

Department of Botany, Mycology and Ecology

Head of the Department

dr hab. Małgorzata Wrzesień, room 271 B

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Current Departmental Membership:

Academic teachers
including potential thesis supervisors
(undergraduate and graduate)
for the academic year 2021/2022

1. Prof. dr hab. Wiesław Mułenko
2. dr hab. Joanna Czarnecka prof. UMCS
3. dr hab. Piotr Sugier prof. UMCS
4. dr hab. Małgorzata Wrzesień
5. dr Magdalena Franczak
6. dr Monika Kozłowska
7. dr Anna Rysiak
8. dr Urszula Świdorska-Burek
9. mgr inż. Karolina Tymoszuć

Technical staff

1. dr Zbigniew Cierech – st. referent (etat naukowo-techniczny)
1. mgr Magda Mamczarz – specjalista (etat inżynieryjno-techniczny)
2. mgr Marcin Anusiewicz – specjalista inżynieryjno-techniczny

RESEARCH ISSUES

In the field of **ECOLOGY**: **dr hab. Joanna Czarnecka, Dr Magdalena Franczak, Dr Anna Rysiak, dr hab. Piotr Sugier**

- ❖ The role of soil seed banks in the preservation and restoration of ecological systems under various degrees of stress and disturbance.
- ❖ Study of selected life history traits of native, alien and invasive species. Non-standard mechanisms of seed dispersal.
- ❖ Habitat conditions and factors modifying the content and chemical properties and biological activity of plant secondary metabolites.
- ❖ Urban ecology - transformations of vegetation and its habitats under anthropopression - synanthropization processes, biological invasions.

In the field of **BOTANY**: **dr hab. Małgorzata Wrzesień**

- ❖ Spontaneous flora of anthropogenic linear systems
- ❖ Chorology of rare, threatened and alien/invasive species in anthropogenic habitats
- ❖ Spatial distribution and productivity of "bee pastures" in intensively and extensively managed agricultural landscapes
- ❖ Flowering biology and assessment of the forage value of species found in anthropogenic and seminatural plant communities

In the field **MYCOLOGY**: **prof. dr hab. Wiesław Mułenko, dr Monika Kozłowska, dr Urszula Świdorska-Burek**

- ❖ Microscopic phytopathogenic fungi: taxonomy, biology, diversity, species richness
- ❖ Occurrence, role and importance of parasites in natural and anthropogenic communities
- ❖ Life strategies of invasive fungi; parasitic fungi of medicinal plants

Herbarium collections of the Department and their use in science: floristic, taxonomic, biogeographic studies, creation of databases (algae, mosses, liverworts, vascular plants, fungi, lichens).

Selected examples of completed undergraduate theses:

ECOLOGY

Dr Anna Rysiak

- ◆ Selected features of the life history of the invasive alien species *Heracleum sosnowskyi* Manden
- ◆ Algae as a source of biologically active substances
- ◆ Comparison of selected features of life history of two species of the genus *Impatiens* L. - the native *Impatiens noli-tangere* L. and the invasive *Impatiens glandulifera* Royle

Dr Magdalena Franczak

- ◆ Effects of water stress on seed germination of *Lythrum salicaria* L.
- ◆ Plant-animal interactions as an example of adaptation to the environment

BOTANY

Dr Monika Kozłowska

- Plants used in the treatment of urinary tract diseases
- Medicinal properties of plants of the Rosaceae family

Dr Urszula Świdarska-Burek

- Application of selected representatives of algae in cosmetology and medicine

Dr hab. Małgorzata Wrzesień

- Plant psychotropic and narcotic agents
- Therapeutic use of herbal raw materials and their components in metabolic disorders

Selected examples of completed undergraduate theses:

MYCOLOGY

Dr Monika Kozłowska

- The share of fungi of the order Erysiphales in the natural forest communities of the Białowieża Forest

Dr Urszula Świdorska-Burek

- Parasitic fungi occurring on representatives of the genus *Anemone* in the Tatra National Park
- Healing properties of selected species of macrofungi

Master thesis examples in the field of BOTHANICS

Themes realized, supervisor dr hab. Małgorzata Wrzesień:

1. The influence of anthropogenic linear systems on the vegetation of the Roztocze National Park.
2. Analysis of spontaneous flora of large railroad stations in east-central Poland.
3. Analysis of species diversity and ecological specificity of vascular flora of deactivated railroads in Lublin region.
4. Attractiveness of flowers of selected ornamental plants for pollinating entomofauna in the collections of Botanical Garden in Lublin. Summer aspect.
5. Biodiversity of insects visiting flowers of ornamental plants in the collections of the Botanical Garden of Maria Curie-Skłodowska University in Lublin. Spring aspect.

Suggested topics for implementation:

1. Validation of resources of pollinators beneficial flora in the agricultural landscape of selected municipalities of SE Poland.
2. Anthropogenic communities of linear systems and their influence on ecosystem services - a case study of Lublin Upland.
3. Beneficial flora of selected synanthropic communities of the city of Lublin.
4. Natural valorization of chosen reserves of Lublin region.
5. Phytogeographical aspects of vascular plant flora of „your” area of residence or other chosen area in Poland.
6. Floristic diversity of allotment gardens and its contribution to the green urban infrastructure and restoration of pollinators.

