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POPULATION SIZE AND NEST SITE SELECTION OF THE SPANISH SPARROW *PASSER HISPANIOLENSIS* IN THE REGION OF THE RIVER KRKA (CROATIA)

ABSTRACT

The breeding range of the Spanish sparrow, *Passer hispaniolensis*, in Croatia is rapidly expanding. We studied the size of the nesting population and selection of nest site in an area partially included in the Krka National Park. Our results confirm that between 2004 and 2007 in the wider area of the Krka National Park the Spanish sparrow had occupied new localities, and that the number of 160 pairs recorded in 2003 had more than doubled (300–350) by 2007. In the study area, Spanish sparrows nest most commonly in the canopies of introduced planted trees (e.g. *Moru salba*, *Platanus occidentalis*, *Populus nigra* cv. *italica*). This strategy, with a good access to and diversity of potential nesting sites, enables a further expansion of the species.

Keywords: Spanish Sparrow *Passer hispaniolensis*, invasive species, dispersal, range, Skradin, Krka National Park

INTRODUCTION

The Spanish Sparrow *Passer hispaniolensis* (Fig. 1) is a Southwestern Palearctic species (Cramp and Perrins 1994). In Croatia the Spanish Sparrow is a breeding bird (Kralj 1997, Lukač 2007) with up to two clutches per year (Cramp & Perrins 1994). The species is expanding its breeding range along the adriatic coast from south to northwest, or from southern Dalmatia to Istria (Rubinič 2001, Lukač 2004). The dynamics of its expansion in the Balkans has been investigated intensively (Lukač 1988, 2004) but the role of the selection of nest sites has not been adequately explored. The Spanish sparrow in Dalmatia nests in more than 15 tree species, in most cases in the canopy of planted Pine (*Pinus halepensis, P. nigra, P. maritima*), Almond (*Prunus amygdalus*), and Plane (*Platanus orientalis*), and less frequently in the canopy of Downy oak (*Quercus pubescens*), Black locust (*Robinia pseudoacacia*), Wild olive (*Olea silvestris*), Green olive tree (*Phillyrealatifolia*), Mediterranean cypress (*Cupressussempervirens*), Elm (*Ulmus* sp.),

Tamarisk (*Tamarix* sp.) and Palm (*Palma* sp.) trees, and in riverine areas on Silver and Black poplar (*Populus alba, P. nigra*) and Willow (*Salix* sp.) trees (Rubinič 2001, Lukač 2004, Mužinić and Purger 2006). The importance of these tree species selected for nesting for the Spanish sparrows's range expansion is not understood.

The goal of this study was to investigate the significance of nest sites of the invasive bird species Spanish sparrow with respect to the selected tree species and to estimate the population size in the lower course of river Krka.

Fig. 1. Spanish sparrow *Passer hispaniolensis* (Photo by J. Mužinić)

MATERIAL AND METHODS

Study area

The study was conducted in the town of Skradin and in Čulišićke bare in the vicinity of the village Dubravice (WJ75 according to 10×10 km UT Mgrid), situated in the wider area of the lower course of river Krka. Skradin is a small town located on the right bank of the Krka (Fig. 2). It does not have a developed city centre and most buildings (except for those along the main street) are up to two storeys high, surrounded by gardens and orchards. The unique feature of this town are avenues of old mulberry trees (*Morus alba*) in the alley of Skradin sericulturists (Aleja skradinskihsvilara, Fig. 3), planted to breed silk-worms (*Bombixmori*). The wetland area Čulišićke bare is situated between the Podbarebay of river Krka and the village Dubravice, south of the hamlet Čulišić (Fig. 4), and is administered by the Krka National Park. The riverside is bordered by reed beds, marshlands and meadows, and the area gradually ascends towards the

Fig. 2. Town Skradin located on the right bank of Krka (Photo by J. Mužinić)

Fig. 3. Alley of Skradin sericulturists (Aleja skradinskih svilara) in Skradin, the location of Spanish sparrow, nests (Photo by J.J. Purger)

Fig. 4. Čulišićke bare, the area of the expansion of the nesting area of the Spanish sparrow (Photo by J.J. Purger)

hamlet(49-65 m a.s.l.). Čulišić consists of several small houses surrounded by orchards, vineyards and smaller agricultural fields.

Nest counting

To estimate the Spanish Sparrow population, nests were counted outside the breeding season in early spring and autumn after defoliation, to ensure adequate conditions for detecting nests. Nests found in spring belonged to the breeding season of the previous year while those found in autumn to the current year. The exact number of nests is difficult to estimate because some pairs of the Spanish Sparrow may have two clutches per year, and, furthermore, a certain number of nests may fail in the course of the year (Mužinić and Purger 2006). Because of the absence of the Spanish sparrow during winter and because the House Sparrow *Passer domesticus* nests together with this species and builds similar nests, it is not possible to determine with certainty the exact number of nesting pairs of Spanish sparrows on buildings in a settlement. Due to these methodological problems, the total number of nests counted outside the breeding season probably underestimates slightly the true number of the Spanish Sparrow population in the study area. We first counted nests in Skradin on 25 March 2005, representative for Spanish sparrows nesting in 2004 (Table 1). With the same method we counted nests again on 11 April 2006, but immediately before the count several trees had been cut down and branches of othershad been pruned, so the results could not be considered. We repeated the nest count on 22 October 2007. The data on the probable size of the breeding population of the Spanish Sparrow refer to 2004 and 2007 (Table 1). In the area of Čulišićke bare, nests were counted in the same period and with the same method. During the study we recorded all species of trees where nests were located as well as the total number of nests on each tree.

Table 1. The presence of the Spanish sparrow, *Passer hispaniolensis*, in Skradin in 2004 and in 2007 with respect to the tree species (^{o}native, $^{+}$introduced, *invasive)

Tree species		Number of trees with nests		Total number of nests	
		2004	2007	2004	2007
Morusalba	+	26	21	42	39
Platanusoccidentalis	+	1	1	21	60
*Populusnigra*cv. *italica*	+	5	10	17	52
Acernegundo	+*	5	3	17	6
Ulmusminor	o	5	1	17	3
Robiniapseudoacacia	+*	4	2	7	4
Juglansregia	o	2	2	2	2
Prunusamygdalus	o	1	0	1	0
Celtisaustralis	o	1	3	1	5
Total: 9		53	43	125	171

RESULTS AND DISCUSSION

Data collected in the past (Kralj 2007) show that the Spanish sparrow had been nesting in the Krka National Park area since the 1990s. Colonies were on the plateau near Brnjica (UTM WJ85) and in the bays of Čulišićke bare (UTM WJ75) and Polje (Rupe) (UTM WJ76). Birds were sighted in other areas of the National Park (Miljevci, Gornji Radići) but nesting was not confirmed (Kralj 2007). The population size in the Krka National Park in 2003 was around 160 pairs (Kralj 2007).

