MacroFungi

Journal of Macrofungi

Journal homepage: www.macrofungi.org

Volume: 1 Issue: 1 (2025) Pages: 38-42

IQMT IRAQI MUSHROOM AND TRUFFLE PLATFORM

Original Article

New Records of *Peziza* Species (Pezizaceae, Ascomycota) from Northern Iraq

Shimal Younis ABDULHADI [1], **Mustafa Nadhim OWAID** [2,3,*]

[1] *Department of Biology, College of Education for Pure Science, University of Mosul, Mosul, Iraq*

[2] *Department of Heet Education, General Directorate of Education in Anbar, Ministry of Education, Hit, 31007 Anbar, Iraq*

[2] *Department of Environment, College of Applied Sciences-Hit, University Of Anbar, Hit, 31007 Anbar, Iraq*

* Corresponding author: mustafanowaid@gmail.com , mustafanowaid@uoanbar.edu.iq

Received: **11-10-2025** Revised: **08-12-2025** Accepted: **12-12-2025** Published: **14-12-2025**

ABSTRACT: The present study documents macrofungal specimens collected in April 2018 and January 2020 from the Balad and Mosul districts, respectively. Climatic data showed that temperatures in Salahadin ranged between 8-27°C during April 2018, whereas in Mosul they ranged from 0-16°C in January 2020, with average humidity levels of 35.0% in Salahadin and 82.1% in Mosul. Field observations combined with laboratory analyses led to the identification of two species: *Peziza repanda* from both Mosul and Balad, and *Peziza succosella* from Balad. Notably, *P. succosella* is reported here for the first time in Iraq. The findings of this study provide new additions to the macrofungal records of Iraq, particularly within the order Pezizales, thereby enriching the documentation of the Iraqi mycobiota.

Keywords: Cup Fungi, Fungal Diversity, Macrofungi, *Peziza repanda*, *Peziza succosella*, Pezizales.

Cite this article: ABDULHADI, S. Y. & OWAID, M. N. (2025). New Records of *Peziza* Species (Pezizaceae, Ascomycota) from Northern Iraq. *Journal of Macrofungi 1*(1): 38-42.

1. INTRODUCTION

Peziza is considered the largest genus under the Pezizales order and the most important genus in the Pezizaceae family (Pezizomycetes, Ascomycota) (Barseghyan & Wasser, 2011). *Peziza* is a broad group of rotting-wood fungi or dung fungi that grow on the ground. Most species of *Peziza* are not recommended for eating and are challenging to identify to species level except by microscopy, which requires measuring spores. More than 100 species are thought to be present in the polyphyletic genus (Hansen et al., 2001). However, some species of *Peziza* are identified according to morphology and ITS rDNA analyses (Hansen et al., 2002).

The genus *Peziza* includes taxa with stipitate or sessile, epigeous, cupulate, cup-shaped, turbinate, sparsa, or pulvinate apothecia. The diameter of the apothecium can range in size from a few millimeters to over ten centimeters, and it's usually soft, brittle, and fleshy (Barseghyan & Wasser, 2011). Moreover, the diameter and shape of apothecia, pigments, the shape of paraphyses, and the size, ornamentation, and guttulation of spores are used to identify *Peziza* (Hansen et al., 2002).

Very few species of *Peziza* were reported in recent studies in northern Iraq, specifically in the Kurdistan Governorate Region and Salahadin Governorate. *Peziza echinospora* was identified in Erbil Governorate from macrofungi collected between February 2011 andpril 2012 (Toma et al., 2013). *Peziza proteana* f. *sparassoides* and *Peziza proteana* f. *proteana* were recorded in Al-Alam district (Salahadin Governorate), from March to July 2017 (Talib, 2018). *Peziza badia* and *Peziza repanda* were recorded in Halabja city, Kurdistan Governorate Region, northern Iraq, from January to April 2018 (Salih et al., 2019). Lately, *Peziza moseri* was isolated in Tikrit city (Salahadin Governorate) in 2018 (Al-Khesraji & Suliaman, 2019). Moreover, the Kurdistan zone is rich with many macrofungi (Toma et al., 2018). Also, some genera of Ascomycetes were recorded in Iraq, such as *Helvella bachu* in Mosul (Al-Rawi & Abdul-Hadi, 2022) and *Morchella* in Sulaymaniyah (Al Anbagi & Al-Khesraji, 2022).

