Russian Journal of Herpetology Vol. 18, No. 4, 2011, pp. 295 – 316

Authors dedicate this article to the memory of great scientist Louis A. Lantz (1886 – 1953), whose 125-year anniversary we celebrate this year

SYSTEMATIC AND GEOGRAPHICAL VARIABILITY OF MEADOW LIZARD, *Darevskia praticola* (REPTILIA: SAURIA) IN THE CAUCASUS

Sako B. Tuniyev,[1] Igor A. Doronin,[2] Artem A. Kidov,[3] and Boris S. Tuniyev[1]

Submitted May 7, 2011

The compicated history of the intraspecific taxonomy of meadow lizard, *Darevskia praticola* sensu lato is considered and the species' geographical variability in Caucasian Isthmus is analyzed. It was confirmed the species status of *Darevskia praticola* sensu stricto and *Darevskia pontica*. Lectotype of *Darevskia pontica* was assigned and described; the known paralectotypes of *D. pontica* are noted. Description of the new subspecies *Darevskia praticola hyrcanica* ssp. nov. is given from the Talysh foothills and Elbrus range (Azerbaijan, Iran). The possible patters of speciation and distribution of closely related species *Darevskia praticola* sensu stricto and *Darevskia pontica* within the Caucasus and the Balkans are discussed.

Keywords: the Caucasus; *Darevskia praticola* sensu lato; geographical variability; lectotype *Darevskia pontica* sensu stricto; *Darevskia praticola hyrcanica* ssp. nov.

INTRODUCTION

From the moment of description of meadow lizard, *Darevskia praticola* (Eversmann, 1834) its intraspecific division was based on two diagnostic characters — a number of pairs of chin shields and a number of their contiguous pairs. For a nominative form 5 pairs of chin shields were noted and among them 2 pairs form a median suture, while in *Darevskia praticola pontica* (Lantz and Cyrén, 1919) among 6 pairs of chin shields 3 pairs form a median suture. Statement about two subspecies is common, despite of the known overlapping of their ranges in the Stavropol Territory and presence of vast disjunctive parts, far remote from a main distribution range in the Caucasus (in southeast — Talysh and west — in Balkans). Sobolevsky (1930) described *Darevskia praticola hungarcia* from Mekhadia in Transylvanian Alps, being at that time in Hungary (now Romania), but the most herpetologists have considered the Balkan specimens as conspecific with *Darevskia praticola pontica* (Mertens and Wermuth, 1960; Fuhn and Vancea, 1961; Bannikov et al., 1977; Orlova, 1975, 1978; Ananjeva et al., 2006). It was not accepted opinion of Tertyshnikov (Tertyshnikov and Gorovaya, 1998; Tertyshnikov, 2002) about specific status of *Darevskia praticola* and *Darevskia pontica*. It is necessary to specify that previous researchers had limited available material from Talysh. New materials, collected by Kidov in Talysh, as well as description of modern pattern of distribution of this species (Kidov et al., 2009; Kidov, 2010) was allowed, along with additional study of collections to revise its variability and taxonomic position of populations from Black Sea and Caspian Sea basins.

[1] Federal State Institution Sochi National Park, Sochi, Russia, e-mail: tuniev1@mail.ru

[2] Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia, e-mail: ivdoronin@mail.ru

[3] K. A. Timiryazev Moscow Agricultural Academy, Moscow, Russia.

MATERIAL AND METHODS

A total of 130 specimens were studied. In statistical and canonical analyses information is used for to 116 adult specimens from the different localities in Russia within the Krasnodar Kray, Stavropol Kray, Republic of Adygea, Karachay-Cherkessia, also from Azerbaijan, Georgia, and Armenia (Fig. 1). Material is stored in herpetological collection of the Sochi National Park (SNP)

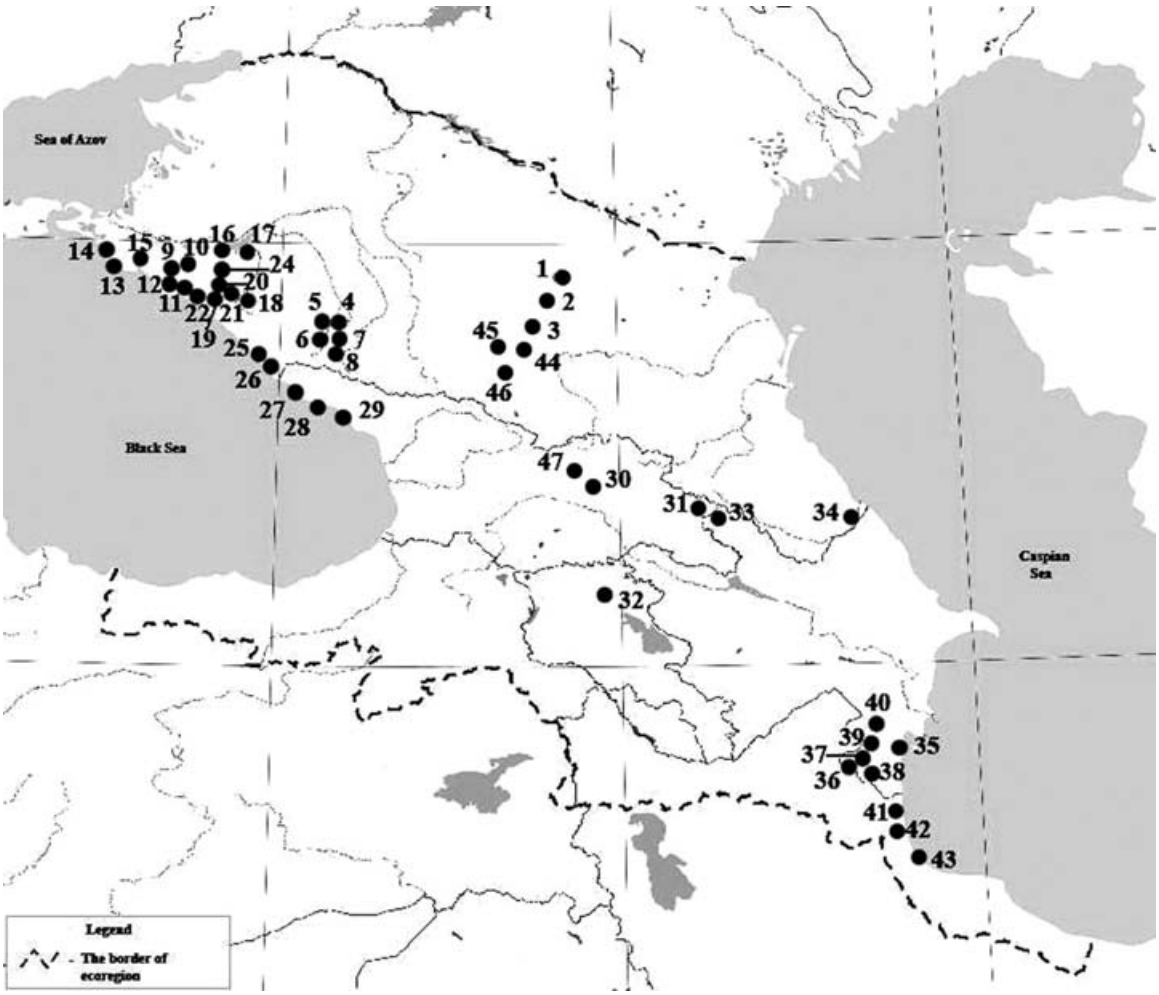

Fig. 1. Distribution localities of *Darevskia praticola* sensu lato on the Caucasian Isthmus: *1*, Village Orlovka; *2*, Town Zelenokumsk; *3*, Town Mineral'nye Vody; *4*, River Kizilka; *5*, Gerpegem Ridge; *6*, Kapustin gorge, Mt. Kutanka [Terra typica *Lacerta plicata*]; *7*, Mt. Akhmet-Kaya; *8*, Tamskoe gorge; *9*, River Ubin near "Dubrava" camping; *10*, River Afips near Smolenskaya settlement; *11*, Mt. Oblego; *12*, Village Mikhaylovskiy Pereval; *13*, Cape Malyy Utrish; *14*, Cape Bol'shoy Utrish, Mt. Kobyla; *15*, Town Krymsk; *16*, Village Pseytug; *17*, Progress settlement near Krasnodar city; *18*, Kamyshanova glade, *19*, Mt. Bol'shoe Pseushkho; *20*, Mt. Semashkho; *21*, Khakudzh and Lysaya mountains; *22*, Agoy Reservation; *23*, Village Lygotkh; *24*, Town Khadyzhensk; *25*, Sochi city [terra typica *Lacerta colchica*]; *26*, Mt. Bol'shoy Akhun; *27*, Town Gagry [terra typica *Darevskia pontica* sensu stricto]; *28*, Town Gudauty; *29*, Sukhum city; *30*, Tsiv-Gomborskiy Ridge; *31*, Town Lagodekhi; *32*, Town Vanadzor; *33*, Town Vashlovani; *34*, River Samur; *35*, Village Kaladagna; *36*, Mt. Lyazhi; *37*, Natural boundaries of Gada-Zyga-Khi [terra typica *Darevskia praticola hyrcanica* ssp, n.]; *38*, Natural boundaries of Zarbyulyun; *39*, Town Lerik, village Veri, village Siev; *40*, Village Kalinovka; *41*, Between Astara and Ardebil; *42*, Alburz Ridge near Ardebil; *43*, Gilyan Lowland at Enzeli Bay; *44*, Town Pyatigorsk; *45*, Town Essentuki; *46*, Town Kislovodsk [terra typica *Darevskia praticola*]; *47*, Ananuri.

and Zoological Institute of Russian Academy of Sciences (ZISP) in St. Petersburg (Table 1). Material is combined according to geographical localities into 6 samples: 1, Talysh (including the Lenkoran lowland and Alburs ridge); 2, Stavropol Kray; 3, North-Western Caucasus (western districts of the Krasnodar Kray); 4, North-Western Caucasus (east districts of the Krasnodar Kray and Karachay-Cherkessia); 5, East Georgia; 6, Armenia. The diagnostic characters of subspecies used by Lantz and Cyrén (1919), were examined, as well as morphological characters, offered by Bannikov et al. (1977) (Table 2). To eliminate influence of sexual variation, comparison of males and females were made separately (Tables 3 – 5). The results obtained were compared to the information published earlier by a number of authors (Lantz and Cyrén, 1919, 1937; Shebzukhova, 1969; Orlova, 1978; etc.). Single specimens from other localities were not used in a statistical analysis, but discussed in the paper concerning some characters.

TABLE 1. Examined Specimens of *Darevskia praticola* sensu lato, Stored in Herpetological Collections of Sochi National Park (SNP) and Zoological Institute, Russian Academy of Sciences (ZISP)