On 12 April 2004 we detected Spanish sparrows nesting in Pakovo Selo (UTM WJ85), with 11 nests in the canopies of five Mediterranean hackberry trees, *Celtis australis*, and six nests and 10-12 birds on three Mediterranean hackberry trees in a courtyard in Konjevrate (UTM WJ84). Because the Spanish sparrow had not been recorded in the Konjevrate area in the past and because Marguš (2005) did not include the species in the list of the birds of that area, it is possible that the observed pairs were the first to settle in the area.

We were not able to count or estimate the number of pairs nesting on buildings in Skradin. In this area, the Spanish sparrow mostly has chosen canopies of planted introduced trees (Table 1). In 2004 native trees accounted for 17% (n = 21) of all nest trees, and in 2007 for no more than 6% (n = 10) (Table 1). In 2007, 171 nests were recorded in Skradin (UTM WJ75) alone (Table 1). This number exceeds the entire population of the Krka National Park recorded by Kralj (2007) in 2003.

In Skradin, the number of trees with nests in 2007 was somewhat smaller than in 2004 (Table 1), but the difference was not statistically significant (chi-square with Yates's correction = 0.33, P = 0.56). However, the number of nests in 2007 was higher, although, again, not statistically significant (chi-square with Yates's correction = 3.29, P = 0.07).

In Čulišićke bare eight to ten pairs of Spanish sparrows were found nesting on houses and in the canopies of Poplar (*Populus nigra* cv.*italica*) and Almond (*Prunus amygdalus*) treesfrom 2004 to 2005 (Mužinić and Purger2007). No new nests were recorded in 2006. From 2004 to 2006, in Čulišićkebare 50-60% of nests (n = 5-6) were located on buildings. In 2007, we counted 58 nests (83%) on 20 Poplar trees, and eight nests (11%) on three Walnut (*Juglans regia*) trees. Four nests (6%) were found under eaves and gutters of houses in Čulišić. While between 2004 and 2006 only around ten pairs nested in Čulišićkebare, the number had increased to 70 in 2007. Marques et al. (2002) also reported that nest location was highly variable with respect to the chosen tree species, age and structure.

In the study area, Spanish sparrows most often nested in the canopies of planted introduced tree species (e.g. *Morus alba*, *Platanus occidentalis*, *Populus nigra* cv. *italica*) (Table 1), which, combined good access to and diversity of potential nesting sites, enables a further expansion of the species.

Taking all results into account, we conclude that 300-350 pairs of Spanish sparrows nested in the wider area of Krka National Park in 2007. The number of nests in relation to available nesting locations probably did not reach its limit yet in Skradin or Čulišićke bare. This is confirmed by the finding that 60 nests of Spanish sparrows were observed on a single Plane tree in the centre of Skradin, while a neighbouring Plane tree had no nests at all. It is also evident that nests were found on 26 (16%) of the total number of 160 existing mulberry trees in Skradin. In Čulišićke bare, Spanish sparrows placed their nests in Poplars, using around 20 of the total of 42 trees in the avenues. We propose that the size of the Spanish sparrow population was not limited by access to nest sites but by some other limiting factor such as food or competition. Our observations of differential nest distribution within a colony, with highest density in the central part, support reports by Marques et al. (2002), confirming that colonies are constrained by nest predation.

The colony of 60 nests on a single plane tree in Skradin in 2007 is close to the largest colony of Spanish sparrows ever recorded on a single tree in Croatia. A colony of 100 nests was observed in Islam Latinski, District of Zadar, on 31 July 2001, on the about 250 years old "Green oak", *Quercus viridis*, a hybrid between the Austrian oak (*Quercus cerris f. austriaca*) and the Evergreen oak (*Q. ilex*) (Štahan 2001, Devčić--Buzov 2006).

Our results confirm that between 2004 and 2007 in the wider area of the Krka National Park the Spanish sparrow had occupied new localities and that the number of 160 pairs recorded in 2003 had more than doubled by 2007. Nests were preferably built in canopies of planted introduced tree species, confirming the adaptability of the Spanish sparrow. Our conclusions support those by Martin and Fitzgerald (2005) who argued for the House Sparrow, *Passer domesticus*, that "a predilection for trying new foods and being attracted to novel objects may in part explain how this species has so successfully invaded new areas".

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SYNANTHROPISATION AND SYNURBISATION OF RAVEN *CORVUS CORAX* IN POLAND: A REVIEW

ABSTRACT

The Raven *Corvus corax* is one of the oldest synanthropic bird species. Historical development of human settlements and cities was the reason of occupancy by ravens neighborhood of villages and town. Nowadays, suburban areas are, among forest and rural areas, habitats used by Ravens. Since end of middle ages Ravens began breeding in interior of towns in the Great Britain. During 20th century Raven occupied several big cities of Europe and North America. In Poland, the first attempts of colonization of cities took place in the 1950s in Warsaw and Kraków. During next decades Raven came back from centrum of cities and began colonized suburban zone, mainly big forests within the border of towns. Untilnow, Raven in Poland nest only in suburban zones. Observations of non-breeding pairs inside of cities are still rare. The biggest population in cities do not exceed 20 breeding pairs.

INTRODUCTION

The Raven *Corvus corax* is one of the oldest synanthropic bird species. Historical development of human settlements and towns were the reason of occupancy by Ravens neighborhood of villages and town. Ravens accompanied camps hunters in paleolith and formed associations with humans, using the remnants of their food (Marzluff and Angel 2005). The evidence of strong connections of Ravens and humans was „cycle of Raven", present in the myths and beliefs of primeval tribes in North America and Asia (Szyjewski 1991). During the Middle Ages, a Raven nest on Tower of London was known (Ratctliffe 1997). During the 20th century Raven inhabited some cities in Europe and North America (Ratctliffe 1997, Boarman and Heinrich 1999). Raven expansion on deserts of North America and far North is closely linked with development of human settlements in these areas (Heinrich 1999).

The Raven is a species with wide range, including almost Europe, Asia, North America and north part of Africa (Ratcliffe 1997). It use wide spectrum habitats from natural and managed forests across non-forest open areas and human settlements, towns and cities (Zawadzka 2006). Raven is an omnivore, opportunist bird species,

characterized by unique intelligence (Ratcliffe 1997, Heinrich 1999). After extermination in greater part of Europe, also in Poland, in the beginning of 20th century, Raven rebuilt its range and number, and currently is a species widespread, reached high densities (Zawadzka 2006). In Poland, Raven is a common, numerous species, reaching total population number estimated at least 20.000 breeding pairs and local densities from 1-20 pairs/100 km^2, average 5-7. Additionally, there is a big non-breeding part of population in Poland, at a difficult to assess number (Zawadzka 2006). According to MPPL data, in 2000-2012 number of Raven increased twice, and index of a widespread this species equals 0,5 (www.monitoringptakow.gios.gov.pl). Raven is plastic in terms place of nesting. Built nests on trees, rocks, and, especially in vicinity of human settlements, on pylons, rather on buildings or another constructions. Theoretically, the Raven satisfies all conditions in order to nest inside cities. This paper contains a review of data about colonization the cities by ravens in Poland, based on published source and data from questionnaires.