Macrofungal diversity in Iraq remains underdocumented due to limited systematic surveying and a lack of public awareness of wild fungi. Therefore, this study is designed to expand the known geographic range of the genus *Peziza* in Iraq by surveying, isolating, and characterizing its species for the first time in Mosul (Nineveh Governorate) and Balad (Salahadin Governorate), thereby enriching the national mycobiota database in Iraq.

2. MATERIALS AND METHODS

2.1. Description of the Study Area

Two Iraqi cities, Balad (Salahadin Governorate) and Mosul (Nineveh Governorate), were included in this work. Maximum and minimum temperatures and humidity were recorded in the month of mushroom collection by the Meteorological Services of WeatherOnline Ltd. (UK).

2.2. Collection and Identification of the Cup Fungi

Fresh *Peziza* species were photographed in situ by a digital camera. Microscopic examination has been performed on dried specimens rehydrated in water to assess morphological properties using an optical microscope (Angelini, 2012). Microscopic features were examined using rehydrated specimens mounted in distilled water. Measurements were taken with an ocular micrometre, with at least 30 spores per sample.

3. RESULTS AND DISCUSSION

The species of *Peziza* were collected from two Iraqi cities: Balad (Salahadin Governorate) at a scale of 1:1 km and Mosul (Nineveh Governorate) at a scale of 1:5 km, as shown in Figure 1. Moreover, temperatures and humidity percentages at the study sites were recorded in Salahadin from 02-30 April 2018 and in Mosul from 03-31 January 2020, as shown in Figures 2 and 3, respectively.

Air temperatures were recorded in Salahadin from 02-30 April 2018 (Figure 2A) and Mosul from 03-31 January 2020 (Figure 2B). The high temperature ranged from 18 to 27 °C, while the low temperature ranged from 8 to 17.5 °C in Salahadin during April 2018. The high temperature ranged from 9 to 16 °C, while the low temperature ranged from 0 to 6.5 °C in Mosul during January 2020. Moreover, humidity percentages were recorded in Salahadin from 02-30 April 2018 (Figure 3A) and in Mosul from 03-31 January 2020 (Figure 3B). The average humidity percentage in Salahadin during April 2018 was 35.0% (minimum 45% and maximum 90%), whereas the average humidity percentage in Mosul during January 2020 was 82.1% (minimum 70% and maximum 91%) (Figure 3).

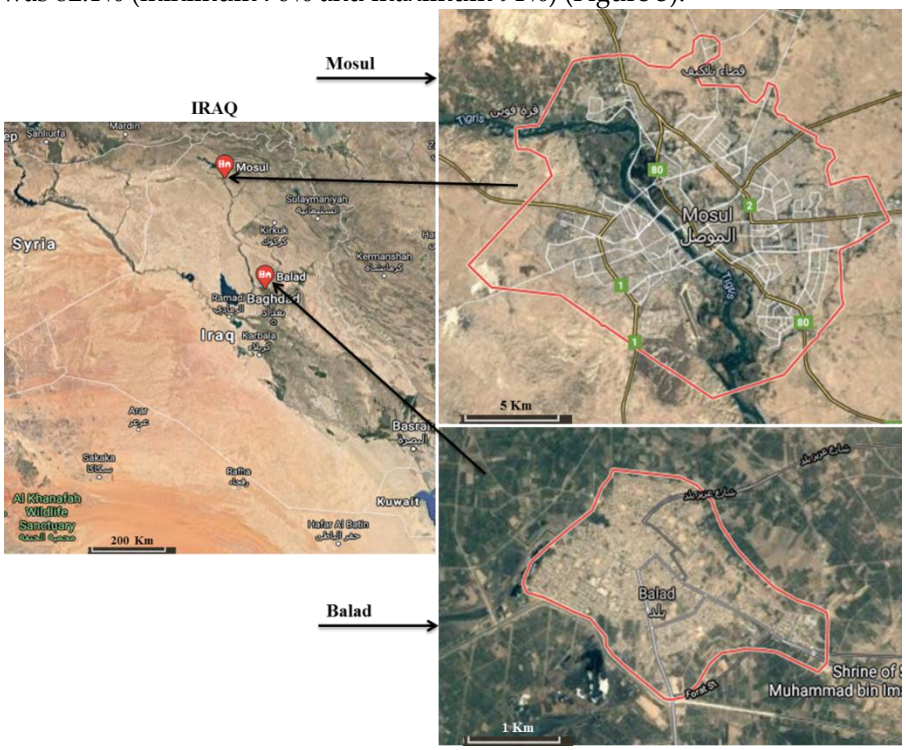

Figure 1. Map of Iraq (1:200 km) with cities of the study, Balad (1:1 km) and Mosul (1:5 km)

