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This article commemorates the 160th anniversary of the birth and 100th anniversary of the death of Nikolai Alekseyvich Zarudny (1859 – 1919)

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ADDITIONAL DATA ON THE HERPETOLOGICAL COLLECTION OF LOUIS AMÉDÉE LANTZ (1886 – 1953): DESIGNATION OF A LECTOTYPE FOR *Eremias zarudnyi* LANTZ, 1928

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Several recent papers have reviewed the life and work of French herpetologist Louis Amédée Lantz. They have detailed the composition of his collections deposited in several museums. However, since then, several other important specimens from his collections have come to light. We here identify the syntypes of *Eremias zarudnyi* Lantz, 1928, which were located in Russia. We provide data on the type series, an English translation of the French description of *E. zarudnyi* and designate and describe a lectotype for the species.

Keywords: L. A. Lantz; N. A. Zarudny; ZISP; lectotype designation; Lacertidae; *Eremias zarudnyi*; Iran.

INTRODUCTION

Louis Amédée Lantz (1886 – 1953) was a French herpetologist who spent 12 years in Russia and roughly 30 years in the United Kingdom working as a chemical engineer. He was involved in herpetology all his life, describing several new taxa and amassing large collections which are now proving to be very important from taxonomic, conservation and historical standpoints. They also include numerous types. Large parts of his herpetological collections were also deposited in both Russia and Georgia. One of us (I.D.) recently found a document in the St. Petersburg branch of the Archives of the Russian Academy of Sciences indicating the acceptance of the L. A. Lantz collection from the Polytechnic Museum (Moscow) (Fund 55. Inventory 1. Case 200. Correspondence with correspondents of the Zoological Museum, 1930, letters A – Z. Sheet 141. Act of 25 Oct. 1930). This collection comprised 12 boxes with 425 cans and test tubes containing lizards, one can containing a crocodile, 55 jars containing snakes and 158 cans containing a mixture of amphibians and invertebrates. There was an additional sheet (142) which provided a brief inventory of these boxes (however, with no clear indication of species composition). Those specimens were housed in the Zoological Museum of the Academy of Sciences of the USSR (now ZISP, Zoological Institute of St. Petersburg) and curated by Georgy Feodorovich Sukhov (1899 – 1942), a friend, colleague and co-author of L. A. Lantz.

A species described by Lantz in 1928 (*Eremias zarudnyi*) was omitted by Ineich and Doronin (2017) and Ineich et al. (2017) in their previous lists of the amphibian and reptile taxa that Lantz described. We here present all available data on that species, its types and their location and we further provide an English translation of its description, originally written in French. The binomen has been considered as a synonym of *Eremias grammica* (Lichtenstein, 1823) by subsequent revisers of the species complex, but its peripheral distribution and L. A. Lantz's perceptiveness, particularly for lacertid lizards, keep us from excluding the possibility that

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Fig. 1. Original jar including three syntypes of *Eremias zarudnyi* under the tag numbers ZISP 9322.1-3.

E. zarudnyi could be a valid taxon. A recent work of V. F. Orlova and R. A. Nazarov (2017, p. 301) is also in accordance with this view: "In our opinion, Iranian populations are significantly separated from Central Asian ones and it is quite possible that molecular studies will confirm the validity of the species proposed by Lantz — *E. zarudny*" (translated from Russian). With this in mind, we herein designate a lectotype from among the seven syntypes of this taxon. Below we translated into English the original description of *Eremias zarudnyi* written in French by L. A. Lantz. We believe that this translation, made by confirmed herpetologists, will be helpful to the specialists involved with Palearctic lacertids. Museum acronyms used here are ZISP (Zoological Institute of St. Petersburg, Russia; formerly ZIL, Zoological Institute of Leningrad).

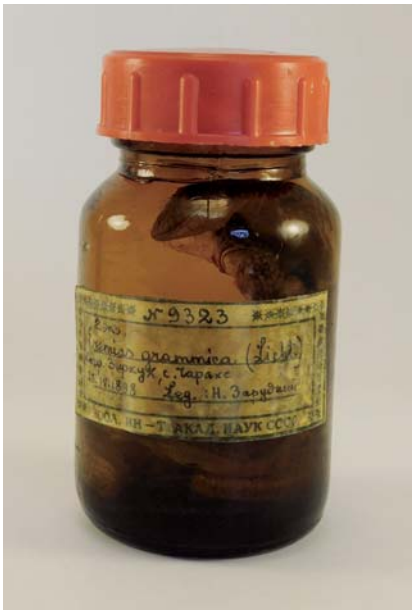

Fig. 2. Jar including four syntypes of *Eremias zarudnyi* under the tag numbers ZISP 9323.1 – 4.

