m a. s. l. Predrag Jovanović from Paraćin saw a lynx one evening, at Garia, near Straža, in October-November, 1999. The animal was slowly moving across the pasture and disappeared in a pine forest (plantation of black pine). A hunter, Zoran Kostić from Paraćin, saw a lynx in the vicinity of Krivi Vir, at Poljanice locality (600 m a. s. l.), in the mid January, 2000. The animal was slowly moving in the dusk, along the forest path covered with snow. He observed the animal through an optical device on his gun. Later, he also found traces of lynx, leading through a mixed forest, shrub, pastures and meadows.

Suvaja. A gamekeeper, Ljubiša Lazić from Skorica, one evening spotted a lynx on a clearing near hunter's house at the locality Donja Suvaja, in the summer of 1996.

Rtanj Mt. A hunter, Zoran Jović from Jablanica, stated confidential data of some hunters that a young lynx was shot on the slopes of Rtanj Mt., above Rujište village, in the fall of 1994. An animal was shot by a shepherd, when it entered the yard to slaughter sheep. Few days before a family (female with grown up juveniles) slaughtered 3–4 sheep. A gamekeeper who investigated the event, stated that a young male was shot, 12–15 kg weight in October, 1996. A shepherd waited for the animal by the sheep, previously slaughtered by lynx. It was his opinion that a wolf slaughtered the sheep. He destroyed the skin because of high fines. After 20–25 days, another young male was seen near Baba on Rtanj Mt. Those were two versions of the same event, acquired from different sources. First version was acquired in 1994, and the second in 1999. There are obvious mistakes in dates, which is referred to in the chapter "Material and Method". Zoran Ilić acquired data from hunters that lynx traces were seen in the snow on Rtanj Mt., in winter 1999–2000.

Slemen. Zoran Ilić acquired data from hunters that a lynx was shot on Slemen, above Vlaško Polje village (between Boljevac, Knjaževac and Soko Banja) in the winter 1999–2000. Other data were unavailable.

Ozren and Devica. Zoran Ilić from Soko Banja stated that a hunter, with a good knowledge of game, saw a lynx on Ozren Mt. in August 1995. The animal was spotted in a beech forest, at 800 m a. s. l. In addition, traces of lynx were detected on Devica, near Radenkovac, in the winter 1999–2000.

Stara planina. Dragan Panajotović heard a story from local people that an unknown beast was ran over by a car on the road near Dojkinci village, in fall, 1989. According to the description, it was probably a lynx. He also claimed that an army officer and a hunter saw a lynx above Aldinac village, in the direction of state border to Bulgaria (between Pisana bukva and Orlov kamen), in the fall, 1994. Panić (2000) re-

ported that a lynx was strangled by hounds at Udica locality, above Topli Do, in the spring-summer, 1993.

Shepherds claimed that unknown animal slaughtered several sheep near Babin Zub in 1997 and 1999. According to the described method, it was probably lynx.

Suva planina. Aleksandar Gligorijević from Niš claimed he saw lynx on Suva Mt. in 1998. Information was not verified.

Belava. Panić (2000) reported that hunters clearly observed a lynx on Belava (Sedlar) in fall, 1993. Animal was hidden in lilac shrubs on the rocks near Gnjilanska korita. Lynx injured several dogs during the fight. Hunters shot, but did not kill it.

Vicinity of Pirot. According to Dragan Panajotović a hunter Ljubiša Krstić, from Pirot, saw a lynx at Đeltaš locality, near Pirot (in the direction of Babušnica), in June or July 1995. Hunting inspector Siniša Georgijev from Pirot, acquired data from hunters that a lynx was seen at Petlovo bojište locality, between Pirot and Babušnica in 1990.

Vidlič. A president of hunting organization from Pirot, Milutin Pejčić, heard from army soldiers that several of them saw a female with juvenile, on Vidlič Mt., above Izatovac and Braćovac, in the beginning of June, 1999. They saw animals one evening, in the beech forest with rocks. Panić (2000) also reported that hunters saw a lynx on the slopes of Vidlič in the beech forest above Rsovac, at the locality Krušje, in fall 1993.

Vlasina. A hunter Borko Ćirić from Suračevo, claimed to heard a story from hunters that a lynx was killed near Kalna village, near Strezimirovac, by the end of 1990s. Aca Rangelov from Zvonačka Banja acquired data from soldiers that a lynx was shot at the same locality in 1998. Hunters shot it because it slaughtered sheep. It was probably the same case with no additional details.

Deliblatska peščara. All data came from gamekeeper Zoran Đurić from Banatski Karlovac. He heard a story from a hunter who claimed to saw a lynx in the vicinity of Šušara, in 1993–4. Later, he personally spotted a lynx on several occasions, when running through a shrub at Flamunda locality, in August 1996; he also saw a lynx resting on a sand dune near Flamunda, at 8 AM, by the end of August, 1997 (the animal ran away, but they found traces in the sand; it was probably waiting for a roe deer and deer). In August 1997, about 10 sheep were slaughtered between Korna and Čoka. At first, it looked as wolfs did it, but there were characteristic teeth marks on the neck of two sheep, and later eaten by wolfs. In addition, a freshly slaughtered roe deer was found at Korn, with characteristic teeth marks, in 1997. Z. Đukić thought it was a lynx. One lynx crossed the forest road between Čoka and Brandibul one evening, in the winter, 1998–9, and disappeared in shrub and sand dunes. About 500 m further, a lynx crossed a road in front of his car, at the end of November, 1999, and disappeared in the shrub and small forest in the sand area.

It was probably one lynx seen in the area of 1200 ha in Deliblatska peščara. There was a black pine plantation in this area, covering about 300 ha before the forest fire, and now is reduced to only 60 ha. Altitude of the area is 140–180 m a. s. l.

Vicinity of Bela Crkva. Popov (1997) stated that a young female was shot in Kaluđerevo, near Bela Crkva, in the fall, 1991. It was the first recent data on the presence of lynx in Banat.

There are numerous data on Carpathian lynx in the paper of Hadži-Pavlović (1997), and others, presented in the Map 1.

