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A NEW LIZARD SPECIES FROM *Lacerta saxicola* GROUP — *Lacerta dryada* sp. nov. (*SAURIA*, *LACERTIDAE*) AND SOME COMMENTS RELATIVE TO *Lacerta clarkorum* DAREVSKY ET VEDMEDERJA, 1977

Ilya S. Darevsky[1] and Boris S. Tuniyev[2]

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The re-examination of *Lacerta clarkorum* Darevsky et Vedmederja, 1977 type series as well as analysis of the recently collected new material may suggest that within the frames of Northeastern Turkey and neighboring region of Adzharistan within the Georgia, live two close allopatric species: *Lacerta clarkorum* proper and a new species *Lacerta dryada* sp. nov., whose description is made in this article. Evidence is provided on the distribution and comparative ecology of both species, their possible phylogenetic relation being discussed.

Key words: *Sauria*, *Lacertidae*, *Lacerta dryada* sp. nov., *Lacerta clarkorum*, Adzharistan, Turkey.

The lizard species *Lacerta clarkorum* was described from a few specimens collected by Richard and Erica Clark (1973) in the Artvin region of the Northeastern Turkey. Four other specimens of lizard, collected later in the neighboring territory of Adzharistan (the river Charnali canyon), were with some reserve, also placed into this species (Darevsky and Vedmederja, 1977). The subsequent collections, taken by the authors in Adzharistan and neighboring Turkey in 1989 – 1995, are strongly suggestive that the specimens from Adzharistan as well as from vicinity of Hopa in Northeastern Turkey offer the number of morphological features that enable us to place these lizards into a new species, whose description is given below.

***Lacerta dryada* sp. nov.**
Figs. 1 – 2 and Fig. 3 (see inset on p. 63).

Lacerta clarkorum Darevsky et Vedmederja, 1977:50 – 54 (part.)

Holotype: CNR, Sochi, No. 1103 (7), adult male, Western Georgia, Adzharistan, Khelvachaury district, gorge of Charnali River, Coll. B. Tuniyev, June 25, 1994.

Paratypes (21 specimens: 13 ♂♂ and 8 ♀♀): ZISP, St. Petersburg, Nos. 18809, 18810, same locality as holotype, Coll. I. Darevsky, September 5 1976; Kharkov, Nos. 459 (1), 459 (2), same locality, Coll. V. Vedmederja, July 27, 1975; CNR, Sochi, No. 1103 (1 – 6, 8 – 17), the same data as holotype, No. 1131,

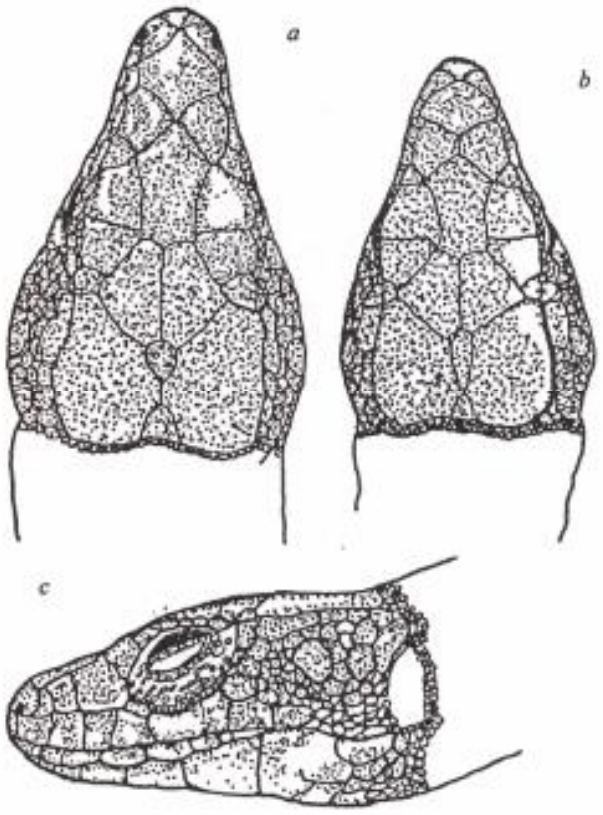

Fig. 1. Dorsal and lateral view of the head: *a*, *c*) *Lacerta dryada* sp. nov. (Holotype, CNR No. 1103 (7); *b*) *Lacerta clarkorum*. Note the different shape of frontonasals in species under comparison.