Coll. No.	*n*	Sample	Collection locality	Date	Collector
SNP 1173	20	1	Azerbaijan, Astara District, Talysh Ridge, natural boundary of Gada-Zyga-Khi (1510 m, 38°28′ N 48°35′ E).	18.08.2009	Kidov A. A.
ZISP 12301	1	1	Azerbaijan, Lenkoran District, Lerik town.	14.05.1909	Kirichenko N. A.
ZISP 12630	1	1	Iran, Sharferud [= Sharif Rud], Enzeli Bay, Gilyan.	13.09.1913	Mlakosievich L.
ZISP 12632	1	1	Azerbaijan, Lenkoran District, Kaladagna.	30.03.1912	Baldamus
ZISP 12633	1	1	Azerbaijan, Lenkoran District, Kaladagna	30.03.1912	Lantz L. A.
ZISP 12634	1	1	Iran, Kheyran, Astara-Ardebil	5.04.1912	Lantz L. A.
ZISP 12635	1	1	Iran, mountain [= Ridge] of Alburz near Ardebil	5.04.1912	Lantz L. A.
ZISP 23562	10	2	Russia, Stavropol Kray, Budenovsk Rayon, Kuma River, vicinity of village Orlovka	30.06.2005	Lotiev K. Yu., Milto K.
SNP 1436	3	2	Russia, Stavropol Kray, Budenovsk Rayon, Kuma River, vicinity of village Orlovka	22.06.2008	Tuniyev B. S.
ZISP 22125	15	2	Russia, Stavropol Kray, river bad of Kuma River, Zelenokumsk town to Mineral'nye Vody town	2000	Darevsky I. S.
SNP 1285	1	3	Russia, Krasnodar Kray, Mostovskoy Rayon, vicinity of Psebay settlement, gorge of Kizilka River	20.04.2004	Tuniyev B. S.
SNP 1222	2	3	Russia, Krasnodar Kray, Mostovskoy Rayon, vicinity of Psebay settlement, Gerpegem Ridge	06.2002	Tuniyev B. S.
SNP 1349	1	3	Russia, Krasnodar Kray, Mostovskoy Rayon, Kapustin gorge	29.06.2005	Tuniyev B. S.
SNP 1379	1	3	Russia, Krasnodar Kray, Mostovskoy Rayon, vicinity of Psebay settlement, Gerpegem Ridge	05.05.2006	Lukjanova N. A.
SNP 1416	1	3	Russia, Krasnodar Kray, Mostovskoy Rayon, Kapustin gorge	29.08.2007	Tuniyev B. S.
SNP 1148	4	3	Russia, Karachay-Cherkessia, Pregradnenskiy Rayon, valley of river Bol'shaya Laba, vicinity of village Kurzhinovo, Mt. Akhmet-Gora (Akhmet-Kaya)	16.06.1995	Tuniyev B. S.
SNP 1142	3	3	Russia, Krasnodar Kray, Mostovskoy Rayon, vicinity of cordon Chernorechye, Mt. Kutanka	18.06.1995	Tuniyev B. S.
SNP 1283	1	3	Russia, Karachay-Cherkessia, Pregradnenskiy Rayon, Tamskoe gorge of Bol'shaya Laba River	16.04.2004	Tuniyev B. S.
SNP 1243	9	4	Russia, Krasnodar Kray, Severskiy Rayon, Ubin River, vicinity of camping "Dubrava"	12.04.2003	Tuniyev S. B.
SNP 1218	3	4	Russia, Krasnodar Kray, Severskiy Rayon, Afips River, vicinity of settlement Smolenskaya	08.06.2002	Tuniyev B. S.
SNP 1165	7	4	Russia, Krasnodar Kray, Tuapse Rayon, Mt. Bol'shoe Pseushkho	28.05.1996	Tuniyev B. S.
SNP 1304	4	4	Russia, Krasnodar Kray, Severskiy Rayon, river Ubin, vicinity of camping "Dubrava"	04.2004	Tuniyev S. B.
SNP 1366	4	4	Russia, Krasnodar Kray, Tuapse Rayon, Mt. Oblego.	19.04.2006	Tuniyev B. S., Tuniyev S. B.
SNP 1481	2	4	Russia, Krasnodar Kray, Gelendzhik Rayon, vicinity of village Mikhaylovskiy Pereval, postforest glades	25.04.2010	Tuniyev B. S.
SNP 1143	1	4	Russia, Krasnodar Kray, Lazarevskiy Rayon, Ashe river valley, foothill of Mt. Dzhimalta	26.04.1995	Tuniyev B. S.
SNP 1160	1	4	Russia, Krasnodar Kray, Tuapse Rayon, Agoy reservation	23.04.1996	Tuniyev B. S.
SNP 1161	1	4	Russia, Krasnodar Kray, Anapa, vicinity of cape Bol'shoy Utrish, Mt. Kobyla	25.04.2010	Tuniyev B. S.
SNP 1162	1	4	Russia, Krasnodar Kray, Novorossiysk, vicinity of cape Malyy Utrish	27.04.1996	Tuniyev B. S.
SNP 1169	1	4	Russia, Krasnodar Kray, Lazarevskiy Rayon, beginning of Ashe river, Mt. Lysaya	29.05.1996	Tuniyev B. S.
SNP 1216	1	4	Russia, Adygey Republic, Takhtamukay Rayon, aul Pseytuk, Kuban river bank	01.06.2006	Tuniyev B. S.
SNP 1217	1	4	Russia, Adygey Republic, Takhtamukay Rayon, Settlement Progress, vicinity of Krasnodar city	02.06.2002	Tuniyev B. S.
SNP 1230	1	4	Russia, Krasnodar Kray, Apsheronsk Rayon, Kamyshanova Glade	07.2002	Tuniyev S. B.
SNP 1299	1	4	Russia, Krasnodar Kray, Lazarevskiy Rayon, Mt. Khakudzh	07.06.2004	Tuniyev B. S.
SNP 1397	1	4	Russia, Krasnodar Kray, Tuapse Rayon, Mt. Semashkho	08.05.2007	Tuniyev S. B.
SNP 1249	1	4	Russia, Krasnodar Kray, vicinity of Krymsk town	11.04.2003	Tuniyev B. S.
SNP 1281	1	4	Russia, Krasnodar Kray, vicinity of Khadyzhensk town	07.04.2004	Tuniyev B. S.
SNP 1305	4	4	Russia, Krasnodar Kray, Tuapse Rayon, Mt. Bol'shoe Pseushkho	09.05.2004	Tuniyev S. B.
SNP 1431	1	4	Russia, Krasnodar Kray, Lazarevskiy Rayon, vicinity of aul Lygotkh	09.05.2008	Tuniyev S. B.
ZISP 19503	6	5	Georgia, Lagodekhi	14.07.1980	Darevsky I. S.
ZISP 17075	10	6	Armenia, vicinity of Kirovakan [= Vanadzor]	23.06.1956	Darevsky I. S.

Material was treated statistically using standard methods of variation statistics (Lakin, 1990) and one of methods of multivariate statistics — Canonical Discriminate Analysis (CDA) (Tyurin et al., 2003) by the package of STATISTICA 6.0 for Windows. Geographical variability of morphological characters was analyzed using CDA, allowing making a comparison of the preliminary selected groups on the complex of characters (Tyurin et al., 2003). We used a complex of 7 meristic characteristics (G., Sq., P.fm., Gr., M., Sm.1., Inter fm.). Lizards a priori were divided into twelve groups, formed on the principle of sexual and geographical identity.

RESULTS

It is shown that specimens from analyzed populations have for certain differences from each other in a number of morphological characters (Tables 3 – 5).

Coloration of *D. praticola* was earlier described by Orlova (1978). In addition it is necessary to note that chocolate-brown (not red) tones prevail in Talysh speci-

TABLE 2. The List of Morphological Characters

No.	Conditional shortening	Name	Notice
1	L.t	Longitudo totalis	Distance from tip of muzzle to point of tail
2	L.	Longitudo corporis	Distance from point of muzzle to point of cloacae fissure
3	L.cd	Longitudo caudalis	From point of cloacae fissure to point of tail
4	G.	Squamae gulares	Number of the gular scales along a middle line of gullet to middle of collar
5	Sq.	Squamae	Number of dorsal scales around the midbody
6	P.fm	Pori femoralis	Number of femoral pores (right/left)
7	S.m.1	Submaxillaria	Number of chin shields
8	S.m.2	Submaxillaria contacts	Number of joint pears of chin shield
9	Gr.	Granulae	Number of granules between superciliary shields and supraocular shields (left/right)
10	Pil.	Pileus	Distance from tip of muzzle to posterior end of parietal shield
11	Lt.c.	Latitudo capitis	Maximum width of head
12	Al.c.	Altitudo capitis	Height of head near occipital shield
13	M.	Massetericum	Massetericum shield (expressed/not expressed)
14	Inter fm.	Squamae inter pori femoralis	Number of scales between pori femoralis

TABLE 3. Morphological Characters of Examined Samples of *Darevskia praticola* sensu lato

Character	Mean value of character											
	sample 1		sample 2		sample 3		sample 4		sample 5		sample 6	
	males (n = 8)	females (n = 10)	males (n = 10)	females (n = 17)	males (n = 9)	females (n = 5)	males (n = 20)	females (n = 21)	males (n = 2)	females (n = 4)	males (n = 8)	females (n = 2)
L.t.	144 ± 3.3	145.7 ± 9.8	145.3 ± 1.5	151 ± 2.3	136.7 ± 1.7	145 ± 5	150.2 ± 2.1	141.8 ± 2.6	154.5 ± 6.5	—	129.3 ± 6.5	—
L.	50.8 ± 1.7	52.8 ± 1.5	49.5 ± 0.8	55.4 ± 0.8	47.6 ± 0.8	54.5 ± 2.2	49.5 ± 0.4	53.1 ± 0.7	52 ± 2	46.8 ± 3.7	46.1 ± 2	50 ± 0.8
L.cd.	93.5 ± 2.3	91.3 ± 7.8	98.3 ± 1.2	96 ± 1.7	84.9 ± 1.7	89.9 ± 4.5	100.2 ± 1.8	89.2 ± 2	102.5 ± 4.5	—	84 ± 4.5	—
G.	17.8 ± 0.6	17.6 ± 0.5	18 ± 0.4	18.2 ± 0.3	17 ± 0.3	16.8 ± 0.6	17.2 ± 0.4	17.5 ± 0.4	17.5 ± 0.5	17.3 ± 0.5	17.4 ± 0.5	18
Sq.	37.1 ± 0.6	38.5 ± 0.6	37.5 ± 0.5	37.2 ± 0.3	36.5 ± 0.5	34.2 ± 1.2	36.9 ± 0.6	36.4 ± 0.5	38	38 ± 0.6	37.1 ± 0.4	37.5 ± 1.5
P.fm.	10.9 ± 0.2	11.3 ± 0.3	11.6 ± 0.2	11.6 ± 0.3	10.5 ± 0.2	10 ± 0.45	11.2 ± 0.2	10.8 ± 0.2	10 ± 0.5	10.7 ± 0.6	11.6 ± 0.5	10.8 ± 0.3
S.m.1	5	5	5	5	6	6	6	6	5	5	5.1 ± 0.1	5.3 ± 0.1
S.m.2	2	2	2	2	3	3	3	3	2	2	2.1 ± 0.1	2.3 ± 0.1
Gr.	3 ± 0.3	4.7 ± 0.7	2.8 ± 0.7	2.6 ± 0.3	6.3 ± 0.6	7.4 ± 0.45	7.4 ± 0.5	8.2 ± 0.45	4.25 ± 0.25	3.5 ± 0.6	4.4 ± 0.6	6.3 ± 1.1
Pil.	11.4 ± 0.2	11.04 ± 0.2	10.8 ± 0.1	10.6 ± 0.1	11.1 ± 0.1	10.7 ± 0.1	11.4 ± 0.1	10.5 ± 0.1	11.9 ± 0.4	10.4 ± 0.3	11 ± 0.1	10.5 ± 0.1
Lt.c.	7.2 ± 0.2	6.8 ± 0.2	5.7 ± 0.1	5.7 ± 0.1	6.5 ± 0.1	6.4 ± 0.1	6.8 ± 0.1	6.4 ± 0.1	6.7 ± 0.3	6.1 ± 0.2	5.7 ± 0.1	5.7 ± 0.1
Al.c.	5.6 ± 0.2	5.4 ± 0.2	4.5 ± 0.1	4.5 ± 0.1	5.1 ± 0.06	5 ± 0.1	5.5 ± 0.1	5.1 ± 0.1	6 ± 0.3	5 ± 0.3	4.3 ± 0.1	4.21 ± 0.1
M.*	87.5/12.5	100/0	60/40	23.5/76.5	100/0	100/0	100/0	100/0	100/0	100/0	100/0	100/0
Inter fm.	2.4 ± 0.2	3.2 ± 0.2	3.6 ± 0.1	3.5 ± 0.1	2.8 ± 0.3	2.8 ± 0.4	2.8 ± 0.2	3.2 ± 0.1	3.5 ± 0.5	3.5 ± 0.3	3.5 ± 0.2	4

* Numerator, expressed (%); denominator, not expressed (%).

Note. —, data absent.

mens coloration; a white bar on each side of trunk is poorly expressed, more often it has the same color as background of the back and brighter expressed one above hind limbs. Under light bar on each side of trunk in subadult and adult specimens there is the interrupted dark stripe, or row of spots, not recorded in specimens from other parts of *D. praticola* range. The live coloration of lateral ventral shields is goldish-pink, instead white, yellow, or greenish coloration (Figs. 2 and 3).

Animals from riverbed of Kuma River in the Stavropol Kray are differed the least by contrasting color pattern and homogenous coloration. A light bar on each side of body is often visible only at the level of forelimbs. Tertyshnikov (2002) noted the high percent (43%) of specimens from territory of Central Precaucasus which have no pattern (Fig. 4).

Lantz and Cyrén (1919) noted a little occipital, insignificantly wedged between parietals for a nominative subspecies, while *Darevskia praticola pontica* has larger, deeply penetrating occipital shield. A presence and size of occipital according to our data vary practically in all the populations, but it is possible to see the certain tendencies. In particular, animals from the Stavropol Kray have small triangual occipital shield.

For lizards from Talysh the large triangled (35%) and trapezoid (40%) occipital is marked approximately in an

TABLE 4. Comparison of Males of *Darevskia praticola* sensu lato from Different Populations

Character		1/2 $n = 18$	1/3 $n = 17$	1/4 $n = 28$	1/5 $n = 10$	1/6 $n = 16$	2/3 $n = 20$	2/4 $n = 31$	2/5 $n = 13$	2/6 $n = 19$	3/4 $n = 29$	3/5 $n = 11$	3/6 $n = 17$	4/5 $n = 22$	4/6 $n = 28$	5/6 $n = 10$
1	L.t.	0	0	0	0	*	0	0	0	0	*	0	0	0	***	*
2	L.	0	0	0	0	*	0	0	0	*	*	*	0	0	***	**
3	L.cd.	0	0	*	0	*	0	0	0	0	*	0	0	0	***	*
4	G.	0	0	0	0	0	*	0	0	0	0	0	0	0	0	0
5	Sq.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	P.fm.	**	0	0	0	**	***	0	**	0	0	0	***	0	0	**
7	S.m.1	0	***	***	0	0	***	***	0	0	0	***	***	***	***	0
8	S.m.2	0	***	***	0	0	***	***	0	0	0	***	***	***	***	0
9	Gr./P.f.	0	***	***	0	0	***	***	0	0	0	0	0	0	**	0
10	Pil.	*	0	0	0	0	0	***	0	0	0	**	0	0	0	*
11	Lt.c.	***	**	0	0	***	***	***	*	0	*	0	***	0	***	***
12	Al.c.	***	*	0	0	***	***	***	**	0	*	***	***	0	***	***
13	M.	0	0	0	0	0	**	**	0	0	0	0	0	0	0	0
14	Inter fm.	***	0	0	*	***	*	**	0	0	0	0	0	0	*	0

Note. Levels of meaningfulness: *$P < 0.05$); **$P < 0.01$; ***$P < 0.001$, (0) — there are not reliable differences.

