

## Altitudinal distribution of skinks of the genus *Asymblepharus* in the Western Himalaya, India (Reptilia: Sauria: Scincidae)

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### Summary

Ground skinks (*Asymblepharus*) have been recorded in 60 localities of the Western Himalaya, India (Jammu and Kashmir, Himachal Pradesh). In Himachal Pradesh *A. l. ladacensis* was observed at 22 localities. The lowest altitude was 2670 m, Solang village, Beas Valley, Kullu District, whereas the highest record was 4655 m near Komik village, Spiti Valley. The latter is the highest known altitude for this subspecies. *A. himalayanus* was observed at altitudes between 1113 m and 3724 m in 38 localities in both states.

### Zusammenfassung

Es werden 60 Fundorte von Skinken (*Asymblepharus*) aus dem indischen West-Himalaya (Jammu und Kashmir, Himachal Pradesh) aufgeführt. Im Bundesstaat Himachal Pradesh wurde *A. l. ladacensis* an 22 Orten gefunden. Der niedrigste gelegene Fund war das Dorf Solang im Beas Tal (Erstfund für den Kullu Distrikt) in 2670 m NN, der höchstgelegene Nachweis gelang im Spiti Tal in 4655 m NN nahe des Dorfes Komik. Dies ist auch der höchstgelegene Fund dieser Unterart. Die Art *A. himalayanus* wurde in Höhen zwischen 1113 m und 3724 m an 38 Orten in beiden Bundesstaaten nachgewiesen.

**Key words:** Reptilia, Scincidae, *Asymblepharus*, the Western Himalaya, India, altitudinal distribution

### 1. Introduction

Eight species of small mountain skinks are currently recognized in the genus *Asymblepharus* Eremchenko et Szczerbak, 1980. Incidentally, the Cyrillic names of the authors have been published in several different Latin transliterations, e.g. Jeriomtschenko, Jeremčenko or Yeriomchenko and Shcherbak, respectively (BORKIN et al. 2015). The type species *A. alaiicus* (Elpatjevsky, 1901) and *Asymblepharus eremchenkoi* Panfilov, 1999 are distributed in Central Asia including the Tian Shan and Pamir-Alai Mountains. The other six species are endemic to the Himalaya and were grouped under the subgeneric name *Himalblepharus* Eremchenko, 1987 with the type species *A. sikimensis* (Blyth, 1854). The western part of the Himalayan region harbours three species of this subgenus, namely *A. himalayanus* (Günther, 1864), *A. ladacensis* (Günther, 1864) and *A. tragbulensis* (Alcock, 1898). Maps of the global distribution of the genus and both subgenera were published by Roberto SINDACO & Valery JEREMČENKO (2008).

In the literature, these taxa were also associated with generic names *Eumeces*, *Euprepes*, *Mococa*, *Lygosoma*, *Lygosoma* (*Liolepisma*), *Leioloipsisma*, and *Scincella* (e.g., GÜNTHER 1864, STEINDACHNER 1867, BLANFORD 1878, BOULENGER 1890, ZUGMAYER 1909, CHABANAUD 1922, SMITH 1935, AHMAD 1946, SMITH & BATTERSBY 1953, GRUBER 1981, OUBOTER 1986, SAHI & DUDA 1986, TIKADER & SHARMA 1992, DAS et al. 1998, SHRESTHA 2001, EREMCHENKO 2002).