NESTING OF THE RAVENS IN CITIES

During the 20th century the Raven began nesting inside the big cities in Europe and North America, where it built nests on the buildings. As a breeding species was noted e.g. in Chicago, Los Angeles, Lwów, Moskwa, Berno, Londyn (Konstantinov et al. 1996, Ratcliffe 1997, Boarman and Heinrich 1999). In Poland, during the 1950s and 1960s years 20th century, Ravens sparse started nesting on the edge of big cities, or even in the big, centrally located urban parks. During the middle of the 1950s, about 14 pairs nested in Warsaw and its neighborhood. In 1955-1956, broods of Raven were found in Łazienki Park in Warsaw, and in small forest on periphery of this city and in neighboring towns: Bielany, Młociny, Dziekanów Leśny, Jabłonna, Powsin, Świder, Radość, Podkowa Leśna, Struga, Zielonka, Piaseczno i Grodzisk Mazowiecki (Dobrowolski et al. 1958). In the 1960s non-breeding Ravens were observed in the center of Warsaw, although since following decade were lack of those records (Nowicki 2001). During 1956-1957 Raven nested in the edge of Kraków: Bielany, Konary and Las Wolski (Dobrowolski et al. 1962). During the next years the process of colonization of big cities was stopped (Tomiałojć 1990). In Łódź, the first brood was recorded in Las Łagiewnicki Forest located in the edge of city. Since 1970 Raven nested there irregularly (Glubowski et al. 2009). All nests were located on trees. Data about attempts of nesting in suburban zones in Poland from the 1970s have been very scarce (Tomiałojć 1990, Tomiałojć and Stawarczyk 2003). During the 1980s there has been a significant increase in number of Polish population (Bednorz 1991, 2000b) and many cases of settle to Ravens on edge of the cities were recorded from almost all regions of Poland. From this period comes data about first regular broods from periphery different sizes of cities on east of country: Suwałki, Białystok, Łosice, Siedlce, Jasło, and also in the center (Łódź) and west (Poznań, Leszno). In 1986, two occupied nests were found in Rędzin region, on

borders of Wrocław and in 1987 in small forest on the edge of Zielona Góra (Dyrcz et al. 1991). Raven nested mainly in suburban zone inside administrative boundaries of towns and cities. Birds nested then in big parks or suburban forests on trees and also in open areas on the electric pylons. Nests were located in the vicinity of attractive places of feeding (slaughterhouses, butchers, garbage dumps, breeding farms). During this time, almost across the whole Polish range, Raven appeared as sparse breeding bird only in suburban zones around towns. Flaying birds in downtown were observed very rare. In winter and non-breeding season Ravens rarely were recorded on the edge of towns, in ruderal and industrial areas (Kuźniak 1996, Stój and Dyczkowski 2002, Ptaszyk 2003, Zawadzka 1996, 2006, Glubowski et al. 2009, M. Rzępała unpubl. data, A. Zbyryt unpubl. data). Attempts of synurbization in this period was connected with the rapid increasing in numbers in the whole species' range and progressing process of the colonization of farmland and synanthropic, but non-urban areas.

In the 1990s Raven gradually colonized cities edge, only slightly increasing low number on periphery, mainly in parks, forests and industrial areas. During those period, in several cities increased frequency of birds appearance in suburban zone during post-nesting period and winter. Within the administrative boundaries of Warsaw nested only 5 pairs, exclusively in suburban zone (Luniak et al. 2001). In Łódź, number breeding pairs increased form 2 in the half of the 1980s. to 7-8 in 2002. Ravens nested only in suburban zone, did not show synubization symptoms. Las Łagiewnicki Forest, located on the edge of this city, was permanent place of breeding (Glubowski et al. 2009). Similarly, in Poznań number of Raven in the 90s did not exceed 15 pairs. Birds were observed singly or rather in small groups on periphery (Ptaszyk 2003). There were lack of evidence of center colonization, but penetration of Raven in built-up areas in suburban zone were recorded (Winiecki 2005). Increase of Raven population during the 1990s. was recorded within Olsztyn boundaries. In 1993, 4 pairs nested in larger forests within the administrative boundaries, but in 2006 there were found 10 pairs. Non-breeding birds were also observed just more frequently (Nowakowski et al. 2006). In the end of the 1990s brood of one pair of Raven was found in cemetery in Szczecin (Tomiałojć and Stawarczyk 2003). Single breeding pair was recorded on the periphery of Jasło (Stój and Dyczkowski 2002) and Kielce (Szczepaniak 2005). After 2000s the rate of cities settlements by Raven basically not change. At present, in Warsaw only over a dozen pair nests, exclusively on the periphery zone. Still lack of Raven records in the center of capital, also during post-breeding season and winter (M. Luniak, unpubl. data). On the east of Poland, Raven retreated from before settled suburban zone in Białystok (A. Zbyryt, unpubl. data) and Suwałki (authors' data). During last decade, number of Ravens in lot of Polish town do not increase or even declined. Data about 1-4 breeding pairs, only from peripheral zone, comes from towns across Poland, e.g.: Lublin (Biaduń 2005), Jelenia Góra (B. Gramsz, unpubl. data), Cieszyn (Jagiełko and Linert 2010), Częstochowa (Czyż 2008), Radom (authors' data), Siedlce (M. Rzępała, unpubl. data), Zielona Góra (P. Czechowski, unpubl. data), Leszno (S. Kuźniak, unpubl. data),

Bydgoszcz (P. Indykiewicz, unpubl. data). In the west part of country, nests are built on trees, in big parks or forests in peripheral zone. In the center and east of country, Raven bred mainly in open areas, on electric pylons. Last years, attempts of single pairs settle in urban park in Legnica and Wrocław were recorded, although active breeding places, still are located only on periphery (L. Tomiałojć, unpubl. data).

PATTERN AND PERSPECTIVES OF CITIES COLONIZATION

During last half of century the Raven expanded its range on the whole Poland area, and its number and densities increased several times (Dobrowolski et al. 1962, Bednorz 1991, Tomiałojć and Stawarczyk 2003, Zawadzka 2006). It is a species frequent in both: forested habitats as well as open, farmland areas, colonized during latest 30 years. Number of nests located in open landscape on pylons increased markedly (Bednorz 2000a, Zawadzka 2006). Across the whole country, flocks of non-breeding, nomadic birds are present, probably more frequent in the west. The first trials of synurbization of Raven in Poland were recorded in big cities in the 1950s. They were connected with development of Raven population, extension of its range and changes behavior in related to humans (Dobrowolski et al. 1958, 1962). Nests were located also in big urban parks and in peripherial zones. During the next decade Raven have removed from center of cities, and during following years very slowly inhabited only edges and periphery. This process run most visibly in the 1980s, almost do not show geographical diversification nor dependence on town size. Raven appeared this period in forests within the administrative boundaries and periphery with loose build. Increase in number during next decades followed very slowly. Nowadays number of Raven breeding pairs do not exceed 20 in the biggest Polish cities, but usually is significantly lower. Densities are extremely low, especially in compared in densities vital urban populations other Corvids. Regional increase of breeding pairs is accompanied slight increase of records of non-breeding and wintering Ravens, still mainly in suburban zone. Sporadic, in some towns take place single records in downtown zone. Observations of single birds or pairs dominated. On the cities in the west of Poland are recorded few attempts of urban park colonization.

