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DISTRIBUTION OF *Ablepharus kitaibelii fitzingeri* MERTENS, 1952 (SQUAMATA: SCINCIDAE) IN HUNGARY

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Ablepharus kitaibelii fitzingeri is the northernmost subspecies of the snake-eyed skink (the only representative of the genus in Europe), and an endemic species of the Carpathian Basin. Despite of its unique status in the Hungarian herpetofauna and its strict protection, no recent summary has been provided on its distribution in the country. In the last attempt, Dely (1978) presented 40 localities of the subspecies. Here we give an updated distribution of the subspecies (100 localities), based on records from the literature, collection of the Hungarian Natural History Museum (HNHM), field surveys made by the authors and observations of field researchers. The current conservation status of *A. k. fitzingeri* in Hungary is discussed and an updated distribution map is provided.

Keywords: *Ablepharus kitaibelii fitzingeri*, snake-eyed skink, Hungary, distribution.

INTRODUCTION

Ablepharus kitaibelii Bibron & Bory, 1833 is the only representative of the genus in Europe, and the northernmost European member of the lizard family Scincidae. *Ablepharus kitaibelii fitzingeri* Mertens, 1952 is characteristic to the Carpathian Basin. It occurs in Hungary, in the southern part of Slovakia and in the northern part of Serbia (Fuhn, 1969; Gruber, 1981; Gasc et al., 1997; Ljubisavljevic et al., 2002). The A. kitaibelii group occurs mainly in the Mediterranean area, while *A. k. fitzingeri* occupies the northern range of the species' distribution range (Mertens, 1952; Gruber, 1981). In accordance with this, *A. k. fitzingeri* is protected by the nature conservation law in Hungary since 1974.

This subspecies inhabits a high variety of habitats, which can be grouped according to their rock basement and soil types: sandstone (e.g., Somlyó Hill at Fót), dolomite and limestone (e.g., Buda Hills), andezite (e.g., Cserhát), volcanic gabbro (e.g., Bükk), basalt (e.g., Balaton Uplands), or even sand (e.g., Kiskunság). The Hungarian localities represent three main regions: (1) the Transdanubian Mountains, (2) the North Hungarian Mountains, and (3) the Great Hungarian Lowland (Fig. 1).

The current conservation status and ecology of *A. k. fitzingeri* are poorly evaluated, as most of the previous studies dealt only with its distribution (e.g., Fitzinger, 1829; Lendl, 1899; Fejérváry, 1912, 1917, 1925; Bolkay, 1914; Méhely, 1918; Fejérváry-Lángh, 1943; Szunyoghy, 1954; Varga, 1975; Dely, 1978; Solti and Varga, 1988; Gubányi, 1999). Due to its peculiar position in the Central European herpetofauna, Dely (1978) made the latest attempt to summarise its known localities in Hungary. The majority of the observations summarised by him were dated from the first part of the 20th century.

Our aim was to collect together all the records from the literature, data from the collection of the Hungarian Natural History Museum (HNHM), data from our field surveys and records of field researchers with reliable knowledge of *A. k. fitzingeri*. Remarks on the current conservation status of *A. k. fitzingeri* are also provided, and an updated distribution map is drawn.

RESULTS

All known locality records of *A. k. fitzingeri* have been listed according to the three regions identified above. The accuracy of the locality data depended on the