The taxonomy and relationships of the Himalayan skinks need further clarification. For instance, according to SINDACO & JEREMČENKO (2008), perhaps, the Himalayan species would be best regarded as belonging to the separate genus *Himalblepharus* Eremchenko, 1987. On the contrary, the genus *Asymblepharus* itself was rejected by SHEA & GREER (2002), without any justification. *Scincella capitanea* Ouboter, 1986 from Nepal was transferred to *Asymblepharus* (EREMCHENKO et al. 1998, EREMCHENKO 2002) and, was later returned to the genus *Scincella* (LINKEM et al. 2011) without taxonomic comments. Unlike other authors, OUBOTER (1986), NANHOE & OUBOTER (1987) and SHRESTHA (2001) recognized *A. himalayanus* as a

subspecies of *A. ladacensis* (“*Scincella ladacensis himalayanana*”). In contrast, EREMCHENKO (1992, 2002) and SINDACO & JEREMČENKO (2008) recognized *A. himalayanus* as a distinct species and divided *A. ladacensis* into two subspecies: the nominotypical one and the new *A. ladacensis stimsoni*.

Following CONSTABLE (1949), DAS et al. (1998) resurrected “*Lygosoma himalayanum* var. *tragbulense*” Alcock, 1898 from synonymy with *A. himalayanus* and raised it to full species rank. Only five specimens (two syntypes and three additional topotypes) of this species are known, from the type territory (Tragbul Pass, ca. 50 km NNW Srinagar, Kashmir) at the elevation of about 9000–9500 feet, i.e. 2740–2895 m (DAS et al. 1998).

*Euprepes kargilensis* Steindachner, 1867 described from Kargil, western Ladakh, is probably a full species of the *A. ladacensis* species complex (SINDACO & JEREMČENKO 2008), although previous authors (e.g., BOULENGER 1890, SMITH 1935, OUBOTER 1986) synonymized that species with *A. ladacensis*. Highland lizards from the Spiti Valley (Himachal Pradesh, India) which were described as *Euprepes stoliczkai* Steindachner, 1867 and later synonymized with *A. ladacensis* (e.g., OUBOTER 1986, EREMCHENKO 2002, SINDACO & JEREMČENKO 2008), have some peculiarities in the scalation characters. Based on this example, OUBOTER (1986) concluded that “splitters” might call almost every population a different species because of slight differences resulting from the isolation in which most populations live.

The vertical distribution of the Himalayan skinks is of special interest. OUBOTER (1986) remarked that altitude as well as humidity have some influence on clinal change in certain morphological and physiological characters. Summarizing numerous data from the literature, we found that lizards of the subgenus *Himalblepharus* occur between 150 m and 5490 m above sea level (e.g., SWAN & LEVITON 1962, GRUBER 1981, OUBOTER 1986, NANHOE & OUBOTER 1987, EREMCHENKO

2002, BAHUGUNA 2010). At first glance, the lowest altitude record of “*Scincella sikimmensis*” from riverine and sal forest at Chitwan National Park at an elevation of 150 m (ZUG & MITCHELL 1995, EREMCHENKO 2002) in the Terai zone of Nepal seems to be exceptional. However, there are two intermediate findings of ground skinks which link the Chitwan locality with the main area of their higher distribution. So, another species, *A. himalayanus* inhabits the Himalayan foothills in the Corbett Tiger Reserve in Uttarakhand State, India at an elevation about 400 m (BAHUGUNA 2008, 2010). Moreover, BOULENGER (1890) mentioned an intermediate altitude of 3000 feet (= 914 m) as the lower limit for “*Lygosoma sikkimense*” in the Eastern Himalaya (Sikkim).

Curiously, both the lowest and highest known localities for *Asymblepharus* (*Himalblepharus*) species are from Nepal. Furthermore, the locality of 5490 m above sea level in western Nepal (Smith & Battersby 1953: “*Leiolepisma ladacense*”, Kahajeng Khola, 18,000 feet, collected by the British botanist Oleg Polunin) seems to be the world’s highest record of any reptile.

In this paper, we analyse the altitudinal distribution of skinks of the genus *Asymblepharus* in the Western Himalaya, India.

## 2. Materials and Methods

Our field observations were made over the course of four trips to the Western Himalaya in 2011, 2013, 2015, and 2017, organized by the Center for Himalayan Research, St. Petersburg Association of Scientists and Scholars, under the guidance of Dr. Leo J. Borkin. Administratively, these travels covered two Indian states: Himachal Pradesh as well as Jammu and Kashmir. Geographical coordinates and altitudes of localities were identified by means of Global Positioning System (GPS) devices; photographs of each locality and some lizards were taken.

