University of Gdańsk

Subject card

Subject name and code	Cryptic species, PG_00154371		
Field of study	Natural Resources Conservation		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2026/2027
Education level	undergraduate studies	Subject group	Optional subject group
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	1.0
Learning profile	academic	Assessment form	
Conducting unit	Pracownia Lichenologii i Mykologii Eksperymentalnej -> Katedra Taksonomii Roślin i Ochrony Przyrody -> Faculty of Biology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Beata Guzow-Krzemińska	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	15.0	0.0	0.0	0.0	15

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	15	2.0	8.0	25

Subject objectives

To introduce students to different species concepts .
To understand the concepts of species complex, cryptic species, species pairs.
To explore markers and methods used to identify cryptic taxa in different groups of organisms.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[OZPL3_K01] The graduate is ready to recognise the limitations in his/her own knowledge and understands the need for continuous learning and development	Knows the limits of own knowledge on different species concepts and understands the need for continuous learning and development	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report [SK8] observation of student's independent or team work
[OZPL3_W10] The graduate possesses a comprehensive understanding of current issues in biology and related fields	knows and describes contemporary methods and markers used for identification of cryptic taxa	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[OZPL3_W04] The graduate possesses advanced knowledge and understanding of the characteristics, systematics, and evolution of selected groups of organisms, as well as the basic concepts and mechanisms of evolution	presents the characteristics and systematics of selected groups of organisms, with reference to cryptic species	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[OZPL3_U11] The graduate is able to present in Polish and in a foreign language on specific issues in the field of biology during oral presentations	presents and discusses different species concepts	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[OZPL3_U02] The graduate can read with comprehension scientific texts in the field of natural sciences in Polish and simple texts in English	reads with understanding and analyzes scientific texts in the field of natural sciences in Polish and n English	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written

Subject contents	Cryptic species in different groups of organisms. Molecular markers used in taxonomic studies. DNA barcoding for species identification. Importance of cryptic species in biodiversity and conservation studies. Characterization of selected cryptic species, with special emphasis on plants and fungi.	
Prerequisites and co-requisites	English language skills that enable reading of scientific texts	
Assessment methods and criteria		

Subject passing criteria	Passing threshold	Percentage of the final grade
presentation	51.0%	40.0%
test	51.0%	50.0%
class work	51.0%	10.0%

Recommended reading	Basic literature	The course is an original elaboration of the issues based on many years of studying the reference literature. Crespo A., Pérez-Ortega S. 2009. Cryptic species and species pairs in lichens: A discussion on the relationship between molecular phylogenies and morphological characters. Anales Jard. Bot. Madrid 66S1: 71-81. Bickford D., Lohman D. J., Sodhi N. S., Ng P. K. L., Meier R., Winker K., Ingram K. K., Das I. 2007. Cryptic species as a window on diversity and conservation. Trends in Ecology & Evolution 22(3): 148-155. https://doi.org/10.1016/j.tree.2006.11.004. Jörger K. M., Schrödl M. 2013. How to describe a cryptic species? Practical challenges of molecular taxonomy. Frontiers in Zoology 10:59. https://doi.org/10.1186/1742-9994-10-59. Ossowska, E., Guzow-Krzemińska, B., Szymczyk, R., & Kukwa, M. (2021). A molecular re-evaluation of Parmelia encryptata with notes on its distribution. The Lichenologist, 53(4), 341-345. doi:10.1017/S0024282921000219 Lücking, R., Leavitt, S.D. & Hawksworth, D.L. Species in lichen-forming fungi: balancing between conceptual and practical considerations, and between phenotype and phylogenomics. Fungal Diversity 109, 99154 (2021). https://doi.org/10.1007/s13225-021-00477-7
	Supplementary literature	Guzow-Krzemińska B. 2012. Molecular approaches in conservation of lichens. In: Lichen protection - Lichen protected species. Lipnicki L. (ed.) p. 77-89. Guzow-Krzemińska B., Kukwa M. 2013. Metody badawcze we współczesnej taksonomii porostów. Kosmos 62(1): 95-103. Crespo, A., Lumbsch, H.T. Cryptic species in lichen-forming fungi. IMA Fungus 1, 167170 (2010). https://doi.org/10.5598/imafungus.2010.01.02.09 Dudgeon S., Kübler J. E., West J. A., Kamiya M., Krueger-Hadfield S. A. 2017. Asexuality and the cryptic species problem. Perspectives in Phycology 4(1): 47-59. Additional literature - primarily in the form of published review and experimental papers - will be suggested on an ongoing basis.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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