

sexing birds. Robins migrating through the Polish Baltic coast could belong to different populations for which total head length seems to be better sex indicator than recommended tarsus length.

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**SKELETON'S COMPARATIVE MORPHOLOGY OF THE PELVIC GIRDLE AND THE HIND LIMB IN REPRESENTATIVES OF DIFFERENT GROUP OF BIRDS**

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One of the main purpose of morphological researching is to define the adaptation of the animals to specific environmental conditions and find the relations between different groups of birds. The skeleton of the pelvic girdle and the hind limb of birds from different ecological groups have been studied. The pelvic girdle is formed by the fusion of the synsacrum with three paired bones: ilium, ischium, and pubis. The bony framework of the hind limb consists of the femur, tibiotarsus, fibula, tarsometatarsus, and four digits. The structure of these skeleton elements is differ from one species of birds to another. There were taken 3 species of birds for the research: Black Tern *Chlidonias nigra*, Yellow-legged Gull *Larus cachinnans* (Charadriiformes) and Corncrake *C. crex* (Gruiformes). The results of the following research are presented in the table.

The examined species of birds are the representatives of three different groups. The black tern is a typical atmobiont, it usually hunts in the air, walks reluctantly and doesn't swim over the water surface. Thereby, in our point of you, relative indexes of femur's length (Lf, see table), tarsometatarsus (Ltm) and the whole length of hind limb (L) are the least among the explored species. The other features of this bird are the same relative length of preacetabularic to postacetabularic part of ilium (Lpr), but it is necessary to point the high indexes of ventral (bv) and dorsal (bd) pelvic width as well as it's height (hc).

The morphometrical indexes of pelvis, thigh-bone, tibiotarsus, tarsometatarsus (according to truncus)

The bird	Lc	Lpr	bd	bv	hc	Lf	Lt	Ltm	L
Black Tern <i>Chlidonias nigra</i>	76,4	106,3	68,0	94,5	67,3	90,5	62,9	80,9	330,9
Yellow-legged Gull <i>Larus cachinnans</i>	48,3	127,8	42,7	34,6	41,8	114,2	43,4	141,6	486,7
Corncrake <i>C. crex</i>	91,8	140,0	24,5	40,8	36,7	111,1	67,1	102,2	362,2

Corncrake is a typical kserobiont that mostly moves on the ground and obtains food there. It flies heavily and rarely. Undoubtedly, one of the adaptation to such way of life is considerably predominant in preacetabularic part of ilium (Bogdanovich, 1995), with attached muscles, that leads to the lengthening of pelvis (Lc). Also we should notice that corncrake's dorsal, ventral width and height of pelvis are the least, but the tibiotarsus (Lt) is the longest.

Yellow-legged gull, unlike two previous species, is water-fowl, but also is good in flying and skillfully moves on the ground, searching food there (Atamas, 2005). This is the bird without certain specialization and it is characterized by features similar to atmobiontes and kserobiontes, but it also has some peculiarities. In particular, both, the corncrake and yellow-legged gull, have approximately the same ventral width and the height of pelvis, and the relative length of femur. But yellow-legged gull has the longest tarsometatarsus and the whole hind limb, the least length of pelvis and short tibiotarsus.

Thus, the structure of the pelvic girdle and the hind limb in birds is adapted to the existence in certain environmental conditions and obtaining food. The kserobiontes have such features as

predominance in preacetabular part of ilium, ventral and dorsal width of pelvis is narrower, and lengthened femur and tarsometatarsus. The pelvis of atmobiontes is wider and higher, and the tarsometatarsus is shorter. Birds, that can be characterized by the absence of specialization in the methods of moving, have the features of kserobiontes and atmobiontes, and their own specific features.

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**BREEDING SUCCESS OF THE GREAT CORMORANT *PHALACROCORAX CARBO*  
SINENSIS IN COLONY AT KAŹY RYBACKIE (N POLAND)**

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The breeding success of Great Cormorant *Phalacrocorax carbo sinensis* was investigated in the biggest European colony (11500 pairs) at Każy Rybackie (northern Poland). Data was collected in two years (2003 and 2004) in two separated parts of the colony differed from each other. One was located in the old part where birds nests for over fifty years (A), the other is being occupied since 1999 (B). At the beginning of breeding season cormorants start to occupy nests which survived from the previous year and preferred section A. Birds nested in section B had an average lower breeding success in both years than birds nested in section A. Number of chicks observed in nest was 1 to 5, mostly 2 or 3. Breeding success depends on timing of breeding, early breeders have greater number of chicks fledged from the nest than those who start to breed later.

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**AUTUMN MIGRATION DYNAMICS OF THE REDSTART  
(*PHOENICURUS PHOENICURUS*) AT THE POLISH BALTIC COAST**

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Catching results from three Operation Baltic bird ringing stations: Bukowo-Kopań (54°21'N, 16°17'E/ 54°28'N, 16°25'E), Hel (54°21'N, 18°28'E), Mierzeja Wiślana (54°21'N, 19°19'E) located at the Polish Baltic coast were used in this study. Data were collected during autumn migration in years 1961-2004. Pooled migration dynamics of the studied species at each stations was compared. An analysis of 44-years data showed that course of the Redstart passage at all stations was similar. Autumn migration through the Polish Baltic coast lasted from second half of August till the end of October and was the most intense in September. Species migration dynamics showed typical „wave structure” at all stations, as well. According to Remisiewicz and Baumanis (1996) this phenomenon could be the basis for defining the groups of birds, which differed probably in the origin or chosen migration routes. However the Redstart migration at the Polish Baltic coast was too concentrated and defining separate groups of birds was very difficult. Therefore proposed division into migration waves will be also verified by detailed analyses of ringing recovery data (e.g. recovery dates), biometrical data and directional preferences of migrating Redstarts tested in the Busse's orientation cage.