[1] Zoological Institute, Russian Academy of Sciences, 1 Universitetskaya nab., 199034 St. Petersburg, Russia.

[2] Caucasian State Biosphere Reserve, Sochi, Russia.

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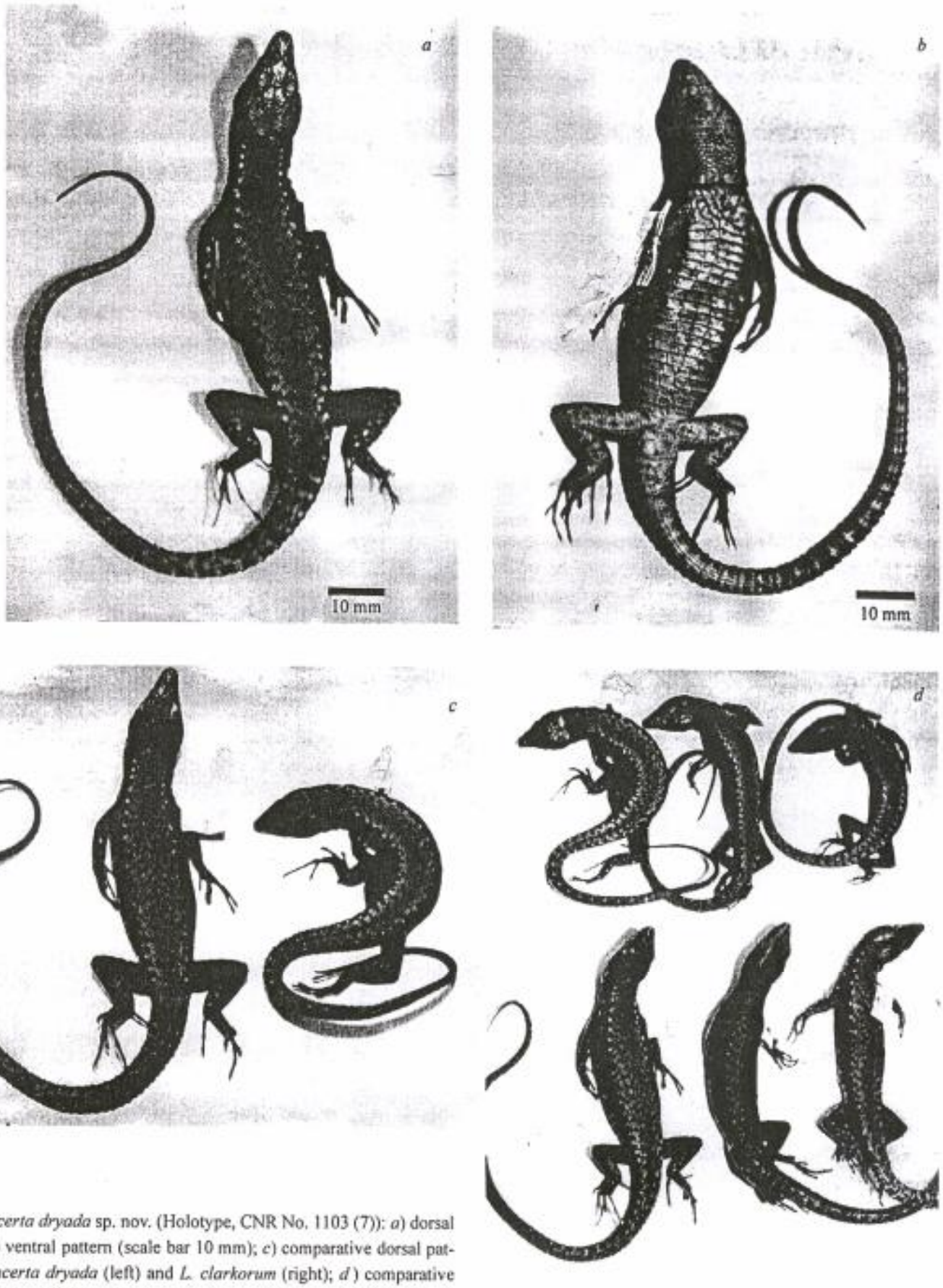