RESULTS

Lacertidae Bonaparte, 1831
Eremias Fitzinger, 1834
Eremias zarudnyi Lantz, 1928

One lacertid species was omitted by Ineich and Doronin (2017) and Ineich et al. (2017) in their review of the amphibians and reptiles described by L. A. Lantz: *Eremias* (*Scapteira*) *zarudnyi* Lantz, 1928. The species was described on pp. 123 – 127 in "Les *Eremias* de l'Asie occidentale" (Lantz, 1928). The *Eremias* publication appeared in two separate volumes, **4**, 1 – 72 + 3 plates at the end of the volume, dated 1927 and published in 1928 and **5**, 1 – 64, dated 1928 and published in 1930. The complete work combining Lantz's *Eremias* papers of volumes 4 and 5 (136 pp. + 3 plates) is dated 1928 which is also the date of its publication. Lantz had achieved the complete publication in 1928 although the second part was only published in a volume in 1930.

Original description. Lantz's original description is based on 12 examined specimens among which eight (5 males, 2 females, 1 juvenile) were from Tsharakhs [Sarakhs, near the Turkmenistan border, along the Silk Road], Zir-Kuh [Zirkuh County], Khorassan [Khorasane-razavi Province, northeast Iran], 1898, coll. Acad. Petr. [ZISP] No. 9322 – 9323, leg. N. [A.] Zarudny (Figs. 1 – 3).

The eight specimens are clearly indicated as «(types)» on page 123 in the original description which

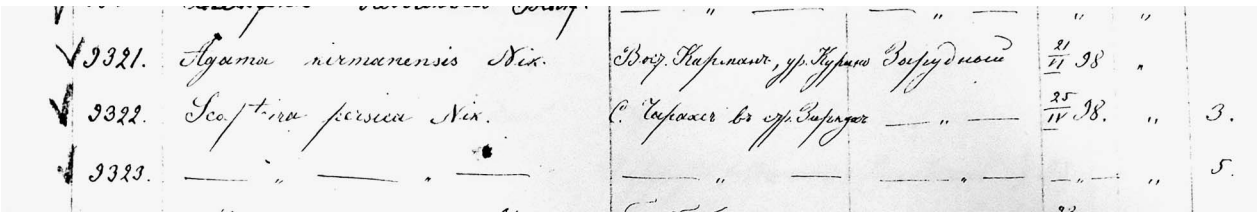

Fig. 3. ZISP catalogue file referring to the syntypes of *Eremias zarudnyi* 9322.1-3 (three specimens) and 9323.1 – 4 (originally five specimens but only four present) under the name *Scapteira persica*.

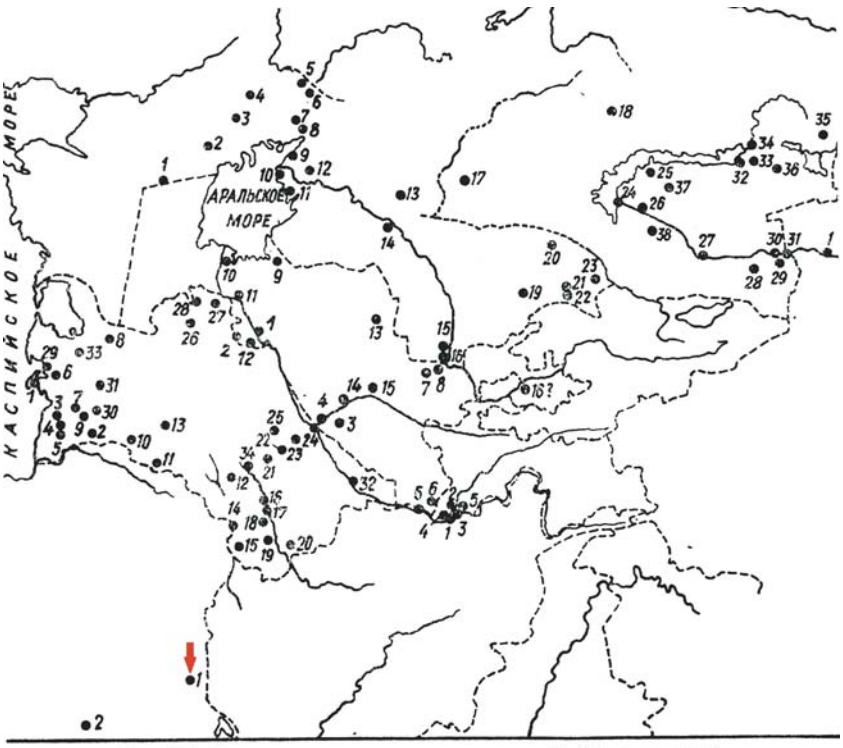

Рис. 80. Распространение ящурки сетчатой (*E. grammica*).
См. кадастр, стр 250.

