

Early Pleistocene birds of Stránská skála, Czech Republic: 2. Absolon's cave

Raně pleistocénní ptáci Stránské skály, Česká republika: 2. Absolonova jeskyně

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Excavations in the Absolon's cave at Stránská skála in the Czech Republic have yielded 645 identifiable bones of birds. The fauna is early Pleistocene in age, corresponding to the MQ 1b zone (sensu Mlíkovský 2002b). The avifauna consists of 19 genera and at least 24 species, which belong to nine families. The avifauna includes some boreal elements, while southern elements are absent. This indicates rather cold climate during the accumulation of the avifauna.

Z vykopávek v Absolonově jeskyni ve Stránské skále v České republice bylo získáno 645 určitelných kostí ptáků. Jedná se o raně pleistocénní faunu, která patří do zóny MQ 1b (sensu Mlíkovský 2002b). Avifauna se skládá z 19 rodů a nejméně 24 druhů, které patří do 9 čeledí. Obsahuje některé boreální prvky, zatímco jižní prvky v ní chybí. Tato skutečnost naznačuje, že se daná avifauna nabromadila v poměrně chladném klimatu.

Keywords: Aves, Biharian, Pleistocene, Czech Republic

INTRODUCTION

Stránská skála is a karstic hill in Brno, Czech Republic, which has yielded several rich assemblages of early Pleistocene (late Biharian) vertebrates (Musil 1965, 1972a, 1995a, Musil & Valoch 1968). Bird remains excavated by early researchers were described and/or mentioned by Čapek (1925), Knies (1925), Skutil and Stehlík (1939), Musil and Valoch (1968), and Jánossy (1972). In addition, Mlíkovský (1995) described avian remains from the Musil's talus cone at Stránská skála. In this paper I describe avian remains excavated by Karel Absolon in 1925–1935

at Stránská skála from a site called "cave above the 2nd quarry" (see Musil and Valoch 1968).

Absolon's material includes avian bones with two distinct types of fossilisation. Most of the bones are whitish to brownish in color, and probably originated in the late Biharian, i. e. in the MQ-zone 1b sensu Mlíkovský (2002b), which corresponds to the Q-zone 2 sensu Horáček (1981) and Horáček & Ložek (1988) and the MNQ-zone 21 sensu Guérin (1982). A few bones, however, are entirely black, and evidently originated much

earlier, probably in the Neogene. Both Pliocene and Miocene deposits can be found at Stránská skála (O. Fejfar, pers. comm.), but no such locality yielding vertebrate fossils was identified as such. The avian black bones include the following specimens: 2 humeri dex. (133, 753), humerus sin. (144?), femur sin. (131), prox. tibiotarsus dex. (1084), dist. tibiotarsus sin. (138), and tarsometatarsus sin. (132?). All belong to the Passeriformes, but are not further treated in this paper.

The material is deposited in the collection of the Anthropos Institute of the Moravian Museum in Brno, Czech Republic. The bones bear catalogue numbers, which are listed below in parentheses.

Stratigraphy of the European Pleistocene follows Mlíkovský (2002b). The sequence and nomenclature of modern species is after Beaman (1994). Measurements were taken according to van den Driesch (1976). Minimum numbers of individuals (MNI) were calculated according to Grayson (1984).

Abbreviations used are as follows: cran. = cranial, dex. = right, dist. = distal, prox. = proximal, sin. = left, stern. = sternal.

SYSTEMATIC LIST

Anatidae

Tadorna tadorna (Linnaeus, 1758)

MATERIAL. 4 coracoids sin. (33, 35, 70, 983), 2 coracoids dex. (34, 37), 2 cran. coracoids sin. (323, 553), 2 cran. coracoids dex. (386, 561), humerus dex. (84), 3 dist. humeri sin. (71, 91, 101), 6 dist. humeri dex. (67, 71, 87, 91, 101, 105, 233, 305, 1064), 3 prox. ulnae sin. (306, 319, 545), 2 prox. ulnae dex. (174, 528), 2 dist. ulnae sin. (316, 795), 2 dist. ulnae dex. (597, 889), 2 carpometacarpi dex. (214, 259), 3 prox. carpometacarpi dex. (258, 430, 1197), dist. carpometacarpus

sin. (1107), 3 dist. carpometacarpi dex. (363, 902, 1199), femur sin. (966), 2 dist. femora sin. (1104, 1111), 2 dist. femora dex. (325, 479), 5 dist. tibiotarsi sin. (350, 562, 566, 892, 1015), 5 dist. tibiotarsi dex. (593, 632, 1139, 1146), tarsometatarsus sin. (202), tarsometatarsus dex. (210), prox. tarsometatarsus dex. (673), dist. tarsometatarsus sin. (208, 907); MNI = 7.

