



Do Whatever a Toad Does: A Report on Height-seeking Behaviour in *Bufo bufo* (Linnaeus, 1758) from Türkiye

Cantekin DURSUN¹ and Nurhayat ÖZDEMİR²

How to cite: Dursun, C., & Özdemir, N. (2025). Do whatever a toad does: a report on height-seeking behaviour in *Bufo bufo* (Linnaeus, 1758) from Türkiye. *Sinop Üniversitesi Fen Bilimleri Dergisi*, 10(1), 319-324. <https://doi.org/10.33484/sinopfbid.1570373>

Note

Corresponding Author

Cantekin DURSUN
 cantekin.dursun@erdogan.edu.tr

ORCID of the Authors

C.D: 0000-0001-7766-1470
 N.Ö: 0000-0002-3880-5846

Received: 19.10.2024

Accepted: 24.01.2025

Abstract

The family Bufonidae including terrestrial toads is generally characterized by short hind limbs compared to their larger body size. Even though toads are characterized as walker-hoppers in terms of locomotion, they may exhibit climbing behaviour to avoid predators and to use shelters for inhabiting. In this report, the most recent record regarding the climbing behaviour of *B. bufo* was presented from Türkiye. The observation was made in Yazılı Canyon Natural Park, located in Sütçüler, Isparta. A single female specimen demonstrated climbing behaviour to a tree trunk to reach a humid shelter.

Keywords: Common toad, climbing, Anatolia, locomotion

Kurbağanın Yaptığı Herşeyi Yap: Türkiye'deki *Bufo bufo* (Linnaeus, 1758) Türünün Yükseklik Arama Davranışı Raporu

¹Recep Tayyip Erdogan
 University Faculty of Arts and
 Sciences, Department of Biology,
 Rize, 53100, Türkiye

²Karadeniz Technical University,
 Faculty of Science, Department of
 Biology, Trabzon, 61080, Türkiye

This work is licensed under a
 Creative Commons Attribution
 4.0 International License

Öz

Kara kurbağalarını içeren Bufonidae familyası, büyük vücut boyutuna kıyasla genellikle kısa arka bacaklarla karakterize edilir. Hareket mekanizması bakımından yürüyen-zıplayan olarak nitelendirilmelerine rağmen kurbağalar, yırtıcılardan kaçınmak ve barınakları kullanmak amacıyla tırmanma davranışı gösterebilirler. Bu raporda, *B. bufo* türünün tırmanma davranışına ilişkin en güncel kayıt Türkiye'den sunulmuştur. Gözlem, Isparta, Sütçüler, Yazılı Kanyon Tabiat Parkı'nda yapılmıştır. Tek bir dişi örnek, ağaç gövdesindeki nemli bir barınağa ulaşmak için tırmanma davranışı göstermiştir.

Anahtar Kelimeler: Siğilli kurbağa, tırmanma, Anadolu, lokomosyon

The family Bufonidae (True toads) includes terrestrial anurans which are generally characterized by their short hindlimbs compared to their larger body size. The locomotion characteristic of bufonid toads is categorized as walker-hopper on horizontal axis [1]. From this aspect, vertical climbing in anurans is not a widely observed behaviour in true toads. However, they might show climbing behaviour in order to avoid ground-dwelling predators, to access shelters for rest and forage, and to search for mates [2-4]. The common toad *Bufo bufo* has a broad distribution in the western Palearctic realm extending from the

middle of France to the inner part of Russia [5]. The species is also known from Türkiye in the Marmara, Black Sea, Aegean and Mediterranean regions [6]. The climbing behaviour was only known for the genus *Hyla* in the western Palearctic which is associated with an arboreal lifestyle. However, recent reports showed that *B. bufo* exhibited climbing behaviour at different locations [7, 8]. In this report, the most recent observation of climbing behaviour in *B. bufo* from Türkiye is presented. The observation was made in Yazılı Canyon Natural Park located in Çandır village, approximately 10 km from the Sütçüler district in Isparta province (Coordinates: 37.481049 N, 30.939957 E). In this region, the annual average rainfall is 950.10 mm, and the annual average temperature is 13.3 °C. The driest season occurs between July and August with a mean temperature of 23.3 °C. The land surface is rough and rocky, and the vegetation consists of 185 plant taxa, 61.40% of which are characterized with Mediterranean elements (Figure 1).

