Press release

A HIGH-TECH 'NEOPHYTE RADAR': USING DRONES AND AI TO DETECT INVASIVE PLANTS

Neuchâtel, August 29, 2024 – Butterfly-bush and staghorn sumac are popular additions to our gardens but are now considered problematic. The reason? These are invasive alien plants – invasive neophytes – and discussions about how to tackle them, as well as the ban on them, are becoming more prevalent. Invasive alien plants are not only a threat to our biodiversity, they are also capable of damaging infrastructure or even harming people. They are difficult to detect and tackle. This is where a current research project comes in: With the neophyte radar, the aim is to detect these unwanted guests from the air in future, using drones and AI. This is an important step in containing them.

Invasive neophytes as a challenge for nature and infrastructure

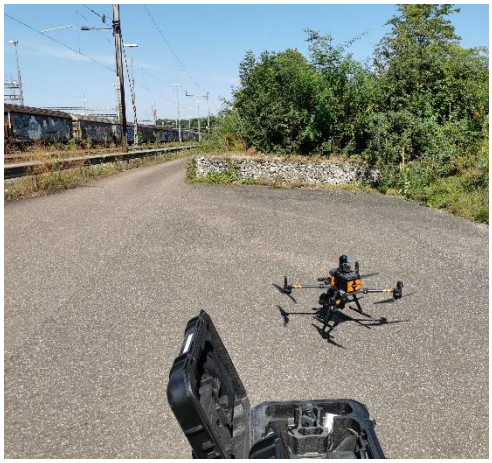
Invasive alien plants (invasive neophytes) pose a huge challenge for people, the environment, and also infrastructure. Awareness of this issue among the general public as well as affected parties has greatly increased in recent years. Due to the Swiss government's ban on the sale of popular garden plants like Chusan palm or cherry laurel, which will come into force September 1 of this year, there has been a growing focus on this problem recently in the media. Invasive alien species like Japanese knotweed, which can replace native plants, or narrow-leaved ragwort, which is poisonous, are less well-known. And that's not all – invasive plants cause economic damage to agriculture. In infrastructure installations (e.g. tracks, signals), they can lead to ingrowth, damage to the structure or visual impairment. Detecting and containing these invasive plants is a tough job. The key lies in effective monitoring programs.

Detection from air as the key

A research consortium made up of CSEM, the University of Zurich and the Zurich University of Applied Sciences ZHAW as well as SBB (Swiss Federal Railways) and ExoLabs GmbH as implementation partners now intends to take a new approach to tackling this issue with the support of Innosuisse. Until now, neophytes have mainly been charted using time-consuming and expensive inspections. In future, the aim is to detect neophytes from the air too – for instance using drones – over large areas and for different species of plants. This is to be made possible through new approaches to plant detection using artificial intelligence (AI). AI is already capable of detecting certain plants or animals in high-resolution images; but these are aerial photos taken from great height, in which small neophytes are just a few pixels large, making it difficult to tell them apart from native plants. Vegetation ecologists and data and sensor specialists are working together. With the neophyte radar, they aim to provide an inexpensive and robust solution to tackle the urgent problem of the spread of invasive plants.

New possibilities get the go-ahead

The solution is centered around the systematic and affordable detection of unwanted guests over a large area: First with the aim of understanding how they spread and then to take targeted measures to effectively repress them. This leads to new approaches and business models for private service providers and public stakeholders – not only for Switzerland, but also for the international market, as borders aren't able to stem the spread of invasive alien plants.

© University Zurich – A field of invasive alien species (here Japanese Knotweed) is first filmed by a drone and labeled on site so that an AI model can later detect them independently on the aerial image (blue area).

Additional information

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