These results agree with average monthly climatic data from 1980 to 2010 obtained from all meteorological stations in the study areas (Mosul and Salahadin). In January, precipitation was 61.5 mm, minimum temperature 3.4 °C, and maximum temperature 11.5 °C in Mosul, but in April, precipitation was 17 mm, minimum temperature 15.3 °C, and maximum temperature 28.9 °C in Salahadin (Muhaimeed & Al-Hedny, 2013). These climatic conditions fall within the known ecological range favoring the appearance of *Peziza* species, which typically emerge in cool, moderately humid environments.

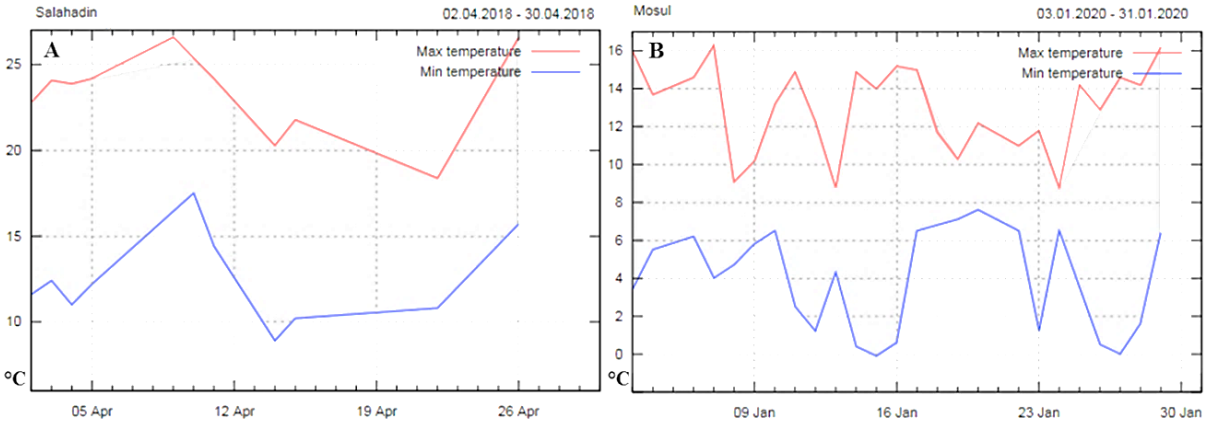

Figure 2. Temperatures in Salahadin from 02-30 April 2018 (A) and Mosul from 03-31 January 2020 (B)

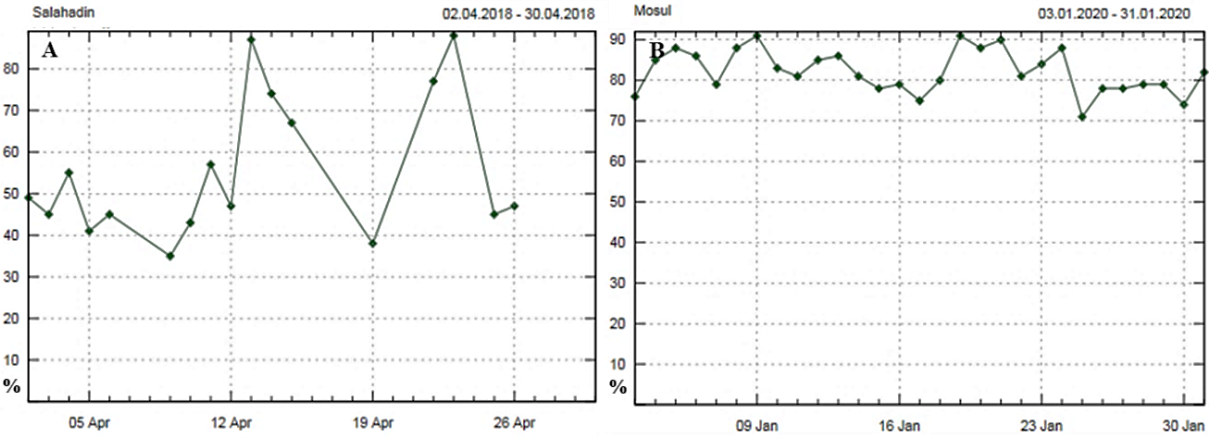

Figure 3. Humidity Percentages in Salahadin from 02-30 April 2018 (A) and Mosul from 03-31 January 2020 (B)