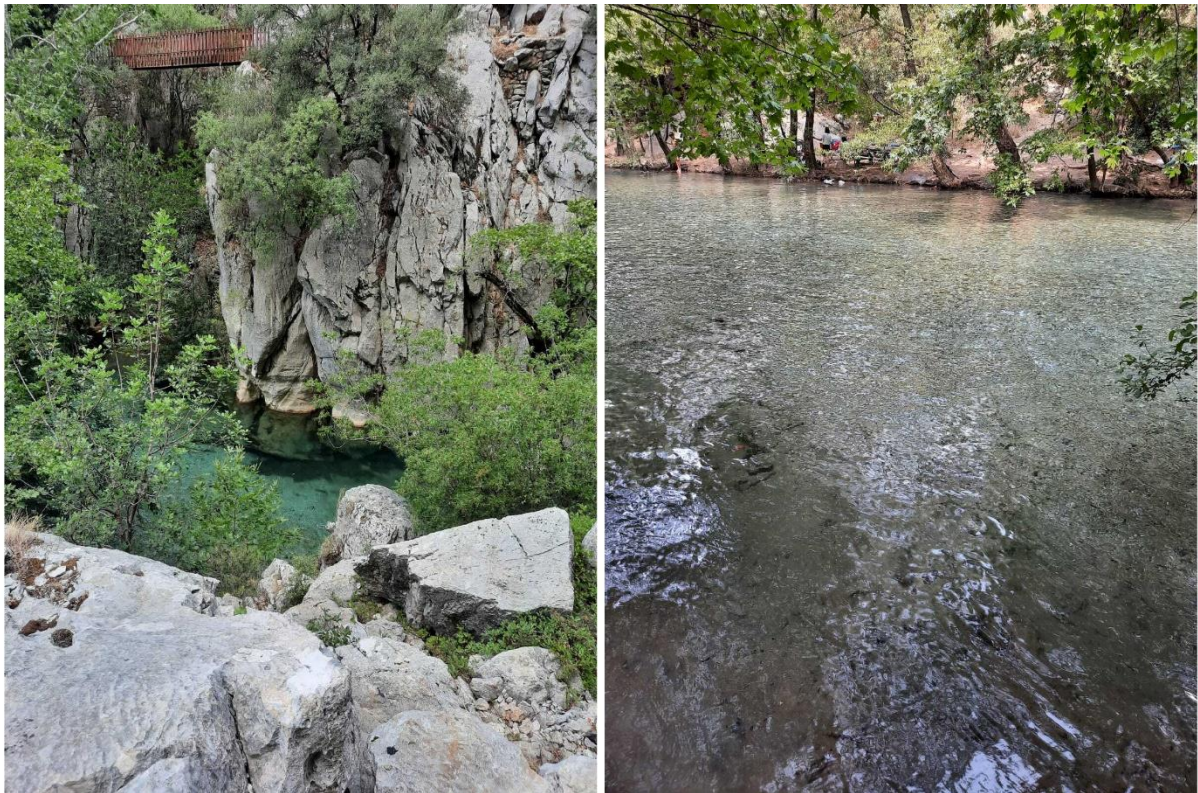


Figure 1. Habitat photographs of the observation site in Yazılı Canyon

The climbing record was documented in the afternoon on August 15, 2024. During this observation, a single brownish female specimen demonstrated climbing behaviour to reach a humid shelter. The toad climbed along the tree trunk on the vertical axis (Figure 2). Trees are generally a key factor of habitats in many amphibians and the climbing behaviour serves to specific purposes, such as foraging, predator avoidance, breeding, and habitat exploration [9-11]. Arboreal climbing behaviour can be related with environmental factors such as the presence of moist shelters in tree trunks during a drought period. Given the timing of our observation, the specimen probably tried to reach a safe zone to avoid sunlight and predators.