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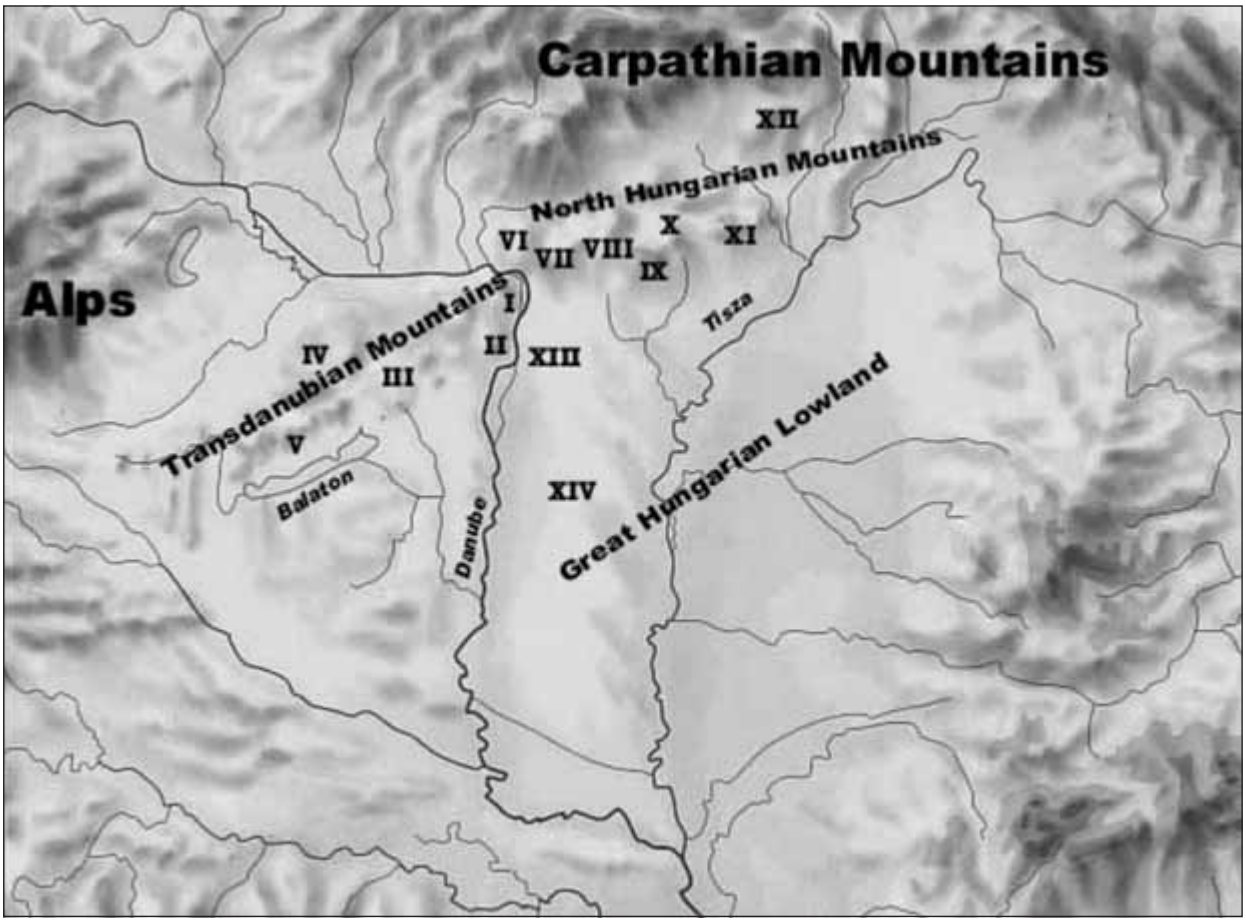

Fig. 1. The main regions and areas of Hungary mentioned in the present study. For the areas represented with roman numbers in the map see *Results*.

available information. Parts of the locality names (geological formations, geographic categories) are translated from Hungarian into English. Nearest settlement (municipality) is given in front of the locality name. Source and date of records are referred to in parentheses. The records prior and after 1980 are compared in the context of Hungary (Fig. 2) and Budapest (Fig. 3).

The Transdanubian Mountains

I. Pilis-Visegrád Hills

Visegrád: Nagyvillám (Fejérváry-Lángh, 1943; Szabó, 1956; Dely, 1978; Janata pers. obs., 2000)

Dömös: Prépost Hill (Szövényi pers. obs., 2003)

Dömös: Lukács Valley (Szövényi pers. obs., 2003)

Esztergom: Nagy-Strázsa Hill (Janata pers. obs., 2002)

Szentendre: Sas Cliff (Szabó, 1956; Dely, 1978; Janata pers. obs., 2002)

Pomáz: Mesélő Hill (Janata pers. obs., 1992)

Pomáz: Kis-Csikóvár (Koncz pers. obs., 2001)

Leányfalu: Nyerges Hill (HNHM 1954; Szabó, 1956; Dely, 1978)

II. The western part of Budapest and its vicinity

Solymár: Kálvária Hill (Hornung pers. obs., 2003)

Budapest: Csúcs Hill (Fejérváry-Lángh, 1943; Dely, 1978)