Anas querquedula Linnaeus, 1758

MATERIAL. Coracoid sin. (283), cran. coracoid sin. (134), 4 prox. humeri sin. (107, 125, 854, 1045), 2 prox. humeri dex. (109, 1050), prox. ulna sin. (1150), prox. ulna dex. (1171), dist. tibiotarsus sin. (1015); MNI = 4.

Mergus connectens Jánossy, 1972

MATERIAL. 12 coracoids sin. (38–41, 43–44, 281, 307, 981–982, 986, 988), 22 coracoids dex. (45–54, 56–60, 984–985, 987, 989, 991), 9 cran. coracoids sin. (297, 299, 300, 385, 396, 413, 650, 669, 711), 26 cran. coracoids dex. (61, 63, 176, 292, 302, 341, 454, 489, 495, 498, 510, 536–537, 555, 623, 637, 640, 674, 736, 756, 976, 980, 1047, 1052, 1112, 1145), 7 stern. coracoids sin. (36, 288–290, 331, 337, 508), 7 stern. coracoids dex. (289, 310, 411, 452, 494, 729, 990), 3 humeri sin. (69, 88–89), 8 humeri dex. (66, 70, 72, 74, 77, 85–86, 1195), 10 prox. humeri sin. (81, 92–93, 103, 126, 304, 342, 540, 557, 593), 2 prox. humeri dex. (313–314), 3 shafts of humeri (320, 330, 348), 26 dist. humeri sin. (68, 97, 100, 104, 315, 317, 336, 346, 338, 360, 407, 409, 410, 432, 460, 462, 469, 551, 600, 613, 728, 789, 1100, 1118, 1141, and one number was undecipherable), 21 dist. humeri dex. (75, 83, 94, 303, 31x, 322, 326, 328, 343, 435, 446, 473, 481, 487, 505, 516, 547, 612, 629, 648, 750), 10 ulnae sin. (4, 6–7, 9, 17, 21–22, 27–28), 12 ulnae dex. (1–2, 5, 11, 14–16, 18, 20, 23, 25a, b), 11 prox. ulnae sin. (12, 23, 26,

332, 349, 395, 431, 436, 463, 474, 604), 13 prox. ulnae dex. (8, 10, 29, 31, 351, 390, 412, 491, 509, 512, 666, 757, 899), 2 dist. ulnae sin. (3, 24), 4 dist. ulnae dex. (13, 345, 356, 444), 10 carpometacarpi sin. (262–263, 265–266, 269, 352, 355, 406, 488, 894), 12 carpometacarpi dex. (112, 260–261, 264, 267–268, 270–271, 358, 371, 380, 417), 18 prox. carpometacarpi sin. (275, 277, 279–280, 382–383, 438, 458, 523, 538, 573, 598, 617, 633, 720, 723, 1054, 1162), 9 prox. carpometacarpi dex. (539, 56x, 582, 625, 702–703, 709, 1057, 1062), 7 dist. carpometacarpi sin. (400, 644, 725, 735, 767, 779, 920), 5 dist. carpometacarpi dex. (276, 405, 614, 636, 663), 15 femora sin. (161–167, 425, 570, 1042, 1044, 1092–1095), 13 femora dex. (137, 150–156, 158–159, 312, 426, 975), 10 prox. femora sin. (166?, 335, 359, 362, 376, 520, 704, 893, 1076?, 1120), 15 prox. femora dex. (168–171, 324, 434, 437, 620, 631, 888, 978–979, 1110, 1135, 1196), 9 dist. femora sin. (221, 224, 401, 447, 546, 658, 730, 912, 115x), 7 dist. femora dex. (226, 339, 595, 683, 748, 887, 1170?), tibiotarsus sin. (1065), 9 prox. tibiotarsi sin. (218, 225, 227, 230, 232, 334, 427, 486, 1078), 10 prox. tibiotarsi dex. (223, 340, 378, 449, 451, 541, 559, 797, 900, 917), 24 dist. tibiotarsi sin. (215, 217, 329, 354, 361, 403, 429, 441, 450, 519, 534, 536, 544, 664, 685, 721, 890, 908,

