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RESEARCH ARTICLE

Expanded geographic range of Acanthodactylus savignyi (Audouin 1827), a near-threatened lizard (Squamata: Lacertidae), with a new provincial record

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ABSTRACT

Acanthodactylus savignyi is one of Algeria's endemic and rare reptile species. A population of this species has been identified in a new locality within the Sidi Bel Abbes region in the Northwest of Algeria. This study provides a brief description of the species in this explored area, highlighting its ecological significance and potential conservation needs.

Keywords: Acanthodacthylus savignyi; new locality; Lacertidae; Algeria; Sidi Bel Abbes; distribution

1. Introduction

The genus Acanthodactylus is one of the most diverse and widespread groups of diurnal reptiles, ranging from North Africa to western India and representing the most species-rich genus in the family Lacertidae, with over 40 recognized species. These lizards inhabit a variety of arid habitats and are well-distributed across the Palearctic realm. As part of the Old World lacertidae, Acanthodactylus species are known for being notoriously difficult to identify due to their significant morphological similarities[1-4]. In North Africa, the genus Acanthodactylus comprises four groups: A. scutellatus, A. pardalis, A. boskianus, and A. erythrurus. Its morphological characteristics include toes with comb-like projections and the absence of occipital scales[2-13].

Our focus is on the A. erythrurus group, which includes three species in Algeria: A. erythrurus, A. savignyi, and A. blanci[3,9,10]. Acanthodactylus savignyi initially included two subspecies, A. s. savignyi and A. s. blanci, which were later elevated to the rank of species (A. savignyi and A. blanci). A. savignyi is a species endemic to Morocco and Algeria, observed only in the Oran region of Algeria and in Oujda,

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Morocco[9,10,14].

In contrast, A. blanci is an endemic species of Tunisia and Algeria with no subspecies[4,10]. A. erythrurus can be found in Morocco, Algeria, and across the Strait of Gibraltar in Gibraltar, Portugal, and Spain with multiple subspecies[4].

This study presents the discovery of a new locality record for A. savignyi, extending the known distribution of this rare and endemic species in western Algeria.

2. Materials and methods

Study area

Sidi Bel Abbes is strategically located in a central position, bordering the southwestern part of the Algerian Tell in northwestern Algeria. This region falls within the semi-arid bioclimatic zone, characterized by an annual rainfall of approximately 250–500 mm[15]. Ain Bent Soltane, located in the municipality of Oued Taourira, lies 20 km south of the Merine Daïra on National Road No. 94, which connects Merine to the Merhoum Daïra.

Reptile sampling

The sampling method used during field outings involved slowly traversing a chosen environment to visually detect or hear the sounds of lizards. The search for specimens also included directed observation of animals outside their shelters, lifting stones and logs, inspecting vegetation, looking under the bark of decaying trees, and occasionally digging into the ground with a shovel at locations where the animals might burrow[16].

Although six individuals were observed, only one specimen was retained, as the population is limited in the study area. The individual is preserved in 95% alcohol at the Laboratory for Valorization and Conservation of Arid Ecosystems (LVCEA), University of Ghardaïa, 47000 Ghardaïa, Algeria.

3. Results and discussion

Taxonomic account

Squamata Oppel, 181

Lacertidae Oppel, 1811

Acanthodactylus savignyi (Audouin, 1827)

New records. ALGERIA – **Sidi Bel Abbes** • Ain Bent Soltane; 34°40'53.28"N; 0°23'11.68"E; 1226 m a.s.l.; June 2019; Mayssara El Bouhissi obs.; three adults, two males and one female; three juveniles, sex undetermined.

During our field surveys in northeastern Algeria, specifically in the municipality of Ain Bent Soltane (34°40'53.28"N; 0°23'11.68"E; 1226 m a.s.l.) at Sidi Bel Abbes region (**Figure 1**), we observed a species from the genus “Acanthodactylus” exhibiting distinct morphological traits. Due to uncertainty in identification, we captured six specimens to conduct a detailed morphological study, and only one specimen was retained and preserved in 95% alcohol at the Laboratory for Valorization and Conservation of Arid Ecosystems (LVCEA), University of Ghardaïa, Algeria. Since this population may belong to the “A. erythrurus” group, and closely resembled “A. erythrurus”, the primary objective of this study was to confirm its identity. The determination may provide evidence of a new species record for the region. The biotope

where we encountered this species is a degraded steppe, characterized by a temporary wadi with sandy areas, surrounded by cereal crops.