Very poor synurbization of Raven surprise on the background unusual ecological plasticity of species, his omnivorous, and also in comparison with other Corvids species, almost all strong synurbic (Magpie *Pica pica*, Hooded Crow *Corvus cornix*, Jackdaw *Corvus monedula* , Rook *Corvus frugilegus*, and last time also Jay *Garrulus glandarius*) (review in: Jerzak et al. 2005). One of factors could inhibit colonization of Raven in urban zones may be strong competition with Hooded Crow, which numbers reached in towns from15-50 pairs in Częstochowa (Czyż 2008), 56-60 in Leszno (Kuźniak 1996), 110 in Łódź and Olsztyn (Glubowski et al. 2009, Nowakowski et al. 2006) to 1.500 pair in Warsaw (Luniak 2001). Direct attacks Ravens by flocks of Hooded Crow were observed in urban parks in Legnica and Wrocław (Tomiałojć 2009). Raven

find optimal conditions for feeding in periphery zone, where garbage dumps, breeding farms, food waste and farms constitute the main feeding places are located (Zawadzka 2006). Thus, center of towns are still less attractive for as feeding ground than its edges, although Ravens take food among cars on urban parking places were recorded in USA (Heinrich 1999). Settle in towns is for many bird species a way to avoidance predators, although Raven practically has any enemies except humans. Colonization of cities as new habitats may be affected by high density non-urban populations. In this case, probably density of Raven in Poland are not so high, in order to birds to have look for new breeding areas within towns. Migration into urban zone may be caused by competition with other species. The Raven is a dominant in relationships in other Corvids, and also often with some birds of prey (Selva et al. 2005, Zawadzka 2006). There are no species in nature, who may displace Raven from periphery to urban area, but cities may be defended against colonization by Raven by others frequent Corvids populations, nested inside cities. On the other hand, there are not the main reason affected for stopping of colonization cities by Ravens. Urbanization of Ravens should be precede by significant increase both: population number in peripheral zone, as well as non-breeding flocks in urban center. Untilnow, there is a lack of those process symptoms, although it is possible. Colonization of town may run in stages. In Poznań, settled city by Hooded Crow lasted above 40 years, and was divided for clear stages in gradient from periphery to center (Ptaszyk 2003). Similar may be model of colonization of interior of town by Ravens. This process needs permanent monitoring.

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LICKING OF PINE SAP BY GREENFINCHES *CARDUELIS CHLORIS* AND GOLDFINCHES *CARDUELIS CARDUELIS*

ABSTRACT

In 2011 and 2012, an unusual and so far not described foraging behaviour of two finch species was observed in the Barycz valley, W-Poland. Several times Greenfinches *Carduelis chloris*broke off fresh shoots of Scots pine (*Pinus silvestris*) and then licked up the leaking sap. Afterwards, Goldfinches *Carduelis carduelis* also licked up the sap from the same spot. We hypothesize that both species take advantage of the antiseptic nature of *Pinaceae* sap.

During an ornithological study in the agricultural landscape of Western Poland near the town of Odolanów (51°34'N, 17°40'E; for details see Antczak *et al.* 2004, Ekner-Grzyb et al. 2013), we several times observed an unusual foraging behaviour of two species of *Carduelid* finches. On 10th April 2011 three adult Greenfinches *Carduelis chloris* were seen breaking off fresh shoots, 3-5 cm long, of Scots pine (*Pinus silvestris*) (Fig. 1) in a 20 to 30 year old Pine stand. The shoots were discarded and the birds

Fig. 1. Breaking off pine shoots by Greenfinch

Fig. 2. Leaking juice

Fig. 3. Juice licking by Greenfinch

licked up only the sap leaking from the breakage (Fig. 2 and 3). After 20 minutes two Goldfinches *Carduelis carduelis* landed on exactly the same spot and also started to lick up the leaking sap.

Greenfinches breaking off young Pine shoots and licking up the juice were recorded a total of six times in 2011 (10th, 11th, 21st and 22nd April, 1st and 3rd May) and five times in 2012 (12th (twice), 19th and 20th April, 6th May). In seven cases (four times in 2011 and three times in 2012) Goldfinches were observed licking up juice from pine shoots broken up shortly before by Greenfinches.

To the best of our knowledge, licking up sap from actively broken fresh Pine shots by Green- and Goldfinches has not been described so far. We first assumed that birds have found a new food source to supplement their early spring diet (for details of regular food composition see Cramp & Simmons 1988, Sage 2011). However, Karting et al. (1991) could show that Pine juice has no significant nutrition value but contains several compounds with antiseptic characteristics (see table). For example, they are active against Gram+ bacteria and some species of *Candida.* Therefore, we hypothesize that licking up fresh Pine juice by Green- and Goldfinches is not a regular foraging habit but helps to improve the immunological status, perhaps especially important after winter time. However, this hypothesis still needs verification.

Tab. Chemical composition of *Pinaceae* sap (after Karting *et al.* 1991)

INGREDIENT	FUNCTION
α- pinen	Broad – spectrum antibiotic
Limonene	Insect repellent, insecticide
Borneol	Insect repellent, insecticide
Camphene	Component of drugs used in gall bladder and kidney diseases
Linalool	Insecticide
Humulene	Antiphlogistic
β – carbophyllene	Antiphlogistic

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THE STATUS OF SPARROWS IN LESOTHO, SOUTHERN AFRICA

ABSTRACT

There are three *Passer* species in Lesotho: House Sparrow *P. domesticus*, Cape Sparrow *P. melanurus*, and Grey-headed Sparrow *P. diffusus*. The House Sparrow is an introduced species, recorded first in Lesotho in 1954.Today, all three species are very numerous (as dominants or subdominants) in urban and rural areas in all ecozones in the country. With an increase of altitude the proportion of Cape Sparrows in relation to the other sparrow species increases, while the reverse is true for the Grey-headed Sparrow. The proportion of House Sparrows appears to be only slightly affected by altitude. In some areas, the House Sparrow may displace the Grey-headed Sparrow.

Keywords: House Sparrow *Passer domesticus*, Cape Sparrow *P. melanurus*, Grey-headed Sparrow *P. diffusus*, distribution, abundance, Drakensberg, Lesotho

INTRODUCTION

There are four species of the genus *Passer* in southern Africa, three of which occur in Lesotho: House Sparrow *P. domesticus*, Cape Sparrow *P. melanurus*, and Grey-headed Sparrow *P. diffusus* (Hockey et al. 2005). The two latter species are indigenous, but the House Sparrow has been introduced at the end of 19th century, and subsequently expanded its range from Cape Town, East London and Maputo to almost the entire area of southern Africa (Hockey et al. 2005). The first record of this species in Lesotho was made at Roma in 1954 (Maclean 1955). At the early 1960s it was also recorded in Maseru and in the 1970s was regarded as a common species there (Kopij 2000). Although the House Sparrow is known to occur today all over Lesotho, it is unknown how successful it is in different ecozones and habitats and how it affects the two indigenous sparrow species, an issue that is dealt with in the present study.