Budapest: Hármashatár Hill (Fejérváry, 1912; Dely, 1978; Siklósi pers. obs., 2002)

Budapest: Újlaki Hill (Siklósi pers. obs., 2002)

Budapest: Mátyás Hill (Fejérváry, 1912, 1917; Méhely, 1918; Fejérváry-Lángh, 1943: Dely, 1978; Tóth, 2002; Halász pers. obs., 2002)

Budapest: Látó Hill (HNHM 1972; Dely, 1978)

Budapest: Hűvösvölgy (Fejérváry, 1912; Dely, 1978)

Budapest: Zugliget (Fejérváry, 1912; Dely, 1978)

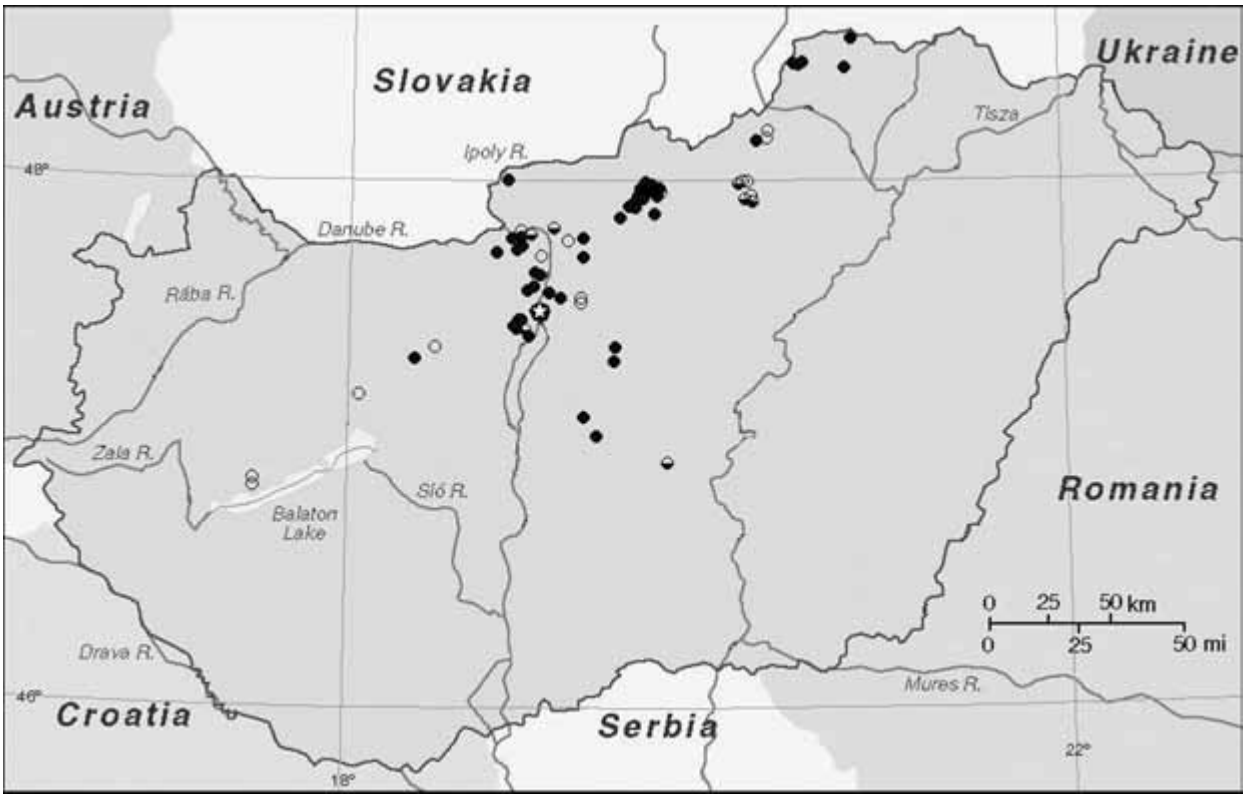

Fig. 2. Locality records of *A. k. fitzingeri* in Hungary prior (opened circles) and after 1980 (filled circles). Localities proven prior and after 1980 either are represented with half-filled circles. The sign star represents the area of Budapest.