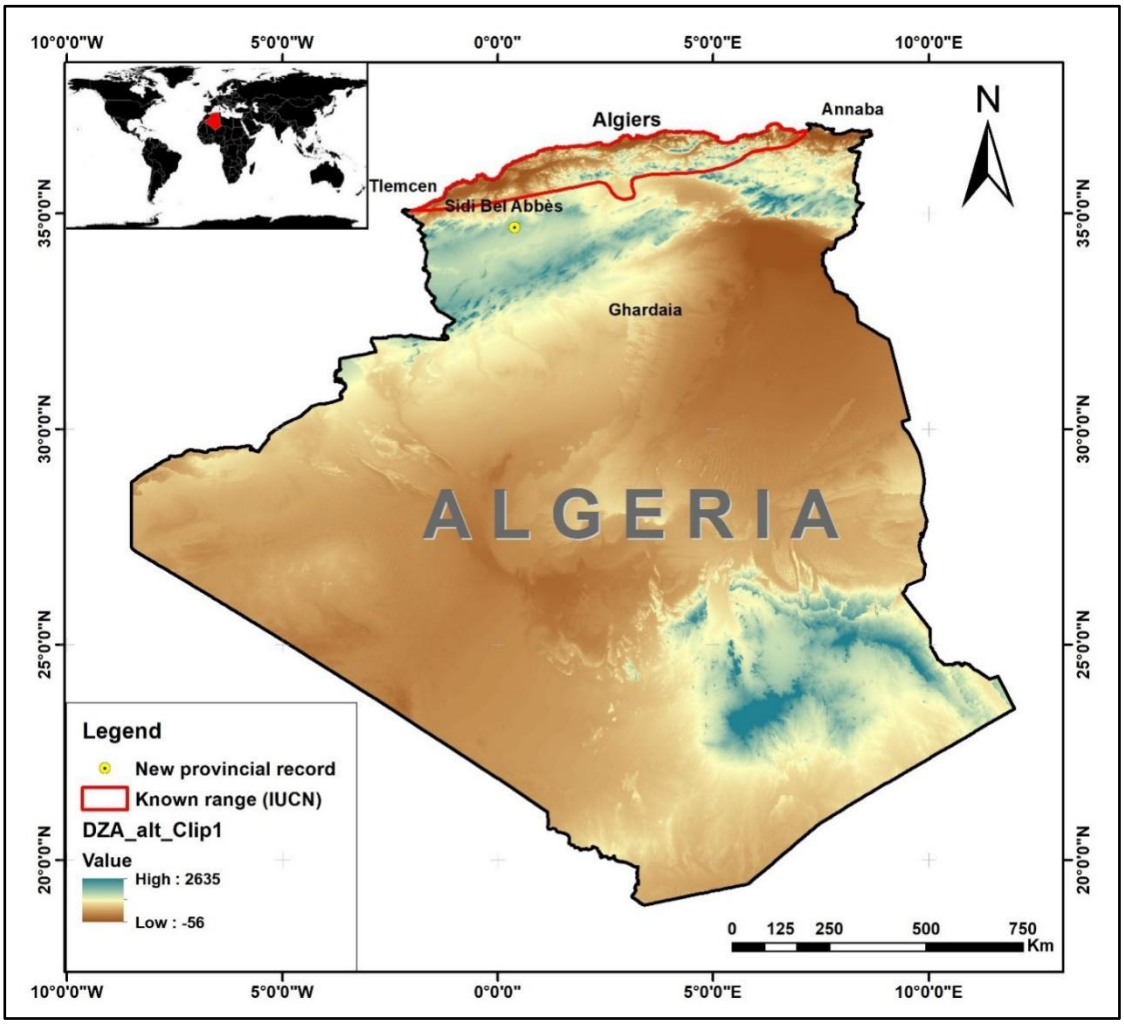

Figure 1. Distribution map of Acanthodactylus savignyi in Algeria.