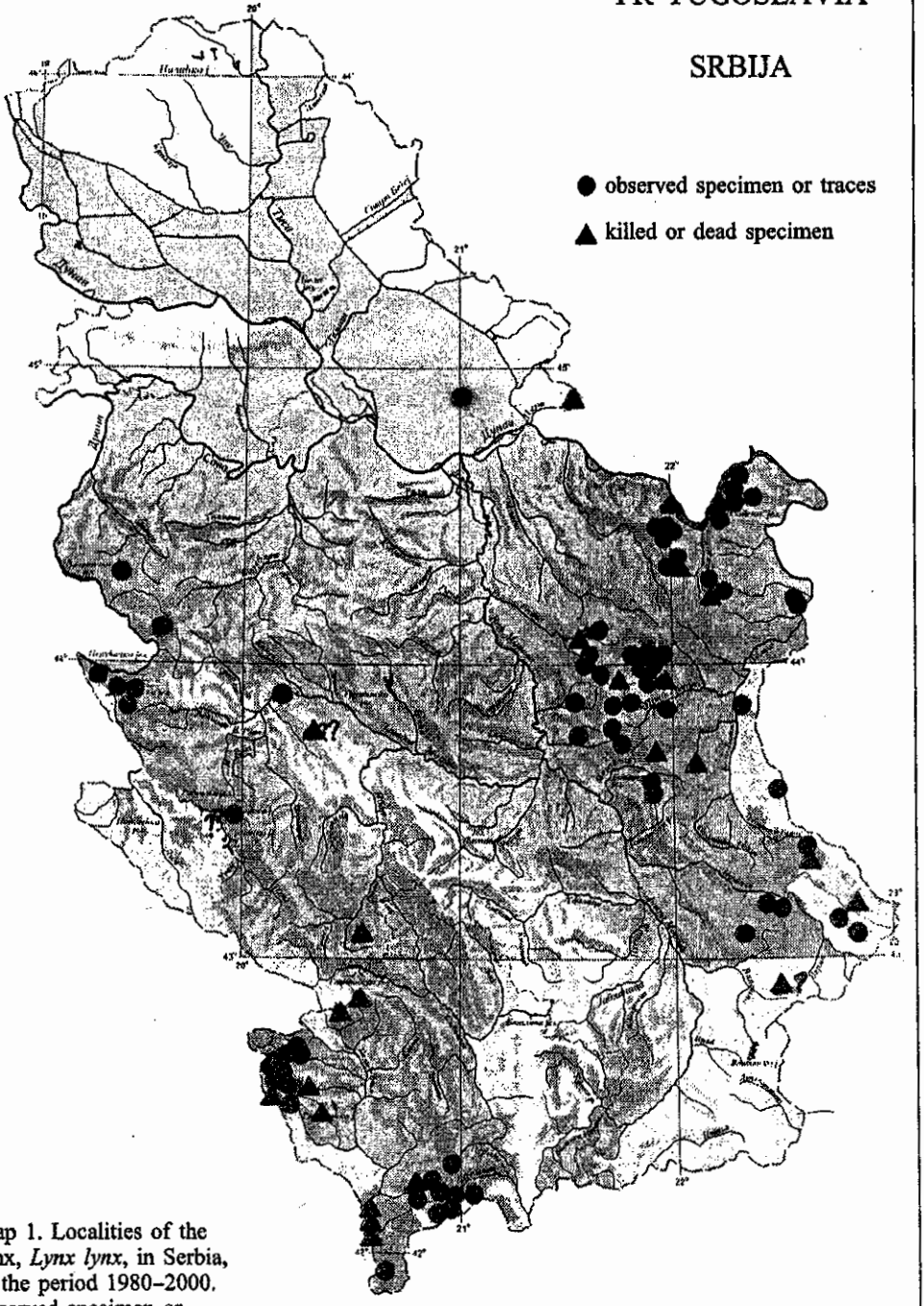
The data on the lynx, *Lynx lynx* in the west Serbia

Debelo Brdo — Trešnjica Canyon. Hunting inspector, Miodrag Petrović from Bajina Bašta, provided a data from his expertise when an unknown animal (probably lynx) slaughtered large number of sheep in Ovčinja, Gvozdac, Donje Zarožje and Gornja Košlja villages, in the period of the second half of May and the first half of June, in 1990. The examination concluded that all sheep were killed during the night, and in the barn. A fence of a barn was 2 m high, without any visible damage or other traces. Slaughtered animals were left in a barn. Marks on the neck, two characteristic stings by teeth, were visible only after very careful examination. Only in one case a part of a throat and a neck has been eaten. The animal slaughtered usually one or two, very rarely three sheep, at single occasion, and only once a flock of 20 sheep. On that occasion there were two short brown-yellowish hairs found on the fence, and traces of an animal about 100 m from the place. The trace corresponded to the lynx, although somewhat larger, probably widened in the dust. Sheep owners and villagers gave various statements about the animal. Two descriptions indicated a lynx. According to one witness "a large spotted cat" was seen, one early morning, resting on hey stack, near Ružići village, that ran away immediately after it was seen. Another witness claimed to saw one evening on the road near Zarožje, a huge spotted cat, with a large head and small white, that ran away immediately. It was established that an animal slaughtered 120 sheep in this area. Altitude of its range and hunting area was between 822 and 1114 m a. s. l. In July 1990, hunters organized a chase. According to a hunting specialist, Aleksandar Pantelić, in the area of Dubašnica Creek, near Ružić, hounds entered the forest quickly and barking, but soon came back squealing. Hunters fired in the air without entering the forest. After this event, there were no further incidents with the cattle, and no additional data were acquired.

Sokolske planine. A hunter Nikola Živković from Postenje village claimed that hunters from Rujevac shot a lynx on the slopes of Sokolske Mt., in 1995–6. A priest Rade Marković from Gračanica checked data on this lynx. A hunter claimed he did not kill it, but he is positive that an animal inhabited area of Postenjska River and Sokolske Mt. He also stated that a lynx killed 4 of his sheep in the beginning of August 1999. Description of the event indicated a lynx slaughtered sheep.

"Tara" National Park. Milisav Jeremić from Rača claimed to saw a lynx in Rača Canyon, in December 1985, in the evening, at the moment it attacked 4–5 chamois. Chamois leaped away. He found traces of lynx that came from a shallow cave in the canyon, in the snow layer of 10 cm depth.