Fig. 2. *Lacerta dryada* sp. nov. (Holotype, CNR No. 1103 (7)): *a*) dorsal pattern; *b*) ventral pattern (scale bar 10 mm); *c*) comparative dorsal patterns of *Lacerta dryada* (left) and *L. clarkorum* (right); *d*) comparative view of dorsal patterns in specimens of *Lacerta clarkorum* (s. str.) from Maden in Turkey (above) and *Lacerta dryada* sp. nov. from terra typica in Adzharistan (below).

Turkey, Artvin villayat, vicinity of Hopa, village Subashi-Kej, Coll. B. Tuniyev, May 29, 1995.

Diagnosis. A comparatively large rock-lizard species differs distinctly from the related *Lacerta clarkorum* and other members of *Lacerta saxicola* group by the body coloration, and some metric and meristic characters of pholidosis, in particular by the scutellation of the head temporal area.

Description of holotype. Head moderately depressed; the length of frontonasal is somewhat greater than its width; short suture between rostral and frontonasal; series of granules between the supraoculars and the supraciliaries incomplete (9 on the right, 8 on the left sides of head respectively); the first supratemporal is large, somewhat constricted, and posteriorly truncate; four small posttemporals are present on each sides; mesenteric and left tympanic distinct and a little larger than other scales of temporal area (right tympanic indistinct); scales on body granular, smooth, 59 dorsal scales at midbody; 36 marginal scales along the 10 central ventrals at both sides; 23 scales between the chin shields and the collar; 39 granules between the ears across the throat; the pectorals and ventrals plates are arranged in 24 transverse rows; anterior of the broad anal, two big preanals are present symmetrically; femoral pores on each side number 20 and 19; scales on the upper surface of shin as large as dorsals, feebly keeled; around the middle of the right and left shins 18 and 17 small scales respectively; scales on the anterior third of the tail feebly killed. Snout-vent length is 67.4 mm; tail length is 132 mm. Back (in life) grass-green with numerous black dots and spots more dense along the vertebral line; sides with broad dark brown dorsolateral bands, frequently enclosing within itself small white and bluish dots; series of dark and blue spots along the outer row of ventral plates; ventral surfaces bright-yellow in life.

Description of paratypes. All paratype specimens agree with the description of the holotype with slight deviation in the metric and meristic characters as indicated in Tables 1 – 3.

Etymology. The species is named after the mythological creature inhabiting trees associated with the Tertiary-relict forests of southern Colchis and having pronounced arboreal mode of life.

Comparative remarks. The new species *Lacerta dryada* differs from the close allopatric *Lacerta clarkorum* by a larger size, body coloration peculiarities and some meristic characters of scutellation (Fig. 3 (see inset on p. 63); Tables 1 – 3). In particular in *L. dryada* the mesenteric as rule is large and well expressed (rarely absent), whereas in *L. clarkorum* this shield is small if at all. It is to be noted that in the both species under comparison a more or less pronounced contact exists between rostral and frontonasal scutes. Rarely rostral is separated from the frontonasal. From the sympatric *Lacerta rudis*, *Lacerta dryada* differs by large sizes, body coloration and the number of meristic characters, primarily by a small-sized scales on the upper surface of shins. The fragmentation of some plates of the head is often the case in *L. dryada*, which results in formation of small irregular additional shields.

Darevsky et Vedmederja (1977) suggested a possible hybridization between *L. clarkorum* and *L. rudis*. According to our finding, the latter species may easily hybridize with *L. dryada*, and the hybrids are often found in nature.