Fig. 4. Map from N. N. Szczerbak (1974, p. 249) showing the collection points of *Eremias grammica* including *E. zarudnyi* as a synonym. Locality 1 (indicated by an arrow, type locality of *E. zarudnyi*): Zirkukh (= Zir-Kuh) Desert, between Ahangerun and Charach (= Tsharakhs), the bed of Baaz, ZISP collection (Zarudny, 1904); 2: Hadji-I-Du Chagi (= Hadji-i-du-Tshahi), Nehbendan, northeast of Kerman, ZISP collection (Lantz, 1928).

means that the 4 others cited in that description do not belong to the syntype series. The four non-syntype specimens comprise two juveniles from Bam-Rud [Bamrud is a village in Zirkuh Rural District], Zir-Kuh [Zirkukh County, Iran], 1901, coll. ZISP 9943, leg. N. Zarudny and two other juveniles from Hadji-i-du-Tshahi [?], Nehbendan [Nehbandan County], northeast of Kirman [Kerman Province, Iran], 1901, coll. ZISP 9944, leg. N. Zarudny (Fig. 4). Among the eight syntypes (Figs. 5 – 6) only seven are present in the ZISP collections and the missing specimen may have been left in Kiev when all eight were loaned by N. N. Szczerbak; however no *E. zarudnyi* type specimens are mentioned in the Kiev collections database or anywhere in literature.

Lantz (1928, vols. 4/5, p. 16) indicated before describing *E. zarudnyi* that this species does not correspond to *Eremias* (*Eremias*) *persica* Blanford, 1874 but to *Scapteira persica* Nikolsky, 1900 (on the title page of the 4th volume of "Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St.-Pétersbourg" the year

Fig. 5. The specimens ZISP 9322.1-3, three of the eight syntypes of *Eremias zarudnyi* Lantz, 1928.

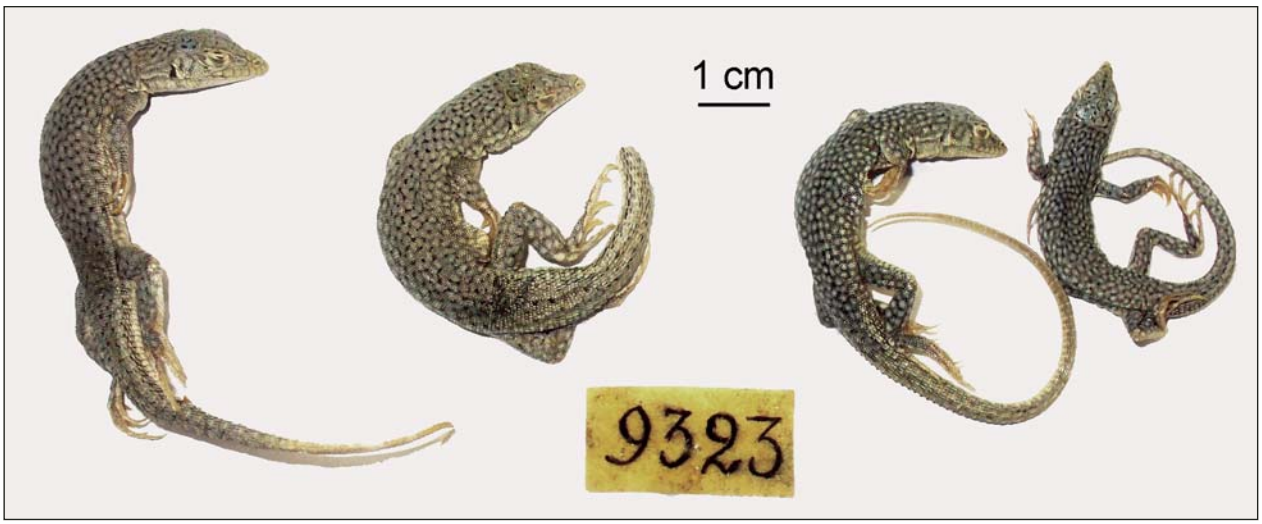

Fig. 6. The specimens ZISP 9323.1-4, four of the eight syntypes of *Eremias zarudnyi* Lantz, 1928.

1899 is printed; for this reason the year of the description of this taxon is often indicated as "1899." However, this volume was actually published in 1900 (Asanovich et al., 2007)) which he was about to rename as such. As he considered the genus *Scapteira* Wiegmann, 1834 a junior synonym of *Eremias* Wiegmann, 1834 [he was the first to consider them subgenera within the genus *Eremias*) the later species had to be renamed as nomen novum to avoid homonymy with *E. persica* Blanford, 1874].