Hunters from Bajina Bašta saw a lynx disappearing among rocks near Đanići, in the strictly protected areas "Zvezda" forest department (3rd section), in 1996, at



Map 1. Localities of the lynx, *Lynx lynx*, in Serbia, in the period 1980–2000. observed specimen or traces killed or dead specimen

350 m a. s. l. Also, Miloje Savić claimed that a gamekeeper in the National Park saw a lynx in the same place in March, 1996.

A hunter, Z. Blagojević, claimed he saw a female lynx with two juveniles, in the forest near Mitrovac (forest department "Tara", section 49), in summer 1996? Forest technician R. Savić found traces that resembled to lynx, in the mud near Kurtina bara, near Mitrovac, in June-July, 1997. Foresters also saw traces in the same place in August, 1999. This information confirmed the state of Z. Blagojević, because the findings were close.

Mokra gora. A hunter Milenko Ćosović from Užice saw a female lynx (in lactation) at the locality Nadkrajevi (2 km southeast from Zborište Peak), on Mokra gora Mt. in June, 1995. The animal was seen in the pasture, and black pine and beech forest, and limestone area with smaller caves, at 1000 m a. s. l.

Uvac. According to hunters from Jasenovo village, a lynx was seen in Tisovica Gorge, in the fall of 1994. This is not confirmed information.

Veterinarian Dr. Milan Đekulić from Nova Varoš investigated a case on sheep and other cattle slaughtered by an unknown animal, in Uvac, during the fall of 1997. Nine sheep were killed near Amzići village, near Kokin Brod, and two sheep near Vilovi village. In the latter case, shepherd suspected on the bear, but on the throat, characteristic teeth marks were detected. A veterinarian concluded that was a lynx, although villagers never heard or saw anything about lynx in this area. Also, in this area, unknown animal attacked and scratched cows on the back (without any larger damage to the cattle). Note: Mirić (1981) stated similar data on lynx attacking cattle in Macedonia.

Ovčarsko-Kablarska Gorge and Jelica Mt. A Lawyer, Tomislav Stanković from Čačak, claimed to saw a lynx, together with his three friends, in Ovčarsko-Kablarska Gorge, in April, 1990. They saw it from a boat, at 30–40 m distance, when it appeared one morning near Vidovski tunnel, and left towards slopes of Kablar Mt. Also, Dušan R. Ivanović acquired information from hunters that a killed lynx was found in the lake near dam Međuvršje in the gorge, nearly 10 years ago (exact year was not stated — possibly before 1990?).

Dušan R. Ivanović acquired data from a hunter that a lynx was shot on Jelica Mt., in the beginning of February in 2000. According to the witness, a lynx was in the cave, in Stjenik locality, Ploča. The animal was shot while escaping from the cave, by a hunter Dragan Tomić from Konjevići. After the statements have been given, and with the knowledge of possible sanctions, all data were hidden and misleading information were given (e. g., a hunter was not at home, and the animal was taken to Belgrade to taxidermist!?).

DISCUSSION AND CONCLUSION

In this paper, we present numerous new data pertaining to status and biology of lynx in Serbia. Regardless of methodological problems, these data make a significant contribution to our knowledge of the status and biology of this species in Serbia. As a matter of fact, these data are continuation and amendment to the study of status and biology of lynx in the past (Mirić, 1981, Milenković, 1985, Mirić & Paunović, 1992,

1994, Hadži-Pavlović 1997, Popov, 1997). That is why we need detailed analysis, discussion and synthesis of the data obtained through previous research.

Especially important are new data on Balkan lynx, *Lynx lynx martinoi* in Kosovo and Metohija and in the area of Raška. The species has been closely observed in the larger part of this area and it is possible to assess its distribution on the basis of available data. During the nineties the species was registered in the areas of Brezovica, Jažinačko lake, Prevalac, above Gornje selo and below Bistra, Dančovo, the massif of Ošljak, Kodža Balkan, Jezeračko-Nerodimske forests, the gorge of Dečanska Bistrica, vicinity of Restelica (1988), Koritnik, Juničke planine, Dečanske planine and the gorge of Dečanska Bistrica, Kožnjar, Žuti kamen, Korpivnik, Oklaička glava and Mokra gora, Istočke planine and Crni vrh (map 1). In comparison to data provided by Mirić (1981) for the period around 1974, the areal of this species has decreased. For example, lynx cannot be seen any more in certain locations in Šar planina (around Ljuboten, Opolje and maybe around Čardačište), on Paštrik (the last data originate from 1977–8) and in certain parts of the massif of Prokletije. Presence of lynx on Oklaička glava in Mokra gora, near Vrelo and especially on Crni vrh in Raška were new findings of this species in the so far unknown areas in the wider region of Metohija and Raška. Generally, they do not break the existing map or "scheme" of distribution provided by Mirić (1981). Findings of lynx near the village of Ereč in Metohija valley between Đakovica and Junik during the winter are not uncommon, although this is a new location. Most probably, the lynx descended from the Juničke mountains to the valley in search of food.

The numbers of the Balkan lynx are difficult to asses. On the basis of presented data and complete insight into the general situation in the field during the research work during the nineties, it may be said that in the wider area of Šar planina lived 7 to 9 specimens, in the area of Koritnik 2–3 specimens, in the wider area of Prokletije 10 to 12 specimens, in Mokra gora 1 specimen, on Istočke planine 1 specimen and on Crni vrh 1 specimen. The total number of animals in the period 1990–1999 was between 22 and 27 specimens. It is most probably that this number decreased during 1999–2000 due to intense war operations and the chaos that occurred during and after the military intervention of NATO. It is estimated that present number of animals is between 12 and 18 animals. It is also probable that this number will continue to fall because of the killings that occur as a consequence of uncontrolled carrying and use of guns in this area of Kosovo and Metohija. The Balkan lynx is at this moment highly endangered and facing extinction in this very important part of the areal of this subspecies in the Balkans.