1067, 1075, 1082, 1101, 1122, 1155), 29 dist. tibiotarsi dex. (216, 219, 222, 228, 231, 250, 374, 379, 393, 465–466, 511, 542, 616, 634, 665, 667, 684, 759, 914a, b, 1066, 1076, 1102–1103, 1113, 1115, 1130, 1143), 14 tarsometatarsi sin. (119, 182–184, 185, 187, 190, 195, 198, 201, 397–398, 1068, 1070), 11 tarsometatarsi dex. (179, 186, 188–189, 192–194, 196–197, 199–200), 5 prox. tarsometatarsus sin. (173, 212, 532, 596, 1069), prox. tarsometatarsus dex. (204), shaft of tarsometatarsus sin. (1055), shaft of tarsometatarsus dex. (586), 3 dist. tarsometatarsi sin. (181, 205, 1053), 4 dist. tarsometatarsi dex. (191, 206–207, 655); MNI = 62.

MEASUREMENTS: See Table 1. The holotypical right coracoid (Abs-88) measures as follows: maximum length = 54.1 mm, internal length = 51.2 mm, minimum shaft width = 6.1 mm.

REMARKS: A left tarsometatarsus (182) was erroneously listed as belonging to *Anas* cf. *strepera* Linnaeus, 1758 by Jánossy (1972). The latter species has no valid record from the Absolon's cave.

This extinct species was abundantly found in the Absolon's collection, but the other record of this species is limited to only two bones from two early Pleistocene localities, incl. Stránská skála – Musil's talus cone, layer 13 (Mlíkovský 1995), and Betfia 5 in Romania (Jánossy 1972).

Table 1. The largest length of main bones of *Mergus connectens*. SD = standard deviation, CV = coefficient of variability (in %). Internal length of coracoids is used here.

Tab. 1. Největší délky hlavních kostí morčáka *Mergus connectens*. Mean = průměr, SD = směrodatná odchylka, CV = koeficient variability (v %), range = rozsah. U korakoidů byla měřena interní délka.

Bone / kost	Mean ± SD	CV	Range	n
Coracoid	51.8 ± 0.82	1.58	50.3–53.5	23
Humerus	82.3 ± 1.73	2.10	80.7–85.3	11
Ulna	70.5 ± 1.39	1.97	68.2–72.4	10
Carpometacarpus	50.2 ± 1.41	2.81	48.1–52.2	18
Femur	46.6 ± 1.03	2.20	45.0–48.2	19
Tibiotarsus	75.8	–	–	1
Tarsometatarsus	43.2 ± 0.72	1.67	41.3–44.1	14

Accipitridae***Accipiter gentilis* (Linnaeus, 1758)**

REMARKS. Jánossy (1972) tentatively identified pedal phalanx 3 digiti 3 as belonging to this species. This is too uncertain, however, so I delete it from the faunal list.

Falconidae***Falco vespertinus* Linnaeus, 1766**

MATERIAL. Coracoid sin. (1063), prox. humerus sin. (1051); MNI = 1.

REMARKS. Jánossy (1972) erroneously attributed these specimens to *Falco tinnunculus* Linnaeus, 1758. The latter species has no valid record from the Absolon's cave.

***Falco subbuteo* Linnaeus, 1758**

MATERIAL. Coracoid dex. (257), carpometacarpus dex. (141), ulna dex. (64); MNI = 1.

REMARKS. Jánossy (1972) erroneously attributed the ulna to *Falco tinnunculus* Linnaeus, 1758.

***Falco cf. peregrinus* Tunstall, 1771**

MATERIAL. Prox. tarsometatarsus sin. (110); MNI = 1.

Phasianidae***Lagopus lagopus* Linnaeus, 1758**

MATERIAL. Coracoid sin. (295), coracoid dex. (293), 2 cran. coracoids sin. (1184, 1185), 3 cran. coracoids dex. (122, 284, 1105), prox. humerus sin. (588), 2 dist. humeri sin. (115, 1119), 2 prox. ulnae sin. (30, 116), dist. ulna sin. (1133), dist. ulna dex. (1129), 3 carpometacarpi sin. (272, 1059, 1144), 3 carpometacarpi dex. (273, 278, 1165), dist. tarsometatarsus sin. (1022), dist. tarsometatarsus sin. juv. (1164); MNI = 5.