After its description, *E. zarudnyi* was considered a synonym (Chernov, 1934) or a subspecies (Chernov, 1948) of *E. grammica* with the new combination — *Eremias grammica zarudnyi*. A year later Chernov wrote: "a lizard described as a *Scapteira persica* Nik. (=*Eremias zarudnii* Lantz), is at best, a subspecies of *Eremias grammica* (Licht.)" (Chernov, 1949, p. 233). But later (Chernov, 1959) he again considered it as a junior synonym of *E. grammica*, a view later shared by N. N. Szczerbak (1971, 1974). Since that time no other study has been conducted on the *E. grammica* species complex (Anderson, 1948) of *E. grammica* with the new combination — *Eremias grammica zarudnyi*.

We hereby translate Lantz's (1928, p. 16) statements concerning his distinction between the two species:

Fig. 7. Nikolai Alekseyvich Zarudny photographed in the Syr-Darya floodplain, summer 1911. His autograph is also shown below the picture. From Bobrinsky (1940).

Fig. 8. Portrait of Nikolai Alekseyvich Zarudny. From "Spatial-temporal dynamics of biota and ecosystems in the Aral-Caspian basin. Materials of the II Int. Conf., dedicated to the memory of the outstanding naturalist and traveler Nikolai Alekseevich Zarudny, IPK "Universitet," Orenburg, 2017."

"The last subgenus, *Scapteira*, contains *E. grammica* as the type species. Next to it we find the interesting species that Nikolsky described as *Scapteira persica*. Because of the combination of the genera *Scapteira* and *Eremias*, and given the precedence of *Eremias persica* Blanf. [note from the translator: published in 1874], I had to give it a new name; I thought I could not do better than to call it *E. zarudnyi*, in honor of the indefatigable naturalist and explorer N. A. Zarudny, who discovered it in the sands of the Zir-Kuh in eastern Persia. This species is very close to *E. grammica*, although it can be easily distinguished by the presence of a row of large infrafemorals along the inner margin of the thigh, by the external infradigitals of the fourth toe which are less wide, by the donkey shaped back, nearly keeled, and by the less developed laterals."

Nikolai Alekseyvich Zarudny (1859 – 1919) (Figs. 7 – 8) was a Russian traveler and zoologist with a particular interest in the study of the birds of Central Asia. He undertook five expeditions in the Caspian region between 1884 and 1892 and also led expeditions to what was formerly known as Persia (Iran; Fig. 9). This was supported by both the Russian Geographic Society and the Zoological Museum of the Imperial Academy of Sciences (Zoological Institute of the Russian Academy of Sciences). Several species of reptiles were named after Zarudny by Alexander Mikhailovich Nikolsky (1858 – 1942): the tortoise *Testudo zarudnyi* Nikolsky, 1896; the skink *Eumeces schneideri zarudnyi* (Nikolsky, 1900); the sphaerodactylid *Teratoscincus zarudnyi* Nikolsky, 1896 which is a synonym of *Teratoscincus keyserlingii* Strauch, 1863; the gekkonid *Mediodactylus russowii zarudnyi* Nikolsky, 1900; and the trogonophid *Diplometopon zarudnyi* Nikolsky, 1907 (Bobrinsky, 1940; Ananjeva, 2012, 2017). In Iran, Zarudny collected the specimens of *E. zarudnyi* examined by Lantz.

Translation of the original description

General shape and proportions. Head rather long, fairly high, moderately enlarged in the masseteric region; snout rather long, pointed; nostril surrounded by patches of only lightly swollen plates; plates of pileus more or

