

A NEW SPECIES OF THE GENUS *Tropicolotes* PETERS, 1880 FROM HORMOZGAN PROVINCE, SOUTHERN IRAN (REPTILIA: GEKKONIDAE)

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ABSTRACT. We have described a new species of gekkonid lizard of the genus *Tropicolotes* from southern Iran, on the coastal regions of Persian Gulf from Bandar-e Lengeh, Hormozgan province. *Tropicolotes hormozganensis* sp. nov. belongs to the eastern clade of the genus *Tropicolotes* (*wolfgangboehmei-nattereri* complex) that is distributed in western Asia. It can be distinguished from the recent described species by having four pairs of postmentals and four nasal scales around the nostril. Postmental scales also differentiate it from *T. wolfgangboehmei*. The new identification key for the Iranian species of genus *Tropicolotes* is provided.

KEY WORDS: Endemic, Hormozgan province, Iranian Plateau, *Tropicolotes*, Zagros Mountains.

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INTRODUCTION

During recent years, many lizard species have been described from Iran, with most from the Phylodactylidae and Gekkonidae families (Smid et al. 2014). The Zagros Mountains is a high endemism area in Iran that has an important role in most speciation events during recent periods (Macey et al. 1998; Gholamifard 2011; Esmaeili-Rineh et al. 2016). Many species from Phylodactylidae were described recently, all of which are endemic to the

Zagros Mountain valleys. However, many authors believe that the refuge role of this mountain in recent glacial period affected the speciation pattern of geckos, as they become isolated and cannot migrate for long distances (Torki et al. 2011a). Many species of Lacertidae were described from the Zagros Mountain region as *Apathya yasujica*, *Iranolacerta zagrosica*, *Eremias isfahanica*, *Eremias montana* (Rastegar-Pouyani & Nilson 1998; Rastegar-Pouyani & Rastegar-Pouyani 2001; Nilson et al. 2003; Rastegar-Pouyani et al. 2016) and also many Gekkonid species were described from this area during recent years (Krause et al. 2013; Smid et al. 2014).

Gekkonidae is distributed all over the world, but most of the species are nocturnal (Esmaeili-Rineh et al. 2016) and 13 genera and 41 species occur in Iran (Safaei Mahroo et al. 2016). A new genus was described from southern Iran (*Parsigecko*) that is morphologically distinct from other genera of the family, but near to *Rhinogecko* based on scalation (Safaei-Mahroo et al. 2016). Additionally, a new species was described from the genus *Tropicolotes* (Krause et al. 2013) that was only collected in Nayband Gulf, Bushehr province, south Iran. Rounaqi et al. (2017) found another population of the latter species from Fars province based on the molecular analyses (Fig. S1) and expanded its distribution range northward. Several populations of the genus *Tropicolotes* were collected

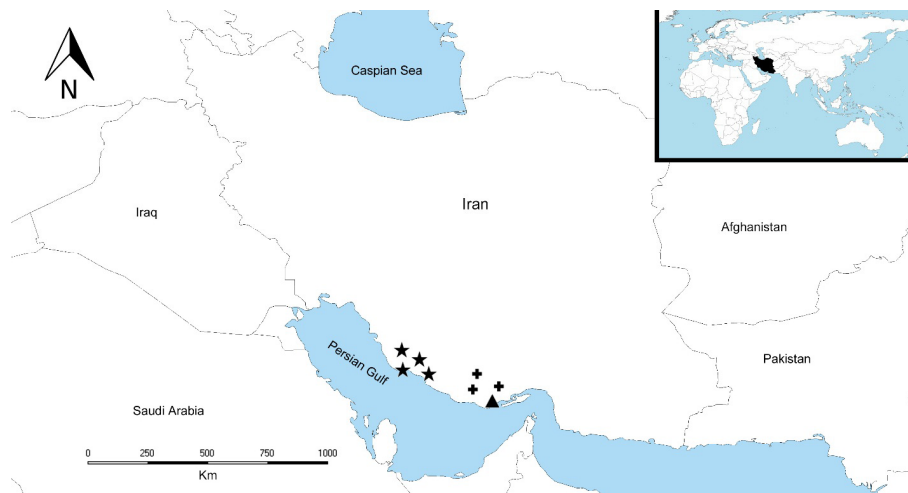


Figure 1. Map of Iran and records of two species belonging to the genus *Tropicolotes*. Stars indicate *T. naybandensis* in Bushehr and Fars provinces. The triangle and plus symbols refer to the newly described species in Bandar-e Lengeh, Hormozgan province (the triangle symbol indicates the type locality of *T. hormozganensis* sp. nov.).

by Rounaqi et al. (2017) from Hormozgan province and mtDNA markers and morphological characters were used to identify them as a new undescribed taxon (Fig. 1).