TABLE 5. Comparison of Females of *Darevskia praticola* sensu lato from Different Populations

Character		1/2 $n = 27$	1/3 $n = 15$	1/4 $n = 31$	1/5 $n = 14$	1/6 $n = 12$	2/3 $n = 21$	2/4 $n = 38$	2/5 $n = 21$	2/6 $n = 19$	3/4 $n = 26$	3/5 $n = 9$	3/6 $n = 7$	4/5 $n = 25$	4/6 $n = 23$	5/6 $n = 27$
1	L.t.	0	0	0	—	—	0	0	—	—	0	—	—	—	—	—
2	L.	0	0	0	0	0	0	*	**	0	0	0	0	**	0	0
3	L.cd.	0	0	0	—	—	0	0	—	—	0	—	—	—	—	—
4	G.	0	0	0	0	0	***	0	0	0	0	0	0	0	0	0
5	Sq.	*	**	**	0	0	***	0	0	0	0	*	0	0	0	0
6	P.fm.	0	*	0	0	0	***	***	0	0	0	0	0	0	0	0
7	S.m.1	0	***	***	0	*	***	***	0	***	0	***	***	***	***	0
8	S.m.2	0	***	***	0	*	***	***	0	***	0	***	***	***	***	0
9	Gr./P.f.	***	*	***	0	0	***	***	*	***	0	***	0	***	0	*
10	Pil.	*	0	**	0	0	0	0	0	0	0	0	0	0	0	0
11	Lt.c.	***	0	*	*	*	***	***	0	0	0	0	**	0	**	0
12	Al.c.	***	0	*	0	*	***	***	*	0	0	0	**	0	***	0
13	M.	***	0	0	0	0	***	***	**	0	0	0	0	0	0	0
14	Inter fm.	0	0	0	0	0	***	***	0	0	0	0	0	0	0	0

Note. Levels of meaningfulness: *$P < 0.05$; **$P < 0.01$; ***$P < 0.001$; (0), there are not reliable differences; (–), there is not information.

Fig. 2. Coloration of *Darevskia praticola hyrcanica* ssp. nov. from Talysh.

Fig. 3. Golden-pink spots on lateral ventral shields of *D. p. hyrcanica* ssp. nov.

Fig. 4. Coloration of *Darevskia praticola praticola* from Stavropol Kray (Kuma River valley, vicinity of village Orlovka).

equal proportion; about 1% of specimens have the occipital fragmented into small portions and 0.5% of specimens have the diamond-shaped, little rounded occipital, or an occipital absent.

Specimens from North-Western Caucasus have a trapezoid occipital (61%), triangle (21%), little rounded (3%), or little fragmented (1%); occipitals deeply penetrating between parietals in both prevailing configurations present about 25% of general number. An accessory interparietal is registered in 6% of all specimens from North-Western Caucasus. Characteristically, that presence of the large deeply penetrated occipital, as well as presence of additional interparietal, or the fragmented occipital is registered in specimens originated from the west of Krasnodar Kray. On a border of Karachay-Cherkessia and within its territory the lizards with small triangle and rounded occipital are found.

Males. The smallest specimens are marked in Armenia (L.t. = 129.3 mm), the largest from East Georgia (154.5 mm) and west of North-Western Caucasus (150.2 mm). Most high length of pileus, height and width of head, is typical for lizards from East Georgia, Talysh and west of North-Western Caucasus, the least — from the Stavropol Kray. The maximal number of chin shields and their contacting pairs is found in animals from North-Western Caucasus (diagnostic characteristic of *D. p. pontica*); asymmetry of 5/6 chin shields is observed in single individuals from Armenia. A central temporal is enlarged in the individuals from all the populations, except for the Stavropol Kray (where it is not expressed in 40% of specimens). The least number of femoral pores is registered in specimens from Talysh (10.9), the east of North-Western Caucasus (10.5), and East Georgia (10). The number of granules between superciliary shields and supraocular shields is minimal in Stavropol (2.8) and Talysh specimens (3), and maximal in the west of North-Western Caucasus (7.4). The minimal number of scales between the rows of femoral pores is found in marginal populations from Talysh (2.4) and North-Western Caucasus (2.8).

Females. Distinctions in the sizes of females are not so strongly expressed. However the females from Armenia and from East Georgia (not like males) are distinguished by smallest body length. Maximal length of pileus is marked in Talysh (11.04 mm), minimum — in East Georgia (10.4 mm). The number of pairs of chin shields and pairs of contacting submaxillar shields is maximal in animals from North-Western Caucasus (diagnostic characteristic of *D. p. pontica*). Like in males an asymmetry of 5/6 chin shields is observed in single specimens from Armenia. A central temporal is enlarged in the specimens of all of populations, except for lizards from the Stavropol Kray. In majority (76.5%) of these specimens this shield practically does not differ in size from other shields of temporal area. The minimal number of femoral pores is found in specimens from the west of North-Western Caucasus (10.04), maximal number — from the Stavropol Kray (11.6). The number of granules between superciliary shields and supraocular shields is maximal in North-Western Caucasus (8.2) and mini-

mal — in the Stavropol Kray (2.6). The minimal number of scales between the rows of femoral pores is registered in marginal population from Talysh (3.2), west of North-Western Caucasus (2.8) and the east of North-Western Caucasus (3.2). Similarity between these three peripheral populations is marked in a maximal width and height of head.

The main patterns of sexual dimorphism in general do not differ from those described by Orlova (1978) and shown in Tables 6 – 8.

The results of CDA showed relatively high accuracy of division of geographical groups. Accuracy for males is following: Talysh — 81.8%, Armenia — 85.7%, East Georgia — 50.0%, Stavropol Kray — 63.6%, the east of North-Western Caucasus — 44.4%, west of North-Western Caucasus — 80%; accuracy for females: Talysh — 93.3%, Armenia — 50.0%, East Georgia — 25.0%, Stavropol Kray — 74.5%, the east of North-Western Caucasus — 57.1%, west of North-Western Caucasus — 87%.

The results of CDA show that in space of discriminant functions males of lizards formed two groups (Fig. 5). The first group consists of the males from the

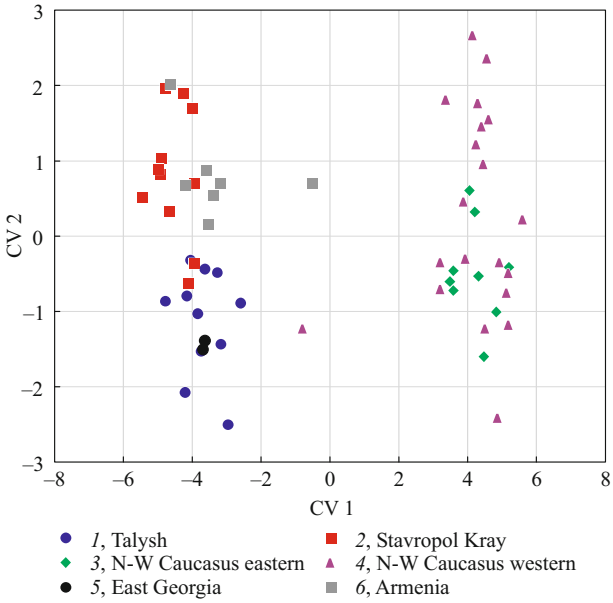

Fig. 5. Two-dimensional scatterplot of samples of *Darevskia praticola* in space of CDA function by the complex of morphometric characters. Adult males.

TABLE 6. Comparison of Adult Males and Females of *Darevskia praticola* sensu stricto

Character	Males ($n = 29$) min – max / $\bar{x} \pm m$	Females ($n = 33$) min – max / $\bar{x} \pm m$	t	P
L.t.	121 – 161 / 141.6 ± 2.8	127 – 162 / 146 ± 4.4	0.9	>0.05
L.	42 – 61 / 48.9 ± 0.7	39 – 61 / 53.2 ± 0.9	3.7	<0.001
L.cd.	79 – 107 / 93.2 ± 2.1	78 – 105 / 92.9 ± 3	0.1	>0.05
G.	15 – 20 / 17.7 ± 0.2	16 – 20 / 17.9 ± 0.2	0.4	>0.05
Sq.	34 – 40 / 37.2 ± 0.3	35 – 41 / 37.7 ± 0.3	1.3	>0.05
P.fm.	9 – 13 / 11.3 ± 0.3	9 – 13 / 11.3 ± 0.4	0.1	>0.05
S.m.1	5 (6)	5 (6)	—	—
S.m.2	2 (3)	2 (3)	—	—
Gr.	0 – 6 / 3.3 ± 0.5	1 – 8 / 3.6 ± 0.6	0.6	>0.05
Pil.	9.8 – 12.3 / 11.1 ± 0.1	9.7 – 12 / 12 ± 0.1	2.4	<0.05
Lt.c.	5.3 – 7.7 / 6.2 ± 0.1	5.2 – 7.9 / 6.1 ± 0.1	0.4	>0.05
Al.c.	4 – 6.5 / 4.8 ± 0.1	3.8 – 6.5 / 4.8 ± 0.1	0.3	>0.05
Inter fm.	2 – 4 / 3.2 ± 0.1	2 – 4 / 3.5 ± 0.1	1.4	>0.05

Notes. —, data absent; in brackets — rare, as exception.

TABLE 7. Comparison of Morphological Characters of Adult Males and Females of *Darevskia pontica* sensu stricto (North-Western Caucasus)

Character	Males ($n = 29$) min – max / $\bar{x} \pm m$	Females ($n = 26$) min – max / $\bar{x} \pm m$	t	P
L.t.	135 – 159 / 147.7 ± 2.4	134 – 157 / 142.4 ± 2.3	1.6	>0.05
L.	42.9 – 52.4 / 48.9 ± 0.4	47.6 – 61.6 / 53.3 ± 0.7	5.7	<0.001
L.cd.	87.7 – 107.1 / 98.2 ± 2	81.3 – 99.2 / 89.3 ± 1.7	3.4	<0.01
G.	14 – 21 / 17.1 ± 0.3	15 – 21 / 17.4 ± 0.3	0.7	>0.05
Sq.	32 – 41 / 36.8 ± 0.4	30 – 42 / 36 ± 0.5	1.3	>0.05
P.fm.	9 – 13 / 11 ± 0.3	9 – 13 / 10.6 ± 0.4	1.3	>0.05
S.m.1	6 (5)	6 (5)	—	—
S.m.2	3 (2)	3 (2)	—	—
Gr.	1 – 11 / 7 ± 0.8	5 – 12 / 8.1 ± 0.8	1.9	>0.05
Pil.	10.5 – 12.4 / 11.3 ± 0.1	9.7 – 11.2 / 10.5 ± 0.1	6.6	<0.001
Lt.c.	6 – 7.5 / 6.7 ± 0.1	5.9 – 7.1 / 6.4 ± 0.1	3.2	<0.01
Al.c.	4.5 – 6.7 / 5.4 ± 0.1	4.7 – 5.9 / 5.1 ± 0.1	0.3	>0.05
Inter fm.	2 – 4 / 2.8 ± 0.2	2 – 4 / 3.2 ± 0.1	1.8	>0.05

Notes. —, data absent; in brackets, rare, as exception.

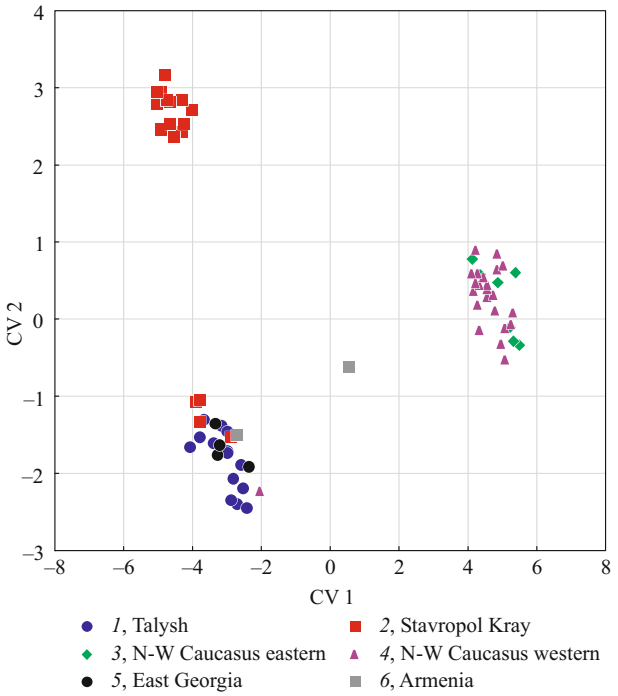

Fig. 6. Two-dimensional scatterplot of samples of *Darevskia praticola* in space of CDA function by the complex of morphometric characters. Adult females.

TABLE 8. Comparison of Morphological Characters of Adult Males and Females of *Darevskia praticola hyrcanica* ssp. n. from Talysh

Character	Males ($n = 7$) min – max / $\bar{x} \pm m$	Females ($n = 11$) min – max / $\bar{x} \pm m$	t	P
L.t.	131 – 148 / 144 ± 3.3	128 – 162 / 145.7 ± 9.8	0.19	>0.05
L.	45 – 61 / 50.8 ± 1.7	46 – 59 / 52.8 ± 1.5	0.9	>0.05
L.cd.	84.6 – 97.1 / 93.5 ± 2.3	78 – 105 / 91.3 ± 7.8	0.3	>0.05
G.	15 – 20 / 17.8 ± 0.6	16 – 20 / 17.6 ± 0.5	0.2	>0.05
Sq.	36 – 48 / 44.8 ± 1.5	38 – 46 / 41.1 ± 0.7	2.4	<0.05
P.fm.	10 – 12 / 10.9 ± 0.2	10 – 13 / 11.3 ± 0.3	1	>0.05
S.m.1	5	5	—	—
S.m.2	2	2	—	—
Gr.	1 – 4 / 3 ± 0.3	2 – 8 / 4.7 ± 0.7	2	>0.05
Pil.	10.4 – 11.9 / 11.4 ± 0.2	9.7 – 12 / 11.04 ± 0.2	1.2	>0.05
Lt.c.	6 – 7.7 / 7.2 ± 0.2	6 – 7.9 / 6.8 ± 0.2	1.3	>0.05
Al.c.	4.6 – 6.5 / 5.6 ± 0.2	4.5 – 6.5 / 5.4 ± 0.2	0.6	>0.05
Inter fm.	2 – 3 / 2.4 ± 0.2	2 – 4 / 3.2 ± 0.2	3	<0.01

Stavropol Kray, East Georgia, Armenia and Talysh, the second one — of the males North-Western Caucasus. Animals from Talysh are isolated from animals from Armenia and Stavropol Kray in the second discriminant function. The small number of specimens in sample from East Georgia was reflected in a canonical analysis.