Geographical distribution and ecological peculiarities. *Lacerta dryada* sp. nov. occurs on the restricted territory of the north-eastern foothills of the Pontic Ridge within the boundary of area of Adzharistan and Northeastern Turkey where it is certainly known from the gorge of Charnali river and the vicinity of Hopa (Fig. 4). Apparently the isolated micropopulations might be found also along the northern slope of the Pontic Ridge westward till Surmene (the botanical boundary of Colchis and Submediterranean types of vegetation), where the virgin forests of Colchis type extended in this area until the beginning of the 20th century (Shishkin, 1930). *L. dryada* has altitudinal distribution from 50 up to 300 m above sea level. This species normally inhabits narrow and shady gorges with big blocks and small rocky walls under the luxuriant mixed subtropical forests of Colchis type with evergreen undergrowth. At the gorge of the Charnali River there is mixed Alneto-Castaneto-Fagetum rhododendroso-laurocerasosum. In the vicinity of Hopa this species inhabits Alneto-Castanetum rhododendroso-buxosum. In both localities *L. dryada* is sympatric with *L. rudis* and *L. derjugini*, but it is syntopic only with the latter one, when apparently the competition is between *L. rudis* and *L. dryada*. In any case in both known localities *L. rudis* occurs along the wide mainly deforested parts of gorges with sufficient light, whereas *L. dryada* inhabits shady woodland plots of the main gorges and along the sidelong branch-gorges. Moreover, *L. rudis* is a typical petrobiont, whereas *L. dryada* prefers arboreal mode of life.

Closely related to *L. dryada* species *L. clarkorum* (s. str.) is distributed along the eastern part of the Pontic Ridge (westward to Javuzkemal, Giresun villayat; (BM No. 1964.392), and it was found also on the Lesser Adzhar Ridge (Mt. Mtirala) (Fig. 4). Unlike *L. dryada*, *L. clarkorum* inhabits upper belts of colchian forests and the "shkeriany" (Mandjavidze, 1982) – middle-high-mountain mixed dense bushes of evergreen and deciduous shrubs (*Rhododendron ungernii*, *Rh. ponticum*, *Rh. caucasicum*, *Rh. luteu*, *Ilex colchica*, *Laurocerasus officinalis*, *Epigaea gaultheriodes*, etc.). *L. clarcorum* lives from 900 m up to 1700 m above sea level. On the Mt. Mtirala *L. clarkorum* appears at an altitude approximately 900 m in *Fagetum nudum* belt and it is spread almost to the top of this mountain (1200 m above the sea level) along the "shkeriany" bushes. In Maden as well as round all the upper basin of Murgul River (a left tributary of the Choroch River, vicinity of Borchka), the *L. clarkorum* occurs from the gorges and roadsides with sufficient light in beech and fir forests (1300 m above the sea level) up to "shkeriany" bushes and beech elfin-woodland (*Fagetum subalpinum*) on the mountain Trial (Tyrjal), at an elevation of approximately 1700 m.

Unlike of *L. dryada*, *L. clarkorum* is syntopic with *L. rudis* along the distribution range and both species were observed together at the same stones or

TABLE 1. Some Morphological Characters of *Lacerta dryada* sp. nov. (type series), *L. clarkorum* (s. str.), and Sympatric Species *Lacerta rudis*

