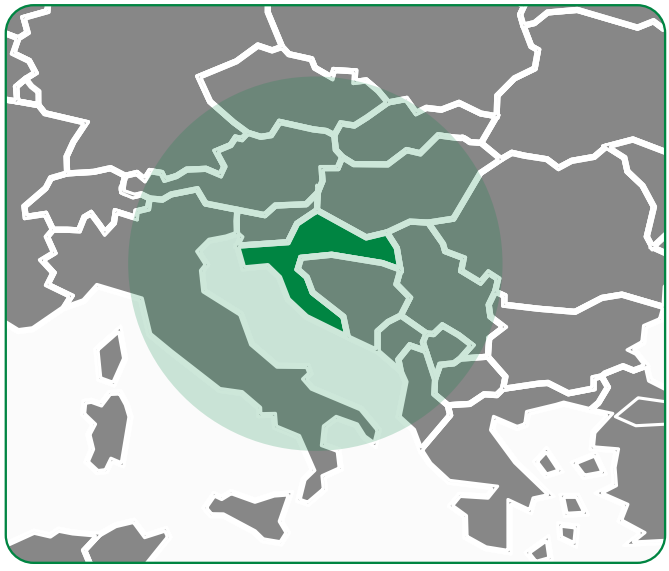
INVASIVE SPECIES DETECTION IN CROATIA

What it is about

This case investigates the benefits of using a remote sensing solution based on Sentinel data to help Lonjsko Polje, a nature park in Croatia, understand where and how invasive plant species are overrunning areas within the park. Invasive alien species are non-native organisms which can harm local ecosystems, compete with native species for resources, alter habitats, and disrupt ecological balance, leading to biodiversity loss and potential extinctions. The heart of this case revolves around the detection and delineation of the park areas infested by the False Indigo Bush (Amorpha fruticosa). In the case analysed, several benefits were accrued thanks to the Sentinel-based solution. Firstly, the park managers were able to specifically identify and reclaim areas for natural habitat and biodiversity preservation. Moreover, novel techniques were developed to remotely sense invasive species over vast areas.



What we found

- Invasive alien species are introduced by human activities, such as trade, travel, or intentional transplantation.
- Oikon, a Croatian remote sensing company and research institute, used Sentinel-2 data and innovative algorithms to map and classify extensive areas of the park.
  The Sentinel-2 based system developed by Oikon ended up performing better than both a LiDAR-based system and an in-field inspection system.
- After the infested areas could be delineated and reclaimed, certain parts of the park could be converted to arable land which farmers can use to help reintroduce and support native livestock, including the posavina horse, the turopolje pig, and slavonian-syrmian grey-cattle.

Funded by the EU and ESA

Layout by ESA EO Graphics Bureau

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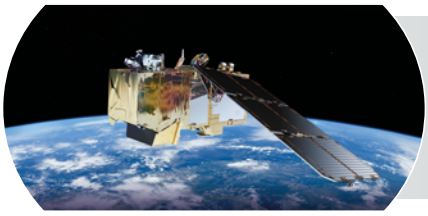
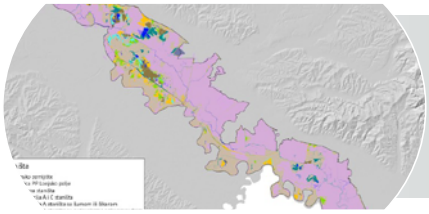


The Satellite Data
Copernicus Sentinel-2 provides free-of-charge frequent wide-swath, high-resolution multispectral imagery with 13 spectral bands over Croatia.



The Service Provider
Oikon, a Croatian remote sensing company and research institute, utilise Sentinel-2 data to help clients detect and monitor invasive alien species (or IAS). They also use Sentinel data to help clients classify habitat types, which aids in their preservation.

€600k-750k pa

The Primary User
Lonjsko Polje Nature Park is a protected area in Croatia, known for its wetlands and rich biodiversity. The Sentinel-derived service in this case helped them identify what areas were overgrown by IAS, thereby allowing them to specifically target these areas for reclamation.

€680k IAS eradication costs

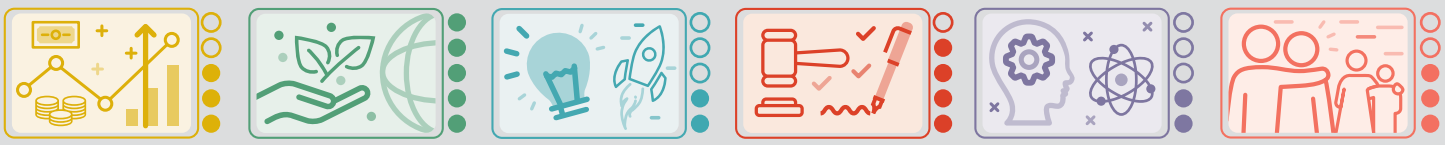
Secondary Beneficiaries
The third beneficiaries in this value chain are the local farmers within Lonjsko Polje. As a result of IAS being identified and removed, farmers could reclaim these areas into arable land and reintroduce native livestock.

€1.2M pa

End User Beneficiary
Citizens and society benefit from the protection of natural landscapes, the maintenance of biodiversity and the eradication of IAS in Lonjsko Polje. This helps ensure these sensitive ecosystems remain protected for the enjoyment of tourists and local economies.

€2.8M pa

Total benefits



Anticipated benefits: €3.9M - 4.1M pa

About the project

Through a series of case studies, EARSC aims to gather quantitative evidence that the usage of Copernicus Sentinel data provides an effective and convenient support to various market applications. These studies are undertaken in the frame of the project "Showcasing the benefits brought by the usage of Sentinels data to society, environment and economy: a bottom-up assessment based on traceable impacts along selected value chains", under an assignment from the European Space Agency (ESA) funded by the European Union as part of the Copernicus Programme.

Download the full report from the project website

http://earsc.org/sebs