REMARKS. Prox. carpometacarpus dex. (937), mentioned by Jánossy (1972), is missing in the collection.

***Tetrao tetrix* Linnaeus, 1758**

MATERIAL. Tarsometatarsus sin. juv. (180); MNI = 1.

***Perdix perdix* (Linnaeus, 1758)**

MATERIAL. Dist. humerus sin. (1151), dist. tarsometatarsus sin. (211); MNI = 1.

***Coturnix donnezani* (Depéret, 1892)**

MATERIAL. Dist. ulna dex. (1012), dist. tibiotarsus dex. (802), dist. tarsometatarsus sin. (1017); MNI = 1.

REMARKS. This extinct species was widespread in Europe from the early Pliocene till the end of the early Pleistocene (Mlíkovský 2002a.).

***Coturnix coturnix* (Linnaeus, 1758)**

MATERIAL. Coracoid sin. (145); MNI = 1.

Charadriidae***Charadrius morinellus* Linnaeus, 1758**

MATERIAL. Prox. humerus dex. (135); MNI = 1.

cf. *Vanellus vanellus* Linnaeus, 1758

MATERIAL. Dist. humerus dex. (106); MNI = 1.

REMARKS. Jánossy (1972) erroneously attributed these specimens to *Larus ridibundus* Linnaeus, 1766.

Scolopacidae***Gallinago media* (Latham, 1787)**

MATERIAL. Coracoid sin. (286), coracoid dex. (256), tibiotarsus sin. (128), tarsometatarsus dex. (130), dist. tarsometatarsus dex. (147); MNI = 2.

cf. *Tringa* sp.

MATERIAL. Coracoid sin. (285); MNI = 1.

REMARKS. Jánossy (1972) erroneously attributed this specimen to *Limosa limosa* (Linnaeus, 1758). The latter species has no valid record from the Absolon's cave.

Columbidae***Columba palumbus* Linnaeus, 1758**

MATERIAL. Coracoid dex.; MNI = 1.

Strigidae***Glaucidium passerinum* (Linnaeus, 1758)**

MATERIAL. Tarsometatarsus dex. (213); MNI = 1.

***Strix nebulosa* Forster, 1772**

MATERIAL. Dist. tarsometatarsus sin. (2370); MNI = 1.

***Asio otus* (Linnaeus, 1758)**

MATERIAL. Dist. tibiotarsus sin. (1179); MNI = 1.

REMARKS. Jánossy (1972) referred this specimen to his *Strix intermedia*. However, it differs from the same element of the *Strix* species in being smaller, and in having a shallower fossa flexoria.

Apodidae***Apus apus* (Linnaeus, 1758)**

MATERIAL. Dist. ulna sin. (877), 3 carpometacarpus dex. (857, 1013, 1032); MNI = 3.

Corvidae***Nucifraga caryocatactes* (Linnaeus, 1758)**

MATERIAL. Dist. tarsometatarsus sin. (146); MNI = 1.

REMARKS. Jánossy (1972) erroneously assigned this specimen to *Pica pica* (Linnaeus, 1758). The latter species has no valid record from the Absolon's cave.

***Pyrrhocorax graculus* Linnaeus, 1758**

MATERIAL. Dist. humerus sin. (587), prox. ulna dex. (995), prox. carpometacarpus sin. (599), prox. tarsometatarsus sin. (1056), dist. tarsometatarsus sin. (1026); MNI = 2.

***Corvus monedula* Linnaeus, 1758**

MATERIAL. 2 ulnae sin. (32, 118), prox. ulna sin. (1023), ulna dex. (114), dist. ulna

dex. (998), prox. carpometacarpus dex. (1021), dist. tibiotarsus sin. (518), prox. tibiotarsus dex. (1048), dist. tibiotarsus dex. juv. (1003), dist. tarsometatarsus sin. (144); MNI = 1.

REMARKS. Jánossy (1972) erroneously identified two of these specimens (tibiotarsus 1003, tarsometatarsus 144) as belonging to *Pica pica* (Linnaeus, 1758), and two ulnae (998, 1023) as belonging to *Pyrrhocorax graculus* Linnaeus, 1758.