New findings of the Carpathian lynx confirm the previous conclusions (Milenković, 1985, Mirić and Paunović, 1992, 1994, Hadži-Pavlović, 1997) on spreading of the areal of this subspecies or spontaneous appearance of the lynx in eastern Serbia and Banat over the last two decades. Regardless of the lack of evidence and some incomplete data procured from the local population and collaborators in the field, it is evident that these numerous reports are in congruence with already established trend for this species in the area of eastern Serbia and Banat, as presented in literature. On the basis of available data we may confirm in this paper that lynx has spread through a wide

area of eastern Serbia and can be seen in numerous locations: Severni Kučaj, the gorge of Đerdap, Veliki Štrbac, Mali Štrbac, Miroč, vicinity of Blizna near Majdanpek, Deli Jovan, vicinity of Mokranj, Lazarev canyon, Malinik, Južni Kučaj, Beljanica, Resava, probably Resavica, Čestobrodica, Suvaja, Rtanj, Slemen Ozren-Devica, Stara planina and maybe Suva planina, Vidlič, Belava, vicinity of Pirot and the wider area of Vlasina. Estimations of the number are difficult to make with any precision. According to the existing data, we may assume that this area is inhabited by about 30 animals.

The first proof of presence of lynx in the area of southern Banat was described by Popov (1997). One young female was killed in the area of the village of Kaluđerovo in October 1991. It is assumed that the specimen migrated from the Romanian Carpathian mountains. Relatively often reports of lynx appearances in the area of Deliblatska peščara presented in this confirm its continual presence between 1994 and 1999. We assume that these artificially forested dunes rich with game (roe deer, deer and other species) scarcely inhabited by man provided a permanent habitat for the lynx. It is most probable that there is only one specimen covering an area of 12.000 ha.

Contemporary presence of lynx in the area of western Serbia has been reported for the first time in this paper. Although there is no firm material proof, several accidental spotting by hunters and others, presence of tracks and characteristic slaughtering of sheep in the area of Sokolske planine (near Rujevac), area of Debelo brdo and vicinity, Tara, Mokra gora and the area of Uvac, indicate its probable permanent presence over the last ten years. Since there are no material proofs (remains of killed animals, skins, sculls, etc.), it is not possible to determine what subspecies is in question here. On the basis of chronology of spotting in this area we may assume that lynx in this area originates from the specimens which migrated from Bosnia and Herzegovina which descend from the specimens of Carpathian lynx reintroduced in Slovenia and Croatia. Rapid expansion and recolonization of the reintroduced group has been reported in papers and reports from this area (Cop, 1988). Further spreading to the east and into Bosnia also has been reported (Blagojević, 1988, Z. Rapajić, personal communication 2000). It is possible that appearance and killing of a specimen in the mountain of Jelica near Guča could be explained by spreading of this small and newly formed group. Total number of this group is estimated at 3 to 6 animals.

The trend of lynx in Serbia was presented in the previous chapter partially through distribution and numbers, i.e. findings of lynx. The trend of lynx is different for different subgenera and subpopulations. The trend of the Balkan subpopulation *Lynx lynx martinoi* in Kosovo and Metohija and Raška over the last two decades, and especially during the last decade, is showing rapid fall of the numbers and general decrease of the areal when compared to data presented by Mirić (1981) which pertain to the period around 1974–75. This trend is a consequence of complex impact of negative factors (killings, traps, degradation of the habitats, decrease of trophic resources and disturbance). Such condition was undoubtedly a consequence of the chaos and military operations over the last ten years, and especially after the beginning of ethnic conflicts in the period 1998–2000 in the area of Kosovo and Metohija. Carpathian lynx in the area of eastern Serbia is displaying the trend of spreading of the areal to-

wards parts of south-east Serbia and it appears in the habitats in which it lived in the past (Stara planina and vicinity of Pirot) and in new locations where it has not been spotted so far (Rtanj, Slemen, Ozren-Devica, Suva planina, Vidlič and the area of Vlasina). This spreading has been evident over the last two decades, and has been especially strong over the last decade. The reasons for this expansion are clear enough, because this are is distinguished for favorable ecological conditions and for this species (spacious forest and rocky-forest hill-mountain areas, scarcely populated and relatively rich with game and other prey on which the lynx is feeding). Negative trends (killing, traps, degradation for forest habitats, etc.) are present danger for the newly formed subpopulation. However, further spontaneous recolonization may be expected as well as increase of the number of members of this subpopulation towards the south and possibly convenient central areas of Serbia. We can also expect in the future the subpopulation of Carpathian lynx, due to spreading of the areal, will connect with subpopulation in western and even south and southeast parts of Serbia, where the Balkan subpopulation is living. However, long-term prognosis of the trends fall outside the scope of this paper.

Obtained data on lynx habitats presented in this paper are mostly in congruence with the data presented in the study by Mirić (1981) and contributions by Hadži-Pavlović (1997) and Mirić and Paunović (1992, 1994). The Balkan lynx is mostly found in hill and mountain regions in altitude range from 550 to 2500 meters in scarcely populated forest and rocky-forest areas of Šar planina, Kodža Balkan, Koritnik, Prokletije, Istočke planine, Mokra gora and Crni vrh in Raška. Carpathian lynx in the eastern parts of Serbia is mostly found in forest and forest-rocky hill-mountain parts of Severni Kučaj, the gorge of Đerdap, Veliki Štrbac, Mali Štrbac, Miroč, Deli Jovan, around Blizna, vicinity of Mokranje, Resava, Resavica, Lazarev Kanjon and other gorges of Južni Kučaj, Rtanj, Ozren-Devica, Stara planina, Vidlič, and to the area of Vlasina and the adjoining slopes where it lives permanently or comes down from the mountains in search of food. In this area lynx is found in altitude range from 100 to 1000 meters. It is often found in beech, oak and other deciduous forests. It is also often found in thickets, gorges and on rocky terrain. Its areal often includes forest clearings, meadows and other semi-open and open terrain. The lynx is often using forest paths and roads, or running across local and regional asphalt roads in search of prey. In the area of western Serbia lynx is seen in similar forest and rocky-forest habitats in altitude range between 350 and 1200 meters. Habitation of lynx in artificially forested dunes of Deliblatska peščara in altitude range 140–180 meters is a less common phenomenon. However, very good trophic sources, scarce human population and low level of human impact in this area clearly indicate that conditions for survival of this rare Forest species are present.