Characteristic		*L. dryada* sp. nov. (14 ♂♂ + 8 ♀♀)				*L. clarkorum* * (8 ♂♂ + 6 ♀♀)				*L. rudis* ** (19 ♂♂ + 22 ♀♀)			
		min	$\bar{X}$	max	σ	min	$\bar{X}$	max	σ	min	$\bar{X}$	max	σ
L.	♂	62.0	66.6	69.7	2.23	54.7	58.9	63.4	3.68	60.0	77.5	88.0	8.06
	♀	57.0	63.8	72.4	5.51	46.7	58.5	66.0	6.65	59.0	75.1	85.0	8.21
L. cd.	♂	113.0	125.6	142.0	9.57	101.0	107.1	120.0	6.47	–	–	–	–
	♀	96.0	110.1	120.5	10.01	68.0	89.4	106.0	14.69	–	–	–	–
100L/L. cd.	♂	48.0	53.3	60.0	3.35	53.0	54.6	61.0	2.87	–	–	–	–
	♀	53.0	58.0	66.0	4.67	62.0	66.2	70.0	3.56	–	–	–	–
Dors./10Vent.	♂	33.0	37.5	41.0	2.66	30.0	33.2	37.0	2.48	22.0	26.5	33.0	3.01
	♀	34.0	35.4	39.0	1.81	26.0	33.0	38.0	5.29	21.0	23.9	29.0	2.14
Praean.	♂	6.0	7.6	9.0	1.03	7.0	9.1	11.0	1.46	5.0	6.2	8.0	0.96
	♀	8.0	8.1	9.0	0.38	6.0	8.0	10.0	1.82	5.0	6.7	10.0	1.03
Centr. Anal.	♂	1.0	2.1	3.0	0.54	2.0	2.6	3.0	0.53	1.0	1.1	2.0	0.53
	♀	2.0	2.3	3.0	0.48	2.0	2.8	4.0	0.96	1.0	1.2	2.0	0.39
P. fm.	♂	17.0	19.3	22.0	1.11	16.0	17.3	19.0	0.85	18.0	21.0	24.0	1.29
	♀	18.0	18.8	21.0	1.09	15.0	16.2	18.0	0.84	17.0	19.9	23.1	1.37
Gul.	♂	21.0	24.2	32.0	2.80	21.0	22.1	24.0	1.13	25.0	28.0	32.2	2.40
	♀	22.0	23.6	26.0	1.30	21.0	22.8	25.0	1.60	25.0	27.6	33.0	2.38
Pl. gul.	♂	34.0	39.9	47.0	3.30	36.0	39.2	42.0	1.91	37.0	43.1	47.0	2.82
	♀	32.0	37.4	41.0	2.77	36.0	37.2	40.0	1.60	34.0	40.4	51.3	3.85
Tibil.	♂	14.0	17.6	20.0	1.50	16.0	17.5	21.0	1.51	11.0	12.6	14.0	0.80
	♀	13.0	17.4	21.0	1.60	14.0	16.7	20.0	1.95	10.0	12.0	14.0	1.05
Granul.	♂	4.0	6.8	11.0	0.68	5.0	6.1	8.0	1.31	8.0	11.6	15.0	1.53
	♀	4.0	6.5	9.0	1.90	4.0	6.6	10.0	3.11	8.0	11.7	14.0	1.21
Sq.	♂	47.0	55.4	62.0	4.81	47.0	52.0	57.0	4.11	40.0	45.8	57.0	4.61
	♀	45.0	52.0	59.0	5.04	47.0	50.8	56.0	3.76	40.0	42.9	46.0	2.14
Ventr.	♂	22.0	24.3	26.0	1.20	22.0	24.5	26.0	1.19	21.0	23.6	25.0	1.07
	♀	24.0	25.9	27.0	1.25	25.0	26.8	28.0	1.33	24.0	26.1	28.0	1.04

* Material: CNR NN1136 (6 ♂♂, 3 ♀♀), 1088; CAS Nos. 105510, 105611, 105612; BM No. 1964.392.
** Material from Hopa (Eiselt, Darevsky, 1991).

rocks. Perhaps *L. clarkorum* is present without syntopic species only at the upper limit of altitudinal distribution, because *L. rudis* does not spread so high at the seacoastal Adzhar-Lazistan.

L. clarkorum is a typical petrobiont which occurs on heaps of stones, rocky outcrops, and stony talus slopes.

Populations of *L. clarkorum* attain high density, up to 200 specimens per 100 – 150 m^2, when populations of *L. dryada* had the abundance less than 30 – 40 specimens per 1 km^2.

