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A preliminary contribution to *Platyceps najadum* (Eichwald, 1831) and systematic status of *Coluber atayevi* Tunijev & Shammakov, 1993 (Reptilia: Squamata: Colubrinae)

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A preliminary contribution to *Platyceps najadum* (Eichwald, 1831) and systematic status of *Coluber atayevi* Tunijev & Shammakov, 1993. - External morphological features of *Platyceps najadum* and the distribution of this species in Iran and Turkmenistan are analysed. Based on morphological characters and mtDNA sequence data (12S rDNA), *Coluber atayevi* Tunijev & Shammakov, 1993 is ranked as a subspecies of the Slender racer, *P. najadum atayevi* comb. n. This taxon seems to have a restricted distribution in the Kopet Dag.

Keywords: *Platyceps najadum* ssp. - *Coluber atayevi* - Iran - Kopet Dag - morphology - systematics - mtDNA.

INTRODUCTION

Eichwald (1831) described *Tyria najadum* from the vicinity of Baku in Azerbajdzhan. Eichwald's, or the Slender, racer is distributed from the eastern Adriatic Region (Dalmatia) to the Caucasus and northeastern Iran. Mertens & Müller (1928) referred this species to the genus *Coluber* auct.

Schätti & McCarthy (2001) considered *Tyria najadum* Eichwald, 1831, *Zamenis dahlii* var. *collaris* Müller, 1878 (see Schätti *et al.*, 2001), and *Coluber* (s. l.) *schmidtleri* Schätti & McCarthy, 2001 to be closely related to *Zamenis rhodorachis* Jan, 1863 and allied taxa (see Schätti, 1993). The *najadum* group is a distinct evolutionary lineage within the monophyletic racer genus *Platyceps* Blyth, 1860 (Schätti & Utiger, 2001).

Tunijev & Shammakov (1993) described *Coluber atayevi* on the basis of twenty-three specimens from the vicinity of Saivan in the "Bakharden Region" of Turkmenistan. They noted "significant morphological divergence" compared with "other representatives of the *najadum-rubriceps* complex" and concluded that their new taxon replaces the Slender racer in the "western and central Kopet-Dag". Darevskij & Orlov (1994) questioned the validity of *C. atayevi*. Schätti & Utiger (2001) excluded this taxon from their systematic re-arrangement of Old World racer genera for want of morphological criteria allowing a clear distinction from *Platyceps najadum*. For the time being, Atajev's racer parades under the operational term *Coluber* sensu lato.

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This study investigates external morphological characters of *Platyceps najadum*, with special emphasis on features considered to separate this species from *Coluber* (s. l.) *atayevi*, and presents molecular (12S rDNA) data.

MATERIAL AND METHODS

The material used for this investigation was obtained from the following institutions: The Natural History Museum [British Museum (Natural History)], London (BMNH), California Academy of Sciences, San Francisco (CAS), Field Museum of Natural History, Chicago (FMNH), Muséum d'histoire naturelle, Genève (MHNG), Muséum National d'Histoire naturelle, Paris (MNHN), Museo civico di Storia naturale 'Giacomo Doria', Genova (MSNG), National Museum, Department of Zoology, Prague (NMP), Naturhistorisches Museum, Wien (NMW), Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt on Main (SMF), Zoological Institute, Russian Academy of Sciences, St. Petersburg (ZISP), Institut für Systematische Zoologie [formerly Zoologisches Museum], Museum für Naturkunde, Humboldt-Universität, Berlin (ZMB), and Zoologische Staatssammlung, München (ZSM). Further acronyms used in the text are CRS (Caucasian Reserve, Sochi, Krasnodar Region, Russia), MTKD (Staatliches Museum für Tierkunde, Dresden), and RM (J. Robert Macey, Berkeley: field tags).

The specimens from Iran and Turkmenistan examined for the purpose of this study are: BMNH 1920.3.20.3 (Gorgan, Golestan Province, 36°50'N 54°29'E, ♀, Ingoldby); CAS 182948-50 (Turkmenistan: "environs of Saivan Village, Saivan-Nokhur Plateau, western Kopet-Dag, Bakharden Region", ♂, ♀♀, paratypes of *Coluber atayevi*), CAS 185185-86 and 185188-94 ("elev. 1200-1300 m, 38°30'N 56°47'E, 2 km SE (airline) of Saivan, Ashgabad Region", 5 ♂♂, ♀♀, paratypes of *C. atayevi*); FMNH 141612 (Shahrabad [Shahrabad-e-Khavar], Khorasan, 37°30'N 56°51'E, unsexed [tail completely truncated immediately behind anal scute], Street Expedition), FMNH 141649 (Chalus, Mazandaran, 36°40'N 51°25'E, juv. ♂, Street & Lay 1962); MHNG 1403.92 (Lar [Elburs], Teheran (Central) Province, 35°22'N 49°42'E, ♀), MHNG 1403.93 (Polur, Teheran, 35°52'N 52°03'E, ♂), MHNG 2626.56 (vic. of Mahniyah, Hamadan/Zanjan border, 35°31'N 49°05'E, ♂); MNHN 3582 ("Perse", ♂, Aucher-Eloy); MSNG 30313 ("Isphahan", ♂, Doria); NMP6V 35563 ("50 km NNE Avaj", Zanjan, approx. 35°34'N 49°13'E [Avaj], juv. ♀); NMW 20138 ("Pera, Khoi" [Khoy], West Azarbaijan, ca. 38°33'N 44°58'E, ♂, Zugmayer); SMF 30095 ("Shahi" [Qa'emshar], Mazandaran, 36°28'N 52°53'E, ♀), SMF 67214 ("Sarab bei Miyandoab", West Azarbaijan, ca. 36°57'N 46°06'E [Miandowab], ♀); ZISP 13626 (Gorgan, juv., Kirichenko 1914 [in bad shape, ventral and subcaudal counts unknown]), ZISP 18624 (Turkmenistan: Firjuza, 37°56'N 58°04'E, ♀, Gorbunov 1973); ZMB 31841 ("Persisch Kurdistan", ♀); ZSM 6.1968 (Gok Shalu, Miandowab, ♂), ZSM 55.1972 ("Tschalus" [Chalus Valley], Mazandaran, ca. 36°38'N 51°38'E, ♂).

