

# Solidago gigantea distribution mapping

## Problem description

The invasive species *Solidago gigantea* poses significant challenges to floodplain ecosystems due to its aggressive spread and impact on native biodiversity. Effective management and conservation efforts require accurate mapping of its distribution and an understanding of the factors influencing its spread.

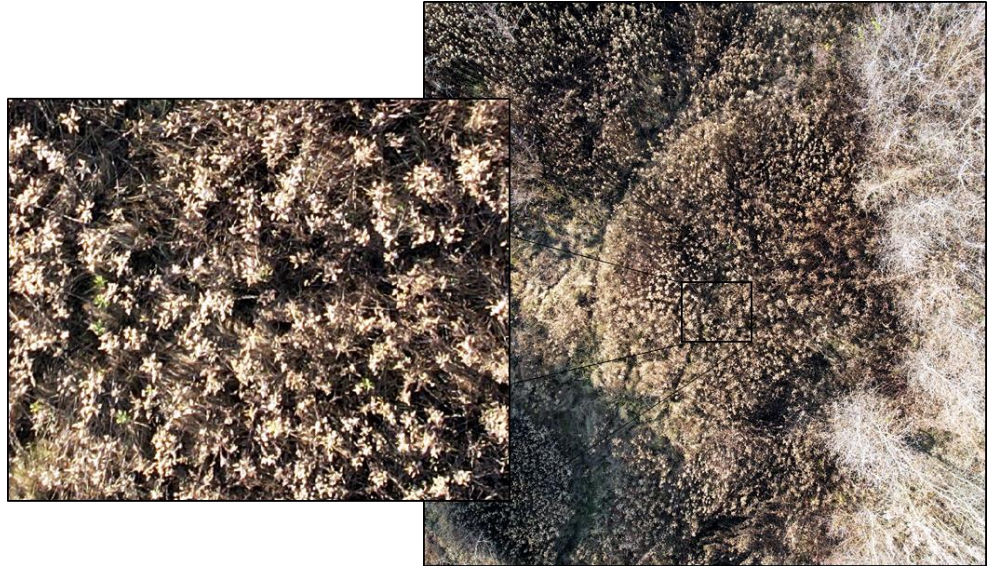


Fig 1. Aerial view of *Solidago* captured by UAV.

## Proposed solution

We employed a combination of phenological descriptors and remote sensing techniques to map the distribution of *Solidago gigantea*. By integrating field data on phenological characteristics with aerial and satellite imagery, we aimed to create a detailed spatial distribution map of this invasive species.