Budapest: Rózsadomb (Dely, 1978; Fejérváry-Lángh, 1943)

Budapest: Vár Hill (Fejérváry, 1912, 1917; Fejérváry-Lángh, 1943; Dely, 1978)

Budapest: Márton Hill (Fejérváry, 1917; Dely, 1978)

Budapest: Sváb Hill (Fejérváry, 1912, 1917; Fejérváry-Lángh, 1943; Dely, 1978)

Budapest: Farkas Valley (Fejérváry, 1912, 1917; Fejérváry-Lángh, 1943; Dely, 1978)

Budapest: Sas Hill (Fejérváry, 1912, 1917; Méhely, 1918; Fejérváry-Lángh, 1943; Dely, 1978; Herczeg pers. obs., 1998 – 2003)

Budapest: Gellért Hill (Fejérváry, 1912, 1917; Méhely, 1918; Fejérváry-Lángh, 1943; Dely, 1978)

Budapest: Rupp Hill (Siklósi pers. obs., 2002)

Budapest: Kamaraerdő-Török Stone (Fejérváry, 1912, 1917; Fejérváry-Lángh, 1943; Dely, 1978)

Budapest: Budafok (Méhely, 1918; Fejérváry-Lángh, 1943; Dely, 1978)

Diósd: (Fejérváry-Lángh, 1943; Dely, 1978)

Budaörs: Csiki Hills (Fejérváry-Lángh, 1943; Dely, 1978)

Budaörs: Odvas Hill (HNHM 1988; Tóth pers. obs., 1998)

Budaörs: Schreiber Berg (= Hill) (Tóth pers. obs., 1998)

Budaörs: Farkas Hill (Tóth pers. obs., 1998)

Budaörs: Kecske Hill (Siklósi pers. obs., 2002)

Budaörs: Törökugrató (HNHM 1988; Herczeg and Varga pers. obs., 2001)

Törökbálint: Huszonnégyökrös Hill (HNHM 1957; Dely, 1978)

Törökbálint: Tétényi Plateau (Szövényi pers. obs., 1995, 2000)

Érd: (Halász pers. obs., 2000)

III – V. Vértes Hills, Bakony Mts., and Balaton Uplands

Csákvár (Fejérváry-Lángh, 1943; Szunyoghy, 1954; Dely, 1978)

Csákberény (Péchy pers. obs., 1990)

Várpalota (Fejérváry-Lángh, 1943; Szunyoghy, 1954; Dely, 1978)

Tapolca: Szentgyörgy Hill (Méhely, 1897, 1918; Fejérváry, 1912, 1917; Szunyoghy, 1954; Dely, 1978)

Fig. 3. Distribution of *A. k. fitzingeri* in Budapest prior (opened circles) and after 1980 (filled circles). Localities proven prior and after 1980 either are represented with half-filled circles.

The North Hungarian Mountains

VI. Börzsöny

Kemence: (Péchy pers. obs., 1990)

Nagymaros: Rigó Hill (Szabó, 1960)

Nagymaros: Dömös Crossing ferry harbour (Zörényi pers. obs., 1992)

Nagymaros: Ördög Hill (Szövényi pers. obs., 2002, 2003)

Nagymaros: Szentmihály Hill (Szövényi pers. obs., 2002, 2003)

VII. Western Cserhát

Csővár: Vár Hill (Kun et al., 2000)

Penc (Fejérváry, 1917; Fejérváry-Lángh, 1943)

Püspökszilágy: Nagy-Szór (Rottenhoffer pers. obs. 2002)

Vác: Naszály (Fejérváry, 1917; Fejérváry-Lángh, 1943; Szunyoghy, 1954; HNHM 1962; Dely, 1978; Korsós pers. obs., 2000, Herczeg pers. obs., 2001; Császár and Herczeg pers. obs., 2002)

VIII. Eastern Cserhát

Buják: Csirke Hill (Harmos and Herczeg, 2003)

Cserhátszentiván: Bézma (Harmos and Herczeg, 2003)

Ecseg: Erős Side (Harmos and Herczeg, 2003)

Ecseg: Közép Hill (Harmos and Herczeg, 2003)

Ecseg: Bézma (Harmos and Herczeg, 2003)

Kozárd: Pogányvár (Harmos and Herczeg, 2003)

Kozárd: Majorsági Hill (Harmos and Herczeg, 2003)

Kozárd: Kerekbükk — Macska Hill (Varga, 1975; Dely, 1978)