The morphological description of *Platyceps najadum* is based on data from roughly 250 specimens. A detailed analysis of this sample will be presented in a forthcoming study. The dorsal scale formula gives the number of longitudinal rows at the tenth ventral, at midbody (50% of the total number of ventrals) and in front of the anal scute. Reductions in the number of dorsal scale rows on the posterior part of the body

are situated either 'high' (paravertebral or vertebral) or 'low' (lateral). Their position along the trunk is expressed in terms of ventrals and as a percentage of the total number thereof (%ven); these values are based on the mean of the right and left side counts. The tail / body ratio is the tail length divided by the snout-vent length, i.e., from the tip of the snout to the posterior border of the anal scute.

For this paper, a partial sequence of the mitochondrial small ribosomal subunit (12S rRNA) was obtained from tissue samples of the following specimens: *C. atayevi* Tunijev & Shammakov CAS 185188 (RM 9545, 99% ethanol, liver), *Platyceps karelini* (Brandt) MHNG 2443.3 (frozen muscle), *P. najadum* (Eichwald) MHNG 2626.56 (ibid.), and *P. variabilis* (Boulenger) MHNG 2456.71 (ibid.). The GenBank numbers are AY647231-34. The technique of DNA extraction as well as PCR and sequencing procedures are described in Utiger *et al.* (2002). The obtained data were added to those of *Hemorrhois hippocrepis* (L.) and seven *Platyceps* spp. (including two *P. najadum*) from an existing sequence file consisting of two partially analysed mitochondrial genes, cytochrome oxidase subunit I (COI) and 12S rRNA (Schätti & Utiger, 2001). For the new samples, only the latter gene region was investigated. The lacking COI characters were coded as missing.

TABLE 1. Sequence properties and tree reconstruction parameters.

	gaps: missing unweighted MP	gaps: 5th character state unweighted MP	gaps: 5th character state weighted MP
Lenght of sequence alignment (COI/12S)	1116 (513/603)	1116 (513/603)	1116 (513/603)
Total of variable characters (COI/12S)	308 (150/158)	317 (150/167)	317 (150/167)
- parsimony-informative (COI/12S)	191 (108/83)	197 (108/89)	197 (108/89)
Number of most parsimonious trees	1	1	1
Tree length	592	622	258.8
Rescaled consistency index (RC)	0.32	0.316	0.708

All phylogenetic analyses were performed with PAUP* version 4.0b10 for Mac (Swofford, 1998), and the weighted maximum parsimony (MP) analysis is described in Utiger *et al.* (2002) and Utiger & Schätti (2004). Gaps in the 12S rDNA sequence were treated as fifth character state. After a first run with heuristic search and tree-bisection reconnection (TBR) branch swapping, characters were weighted with the rescaled consistency index (RC, Farris, 1989) and a second heuristic search was performed. Nonparametric bootstrap values (Felsenstein, 1985) with 1000 replicates were calculated for both character types (see Discussion).

RESULTS

MORPHOLOGY

Platyceps najadum has eight or nine supralabials, the fourth and fifth or fifth and sixth entering the eye; with the exception of MNHN 3582 from "Perse" (Duméril *et al.*, 1854), all Iranian specimens examined as well as an individual from Turkmenistan (ZISP 18624) have eight supralabials. The preocular and anterior subocular are single; posterior subocular scales are absent. The number, size and arrange-

ment of the temporals is highly variable; usually, there are two anterior and three posterior scales; in most cases, the lower anterior temporal is larger than the upper. Fragmentation of the temporals is noted in the type series of *Coluber najadum albitemporalis* Darevskij & Orlov, 1994.

Usually, there are ten (nine to eleven) sublabials, the anterior four or five in contact with the first chin shield (inframaxillary), which is shorter and slightly broader than the posterior. Normally, the posterior pair of chin shields is separated anteriorly by one or two granular scales and two or three rows caudally. However, the size and number of the scales separating the posterior chin shields is highly variable; in some specimens, the latter are in contact for almost their whole length as, for instance, in ZSM 55.1972.

