
by İbrahim Baran, Max Kasparek and Mehmet Öz

Abstract: The two subspecies of *Ophisaurus apodus* represent different ecotypes: *thracicus* is a coastal type, which occurs in Turkey along all coasts (but only local along the Black Sea coast), whereas nominate *apodus* is an inland type which is found in Turkey only in the extreme east. *Anguis fragilis* is confined to areas in which the monthly mean precipitation is above 20 mm.


Key words: Anguidae - Turkey - Middle East - distribution - systematics - zoogeography

1. Introduction

In Turkey, two anguids live, both of which are on the border of their range there: The Slow Worm, *Anguis fragilis*, is a palaearctic faunal element whose continuous range reaches its southern limit in Anatolia. The European Glass Lizard, *Ophisaurus apodus*, is an irano-turanian element with the main area between Anatolia and Central Asia. In Europe, the species is confined to a rather limited coastal strip on the Balkans. With this background, the range of both species within Turkey will be examined here and an attempt will be made for its explanation.

2. The records

2.1. Slow Worm (*Anguis fragilis*)

ATATÜRK & BUDAK (SZE). • Hamsıköy = Ciharli (40.41/39.28), 4.9.77 leg. BARAN (SZE). • Trabzon (41.00/39.43): BÖTTGER (1889) and BODENHEIMER (1944); also Ladak in the Trabzon province: EISELT (1965). • 10 km S of Trabzon (40.55/39.43): CLARK & CLARK (1973). • Dumlusu Köyü near Of (40.56/40.17), 2.8.75 leg. ÇELENKÖGLU (SZE). • Rize (41.02/40.31): BÖTTGER (1889). • between Ardeşen and Fındıklı (41.14/41.05): CLARK & CLARK (1973). • 5 km S of Hopa (41.22/41.24): CLARK & CLARK (1973). • Artvin (41.11/41.49), NESTEROV (1912), NIKOLSKY (1915), EISELT (1965), 19.7.54 leg. BAŞOĞLU (SZE), 28.9.88 observed by DUKSEN & WEITKOWITZ. • Konk Köyü (41.04/42.34), 26.8.69 leg. BARAN (SZE).

2.2. European Glass Lizard (Ophisaurus apodus)
Fig. 1. Distribution of the Slow Worm, *Anguis fragilis*, in Turkey. The shaded area shows the zone with at least 20 mm precipitation in July, which is the month with the lowest precipitation of the year.


3. Discussion

Text-books on herpetology usually regard the whole of Turkey as the distribution area of the European Glass Lizard (e.g. ENGELMANN et al. 1985, OBST 1981).
However, the map presented here shows that the species' range is rather limited and is more or less confined to coastal areas. There are many sites in the hinterland of the Sea of Marmara and the Aegean Sea. This is apparently due to the fact that the Taurus mountains flatten and the mountain chains and the plains become vertical to the Aegean coastline, which is from north to south. This enables the coastal climate to penetrate into inner parts of the country ("inner Aegean region"). A gap in the distribution map of *Ophisaurus apodus* in the area between the towns of Adana and Antalya is apparently due to insufficient surveying.

The species' situation in the Black Sea region is rather ambiguous, as there are only two records in its central area. The Black Sea region is not insufficiently surveyed from the herpetological point of view, as can be seen e.g. from the distribution of records of the Slow Worm (Fig. 1). Thus the European Glass Lizard's occurrence should, in fact, be rather local in that part of Turkey.

Two records close to the Soviet border in the vicinity of mount Ararat ( Ağrı Dağı) are outside the normal range in Turkey. In roughly the same area, along the Aras River (Araxes or Aras Nehri) nowadays on Soviet territory, the species' occurrence has been known since the last century (BOTTGER 1892).

The confinement to coastal areas is in accordance with the situation in Europe (Jugoslavia, Albania, Greece and Bulgaria) and in the Crimea and the Caucasian Black Sea coast. The occurrence in eastern Turkey, however, is in accordance with the situation in the greater part of the species' range: From northern Caucasus to central Asia, the European Glass Lizard is an inland species adapted to continental climate. That means the European Glass Lizard is split into two ecotypes with rather well-defined ranges. Intergradient zones are not known so far.

Recently, OBST (1978) allocated the European and western Turkish populations of the European Glass Lizard to a new subspecies *thracicus* which is distinguished
from the nominate subspecies by differences in pholidosis, rather short, but wide heads and some features of body colouration. OBST supposed the border between \textit{thracicus} and nominate \textit{apodus} to be in Turkey, but could not find out whether there is a continuous or a discrete border. We suppose that the two ecotypes are identical with the two subspecies with different ecological demands ("inland type", "coastal type"). This opinion is given further support by the fact that Crimean specimens as well as specimens from coastal Caucasus seem to belong to \textit{thracicus} (OBST 1978).

The Slow Worm is confined in Turkey strictly to the Black Sea coastland, where it is found from the westernmost regions to the easternmost regions. The southern limit of the range is almost identical with the 20 mm isohyete of the months July and August. Some deviations from this line are only found in the extreme north-east of Turkey, where the rather humid area (monthly precipitation higher than 20 mm) reaches further inland, although the range of the Slow Worm does not. The minimum factor which limits the distribution in Turkey thus seems to be precipitation. The Slow Worm is a rather specialized lizard whose main diet consists of slugs and earthworms. In its whole distribution range, the Slow Worm's habitat is characterized by a certain humidity of the ground (DELY 1981).

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References
This is a selected reference list. Titles not listed here can be found in the Turkish herpetological bibliography by BARAN (1986).


Authors’ addresses: Prof. Dr. İbrahim Baran, Dokuz Eylül Üniversitesi, Buca Eğitim Fakültesi, Fen Bölümü, Buca/İzmir, Turkey. – Max Kasparek, Bleichstr. 1, D-6900 Heidelberg, West Germany. – Dr. Mehmet Öz, Ege Üniversitesi, Fen Fakültesi, Biyoloji Bölümü, Bornova/İzmir, Turkey.