

On the systematical position of the hedgehogs of genus *Erinaceus* (Insectivora, Mammalia) in Daraa (South of Syria)

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ABSTRACT

In 1964, Harrison talked about the spread of *Erinaceus europaeus* in Europe.

Recently, studies have shown the existence of two species of hedgehogs which are found in Europe and they belong to the genus *Erinaceus*. They are as follows:

1- *E. europaeus* L.1758, and they are found in the West of Europe.

2- *E. concolor* M.1838, and they are found in the East of Europe.

The study has been done on 19 features of the skulls (10 males, 9 females) which were collected from the South of Syria. We applied the biometrical measurements according to the method (Miller, 1912). The most important dimensions he used in the biometrical measurements are: (Nas I, MndI, mI). This is according to the method of (Pucek1981), the skulls of the (*E. concolor*) have higher values.

The results showed that the Syrian skulls are lower and shorter. So, we can classify the hedgehogs in both Syria and Bulgaria from one genus called *E.concolor* and the differences in the nasal index NasI are not important.

We Conclude:

1-The Hedgehogs in Syria, Near East area, Arab area and Asia Minor all belong to the (*E.concolor* Martin).

2-The hedgehogs found in the Asia Minor and the Arab area belong to the genus (*E. concolor*).

Keywords: *Erinaceus europaeus*, *Erinaceus concolor*, hedgehogs, systematical position, Insectivora, Mammalia, Daraa.

الموقع التصنيفي للقنفاذ من جنس Erinaceus (آكلات الحشرات – الثدييات) في درعا (جنوب سورية)

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الملخص

ينتمي جنس القنفاذ إلى آكلات الحشرات الثديية. في عام 1964 تحدث العالم (Harrison) عن انتشار القنفاذ *Erinaceus europaeus* في أوروبا. وحديثاً أظهرت الدراسات وجود نوعين من القنفاذ المنتشرة في أوروبا وهي تنتمي للجنس (*Erinaceus*) هما:

أ – *E. europaeus* L.1958 وتنتشر أفرادها في غرب أوروبا.

ب – *E. Concolor* M.1838 وتنتشر أفرادها في شرق أوروبا.

أجريت الدراسة على 19 عينة من الجماجم منها 10 جماجم لذكور و9 جماجم لإناث جمعت من جنوب سورية. طبقنا عليها القياسات البيومترية بحسب طريقة (Miller, 1912) وأهم الأبعاد التي يعتمد عليها في القياسات البيومترية هي (MI, MndI, NasI) بحسبما جاء بطريقة (pucek 1981). إن جماجم *E.concolor* الأوروبية ذات قيم عالية. وأظهرت النتائج أن جماجم النمادج السورية أصغر حجماً وأقصر طولاً. لذلك فإنه يمكن تصنيف القنفاذ في سورية وبلغاريا بأنها من نوع واحد هو (*E. Conclor*) وإن الخلافات في أبعاد الأنف (Nas I) بينهما ليست ذات أهمية؛ وبذلك نستنتج:

1- إن القنفاذ السورية ومنطقة الشرق الأدنى والمنطقة العربية وآسية الصغرى جميعها تنتمي إلى النوع *E.conclorMartin*.

2- إن القنفاذ المنتشرة في آسية الصغرى والمنطقة العربية تنتمي إلى النوع *E.conclor*.

الكلمات المفتاحية: القنفاذ الأوروبي، القنفاذ الشرقي، القنفاذ، الموقع التصنيفي، آكلات الحشرات، الثدييات، درعا.

أبعاد الجماجم: 1- (MI) عامل الدماغ 2 - (MndI) عامل الفك 3- (Nas I) عامل الأنف.

Introduction

In one of the works on the mammals of Arabia is accepted, that in this part of the world the species *Erinaceus europaeus concolor* (Harrison, 1964) is found.