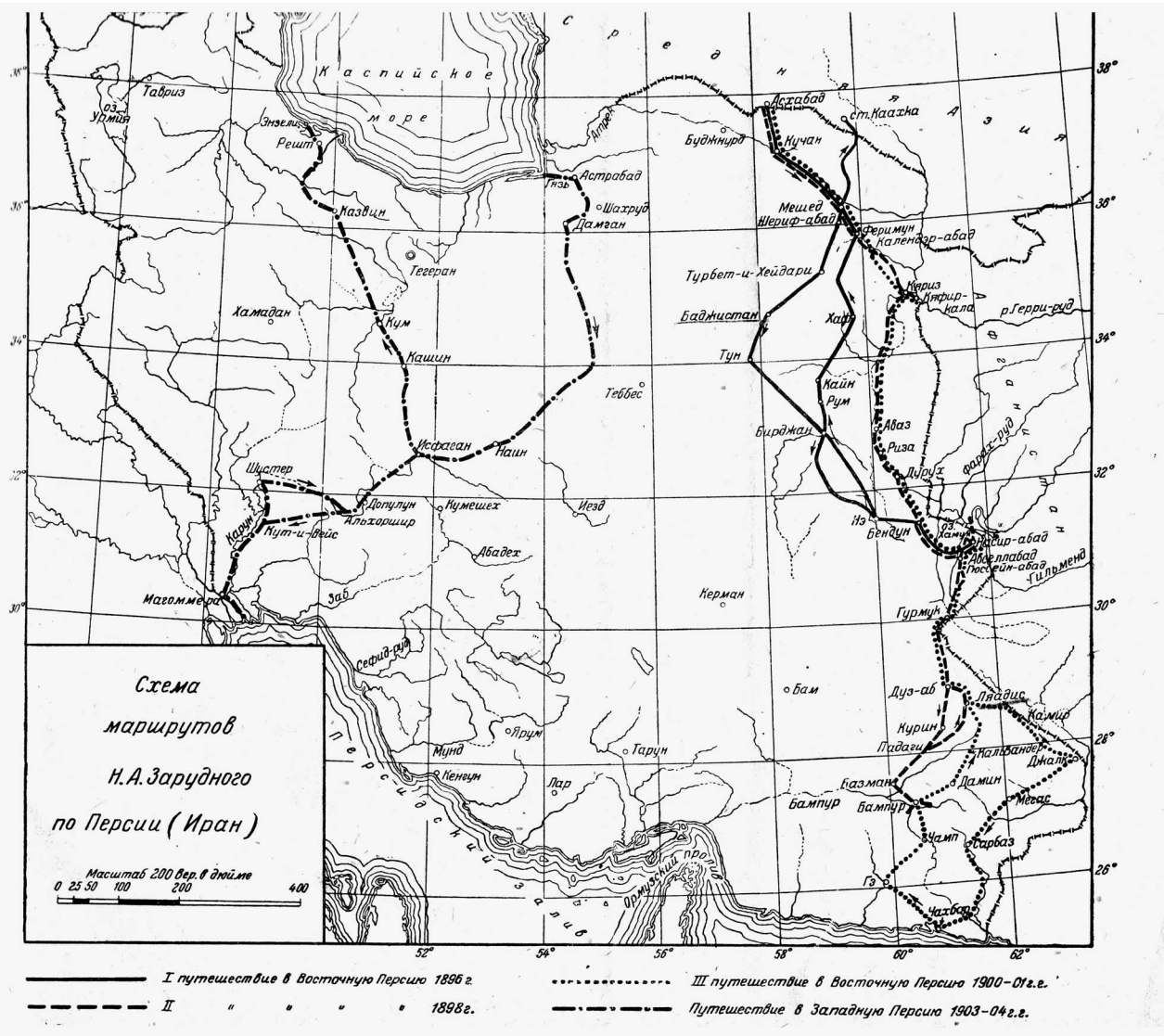

Fig. 9. Travels made by N. A. Zarudny in Persia (from Bobrinsky (1940)). Legend translation: straight lines shows the route of the first expedition to East Persia in 1896; dashed line shows the route of the second expedition to East Persia in 1898; punctuated line shows the route of the third expedition to East Persia in 1900 – 1901; dashed-doted-dashed line shows the route of the expedition to Western Persia in 1903 – 1904.

less convex, with rather deep sutures; well-marked frontal suture; very sharp rostral ridge; very strong supraorbital and infraorbital ridges; fairly developed parietal ridge. Distinct parietal eye.

Trunk fairly elongated, slightly flattened, moderately enlarged towards its middle.

Long limbs, robust hands.

Long tail, very rounded, strong and fairly flattened vertically at its base, thinning at first rather rapidly, and then slowly becoming taller than broad, very thin at its tip.

L. M. [Snout-vent length] male 65 mm, Coll. Acad. Petr. No. 9322. Female 59 mm, same data No. 9323.

R. T. [Ratio of pileus length; indicated as «R.T.» in Lantz (1928) with just ratio of the pileus length as explanation; this most likely corresponds to the ratio of pileus length by snout-vent length.] males 0.24 – 0.25 – 0.26 (5 ex.). Females 0.24 – 0.25 (2 ex.) [Lantz (1928) mentioned eight type specimens among the 12 he examined but today only seven syntypes are present (see above). Curiously some of the morphological data are only provided for seven specimens despite his indication of eight syntypes.].

R. M. A. [indicated as the ratio of anterior member length most likely with snout-vent length] males 0.34 – 0.35 – 0.37 (5 ex.). Females 0.31 – 0.34 (2 ex.).

R. M. P. [indicated as the ratio of the posterior member length most likely with snout-vent length] males 0.59 – 0.62 – 0.65 (5 ex.). Females 0.57 (2 ex.).