Few data about feeding of the lynx presented in this paper partially expand our knowledge of this insufficiently studied issue. On the basis of available data (Mirić, 1981, Hadži-Pavlović, 1997, this paper) it is possible to specify the main sources of food for this species: Balkan lynx is feeding on chamois, roe deer, hares, various birds, thrush, partridge), micro mammals (rodents) and rarely sheep and goat. It also

seems that during winters it only rarely feeds on remains of dead animals. Carpathian lynx is feeding on roe deer, sheep, hares, birds (blackbird, chicken), mouse-like rodents and during winters is feeding on dead dogs which are used as bait for beasts in western Serbia. There are reports of killing of sheep in the sheepfolds and report of observed attack on chamois which was not successful.

Data on intraspecies or social relations within lynx population in Serbia have been registered only on the basis of accidental spotting. In most cases the animals were seen solitary and rarely in small groups of 3–4 animals (a female with her young before the mating season, or in small groups during the mating season from January to March). It is most probable that the tracks of animals in the gorge of Radovanska reka, found during January 2000, were left by a male, female and two young animals. Mirić (1981) reported that the largest groups of 6–7 animals were seen during the mating season in Prokeltije. There are no data on intraspecies conflicts in this report, though Hadži-Pavlović (1997) reported about a conflict between two lynxes over some prey seen by a witness.

Reports of interspecies relations are rare and mostly pertain to meetings with dogs (Mirić 1981, Hadži-Pavlović 1997, this paper). Witnesses confirm that lynx is not afraid of dogs, that it can fight successfully several dogs at the same time, that dogs retreat when they meet lynx and that dog can be injured and killed by lynx. There also different reports of lynx running away and climbing a tree, or the young or young animals killed by dogs (Mirić 1981, Hadži-Pavlović 1997, this paper). According to Mirić (1981) several wolfs may overpower and kill a lynx.

The problems of protection are partially evident in the outline of distribution. Killing is still the key problem in protection of lynx, although this species is protected by Decree of the Government of Serbia and the Law on Hunting of the Republic of Serbia as a natural rarity, and there are high money fines for the offenders. This problem is especially evident in the area of Kosovo and Metohija, but also in other parts of Serbia. Mirić (1981) reported that in the area of Kosovo and Metohija 46 animals had been killed (in various ways) in the past, in the period until 1974. During our research work 12 animals were killed in this are and in Raška in period 1979–1999. Also, in the period 1978–2000, according to various reports, 14 Carpathian lynxes were killed (13 in the area of eastern Serbia and 1 in Banat) (Milenković 1985, Mirić & Paunović 1994, Hadži-Pavlović 1997, Popov 1997, this paper). It is possible that 1 or 2 animals were killed in western Serbia, but these data are concealed from the public. Trapping of lynx is a frequent phenomenon. Two Balkan lynxes were caught and killed in the period 1979–1999 (these data are accounted for as killings). One Carpathian lynx was trapped and killed (Hadži-Pavlović 1997). There were three cases of Carpathian lynx getting killed vehicles while crossing roads in eastern Serbia (Mirić & Paunović 1992, Hadži-Pavlović, this paper). Two examined lynxes were young animals, about a year old. Probable poisoning of Balkan lynx, during the action for poisoning of wolves by means of poisoned baits, was registered in 1 or 2 cases in the past in the wider area of Šar planina (in this paper). It is possible that some of the found dead Balkan lynx in the past, reported by Mirić (1981), were poisoned. A. Nikolić assumed that

this was the case that took place in Nerodimsko-Jezeračke forests during 1962. One Carpathian lynx was found in Danube. It was assumed that the animal drowned after getting caught in the anglers' nets (Hadži-Pavlović, 1997). Carpathian lynx, especially if the animal is young, may be killed by a pack of shepherd dogs, though this is a rare phenomenon. The problems of protection also include the problems of degradation or change of the habitat (especially deforesting, construction of new buildings and settlements, construction of new roads, etc.) Deforesting leads to degradation of the habitats and disappearance of the sources of food (for example, in the area of Ljuboten, in certain parts of Prokletije, etc.). One of the negative factors is decreasing number of animals due to excessive and illegal hunting. One of the negative factors is disturbing of lynx (hunters, shepherds, forest workers, packs of dogs, etc.). Armed conflicts and military actions in the area probably have had highly negative effect on the rare and endangered species of Balkan lynx in Kosovo and Metohija. It has been registered that one animal was killed in an ambush in vicinity of Dečani at the end of March 1999 during the armed conflicts. Chaotic situation in Kosovo and Metohija after coming of KFOR resulted in uncontrolled armament and use of arms by the local population, which could be fatal for this small subpopulation of Balkan lynx in this area.

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Figure 1. Adult male of the Balkan lynx *Lynx lynx* martinoi shot on Ostrovica, March 10, 1979 (photo: A. Nikolić).