***Corvus corone* Linnaeus, 1758**

MATERIAL. Prox. carpometacarpus dex. (847), dist. femur dex. juv. (1152); MNI = 1.

Table 2. Numbers of main limb bones in selected avian genera. Each genus is represented by a single species (see the text).

Tab. 2. Počet hlavních kostí u vybraných rodů ptáků. Každý z těchto rodů byl zastoupen jediným druhem.

Bone/genus Kost/rod	<i>Tadorna</i>	<i>Mergus</i>	<i>Lagopus</i>	<i>Anas</i>
Coracoid	10	73	7	2
Humerus	10	73	3	5
Ulna	9	52	4	2
Carpometacarpus	9	61	6	–
Femur	5	69	–	–
Tibiotarsus	10	63	–	1
Tarsometatarsus	4	40	2	–
Σ	57	431	22	10

DISCUSSION**Taphonomy**

The relative numbers of preserved long bones (Table 2) and circumstantial evidence indicate, that the bones have accumulated for three reasons:

(1) In *Anas* and *Lagopus*, main wing bones considerably outnumber leg bones (87% vs. 13%), but autopodial, stylopodial and zeugopodial bones are preserved in comparable numbers (35% vs. 30% vs. 35%). This pattern is typical of the diurnal raptors of the families Falconidae

and Accipitridae (see e. g. Mlíkovský 1999). The body size of this prey indicates that the raptor was not too small. Of the few raptors recorded in the Absolon's cave, only the Peregrine Falcon *Falco peregrinus* fits these conditions. It is thus possible that *Falco peregrinus* was responsible for the accumulation of a certain proportion of the bones found in the Absolon's cave, similarly as was the case with the taphocenosis from the Musil's talus cone at Stránská skála (Mlíkovský 1995).

(2) The pattern is different in *Tadorna* and *Mergus*. In these two genera, all main long bones are represented in similar ratios as found in the body (Table 2), which contradicts patterns known in all kinds of avian predators. However, no cranial remains were found. Moreover, the bones are in perfect condition, which indicates that the bones did not pass through the digestive tract of any predator (see e. g. Bocheński & Tomek 1997). The sample of *Mergus* bones shows two additional features, while that of *Tadorna* bones is less informative in this respect. Firstly, all modern *Mergus* species are highly sex-dimorphic in body size, which is well reflected in the size of their bones (Woelfle 1967, Jánossy 1972). Lengths of each bone kind from the *Mergus* sample from the Absolon's cave are unimodal in distribution, and the variance of each sample is very small, the coefficient of variation ranging between 1.6 and 2.8%. This indicates that only one sex was present at Stránská skála, and that the sampled population was highly uniform. This in turn indicates that all *Mergus* bones were assembled in the Absolon's 2nd cave during a very short time period. Summarising this evidence only one explanation for this pattern seems to be plausible: The bones could hardly arrive in the cave unaided, hence a predator had to be involved in their accumu-

lation (coracoids do not outnumber the limb bones, which eliminates the possible effect of water flow – see Korth 1979). The preservation state of the bones and proportions of the limb bones indicate that whole bodies of the carcasses were brought to the cave and then left uneaten. This happened within a short time period (one sex only, and very low variability of bone size in *Mergus connectens*). Perhaps, an epidemic (such as botulism) killed large flocks of *Tadorna tadorna* and *Mergus connectens*. Dying or dead birds were then collected by a canid, such as a *Canis*, *Xenocyon* or *Vulpes* (which were abundant at Stránská skála – Musil 1972b, 1995b), which bit the heads of the birds, and brought the remaining bodies to the cave as stores. Subsequently, the bodies were left uneaten for some reason. Unfortunately, no data are available on the position of avian bones within the Absolon's cave, so that this hypothesis cannot be tested against further data.

(3) Bones of a few species could originate from birds breeding in the cave or in nearby fissures. These species include *Falco* cf. *peregrinus*, *Corvus monedula* and *Pyrhacorax graculus*.

In summary, most of the bones (69% MNI) were probably brought to the site by a canid, while the remainder (up to 31% MNI) originated from the food a large *Falco* species, perhaps *Falco peregrinus*. A minor part of the assemblage (up to 5% MNI) could originate from naturally deceased individuals breeding at the rock.