R. Q. [ratio tail length/snout-vent length] males 1.75 – 1.85 (2 ex.). Female 1.68 (1 ex.).

Scalation. Rostral very narrow, only slightly narrowed at its lower edge which is considerably shorter than the height of the plate. Supranasal weakly swollen, touching the first supralabial in a rather long suture. Internasal entire, large, wider than long, in contact with the freno-ocular. Prefrontal strongly convex or even almost keeled; as long, rarely shorter than the internasal. Interprefrontal absent. Frontal narrowed at its back, still narrowing substantially until the height of the suture between the second and third supraocular, then widening strongly forward; slightly rounded at its anterior edge; as long, rarely shorter or longer than its distance from the suture between supranasals. From 6 to 8 supraciliaries, the first elongated, narrowing towards the rear, with a pronounced ridge; the second medium, strongly swollen; the next 3 to 5 short, swollen, the last medium or short. First supraocular small or medium, almost always separated from the second by either one or two fairly large scales, or by granules, which extend along the outer edge of the second and third supra-oculars into a row of supraciliary granules almost always single, rarely more or less doubled. Second supraocular a little larger than the third. Fourth supraocular indistinct, replaced at the anterior margin of the parietal by 3 or 4 small scales somewhat larger than the granules which separate them from the third supra-ocular; a complete row of frontal granules distinctly larger than the supraciliary granules, and which completely separate the supraoculars from the frontal and the post-frontal. Postfrontal longer than wide. Parietals larger than long, always forming a suture between them. Interparietal small, shorter or as long as the suture of the parietals between them. Occipital absent or very small. Postnasal medium sized, fairly strongly swollen. Infranasal touching the first two supralabials, and always in contact with the third; always well separated from the rostral. Frenal small, about as high as long. Freno-ocular relatively long. Short preocular, rather high. Subocular long, low, separated from the edge of the jaw by a medial supralabial. Before this supralabial 6, rarely 7 anterior supralabials; behind it from 1 to 4, rarely 5 or 6 small posterior supralabials. One or two small prominent postoculars, the lower of which is separated by a scale from the first posterior supralabial. Temporals small and numerous, swollen, larger in the lower half of the temple; supratemporals more or less distinct; often a fairly large supratemporal in the back. Tympanic distinct, medium. Mental relatively small, as long- or longer than wide. From 6 to 10, and most often 7 or 8 infralabials. 5 to 7 pairs of inframaxillaries, the first three forming a median suture, the others somewhat narrow, in contact with the infralabials, forming a broken line towards the gulars, each one being set back on the preceding one. Gulars small and numerous; between the fourth pair of inframaxillaries generally larger scales; from 27 to 35, and on average 31 scales (12 ex.) [most likely five of the 12 examined specimens were juveniles not included in all measurements.] in the median line between the inframaxillaries and the collars. Indeterminate gular fold. Collar rather ill defined, bearing only 2 to 7 scales a little larger than the adjacent gulars. Dorsals small, rounded, swollen, widening towards the sides, where they are conical or even slightly keeled towards the back of the trunk; between them, small relatively numerous granules; towards the middle of the trunk of 55 to 62, and on average 59 scales (12 ex.) in a transverse row. Ventrals longer than broad, slightly imbricated; from 36 to 42, with an average of 39 transverse rows in the male (5 ex.), and 39 or 40 in the female (2 ex.), the longest rows comprising 20 – 22 plates. Preanal region covered with scales more (males) or less (females) large, with no distinct anal plate. Suprahumeral large enough, imbricated, ending in sharp point, and weakly keeled. Supraradials similar to the mid-back dorsals on the upper part of the forearm; widened and markedly keeled along its outer edge. Infracarpals hardly keeled. Fingers carrying a row of keeled internal infradigitals, strongly compressed laterally, and pushed towards the side of the finger by a row of smooth outer infra-digitals; laterals in entire row, keeled and strongly compressed laterally. Suprafemorals and supratibials approximately as large as the mid-back scales, and weakly keeled. A row of imbricated infrafemoral plates, small in the groin, widening very strongly towards the knee, and, at least in the last two thirds of the thigh, considerably larger than the adjacent scales; counted in the proximal third of the thigh, 6 or 7, rarely 8 rows of small scales between this first row and the femoral pores. From 14 to 21, and on average 17/18 femoral pores (12 ex.) fairly well developed; interpore space contained less than four times in the length of a row of pores. Approximately 5 rows of infratibials decreasing in size from the inner edge to the outer edge but without those on the inner edge being significantly larger than the following. Infratarsals barely keeled. Second, third, and fourth toes, with a row of keeled internal infradigitals, pointed, strongly compressed laterally and pushed towards the side of the toe by a row of large external infradigitals humpback-shaped; laterals in full row, keeled, pointed, and very strongly compressed laterally at the top of the toe, trans-

forming farther into flat appendages, triangular, in the form of a saw tooth; separated from the external infradigitals by a sometimes incomplete row of small rounded scales. Fifth toe bearing only a few internal infradigitals, a row of distinctly keeled external infradigitals, and keeled laterals, pointed, moderately compressed laterally. Sheath of the nail considerably enlarged. Supracaudals moderately keeled, and terminated in obtuse point. Infracaudals smooth and truncated at the base of the tail, further strongly keeled and pointed.