It was noted also the differences in diurnal activity between two close species. *L. dryada* was active only during sunny hours, whereas *L. clarkorum* (and also *L. rudis*, *L. derjugini*) remained active in cloudy and foggy weather and even during rain. In addition, the late evening (including twilight) activity was typical of *L. rudis* and specially of *L. clarkorum* in Maden (1300 m), which was never observed for *L. dryada*. In the gorge of Charnali River *Lacerta derjugini*, *Anguis fragilis*, *Natrix megalocephala*, *Coronella austriaca*, *Elaphe longissima*, and *Vipera kaznakovi* are syntopic with *L. dryada*, whereas *L. rudis* occurs along the ecotones. In the vicinity of Hopa the syntopic species with *L. dryada* were represented by *L. derjugini*, *A. fragilis*, *N. megalocephala*, and *V. kaznakovi*, whereas *L. rudis* lives in ecotones. We have noted also the community of batrachofauna in both localities (*Triturus vittatus ophryticus*, *Mertensiella caucasica djanashvilii*, *Pelodytes caucasicus*, *Bufo verrucosissimus*, *Hyla arborea*, and *Rana macrocnemis*).

Lacerta clarkorum (s. str.) is also sympatric and syntopic to the row of herp-species listed above except the most thermophilic species (*Elaphe longissima* and *Vipera kaznakovi*), altitude of there distribution not exceeding 800 m above sea level.

It is necessary to discuss some speculations on possible origin of *L. dryada* and *L. clarkorum*. Earlier, based on analysis of herpetofauna of Colchis we note that *L. clarkorum* (s. l.) belongs to Adzhar-Lazistan subgroup of Colchis ecological-geographical group (Tuniyev, 1990). It appears that *L. dryada* is a very ancient and relict species, its origin associated with Tertiary-relict Colchis forests. And its modern disjunctive distribution on range includes well preserved woodland plots in Adzharistan and Turkish Lazistan. Apparently *L. dryada* is the closest species to the an-

TABLE 2. Sexual Dimorphism (♂♂ – ♀♀) in *Lacerta dryada* sp. nov – *L. clarkorum*

Characters	*Lacerta dryada* sp. n.			*L. clarkorum* (s. str.)		
	d	σ	*t*	*d*	σ	*t*
L.	2.82	1.72	1.64	0.43	2.76	0.16
L. cd.	15.47	5.69	2.72	18.03	5.19	3.47
100L./L. cd.	–4.76	2.13	2.23	–11.63	1.85	6.3
Dors./10Ventr.	2.11	1.14	1.85	0.17	2.46	0.07
Praean.	–0.5	0.4	1.25	1.14	0.99	1.15
Centr. Anal.	–0.2	0.25	0.8	–0.18	0.48	0.38
P. fm.	0.48	0.35	1.37	1.09	2.52	0.43
Gul.	0.61	1.06	0.57	–0.7	0.72	0.98
Pl. gul.	2.49	1.38	1.8	2.08	0.96	2.17
Tibil.	0.24	0.94	0.25	0.8	0.7	1.14
Granula	0.29	0.39	0.74	–0.46	0.87	0.53
Sq.	3.36	2.17	1.55	1.17	2.14	0.55
Ventr.	–1.58	0.54	2.93	–2.35	0.67	–3.51

Note. *d*) Distance between compared means; σ) standard deviation; *t*) Student's *t*-test.

TABLE 3. A Comparison of Morphology and Pholidosis of Two Closely Related lizards species *Lacerta dryada* sp. nov. (14 ♂♂ + 8 ♀♀) and *Lacerta clarkorum* s. str. (8 ♂♂ + 6 ♀♀)