## 3. Results and Discussion

In total, we encountered ground skinks of two currently recognized species in 60 localities in the Western Himalaya, scattered across two Indian states: Himachal Pradesh, and Jammu and Kashmir.

***Asymblepharus ladacensis ladacensis*.** In the Western Himalaya, we found the Ladakh ground skink at 22 localities, at elevations between 2670 m and 4655 m. The lowest record was at Solang village (32.3313° N and 77.1476° E), situated in the Beas Valley, Kullu District, Himachal Pradesh. In autumn (14 October, 2017) skinks were quite common near the road between Solang and Dhundi villages, moving among stones in grass. Importantly, we found *A. himalayanus* only slightly below this locality, on the wall running along the road. The highest occurrence of *A. ladacensis* we recorded was in the Spiti Valley, Lahaul and Spiti District, Himachal Pradesh. In autumn (8 October 2011) we found five skinks at an altitude of 4575 m near Tangyud Gompa (Buddhist monastery), Komik village (32.2355° N and 78.1127° E). Lizards were observed among small stones slightly below an area of frosted ground.

During our next visit, in warmer summer time (10 June 2015), a skink was found at an elevation of 4655 m in the same region (32.2567° N and 78.0967° E), which was still covered by ice patches.

In autumn (2 October 2011) skinks were quite common, moving among stones including stony walls in Chitkul village (or Chhitkul, 31.3511° N and 78.4369° E, 3430 m) in the Baspa (or Sangla) Valley, Kinnaur District, Himachal Pradesh. There, *A. ladacensis* also inhabited chinks with grass tufts in masonry at the bus stop. The transition zone from the mixed coniferous-birch forest and dense bushes to alpine vegetation is special feature of this locality. The Baspa River is a left tributary to the Sutlej (or Satluj) River. Chitkul is the last inhabited village near the Indo-Chinese border on the old trade route to Tibet. In the alpine zone of Spiti Valley, skinks were found among stones in the grass area at Dhankar Lake as well as in mountain gravelly desert with sparse small thorny cushion-like bushes of *Caragana brevifolia*, on roadsides and in villages (Kibber, Komik).

SAIKIA et al. (2008) reported on the occurrence of *Asymblepharus* (= *Scincella*) *ladacensis* from several places up to 3600 m in the Pin Valley. These authors stated that they published the first record of the species not only for this valley (which is correct) but for the Lahaul and Spiti District, and for Himachal Pradesh State in general. However, STEINDACHNER (1867: 46) described this lizard as a new species “*Euprepes stoličkar*” based on several specimens collected in the Spiti River valley (“aus dem Thale des Spiti-Flusses”) at altitudes circa 12.000–14.000 feet (= 3660–4270 m). This name is currently recognized as a synonym of *A. l. ladacensis* (e.g., OUBOTER 1986). The Pin Valley is a lateral valley formed by the Pin River, a right tributary of the Spiti River.

The Ladakh ground skink was also common in the environs of Dhankar Lake at an elevation of 4156 m (32.0923° N and 78.2285° E) above the Dhankar Gompa; the latter is located in the Spiti Valley at the point of confluence of Pin and Spiti rivers. We observed this species during both our visits to the lake in 6 October 2011 and 9 June 2015. Therefore, our data confirmed the distribution of *A. ladacensis* in the Spiti Valley, providing the highest known record of this species both for this region and for Himachal Pradesh State.

In a recent review of the vertebrates of Himachal Pradesh, SHARMA & SIDHU (2016) listed the “Mountain Ground Skink” (*A. ladacensis*) for Lahaul & Spiti District only. Therefore, our finding of this species in the Baspa Valley (Chitkul) is the first record for the Kinnaur District.