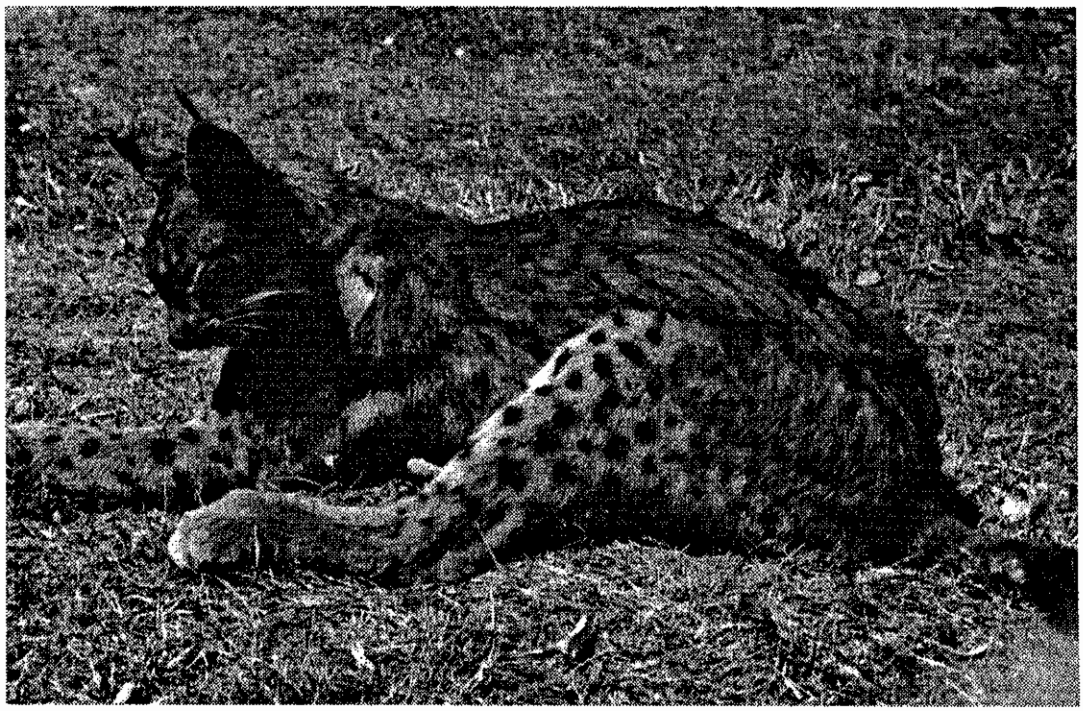

Figure 2. Young female of Carpathian lynx, *Lynx lynx* carpathicus, hit by car in Đerdap Gorge, July 17–18, 1996 (photo: Z. Milovanović).

hunting inspector (Bajina Bašta), Aleksandar Pantelić — hunting specialist in the Hunting Association of Serbia (Belgrade), Rade Marković — priest (Gračanica), Zoran Đurić — gamekeeper (Banatski Karlovac), Boban Vasiljević — gamekeeper (Podgorac), Miki Simović — police inspector (Podgorac), Dragan Panajotović — hunter (Pirot), Zoran Ilić (Soko Banja), Dušan R. Ivanović (Guča) and Dr. Milan Džekulić (Nova Varoš).

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БРАТИСЛАВ Р. ГРУБАЧ

RIS *Lynx lynx* (Linnaeus, 1758) U SRBIJI

Rezime

У овом раду дати су бројни нови подаци о статусу и биологији риса у Србији. Без обзира на методолошке проблеме, они су значајан прилог познавању статуса и биологије ове врсте у Србији. Фактички, они представљају континуитет, допуну и новине у досадашњем проучавању статуса и биологије риса (Мирић 1981, Миленковић 1985, Мирић и Пауновић 1992, 1994, Хаџи-Павловић 1997, Попов 1997). Због тога је неопходна детаљна анализа, дискусија и синтеза добијених резултата досадашњих истраживања.

Посебно су значајни нови подаци о балканском рису *Lynx lynx martinoi* на Косову и Метохији и у Рашкој области. Врста је детаљно праћена на већем делу подручја и могуће је на основу свих података дати њену распрострањеност. Врста је током 1990-их регистрована на подручјима Брезовице, Јажиначког језера, Превалца, изнад Горњег Села и испод Бистре, Данчову, масиву Ошљака, Коџа Балкану, Језерачко-Неродимским шумама, клисури Дечанске Бистрице, околини Рестелице (1988), Коритнику, Јуничким планинама, Дечанским планинама, и клисури Дечанске Бистрице, Кожњару, Жутом камену. Копривнику, Оклаичкој глави на Мокрој гори, Источким планинама и Црном Врху (мапа 1). У поређењу са подацима Мирића (1981) који се односе на период до око 1974. године уочава се смањење дела ареала ове врсте на овом подручју. На пример, рис се више не среће ма неким локалитетима на Шар планини (око Љуботена, Опољу и можда око Чардачишта), на Паштрику (последњи подаци потичу из 1977–1978.) и на неким деловима масива Проклетија. Налази риса на Оклаичкој глави на Мокрој гори, код Врела и посебно на Црном врху у Рашкој су нови налази ове врсте на до сада непознатим подручјима на ширем подручју Метохије и Рашке. Генерално, они не излазе из постојеће мапе или "шеме" распрострањености дате од стране Мирића (1981). Налаз риса код села Ереча у Метохијској котлини између Ђаковице и Јуника у току зиме није неуобичајен, мада се ради о новој локацији. Највероватније, рис се спустио са Јуничких планина у котлину у потрази за храном.

Бројност балканског риса се тешко може проценити. На основу изнетих података и комплетног увида о општем стању на терену током истраживања 1990-их може се проценити да је на ширем подручју Шар планине живело од 7 до 9 јединки, на подручју Коритника 2–3 јединке, на ширем подручју Проклетија од 10 до 12 јединки, на Мокрој гори 1 јединка, на Источким планинама 1 јединка и на Црном врху 1 јединка. Укупна бројност балканског риса је у периоду 1990–1999. износила између 22 и 27 јединки. Највероватније да је та бројност смањена 1999–2000. услед интензивних ратних дејстава и хаоса који је настао током и после војне интервенције НАТО-а. Претпоставља се да садашња бројност риса износи између 12 до 18 јединки. Вероватно постоји тенденција даљег пада бројности услед убијања које је последица неконтролисаног ношења и употребе оружја на подручју Косова и Метохије. Балкански рис је у овом моменту веома угрожен и прети му истребљење на овом веома значајном делу ареала ове подврсте на Балкану.

Нови налази карпатског риса потврђују предходне констатације (Миленковић 1985, Мирић и Пауновић 1992, 1994, Хаџи-Павловић 1997) о ширењу ареала ове подврсте или спонтаном насељавању риса на подручју Источне Србије и у Банату током задње две деценије. Без обзира на одсуство доказа или на неке непотпуне податаке добијене од локалног становништва и сарадника на терену евидентно је да су ови бројни извештаји у складу са већ констатованим трендом ове подврсте на подручју Источне Србије и Банату у литератури. На основу досадашњих података датих у литератури и у овом раду може се констатовати да је рис настанио широко подручје Источне Србије и да се среће на следећим бројним локацијама: Северни Кучај, клисура Ђердапа, Велики и Мали Штрбац, Мироч, околина Близне код Мајданпека, Дели Јован. околина Мокрања, Лазарев кањон, Малиник, Јужни Кучај, Бељаница, Ресава, вероватно Ресавица, Честобродица, Суваја, Ртањ, Слемен Озрен-Девица, Стара планина и можда Сува планина, Видлич, Белава, околина Пирота и шире подручје Власине. Процена бројности се тешко може одредити прецизно. Према постојећим подацима може се проценити да сада ове просторе настањује око 30 јединки.