Figure 2. Photographs showing the climbing behaviour of *B. bufo* along a tree trunk

The climbing behaviour along vertical axis has been documented for *B. bufo* in literature. For example, Smith [12] mentioned climbing behaviour of common toad observed in two different bird nests located at 183 cm and 122 cm distance from the ground, respectively. Besides, Gosá [13] reported 129 *Bufo spinosus* individuals that climbed on oak trees (*Quercus* sp.) at an 39 cm average distance above the ground (maximum distance: 197 cm). They suggested that toads probably climbed on trees to access moisture which could be obtained from epiphytic moss colonies. Bringsøe [7] noted two cases of height-seeking behaviour of *B. bufo* in Denmark. Besides, it was found that the average distance between the ground and the climbed height was 60 cm. More recently, Kaczmarek and Kubička [8] observed the first arboreal behaviour of a *B. bufo* mass (12 individuals) observed on *Salix alba* and *Betula* sp. trees. The mean height in that study was measured 124.20 cm above the ground. Bringsøe [7] also proposed that the purpose of climbing behaviour is more related to cavity search on tree trunks for shelter, as well

as to hunt small invertebrates inside them. Chang et al. [14] tested climbing ability of *Bufo bankorensis* on various surfaces with angles ranging between 15° and 90°. They revealed that the species performed maximum climbing ability at a slope with 15° angle on wood surfaces. It is also known that a typical tree trunk in healthy trees may lean between 5° and 15° from vertical. Therefore, we can say that the observed specimen probably performed maximum ability on a suitable tree trunk. Except for the genus *Bufo*, the climbing reports are also available for other bufonid toads in the genus *Rhinella*. For example, De Noronha et al. [15] observed similar behaviour for two different species, namely *Rhinella margaritifera* and *R. castaneotica*, which were observed at heights of 132 cm and 32 cm on plants, respectively. They commented that this movement was relevant to resting on arboreal sites to avoid predators. Kaczmarek and Kubicka [16] enhanced their previous report [8] by documenting the unexpected use of trees by *Bufo bufo* in the protected area of “Traszk Ratajskie” located at an urban park in Poznań, Poland. They noted that ageing trees with open cavities and crevices served as suitable habitats for the species, providing humid shelters during drought periods. They also emphasized that mature and ageing trees around waterbodies should be considered as a part of amphibian habitats due to the species’ site fidelity behaviour. From that aspect, our observation led the way to make more investigations in the studied area as well as new fieldworks in different localities. Petrovan et al. [17] have surveyed the presence of terrestrial amphibians in tree cavities used by mammals since 2009. In these surveys, common toad was found in seven different tree species, most frequently in *Salix caprea* at an average height of 134 cm above the ground (with a maximum recorded height of 280 cm). The main reason attracting toads to tree cavities was described as the presence of safe and damp microenvironments that provide abundant invertebrate preys, as observed in this study. In conclusion, this observation represents the first recorded instance of *B. bufo* from Türkiye expanding the literature on the species’ rarely observed arboreal habits. Further fieldwork by herpetologists may yield more records of this behaviour both for *B. bufo* and its sister species, *Bufo verrucosissimus* for which no such records currently exist.

Acknowledgements: Special thanks to Aylin Apaydın and Gökhan Apaydın who photographed and provided the material for this study.

Funding/Financial Disclosure: The study is not funded.

Ethics Committee Approval and Permissions: The study does not require ethics committee approval or any special permission.

Conflicts of Interest: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Authors Contribution: Authors contributed equally to the work