In the present study, we describe the unknown populations of the genus *Tropicolotes* from southern Iran using morphological diagnosis.

Institutional abbreviation: SUHC, Sabzevar University Herpetological Collection (Sabzevar, Iran).

MATERIALS AND METHODS

Specimens of the new species were collected from southern Iran September 2010 near to Bandar-e Lengeh, Hormozgan province (Fig. 1). A list of morphological characters were measured on all specimens and compared with *Tropicolotes naybandensis* (Rounaqi et al. 2017). Metric and meristic characters that examined are as follows: interorbital scales including ciliary scales (IOS), scales around midbody (SAM), ventrals (V), gulars (G), nasalia (N), number of subdigital lamellae under first toe (SDL1 toe), number of subdigital lamellae under third toe (SDL3 toe), number of keels on each subdigital lamellae (KSDL), supralabials (Supralab), sublabials (Sublab), postmental shields (PSTM), contact of postmental shield [yes/no] (PM), body scales [smooth/keeled] (BS), caudal scales [smooth/keeled] (CS), interorbital and gular scales [smooth/keeled] (IG). Metric characters were measured using digital caliper with accuracy 0.1 mm and meristic characters were measured using Olympus loop.

RESULTS

Description of *Tropicolotes hormozganensis* sp. nov. - Fig. 2 A, B.

Etymology: The name of *hormozganensis* was attained from the species locality (Hormozgan province, southern Iran).

Material examined: Holotype: SUHC 1818 (♂), 30.88 mm snout-vent length, collected September 2010; Paratypes: SUHC 1819 (♂), 29.69 mm snout-vent length, SUHC 1820 (♀) and 30.70 mm snout-vent length, collected September 2010. All specimens were collected from Bandar-Lengeh, Hormozgan province, southern Iran. Based on Rounaqi et al. (2017), differences between *T. naybandensis* and *T. hormozganensis* sp. nov. were confirmed by both molecular and morphological characters. Morphological analyses indicated that three morphological characters

differentiated them: number of nasal scales, number of scales under first toe, and number of postmental shields.

Diagnosis: Two species are closely related to *T. hormozganensis* sp. nov. as *T. naybandensis* and *T. wolfgangboehmei*. The new species was differentiated from *T. naybandensis* with fewer than 3 nasal scales; fewer than 12 scales under the first toe; and more than 3 postmental scales. *T. hormozganensis* sp. nov. is differentiated from *T. wolfgangboehmei* by having three pairs of postmentals (Fig. 2C), but is differentiated from *T. steudneri* in the relative size of postmentals as these have equal size in *T.*