STUDY AREA

Lesotho is an enclave within the Republic of South Africa. Three-quarters of the country, known as the highlands or Maloti, lay above 2,200 m a. s. l. Areas below 1,700 m are regarded as lowlands while foothills are located between 1,700 and 2,200 m. The

lowlands (total area 6,051 km^2) form a strip of land at the northeast-southwest border of Lesotho and extend eastward to the Cave Sandstone Foothills. The foothills (total area 2,964 km^2) form a narrow band bordering the highlands to the east and the lowlands to the west, and constitute, therefore, an intermediate region between the highlands and the lowlands. The Senque Valley Zone lies below 1,800 m and occupies 3,398 km^2 (Ambrose et al. 2000). The study area of the present investigation encompasses the Senque Valley and the lowlands. In 2000, the population of Lesotho was estimated at about 2 million people. With more than three-quarters of the total number of Lesotho inhabitants, the Lowlands are heavily populated, while the population is sparse in the highlands.

In the lowlands the natural vegetation is Highveld Grassland (Acocks 1988). The Maloti/Drakensberg region, called also the Eastern Mountains, is an endemic and so called 'hot-spot' region, with an area of about 40,000 km^2, most of which is located within Lesotho. The main vegetation type here is the Afromontane Grassland, with Highveld Grassland in the lowest (below 1,800 m) and Alpine Grassland in the highest altitudes (over 2,500 m). The 'hot-spot' covers entirely the Afromontane and Afroalpine Grasslands, and borders the Highveld Grassland.

In each ecozone, main habitats with various degrees of modification were distinguished: urban, rural, farmland, mosaic of habitats, natural habitats and river valleys. Four towns (Maseru, Thaba Tseka, Mokhotlong, Qacha's Nek) and three larger settlements (Roma, Morija, Semonkong) were selected as urban habitats, while 13 villages were randomly selected as rural habitats. Three towns were located in the highlands and one (Maseru) in the lowlands. Of the 13 villages, four were located in the lowlands, four in the highlands, two in foothills and three in the Senque/Orange Valley.

STUDY METHODS

The three sparrow species were studied from 1996 to 2002. A line transect method following Bibby et al. (1993) was used to assess species diversity and relative abundance of all resident (breeding) birds. Transects were fixed along roads in rural or urbanized areas. Counts were conducted at different times of day and lasted 0.5 to 4 hours, but mostly about 1 hour. For Semonkong, Thaba Tseka, Mohotlong and Morija, respectively, three to seven counts were conducted, while in the rural areas only single counts were carried out in each settlement.

The proportion of breeding pairs of a particular sparrow species in relation to the total number of breeding pairs of all sparrow species was calculated. The dominance of sparrows in the breeding bird communities was calculated as the percentage of the number of breeding pairs of a particular sparrow species in relation to the total number of breeding pairs of all bird species.

RESULTS and DISCUSSION

In general, with an increase of altitude the proportion of Cape Sparrows in relation to the two other sparrow species increased, while the reverse was true for the Grey-headed Sparrow. The proportion of the House Sparrow appears to be only slightly affected by altitude. In the lowlands, the proportion of Grey-headed Sparrows equaled almost the proportion of the other sparrows. However, in the highlands the Cape Sparrow accounted for two-thirds of all sparrows. The proportion of the House Sparrow was almost identical to that of the Cape Sparrow in the lowlands, and to the Grey-headed Sparrow in the highlands (Fig. 1).

On average for all habitats, only the Cape Sparrow was in the group of dominant species, and, furthermore, only in the highlands. In the lowlands, the Grey-headed Sparrow was a subdominant species. However, sparrows were often dominants or subdominants in urban and rural habitats in all ecozones. The House Sparrow dominated strongly even in highland urban and rural areas. In the future, it may displace the indigenous Grey-headed Sparrow in such habitats.

In Maseru, the only larger city in Lesotho, all three sparrow species appear to be similarly numerous and dominant. The House Sparrow is especially successful in the so called township, where it is not only the commonest sparrow species, but, by far, the most abundant bird species at all (Kopij 2000). Also in some rural areas in the lowlands the House Sparrow strongly dominates.

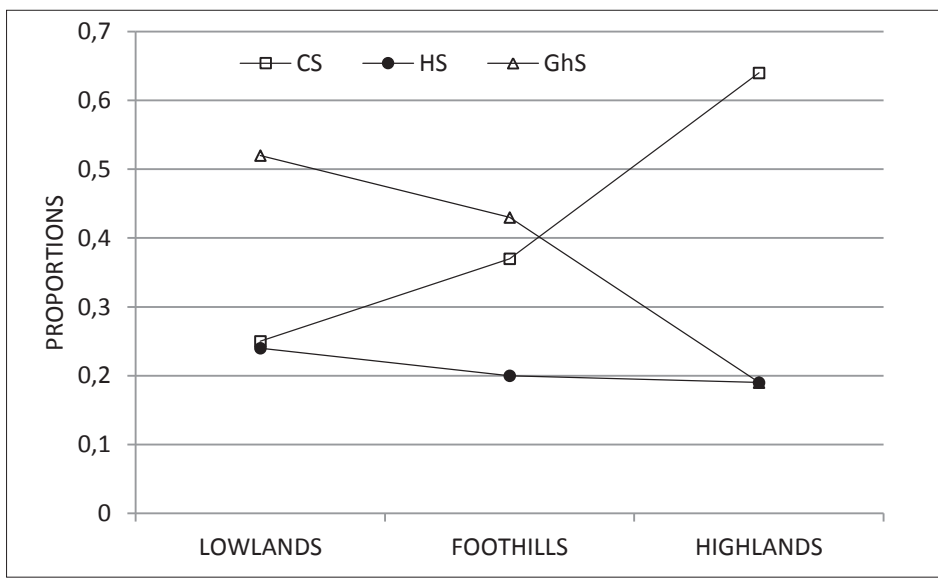

Fig. 1. Proportions of the three species Cape Sparrow (CS), House Sparrow (HS), and Grey-headed Sparrow (GhS (in relation to all other birds) in the lowlands (N=975 pairs of all sparrow species), foothills (N=292) and highlands (N=889) in Lesotho.

Hockey et al. (1997) do not list urban and rural areas as habitats of the Grey-headed Sparrow. However, it is a common and sometimes even dominant species in such habitats in Lesotho, especially in well-timbered places.

Of the three sparrow species occurring in Lesotho, the Grey-headed Sparrow is most closely associated with trees as nesting sites. The Cape Sparrow may build nests in trees and shrubs as well as in buildings and other man-made structures, whereas House Sparrow nests were found only in buildings and other man-made constructions (Kopij 2013). The Grey-headed Sparrow, therefore, is predisposed to inhabit natural habitats while the House Sparrow is predisposed to occupy highly modified, treeless built-up areas. These tendencies were visible in all ecozones in Lesotho (Tab. 1).

Table 1. Proportions and dominance of the three species Cape Sparrow (CS), House Sparrow (HS), and Grey-headed Sparrow (GhS) in Lesotho.