Први доказ присуства риса на подручју јужног Баната описао је Попов (1997). Једна млада женка је убијена у атару села Калуђерево октобра 1991. Претпоставља се да је ова јединка имигрирала из румунских Карпата. Релативно честа виђења риса на подручју Делиблатске пешчаре изнета у овом раду потврђују његово стално присуство од 1994. до 1999. Претпостављамо да је на вештачки пошумљеним динама овог локалитета богатог дивљачи (срнама, јеленима и др. врстама плена) и мало настањеног људима, дошло је до сталног настањивања риса. Највероватније, да се ради о само једној јединки која захвата простор од око 12000 ха.

Савремено присуство риса на подручју Западне Србије је у овом раду први пут наведено. Мада нема поузданих материјалних доказа, више случајних опажања ловаца и других, налази трагова и карактеристично клање оваца на подручју Соколских планина (код Рујевца), подручју Дебелог брда и околине, Тари, Мокрој гори и на подручју Увца указују на вероватно његово ново стално присуство током последњих десетак година. С обзиром да нема материјалних доказа (остатака убијених јединки — коже, лобања и др.), немогуће је реши о којој подврсти се ради. С обзиром на хронологију појављивања изнету у овом раду, може се претпоставити да рис на овом подручју потиче од јединки имигрираних са подручја Босне и Херцеговине које воде порекло од јединки карпатског а риса које су реинтродуковане у Словенији и Хрватској. Велика експанзија и реколонизација те реинтродуковане групе је констатована у досадашњим радовима и извештајима за та подручја (Чоп 1988). Даље ширење на исток и насељавање подручја Босне је такође евидентирано (Благојевић 1988, Ж. Рапајић усм. саопшт. 2000). Могуће је да појављивање и убијање јединке на планини Јелици код Гуче представља даље ширење те мале новоформиране групе. Укупна бројност ове групе се процењује на 3 до 6 јединки.

Тренд риса у Србији је у предходном поглављу делимично приказан кроз расптрострањеност и бројност, односно налазе риса. Тренд риса се разликује од једне до друге подврсте или субпопулације. Тренд балканске субпопулације *Lynx lynx martinoi* на Косову и Метохији и у Рашкој области показује током задње две децније, а посебно током задње деценије, велики пад бројности и опште смањења ареала у поређењу са подацима Мирића (1981) који се односе за период до око 1974–1975. Овакав тренд је последица комплексног дејства негативних фактора (убијаје, замке, деградација станишта, смањење трофичких ресурса и узнемиравања). Овакво стање је било, свакако, последица хаотичног стања и ратних дејстава у периоду током последњих десет година, а посебно након избијања етничких сукоба и ратних конфликата у периоду од 1998–2000, на подручју Косова и Метохије. Карпатски рис на подручју источне Србије показује даљи тренд ширења ареала ка деловима југоисточне Србије и појављује се на местима где је у прошлости живео (Стара планина и околина Пирота) и на другим новим локацијама где досада није забележен (Ртањ, Слемен, Озрен-Девица, Сува планина, Видлич и подручје Власине). Ово ширење је евидентно током последње две деценије, а посебно је изражено током последње деценије. Разлози овакве експанзије су довољно јасни јер се ово подручје се одликује повољним еколошким условима за ову врсту (простране шумовите и шумовито-стеновите брдско-планинске области, мало настањене људима и релативно богате са дивљачи и другим врстама плена којима се рис храни). Негативне појаве (убијање и лов замкама, деградација шумских станишта и др.) су присутни и представљају опасност за новоформирану субпопулацију. Ипак, може се очекивати даља спонта-

на реколонизација и повећање бројности ове субпопулације ка јужним и могуће централним повољним подручјима Србије. Могло би се очекивати да се у будућности субпопулација карпатског риса услед ширења ареала споји са субпопулацијама риса, у западним и чак јужним-југозападним деловима Србије, где живи балканска субпопулација. Ипак, дугорочне прогнозе о тренду риса у будућности изилазе из оквира овог рада.

Добијени подаци о станишту риса изнети у овом раду углавном се поклапају са подацима изнетим у студији Мирића (1981) и прилозима Хаџи-Павловића (1997) и Мирића и Пауновића (1992, 1994). Балкански рис се среће углавном у брдским и планинским подручјима од око 550 до 2500 mnv у мало настањеним шумовитим и шумовито-стеновитим областима подручја Шар планине, Коџа-Балкана, Коритника, Проклетија, Источких планина, Мокре горе и Црног врха у Рашкој. Карапатски рис у источним деловима Србије се углавном среће у шумовитим и шумовито-стеновитим брдско-планинским деловима Северног Кучаја, клисури Ђердапа,Великом и Малом Штрпцу и на Мирочу, Дели Јована, око Близне. околини Мокрања, Ресави, Бељаници, Ресавици, Лазаревом кањону и другим клисурана Јужног Кучаја, Ртња, Озрена- Девице, Старе планине, Видлича, и до подручја Власине и суседних обронака где стално живи или се повремено спушта у потрази за храном. На овом подручју рис се среће на висинама између 100 и 1000 mnv. Овде се често среће у буковим, храстовим и другим листопадним шумама. Често се среће по шикарама и клисурама и камењарима. Простор често захвата шумске пропланке, пашњака и друге полуотворене или отворене терене. Често се креће шумским стазама и путевима, или претрчава локалне и регионалне асфалтне путеве у потрази за пленом. На подручју западне Србије рис се среће на сличним шумским и шумско-стеновитим стаништима између 350 и 1200 mnv. Настањивање риса на вештачки пошумљеним динама Делиблатске пешчаре на око 140–180 m надморске висине представља мање уобичајену појаву. Ипак веома добри трофички извори и мала насељеност и изложеност утицајима људи овог подручја јасно показују да на овом подручју постоје услови за опстанак ове ретке „шумске" врсте.