Ecology

Most of the birds recorded from the Absolon's cave (79% MNI) inhabit open marshes and/or waterbodies, only 8% are dependent on dry ground, and only 9% MNI need trees or shrubs for their existence. This is in good accordance

with ecological requirements of the avifauna recorded in the Musil's talus cone (Mlíkovský 1995).

The abundance of *Lagopus lagopus* is a good indicator for the presence of cold climate (Tyrberg 1991, 1995, Mlíkovský 2002b). In this point, the avifauna from the Absolon's cave agrees with the Čapek's sites at Stránská skála (Jánossy 1972), but differs markedly from all layers in the Musil's talus cone (Mlíkovský 1995). None of the species recorded in the Absolon's cave is typical of warm interglacials. In addition, two of the owl species, *Strix nebulosa* and *Glaucidium passerinum*, are typical of boreal forests. The presence of bones from juvenile individuals indicates that the relevant species bred in the vicinity of Stránská skála. They include *Lagopus lagopus*, *Tetrao tetrix*, *Corvus corone*, and *Corvus monedula*. At the same time, the presence of juvenile bones indicates that a part of the assemblage was accumulated during the breeding season.

Biogeography

All modern species recorded in the Absolon's cave still occur in the western Palearctic (see Hagemeyer & Blair 1997). Only two forms have become extinct: *Mergus connectens* and *Coturnix donnezani* (see Mlíkovský 2002a for their taxonomic treatment). For distributional data of birds in the early Pleistocene of Europe see Tyrberg (1998) and Mlíkovský (2002a).

Paleopathology

None of the bones showed any signs of injuries or pathological changes.

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SOUHRN

Z vykopávek v Absolonově jeskyni ve Stránské skále v České republice bylo získáno 645 určitelných kostí ptáků. Jedná se o raně pleistocenní faunu, která patří do zóny MQ 1b (sensu Mlíkovský 2002b). Avifauna se skládá z 19 rodů a nejméně 24 druhů, které patří do 9 čeledí (viz příloha).

Většina kostí (69 % minimálního počtu jedinců, MPJ) byla pravděpodobně přinesena na místo psovitou šelmou, zbytek (až 31 % MPJ) pochází z potravy velkého sokolovitého ptáka, pravděpodobně sokola stěhovavého *Falco peregrinus*.

Většina ptačích druhů nalezených v Absolonově jeskyni obývá vodní a mokřadní biotopy (79 % MPJ), pouze 8 % druhů je suchozemských a 9 % je vázaných na stromy. Nálezy obsahují některé arktické a boreální prvky (bělokur rousný *Lagopus lagopus*, puštík vousatý *Strix nebulosa*, kulíšek nejmenší *Glaucidium passerinum*), zatímco jižní prvky v ní chybí. Tato skutečnost naznačuje, že se daná avifauna nabromadila v poměrně chladném klimatu. Všechny moderní druhy nalezené v Absolonově jeskyni se dosud vyskytují v západní Paleartidě. Pouze dvě formy vymřely, morčák *Mergus connectens* a křepelka *Coturnix donnezani*.

LITERATURE

- Beaman M. 1994: Palearctic Birds: A Checklist of the Birds of Europe, North Africa and Asia North of the Foothills of the Himalayas. *Harrier Publications, Stonyhurst*.
- Bocheński Z. M. & Tomek T. 1997: Preservation of bird bones: erosion versus digestion by owls. *International Journal of Osteoarchaeology* 7: 372–387.