N	Locality and habitat	x^2-test	Proportions			Dominance			Number of pairs	
			CS	HS	GhS	CS	HS	GhS	Genus *Passer*	All bird species
	LOWLANDS									
1	Maseru, urban	5,93	0,41	0,35	0,25	2,80	2,41	1,70	281	4,067
2	Maseru, urban	1,85	0,38	0,30	0,32	4,23	3,31	3,56	181	1,631
3	Roma, NUL campus	21,97	0,06	0,04	0,90	0,79	0,59	12,87	72	505
4	Roma, NUL campus	15,26	0,12	0,02	0,86	1,41	0,24	10,35	51	425
5	Morija, rural	6,33	0,00	0,00	1,00	0,00	0,00	1,36	4	295
6	Roma, rural	15,10	0,05	0,26	0,68	1,09	5,45	14,18	57	275
7	Rural	3,73	0,14	0,32	0,55	2,73	6,36	10,91	22	110
8	Roma, farmland	21,90	0,14	0,21	0,65	1,06	1,59	4,84	170	2,271
9	Farmlands	8,62	0,10	0,29	0,62	0,60	1,79	3,87	42	672
10	Koro Koro, mosaic	14,00	0,00	0,00	1,00	0,00	0,00	1,61	27	1,679
11	River valleys	14,03	0,18	0,09	0,74	1,41	0,71	5,89	68	849
	Total	28,26	**0,25**	**0,24**	**0,52**	**1,87**	**1,82**	**3,94**	**975**	**12,779**
	FOOTHILLS									
12	Rural	4,56	0,14	0,21	0,64	1,34	2,01	6,04	14	149
13	Farmlands	8,62	0,10	0,29	0,62	0,64	1,93	4,17	42	623
14	Nyakosuba, mosaic	14,78	0,40	0,14	0,47	1,36	0,48	1,60	43	1,248
15	Masite Plateau	5,33	0,00	1,00	0,00	0,00	0,13	0,00	1	752
16	Qeme Plateau	4,43	0,25	0,48	0,27	1,38	2,63	1,50	44	798
17	Leribe Plateau	41,07	0,40	0,00	0,60	0,63	0,00	0,94	5	320
18	Berea Plateau	20,15	0,60	0,06	0,34	5,09	0,48	2,88	88	1,042
19	Cliffs S of Roma	3,79	0,00	0,20	0,80	0,00	0,22	0,88	5	452
20	Cliffs N of Roma	1,84	0,19	0,38	0,43	0,96	1,91	2,15	21	418
21	River valleys	6,89	0,52	0,00	0,48	0,68	0,00	0,64	29	2,200
	Total	23,20	**0,37**	**0,20**	**0,43**	**1,35**	**0,71**	**1,59**	**292**	**8,002**

	HIGHLANDS									
22	Qacha's Nek, urban	9,67	0,00	0,00	1,00	0,00	0,00	11,76	14	119
23	Semonkong, urban	12,85	0,52	0,38	0,10	11,74	8,48	2,17	103	460
24	Thaba Tseka, urban	82,68	0,68	0,16	0,16	23,29	5,48	5,33	224	657
25	Mokhotlong, urban	10,31	0,48	0,35	0,17	18,88	13,57	6,49	132	339
26	Rural	5,76	0,48	0,23	0,29	13,87	6,57	8,39	79	274
27	Semonkong, farmland	111,87	0,86	0,08	0,05	3,66	0,35	0,22	132	3,115
28	Montsunyane, mosaic	68,32	0,92	0,05	0,03	5,58	0,28	0,19	65	1,075
29	Sehlabathebe, grassland	4,50	1,00	0,00	0,00	0,27	0,00	0,00	3	1,120
30	Sehlabathebe, farmland	26,32	0,92	0,00	0,08	7,54	0,00	0,66	25	305
31	Alti-mountain grassland	1,83	1,00	0,00	0,00	0,24	0,00	0,00	1	417
32	River valleys	14,10	0,50	0,00	0,50	1,96	0,00	1,99	111	2,810
	Total	244,09	**0,64**	**0,17**	**0,19**	**5,28**	**1,43**	**1,60**	**889**	**10,691**
	Grand total	106,25	**0,42**	**0,21**	**0,37**	**2,90**	**1,40**	**2,55**	**4,312**	**62,944**

In Bloemfontein, the House Sparrow was recorded for the first time in 1959 (Markus 1960). In 1997, it was an abundant breeding resident (1,150 pairs, 4.4%) concentrating in the oldest densely built-up and treeless parts of the city (Kopij 2001). However, in the same time the Cape Sparrow was by far much more abundant (7,483 pairs, 28.5%) in Bloemfontein (Kopij 2001).

In conclusion, all three sparrow species are very numerous breeding species in urban and rural areas in all ecozones in Lesotho, and, in general, there seems to be little interspecific competition. However, in some areas the House Sparrow may displace the Grey-headed Sparrow.

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SHORT NOTES

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NESTLING OF HOUSE SPARROW *PASSER DOMESTICUS* IN NEST BOXES IN ZIELONA GÓRA PRELIMINARY REPORT

The population of House Sparrows in most of European cities declined in the end of the XX century (De Laet & Summers-Smith 2007). One of the presumable reasons of this decline is loss of nest sites. The House sparrow is a secondary hole-nester (Anderson 2006) and places its nest in holes of buildings, shrubs and nest boxes. The rate of nest box occupation depends on the location and competition with other species (Anderson T.R. 2006).

The aim of this study was to investigate the rate of nest box occupation by House sparrows in Zielona Góra, Western Poland, which can provide information about the availability of nesting sites.

STUDY AREA, MATERIAL AND METHODS

The study was carried out in 2014 on five plots in Zielona Góra where House sparrows occurred. The investigated plots represented three urban habitats: parks, old housing estates and new housing estates. On the study plots nest-boxes of type A were located on trees at more than 3 m height with the box entrance avoiding westerly directions. All nest boxes were already put up in 2013. In the breeding season 2014 all 86 nest boxes were inspected.

RESULTS AND DISCUSSION

House sparrows occupied 3,4% of all nest boxes. A total of 39% of nest boxes were occupied by bird species (Tab. 1.), mostly by the Great tit *Parus major* and Blue tit *Cyanistes caeruleus.*

Tab. 1. Nest boxes occupied by birds in Zielona Góra

Habitat	Total number of nest boxes hung up	Number of nest boxes occupied	Number of nest boxes occupied by House sparrows
Parks	21	10	0
Old housing estates	32	12	2
New housing estates	34	10	1

In a similar study conducted in Warsaw, House Sparrows occupied 4% of nest boxes (Węgrzynowicz 2012). Moreover, in Poznań in the 1980s House sparrows did not occupy any nest box (Mizera i Kozłowski 1992). In contrast, in Berlin in 2000 House Sparrows used 26 to 98% of available nest boxes (Feige 2007, Grasnick & Böhner 2008, Otto 2008). Therefore, the nest box occupation rate of House Sparrows differs strongly between cities. House sparrows tolerate nest boxes, which are considered suboptimal breeding places, if the breeding success is high and nutritional conditions are good (Summers-Smith 1958).