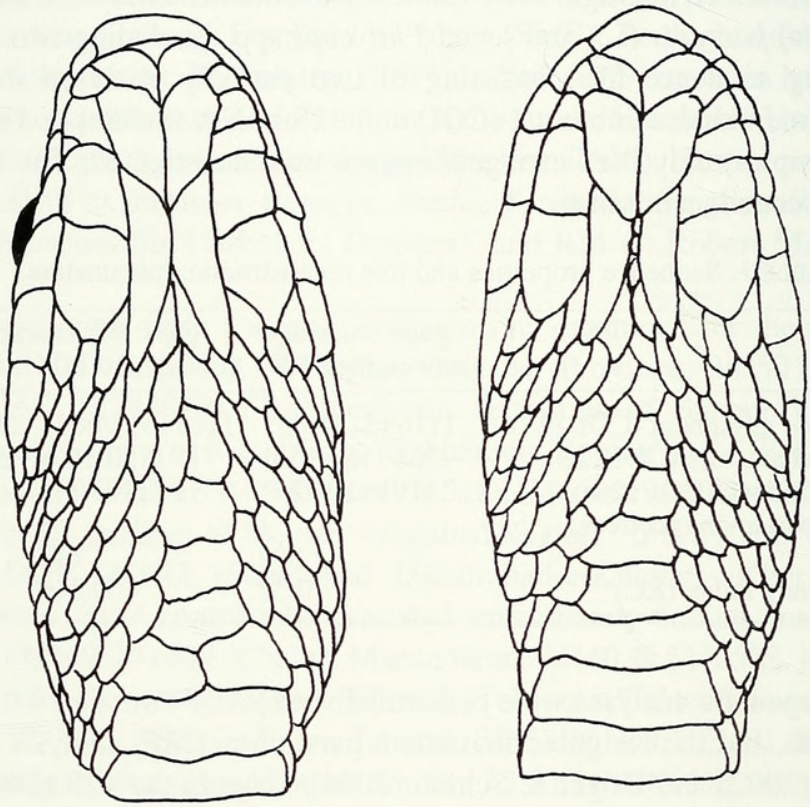

FIG. 1
Ventral head scales of *Platyceps n. najadum* ZSM 55.1972 (left) and ZSM 48.1918 (right).

Platyceps najadum has 205-236 (♂♂ 205-225, ♀♀ 208-236) ventrals and 100-140 (♂♂ 100-140, ♀♀ 103-137) paired subcaudals; the anal scute is paired. There are 207-236 (♂♂ 207-222, ♀♀ 219-236) ventrals and 107-133 (♂♂ 109-132, ♀♀ 107-133) subcaudals in specimens from Iran.

Generally, the highest ventral counts are recorded in eastern Anatolia and adjacent regions (including SMF 67214). The minimum for subcaudals (100) in specimens with complete tails was registered in ZISP 14092 from Sochi (Krasnodar). Strauch (1873) and Nikolskij (1916) noted 98 subcaudals in the "Kaukasus" (no. 1741, "Dr. Höft, 1844") and 99 for a specimen from the Transcaspian Region. Considerably lower subcaudal counts reported, for instance, by Latifi (1991) and Darevskij & Szczerbak (1993) are probably from individuals with incomplete tails.

Platyceps najadum normally has 19-19-15 or 19-19-13 dorsal scale rows. Both patterns are found in specimens from the southern border of the Caspian Sea to northern Khorasan. The reduction pattern in two females (MHNG 1403.92, SMF 30095) is 'high-low' or 'low-high' at 61-89%ven; ZSM 55.1972, a male with 13 dorsal scale rows prior to the anal scute, has the reductions 'low-high-high' at 61-62% (first and second) and 85%ven (third); FMNH 141612 (unsexed, see Material and Methods) shows the sequence 'low-high' at 61-64%ven; ZISP 18624 (♀) from the Kopet Dag (Firjuza) has two reductions involving low (first) and high (second) levels at 64-65%ven.

The maximum total length reported for *Platyceps najadum* is approx. 140 cm (Cattaneo, 2001). The longest male examined, i.e., MHNG 1358.72 from Zadar (Dalmatia), attains 920 + 395 mm. The maximum snout-vent length in females is 913 mm in MHNG 2447.68 from Mt. Ararat, Turkey (tail incomplete). The body is slender and the tail / body length ratio in adults at least 0.32 (♀♀) to 0.34 (♂♂); in Anatolia some specimens, e.g., CAS 105234 (♀) from the vicinity of Anamur, attain values of 0.50.

Head, body, and tail are generally olive, light brownish, or faint grey. The supralabials, preocular, and postoculars are white or yellowish. Often, there is a dark spot below the eye or an oblique stripe running from the lower border of the orbit to the temporal region. The lateral portion of the neck and forebody shows conspicuous white-edged ocelli or blotches with dark (black to dark olive) centres; these markings may be replaced by, or mixed with, narrow bars on the anterior flanks. Size and distinctiveness of the posterior lateral markings reduce progressively, and the light edges of the ocelli and blotches are absent. The anterior lateral markings may be confluent mid-dorsally forming transverse bands. The chin, venter, and underside of the tail are uniform light (white, cream, or yellowish). Mertens (1940) noted a brick red ("ziegelrot") hue of the posterior subcaudals in SMF 30095.