The Ladakh ground skink was described under the name “*Eumeces ladacensis*” by GÜNTHER (1864: 88) from “Ladak (Tibet)”. The single specimen was obtained from Messrs. von Schlagintweit. CONSTABLE (1949) mentioned “Kharu, Ladakh” as the type locality of the species. According to various authors, that lizard is widely distributed in Ladakh from Kargil in the west (“*Euprepes kargilensis* Steindachner, 1867”) along the upper Indus River to Hemis in the east at an elevation of 2710–3700 m (STEINDACHNER 1867, BOULENGER 1890, GRUBER 1981, OUBOTER 1986). In all localities investigated by GRUBER (1981), except Hemis, these skinks were quite



**Fig. 1:** *Asymblepharus ladacensis*, between Solang and Dhundi, 2816 m a.s.l., the Beas Valley, Kullu District, Himachal Pradesh, 14 October 2017. All pictures: Daniel A. Melnikov.



**Fig. 2:** *Asymblepharus himalayanus*: vicinity of Mcleod Ganj, 1736 m a.s.l., Kangra District, Himachal Pradesh, 10 October, 2017.



**Fig. 3:** Habitat of *Asymblepharus ladacensis*, Komik village area, 4655 m a.s.l., Spiti Valley, Himachal Pradesh, 10 June 2015.



**Fig. 4:** Habitat of *Asymblepharus himalayanus*: near Parkachik village, 3375 m a.s.l., Kargil District, Ladakh, Jammu & Kashmir, 30 June 2015.



**Fig. 5:** Habitat of *Asymblepharus ladacensis*: vicinity of Dhundi, 2816 m a.s.l., Himachal Pradesh, 14 October 2017.



**Fig. 6:** Habitat of *Asymblepharus himalayanus*: garden path, Nicholas Rorerich Museum, 1831 m a.s.l., Naggar, Kullu District, Himachal Pradesh, 13 June 2015.

common. Nevertheless, SAHI et al. (1996) wrote that “*Scincella ladacense*” is a very rare species. We found no specimens of this species in the Ladakh region in 2013 and 2015.

According to SHRESTHA (2001), “*Scincella ladacensis*” is the commonest skink found in Kumaon, Uttar Pradesh (now Uttarakhand), India, and seems to be abundant on the banks of the Nainital Lake, located at an altitude of 1938 m. However, Indian authors (e.g., BAHUGUNA 2010) did not list *A. ladacensis* in reviews on the fauna of Uttarakhand, which only list *A. himalayanus*.

SHRESTHA (2001) also reported that “*Scincella ladacense*” is well represented at Shey Gompa (4500 m) in the Indus River Valley. However, this famous Buddhist monastery is situated in the Leh District at approximately 1000 m lower (ca. 3415 m). According to MEHTA & JULKA (2001), “*Leilolopisma ladacense*” is endemic to Ladakh and was found up to an altitude of about 4800 m (no exact locality was given). In fact, *A. ladacensis* spreads across the Western Himalaya reaching eastwards the northern spur of the Dhaulagiri Himal in Nepal at altitudes between 2590 and 5490 m (SWAN & LEVITON 1962, OUBOTER 1986, NANHOE & OUBOTER 1987, EREMCHENKO 2002). However, Nepalese skinks belong to the subspecies

*A. ladacensis stimsoni* Eremchenko, 1992. In general, *A. l. ladacensis* occurs at lower altitudes in the Western Himalaya compared to conspecific skinks in Nepal.

***Asymblepharus himalayanus*.** We observed *A. himalayanus* at altitudes between 1113 m and 3724 m in 38 localities in the eastern and western sides of the Kashmir Valley and in the Kargil District of Ladakh (Jammu and Kashmir State) as well as in Chamba, Kullu, Mandi, Shimla, Kinnaur, and Solan districts (Himachal Pradesh). The lowest record was Aut (31.7640° N and 77.2035° E, Solan District), and the highest was at a point after the checkpoint on the southern side of Pir Panjal Range below Sach Pass (32.9943° N and 76.2153° E), Chamba District, both in Himachal Pradesh in 13 October 2011 and 7 October 2017, respectively. The latter locality was above the treeline, in a stony desert area of the alpine zone.