Малобројни подаци о исхрани риса у овом раду делимично допуњују ову недовољно проучену проблематику врсте у Србији. На основу расположивих података (Мирић 1981, Хаџи-Павловић 1997, овај рад) уочавају се главни извори исхране риса: Балкански рис се храни дивокозама, срнама, зечевима, разним птицама (дроздовима, јаребицама камењаркама), микромамалијама (глодарима) и ретко овцама и козама. Такође, изгледа да зими веома ретко долази на остатке угинулих животиња. Карпатски рис се храни срнама, овцама, зечевима, птицама (кос, кокошка), мишоликим глодарима и зими долази на мртве псе који су постављени као мамци за звери а у западној Србији евидентирани су случајеви клања оваца по торовима током ноћи и посматран је безуспешан напад на дивокозе.

Подаци о интраспецијским или социјалним односима риса у Србији су регистровани само на основу случајних опажања. Углавном, јединке су виђене солитарно и веома ретко у малим групама од 3 до 4 јединке (женка са својим младунцима до сезоне парења, или у мањим групама у доба парења од јануара до марта). Вероватно су трагови 4 јединке у клисури Радованске реке, нађени током јануара 2000. потицали од мужјака, женке и два младунца. Мирић (1981) наводи да су највеће групе од 6–7 јединки виђене током сезоне парења на Проклетијама. Нема података о интраспецијским конфликтима у овом извештају, мада Хаџи-Павловић (1997) наводи конфилкт два риса око плена на основи једне изјаве очевидца.

Интерспецијски односи риса су мало забележени и углавном се односе на сусрете са псима (Мирић 1981, Хаџи-Павловић 1997, овај рад). Уочено је да се по посматрањима очевидаца рис посебно не плаши паса, бори се успешно са по неколико паса, пси се повлаче када наиђу на риса и пас може бити повређен или убијен од риса. Такође, супротно, случајеви бежања и пењања риса на дрво, или страдања младунаца или младих јединки од паса су евидентирани (Мирић 1981, Хаџи-Павловић 1997, у овом раду). Према Мирићу (1981) више вукова могу савладати и убити риса.

Проблеми заштите риса су делимично дати кроз приказ распрострањености. Убијање представља и даље главни проблем заштите риса, мада је врста заштићена Уредбом Владе Србије и Законом о ловству Републике Србије као природна реткост, и за њено убијање предвиђене су високе новчане казне. Овај проблем је посебно евидентан на подручју Косова и Метохије, али и у свим другим деловима Србије. Мирић (1981) наводи де је на подручју Косова и Метохије у про-

шлости до 1974. убијено (на разне начине) 46 јединки балканског риса. У току наших истраживања на овом подручју и Рашкој убијено је укупно 12 балканских рисова у периоду 1979–1999. Такође, у периоду од 1978. до 2000, убијено је према разним извештајима 14 карпатских рисева (13 на подручју источне Србије и 1 у Банату) (Миленковић 1985, Мирић и Пауновић 1994, Хаџи-Павловић 1997, Попов 1997, овај рад). Могуће је да је и у Западној Србији убијено 1–2 риса, али се ти подаци крију од јавности. Хватање риса замкама је честа појава. Два балканска риса су била ухваћена и убијена у периоду од 1979. до 1999. (ови подаци су рачунати и као убијање). Један карпатски рис је ухваћен на замку и убијен (Хаџи-Павловић 1997). Страдање карпатског риса у Источној Србији од возила при преласку преко путева је евидетирано у укупно три случаја (Мирић и Пауновић 1992, Хаџи-Павловић, овај рад). Два прегледана риса су биле младе јединке старе око једне године. Вероватно тровање балканског риса, у акцији тровања вукова помоћу отровних мамаца, је евидентирано у 1–2 случаја у прошлости на ширем подручју Шар планине (у овом раду). Могуће је да су неки нађени мртви балкански рисови у прошлости били отровани, о којима извештава Мирић (1981). За један такав случај, претпоставља А. Николић да се догодио на Неродимско-Језерачким шумама током 1962. Један карпатски рис је нађен у водама Дунава и претпоставља се да се утопио јер се уплео у рибарске мреже (Хаџи-Павловић 1997). Страдања карпатског риса (посебно младих јединки) може доћи и од чопора чобанских паса, мада је то ретка појава. Забележено је до сада два случаја. У проблеме заштите могу се посебно истаћи проблеми деградације или промене станишта (посебно сеча шума, изградња разних објеката и насеља, пробијање путева и сл.). Сеча шума доводи до деградације станишта и смањења извора исхране (на пример на подручју Љуботена, на деловима Проклетија и др.). Један од негативних фактора се смањење бројности дивљачи услед претераног и илегалног лова. У негативне факторе спада стално узнемиравање риса од људи (ловаца, чобана, шумских радника, чопора паса и др.). Оружани сукоби и ратна дејства су највероватније имали веома негативан ефекат на малобројног и високо угроженог балканског риса на Косову и Метохији. Евидентирано је да је једна јединка убијена у заседи у околини Дечана крајем марта 1999. током ратних сукоба. Хаотично стање по доласку КФОР-а на Косову и Метохији које је довело до неконтролисаног наоружавања и употребе оружја од стране локалног становиштва може бити фатално на ову веома малу субпопулацију балканског риса на овом подручју.

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УПУТСТВО ЗА ПРИЈЕМ РАДОВА

Национални научни часопис „ЗАШТИТА ПРИРОДЕ“ отворен је за стручне и научне радове аутора из земље и иностранства на српском или енглеском језику.

Проблематика обухвата широк спектар научних области и дисциплина које проучавају еколошке феномене заштите природе.

За часопис се примају радови који нису објављени у другом штампаном материјалу.

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- *насловљен текст рада дужине до 15 страна (укључујући прилоге); у тексту означити места за табеле и графиконе, односно фотографије које се прилажу уз текст;*
- *на посебном листу се достављају одштампане табеле, графикони и фотографије нумерисани са легендом на српском и енглеском језику;*
- *текст и прилози се предају на дискети у World формату и 2 примерка одштампаног текста;*
- *радови се предају у ћириличном писму, фонт величине 11, а латински називи и формуле у латиничном писму;*
- *прилози се могу предати у оригиналу;*
- *рукописи се достављају на адресу Завод за заштиту природе Србије, Трећи булевар 106, Нови Београд, тел/факс 142-281, 142-165, 138-062 са назнаком „за часопис“;*
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