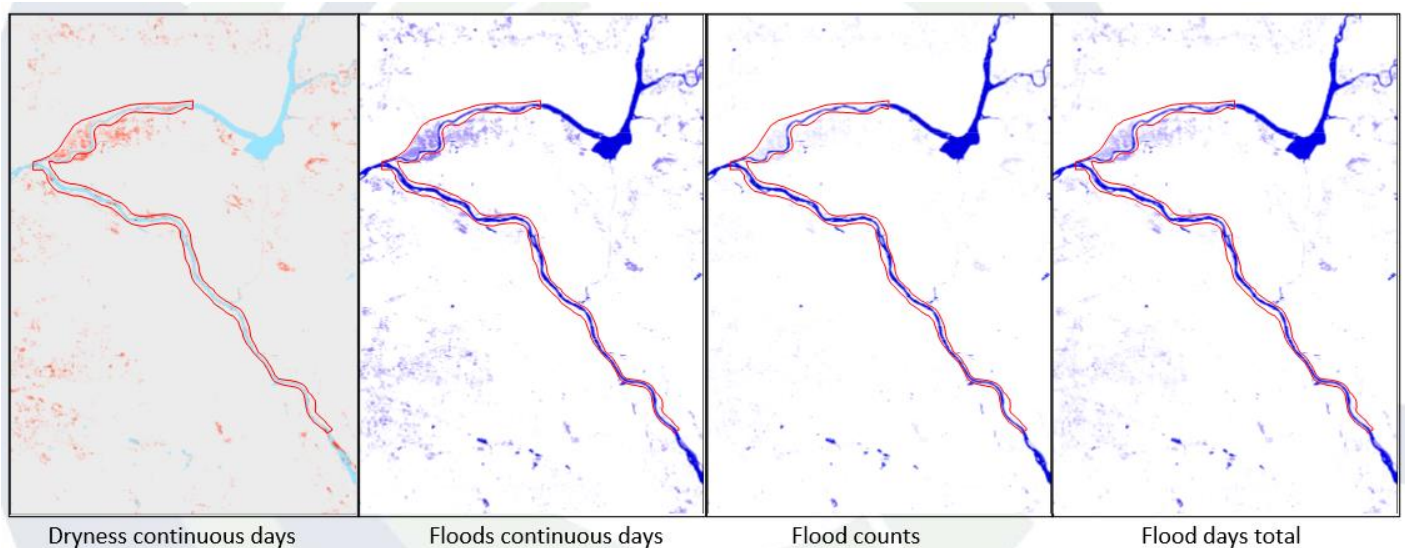


Fig 2. Maps of hydroperiods calculated based on flood mapping products.

## Main features

**Phenological Data Collection:** Field data on the timing and duration of flowering and fruiting phases of *Solidago gigantea* were collected across floodplain sites.

**Remote Sensing Integration:** Aerial and satellite images were used to enhance the spatial accuracy of the distribution map.

**Influence of Surface Water:** Given the research-confirmed effect of soil moisture and flooding on the spread of *Solidago gigantea*, we focused on floodplains along the Vistula and Narew river terraces. These areas are prone to extended periods of water backlog, providing a unique environment to study the plant's response to inundation.

**Monitoring Flooding Impact:** Satellite data enabled us to locate plots of *Solidago gigantea* that experience periodic flooding and to monitor the impact of these conditions on the plant's spread. Our objective was to determine whether inundation facilitates or hinders the invasion of this species.

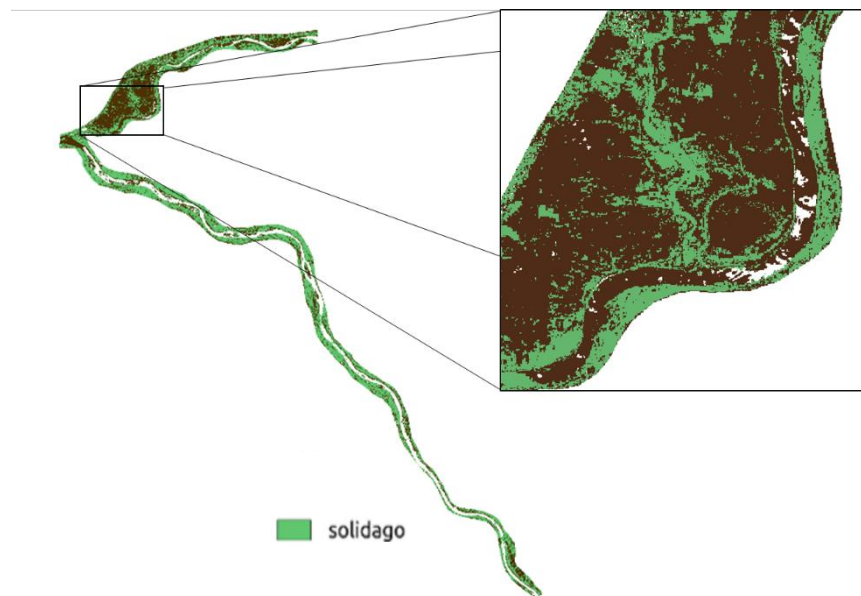


Fig 3. Map of *Solidago gigantea* classification.

## References

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