desiccation, and can persist for long periods of time; it is also listed on the A-2 quarantine list in Ukraine and many other countries around the world (CORBFL, 2021).

Conclusions. In Ukraine, a description was conducted of lesions on the seeds and green parts of lentil plants of the "Linza" and "Chervona" varieties caused by bacterial pathogens. Five isolates were obtained, all of which were found to be virulent toward lentils. Based on their morphological and physiological-biochemical properties, strains 1k, 2k, 5k, 7k, and 11k were identified as belonging to the genus *Curtobacterium*.

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SOIL MYCOBIOME OF FOREST ECOSYSTEMS OF WESTERN POLISSIA OF UKRAINE: BIODIVERSITY AND STRUCTURAL ORGANISATION

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Abstract. The research dedicated to the study of biodiversity and structural organisation of soil mycobiomes in various forest ecosystems of Western Polissia of Ukraine demonstrated a high species diversity of microscopic fungi. The representatives of *the Ascomycota* shaped a stable taxonomic core, with the genus *Penicillium* being the dominant one. Different forest edaphic habitats demonstrated a high degree of species similarity in their mycobiomes, indicating ecological stability and the presence of a shared regional fungal pool. The results obtained provide a basis for future mycological monitoring and forest restoration.

Keywords: fungal community; fungal diversity; mycobiome structure; forest ecosystem; forest type; edatope; Western Polissia.

Relevance. Forest ecosystems are among the most complex biomes on Earth and play a key role in the conservation of biodiversity, the regulation of water resources, climate stability and the provision of ecosystem services (Melnyk-Shamrai & Ivaniuk, 2026). Soil microbiomes play a central role in maintaining the viability of forests, ensuring the cycling of nutrients, the transformation of organic matter and energy exchange (Marín, et al., 2023). In view of human impact, climate change and the degradation of forest ecosystems as a result of military action, the study of mycobiomes of climax ecosystems remains a topical area.

Materials and Methods. The study was carried out in the Zhytomyr, Rivne and Volyn regions. Twenty monitoring plots were surveyed, representing a range of forest edaphic types: fresh and moist pine bor forests; fresh and moist pine subor forests; moist pine subor forests; moist and damp sugrud forests; fresh and moist sugrud forests; and moist and damp pine subor forests. The predominant soils were sod-podzolic soils with varying degrees of podzolisation, soil moisturising and gleying.

Soil samples were collected from the 0–10 cm layer in accordance with international standards from three sampling plots on each site. The quantitative and qualitative composition of microfungi was determined using classical microbiological methods. Isolates were identified on the basis of macro- and micromorphological characteristics, utilising modern taxonomic keys and the MycoBank and Outline of Fungi databases. The taxonomic composition and α- and β-diversity indices (Shannon, Simpson, Pielou, Berger–Parker, Margalef, Menhinick, Sørensen, Jaccard, Ochiai, Kulczynski, Whittaker) were assessed, and principal component analysis (PCA) and cluster analysis were performed. Statistical analysis was performed using Statistica 10, Mothur v.1.30.2 and Cluster 3.0. The significance level was set at $P < 0.05$.

Results. A high level of species richness of soil fungi was recorded in the forest ecosystems of Western Polissya. The phylum *Ascomycota* dominated in all edaphic sites (87.12–91.22 per cent of the species composition). The proportion of *Mucoromycota* was 8.29–11.04 per cent, and that of *Entomophthoromycota* was 0.47–0.61 per cent. The leading genus in all groups was *Penicillium* (26–27 species; approximately 13–16 per cent of the species composition). The taxonomic core was also formed by *Aspergillus*, *Cephalotrichum*, *Fusarium*, *Trichoderma*, *Mucor*, *Alternaria*, *Talaromyces* and *Colletotrichum*. The ten most abundant genera accounted for approximately 46–53 per cent of the total species diversity. All the communities studied exhibited exceptionally high biodiversity, characteristic of mature natural ecosystems: Shannon index $H' = 4.39–4.66$; Simpson's 1–D index = 0.983–0.989; Piel's evenness index J = 0.859–0.870. Differences between edatops were determined mainly by rare and associated taxa, whilst the core was formed by widespread saprotrophic genera.

Cluster analysis revealed gradual changes in the composition of the mycobiome along the ecological gradient of pine bor forests → pine subor forests → sugrud forests, without any sharp floristic barriers. The structure of the communities corresponded to a nested organisation: the mycobiota of oligotrophic pine bor forests was largely incorporated into the richer communities of pine subor forests and sugrud forests. The increase in diversity occurred mainly through the addition of new species, rather than the replacement of dominant taxa. Functionally, the clusters differed in their range of life strategies: K-strategists predominated in plots 1–4; a complex of K–V-strategists in plots 5–8; an r–K spectrum in plots 9–12; V-strategists in plots 13–16; and r-strategists in plots 17–20

Conclusions.

1. Soil mycobiomes in the forest ecosystems of Western Polissya are characterised by high taxonomic richness (163–212 species of microscopic fungi) and structural stability.

2. The phylum *Ascomycota* dominates in all edaphic communities (87–91 per cent), whilst the genus *Penicillium* is the key component of the taxonomic core.

3. The high similarity of the mycobiota between edaphic sites (Sørensen = 0.800–0.930) indicates the presence of a shared regional pool of soil fungi characteristic of the forests of Western Polissya.

4. The structure of the soil mycobiota is determined by a complex of factors: soil trophic level, moisture content and acidity, the composition of the tree stand, and the quality of litter.

5. For the first time, a nested type of mycobiome organisation has been established for the main forest edaphic types of Western Polissya: the mycobiota of oligotrophic pine bor forests is largely encompassed by the richer communities of pine subor forests and sugrud forest communities.

6. The combination of high similarity among communities and significant taxonomic richness indicates the ecological stability of Polissya's natural forest ecosystems and the relatively high level of conservation of their soil mycobiomes. The identified taxonomic core, together with edaphically and topically specific rare taxa, can serve as a basis for further monitoring of changes in forest ecosystems.

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BACTERIAL COMMUNITIES OF MICROBIAL MATS IN FRESHWATER LAKES OF THE MARITIME ANTARCTIC: TAXONOMIC STRUCTURE, ABUNDANCE, AND PHYSIOLOGICAL PROPERTIES

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Abstract. The taxonomic structure, abundance, and physiological properties of bacteria inhabiting microbial mats in lakes on Irizar and Uruguay Islands in the Maritime Antarctic were investigated. Differences in the structure of bacterial communities and the abundance of culturable bacteria were identified. Bacterial isolates differed in their ability to grow on various culture media. The results indicate taxonomic, quantitative, and physiological and biochemical heterogeneity among the microbial mats studied.
Keywords: microbial mats, Maritime Antarctic, taxonomic structure, bacterial isolates, freshwater lakes.

Antarctic freshwater ecosystems are characterized by low temperatures, pronounced seasonality, and limited nutrient availability. Despite these extreme conditions, microbial mats develop in Antarctic water bodies and play important roles in polar ecosystem functioning and biogeochemical cycles. Microbial activity within mats drives key processes, particularly carbon and nitrogen fixation, promoting organic carbon accumulation and the formation of bioavailable nitrogen compounds under nutrient-limited conditions (Sohm et