- Čapek V. 1925: Diluviální fauna od Holubic [A Diluvial fauna from Holubice.] *Časopis Moravského Zemského Musea* 22–23: 159–178. [In Czech.]
- Driesch A. van den 1976: A guide to the measurements of animal bones from archaeological sites. *Peabody Museum Bulletin* 1: 1–127.
- Grayson D. K. 1984: Quantitative Zooarcheology. *Academic Press, Orlando*.
- Guérin C. 1982: Première biozonation du Pléistocène européen, principal résultat biostatigraphique de l'étude des Rhinocerotidae (Mammalia, Perissodactyla) du Miocène terminal au Pléistocène supérieur d'Europe occidentale. *Géobios* 15: 593–598.
- Hagemeijer W. J. M. & Blair M. J. (eds) 1997: Atlas of European Breeding Birds: Their Distribution and Abundance. *T. & A. D. Poyser, London*.
- Horáček I. 1981: Comments on the lithostratigraphic context of the early Pleistocene mammal biozones of Central Europe. In: Quaternary Glaciations in the Northern Hemisphere (IGCP project 73/1/24), Report 6: 99–117. *IGCP, Praha*.
- Horáček I. & Ložek V. 1988: Palaeozoology and the mid-European Quaternary past: scope of the approach and selected results. *Rozprawy Československé Akademie Věd, Řada Matematických a Přírodních Věd* 98 (4): 1–103.
- Jánossy D. 1972: Die mittelpleistozäne Vogel-fauna der Stránská skála. In: Musil R. (ed.): Stránská skála I. *Anthropos (Brno)* 20: 35–64.
- Knies J. 1925: Přehled moravského paleolithu [Review of the Moravian Paleolithic.] *Obzor Praehistorický* 4: 159–178. [In Czech.]
- Korth W. W. 1979: Taphonomy of microvertebrate fossil assemblages. *Annals of the Carnegie Museum* 48: 235–285.
- Mlíkovský J. 1989: Ptáci staršího a středního pleistocénu Československa: současný stav a perspektivy výzkumu [Birds of the early and middle Pleistocene of Czechoslovakia: current state and perspectives of the research]. – In: Seitl L. (ed.): Současný stav a perspektivy výzkumu kvartéru v ČSSR [Current State and Perspectives of the Quaternary Research in the ČSSR]. *Moravské muzeum & Universita J. E. Purkyně, Brno*: 63–67. [In Czech.]
- Mlíkovský J. 1995: Early Pleistocene birds of Stránská skála: 1. Musil's talus cone. In: Musil R. (ed.): Stránská skála Hill: Excavations of open-air sediments 1964–1972. *Anthropos (Brno)* 26: 111–126.
- Mlíkovský J. 1996: Early and middle Pleistocene birds from the Bohemian Karst, Czech Republic. *Acta Societatis Zoologicae Bohemicae* 60: 187–190.
- Mlíkovský J. 1998: Early Pleistocene birds of Deutsch-Altenburg, Austria. *Acta Societatis Zoologicae Bohemicae* 62: 135–141.
- Mlíkovský J. 2002a: Cenozoic Birds of the World. Part 1: Europe. *Ninox Press, Praha*.
- Mlíkovský J. 2002b: Late Cenozoic biostratigraphy of Europe: mammal zones and the fossil record of birds. In: Horáček I. & Mlíkovský J. (eds): Papers in paleomammalogy honoring Oldřich Fejfar. *Lynx* (n. s.) 279–294.
- Musil R. 1965: Aus der Geschichte der Stránská skála. *Acta Musei Moraviae* 50: 75–106.
- Musil R. (ed.) 1972a: Stránská skála I. *Anthropos (Brno)* 20: 1–204.
- Musil R. 1972b: Die Caniden der Stránská skála. In: Musil R. (ed.): Stránská skála I. *Anthropos (Brno)* 20: 107–112.
- Musil R. (ed.) 1995a: Stránská skála hill: excavations of open-air sediments 1964–1972. *Anthropos (Brno)* 26: i–viii, 1–214.
- Musil R. 1995b: Large fauna of talus cones at the Stránská skála Hill. In: Musil R. (ed.): Stránská skála Hill: Excavations of open-air sediments 1964–1972. *Anthropos (Brno)* 26: 65–83.
- Musil R. & Valoch K. 1968: Stránská skála: its meaning for Pleistocene studies. *Current Anthropology* 9: 534–539.
- Tyrberg T. 1991: Arctic, montane and steppe birds as glacial relicts in the West Palearctic. *Ornithologische Verhandlungen* 25: 29–49.
- Tyrberg T. 1995: Palaeobiogeography of the genus *Lagopus* in the West Palearctic. In: Peters D. S. (ed.): Acta palaeornithologica. *Courier Forschungsinstitut Senckenberg* 181: 275–291.
- Tyrberg T. 1998: Pleistocene Birds of the Palearctic: A Catalogue. *Nuttall Ornithological Club, Cambridge, Mass.*
- Woelfle E. 1967: Vergleichend morphologische Untersuchungen an Einzelknochen des

postcranialen Skelettes in Mitteleuropa vorkommender Enten, Halbgänse und Säger. *Unpubl. Diss., Ludwig-Maximilians-Universität München.*

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Appendix. Early Pleistocene birds from the Absolon's cave at Stránská skála. MNI = minimum number of individuals.