Populations with two large and conspicuous milky dots on the nape occur in the vicinity of Lenkoran and Archivan, southern Azerbajdzhan (*Coluber najadum albitemporalis* Darevskij & Orlov).

Specimens having one or several cross-bands on the nape and neck are recorded from Anatolia, Syria, and Iraq to the Caucasus and Turkmenistan (e.g., BMNH 1920.3.20.3, MHNG 1403.92, NMP6V 35563, ZISP 18624, and ZSM 6.1968). In the eastern part of the distribution range occur individuals with a dorsal colour pattern composed of fine black spots behind the neck that may extend onto midbody as exemplified by NMW 20138, SMF 30095, and ZSM 55.1972. Specimens virtually devoid of any dorsal markings are known from various areas and seem to be common in central western Iran (e.g., MHNG 2626.56, MSNG 30313).

Distribution

Platyceps najadum lives from Dalmatia across the southern Balkans, the Ionian and Aegean islands including Lefkada [Levkás] and Lipsos (new records), Anatolia, the Levant south to Lebanon and the Syrian lava desert, Iraq, the Caucasus north to the Krasnodar Region and Dagestan, Azerbajdzhan, northern Iran, and in the Kopet Dag, Turkmenistan (e.g., Strauch, 1873; Baran, 1976; Bannikov *et al.*, 1977; Darevskij & Szczerbak, 1993).

Based on the catalogue entries of the St. Petersburg herpetological collection, Ananjeva and Orlov (1977) concluded that a juvenile specimen (ZISP 11151) collected in 1910 by K. A. Satunin at "Derbel in Caucaso" (Nikolskij, 1916: 93) came from Dzhebel (39°38'N 54°14'E) in the Bolshoj Balkhan area, Turkmenistan. Probably following these authors, Szczerbak & Golubev (1981) mentioned this individual from the Transcaspian Region. However, ZISP 11151 is from Derbent (42°03'N 48°18'E) in Dagestan (Nikolskij, 1916: 94).

In Iran, *Platyceps najadum* is reported from large parts of the western mountain region (e.g., MHNG 2626.56, NMP6V 35563) south to Esfahan Province (Blanford, 1876: MSNG 30313), and the Caspian Region (e.g., SMF 30095, Qa'emshar). Northeastern records and collecting sites include BMNH 1920.3.20.3 and ZISP 13626 from Gorgan (Baran, 1976; Ananjeva & Orlov, 1977), FMNH 141612 (Shahrabad, N Khorasan), Emamrud ("Shakhrud", 36°25'N 54°58'E, ca. 1200-1500 m a.s.l.) in Semnan Province, "Kent-Parsian" between 36°22'-37°15'N and 55°25'-56°45'E (fide Adamec, 1981) as well as Darreh Gaz and Quchan (Fig. 2) in northern Khorasan (Kessler, 1872; Derjugin, 1905; Latifi, 1991). The southern distribution limit is not well documented (see below).

Apart from an unspecified record from the Transcaspian Region (leg. Matvejev 1904) quoted by Czarevskij (1915), *Platyceps najadum* is recorded from Mt. Khozly and Kara Kala settlement to as far east as the Gaudan Valley (Ashkhabad - Quchan road) separating the central and eastern Kopet Dag (Fig. 2), between ca. 400 m (Kara Kala) to 2'000 m on Mt. Dushak (Varenczov, 1894; Ananjeva & Orlov, 1977; Rustamov & Shammakov, 1979; Szczerbak & Golubev, 1981; Szczerbak *et al.*, 1986; Starkov, 1988; Atajev & Shammakov, 1990; Atajev *et al.*, 1991, 1994). The map (Fig. 2) does not include three records from Turkmenistan, i.e., a specimen collected by Bilkevich near "Ashkhabad" (Nikolskij, 1905), probably a vague origin, and two unlocated places, "Garrygala" and "Imarat" (Atajev *et al.*, 1991, 1994).

Besides Derjugin's (1905) record from "Kent-Parsian" in the border area of Semnan and Khorasan Provinces (see above), various specimens mentioned from the Irano-Turkmenian border region are presumably lost (see Ananjeva & Orlov, 1977). This is, for instance, the case with an individual obtained at "Ashkhabad" (37°57'N 58°23'E, see above) or Varenczov's (1894) material (determined by N. M. Kulagin, fide Nikolskij, 1905) collected near km 20 along the road from Ashkhabad to the Gaudan pass (37°37'N 58°24'E) and at "Suluklju". New observations from 1400-1500 m near Suljukli in Germob District (Szczerbak *et al.*, 1986: "Germab", see Fig. 2) were reported by Szczerbak & Golubev (1981).

Tunijev & Shammakov (1993) did not cite, for instance, the occurrence of the Slender racer near the Arvaz pass at above 1800 m a.s.l. (active at 8°C) and in the vicinity of Kënekesir (Kojnja-Kasyr, "Kojne-Kesyr") reported by Atajev & Shammakov (1990) and Starkov (1988), respectively (Fig. 2). Atajev *et al.* (1994) reported the species from "Garrygala" west of Mt. Dushak (see above). Further publications dealing with the herpetofauna of Turkmenistan such as, for instance, Bobrinski (1923), Bogdanov (1962), Shammakov (1971), Rustamov & Shammakov (1982), or Shammakov *et al.* (1993) do not procure any pertinent information about this species, and Atajev (1985: map 86) gave but four localities based on previous records (i.e., Mt. Dushak, Firjuza, Suljukli, and "Kuchanskoje shosse"). The occurrence of *Platyceps najadum* in the vicinity of Firjuza as first reported by Ananjeva & Orlov (1977) was confirmed by observations in May 1979 (Szczerbak *et al.*, 1986).