Kozárd: Barát Hill (Dely, 1978; Varga, 1975; Solti and Varga, 1988)

Mátraszőlős: Magasverő (Harmos and Herczeg, 2003)

Mátraszőlős: Mészkőbánya (Harmos and Herczeg, 2003)

Mátraszőlős: Külső-Tepke (Harmos and Herczeg, 2003)

Mátraszőlős: Tepke (Varga, 1975; Dely, 1978; Harmos and Herczeg, 2003)

Mátraszőlős: Kőkapu Hill (Harmos and Herczeg, 2003)

Mátraszőlős: Purga Hill (Harmos and Herczeg, 2003)

Mátraszőlős: Kacsan Hill (Harmos and Herczeg, 2003)

Mátraszőlős: Kis-Függő Stone (Varga, 1975; Dely, 1978)

Mátraverebély: Meszes Plateau (Harmos and Herczeg, 2003)

Sámsonháza: Brezina (Harmos and Herczeg, 2003)

Sámsonháza: Csűd Hill (Harmos and Herczeg, 2003)

Pásztó: Pogányvár – Barát Hill (Dudás pers. obs., 1999)

Pásztó: Harangoskút (Dely, 1978)

IX. Mátra Mts.

Tar: Farkaslyuk Plateau (Dely, 1978; Harmos and Herczeg, 2003)

Tar: Cakó Peak (Harmos and Herczeg, 2003)

Tar: Kőerdő Plateau (Dely, 1978)

Apc: Somlyó (Mester, 1995)

X. Heves-Borsod Hills

Bánszállás (Lukács, 1956)

Ózd – Kajla region (Lukács, 1956)

Járdánháza: Papp Hill (Murányi pers. obs., 1999)

XI. Bükk Mts.

Eger: Kis Eged Hill (Fejérváry, 1912, 1917; Méhely, 1918; Szunyoghy, 1954; Dely, 1978)

Eger: Nagy Eged Hill (Lukács, 1956; Murányi pers. obs., 2000)

Eger: Eged (HNHM 1902; Solti and Varga, 1988)

Szarvaskő (Murányi pers. obs., 2002)

Szarvaskő: Malom Hill (HNHM 1984; Lukács, 1956)

Szarvaskő: Újhatár Valley (Lukács, 1956)

XII. Aggtelek Karst

Aggtelek: Baradla Plateau (Korsós pers. obs., 1989; Gubányi, 1999)

Aggtelek: Baradla Valley (Korsós pers. obs., 1989; Gubányi, 1999)

Aggtelek: Tó Hill (Korsós pers. obs., 1989; Gubányi, 1999)

Tornanádaska: Bódva stream (Korsós pers. obs., 1989; Gubányi, 1999)

Szalonna: Pozsga Side (Korsós pers. obs., 1989; Gubányi, 1999)

The Great Hungarian Lowland

XIII. The southern part of Budapest and its vicinity to the east

Budapest: Pestszentlőrinc (HNHM 1969)

Budapest: Városliget (Fejérváry, 1912, 1917; Szunyoghy, 1954; Dely, 1978)

Gödöllő (Fejérváry, 1917; Fejérváry-Lángh, 1943; Szunyoghy, 1954; Dely, 1978)

Isaszeg (Fejérváry, 1917; Fejérváry-Lángh, 1943; Szunyoghy, 1954; Dely, 1978)

Fót: Somlyó Hill (Korsós pers. obs., 1980; Csáky pers. obs., 2000; Szénási pers. obs., 2001)

Dunakeszi and Káposztásmegyer (Korsós pers. obs., 1991)

Albertirsa: Golyófogó Valley (Csáky pers. obs., 1996)

Pánd: Lösz-kopár (Vidra pers. obs., 2003)

XIV. Kiskunság

Kunpeszér (Máté pers. obs., 2001)

Kunadacs (Máté pers. obs., 2001)

Kecskemét: Kohányszentlőrinc Forest (= Nyárlőrinc; Szunyoghy, 1954; Dely, 1978; Bankovics, 1979; HNHM 1980, 1982, 1983).