Příloha. Raně pleistocenní ptáci z Absolonovy 2. jeskyně ve Stránské skále. MNI = minimální počet jedinců.

Species / <i>druhy</i>	Bones / <i>kosti</i>	MNI	% MNI
<i>Tadorna tadorna</i>	57	8	7.8
<i>Anas querquedula</i>	11	5	4.9
<i>Mergus connectens</i>	506	62	60.2
<i>Falco vespertinus</i>	2	1	1.0
<i>Falco subbuteo</i>	3	1	1.0
<i>Falco</i> cf. <i>peregrinus</i>	1	1	1.0
<i>Lagopus lagopus</i>	22	4	3.9
<i>Tetrao tetrix</i>	1	1	1.0
<i>Perdix perdix</i>	2	1	1.0
<i>Coturnix donnezani</i>	3	1	1.0
<i>Coturnix coturnix</i>	1	1	1.0
cf. <i>Vanellus vanellus</i>	1	1	10.0
<i>Charadrius morinellus</i>	1	1	1.0
<i>Gallinago media</i>	7	2	2.0
cf. <i>Tringa</i> sp.	1	1	1.0
<i>Columba palumbus</i>	1	1	1.0
<i>Glauclidium passerinum</i>	1	1	1.0
<i>Strix nebulosa</i>	1	1	1.0
<i>Asio otus</i>	1	1	1.0
<i>Apus apus</i>	4	3	2.9
<i>Nucifraga caryocatactes</i>	1	1	1.0
<i>Pyrrhocorax graculus</i>	5	2	2.0
<i>Corvus monedula</i>	10	1	1.0
<i>Corvus corone</i>	2	1	1.0
Σ	645	103	100



Další kříženec slavíka obecného (*Luscinia megarhynchos*) se slavíkem tmavým (*Luscinia luscinia*)

Another Nightingale (Luscinia megarhynchos) and Thrush Nightingale (Luscinia luscinia) hybrid found

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Kverek P. 2002: Další kříženec slavíka obecného (*Luscinia megarhynchos*) se slavíkem tmavým (*Luscinia luscinia*). *Sylvia* 38: XX–XX.

V roce 2002 byl na lokalitě Kolomuty (okr. Mladá Boleslav) při kontrole hnízdní populace slavíka obecného odchycen kříženec mezi slavíkem obecným (*Luscinia megarhynchos*) a slavíkem tmavým (*Luscinia luscinia*). Pták vykazoval znaky obou druhů s převahou slavíka tmavého. Samec obhajoval teritorium, na lokalitě byl potvrzen i při následující kontrole, kdy byl znovu odchycen. Hnízdění však nebylo spolehlivě potvrzeno. Uvedené pozorování je dalším dokladem křížence těchto blízce příbuzných druhů slavíků na našem území.

A Nightingale (Luscinia megarhynchos) and Thrush Nightingale (Luscinia luscinia) hybrid was caught in Kolomuty (district of Mladá Boleslav, central Bohemia, Czech Republic) during a check of the local Nightingale breeding population in 2002. The individual showed characters of both species, those of Thrush Nightingale prevailing. The male defended its territory and was recorded at the site also during the following check when it was captured again. However, breeding of the bird has not been proved. The above observation confirms the occurrence of hybrids of the two closely related species in the country.

Keywords: Nightingale, *Luscinia megarhynchos*, Thrush Nightingale *Luscinia luscinia*, hybridisation

Slavík obecný (*Luscinia megarhynchos*) podle Hudce (1983) hnízdil na území bývalého Československa pravidelně a nebyl vzácným v 19. století. Silný úbytek nastal až počátkem 20. století a trval zhruba do jeho poloviny. Pak se znovu začal šířit, běžným se stal v Polabí a Pohoří, hojný je i na jižní Moravě a Ostravsku (Šťastný et al. 1997). Sledovaná po-

pulace v severovýchodní části Mladoboleslavska vykazuje v posledním desetiletí nárůst zhruba o 30 % (Kverek vlastní pozorování).

Slavík tmavý (*Luscinia luscinia*) podle Hudce (1983) hnízdil v bývalé republice pouze v nejvýchodnější části Slovenska. Z východních Čech je uváděn Štanclem (1992) pouze jako protahující