

BayCEER Kolloquium

Lectures in Ecology and
Environmental Research

Summer 2023



UNIVERSITÄT
BAYREUTH

Donnerstag/Thursday

15.06.2023

12:15 in H6, GEO



Prof. Dr. Georg Petschenka

Institute of Phytomedicine, Universität Hohenheim

Insect interactions with natural and man-made toxins

Many herbivorous insects sequester plant toxins to defend against predators. Our research focuses on cardiac glycosides, potent toxins found in plants. We study the physiological mechanisms underlying insect resistance and sequestration and have found that both traits are interconnected.

Specifically, sequestering cardiac glycosides requires different resistance traits than consuming a toxin-rich diet, which means that predators favoring sequestration can spur the evolutionary arms race between insects and plants. Moreover, we have found that the sequestration of plant toxins can drive associations with individual plant species, even in dietary generalists. Therefore, sequestration is an important mechanism shaping ecological interactions across trophic levels. In addition to plant toxins, insects are exposed to a diversity of chemical pesticides, including potent insecticides. To understand the potential role of insecticides as a driver of insect decline, we study the effects of commonly used insecticides on wild insects. Our goal is to understand how plant toxins function across trophic levels, how anthropogenic contaminants affect wild living insects, and ultimately, how both frameworks are intertwined.

Bayreuth Center of Ecology
and Environmental Research

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