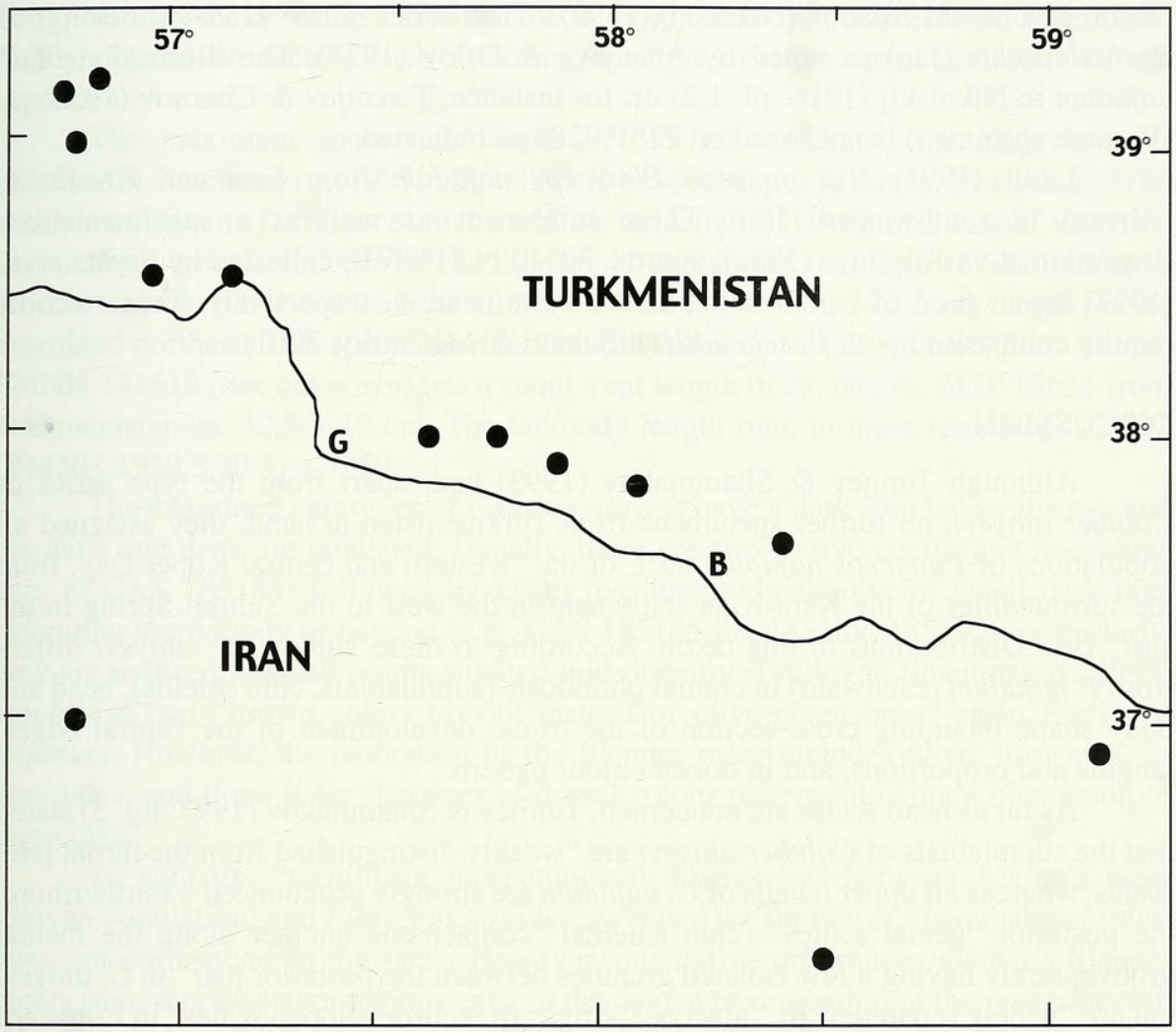

FIG. 2
Distribution of *Platyceps najadum* in Turkmenistan (Kopet Dag) and North Khorasan, Iran. Localities in the Kopet Dag are Firjuza (ZISP 18624, Ananjeva & Orlov, 1977) at 37°56'N 58°04'E as well as Arvaz (38°14'N 57°09'E, pass, approx. 1'840 m a.s.l.), Dagish and Dashtoj gorge (Babazo District: B), Mt. Dushak (ca. 37°58'N 57°54'E), vicinity of Germob (ca. 38°01'N 57°44'E), Kara Kala (38°34'N 56°44'E, 400 m), Karanki gorge (Babazo District: B, 1'200-1'400 m), 15 km NE Kënekesir ("Kojne-Kesyr", ca. 38°17'N 57°00'E), Mt. Khozly (ca. 38°35'N 56°48'E, "about 18 km south of Bami"), Mirza Dag (38°01'N 57°36'E), the vicinity of Saivan (38°30'N 56°47'E, type locality of *Coluber atayevi*), Suljukli (Germob District: G), and km 20 on the Ashkhabad - Quchan road (Varenczov, 1894; Rustamov & Shammakov, 1979; Szczerbak & Golubev, 1981; Szczerbak *et al.*, 1986; Starkov, 1988; Atajev & Shammakov, 1990; Atajev *et al.*, 1991; Tunijev & Shammakov, 1993). Babazo and Germob are border districts with Iran (Sczcerbak, 1986: map). Iranian localities include Shahrabad (37°30'N 56°51'E, FMNH 141612) and two collecting sites from Latifi (1991), i.e., Darreh Gaz ("Darehghaz", 37°27'N 59°07'E) and Quchan ("Ghoochan", 37°06'N 58°30'E).

Latifi (1991) mentioned *Platyceps najadum* from Kerman, Baft (29°12'N 56°36'E) and Khash (28°14'N 61°15'E) in southeastern Iran. At least two of these indications are possibly based on records (ZISP 9286, 9288) of "*Zamenis dahlii* Fitz." from "Kaskin in Kirmano orient." (ca. 27°30'N 60°22'E, fide Anderson, 1999) and

"Kerat in Chascht-Adano" (Nikolskij, 1899)[1]. The series (ZISP 9285-88) belongs to *P. rhodorachis* (Jan) as noted by Ananjeva & Orlov (1977). The illustration of *P. najadum* in Nikolskij (1916: pl. 1.2) or, for instance, Terentjev & Chernov (1936: pl. IV, same specimen) is not based on ZISP 9286 as indicated.

Latifi (1991) also reported *Platyceps najadum* from Fars and Khuzestan (Ahvaz) in southwestern Iran. These references as well as a specimen from Boyerahmad-va-Kogiluye (Yasuj, approx. 30°40'N 51°36'E) collected by Frynta *et al.* (1997) are in need of confirmation and re-identification, respectively. These records require comparison with *P. schmidtleri* (Schätti & McCarthy, 2001).

DISCUSSION