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SHORT NOTES

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NEW YEAR'S EVE FIREWORKS IMPACT ON THE NUMBER OF MAGPIES ON THE ROOSTING PLACE

ABSTRACT

Roost sites play a very important role in magpie's life cycle. Frightening birds away may have disadvantageous influence on its population. There have been conducted researches concerning changes in roosting birds number for intense use of fireworks on New Year's Eve. The researches took place on magpies' roosting sites in Zielona Góra, W Poland. The results suggest there should be ban on using fireworks or there should be marked certain town areas (after consulting with ornithologists) where fireworks could be used.

INTRODUCTION

In the second half of the 20th century on urbanised areas the magpie number started to increase rapidly (Birkhead 1991, Jerzak 2001, Zhengmei Wang et al. 2010). A large density of breeding pairs resulted into increase of roosting flocks number. The largest stated roost site was situated in Lviv where 1700 individuals roosted (Bokotey 1997).

The magpie comes under the species that gather in winter on shared roost sites. It appears to be an interesting behaviour, for magpie is a territorial species, which stays on its territory during the year. In winter birds abandon their territory and roost in shared roost sites. There have been a few theories explaining that behaviour. According to Wynne-Edwards (1962) the common roosting is essential for self-regulation of population number. Gadgil (1972) noticed that this is a behaviour protecting birds form predators which are becoming more active in winter. The group of researchers hypothesized that common roost site serves exchange of information about feed distribution that is hard to reach in winter. (e.g. Ward, Zahavi 1973). Moller (1985) suggested explaining magpie common roost sites as exchange of information about "maritial" status of close neighbours. It seems, therefore, that roost sites play an important role in magpie's life cycle. It should be even protected on the city territory where many occurring factors

might intrude roosting. One of such factors is common use of fireworks on New Year's Eve and on New Year's Day. The Authors decided to conduct researches if it actually has any influence on magpies' number on roost sites.

RESEARCH TERRITORY

Researches were conducted on magpie roost sites located in Zielona Góra, W Poland. There are 120.000 inhabitants in and the city and it is surrounded by forests. Magpie population has been increasing since the beginning of the 20thcentury (Gruhl 1929, Jerzak 2001). The roost site is located on tree-lane (mainly *Tilia sp.*) on Wyspiańskiego Street in eastern part of the city.

METHODOLOGY

Roosting magpie counts were conducted from 1. November 2013 and during winter in a week long intervals. It was especially important to count the birds on New Year's Eve (in the evening after dusk) and then on New Year's Day (before dawn) in order to state what changes have occurred in bird roosting number during the highest intensity of fireworks.

RESULTS

Magpies' number on roost sites started to increase in November reaching the highest number in December (up to 156). On New Year's Eve there was a radical decline of bird number from 30 individuals to only 5 (Fig. 1). Magpie number has fallen in December, what was presumably caused by irregular firework shots. In January magpies' number

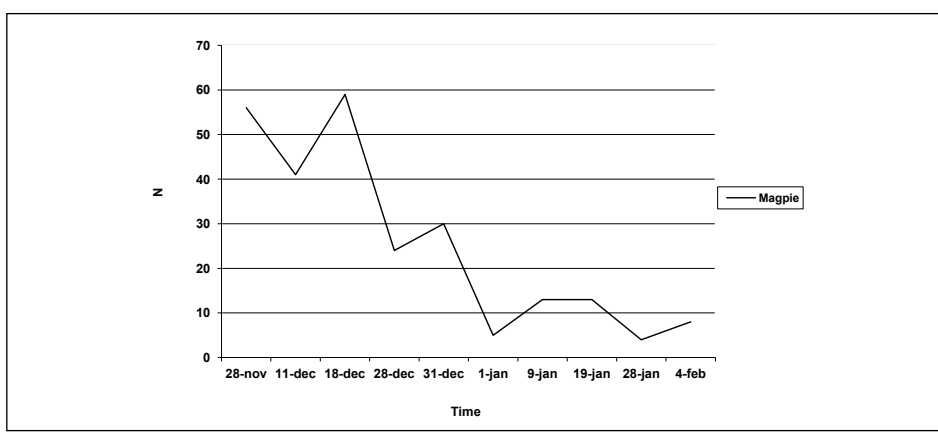

Figure 1. Changes in magpies' number on roost site in Zielona Góra on Wyspiańskiego Street during winter 2013/2014

started to grow afterwards, however it did not reach the number from before New Year's Eve.

DISCUSSION

Many researches have been conducted on magpies roosting places (Jerzak 2001). Many hypotheses have been also suggested. There is a clear evidence for the fact that roost sites in the city are more numerous than the ones located outside the town. It is caused by magpie occurrence in much larger concentrations on urbanised areas. Researchers stated changes in number caused by weather: temperature, wind (Czechowski et al. 2005) but the number changes are of small amplitude. However, number decline stated on New Year's Eve was sharp and radical. The attention to number decline of magpie on roost sites in Zielona Góra in December and January had been paid even before (Jerzak 2001). In all likelihood it may be caused by early firework shots and also after New Year's Day. It is against the law due to the fact that The Mayor issues an order allowing for firework shots only on New Year's Eve.

A radical bird number decline was stated in our researches on New Year's Eve. Birds uneasily restore their number from that night. There is much information about disadvantageous influence on animals caused by fireworks. Fatalities were even stated. Research results suggest that fireworks should not be allowed or there should be marked certain town areas (after consulting with ornithologists), where fireworks would be used.

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IN MEMORIAM

VICTOR R. DOLNIK
1938-2013

Victor R. Dolnik was elected a Corresponding Fellow of the AOU in 1970 and an Honorary Fellow in 1977. He was born in 1938 in Sverdlovsk, USSR (now Yekaterinburg, Russia) into a family of engineers and passed away after a long illness on 4 November 2013 at his home in St. Petersburg.

After graduating from high school in 1955 Victor was most sagacious to seek and gain admittance to Leningrad (St. Petersburg), not to Moscow University. He had a good reason to do so: the biological science in the USSR was still under a strong influence of the pseudo-scientific spirit of Trofim Lysenko's teachings, and the faculty of biology of the Leningrad University was then the only place in the Soviet Union where genetics was taught by true scientists who asked their students at the first lecture to forget everything they had been told at high school about biology.

Victor Dolnik started his research carrier in 1960 in a quiet corner of the former East Prussia, on then nearly unpopulated Courish (Curonian) Spit on the Baltic coast, in Rybachy (former Rossitten), where the world's first bird observatory Vogelwarte Rossitten had been active in 1901-1944. In that migration hotspot Johannes Thienemann started the world's first large-scale bird banding project, which made that place famous before World War II. Vogelwarte Rossitten was resuscitated in 1956 by Prof. Lev Belopolsky as the Biological Station Rybachy (as it included not just ornithologists but also marine biologists and parasitologists) of the Zoological Institute in Leningrad. A young team of biologists from Leningrad, Moscow, Estonia and Latvia worked on the Courish Spit. Victor Dolnik stood apart from his colleagues already in that young age by his ability and clear vision of the future research, so it was no wonder that he soon became a valuable deputy of Lev Belopolsky. When the latter accepted an invitation to become a professor at Kaliningrad University, Victor Dolnik was appointed the Biological Station's director in 1967, at the age of 29 years.