Distributing in space of discriminant functions of females (Fig. 6) appeared more heterogeneous with formation of three groups. The absolutely isolated position was occupied by females from North-Western Caucasus. Part of females from the Stavropol Kray formed independent group (Zelenokumsk — Mineral'nye Vody), and other part (village Orlovka) is more similar in morphotype with the females from Talysh. Females from Georgian and Armenian populations did not show any differences, what presumably, could be related to the small number of the examined specimens. It is necessary to notice that animals from North-Western Caucasus are well isolated in both discriminant functions, while differences of animals from other groups are in a greater degree expressed in the second discriminant function.

The results obtained confirm the high degree of morphological separateness of the compared samples of meadow lizard. Likeness degree between the selected

TABLE 9. Mahalonobis Distances and Levels of Significance Among the Groups of Males *D. praticola* sensu lato, According CDA Results

Sample	Talysh	Stavropol Kray	North-Western Caucasus, east	North-Western Caucasus, west	East Georgia	Armenia
Talysh	—	5.6	70.1	70.2	3.5	5.8
Stavropol Kray	0.003	—	87.1	85.1	10.1	4.9
North-Western Caucasus, east	0.000	0.0	—	1.5	72.3	66.3
North-Western Caucasus, west	0.000	0.0	0.4	—	73.8	63.2
East Georgia	0.8	0.3	0.000002	0.000001	—	7.3
Armenia	0.01	0.4	0.000000	0.000000	0.6	—

Notes. Levels of significance/Mahalonobis distance.

TABLE 10. Mahalonobis Distances and Levels of Significance Among the Groups of Females *D. praticola* sensu lato, According CDA Results

Sample	Talysh	Stavropol Kray	North-Western Caucasus, east	North-Western Caucasus, west	East Georgia	Armenia
Talysh	—	16.2	76.5	65.4	1.3	8.6
Stavropol Kray	0.0	—	99.4	86.9	15.8	23.6
North-Western Caucasus, east	0.0	0.0000	—	1.9	75.9	47.1
North-Western Caucasus, west	0.0	0.0000	0.3	—	64.7	36.5
East Georgia	0.9	0.0001	0.0000	0.0000	—	6.7
Armenia	0.4	0.01	0.0001	0.0004	0.7	—

Notes. Levels of significance/Mahalonobis distance.

samples in a CDA is estimated by Mahalonobis distance (Tyurin et al., 2003). The distances between the centers of samples of adult males of meadow lizard varied from 1.5 to 87.1. Minimum (1.5) value was shown between males from western and east parts of North-Western Caucasus, and maximal value (85.1, 87.1) — between males from western and east population of North-Western Caucasus and Stavropol Kray (Table 9). For the females this distance between the centers of samples varied from 1.3 to 99.4. Minimum (1.3) value was shown between females from East Georgia and Talysh, and maximal value (99.4) — between females from the Stavropol Kray and North-Western Caucasus (Table 10).

The contribution of different morphological characters to discrimination of groups is different. Because the first discriminant function takes into account the most percent of dispersion and dividing of animals into basic groups occurs exactly along it, we will describe the contribution of characters to the division of groups on the basis of values of this function (Tables 9 and 10).

A maximal contribution to discrimination of groups of males (Table 11) was brought by the followings characters: number of chin shields and gulares, number of femoral pores, number of scales between the rows of femoral pores, number of granules.

A maximal contribution to discrimination of groups of females (Table 12) was brought by the number of chin shields, presence/absence of massetericum and number of scales between the rows of femoral pores.

During our study new information was obtained about morphology and geographical variability. Most valuable is revealing of substantial differences in the mean values in a number of metric and meristic characters of lizards from six regions (Tables 3 – 5), and also discrimination of three groups among six samples, selected by principle of geographical identity using a CDA (Figs. 5 and 6; Tables 9 and 10).

The results obtained allow to made a conclusion about taxonomic distinctivity of only three groups — from the Stavropol Kray, North-Western Caucasus and Talysh, while lizards from Armenia and East Georgia are close to the Stavropol animals. Level of differences of animals from both groups from North-Western Caucasus from animals of all of other groups confirms the species status of *D. praticola* and *D. pontica*. Interestingly, that the maximal values of Mahalonobis distance (87.1 and 99.4) is obtained in specimens of both sexes in the neighboring populations from Stavropol Kray and the east of North-Western Caucasus. It justifies the high degree of divergence of examined populations.

Animals from Talysh population, despite of considerable geographical isolation can be considered as a form of only subspecific level. This conclusion can be supported by differences in pholidosis, proportions of head and color pattern of lizards from Talysh.

TABLE 11. Contribution of Different Morphological Characters in Separation of Males Group *D. praticola* sensu lato (on DCA Results)

Character	Standardized coefficient of first discriminant function	Character rank
G.	0.03	2
Sq.	0.02	6
P.fm.	0.03	3
Sm.1	0.14	1
Gr.	0.03	4
M.	0.025	7
Inter fm.	0.03	5

TABLE 12. Contribution of Different Morphological Characters in Separation of Females Group *D. praticola* sensu lato (on DCA Results)

Character	Standardized coefficient of first discriminant function	Character rank
G.	0.01	7
Sq.	0.01	6
P.fm.	0.01	5
Sm.1	0.7	1
Gr.	0.01	4
M.	0.04	2
Inter fm.	0.02	3

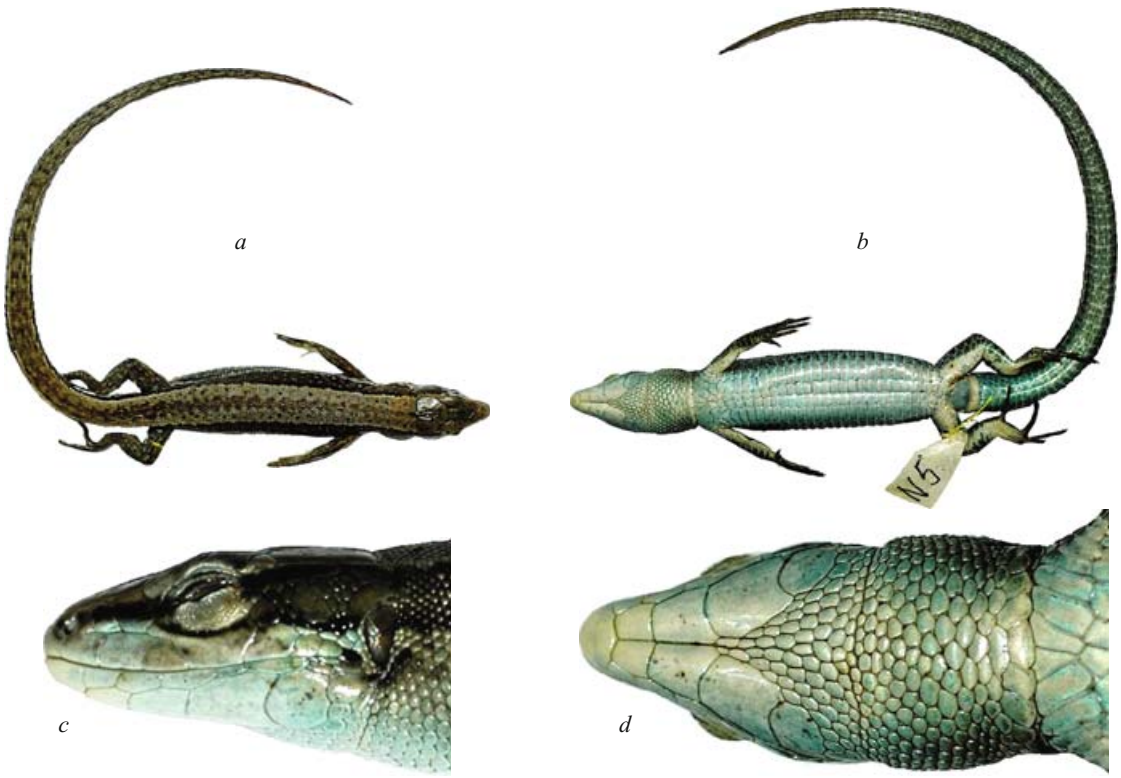

Fig. 7. Holotype of *Darevskia praticola hyrcanica* ssp. nov.: *a*, dorsal side; *b*, ventral side; *c*, head from lateral side; *d*, head from ventral side.

DESCRIPTION OF A NEW SUBSPECIES

Family Lacertidae Bonaparte, 1831
Genus *Darevskia* Arribas, 1997
***Darevskia praticola hyrcanica* Tuniyev, Doronin, Kidov et Tuniyev ssp. nov.**

Diagnosis. Small lizard, different from specimens of nominative subspecies by the larger size of pileus, higher values of width and height of head, reduced number of scales between the rows of femoral pores. Animals are colored in chocolate-brown tones; on each side of body under light bar the interrupted dark stripe, or row of spots; always contrasting color pattern, the color in life of lateral ventrals is goldish-pink.

Holotype. Herpetological collection of Sochi National Park, Sochi, SNP No 1473 (5), adult female, Azerbaijan, Astara District, Talysh Ridge, natural boundary of Gada-Zyga-Khi (1510 m above sea level, 38°28′ N 48°35′ E), 18.08.2009, collector A. A. Kidov (Fig. 7).

Paratypes. 25 specimens, herpetological collection of SNP, Sochi; 6 specimens, ZISP, St. Petersburg:

SNP, No. 1473 (0) adult male, (1) adult male, (2) adult male, (3) adult male, (4) adult male, (6) adult male, (7) subadult male, (8) subadult male, (9) subadult male, (10) adult female, (11) adult female, (12) adult female, (13) adult female, (14) adult female, (15) subadult female, (16) subadult female, (17) subadult female, (18) subadult female, (19) subadult female, Azerbaijan, Astara District, Talysh Ridge, natural boundary of Gada-Zyga-Khi District, Talysh Ridge, natural boundary of Gada-Zyga-Khi, 18.08.2009, collector A. A. Kidov;

ZISP, No. 12301, adult female, Azerbaijan, Lenkoran District, Lerik, 14.05.1909, collector N. A. Kirichenko;

ZISP, No. 12630, adult female, Iran, Sharferud [= Sharif Rud], Enzeli Bay, Gilyan, 13.09.1913, collector G. Mlokosevich;

ZISP, No. 12632, adult female, Azerbaijan, Lenkoran District, Kaladagna, 30.03.1912, collector Baldamus;

ZISP, No. 12633, adult female, Azerbaijan, Lenkoran District, Kaladagna, 30.03.1912, collector Baldamus;

ZISP, No. 12634, adult female, Iran, Kheyran, Astara-Ardebil, 05.04.1912, collector L. A. Lantz;

ZISP, No. 12635, adult male, Iran, mountain [= Ridge] of Alburz near Ardebil, collector L. A. Lantz.

Description of holotype. Adult female, length of body from the snout to the anus (L.) 50.9 mm, length of tail (L.cd.) 97.1 mm. Distance from the snout to the posterior edge of parietals (Pil.) 11.5 mm; maximal head width in the region of tympanic shield (Lt.c.) 7.6 mm; head height in the region of occipital (Al.c.) 6 mm. Width

TABLE 13. Morphological Characters of Paratypes of *Darevskia praticola hyrcanica* ssp. n.