Pattern and coloration. Pattern characterized by the presence of a dark network of surrounding clear ocelli arranged without visible order along the back and limbs and longitudinally more or less apparent on the flanks from the supraciliary line up to the labial line. Pattern of the young is as in the adult, but with much more of a contrasting effect. Greenish-gray or brownish pileus, with small sparse black spots. Back and limbs covered with small white ocelli (j. [juveniles]) or light yellowish grey (ad. [adults]), very closely arranged, surrounded by a fine blackish network. Parietal band visible on tail only, double on its base, single further; more or less truncated and diffuse. Supraciliary lines indicated along the trunk by closely spaced, almost confluent ocelli, more apparent than those of the back; continuous, but diffuse, along the tail. Upper temporal bands diffuse along the trunk, continuous and well visible all along the tail. Postocular lines indicated by very close, almost confluent ocelli. Diffuse lower temporal bands. Subocular lines in well-visible ocelli along the trunk and tail, sometimes more or less continuous. Indistinct maxillary bands. Labial lines visible along the trunk in the state of diffuse ocelli. Indistinct costal bands. Ventral side whitish. "

Chernov (1934, 1959) and later Szczerbak (1971, 1974) showed, sometimes based on a huge sample size, that the diagnoses of Nikolsky (1899) and Lantz (1928) were incorrect. Furthermore, they considered *E. zarudnyi* a synonym of *E. grammica*. We, however, below translate the characters distinguishing both species as indicated by Lantz (1928, pp. 40 – 41) in his key of the subgenus *Scapteira*:

"Parietals separated by granules. The external infradigitals of the fingers in the form of flat appendages. Internal infrafemorals scarcely wider than those of the adjacent row. Femoral pores present. Internal infratibials barely wider than the adjacent. 4th toe with internal infradigitals more or less completely transformed into flat appendages, external infradigitals barely swollen, and laterals in the form of flat appendages all along the toe. Pattern without longitudinal arrangement on the flanks *grammica* Lichtenstein

Parietals forming a suture between them. Laterals of the fingers keeled, prominent, but not transformed into flat appendages. Internal infra-femorals considerably wider than those of the next row, at least in the distal half of the thigh. Femoral pores present. Internal infratibials barely wider than the adjacent. 4th toe with keeled internal infradigitals, prominent, but not transformed into flat appendages, external infradigitals in the shape of a donkey back and keeled laterals carnations at the top of the toe, transformed into flat appendages more proximally. Pattern disposed longitudinally on the flanks *zarudnyi* n.n."

Considering that *E. zarudnyi* has a peripheral and isolated distribution area (Fig. 4) relative to that of *E. grammica*, and also considering that Lantz had a good knowledge of Palearctic lacertid systematics, we cannot dismiss the possibility that the former taxon is a valid species. Genetic studies will be useful to confirm whether or not this is the case. Note that many of Lantz's (or Lantz and Cyren) taxa have either been revalidated from synonymy in recent papers, or elevated to species rank. Among them Arribas et al. (2018) designated a lectotype for *Darevskia parvula* (Lantz et Cyren, 1913). After examination of the seven of the eight syntypes available to us we here designate a lectotype in order to relate the binomen to a unique voucher. We consider that lectotype designation is particularly relevant in our case since the described taxon might represent a valid species.

Designation of a lectotype. We here designate the specimen ZISP 9322.1 as the lectotype of *Eremias zarudnyi* (Fig. 10).

Description of the lectotype. An adult male preserved in 75% ethanol in a good state of preservation. SVL (snout-vent length) 60.0 mm; TL (tail length, from vent to the tip of the tail) 106.0 mm; Gl (gleno-acetobular distance, from axilla to groin measured from the posterior margin of forelimb to the anterior margin of hindlimb insertion) 35.0 mm; HL (head length, from rostrum to occipital sinus) 15.3 mm; HW (maximum head width) 11.0 mm; HH (maximum head height) 8.6 mm; NL (head length from snout tip to the anterior edge of the collar, measured from ventral side) 21.0 mm; Pa (forelimb length, from forelimb insertion to the tip of the longest finger) 20.0 mm; Pp (hindlimb length, from hindlimb insertion to the tip of the longest toe) 37.0 mm; ratio HL/SVL 0.25; ratio HW/HL 0.71; ratio HH/HW 0.78; ratio Pa/SVL 0.33; ratio Pp/SVL 0.61; number of scales around midbody, 59; number of gular scales along the mid-line of throat, 32; number of collar scales, 13; number of femoral pores (right/left), 19/18 (one left femoral pore is poorly developed); number of transverse rows of ventral scales, 38; maximal number of longitudinal rows of ventral scales counted at midbody, 21; number of scales around the 9 – 10th tail ring, 38; number of