References

- [1] Enriquez-Urzelai, U., Montori, A., Llorente, G. A., & Kaliontzopoulou, A. (2015). Locomotor mode and the evolution of the hindlimb in western Mediterranean anurans. *Evolutionary Biology*, 42, 199-209. <https://doi.org/10.1007/s11692-015-9311-1>
- [2] Alonso, R., & Rodríguez, A. (2003). Advertisement calls of Cuban toads of the genus *Bufo* (Anura, Bufonidae). *Phyllomedusa: Journal of Herpetology*, 2(2), 75-82. <https://doi.org/10.11606/issn.2316-9079.v2i2p75-82>
- [3] Santos-Souza, C. J., Pedroso-Santos, F., Rebelo-Silva, K., Lima-Martins, M. J., & Costa-Campos, C. E. (2023). Feeding ecology of *Amazophrynella teko* (Anura: Bufonidae) in the eastern Brazilian Amazonia. *North-Western Journal of Zoology*, 19(2), 161-166.
- [4] De Campos, C. E. C., & Pedroso-Santos, F. (2022). Antipredator behaviour employed by *Rhinella castaneotica* (Bufonidae) during climbing behaviour. *Revista Latinoamericana de Herpetología*, 5(3), 09-11. <https://doi.org/10.22201/fc.25942158e.2022.3.482>
- [5] Recuero, E., Canestrelli, D., Vörös, J., Szabó, K., Poyarkov, N. A., Arntzen, J. W., Crnobrnja-Isailovic, J., Kidov, A. A., Cogalniceanu, D., Caputo, F. P., Nascetti, G., & Martínez-Solano, I. (2012). Multilocus species tree analyses resolve the radiation of the widespread *Bufo bufo* species group (Anura, Bufonidae). *Molecular Phylogenetics and Evolution*, 62(1), 71-86. <https://doi.org/10.1016/j.ympev.2011.09.008>
- [6] Özdemir, N., Dursun, C., Üzümlü, N., Kutrup, B., & Gül, S. (2020). Taxonomic assessment and distribution of common toads (*Bufo bufo* and *B. verrucosissimus*) in Turkey based on morphological and molecular data. *Amphibia-Reptilia*, 41(3), 399-411. <https://doi.org/10.1163/15685381-bja10009>
- [7] Bringsøe, H. (2016). Two cases of height-seeking behaviour in the Common Toad, *Bufo bufo* (Linnaeus, 1758), in Denmark. *Mertensiella*, 24, 146-149.
- [8] Kaczmarek, M., & Kubicka, A. M. (2022, September 4-9). Case of arboreal behaviour of common toads *Bufo bufo* in Poznań, Poland [Conference presentation]. The 21st European Congress of Herpetology, Belgrad, Serbia. <https://seh-congress-belgrade2022.shdmr.org/>
- [9] Vassallo, A. I., Manzano, A., Abdala, V., & Muzio, R. N. (2021). Can anyone climb? The skills of a non-specialized toad and its bearing on the evolution of new niches. *Evolutionary Biology*, 48(3), 293-311. <https://doi.org/10.1007/s11692-021-09539-9>
- [10] Hudson, C. M., Brown, G. P., & Shine, R. (2016). Athletic anurans: the impact of morphology, ecology and evolution on climbing ability in invasive cane toads. *Biological Journal of the Linnean Society*, 119(4), 992-999. <https://doi.org/10.1111/bij.12827>
- [11] Jolley, D. B., Ditchkoff, S. S., Sparklin, B. D., Hanson, L. B., Mitchell, M. S., & Grand, J. B. (2010). Estimate of herpetofauna depredation by a population of wild pigs. *Journal of Mammalogy*, 91(2), 519-524. <https://doi.org/10.1644/09-MAMM-A-129.1>
- [12] Smith, M. (1951). *The British Amphibians and Reptiles*. Collins, London, 318 pp.
- [13] Gosá, A. (2003). *Bufo bufo* (common toad), *Alytes obstetricans* (midwife toad), and *Rana temporaria* (common frog). Tree climbing. *Herpetological Review*, 34(4), 355.
- [14] Chang, Y. H., Wu, B. Y., & Lu, H. L. (2016). Using the climbing ability of *Bufo bankorensis* and *Hynobius arisanensis* to discuss the amphibious corridor design for high altitude areas. *Ecological Engineering*, 95, 551-556. <https://doi.org/10.1016/j.ecoleng.2016.06.092>

- [15] De Noronha, J. C., Barros, A. B., Da Paixao, E. C., Almeida, E. J., Miranda, R. M., & Rodrigues, D. J. (2013). Climbing behaviour of terrestrial bufonids in the genus *Rhinella*. *Herpetological Bulletin*, 124, 22-23.
- [16] Kaczmariski, M., & Kubicka, A. M. (2024). Trunk climbing among ground-dwelling European amphibians—first observation from Poland. *Dendrobiology*, 92, 68-73. <https://doi.org/10.12657/denbio.092.005>
- [17] Petrovan, S. O., Al-Fulaij, N., Christie, A., & Andrews, H. (2022). Why link diverse citizen science surveys? Widespread arboreal habits of a terrestrial amphibian revealed by mammalian tree surveys in Britain. *Plos one*, 17(7), e0265156. <https://doi.org/10.1371/journal.pone.0265156>