It was recently established, that in Europe two species of hedgehogs exist, belonging to genus *Erinaceus* - *E. europaeus* L., 1758, inhabiting West Europe and *E. concolor* M. 1838, found in eastern Europe (Herter, 1938, 1952). The craniological and karyological study indisputably confirmed the existence of the two species (Kral 1967; Gropp, 1969; Ruprecht, 1972; Markov & Dobryanov, 1974; Krystufec, 1983).

The present work aims to make a more detailed characteristic of these species of hedgehogs in the Near East too.

Material and methods

19 skulls (10 males and 9 females) coming from the region of Daraa town in Syria were measured. The skull features were taken after Miller (1912). We joined the skull measurements made by Harrison (1964) for the hedgehogs, collected in neighboring countries. We accept all the material as coming from the Near East. The values of the skull features of the Bulgarian population (as nearest country to the Near East) and this, coming from the Near East, were compared by biometrical methods. From Bulgaria 98 skulls were measured totally, offered by the Institute of Zoology, Sofia. The MI, Mnd. I. and the Nas. I. were measured after Pucek (1981).

Results and discussion

Harrison (1964) recognized distinct taxonomic position of the eastern hedgehogs, but giving them subspecific level only. So we must not conclude, that earlier forms classified as *E.e. concolor* and *E.e. europaeus* are the same, but that they were recognized as different. So we can accept *E.e. concolor* as synonym of *E. concolor*.

Due to the lack of any data about the karyological status of the hedgehogs from the Near East, we will try to discuss its specific affiliation on the base of its craniological peculiarities. The maxillar index (MI), mandibular index (Mnd. I.) and the nasal index (Nas. I) are regarded as the most reliable features for divining of the European hedgehogs (Pucek, 1981).

Sex dimorphism between the sexes in both populations from the Near East and Bulgaria was not established, so the comparison of their biometrical features is given together for both sexes (table 1). Except zygomatic breadth the difference between the two populations is considerable by most of the characters. It is sensitive, that the features of *E. concolor* from Bulgaria have higher values. It is impressive, that the mean values of the measured widths are nearly equal in both of the

populations, while the lengths have higher mean values in the population from Bulgaria in most cases (1,4,5,6,8,10). The platinum height from M3 is nearly equal. The data show, that the Syrian population is distinguished by comparatively shorter and smaller skulls. Most probable this could be explained by the fact, that the majority of the skulls from Bulgaria belong to inhabiting higher places hedgehogs.

Table(1) End variants and biometrical skull features of the species from genus *Erinaceus* from the Near East and Bulgaria.

Feature	Locality	n	Lim.	M ₊ m	S.D	C.V.	T	Difference
1.	Near East	28	51.0-59.2	55.4 ₊ +0.41	2.17	3.95		
	Bulgaria	95	52.8-65.4	59.0 ₊ +0.24	2.85	3.98		7.62 p 0.999
2.	Near East	29	30.0-37.1	34.5 ₊ +0.28	1.51	4.38		
	Bulgaria	97	32.0-40.4	34.8 ₊ +0.56	5.52	15.85		0.50 Incon- siderable
3.	Near East	31	13.1-15.8	14.3 ₊ +0.11	0.59	4.15		
	Bulgaria	75	13.0-17.0	15.0 ₊ +0.10	0.90	5.98		4.93 p0.999
4.	Near East	32	23.0-29.0	27.6 ₊ 0.25	1.42	5.14		
	Bulgaria	80	24.0-34.2	30.1 ₊ +0.18	1.57	5.23		8.33 p0.999
5.	Near East	32	21.4-27.0	24.0 ₊ +0.28	1.61	6.71		
	Bulgaria	80	23.0-29.0	25.0 ₊ +0.15	1.37	5.47		3.28 p0.999
6.	Near East	19	11.5-18.1	12.2 ₊ +0.13	0.56	4.59		
	Bulgaria	71	12.0-15.0	13.6 ₊ +0.08	0.72	5.32		8.44 p0.999
7.	Near East	19	26.0-30.1	28.3 ₊ +0.25	1.10	3.87		
	Bulgaria	72	23.0-35.0	29.4 ₊ +0.21	1.82	6.18		3.23 p0.999
8.	Near East	19	15.8-20.5	18.0 ₊ +0.28	1.22	6.30		
	Bulgaria	71	17.0-23.6	18.8 ₊ +0.17	1.43	7.5		2.45 p0.999
9.	Near East	19	15.9-18.2	17.1 ₊ +0.14	0.61	3.56		
	Bulgaria	81	14.6-20.0	17.8 ₊ +0.12	1.06	5.92		3.60 p0.999
10.	Near East	19	40.0-45.3	41.9 ₊ +0.35	1.52	3.62		
	Bulgaria	81	41.0-48.4	44.4 ₊ 0.20	1.85	4.17		6.41 p0.999