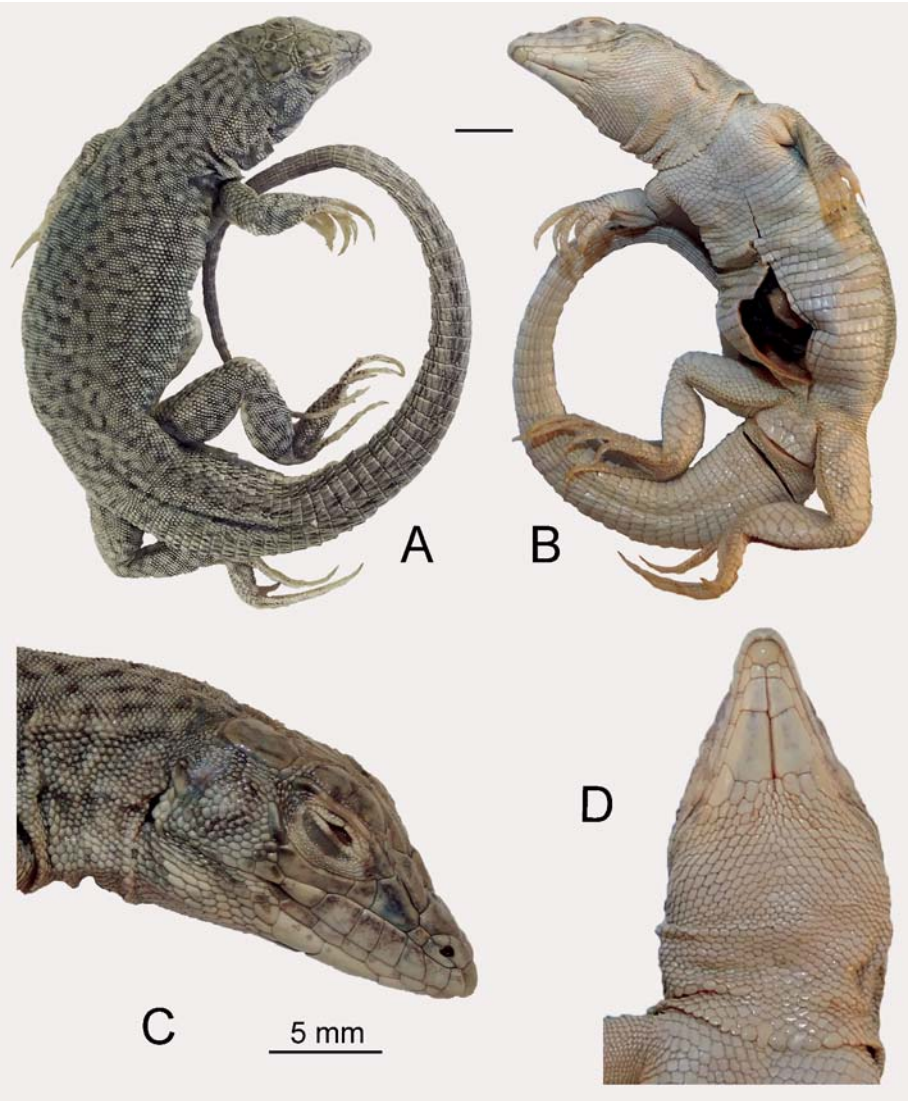

Fig. 10. Plate illustrating the designated lectotype of *Eremias zarudnyi* Lantz, 1928 (ZISP 9322.1): A, general dorsal view; B, general ventral view; C, right lateral view of the head; D, ventral view of the head and gular area.

subdigital lamellae on the 4th toe of hindlimb, 24; number of supralabial plates anterior to subocular (right/left), 6/6; number of infralabial plates (right/left), 7/7; distance between the proximal femoral pores on right and left sides, 3.6 mm; number of submaxillary shields [= chin shields] (right/left), 5/7; number of pairs of submaxillary shields [= chin shields] in contact with each other, 3.

Coloration and pattern of the lectotype (in preservative). The main background of the upper side of the body is grey with a slightly greenish tinge. Pileus covered with black spots. Back, neck, the upper side of the base of the tail and legs are covered by a black-grey mesh pattern. The underside is milky white with dorsal black stripes on the tail.

Louis Amédée Lantz was a very active herpetologist despite the fact that he was not a professional. His contribution to Palearctic herpetology was considerable taking into account both his collected specimens and his published papers.

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