Sex	Characters																	
	L.			L. cd.			100L./L. cd.			Dors./10Ventr.			Ventr.			Praean.		
	d	σ	*t*	*d*	σ	*t*	*d*	σ	*t*	*d*	σ	*t*	*d*	σ	*t*	*d*	σ	*t*
♂♂	7.62	1.28	5.97	18.14	4.37	4.15	–1.25	1.63	0.77	4.37	1.33	3.29	–0.21	0.53	0.39	–1.5	0.58	2.6
♀♀	5.23	3.37	1.6	20.7	7.95	2.6	–8.12	2.56	3.17	2.43	2.12	1.15	–0.96	0.69	1.39	0.14	0.69	0.2
	P. fm.			Gul.			Pl. gul.			Tibialia						Sq.		
	d	σ	*t*	*d*	σ	*t*	*d*	σ	*t*	*d*	σ	*t*						
♂♂	2.04	1.08	1.9	2.09	1.04	2.0	0.61	1.28	0.48	0.14	0.5	0.28	0.67	0.3	2.22	3.36	1.75	1.92
♀♀	2.65	0.38	6.97	0.77	0.77	1.0	0.2	1.27	0.16	0.7	0.72	1.0	–0.08	0.93	0.09	1.17	2.45	0.48

cestor form, which formerly was widely spread in the Western Transcaucasia and gave an origin to the numerous representatives of *L. saxicola* (*L. s. szczerbaki*, *L. s. brauneri*, and *L. s. darevskii*) in the northern areas of Colchis. During the Pliocene – Pleistocene the connection was interrupted between northern and southern populations of ancestor form due several time the transgressions of the former Pontic Sea (now the Black Sea). In the Caucasus modern distribution of *L. saxicola* takes place along both slopes of the Western Caucasus within the limits of Abkhazia, Krasnodar and Stavropol' Regions, Adyghe, and Karachai-Cherkessk Autonomous Region (Darevsky, 1967), when the relict area of *L. dryada* is separated by quite extensive and primarily marshy Colchis (Rioni) lowland.

Lacerta clarkorum (s. str.) is also quite an ancient species, but it has separated from the ancestor form and developed under conditions of upper forest belts of Colchis type and Tertiary-relict formations of shrubs, which has considerable distribution till now along the northern slope of the Pontic Ridge and in the southern part of mountain system belonging to Adzharo-Imeretinskii Ridge.

It is interesting to note the analogy in the altitudinal distribution of lizards of "saxicola complex" along the entire Colchis. In the Western Caucasus comparatively large *Lacerta saxicola* inhabits the lower belts of mountains, whereas at the upper forest belts and in alpine belt much smaller *L. alpina* occurs. A similar picture can be seen in the southern (Adzhar-Lazistan) Colchis, where quite large *L. dryada* from the woodland foothills is replaced in upper belts of the mountains by the vicarious small species – *L. clarkorum*.

It is pertinent to note that in the northern Colchis as well as in the southern Colchis the *L. derjugini* and *L. rudis* accompany the above mentioned lizards, but they are represented by different geographical forms (Eiselt, Darevsky, 1991; Bishoff, 1982, 1984).

Abbreviations: ZISP – Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia; CNR – Caucasian State Biosphere Reserve, Sochi, Russia; NM – Natural Museum of Kharkov University, Kharkov, Ukraine; CAS – California Academy