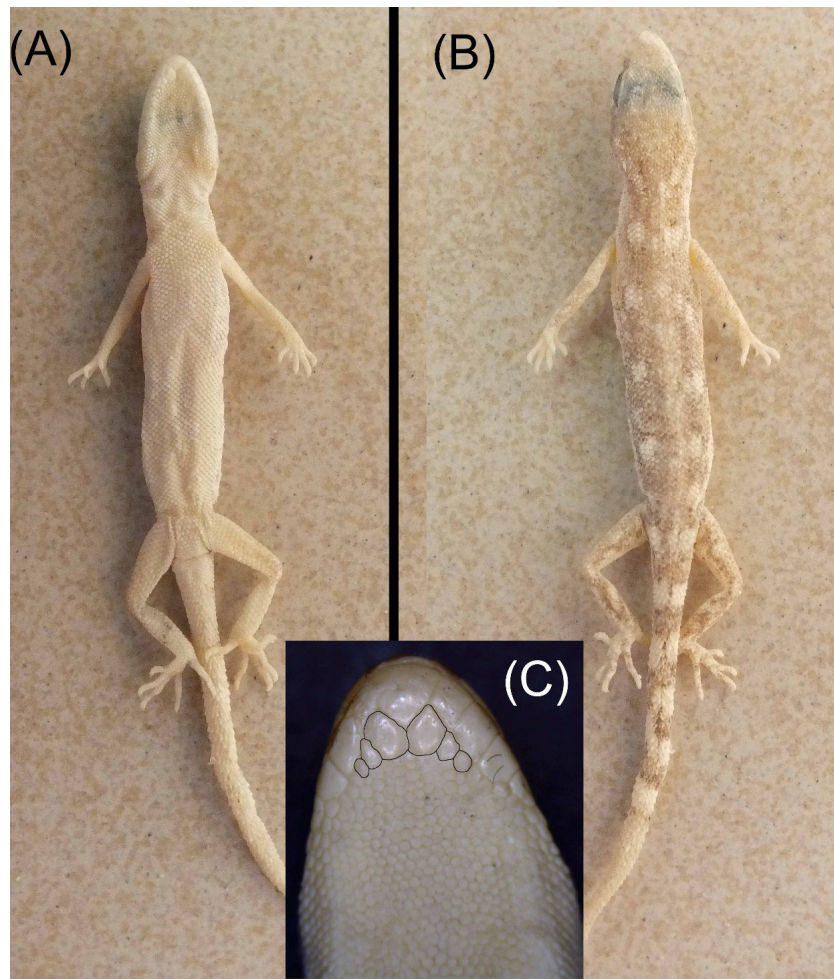


Figure 2. Holotype of *T. hormozganensis* sp. nov. showing (A) ventral view; (B) dorsal view; And (C) postmental scales of the holotype and with those distinguished by size marked using a black line.

steudneri (Wilms et al. 2010) but are smaller in *T. hormozganensis* sp. nov.

Description of Holotype: An adult male; Snout-vent length: 30.88 mm; body slender; forelimb and hindlimbs are elongate; part of the tail regenerated; number of gular scales: 35; nasals: 4; number of scales under first toe: 11; number of postmental scales: 6; supralabials: 11; infralabials: 9; number of scales under third toe: 20; number of ventral scales horizontally: 20; Ventral scales are similar to those under the femur; there is not a precise row of scales under tail; Rostral scale is completely divided; interorbital scales: 14.

Coloration of preserved specimen: dorsal background color is light brown with two parallel sets of five spots between forelimbs and hindlimbs; upper head has homogenous brown color; Ventral surface has cream color homogeneously; there are narrow brown strips on the hindlimbs.

Etymology: The species name, *hormozganensis*, was attained from the species locality, southern Iran, Hormozgan province.

Paratypes: Two specimens was assigned as paratypes of *T. hormozganensis* sp. nov. from the same locality of holotype. SUHC 1819 and SUHC 1820 are voucher numbers of the paratypes. Tails of both specimens were broken; scalation, coloration and pattern of paratypes are the same as for the holotype; metric and meristic measurements of paratypes are presented in Table 1.

Ecological notes: The new species, *Tropicolotes hormozganensis* sp. nov., was collected from southern Iran, in the coastal regions of Bandar-e Lengeh, Hormozgan province. The collection site (Fig. 3) is flat and covered by various vegetation types (shrubs and trees). The surface isn't rocky as that found for *T. naybandensis* in Nayband Gulf. The species is nocturnal and can be found under the shrubs. *Echis carinatus* and *Stenodactylus doraiei* are two sympatric species with the new species found 25 km west of Bandar-e Lengeh, Hormozgan province.

DISCUSSION

Tropicolotes hormozganensis sp. nov. is the second species of this genus from Iran that previously known as *T. cf. steudneri* (Krause et al. 2013; Smid et al. 2014). The new described species distributed in south Zagros region as *T. naybandensis*, however, this can be refer that the Zagros

Table 1. All morphometric measurements of the holotype and two paratypes of *T. hormozganensis* sp. nov. from southern Iran. Abbreviation: Sabzevar University Herpetological Collection (SUHC).

| Character | SUHC 1818 | SUHC 1819 | SUHC 1820 |
|---|--------------|--------------|--------------|
| Interorbital scales including ciliary scales | 22 | 20 | 21 |
| Scales around midbody | 58 | 59 | 55 |
| Ventrals | 20 | 26 | 28 |
| Gulars | 33 | 35 | 35 |
| Nasalia | 4 | 4 | 4 |
| Number of subdigitallamellae under first toe | 12 | 13 | 11 |
| Number of subdigitallamellae under third toe | 20 | 20 | 17 |
| Number of keels on each subdigitallamellae | 3 | 3 | 3 |
| Supralabials | 11 | 10 | 11 |
| Sublabials | 9 | 7 | 8 |
| Postmental shields | 3 | 3 | 3 |
| Contact of postmental shield [yes/no] | yes | yes | yes |
| Body scales [smooth/keeled] | no | no | no |
| Caudal scales [smooth/keeled] | no | no | no |
| Interorbital and gular scales [smooth/keeled] | no | no | no |



Figure 3. Habitat of *Tropicolotes hormozganensis* sp. nov. in southern Iran, near Bandar-e Lengeh, Hormozgan province.