The first mission of the Biological Station was organization of mass standardized trapping and banding of birds, mainly passerines, that migrate over the Courish Spit in huge numbers. This has been done in large stationary funnel traps, the so-called

Rybachy-type traps, that are modeled on Heligoland traps but, unlike them, allow capturing birds in active migratory flight up to 12 m above ground. This type of funnel traps has quickly become popular in the former Soviet Union, and later beyond it. They allowed the Biological Station Rybachy to become the top banding organization in the USSR. Reporting rate of bands was relatively high even in songbirds, because many of them migrated through the densely populated countries of Western Europe. It made it possible to publish the Atlas of Bird Migration on the Courish Spit already in 1971 (an English translation was published in the U.S. in 1973).

Back then the main objective of mass bird banding was seen as obtaining long-distance recoveries. However, later it appeared equally important that right from the start the trapping project had been standardized by timing, trapping effort and handling and measuring techniques, which made it possible to use the data for the analysis of long-term dynamics of avian numbers and timing of migration. In the 1960es, the topic of global climate change and its impact on wildlife has hardly been discussed by anyone, but data collection had already started.

Since the late 1960es the research interests of Victor Dolnik gradually moved towards bioenergetics, migration physiology and photoperiodic control of seasonal events in animal annual cycles, so his work in migration biology has been concentrated on bioenergetic adaptations to migration. One of the main topics of experimental and field work was studying the processes occurring in a migrant's organism during fattening and use of fuel. During this period, Victor Dolnik together with his disciple and friend Valery M. Gavrilov wrote a number of papers on ecophysiological aspects of avian migration, i.e. on the relationship between fuel stores and migration, on role of fat depots in the metabolism regulation, on seasonal change in responsiveness to photoperiod, on the energetics of molt. These studies were summarized in his monograph 'Migratory Disposition in Birds' (Moscow, Nauka Publishers, 1975). Dolnik became involved in orientation and navigation research at about that time.

Looking back, it becomes apparent that Victor Dolnik has founded the main working principle of the Biological Station Rybachy, the combination of field and experimental research, and joint work and everyday life of the researchers involved, in the semi-official environment of the station's building in the village of Rybachy and in quite unofficial environment at Fringilla field site. The name of the field station honors the most common bird on the Courish Spit, Chaffinch *Fringilla coelebs*, both on passage (over 700,000 Chaffinches have been banded by now) and during breeding. The Chaffinch became the lab rat, and it is no wonder that the monograph 'Population Ecology of the Chaffinch' was edited by V.R. Dolnik (Moscow, Nauka Publishers, 1982).

Lab research on avian energetics in varying physiological conditions was an important aspect of Dolnik's experimental studies. It was aimed at measuring energetic costs of different types of activity and made it possible to develop a method of calculating

daily energy budget of free-living birds from their daily activity budgets. These results were published in his monograph 'Energy and time resources of free-living birds' (St. Petersburg, Nauka Publishers, 1995).

As a long-time director of the Biological Station Rybachy (1967-1989), Victor Dolnik not only pursued his own studies, but also organized the work of others, also in the framework of large research projects. One of such projects was the study of avian migration across arid and mountainous areas in (then Soviet) Central Asia in the 1980es. This project, performed in parallel with the efforts of European, mainly German and Swiss, ornithologists on studying how birds crossed the Sahara Desert, unfortunately remained not quite completed. Most valuable data collected in the areas that were difficult to access then and partly became even more difficult to access now, remained published mainly in Russian.

The most part of Dolnik's active carrier was during the Cold War and behind the iron curtain. Dolnik, like few of his colleagues in the Soviet Union, strived for the unity of global research, USSR including. He demanded that his collaborators not only read but wrote and published in English, even though it was hindered not only by linguistic challenges but also by the political restrictions of that time. In the 1960es-1980s, when attending international meetings by Soviet researchers was made very difficult (especially for people who, like Victor, were no members of the ruling party and did not really bother to conceal their skepticism towards Soviet authorities), he not only propagated the recent advances of international colleagues, but was in constant contact with many of them, including Americans Donald Farner and Samuel Charles Kendeigh. Victor Dolnik took a most active part in preparation of the 18th IOC in Moscow in 1982, which played a pivotal role in overcoming the isolation of Soviet ornithologists.

In 1989 Victor Dolnik left his position at the Biological Station Rybachy and moved to Ornithology and Herpetology Lab of the Zoological Institute in Leningrad (St. Petersburg). However, his working style continued to thrive and bring fruits in Rybachy. When the political situation changed and active international contacts ceased to be censured, Dolnik's former collaborators and disciples were able to benefit most from it, because they had been prepared by Victor.

Victor Dolnik always actively disseminated biological knowledge beyond the academic circles, starting from his early popular book on avian movements 'Enigmatic migration' (1968). Together with Prof. Mikhail Kozlov he co-authored high school textbooks on zoology. A very special place in his activities is taken by the book 'Biosphere's naughty child (talks on human behavior in the company of birds, beasts, and children)'. It is considered by many an excellent explanation of ethology's most burning questions in a clear and non-standard manner. This book has been published in six editions and remains most popular in the Russian-speaking world.

Speaking of the Courish Spit and the Biological Station Rybachy, one cannot but mention the atmosphere there, where Victor, smart, fiery, always keen to tell jokes and make friendly practical jokes, took a special place. Evening parties, discussions of the hustle and bustle in our small community and in the larger world, interspersed by joking and then, spontaneously, discussion of a serious scientific issue, were a regular pattern of that time. Victor Dolnik was always at the center of such parties.

Victor Dolnik is greatly missed by ornithologists and other biologists. He will be remembered as a most talented researcher who uncompromisingly searched for truth in various fields of biology. One can safely say that a whole epoch in avian migration and animal bioenergetics research is closely connected with the name of Victor R. Dolnik.

Vladimir Payevsky, Zoological Institute, St Petersburg, Russia
Nikita Chernetsov, Biological Station Rybachy, Rybachy, Russia

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References should be in following form:

1. Barkowska M., Pinowski J., Pinowska B. 2003 – The effect of trends in ambient temperature on egg volume in the Tree Sparrows *Passer montanus* – Acta Ornithol., 38:5-13.
2. Radkiewicz J. 1989 – (Distribution and number of the White Stork in Zielona Góra Provinnce in 1985) – Przyr. Środk. Nadodrza 1: 47-66 (in Polish).
3. Anderson T.R. 2006 – Biology of the ubiquitous House Sparrow from genes to population – Oxford Univ. Press, Oxford, New York.
4. Indykiewicz P. 2006 – House Sparrow *Passer domesticus*, Starling *Sturnus vulgaris*, Tree Sparrow *Passer montanus* and other residents of nests of the White Stork *Ciconia ciconia* – In: The White Stork in Poland: studies in biology, ecology and conservation, Eds. P. Tryjanowski, T.H. Sparks, L. Jerzak, – Bogucki Wyd. Naukowe, Poznań.

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