Acanthodactylus erythrurus, Agama impalearis, Chalcides ocellatus, Chamaeleo chamaeleon, Discoglossus pictus, Mauremys leprosa, and Testudo graeca were the sympatric reptile species that shared the habitat with A. savignyi. These findings highlight the significance of the site in terms of biodiversity, particularly for reptiles and amphibians (**Figure 2**).

Figure 2. View of the observation site of Acanthodactylus savignyi in Ain Bent Soltane, Sidi Bel Abbès, Algeria.

Acanthodactylus savignyi was first reported only in the northwest of Algeria[17], specifically in the Camerata region near Béni Saf in Aïn Témouchent, and along the coast of the Mostaganem region, in the Dayas between Ain-Tedales and Sidi-Douma. Characterized as the only coastal Acanthodactylus species, it is replaced in the high plateaus by A. erythrurus.

Identification

Due to its similarities with Acanthodactylus erythrurus and belonging to the same group, A. savignyi can be easily confused with A. erythrurus if a thorough pholidosis examination is not conducted. However, A. savignyi is characterized by a slightly smaller body size and a more pointed snout compared to A. erythrurus and A. blanci. The lanceolate scales between the fronto-nasal and frontal scales are well-marked, and the nasal region is slightly elongated. A key distinguishing feature of A. savignyi is the presence of two scales that separate the prefrontal scales. The first scale after the frontal scale is small and rectangular, while the second is larger and trapezoidal. Occasionally, granules can be found separating the parietal scales. The second and third supraocular scales are large, while the first and fourth are divided into granules. Typically, there are two lines of granules separating the supraocular from the supraciliary scales, sometimes three lines, and rarely just one line[18].

These few pholidosis criteria allow us to differentiate A. savignyi from closely resembling species within the same group[18] (**Figure 3**).

Figure 3. Acanthodactylus savignyi: A: in its biotope; B: Dorsal View of the Head; C and D: Lateral View.

Globally, A. savignyi is categorized as "Near Threatened" (NT) on the IUCN Red List[19]. At the national level in Algeria, it is protected under Algerian Executive Decree 12-235 of 24 May 2012, which established a list of protected non-domestic animal species. This protection is due to the species' restricted distribution range and the various threats it faces.

Recently, numerous studies on reptiles in Algeria have led to the expansion of several species' known distributions, including the current study, as well as other regions[20-25].

The presence of Acanthodactylus savignyi in the Ain Bent Soltane, Sidi Bel Abbes region, is intriguing and suggests that further research across different seasons is needed to gain a deeper understanding of the distribution of this species and others in the A. erythrurus group.

4. Conclusion

Due to the ecological diversity of Sidi Bel Abbès, including forests, steppes, wetlands, and rivers, there is considerable faunistic richness. However, studies on herpetofauna in this region, as well as in Algeria more broadly, are rare and sporadic.

Our study focuses on the discovery of a new locality for the species Acanthodactylus savignyi in Algeria. We have discovered a small population in the Ain Bent Soltane region of Sidi Bel Abbès.

Further research is needed to gather more data on this endemic species and to map its distribution more comprehensively within the study region. This will enhance observations and facilitate the creation of an updated distribution map for A. savignyi. It is also necessary to conduct a comparative genetic study between coastal specimens and those from the interior or the south of the distribution area in Algeria.

Author contributions

ME: Mayssara El Bouhissi, WD: Walid Dahmani, MAH: Mohamed Ait Hammou, AC: Abdelwahab Chedad, SSE: Sadine Salah Eddine

Conceptualization, ME, WD, MAH; methodology, ME, WD; software, AC and WD; validation, AC, ME, MAH, SSE and WD; formal analysis, WD, AC; investigation, ME, WD, MAH; data curation, AC, ME, MAH, SSE and WD; writing—original draft preparation, AC, ME, MAH, and WD; writing—review and editing, AC, ME, MAH, SSE and WD; visualization, ME, WD, MAH; supervision, MAH, SSE. All authors have read and agreed to the published version of the manuscript.

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Conflict of interest

Authors declare that there is no conflict of interest.

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