Although Tunijev & Shammakov (1993) had, apart from the type series of *Coluber atayevi*, no further specimens from Turkmenistan at hand, they assigned all populations of *Platyceps najadum* auct. of the "western and central Kopet-Dag, from the surroundings of the Kara-Kala settlement in the west to the Sulukli Spring in the east" (see Distribution) to this taxon. According to these authors, *C. atayevi* differs from *P. najadum* (Eichwald) in cranial pholidosis (supralabials, chin shields), head and body shape including cross-section of the trunk, development of the ventral edges, lengths and proportions, and in dorsal colour pattern.

As far as head scales are concerned, Tunijev & Shammakov (1993: fig. 3) stated that the supralabials of *Coluber atayevi* are "weakly distinguished from the throat [sic] scales, whereas all upper labials of *C. najadum* are strongly pronounced". Furthermore, the posterior "genial scutes" (chin shields) "contact one another along the mental groove, rarely having a few isolated granules between the posterior pair" in *C. atayevi* but are "widely separated" by "always 2-4 rows of well-developed scales" in *Platyceps najadum*. The illustrations in Tunijev & Shammakov (1993) simply show that there is no difference between the two taxa in the size of the supralabials. The posterior chin shields are completely separated, for instance, in CAS 185186, 185189, and 185191 (paratypes of *C. atayevi*), and there is considerable variation in the arrangement, number, and development of the median granular scales in *P. najadum* (Fig. 1).

With regard to head shape, Atajev's racer has been diagnosed as having a "narrow, sharp, and flat head with the rostrum beveled downward". The drawings of *Platyceps najadum* in Tunijev & Shammakov (1993: figs 3.a-c) show a bloated head which does by no means represent the contour in living specimens. Differences in general body shape and habitus between the two taxa as insinuated by Tunijev & Shammakov (1993: fig. 2) cannot be confirmed either.

Tunijev & Shammakov (1993) described the lateral edges of the ventrals ("abdominal ridges") in *Coluber* (s. l.) *atayevi* as "practically absent" ("in contrast to" *Platyceps najadum*) and the cross-section of the body round, whereas it is thought to be "rectangular [...] in *C. najadum* and *C. rubriceps*" (i.e., *P. collaris*, see Schätti *et al.*,

[1] ZISP 9285-87 from "Kirmano orient." and "in Sargado" were collected in Sistan-va-Baluchistan. ZISP 9288 was obtained on 13 April 1898 in the vicinity of Herat (34°34'N 60°33'E), eastern Khorasan (Zarudnyj, 1898; Nikolskij, 1905; Anderson, 1999).

2001). In fact, these features are variable in *P. najadum* and, in preserved specimens, finally depend on factors such as killing and preservative agent and state of the specimen.