region might be considered potentially as a hotspot and high level of endemism areas for reptiles in Iran. Many species of the family Gekkonidae were described from Zagros Mountains during recent years as *Mediodactylus stevenandersoni*, *Mediodactylus ilamensis*, *Parsigecko ziaiei*, *Cyrtopodion hormozganum*, *Mediodactylus aspratilis*, *Hemidactylus romeshkanicus*, *Cyrtopodion persepolense* (Anderson, 1973; Nazarov et al. 2009; Nazarov et al. 2012; Fathinia et al. 2011; Toriki, 2011; Toriki et al. 2011b; Safaei-Mahroo et al. 2016). We believe that Zagros Mountain needs more consideration and searching to find all potential species of reptiles inhabited among valleys. All of new described species from Zagros Mountain has limited distribution, because they restricted to valleys and their special microhabitats. Finally, a key to the species of the genus *Tropicolotes* is provided.

Key to species of the genus *Tropicolotes* on the Iranian Plateau

- 1a. Gular scales 26-29; Pairs of postmentals 2; number of subdigital lamella under first toe 14-16; nasalia 2 *Tropicolotes naybandensis*
 2a. Gular scales 30-42; Pairs of postmentals 3; number of subdigital lamella under first toe 10-12; nasalia 4 *T. hormozganensis* sp. nov.

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+ Supplementary material
1 figure / 1 page

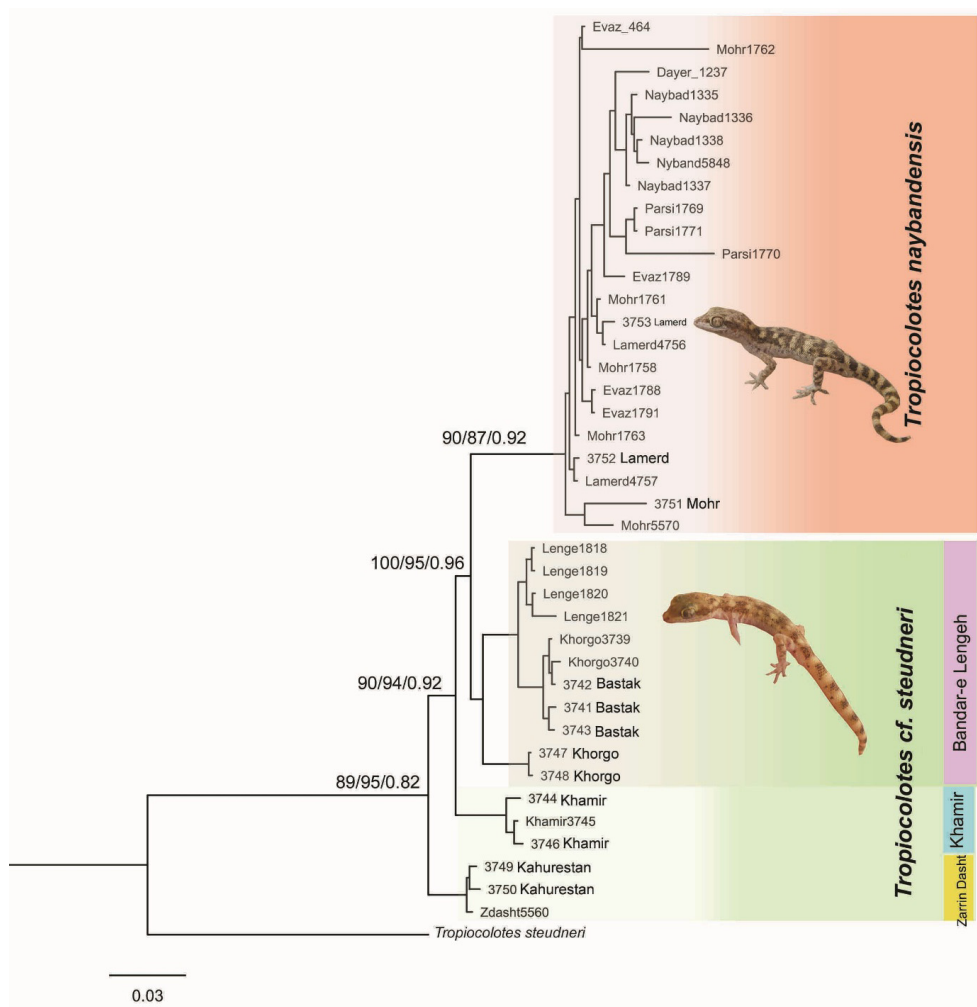


Figure S1. Phylogenetic relationship between Iranian populations of the genus *Tropicolotes* that revealed using molecular data by Rounaqi et al. (2017).