The *Peziza* species in this survey were observed in April 2018 in Balad city and in January 2020 in Mosul city (Table 1), which agrees with the reported appearance period (Salih et al., 2019), which recorded some *Peziza* species in northern Iraq in both January and April. According to checklists of Iraqi macrofungi, six species of the genus *Peziza* have been recorded in Iraq (Al-Khesraji & Suliaman, 2019; Salih et al., 2019; Talib, 2018; Toma et al., 2013). With *P. succosella*, the genus reached seven species in Iraq.

The majority of taxa were distinguished by biochemical and microstructural features, including spore form, ornamentation, color, guttulation, ascus amyloid reaction, pigmentation of the paraphyses, and structure of excipulum (Barseghyan & Wasser, 2011). *Peziza succosella* possesses lactiferous hyphae in the excipulum, which yield a yellowish juice when bruised or cut (Hansen et al., 2001).

Peziza repanda is characterized by cup-shaped apothecia that are often flattened or irregularly lobed, typically measuring 2–6 cm across. The hymenial surface is smooth, glabrous, and displays a light to yellow-brown coloration, while the outer surface is paler and may appear finely granular. The margins are frequently wavy or elevated, as observed in specimens collected from Balad and Mosul. The species commonly grows on decaying wood, plant residues, and nutrient-rich soil.

Microscopically, the asci are cylindrical, vertically arranged within the hymenium, and contain smooth, hyaline, ellipsoid ascospores. Slender paraphyses are present between the asci, sometimes slightly curved. These features collectively correspond to the specimens illustrated in Figures 4a, 4b, 4c, and 4d. *Peziza repanda* was recorded in Balad-Saladin near the Date palm fibres in April 2018, and another sample was recorded in Mosul near a non-living unknown Trunk tree in January 2020, as shown in Figure 1. The apothecia are very short-stipitate or sessile and typi-

cally shallow cup-shaped. The margin crenate or even, externally creamy to whitish fawn, expands and becomes curved, the margin remains splitting or entire, irregularly revolute or regular in outline, reaches 5–10 cm in diameter; hymenium concave, becomes convex or plane, pale brown, becomes darker with age, convolute or even (Figures 4a, 4c, 4d). Asci cylindrical, 345– 325 × 20–15 µm. Ascospores ellipsoid, smooth, hyaline, 13.5- 18.75 × 10–11.25 µm, wall 1.25 µm thick; slightly enlarged above, paraphyses slender, textura angularis and brownish or yellowish (Figure 4b) (Abdel-Azeem & El-Fallal, 2012).

Peziza succosella (Figures 4e and 4f) produces cup-to-saucer-shaped apothecia, which are distinguished by their pale cream to whitish coloration, a key feature visible in the specimens from Balad. The hymenial surface is smooth and slightly darker than the exterior due to a moist inner layer, while the outer surface is creamy white and may appear soft or finely textured. The margins are relatively regular, occasionally tinted with a darker shade. This species typically grows on moist plant debris and organically rich soil.

Kingdom: Fungi
Division: Ascomycota
Class: Pezizomycetes
Order: Pezizales
Family: Pezizaceae
Genus: *Peziza*; Dill. ex Fries (1822)

Inclusion: *Peziza* repanda was recorded for the first time in Balad and Mosul, representing the second record of the species in Iraq, after Halabja in Kurdistan. *Peziza succosella* was recorded for the first time in Iraq in Balad, Salah al-Din Province.

Table 1. Habitats of *Peziza* samples and other descriptions.

Species	Color	Place	Habitat	History
Palamino cup (*Peziza repanda*)	Brown	Balad-Salahadin	Date palm fibers	April 2018
Peziza repanda	Brown	Mosul	an unidentified dead tree trunk	January 2020
Peziza succosella	Creamy	Balad-Salahadin	Date palm fibers	April 2018

Figure 4. Morphological description of *Peziza* species.

Legend: (a) *Peziza repanda* collected from Balad; (b) Ascus and ascospores of *P. repanda* under light microscopy; (c,d) Field images of *P. repanda* collected from Mosul; (e,f) *Peziza succosella* collected from Balad.