The maximum snout-vent length of 533 mm indicated for Atajev's racer (Tunijev & Shammakov, 1993: CRS 421) is exceeded, for instance, in CAS 185185 with almost 60 cm. Differences in the relative tail length ("1/4 of total length" vs. "1/3" in *najadum*) are correlated with the number of subcaudals (see below). The tail/body ratio in *Coluber atayevi* is 0.32-0.36 (♂♂ 0.34-0.36, ♀♀ 0.32-34). Body length for the examined northeast Iran *Platyceps najadum* (all females) ranges from ca. 25 to 84 cm. FMNH 141612 (sex unknown) has a snout-vent length of ca. 64 cm, ZISP 18624 from Turkmenistan ca. 32,5 + 13 cm. The tail/body length ratio in these specimens is 0.31 (BMNH 1920.3.20.3) to 0.39.

The examined paratypes of *Coluber atayevi* have a dark spot below the eye and the nape and neck are ocellated. Usually, there are two to five ocelli (and transverse bars in CAS 185185) followed by up to five longitudinal rows of small dark dots extending to midbody or beyond (e.g., CAS 185185-86, 185189, 185191); posteriorly, they are reduced to small points situated mid-dorsally. Tunijev & Shammakov (1993) emphasise that "brown colors prevail instead of olive-green ones" as in *Platyceps najadum*. However, the coloration of the Slender racer includes olive, brownish, or grey hues, and there is no character of dorsal colour pattern allowing a distinction of these taxa.

To sum up, "significant morphological divergence" between Atajev's racer (Saivan population) and *Platyceps najadum* as stated by Tunijev & Shammakov (1993) does not correspond to the facts. However, qualitative differences vis-à-vis Slender racers from more western regions exist in the degree of separation of the posterior chin shields, relative tail length, and peculiarities of the temporal scales as well as low ventral and subcaudal counts that are, strangely enough, not notified by Tunijev & Shammakov (1993).

In at least nine paratypes of *Coluber atayevi*, viz., CAS 182948-50, 185185 (right side), 185186, 185190-91, 185193, and 185194 (left), the upper first temporal is vertically divided. No information regarding the remaining type material (CRS series) is available (Tunijev & Shammakov, 1993: Tbs 1-2). In any case, this configuration is uncommon in *Platyceps najadum* (e.g., MHNG 2626.56).

The Saivan specimens (CAS series) have 203-224 ventrals (♂♂ 203-209, ♀♀ 214-224) and 94-104 subcaudals (♂♂ 94-104, ♀♀ 97-101) compared to 205-225 (♂♂) and 208-236 (♀♀) ventrals and 100-140 (♂♂) and 103-137 (♀♀) subcaudals in *Platyceps najadum* (see Morphology). Tunijev & Shammakov (1993: Tb. 2) gave 197-214 ventrals and 90-106 subcaudals for the type series of *Coluber atayevi* (sexes not separated)[2]. In *P. najadum* from Iran examined for the purpose of this study there are 207-236 (♂♂ 207-222, ♀♀ 219-236) ventrals and 107-133 (♂♂ 109-132, ♀♀ 107-133) subcaudals. ZISP 18624 (♀) from Turkmenistan has 222 ventrals and 125 subcaudals (not 112 as erroneously stated by Ananjeva & Orlov, 1977).

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[2] According to Tunijev & Shammakov (1993: Tb. 1), a paratype deposited in the Caucasian Reserve, Sochi (CRS 424) has only 190 ventrals and 90 subcaudals.

The sum of the ventral and subcaudal counts for the Saivan series (examined specimens) ranges from 299-322 (♂♂ 299-313, ♀♀ 314-322). These values are usually considerably higher in *Platyceps najadum*. Only in the case of three males from the Krasnodar Region (ZISP 3695: 316, ZISP 14092: 309) and the Ararat area (NMP6V 35564.1: 314) they are below 320 (ZSM 55.1972 has 321). Females normally have values distinctly over 330 and at least 324-325 in the Ararat area, Georgia and Dagestan (MTKD 14274, NMP6V 35564.2, and ZISP 11151); BMNH 1920.3.20.3 from Gorgan (Golestan) has 329 (222 ventrals, 107 subcaudals). Varenczov's (1894) presumably lost specimen from the Gaudan road (see Distribution), probably a female, had 225 ventrals and 101 subcaudals (tail incomplete?).

The description of Atajev's racer is based on a comparison of the type series in the CRS collection (holotype and nine paratypes) collected around Saivan with a limited number (ten specimens) of *Platyceps najadum* "from various areas of the Caucasian Isthmus" and information from literature including questionable data on *P. collaris* Müller [as *Coluber rubriceps* (Venzmer)].

Except for the type series of *Coluber atayevi*, no morphological data are reported for populations from the Bakharden region (i.e., Kara Kala, Mt. Khozly). This is also true for specimens from collecting sites between Kënekesir and Mt. Dushak along the border region with Iran (Fig. 2). By all means, the subadult female from Firjuza (ZISP 18624) with 347 ventrals and subcaudals (see above), entire (unfragmented) anterior temporals, a low (first) and high posterior reduction at 64-65 %ven, and a dorsal colour pattern composed of a collar and distinct bars along the neck conforms to typical *Platyceps najadum* auct.