No.	Collection No.	Specimen No.	Sex	L.t.	L.	L.cd.	G.	Sq.	P.fm.	Sm.1	Sm.2	Gr.	Pil.	Lt.c	Al.c.	M.	Interfm.
1	SNP 1473	0	male	131.4	46.4	85	17	38	11	5	2	3	10	6.7	4.8	1	2
2	SNP 1473	1	male	145.6	50.6	95	16	38	10	5	2	2	12	7	6	1	2
3	SNP 1473	2	male	—	61	—	19	39	11	5	2	1	12	7.6	5.7	1	3
4	SNP 1473	3	male	146.5	49.5	97	15	35	11	5	2	7	11	7.5	5.4	1	2
5	SNP 1473	4	male	148	50.9	97.1	20	38	11	5	2	8	12	7.6	6	1	2
6	ZISP 12635	1	male	—	45	—	17	36	10	5	2	6	11	6	4.6	1	3
7	SNP 1473	6	male	—	50.4	—	18	35	11	5	2	7	12	7.7	6.5	2	3
8	SNP 1473	7	subad. male	121	44.3	76.7	17	39	20	5	2	6	10.2	6.8	4.8	1	4
9	SNP 1473	8	subad. male	124	44.4	79.6	17	37	22	5	2	9	9.6	6.9	4.5	1	3
10	SNP 1473	9	subad. male	119	43.7	75.3	16	34	21	5	2	6	10.2	6.3	4.6	2	3
11	SNP 1473	10	female	—	47.5	—	18	38	13	5	2	2	9.7	6.6	5.1	1	3
12	SNP 1473	11	female	—	57.5	—	16	36	11	5	2	3	11	7	5.7	1	3
13	SNP 1473	12	female	137.4	47.4	90	16	36	10	5	2	4	11	6.9	5.2	1	3
14	SNP 1473	13	female	—	52.3	—	17	40	10	5	2	8	12	7.6	5.8	1	3
15	SNP 1473	14	female	—	55.1	—	18	37	11	5	2	4	11	6.9	5.2	1	4
16	ZISP 12630		female	—	46	—	16	40	12	5	2	2	11	6	5	1	4
17	ZISP 12301		female	—	59	—	20	38	13	5	2	3	12	7	6	1	2
18	ZISP 12632		female	162	57	105	18	41	11	5	2	8	12	7.9	6.5	1	3
19	ZISP 12633		female	147	56	91	20	38	12	5	2	5	11	6.3	5	1	4
20	ZISP 12634		female	128	50	78	17	41	11	5	2	7	11	6	4.5	1	3
21	SNP 1473	15	subad female	116.7	44.7	72	18	34	21	5	2	7	9.5	6	4.6	1	3
22	SNP 1473	16	subad female	116.4	46.4	70	16	36	21	5	2	6	9.7	6.1	4.9	1	2
23	SNP 1473	17	subad female	—	40.1	—	16	37	19	5	2	6	9.6	6.1	4.2	1	2
24	SNP 1473	18	subad female	111	41.1	69.9	18	36	21	5	2	1	9.3	5.8	4.2	1	2
25	SNP 1473	19	subad female	103.1	43.1	60	17	36	22	5	2	8	9.3	5.9	4.2	1	3

of frontonasal in 1.3 time more than its length. Rostral separated from frontonasal by nasals. Interparietal large; occipital trapezoid. Suture between prefrontal and frontal convoluted, not concaved into frontal. Between supraciliaries and supraocularis, dividing them, an incomplete row of 4 granules (on the left) or 5 supraciliary granules (on the right). The first supratemporal long, wedge-shaped; behind it, on the edge of parietal, a one large second supratemporal on each side, only a bit shorter than former. Masseteris is large on both sides. Between masseteris and tympanic 2 shields on each side. Five chin shields on each side, among them the first two pair contact each other along the middle line of throat; 5 sublabials on each side; 7 labials on each side; in front of suboculars three (left), and four (right) fronto-labiali shields (F.l.); 18 scales from the middle line of throat to the collar (G.). A collar includes 9 scales, central enlarged. Scale of body with the well expressed keels; 38 scales across a body (Sq.); 27 transversal rows of abdominal and pectoral shields. A row of 10 preanal pores of approximately equal size in front of large anal shield. A row of femoral pores (11 on the left and 12 on the right) does not reach the knee; 2 scales between the rows of femoral pores.

Description of paratypes. All of paratypes correspond to holotype description with insignificant variations in metric and meristic characters (Table 13).

Coloration of males is more dark and contrasting than in females. The dorsum chocolate-brown, with dark-brown zigzag-shaped band passing to the dorsal surface of tail. Temporal bands wide, dark brown. A light band under temporal band poorly expressed, most often of the same color as dorsum background but a little brighter above hind limbs and in base of tail. Large dark spots in a neck area and above the hind limbs. Below light bar on each side of trunk of semiadult and adult specimens there is the interrupted dark stripe, or row of spots. Belly — greenish, lateral ventrals with goldish-pink spots.

Females color lighter; their color pattern on the back less contrasting. A zigzag-shaped cervical band expressed weaker, slightly darker than basic back coloration. Temporal bands well developed, dark-brown, often with white small ocelli and single white scales along the band to the base of hind limbs. Along all of the back often small dark-brown spots between the occipital and tempo-

Fig. 8. Gada-Zyga-Khi — type locality of *D. p. hyrcanica* ssp. nov. in Talysh mountains.

ral stripes. A light bar under temporal stripe brighter, than in males. Belly-greenish, lateral ventrals with goldish-pink spots.

Etymology. A subspecies is named after the ancient name of the Caspian sea (Hyrcania) and province south-east of Caspian Sea, which is a base for the name of Hyrcan biogeographical province, including Talysh, Lenkoran lowland and Caspian slope of Western Alburz (the area of distribution of the described subspecies).

Geographical distribution and biotopes. Modern distribution of taxon in flat part of the Lenkoran lowland requires confirmation. At present a subspecies is certainly known from mountain-forest Talysh and Western Alburz. In Talysh it is found on a north-eastern slope of Mt. Lyazhi on altitude of 1600 – 1700 m a.s.l. (Kidov et al., 2009), in the natural boundaries of Zarbyulyun (780 m, 38°29′ N 48°38′ E) and Gada-Zyga-Khi (1510 m, N 38°28, E 48°35′) (Kidov, 2010), in village Kalinovka of Masalla District (collection of Zoological Museum of the National Natural History Museum of Ukraine National Academy of Sciences), town Lerik, village Veri (Alekperov, 1978) and Siev [= Siov] (collection of ZISP) Lerik District. In Iran this lizard is known from Kheyran (between Astara and Ardebil), on Alburz Ridge near Ardebil and on Gilyan lowland at Enzeli Bay of the Caspian Sea (Sharif Rud) (collection of ZISP) (Fig. 1).

In the mountain-forest belt of Talysh these lizards inhabit mainly the opened areas (pastures and hayfields), a maximal densities was recorded on the potato fields and in a neighborhood of summer shepherd cabins; prefer to live on the semiplane areas of slopes close to standing water reservoirs and in places with moist soil (Kidov et al., 2009) (Figs. 8 and 9).

On the periphery of the field in the natural boundary of Gada-Zyga-Khi in August 2009 32 specimens were recorded on 100 m of route. In less anthropogenic transformed habitats (on forest glades and clearings near streams) we met only single lizards (Kidov, 2010). On Mt. Lyazhi they inhabit the most overhead treeless part of ridge, covered by the moist meadows of anthropogenic origin with plenty of mole holes. Here 24 adult specimens after two hours morning excursion on a route an about 1 km were recorded.

DISCUSSION

Intraspecific taxonomy of *Darevskia praticola* sensu lato it is one of the most confused in history of study of the Caucasian saurofauna. Boettger (1886) was the first who paid attention on the differences of Talysh *Darevskia praticola* during examination of collections of G. Radde and H. Leder. Unlike 6 pair of chin shields for

Fig. 9. Habitats of *D. p. hyrcanica* ssp. nov. on Mt. Lyazhi.

West Caucasian lizards, 2 specimens from Talysh examined by him have 5 chin shields (the first two pair contact each other). Boettger supposed that if this character is constant for all the Talysh animals, description of local form is possible. Incomplete confused species description of Eversmann (1834) leads to situation when it was not clear which animals are attributed to the nominative subspecies. The initial reason of this mess is in fact that Eversmann selected the type specimen (as it was clear later), from the area of overlapping of two forms. Lantz and Cyrén (1919) made an attempt to clarify this situation and considered a description of Kessler (1878), which specified 6 chin shields for specimens from the Kuban' Region, Pyatigorsk, Belaya River valley and Ananuri. As succeeded to understand Lantz and Cyrén the Eversmann's type from Pyatigorsk was ignored by Kessler, as it had 5 chin shields like the Talysh specimens. However, for unknown reasons, Lantz and Cyrén considered type locality as Pyatigorsk, despite Eversmann indicated, that an animal was caught "on a lawn between sulfur-spring and Narzan" (Eversmann, 1834: S. 345, our translation), i.e., Kislovodsk should be considered as "Terra typica." Indeed, in spite of very general description of type by Eversmann, an image of nominative subspecies is shown in the drawings (Eversmann, 1834: Tab. XXX, Fig. 2) what is confirmed by color pattern and number of chin shields. We agree with Lantz and Cyrén that a specimen from collection of the St. Petersburg University (No. 275, presently stored in ZISP as catalogue number 22848) does not correspond to drawing of holotype from publication of Eversmann: on a drawing a specimen has an accessory shield between occipital and interparietals, practically contacting frontonasal and frontal shields and equal on sizes shields in a temporal area. All of these characters absent in a specimen from collection of the St. Petersburg University. Thus it can not be considered as holotype which most probably was lost. In this connection, the indicated image (Eversmann, 1834: Tab. XXX, Fig. 2) must be considered as a holotype of *Darevskia praticola* (Fig. 10).

Describing the subspecies of *D. praticola pontica* Lantz and Cyrén (1919) include to the type material some animals from Ananuri (East Georgia, Aragvi River valley), where untypical specimens with 6 pair of chin shields were collected. Orlova (1978) noted that more than 25% lizards from Tsiv-Gomborskiy Ridge (East Georgia) have 6 pair of chin shields. In 4 specimens examined by us from Tsiv-Gomborskiy Ridge (ZISP, No. 17805.07.06.1964. Leg. I. S. Darevsky) there are two specimens with 6 pair of chin shields, with first three in a contact. Later (Lantz and Cyrén, 1947) the town Gagry (Abkhazia) was selected as a type territory for *Darevskia praticola pontica*. However a type was not selected from syntypes and specimens from Ananuri were included

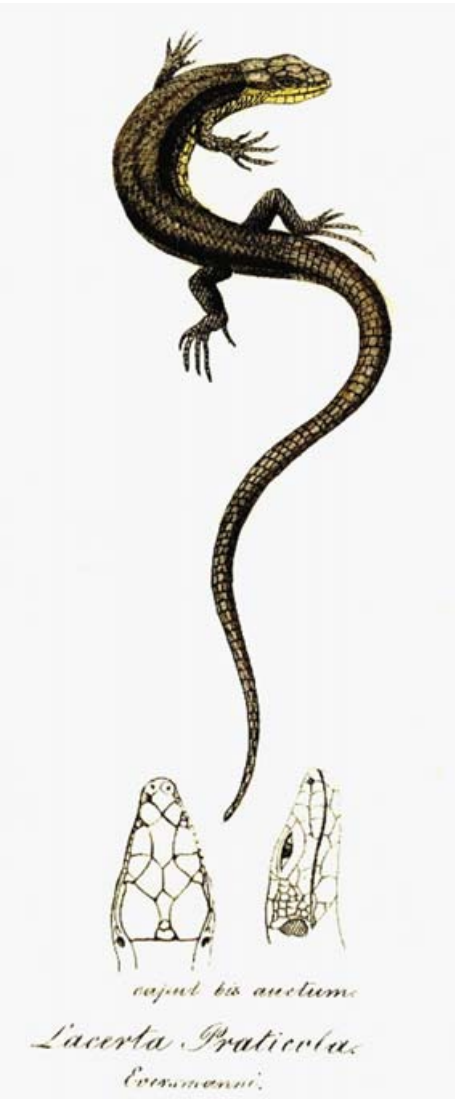

Fig. 10. Image of holotype of *Lacerta praticola* (Eversmann, 1834, Tab. XXX, Fig. 2).

again to the materials. That is especially strange because Lantz and Cyrén (1947) noted untypical specimens among *Darevskia praticola pontica*: one specimen from Sochi has 5 pair of chin shields with two pairs in a contact. Similar combination of chin shields is registered by us in one specimen from vicinity of village Ubin [SNP, No. 1243 (5)] and one more specimen from Mt. Bol'shoy Pseushkho [SNP, No. 1165 (5)]. However these specimens have no differences from other *Darevskia praticola pontica* in other pholidosis characters in particular in the high number of Gr. It is regretfully to state that description of *Darevskia praticola pontica* was done by Lantz and Cyrén (1919) not really correct, as untypical specimens of *Darevskia praticola praticola* from Ananuri were included to the series of *Darevskia praticola pontica*. Thus part of type series of *Darevskia praticola pontica*, in fact, is conspecific with a nominative subspecies, to which on rights for a junior synonym (part.) there name must be included.

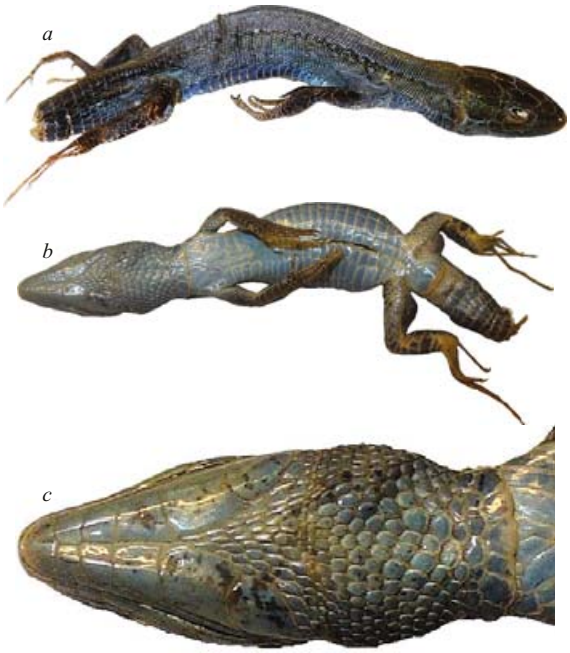

Fig. 11. Lectotype of *Lacerta praticola pontica*: *a*, dorsal side; *b*, ventral side; *c*, head, ventral side.

Taking into account all considerations done above and for stabilization of nomenclature situation we considered as necessary to select lectotype and paralectotypes, and to specify the distribution range of two forms.

Lantz and Cyrén had 15 available specimens from town Gagry, originated from own collection, and 1 specimen from collection of the Petrograd (St. Petersburg) University (Lantz and Cyrén, 1919, 1947). The last is selected by us as lectotype, which description is given below.

Lectotype

Darevskia pontica (Lantz et Cyrén, 1919). ZISP No. 22853 (Fig. 11). Internal label: "*Lacerta praticola* Ewe. Gagry. 1911 Tsarevskiy".