DISCUSSION

The distribution pattern along the Transdanubian Mountans is highly varied between its different parts (Fig. 2). In the easternmost Pilis–Visegrád Hills most localities described before 1980 were confirmed in the last decade, but since then several new localities were also found, and more can be expected. In the western part of Budapest (Buda, on the west side of the river Danube) and its vicinity the situation is completely different. Many populations described before 1980 from the residential area of Budapest disappeared (e.g., Zugliget, Hűvösvölgy, Rózsadomb, Vár Hill, Gellért Hill, Sváb Hill, Márton Hill), due to the expansion of the city (Fig. 3); while others are under strong human pressure and probably will become extinct in the immediate future. The only exception could be the Sas Hill where as a result of the landscape protection a vital population of *A. k. fitzingeri* has been proved to survive (Herczeg et al., unpublished data). In addition, the presence of *Coluber* (Hierophis) caspius was also proved here (Herczeg et al., 2002; Tóth, 2002). In the Buda Hills many populations exist, but the effects of urbanization cause continuous decline of these populations, similar to *C.* (*H.*) *caspius* (Tóth 2002).

Vértes Hills, Bakony Mts. and Balaton Uplands were well known habitats of the subspecies in the past centuries (Fig. 2). Furthermore, Kitaibel described *A. kitaibelii* from here (Vértes Hill: Csákvár, Bakony Mts.: Várpalota) with the name *Lacerta nitida* in his unpublished travel notes in 1797 (Jávorka, 1952). The referred occurrences of *A. k. fitzingeri* in Szentgyörgy Hill (Méhely, 1897, 1918; Fejérváry, 1912, 1917; Szunyoghy, 1954; Dely, 1978) are all based on the single observation by Tömösváry in 1881. Even in the comprehensive herpetofaunistic work on the Bakony Region (Marián, 1988) and in the inventory of the fauna of the Vértes Region (Béni and Viszló, 1996) records of *A. k. fitzingeri* are completely lacking. The locality "Balatonszentgyörgy" (Gruber, 1981) most probably originated from a confusion and merging of the names Lake Balaton and Szentgyörgy Hill written by Fejérváry (1917). Only a single recent data is available from this region, the observation of Tamás Péchy from Csákberény. A monitoring project with a primary focus on *A. k. fitzingeri* would be important in the area.

In the North Hungarian Mountains the populations seem to be more stable (Fig. 2), as most of the localities are protected by law. Several new populations are expected to be discovered in this region as numerous of those were found just in the last few years (Harmos and Herczeg, 2003).

The history of the populations in the Great Hungarian Lowland is different. Populations described from the eastern part of Budapest (Pest) have become extinct (Pestszentlőrinc; Városliget; Fig. 3) due to the expansion of the city, while others in the Kiskunság are under strict landscape protection already, thus they seem to be stable (Fig. 2). Like in the case of the Northern Middle Range, here too, new reports can be expected. New observations were published without detailed information even in the last decade (Janisch, 1993).

CONCLUSIONS

We provide an updated list of 100 locality records for *A. k. fitzingeri* of as opposed to the 40 localities provided in the last paper summarising the known locality records of the subspecies by Dely (1978). Based on the differences among proved data from the time prior and after 1980 (Figs. 2 and 3) it is clear that many populations became extinct in the last few decades, while several new localities have been described. Thus, direct monitoring projects are necessary, as the known and protected *A. k. fitzingeri* populations seems to be stable, while the others are declining. Unknown populations can become extinct even without noticing that fact.

Based on our field surveys the following effects were found actually threatening the Hungarian populations: (1) dispersion of invasive or introduced allochthone plant species (e.g., *Syringa vulgaris*, *Ailanthus altissima*, *Robinia pseudoacacia*, or *Pinus nigra*), (2) housing of habitats, as a result of the urban expansion (many populations disappeared from the residential area of Budapest, and the population of Budaörs, Törökugrató are going to be extinct most probably in the immediate future), (3) predation by feral cats and dogs, (4) erosion caused by human activities (in extreme cases with illegal motocrossing) or the introduced *Ovis ammon*, (5) mining (Varga, 1975), (6) grassfires, and (7) disturbance caused by general human presence (Herczeg and Korsós, 2003). Despite of the unique status of the subspecies and the strict protection, its actual conservation status can be evaluated only by the quality of its known habitats (Korsós, 1994). With respect to the endemic status of *A. k. fitzingeri* in the Carpathian Basin and its strict protection, direct conservation biology surveys seems to be urgent to clarify its real conservation situation.

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