4. CONCLUSION

This study documents two species of the genus *Peziza* in northern Iraq: *Peziza repanda* (found in both Balad and Mosul) and *Peziza succosella* (recorded exclusively in Balad). The identification of *P. succosella* marks a new national record for the Iraqi mycobiota. By integrating field observations with detailed macro- and micromorphological analyses, we provide accurate species delineation and demonstrate the ecological suitability of the surveyed regions for diverse Pezizales fungi. These findings significantly enrich the limited baseline data on Iraqi macrofungi and underscore the necessity for continued, systematic exploration of the country's fungal biodiversity. Future surveys across varied habitats and seasons are crucial to enhance taxonomic understanding, elucidate species distribution patterns, and inform future conservation and ecological research efforts.

Ethical Statement

Not Applicable.

Conflicts of Interest

The authors declare no competing interests.

Funding

No funding was received for this research.

REFERENCES

Abdel-Azeem, A. M., & El-Fallal, A. A. (2012). New record of genus Peziza (Pezizales, Ascomycetes) in Egypt and Africa. *Mycosphere 3*(5), 563–565. https://doi.org/10.5943/mycosphere/3/5/5

Al Anbagi, R. A., & Al-Khesraji, T. O. (2022). Morchella conica Pers., 1818 (Pezizales, Morchellaceae): A New Record from Iraq. *Bulletin of the Iraq Natural History Museum 17*(1), 89–101. https://doi.org/10.26842/binhm.7.2022.17.1.0089

Al-Khesraji, T. O., & Suliaman, S. Q. (2019). New Taxa Records for Macromycota of Iraq from Salahadin Governorate. *Journal of Research on the Lepidoptera 50*(3), 125–135. https://doi.org/10.36872/lepi/v50i3/201032

Angelini, C. (2012). Tropical fungi: twelve species of lignicolous Ascomycota from the Dominican Republic. *Mycosphere 3*(5), 567–601. https://doi.org/10.5943/mycosphere/3/5/6

Barseghyan, G. S., & Wasser, S. P. (2011). The genus Peziza Dill. ex Fr. (Pezizales, Ascomycota) in Israel. *Ascomycete Org 2*(4), 39–50. https://doi.org/10.25664/ART-0037

Hansen, K., Laessoe, T., & Pfister, D. H. (2001). Phylogenetics of the Pezizaceae, with an emphasis on Peziza. *Mycologia 93*(5), 958–990. https://doi.org/10.2307/3761760

Hansen, K., Læssøe, T., & Pfister, D. H. (2002). Phylogenetic diversity in the core group of Peziza inferred from ITS sequences and morphology. *Mycological Research 106*(8), 879–902. https://doi.org/10.1017/S0953756202006287

Al-Rawi, J. M., & Abdul-Hadi, S. Y. (2022). First New Record and Molecular Identification of Helvella bachu (Ascomycetes) Isolated from Iraq/Mosul. *International Journal for Research in Applied Sciences and Biotechnology 3*, 139–144. https://doi.org/10.31033/ijrasb.9.3.25

Muhaimeed, A. S., & Al-Hedny, S. M. (2013). Evaluation of long-term vegetation trends for northeastern of Iraq: Mosul, Kirkuk and Salah al-Din. *IOSR Journal of Agriculture and Veterinary Science 5*(2), 67–76.

Salih, S. A., Al-Zubaidy, A. M. A., Nadir, H. A., & AlKhafaji, M. H. (2019). New interesting records of three species from Pezizaceae and Pyronemataceae families (Pezizalea, Ascomycota) to Kurdistan region – Iraq. *Plant Archives 19*(1), 55–61.

Talib, O. A.-K. (2018). Two Peziza taxa (Peziza proteana f. proteana (Boud.) Seaver and Peziza proteana f. sparassoides (Boud.) Korf) new to Iraq and bordering countries. *African Journal of Plant Science 12*(2), 24–27. https://doi.org/10.5897/ajps2017.1613

Toma, F. M., Ismael, H. M., & Abdulla, N. Q. F. (2013). Survey and Identification of Mushrooms in Erbil Governorate. *Research Journal of Environmental and Earth Sciences*, *5*(5), 262–266.

Toma, F. M., Ismael, H. M., & Abdulla, N. Q. F. (2018). Survey and identification of some new record mushrooms in Erbil Governorate-Kurdistan Region-Iraq. *Rafidain Journal of Science 27*(5), 19–32.