Master's thesis examples in the field of MYKOLOGY

Themes realized, supervisor prof. dr hab. Wiesław Mułenko; mentors – dr Monika Kozłowska, dr Urszula Świdorska-Burek)

1. Participation of fungi of the order Pucciniales in natural forest communities of the Białowieża Forest.
2. Species diversity and dynamics of occurrence of parasitic fungi on alpine coltsfoot (*Homogyne alpina* L. Cass.).
3. Vertical and horizontal distribution of microscopic parasitic fungi on selected plant representatives of the celery family (*Apiaceae*) in the Tatra Mountains.
4. Parasitic fungi of vascular plants in Botanical Garden of Maria Curie-Skłodowska University in Lublin - synthesis and analysis of own and literature data.

Suggested topics for implementation

1. Taxonomy, biology and ecology of the selected groups of fungal parasites of plants.
2. Participation, role and importance of fungi in natural and degraded plant communities (species richness and diversity, geographical distribution; fungi as natural bioindicators of environmental changes).
3. The role and importance of fungi for human life. Fungi as a factor causing the so-called biological corrosion (identification, risk assessment, control).

Master's theses are performed using: (i) materials collected independently by students during fieldwork; (ii) materials collected by research staff; (iii) historical materials collected in the Department's herbarium; (iv) materials obtained from laboratory cultures.

Master thesis examples in the field of ECOLOGY

Themes realized, supervisor dr hab. Joanna Czarnecka

1. Changes in the structure of soil seed bank as an effect of xerothermic grassland overgrowth
2. Influence of a grey heron (*Ardea cinerea* L.) breeding colony on soil properties, plant cover and soil structure of seed bank in suboceanic fresh pine forest and elm-ash forest

Supervisor dr hab. Piotr Sugier

1. Morphological features of stonewort (*Characeae*) oospores and the properties and depth of bottom sediments
2. Habitat conditions as a factor modifying properties of the underground part of *Arnica chamissonis* Less. and prospects for the use of the raw material *Arnicae rhizoma* in pharmaceutical industry
3. Characteristics of plant communities with sand *Helichrysum arenarium* (L.) Moench and their habitats

You have an idea for a topic for your
thesis

We are open
to suggestions



Seed soil bank



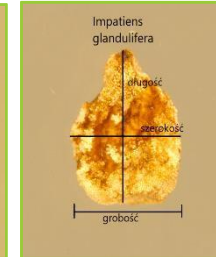
Ecology of aquatic and peatland ecosystems

ECOLOGICAL RESEARCH

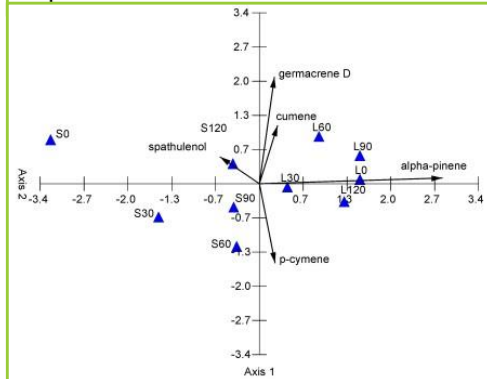
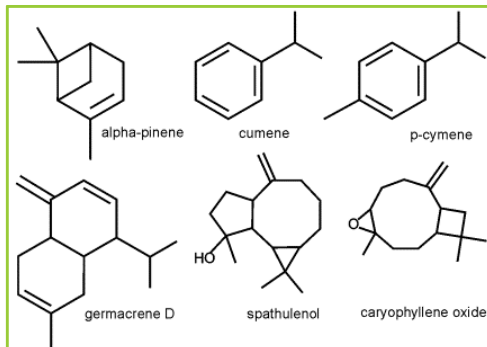
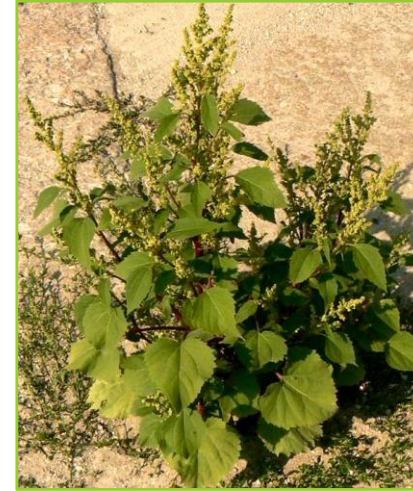
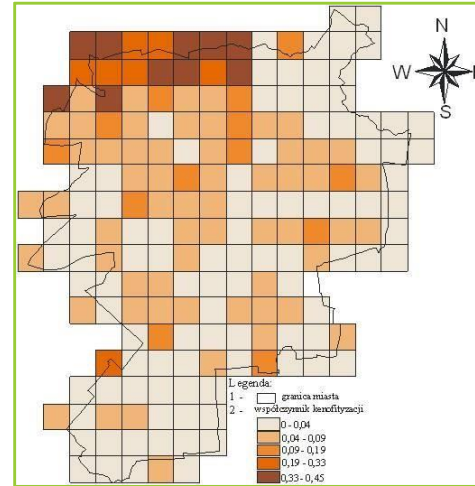
Non-standard seed dispersal mechanisms



Comparison of selected life history traits of two species of the genus *Impatiens* L. the native *I. noli-tangere* L. and the invasive *I. glandulifera* Royle.