The configuration of the chin shields and temporals (see above) as well as particularly low ventral and subcaudal counts in the Saivan population are probably due to a genetic bottleneck[3]. Molecular data reveal divergence of the Saivan population vis-à-vis *Platyceps najadum* auct. (Fig. 3). However, the genetic distance is smaller than between typcial specimens of the Slender racer examined for the purpose of this study and MHNG 2626.56 from the northern Zagros range.

The reader may argue that COI and 12S rDNA data were used for the tree reconstruction (Fig. 3) although a number of COI sequences are missing. However, conspecific samples with a complete data set are available, giving the tree some significance. Unweighted and weighted MP analyses of both gene fragments resulted in the same topology. Bootstrap values with 5000 replicates are virtually identical with those presented in the phylogeny (Fig. 3). Uncorrected genetic distances within the *Platyceps najadum* group are 5.2% (in prep.), 8.6% for *P. collaris* vs. *P. najadum*, and 8.5-12.3% for *Hemorrhois hippocrepis* vs. the remaining species analysed within the scope of this study.

Based on morphological and molecular data, *Coluber atayevi* Tunijev & Shammakov is considered a subspecies of *Platyceps najadum* Eichwald with a limited

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[3] "Increasing climatic aridization in the Holocene can be the cause of disappearance of *C.*[*oluber*] *atayevi* in the foothills and severe restriction of its area in the middle-altitude and high-altitude parts of the western and central Kopet-Dag and, possibly, to the breakup of the area into several local refuges. The "primitive" morphological features were preserved in the absence of contacts with closely related forms" (Tunijev & Shammakov, 1993: 8).

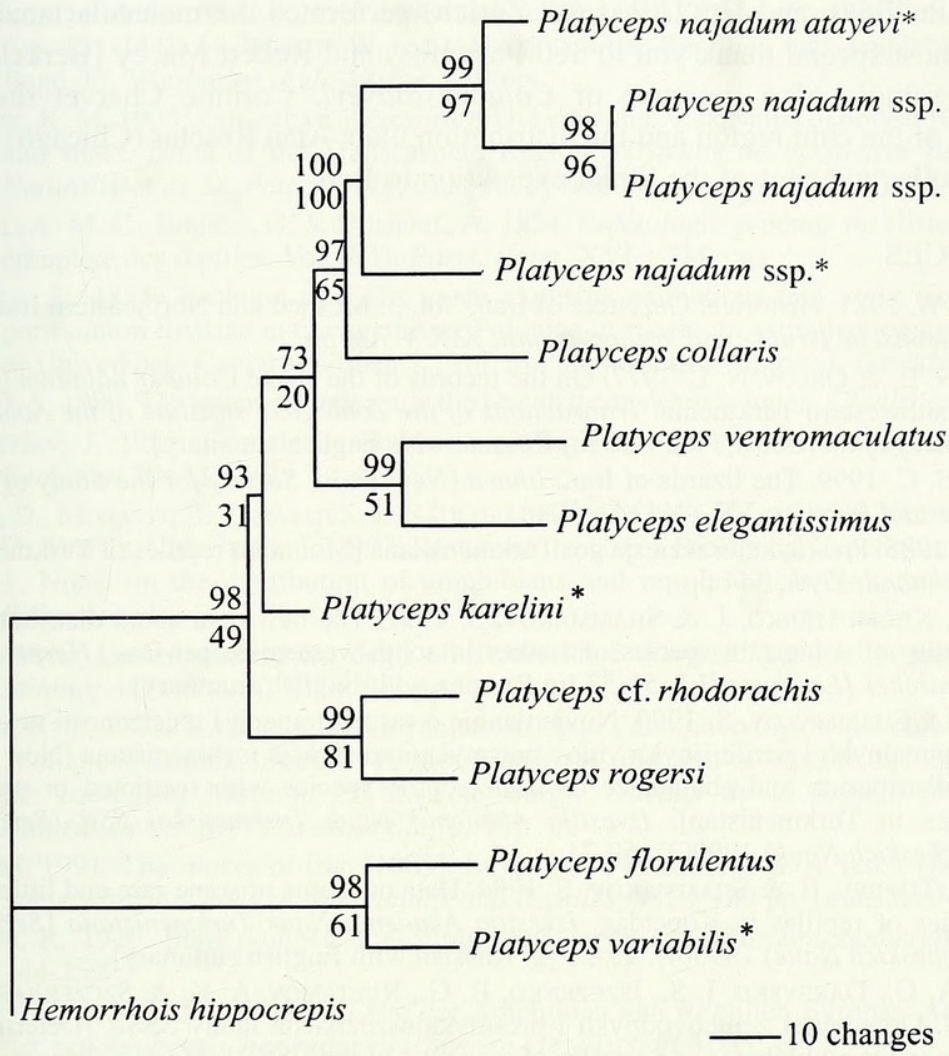

FIG. 3

Weighted maximum parsimony (MP) tree of two partial gene sequences, COI and 12S rDNA (only 12S in taxa with an asterisk) and the Palaearctic horseshoe snake *Hemorrhois hippocrepis* (L.) as out-group. Bootstrap values (1000 replicates) from weighted (upper) and unweighted (lower values) MP analysis.

geographic distribution. Supposedly, *P. najadum* as understood in this paper is made up of several distinct taxa including incipient species, and this systematic complex is in need of a more detailed investigation (in prep.).

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