Adult male. Length of body from the tip of snout to the anus (L.) 46 mm; a tail is broken. Distance from the tip of snout to the posterior edge of parietal shields (Pil.) 11.4 mm; a maximal width of head in the district of tympanic shield (Lt.c.) 7 mm; a height of head in the district of occipital (Al.c.) 5.3 mm. Width of frontonasal in 1.25

time exceeds its length. Rostral separated from frontonasal by nasals. Occipital trapezoid; suture between prefrontals and frontal not concave into frontal. Between supraciliaries and supraocularis, dividing them, a complete row from 10 granules (supraciliary granules) on either side. First supratemporal moderately long, wedge-shaped; behind him, on the edge of parietal, the well expressed postparietal on every side. Masseteris large on each side. Between it and tympanic shield one shield on every side; six chin shields on every side, among them the first 3 pairs contact along the middle line of throat; 7 sublabials — from the left and 6 from the right side; 7 labials — on each side. In front of supraocular 4 frontolabials on each side; 16 scales from the middle line of throat to the collar (G.). A collar (collar) includes 8 scales. Dorsal scales with the well expressed keels; across a midbody 41 scales in one row (Sq.). Ventrals contact on sides of body with 1 – 3 body scales (most often 2). Ventral and pectoral shields in 24 transversal rows. In front of large anal shield (anal) a row from 9 preanal shields. Large preanals are not expressed; ten femoral pores (P.fm.) on every hind limb; their row does not reach knee bend; 3 scales between the rows of femoral pores.

The original body coloration not preserved; general color light-brown, along vertebral spine a darkly-brown cervical stripe. Temporal stripes composed from a longitudinal row of irregular dark spots. Along the upper edge of temporal stripes they are limited by a number of light-colored scales. Belly dirty-white with a mat sheen.

Paralectotypes *Darevskia pontica* (Lantz et Cyrén, 1919)

When describing pontic subspecies of meadow lizard in 1919 Lantz and Cyrén indicated that in their study they used specimens from followings localities of the Black Sea basin: "Georgievsko-Osetinskoie (Kuban' Valley), Novorossiysk, Sochi, mountains near Adler, Gagry, Gudauty, Sukhum..." and Caspian Sea basin "...Ananur (valley of R. Aragvi)" (p. 30). In 1947 the same authors published a list of the examined specimens, providing more detailed locality, date of collection, name of collectors, place of storage and collection number of syntypes. Remarkable that specimens from Mekhadia (ZISP 9814) attributed according to authors points of view to the pontic lizard, were mentioned in work of 1919. Exactly they were used by Sobolevsky in the future for description of *Darevskia praticola hungarica*.

Followings paralectotypes are stored in collection of Zoological Institute:

ZISP 5279, 5280, 2 females, Sukhum-Kale, 1879, Chernyavskiy. Formerly they were kept in the Zoological cabinet of the Emperor St. Petersburg University as No 273 [= Sukhum, Abkhazia].

ZISP 22852, 2 males, Gudauty, 07.1911, S. F. Tsarevskiy. Formerly they were kept in the Zoological cabinet of the Emperor St. Petersburg University as No. 640.

ZISP 22854, 1 male, Black Sea province, slopes of mountain of Okhun (Sochi environs), 10.06.1912, N. S. Dorovatovskiy. Formerly it was kept in the Zoological cabinet of the Emperor St. Petersburg University as No. 683 [= Mt. Bol'shoy Akhun, Khosta Rayon, Sochi].

A species is distributed in the Balkan Peninsula to Romania in the north and in the Black Sea basin of Western Caucasus. Specimens from vicinity of Ananur in a valley of Aragvi River referred earlier (Lantz and Cyrén, 1919, 1947) to the examined taxon in fact belong to *Darevskia praticola praticola*.

The further confused story of study of *Darevskia praticola* sensu lato was following: Lantz and Cyrén referred specimens from Mekhadia in former south-east Hungary (now Romania) to *Darevskia praticola pontica*. As was noted above Sobolevsky (1930) described from Mekhadia *Darevskia praticola hungarica*. He probably or did not know or ignored the publication of Lantz and Cyrén (1919). Later Lantz and Cyrén (1947) in turn ignored description of Sobolevsky. Sobolevsky not only believed that all the Caucasus is inhabited by lizards of nominative subspecies but also did not used diagnostic character, indicated by Lantz and Cyrén, in particular, number of chin shields. Considering the Balkan lizards after a number of characters as a distinct subspecies (noting that they could be considered as a distinct species), Sobolevsky did not recognize a difference between lizards from the Caucasian Black Sea coast and north slope of the Caucasus. Among 23 examined by him specimens from the Caucasus 19 specimens were originated from the Black Sea coast and only 4 — from North Caucasus. From these last 1 specimen (Kuban Region, village Georgievsko-Osetinskoe) is originated from the distribution range of *Darevskia praticola pontica*, and other 3 specimens were collected from a district Essentuki town (ZISP No. 6851, Col. Bogdanov). We succeeded to examine two specimens only, as the third was sent by S. A. Chernov to the Cambridge museum in 1932. In spite of bad condition we identify these specimens as belonging to the nominative subspecies, as they have 5 chin shields with only first 2 contacting pairs, and not developed masseteris. Thus, these specimens Sobolevsky did not note in these specimens those diagnostic characters which were selected by Lantz and Cyrén. Interestingly, that Sobolevsky noted as one of basic diagnostic character of *Darevskia praticola hungarica* the large wide dorsal scales, unlike the small

Fig. 12. *Darevskia pontica* from vicinity of Sochi.

and narrow dorsal scales in *Darevskia praticola* from the Caucasus. This character in due time was used as a base for description of *Lacerta vivipara stenolepis* (Nikolsky, 1913), from the foot of mountain Il at Vladikavkaz (North Ossetia). Examination of type specimen of this form convinced Lantz and Cyrén (1919) in its identity with *Darevskia praticola praticola*, although this specimen had untypical combination of chin shields — 5/6. In this case, for us not so important the reasons of ignoring by Sobolevsky of work of Lantz and Cyrén but it is interesting to approve the fact of division of the Balkan and Caucasian specimens into different distinct taxa. This opinion (with some limitations) was supported by Stugren (1961) and Bischoff (1976), but after indisputable opinion of Mertens and Wermuth (1960), it was refuted by Fuhn and Vancea (1961) and all following researchers (Orlova, 1975, 1978; Bannikov et al., 1977; Ljubisavljevic et al., 2006; Ananjeva et al., 2006).

The combination of West Caucasian and Balkan lizards in one subspecies is in conflict with geographical principle of allocation of intraspecific taxa. A similar situation was formed also in regard to Talysh lizards, traditionally considered within the taxon of *Darevskia praticola praticola*.

As it was already noted above, the main reason for referring of Talysh lizards to a nominative subspecies was a presence 5 chin shields two pairs of which are in a contact. However a limited number of specimens from mainly old collections (Talysh and Iran), did not allow earlier to estimate the originality of these animals, including such perfect study of geographical variation of this lizard in the Caucasus, as for example made by Orlova (1978) or Ljubisavljevic et al. (2006). Alekperov (1978) referred lizards from Azerbaijan, including Talysh to the nominative subspecies. On the base of literature information Anderson (1999) considered animals from Iran as the nominative subspecies.

Probably Lantz and Cyrén supposed to describe a new taxon (variety), for what we have as evidence the labels of the corresponding specimens from collection of Lantz, stored presently in ZISP (Nos. 12632, 12633, 12634, 12635, 14643, 16042). However, as we could suppose, it was not finalized due to the limited material from a region.

The pattern of species distribution illustrates the presence of two large groups, constantly differentiating on such important taxonomic characters as number of chin shields and a number of their contacting pairs. The first group includes animals, having 6 chin shields with first three contacting pairs. The animals of this group, as a rule, are considered as *Darevskia praticola pontica*. The second group unites animals with 5 pair of chin shields, with two pairs in a contact. These lizards are referred to a nominative subspecies.

The distribution range of the first form is disrupted into the Balkan and Caucasian sectors. In Balkan species is known from Romania (Fuhn and Vancea, 1961; Iftime et al., 2008; Covaciu-Marcov et al., 2009), Bulgaria (Buresh and Tsankov, 1933; Biserkov, 2007), to Transdanube Serbia westwards (Ljubisavljevic et al., 2005; 2008). Bodenheimer (1944) supposed the possibility of occurrence of species in European Turkey (Thrace) that was later confirmed by Eiselt (1970). Presently a meadow lizard is known from four localities of Turkish Thrace (Ilgaz and Kumlutas, 2005) and indicated for Greek part of Thrace (Arnold and Ovenden, 2002). Record of species in Hungary (Alekperov, 1978; Bannikov et al., 1977; Tertyshnikov and Gorovaya, 1998; Kuzmin and Semenov, 2006) is erroneous. Andreev (1953) noted a meadow lizard over for territory of Sadgirskiy District of the Chernovtsy Region of Ukraine that was put into question by Taraschuk (1959), who supposed incorrect identification of *Zootoca vivipara* in this case. In the Caucasus *Darevskia praticola pontica* is distributed on the Black Sea coast north-west of Sukhum to Taman Peninsular (Tuniyev and Tuniyev, 2004; 2006) (Fig. 12), along the Main Caucasian Ridge from western extremity to Mt. Lysaya and Mt. Khakudzh on the east, where the maximal altitudinal records are marked on 1400 m a.s.l. (Tuniyev, 2000a, 2000b) (Fig. 12). On the north macroslope of the Western Caucasus *Darevskia praticola pontica* is distributed from a valley of Kuban River to the Skalistyy (Rocky) Ridge

inclusive. Eastward this form reaches the Karachay-Cherkessia and western part of the Stavropol Kray, where it is known from the mountain Strizhament, Nedremannyy Ridge, village Tatarka and Stavropol City (Orlova and Tertyshnikov, 1979; our information).

It is necessary to underline that within the limits of distribution range of *Darevskia praticola pontica* it was described *Lacerta colchica* from Sochi on the Black Sea coast of the Caucasus (Nikolsky, 1915) and *Lacerta plicata* from vicinity of village Veriyut in Shakhgirey canyon of Malaya Laba River on the north slope of Western Caucasus (Bartenef and Reznikova, 1931). Description of these forms brought in an additional mess to a certain degree not clarified until these days.

So, Lantz and Cyrén (1919), obtaining from A. M. Nikolsky a type specimen of *Lacerta colchica* for examination, identified that it is typical *Lacerta vivipara*, and it is a mistake in collection label. At the same time, Ryabinina et al. (2002) believed that this question must be revised.

Orlova (1973) recorded occurrence of *Darevskia praticola pontica* in north part of the Caucasian Reserve, and therefore *Lacerta plicata* was considered as the junior synonym of pontic meadow lizard (Orlova, 1978). It should be noted that Orlova worked in a basin of Belaya River, while *Lacerta plicata* was described from a basin of Malaya Laba River. We have visited this district in several years, and succeeded to collect 6 specimens from type locality (SNP, No. 1142. Mt. Kutan. 08.06.1995; No. 1349. Gorge of Kapustin 29.06.2005; No. 1416. Gorge of Kapustin. 29.08.2007. Coll. B. S. Tuniyev; No. 1521. Gorge of Kapustin. 18.06.2009. Coll. S. B. Tuniyev). The analysis of external morphology (coloring, pholidos) of these specimens confirms their belonging to *D. praticola pontica*. We also noted some signs of possible hybridization with *D. derjugini* (some specimens have contact of rostral and frontonasal shields in one point, numerous dark small spots from both sides of the back between the occipital and temporal stripes and the bright white stripe on each side of tail. Specimens with hybrid characters between *D. praticola pontica* and *D. derjugini* were marked by us also on the Black Sea coast of Caucasus, in vicinity of Sochi on the Agurchik creek (Tuniyev, 1987).

Distribution of *D. praticola praticola* also consists of two fragments: in Talysh – Alburz and in the foot-hills of both slopes of the East Caucasus and the Small Caucasus.

To some kinds of curious points we refer *Lacerta mostoufi* Baloutch, 1976 described from the desert of Dashte-lut in south-east Iran, identified by several experts as *Darevskia praticola* (cit. Anderson, 1999: p. 239). The described phyto-landscape conditions of type locality (village Dekh Sal'm in a 200 km north of mountains Malek Mokhammed) (Anderson, 1999) are characteristic for the members of genera *Phrynocephalus*, *Trapelus*, *Ophisops*, and *Eremias*, but these conditions are not acceptable for habitat of lizards of genus *Darevskia*, including most thermophylous species as *D. nairensis* and *D. defilippi*. Black coloration of specimens, as adaptation (Anderson, 1999) unlikely can be acceptable for the diurnal small-sized lizard in the hot desert. We join in the opinion of Eiselt (1995), considering coloration of holotype as the result of the primary formalin preservation. Despite Anderson doubts (1999), other opinion but a mistake in collection label in this case could not be accepted.

In a retrospective view, curious was referring of lizards from Armenia to *D. praticola pontica* (Chernov, 1937), with the correct pointing of diagnostic character on the number of chin shields, typical for a nominative subspecies. This error was later corrected by its author (Chernov, 1939).

There are relatively large disjunctions of distribution range of *D. praticola* on the east of the Caucasian Isthmus. So it is known from the north foot-hills of Central and East Caucasus, from the east part of the Stavropol Kray (diaper-mountains near Mineral'nye Vody and valley of Kuma River to the village Orlovka in the north) to the north piedmont of Dagestan (Khonyakina, 1964), then isolated finds in the valley of lower flow of Samur River (Roitberg et al., 2000), on the south slope of the East Caucasus in the district of Zakataly (Alekperov, 1978), Lagodekhi and Tsiv-Gomborskiy Ridge (Muskhelishvili, 1969, 1970). Southward it is known from Suramskiy and Kartliyskiy Ridges (Muskhelishvili, 1969, 1970) and, presumably, it is isolated in north Armenia.