Urban ecology and invasive species



Secondary metabolites



Botanical Research



Spontaneous flora of anthropogenic linear systems



Chorology of rare, threatened and alien species in anthropogenic habitats

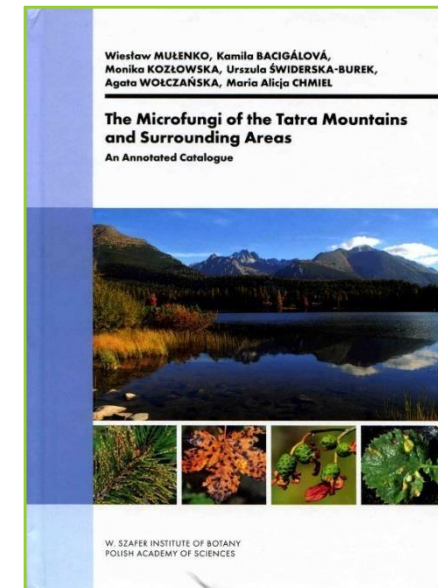
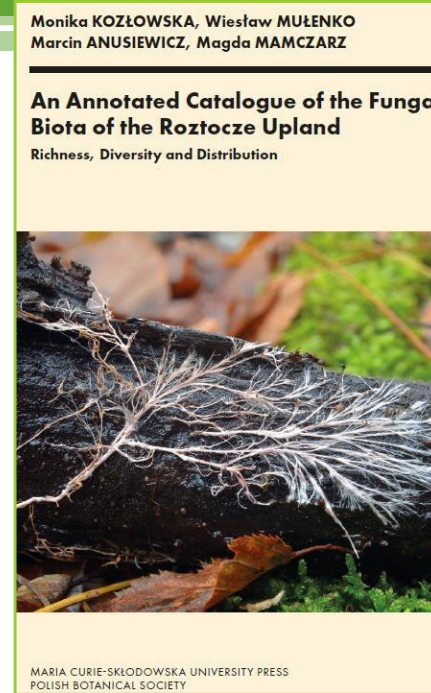
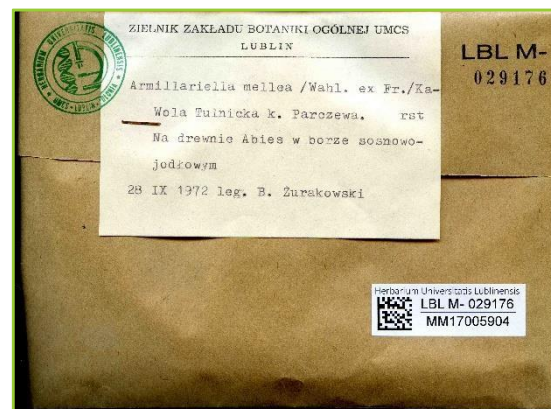


Spatial distribution and productivity of 'bee pastures' in intensively and extensively managed agricultural landscape

Mycological Research



Etiological features and disease symptoms of plants infected by pathogenic fungi. Use of light and scanning microscopy and photographic documentation (macrophotography).



During fieldwork



- ✓ We have rich and valuable herbarium collections of vascular plants, bryophytes, fungi and lichens, as well as unique iconography.
- ✓ Based on the herbarium materials it is possible to do interesting thesis in the field of: botany, taxonomy, ecology and biogeography.
- ✓ Correctly identified and collected specimens by students often enrich their collections.



The Department has:

- ✓ two laboratories: ecological-soil science and mycological;
- ✓ a greenhouse with automatic temperature and irrigation control
- ✓ vegetation chambers with the possibility of temperature, light, humidity and experiment time regulation
- ✓ microscope equipment
- ✓ a graduate laboratory with access to a library and computer equipment.



WE INVITE BIOTECHNOLOGY STUDENTS to complete their bachelor's theses, and in particular their master's theses

We propose the following topics to be pursued:

1. Search and selection of ecotypes of plant species for their use as a source of biologically active compounds.
2. Search and selection of ecotypes of plant species for their use as tools in phytoremediation.
3. Exploration and selection of ecotypes of plant species for their use as crop protection agents.
4. Flowering biology and microbial purity of pollen forage of selected species in allotment garden plantings.

Presented thesis topic:

Analysis of allelopathic properties of fractionated leaf extract of Sosnovskyi hogweed on selected mono- and dicotyledonous plant species.