*A. himalayanus* occurred among stones on roadsides, in villages and at the forest edge (Badseri, Naggar, Ghiagi, Shimla, Manali, McLeonganj, Dalhousie and other localities in Himachal Pradesh). In the Suru River area (Kargil District, Ladakh) we found numerous skinks hiding in a large artificial heap of stones piled on a grass roadside as a result of local road reconstruction. In Kashmir (Gulmarg) lizards were observed in chinks between stones at the base of a Hindu temple situated in a meadow.

This species was described by GÜNTHER (1864: 86) under the name “*Eumeces himalayanus*” based on “several specimens ... procured by Messrs. v. Schlagintweit in the Himalayas”, namely from: Kashmir (2), “Garhval” (2) and “Simla” (1 specimen). Currently, the Himalayan ground skink is known from mountains in northern Pakistan, around the Kashmir Valley in Jammu and Kashmir State, throughout Himachal State, Uttarakhand State, eastwards to the Jalja La, a pass south-west of the Dhaulagiri Himal in Nepal (STEINDACHNER 1867, BLANFORD 1878, AHMAD 1946, CONSTABLE 1949, GRUBER 1981, OUBOTER 1986, NANHOE & OUBOTER 1987, EREMCHENKO 2002, BAHUGUNA 2010, SHARMA & SIDHU 2016). However, large skinks from the Kashmir Valley (Gulmarg) may not belong to *A. himalayanus* but represent a hitherto unknown species of the same genus (EREMCHENKO 2002). SAHI et al. (1996) mentioned “*Scincella himalayanum*” for Kargil, Bodh Kharbu and Leh in Ladakh although other authors (e.g., GRUBER 1981, OUBOTER 1986) assigned ground skinks from this region to *A. l. ladacensis*. Nevertheless, we found *A. himalayanus* near Parkachik village, Suru River region (Kargil District, Ladakh): 34.078303° N and 75.933478° E, altitude 3375 m (30 June 2015).

In the western part of the species’ distribution, in Kashmir, ground skinks were found at elevations between 1520 in Gulmarg and 3800–4100 m at Vyshensar Pass (GRUBER 1981, OUBOTER 1986, SAHI & DUDA 1986). Our data (2620 m and 2683 m) were within this range. In Himachal Pradesh (OUBOTER 1986, SAIKIA 2013), lizards “*Scincella ladacensis himalayana*” were collected at altitudes between 2160 m (Shimla) and 3500 m (Sural, Pangi Valley). Our data varied between 1113 m and 3724 m (see above). According to ZUGMAYER (1909), “*Lygosoma himalayanum*” occurs in Ladakh at elevations between 2600 and 3500 m. Our Suru record (3375 m) coincided with that. In the Uttarakhand State *A. himalayanus* is distributed

between 400 m and 3900 m, from the Corbett Tiger Reserve in the Himalayan foothills to the highlands (HUSAIN & PRANJALENDU 1995, 1997, HUSAIN 2004, BAHUGUNA 2008, 2010, “*Scincella himalayanum*”). In the east, in Nepal, the species was found between 2000 m and 3100 m (EREMCHENKO 2002).

In total, the altitudinal distribution of the species is between 400 m and 4100 m. Therefore, the suggestion (HUSAIN & PRANJALENDU 1997, HUSAIN 2004) that in the Western Himalaya (Jammu and Kashmir, Himachal Pradesh, Uttarakhand) “*Scincella himalayanum*” ascends to [only] 3658 m elevation is incorrect. Curiously, the lowest locality (Uttarakhand) and the highest locality (Kashmir) of *A. himalayanus* were registered in the western part of the range, in contrast with *A. ladacensis* (Nepal).

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