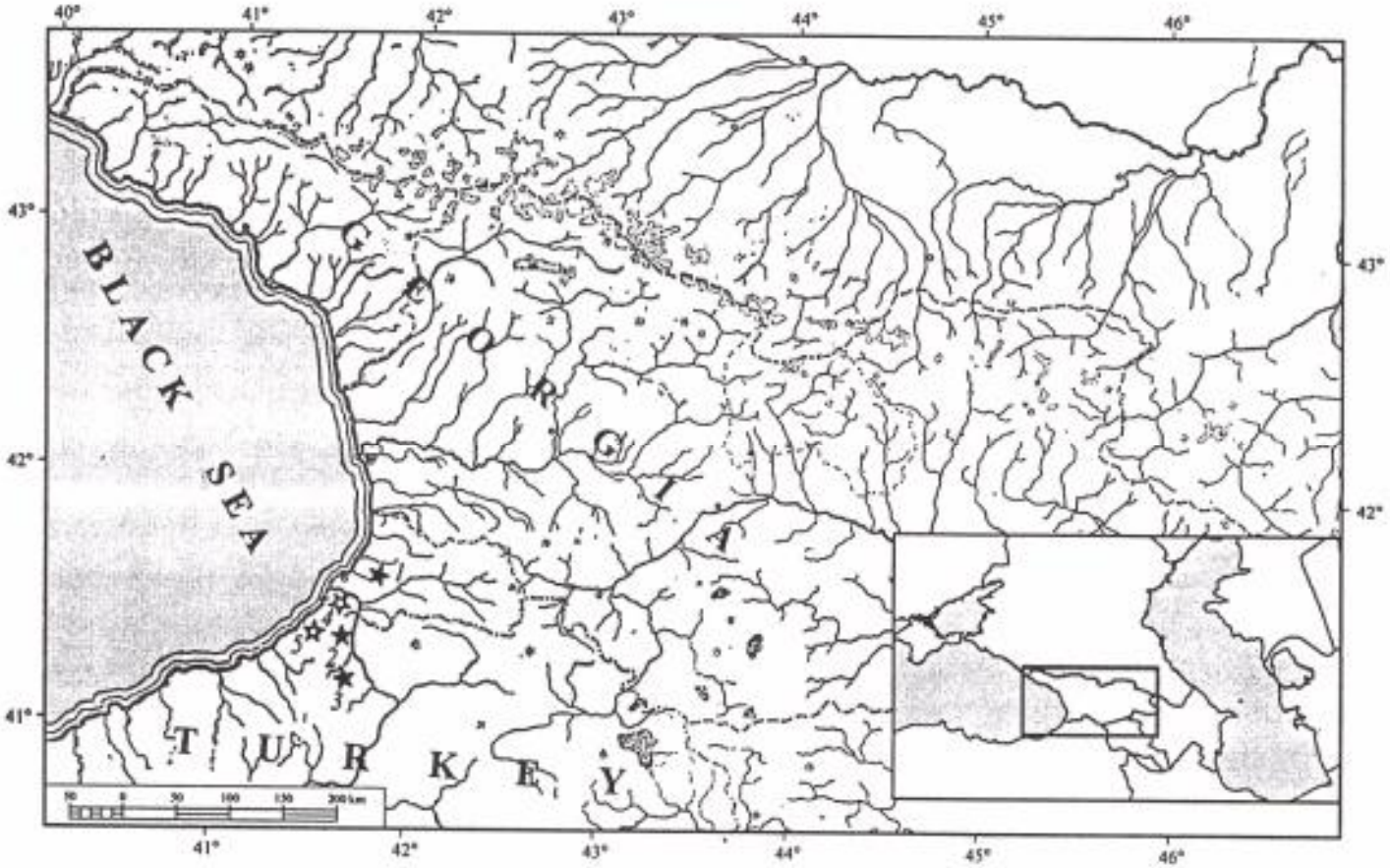

Fig. 4. The main localities of *Lacerta clarkorum* (solid star-mark) and *Lacerta dryada* sp. nov. (open star-mark) in Northeastern Turkey and neighboring districts of Adzharistan. *1*) Mt. Mtirala; *2*) 20 km North-West from Borchka; *3*) vicinity of Moden; *4*) Charnali river gorge; *5*) Subashi-Kaj, vicinity of Hopa. Habitat of *L. dryaga* in the vicinity of Hopa (Turkey) is shown in Fig. 5 (see inset on p. 63)

of Sciences, USA; and BM – British Museum of Natural History, Great Britain.

Morphological characters: L – snout-vent length; L. cd. – tail length; 100L/L. cd. – snout-vent length/tail length relation; Dors./10Ventr. – body scales along the 10 central ventrals; Praean. – preanals; Centr. Anal. – big preanals anterior of anal; P. fm. – femoral pores; Gul. – scales along the mid line of the throat to the collar; Pl. gul. – scales between the ears across the throat; Tibil. – scales around middle of the shin; Granul. – granules between supraoculars and supraciliaries; Sq. – midbody scales; and Ventr. – ventrals between collars and the last complete row.

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