Nowhere along the junction of natural distribution are ranges of two forms in Central Precaucasus (place of passing of meridional border between the western and east groups of populations), the cases of hybridization marked with records of individuals with the mixed characters. This fact, as well as presence of constant important taxonomic characters (number of chin shields), confirm the specific status of lizards from two large groups. We mark asymmetry in the number of chin shields 5/6 for single specimens from Armenia (for 1 male and 1 female from, accordingly 8 and 2 examined specimens from vicinity of Vanadzor (former Kirovokan)]. Lantz and Cyrén (1919) marked a similar anomaly in 1 from 21 examined specimens from Talysh and in 1 from observed 43 specimens from Western Caucasus. The same asym-

metry was recorded by Lantz and Cyrén 1919) for specimen from North Ossetia (*Lacerta vivipara stenolepis*), and also by Orlova (1978) from East Caucasus and Tsiv-Gomborskiy Ridge in East Georgia. Thus, similar anomalies, as an exception, are noted practically within the entire Caucasian distribution range of *Darevskia praticola* sensu lato, but while not found in south-east Europe (Ljubislavljevic et al., 2005). At the same time there is a general tendency in south populations of *D. pontica* sensu stricto on the Black Sea coast of the Caucasus and *D. praticola hyrcanica* in Talysh to the maximal values of length and width of head and minimal number of scales between the rows of femoral pores.

Orlova (1978) underlines likeness of lizards from Balkan and the Western Caucasus from one side and the Central Caucasus with Talysh, with other, in the number of granules and chin shields. The study of genetic relations of populations of meadow lizard led Kosushkin (2006) to the conclusion about isolation of lizards from Talysh (close to subspecific level) from the North Caucasian meadow lizards. According to the opinion of this author, divergence level the Balkan individuals can correspond to subspecific, or even specific level. In the latest work of Ljubislavljevic with co-authors (2005), they made a conclusion on the basis of statistical and multivariate analyses about distinctions at specific level between *D. praticola praticola* and *D. praticola pontica*. However these authors did not make the final taxonomic decision about these forms and again did not discuss the animals from Talysh.

Based on the data obtained the system of close related species of *D. praticola* sensu stricto and *D. pontica* can be presented as follows:

KEY FOR IDENTIFICATION OF SPECIES

1(2) 5 pairs of chin shields, 2 pairs forming a median suture, if 6 pair (exception), number of Gr. from both sides less than 10 (*Darevskia praticola*)

2(1) 6 pairs of chin shields, 3 pairs forming a median suture, if 5 pairs (exception), number of Gr. from both sides more than 11 (*Darevskia pontica*).

KEY FOR IDENTIFICATION OF SUBSPECIES *Darevskia praticola* sensu stricto

1(2) number of scales between the rows of femoral pores more frequently only 3 – 4 (3.5); animals colored in red-brown tones; dark stripes or spots under light stripe absent on each side of body; occipital and temporal bars poorly developed, or animals have homogenous coloration; color in live of lateral ventral shields is white, yellow, or greenish (*D. praticola praticola*)

2(1) number of scales between the rows of femoral pores more frequent only 2 – 3 (2.4); animals colored in chocolate-brown tones, interrupted dark stripe on each side of body under the light stripe, or row of spots; a color pattern always contrasting; the color in live of lateral ventral shields goldish-pink (*D. praticola hyrcanica*).

Conclusion about specific status of *D. praticola* and *D. pontica* is not a large surprise in the light of modern views on phylogeny and systematics of polymorphic genus *Darevskia* Arribas, 1997. There are many examples of superspecies groups, former known as conspecific taxa (*Darevskia alpina – D. caucasica – D. daghestanica*; *D. saxicola – D. lindholmi – D. brauneri*; *D. raddei – D. nairensis – D. defilippi*; and others). Similar evolutional tendencies are marked also for the snakes of Caucasian — Frontal Asian region, in particular *Hemorrhois ravergieri – H. nummifer* (Schätti and Agasjan, 1985; Tuniyev, 1997), *Pelias kaznakovi – P. dinniki – P. darevskii – P. pontica – P. orlovi – P. magnifica* (Tuniyev et al., 2010).

Darevskia praticola sensu lato is considered as a sister taxon in relation to *D. caucasica* group (Murphy et al., 1996). On this base Roitberg (1999) made an effort, to estimate their phenetic relations using a canonical analysis. He revealed trend of changes of morphological indexes in *Darevskia praticola – D. caucasica – D. daghestanica* towards oligomerization, therefore *D. praticola* is considered as younger species, changing rocky and stony habitats to terrestrial, mainly forest habitat. Although Roitberg fairly noted that presence of vast distribution range of this species outside Caucasus in south-east Europe does not allow to interpret it uniquely as evolutionally young taxon he supposed *D. daghestanica* an ancestral species, from which *D. praticola* and *D. caucasica* were speciated during a postglacial period. Ljubislavljevic with co-authors (2005) associated speciation of *Darevskia praticola* sensu lato with the events of Pleistocene and considered *D. pontica* sensu stricto as younger taxon in comparison with *D. praticola* sensu stricto. Last taxon, according to their point of view, penetrated to North-Eastern Caucasus from East Transcaucasia along the Caspian coast in Postglacial, or in Interglacial periods. Penetrating of *D. pontica* sensu stricto to south-east Europe occurred in Pleistocene along the floor of drying up Sea of Azov through Crimea. Probable habitat and disappearing of meadow lizard in Crimea supposed Szczerbak (1966) considering exactly Pleistocene as a time of extinction of species on this peninsula.

Not go into the detailed analysis of phylogenetic relations of meadow lizard and other members of genus *Darevskia*, will note that there is no stable point of view: Fu (1999) and Murphy et al. (2000) referred *D. praticola* and *D. alpina* to "*saxicola*" clade using molecular-genetic methods, that, probably, is an error due to use of hybrid specimens of *D. alpina* in this study. Remarkable that in earlier work of the same authors (Fu et al., 1997) a meadow lizard was used as out-group in relation to other

rocky lizards (including the members of "*saxicola*" and "*caucasica*" groups). Grechko et al. (2006) refuted this conclusion and positioned *D. praticola* close to *D. daghestanica*, noting controversial position of species. Notably, that in study of Arnold et al. (2007) *D. praticola* forms one clade with *D. brauneri* on the Bay phylogenesis tree of Lacertini based on information on cytochrome B 12S rRNA. However information on "*caucasica*" complex was not used in this analysis.

We are inclined to think about the multiple origins of several lines of "*pra-praticola*" in early Pliocene from the ancestor (not directly from *D. daghestanica*) round the Great Caucasus. In this connection, we can assume the divergence of *D. alpina* in the periglacial regions of middle mountain belts and *D. pontica* in refugiums of piedmont belts on Western Caucasus. Thus even on the north and south slopes of Western Caucasus landscape-climatic conditions were different already in Pliocene, and in Pleistocene they are radically divided. The different ways of adaptation and speciation of animals on two slopes of Western Caucasus can be confirmed by the results of study of DNA-markers (Ryabinina et al., 2002; Kosushkin, 2003). According to these data the level of divergence between some populations (for example, from Sochi) is not less that the level of divergence at subspecific level. Independent ways of infusing by *D. praticola* from East Transcaucasia and *D. pontica* from Western Transcaucasia were assumed by Tertyshnikov and Gorovaya (1998).

According analogous scenario divergence could take place for *D. caucasica* in middle-mountain belts and *D. praticola* in foot-hills of Central and East Caucasus. According to Ryabinina et al. (2002), the level of divergence of single populations does not exclude the description of new subspecies or species. Probably, in these processes participated *D. daghestanica*, however its modern distribution from foot-hills to high mountain belt in Dagestan practically does not allow to assume the possibility for the parallel speciation from joint ancestor of two ecologically close species. Morphologically, according to data of Roitberg (1999), *D. praticola* is more close to *D. caucasica* than to *D. daghestanica*. Along East Caucasus the specialization of *D. praticola* also could take place both in foot-hills of north and south slopes.

Modern contact of distribution ranges of *D. praticola* and *D. pontica* in Central Precaucasus can be explained by history of landscapes and biota speciation of north slope of the Great Caucasus. Pyatigorsk volcanic diapermountains limit natural habitats of the Mediterranean species, distributed westward to Taman – Crimea – Balkan. The east from Elbrus is the border of distribution of Dagestan and East-Caucasus endemics. Vast deforested area (due to volcanic activity of Mt. Elbrus) divides the forest areas of Western and East Caucasus.

For us it is important to understand what possible ways were used by *D. pontica* to penetrate to the Balkan Peninsula and *D. praticola* — to Talysh. Grossheym (1936) links formation of wide center of xerophylous flora as in modern Mediterranean with the second half of Tertiary period. Interestingly that according to opinion of Grossheym the basic way of penetration of the Mediterranean elements to the Caucasus went from a north through Manych, thus, the main invasion of Mediterranean species took a place comparatively late, before an ice-age. To reverse direction could happen influsing of *Darevskia pontica* along the sub Mediterranean landscapes to the Balkan Peninsula, and a modern disjunction is the result of Pleistocene transformations of landscapes of north coast of Black Sea in a steppe area.

Likely, distribution of vegetation described by Baranov (1952) from Ergeny — though and deciduous, but heat-loving, with such species, as *Corilus fossilis*, *Alnus incana*, *Quercus* sp., *Castanea* sp., *Parrotia persica*, Araliacea occurred in Pliocene in east part of Caucasus along coasts at first Caspian sector of Pont, and then Balakhan basin. As noted Vereschagin (1959) the indicator of warm climate is *Parrotia persica*, survived at present on 10° south in Talysh – Alburz. Parallel along with Hyrcanian flora took place the speciation of xerophylous Mediterranean and Near East vegetation. This opinion confirms by find of upper-middle Pliocene *Testudo* sp. from Ergeny, similar in size with recent *Testudo graeca* (Alekperov, 1978). It is logically to suppose infusing of *Darevskia praticola* southward to Talysh and Alburz along the belt of this vegetation. Native modifications of landscapes occurred in Pleistocene, with development of deserts, or steppes of practically all of Caspian Sea coast north of Talysh, resulted in disappearance of meadow lizard. Derivatives of the hyrcan forests were saved only in a mouth of Samur River in Dagestan. Remarkable that from the valley of lower flows of Samur River the recent find of *D. praticola* is known (Roitberg et al., 2000).

Important to note the variations in a number of chin shields, recorded in both species in many parts of their distribution range. The constant different number of chin shields in two close species testify the ancient stabilizing of directions of evolutional processes. The described exceptions can be considered as evidence of common origin from ancestors with different combinations of number of chin shields and by local mutations, which are not fixed, except for populations from East Georgia (with both variants of chin shields). Based on considerations above we

can not simply suppose a center the origin of species exactly on the south slope of East Caucasus. Another hypothetical possibility of explanation of differences of population from East Georgia is consequences of hybridizations of two species taking place in the past as *Darevskia praticola* sensu stricto known to Suramskiy Ridge inclusive, and *D. pontica* sensu stricto was recorded by Nikolsky (1913) from Svanetia located not far.

We will underline in conclusion, that originality of disjunctive populations of East Transcaucasia and south Dagestan is the topic of following study which will clarify the patterns and reasons of variability of *Darevskia praticola* sensu stricto in south part of natural habitat.

Acknowledgments. Authors are deeply grateful to N. L. Orlov for consultations in taxonomic and nomenclature fields, to A. N. Pashkov and S. I. Reshetnikov for valuable consultations in a DCA, to K. Yu. Lotiev and I. N. Timukhin for field assistance. The study was partially supported by Scientific School Support Program (Project No. NSh-4724.2010.4) and Ministry of Education and Science of Russian Federation.

REFERENCES

Alekperov A. M. (1978), *Amphibians and Reptiles of Azerbaijan* [in Russian], Elm, Baku.

Ananjeva N. B., Orlov N. L., Khalikov R. G., Darevsky I. S., Ryabov S. A., and Barabanov A. V. (2006), *The Reptiles of Northern Eurasia. Faunistica Pensoft Series. No. 47*, Pensoft, Sofia – Moscow.

Anderson S. C. (1999), *The Lizards of Iran*, SSAR: Society for the Study of Amph. and Rept. Vol. 15, Oxford (Ohio).

Andreev I. F. (1953), "Amphibians and reptiles of Prekarpaty," *Nauch. Zap. Kishinevskogo Univ.*, **8**, 23 – 39.

Arnold E. N. and Ovenden D. (2002), *A Field Guide to the Reptiles and Amphibians of Britain and Europe. 2nd Edition*, Harper Collins Publishers, London.

Arnold E. N., Arribas O., and Carranza S. (2007), "Systematics of the Palaearctic and Oriental lizard tribe Lacertini (Squamata: Lacertidae: Lacertinae), with descriptions of eight new genera," *Zootaxa*, **1430**, 1 – 86.

Bannikov A. G., Darevsky I. S., Ischenko V. G., Rustamov A. K., and Szczerbak N. N. (1977), *Field Guide of the USSR amphibians and Reptiles* [in Russian], Prosveshchenie, Moscow.

Baranov V. I. (1952), *What Talking Sandstones of Kamyshin and Sands of Ergeny About* [in Russian], Stalingrad: Oblastnoe Knigoizdatel'stvo.

Bartenef A. und Reznikova M. (1931), "New Lacerta-Formen (Reptilia) aus dem Kaukasichen Staatnaturschutzgebiete (West-Kaukasus)," *Zool. Anz.*, **96**(9/10), 268 – 271.

Biserkov V., Naumov B., Zankov N., Stojanov A., Petrov B., Dobrev D., and Stoev P. (2007), *Field Guide of the Bulgarian Amphibians and Reptiles* [in Bulgarien], Zeleni Balkany, Sofia.

Bishoff W. (1976), "Echsen des Kaukasus 11. Die Wiesen-eidechse, *Lacerta praticola* Eversmann, 1834," *Aquarien Terrarien*, **12**, 415 – 417.