1. condylobasal length, 2. Zygomatic breadth, 3. interorbital breadth, 4. maxillary tooth row, 5. mandibular tooth row, rostral breadth, 6. Rostral breadth, 7. Mastoid breadth, 8. Length of nasalia, 9. height of the palatinum from M3, 10. mandibular length.

The results show, that the two populations cannot be, in any case, referred to one and the same subspecies. For East Europe *E. concolor roumanicus* (Krystufek, 1983; Peshv in print) is accepted while for Asia Minor and Arabia this is *E.c. concolor* Martin.

The meanings of the skull indexes are given in table (2). It is striking that the difference between the values of the Bulgarian

material of all of them exceed 1.0, which classifies them as *E. concolor*. 78.9% of the Syrian hedgehogs have MI 1.0 (15 skulls have MI 1.0; 2 skulls have MI=1.0 and 2 skulls have MI1.0). By this feature the Syrian population should be classified as *E. europaeus*, but this is not very probable. Ruprcht (1972) points out the unreliability of the MI for the differentiation of the two species, but never the less he accepts it and offers as more reliable the Mnd .I. and the Nas. I. According to Pucek (1981) *E.europaeus* have values of Mnd.I. higher than 77.0, while for *E. concolor* they are lower than 77.0. The values of the Mnd .I. for the two populations (Syria and Bulgaria) are 100% lower than 77.0, despite the slight difference between them. The hedgehogs from Syria and Bulgaria can be indisputably classified as one and of the same species (*E. concolor*) by this feature. The differences in the values of the Nas.1. are not considerable too, and confirm the above statement.

Table (2) End variants and biometrical feature of the skull indexes and comparison of the differences between the hedgehogs from Syria and Bulgaria.

Locality	Index	n	Lim.	M _{±m}	S.D.	C.V.	t	Difference
Syria	MI	19	0.65-1.07	0.88U ± 0.03	0.12	13.59	10.33	P0.999
Bulgaria		98	1.00-1.56	1.19 ± 0.01	0.12	10.50		
Syria	Mnd.I.	19	64.48-72.63	69.6 ± 0.50	2.18	3.13	2.08	P inconsiderable
Bulgaria		98	45.38-73.11	88.4 ± 0.33	3.11	4.70		
Syria	Nas.1.	19	4.70-9.30	6.00 ± 0.23	1.01	16.84	0.84	p inconsiderable
Bulgaria		98	4.12-9.90	5.69 ± 0.10	0.97	17.10		

From the obtained results we can make the following conclusions:

1-The hedgehogs, inhabiting Syria and probably Asia Minor, the Near East and Arabia belong to the species *E.concolor* Martin.

2-The differentiation of the hedgehogs from Bulgaria (most probably East Europe) from those, coming from Asia Minor and Arabia is obvious. The population inhabiting Asia Minor and Arabia belongs to the nominal from-*E. concolor* M., as terra typical comes from Trebizond, Asia Minor (Ellerman & Morrison-Scott,1951), while the population inhabiting East, Europe belongs to the subspecies *E. concolor roumanicus* Barr .- Ham.

Some further karyological and biometrical studies would be very useful, which, we hope, will confirm the present statement.

1-(E.): Erinaceus. 2-Erinaceus curopacus. 3-Erinaceus concolor. 4-(MI)Muxillar index-5-(Mnd)Mendi bular index-6-(NasI)Nasal Index.

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