## Meet-a-Member Alenka Gaberščik

Marcel A. K. Jansen, ORCID: 0000-0003-2014-5859

School of Biological, Earth and Environmental Sciences, University College

Cork, Ireland

DOI: 10.19232/uv4pb.2020.1.20

© 2020 The Author, licensed under (CC BY-SA 3.0)



## Alenka Gaberščik

ORCID: 0000-0003-0484-3702

Department of Biology, Biotechnical Faculty, University of Ljubljana, Slove-

mailto:alenka.gaberscik@bf.uni-lj.si

Which places did you work at before? My career started in an elementary school. After one year of teaching I became a researcher at the Lek pharmaceutical company. In 1981 I joined a research group at the National Institute of Biology, and finally 22 years ago, I got the position of lecturer at the Department of Biology. In the 1980s I attended two one-month courses on terrestrial ecosystems at the Agricultural Institute of Zaragoza. I received my PhD in 1990 at the University of Ljubljana. My research work has always been linked to ecosystem structure and function and plant ecology. The result of an international cooperation in aquatic plant research are many applications related to the Water Framework Directive and a recently published book named "Macrophytes of the Danube River", which I co-edited. Among the ecosystem studies, I have to mention the long-term research on Lake Cerknica (Fig. 4.1), about which I also edited a scientific book titled "The Vanishing Lake".

Why did you choose to work on plant UV-effects? I have always been interested in light, which is a source of energy for plants and ecosystems, and finally also for us, humans. My interest was also in how plants take advantage of specific environmental factors, including UV radiation. UV-B radiation research in Slovenia has been initiated by dr. Jože Bavcon. In his PhD project, we studied ecophysiological responses of plants. In the late 1990s, we were invited by prof. Jelte Rozema to participate in the European project



UV**4**Plants





**Figure 4.1:** Lake Cerknika, one of the vanishing-lakes of Slovenia. UV4Plants members will recall this lake, as it was the destination of an excursion for delegates of the 2018 UV4Plants meeting in Bled.

UV**4**Plants



Figure 4.2: Alenka Gaberščik at a park.

UV-AQTER, in which leading UV scientists also collaborated, namely prof. Lars Olof Björn, prof. Janet Bornman, and prof. Donat Häder. The project team was really excellent, both in human and professional terms. The project meetings were unforgettable and the list of high quality publications derived from the project was extensive. After the project ended, prof. Lars Olof Björn remained our good friend and constructive consultant in our further research.

What is your research-specialisation? Initially, we searched for the negative effects of increased UV-B radiation on various ecological groups of plants, ranging from hydrophytes and amphibious plants to crops and tree species, to determine their potential for the accumulation of phenolic substances and to overcome stress. We also investigated how elevated UV affects the quality of phytoplankton as a source of food for zooplankton. Nowadays we are primarily interested in UV as a formative environmental factor for plants, especially in combination with other factors, such as water shortage and the availability of certain micronutrients in crops. We are also interested in the optical properties of leaves and bark, and in the fate of radiation, including UV that reaches the surface of plants. From this point of view, we also examined the influence of different substances at the plant surface, such as dust on leaves and periphyton on aquatic plants' leaves, on the absorbance of different wavelengths.

UV**4**Plants

Of which UV-related accomplishment are you most proud, and why? We produced huge data sets that led to important conclusions regarding strategies of UV-absorbing compounds accumulation, e.g., many aquatic plants produce saturated amounts of these substances because of the unpredictable radiation environment in the water. The exception is a free-floating ancient species *Ceratophyllum demersum*, which has dose-dependent response that is related to increased need for energy, as measured by respiratory potential (ETS activity). We also produced data showing high adaptability potential to UV in amphibious species. Another important aspect was interaction of drought and UV, where UV mitigated the negative effects of water limitation, resulting in increased biomass production in buckwheat species and also in some cereals. We showed the important role of diatoms dwelling on aquatic plant leaves in absorbing UV and transmitting PAR, and therefore offering protection to the leaves. Our studies also revealed that silica prickle hairs in grasses may scatter UV radiation.

Can you tell a funny story relating to your work on UV-effects? When we established our first UV plots in the Ljubljana Botanical Garden, people were very curious, coming close to the plots, examining plants and asking different questions. Then we fixed a label saying "UV radiation experiment" on the fence and suddenly people started to avoid the plots.

Have you got any hints, tips or other advice to share? For biologist-researcher or for any human, it is important to be aware that there is no free lunch in nature. Everything in nature is a result of cost/benefit relation, and every response of an organism is a kind of trade-off of benefits and costs. Many traits of organisms that appear during evolution benefit organisms, but only in a specific environment. Any change of this environment makes these traits less functional or even useless. Having all this in mind makes the experiments (and life) more reliable.

What made you join UV4Plants? Joining UV4Plants was a logical consequence of our cooperation in the UV4Growth COST project that gathered high quality scientists with sparkling ideas and cutting-edge research in UV radiation and plants. Involvement in the society enables scientific communication, exchange of ideas, and collaboration in research work.

How would you like UV4Plants to develop in the future? The recent mode of action seems constructive, since it enables exchange of knowledge and ideas, which is very important for young scientists. Regular meetings are not only an opportunity to gain new knowledge, but also a chance to establish new friendships and meet old friends.



## Editorial-board-reviewed article.

Published on-line on 2020-09-12. Edited by: Titta K. Kotilainen.