Bodenheimer F. S. (1944), "Introduction into the Knowledge of the Amphibia and Reptilia of Turkey," *Rev. Fac. Sci. Univ. d'Istanbal*, **9**(1).

Boettger O. (1886), "Die Reptilien und Amphibien des Talysh-Gebietes," in: *Die Fauna und Flora des Südwestlichen Caspi*, Leipzig, pp. 31 – 82.

Buresh I. and Zonkov J. (1933), "Study on distribution of reptiles and amphibians in Bulgaria and Balkan Peninsular. Part I. Tortois (Testudinata) and lizards (Sauria)," in: *Proc. of Royal Nat.-Sci. Inst. of Sofia* [in Bulgarian], pp. 150 – 207.

Chernov S. A. (1937), *Field Guide of Snakes*, *Lizards and Tortoises of Armenia* [in Russian], Izd. AN SSSR, Moscow – Leningrad.

Chernov S. A. (1939), "Herpetofauna of Armenian SSR and Nakhichevan ASSR," *Zool. Trudy Arm. Fil. AN SSSR*, **1**, 79 – 194.

Covaciu-Marcov S. D., Cicort-Lucaciu A. S., Gaceu O., Sas I., Ferenti S., and Bogdan H. V. (2009), "The herpetofauna of the south-western part of Mehedinti County, Romania," *NW J. Zool.*, **5**(1), 142 – 164.

Eiselt J. (1970), "Ergebnisse zoologischer Sammelreisen in der Turkei: Bemerkenswerte funde von Reptilen I," *Ann. Naturhistor. Mus. Wien*, **74**, 343 – 355.

Eiselt J. (1995), "Ein Beitrag zur Kenntnis der Archaeolacerten (sensu Mehely, 1909) des Iran (Squamata: Sauria: Lacertidae)," *Herpetozoa*, **8**(1 – 2), 59 – 72.

Eversmann E. (1834), "Lacertae Imperii Rossici variis in itineribus meis observatae," *Nouv. Mem. Soc. Natur. de Moscou*, **3**, 339 – 369.

Fu J. (1999), *Phylogeny of Lacertid Lizards* (*Squamata*: *Lacertidae*) *and the Evolution of Unisexuality. Unpbul. Ph.D. Diss.*, Univ. of Toronto, Toronto, Canada.

Fu J., Murphy R. W., and Darevsky I. S. (1997), "Toward the phylogeny of Caucasian rock lizards: implications from mitochondrial DNA gene sequences (Reptilia: Lacertidae)," *Zool. J. Linnean Soc.*, **121**, 463 – 477.

Fuhn I. E. and Vancea S. (1961), "Reptilia," *Fauna Rep. Pop. Romine*, **14**(2), 246 – 253.

Grechko V. V., Ciobanu D. G., Darevsky I. S., Kosushkin S. A., and Kramerov D. A. (2006), "Molecular evolution of satellite DNA repeats and speciation of lizards of the genus *Darevskia* (Sauria: Lacertidae)," *Genome*, **49**, 1297 – 1307.

Grossheim A. A. (1936.), "Analysis of the Caucasian flora," *Trudy Botan. Inst. Azerb. Fil. AN SSSR*, **1**, 1 – 257.

Iftime A., Petrescu A.-M., and Iftime O. (2008), "Observations on the herpetofauna of the Mehedinti karstic plateau (Mehedinti and Gorj Countries, Romania)," *Trav. Mus. Natl. d'Hist. Naturelle*, **51**, 219 – 230.

Ilgaz C. and Kumlutas Yu. (2005), "The Amphibian and Reptile Species of Igneada (Kirklareli) and its Vicinity," *Pakistan J. Biol. Sci.*, **8**(4), 558 – 560.

Kessler K. F. (1878), "Voyage to Transcaucasia territory in 1875 with zoological goal," in: *Supplement to Proc. St. Petersburg Nat. Soc. Vol. 8* [in Russian].

Khonjakina Z. P. (1964), *Lizards of Dagestan. Author's Abstract of Doctoral Thesis* [in Russian], Makhachkala.

Kidov A. A. (2010), "On distribution of meadow lizard *Darevskia praticola* (Eversmann, 1834) (Reptilia, Sauria: Lacertidae) in forest belt of Talysh in Azerbaijan," *Curr. Res. Herpetol.*, 109 – 112.

Kidov A. A., Pykhov S. G., and Dernakov V. V. (2009), "New finds of Talysh toad (*Bufo eichwaldi*), meadow lizard (*Darevskia praticola*) and Persian race snake (*Elaphe persica*) in south-east Azerbaijan," *Trudy Ukr. Herpetol. Obshch.*, **2**, 21 – 26.

Kosushkin S. A. (2003), "Investigation of species differentiation of two Caucasian lizards genus *Darevskia* with inter-MIR-PCR method," in: *Third Conf. of Herpetologists of Volga Region* [in Russian], Tol'yatti, pp. 32 – 33.

Kosushkin S. A. (2006), *Short Retropozones in Genomes of Reptiles* (*Order Squamata*). *Author's Abstract of Doctoral Thesis* [in Russian], Moscow.

Kuzmin S. L. and Semenov D. V. (2006), *Conspectus of Amphibians and Reptiles Fauna of Russia* [in Russian], Moscow.

Lantz L. A. and Cyrén O. (1919), "On *Lacerta praticola* Eversmann," *Ann. Mag. Nat. Hist.*, **3**(9), 28 – 31.

Lantz L. A. and Cyrén O. (1947), "Les lezards sylvicoles de la Caucasie," *Bull. Soc. Zool. France*, **72**(4 – 5), 169 – 186.

Ljubisaljevic K., Dzukic G., and Kalezic M. L. (2008), "Female reproductive life history traits of the meadow lizard, *Darevskia praticola* (Eversmann, 1834) from western-most boundary of the species range," *Polish J. Ecol.*, **56**(2), 289 – 297.

Ljubisavljevic K., Orlova V. F., Dzukic G., and Kalezic M. L. (2006), "Geographic patterns in morphological variation of the meadow lizard, *Darevskia praticola* (Lacertidae): taxonomical and biogeographical implications," *Periodicum biologorum*, **108**(1), 47 – 55.

MacCulloch R. D., Darevsky I. S., Murphy R. W., and Fu J. (1997), "Allozyme variation and population substructuring in the Caucasian ground lizards *Lacerta derjugini* and *Lacerta praticola*," *Russ. J. Herpetol.*, **4**(2), 115 – 119.

Mertens R. und Wermuth H. (1960), *Die Amphibien und Reptilien Europas*, Frankfurt am Main.

Murphy R. W., Darevsky I. S., MacCulloch R. D., Fu J., and Kupriyanova L. A. (1996), "Evolution of the bisexual species of Caucasian Rock Lizards: a phylogenetic evaluation of allozyme data," *Russ. J. Herpetol.*, **3**(1), 18 – 31.

Murphy R. W., Fu J., MacCulloch R. D., Darevsky I. S., and Kupriyanova L. A. (2000), "A fine line between sex and unisexuality: the phylogenetic constraints on parthenogenesis in lacertid lizards," *Zool. J. Linn. Soc.*, **130**, 527 – 549.

Muskhelishvili T. A. (1969), "Distribution and habitats of meadow lizard (*Lacerta praticola praticola* Eversmann) in Georgia," *Trudy AN GrSSR*, **56**(2), 465 – 466.

Muskhelishvili T. A. (1970), *Reptiles of Eastern Georgia* [in Russian], Tbilisi,.

Nikolsky A. M. (1911), "*Lacerta vivipara stenolepis* Nic.," *Ann. Zool. Mus. Acad. Sci.*, **16**(1), 1 – 11.

Nikolsky A. M. (1913), *Reptiles and Amphibians of the Caucasus* [*Herpetologia caucasica*] [in Russian], Izd. Kavkaz. Muz., Tiflis.

Nikolsky A. M. (1915), *The Fauna of Russia and Adjacent Countries. Vol. I. Reptilia. Chelonia and Sauria* [in Russian], Izd. Imp. Akad. Nauk, Petrograd.

Orlova V. F. (1973), "Herpetofauna of northern part of Caucasian State Reserve," *Vestnik Zool.*, **2**, 61 – 65.

Orlova V. F. (1975), *Systematic and Some Ecological-Morphological Characteristics of Forest Lizards Genus* Lacerta. *Author's Abstract of Candidate's Thesis* [in Russian], Moscow.

Orlova V. F. (1978), "Geographical distribution and intraspecific variability of meadow lizard in the Caucasus," in: *Birds and Reptiles* [in Russian], Izd. MGU, Moscow, pp. 204 – 215.

Orlova V. F. and Tertyshnikov M. F. (1979), "On distribution and ecology of meadow lizard in central part of Northern Caucasus," in: *New Problems of Zoology and Its Discussion in Highschool Education. Part 2* [in Russian], Stavropol, pp. 311 – 312.

Roitberg E. S. (1999), "Phenetic relationships between *Lacerta caucasica*, *L. daghestanica*, and *L. praticola* (Reptilia, Lacertidae): a multivariate trend in external morphology," *Nat. Croat.*, **8**(3), 189 – 200.

Roitberg E. S., Mazanaeva L. F., Ilyina E. V., and Orlova V. F. (2000), "Die Echse des Dagestans (Nordkaukasus, Russland): Artenliste und aktuelle Verbreitungsdaten (Reptilia: Sauria: Gekkonidae, Agamidae, Anguidae, Scincidae et Lacertidae)," *Faunist. Abh. Staatl. Mus. Tierkunde*, **22**(8), 97 – 118.

Ryabinina N. L., Bannikova A. A., Kosushkin S. A., Ciobanu D. G., Milto K. D., Tuniyev B. S., Orlova V. F., Grechko V. V., and Darevsky I. S. (2002), "Estimation of the subspecific level of differentiation in Caucasian lizards of the genus *Darevskia* (Syn. "*Lacerta saxicola* complex," Lacertidae, Sauria) using genome DNA markers," *Russ. J. Herpetol.*, **9**(3), 185 – 194.

Schätti B. und Agasian A. (1985), "Ein neues Konzept für den *Coluber ravergieri — C. nummifer —* Komplex," *Zool. Abh. Statl. Mus. Tierkunde Dresden*, **40**(9), 109 – 123.

Shebzukhova E. A. (1969), *Reptiles of central part of Northern Caucasus. Author's Abstract of Doctoral Thesis* [in Russian], Nalchik.

Sobolevsky N. I. (1929), "The Herpetofauna of the Talysh and of the Lenkoran lowland," *Zap. Zool. Otd. Obshch. Lyubit. Est. Ist. Antropol. Étnogr.*, **5**, 1 – 141.

Sobolevsky N. I. (1930), "New form from genus *Lacerta* (Reptilia) from Hungary," *Trudy Ass. Issl. Inst. Fiz.-mat. Fak. 1 MGU*, **3**(1-A), 3 – 9.

Stugren B. (1961), "Systematik der Wieseneidchse *Lacerta praticola* Eversmann," *Zool. Beitr.*, **6**, 379 – 390.

Szczerbak N. N. (1966), *Amphibians and Reptiles of the Crimea* (*Herpetologia Taurica*) [in Russian], Kiev.

Taraschuk V. I. (1959), *Amphibians and reptiles. Fauna of Ukraine. Vol. 7* [in Ukraine], Kiev.

Terentjev P. V. and Chernov S. A. (1949), *Guide on Reptiles and Amphibians* [in Russian], Moscow.

Tertyshnikov M. F. (2002), *Reptiles of Central Precaucasus* [in Russian], Stavropol.

Tertyshnikov M. F. and Gorovaya V. I. (1998), "Systematic and geographical variability of *Lacerta praticola* Eversmann, 1834 in Precaucasus," *Fauna Stavropol Kray*, **8**, 92 – 95.

Tuniyev B. S. (1987), *Herpetofauna of Caucasian Reserve. Author's Abstract of Doctoral Thesis* [in Russian], Leningrad.

Tuniyev B. S. (1997), "On the distribution of *Coluber ravergieri* and *Coluber nummifer* in Turkmenistan and the possible evolutionary reasons for their polymorphism," *Asiatic Herpetol. Res.*, **7**, 131 – 136.

Tuniyev B. S. (2000a), "Biogeographical peculiarities of herpetofauna of Lazarevskiy Rayon," in: *Proc. of 4th Sci. Conf. of Maykop State Technol. Inst.* [in Russian], Maykop, pp. 103 – 104.

Tuniyev B. S. (2000b), "Modern condition of Gelendzhik herpetofauna," in: *Actual Problems of Ecology and Nature Conservation of Southern Regions of Russia and Adjoint Areas* [in Russian], Krasnodar, pp. 108 – 110.

Tuniyev B. S. and Tuniyev S. B. (2006), "Herpetofauna of Sochi National Park," in: *Inventarization of Main Taxonomical Groups and Cenoses*, *Sozological Investigations of Sochi National Park — First Results of First National Park of Russia. Issue 2* [in Russian], Moscow, pp. 195 – 204.

Tuniyev B. S., Orlov N. L., Ananjeva N. B., and Agasjan A. L. (2009), *Snakes of the Caucasus*: *Taxonomical Diversity*, *Distribution*, *Conservation* [in Russian], Moscow – St. Petersburg.

Tuniyev S. B. and Tuniyev B. S. (2004), "Herpetofauna of Taman Peninsular," in: *Ecological Problems of Taman Peninsular* [in Russian], Krasnodar, pp. 85 – 89.

Tyurin V. V., Morev I. A., and Volchkov V. A. (2003), *Linear Discriminant Analysis in Selection of Genetic Research* [in Russian], Krasnodar.

Vereschagin N. K. (1959), *Mammals of the Caucasus* [in Russian], Moscow – Leningrad.