



Seville, Thursday 26th September 2024

## CSIC researchers propose using IA to improve detection of animals in isolated areas

- Researchers study how to optimise camera traps to ease detection of fauna in areas where there is little communication infrastructure.
- The new technology enables real-time localization and reduces manual work



Three Iberian lynxes in their natural habitat. / STOCKPHOTOASTUR

Researchers from the Institute of Microelectronics of Seville (IMSE-CNM), mixed centre of the CSIC and the University of Seville, and from the Doñana Biological Station (EBD-CSIC) propose using artificial intelligence in the improvement of camera traps to facilitate the detection of animals in isolated areas. The paper, which has been published

in the journal [Ecological Informatics](#), aims at bringing this technology closer to places where there is little communication infrastructure and where detection of fauna is not an easy task because the programs are not optimised.

The research work, which was initiated in 2022 in the frame of the project LiFe and that is carried out within the project ULTIMATE, is part of the Recovery, Transformation and Resilience Plan of the 2021 Call on Ecological and Digital Transition Projects. This study, which ultimately aims to conserve biodiversity, is in line with Sustainable Development Goal 15 of the Sustainable Development Agenda (SDA)

“Our expertise in microelectronic *hardware* design has allow us to face the challenge of capturing these images in complex scenarios and processing them in the smart camera itself. Velasco Montero’s work is very remarkable since she has made it possible to adapt algorithms to very demanding operation conditions, such as light changes throughout the day or changes due to meteorology”, says Ricardo Carmona, one of the principal investigators of the project in the IMSE-CMN.

Besides reducing manual work involving reviewing images, this system allows to detect in real time the presence of animals, facilitating quick actuation. Another benefit of integrating artificial intelligence in the camera itself is the reduction of the stored data that has to be transferred and analysed, since it filtrates information discarding the data that is not interesting. All of this allows biologists to focus on the data analysis, such as behavioural patterns, population monitoring, etc.

## Adaptable at national scale

This innovative method is integrated in a hardware prototype developed in the IMSE and has been put into practice in the Aracena National Park. Although in the beginning it has been applied in a local environment, it has de potential to adapt at a national scale in many work environments.

The Carnivore Research Group research group at EBD-CSIC studies the population trends of several species in their natural habitats. For this purpose, they use camera traps strategically placed at different locations, that produce a large volume of images and video sequences, often too large to be analysed and categorised manually.

In particular, for this study researchers used images compiled by Ariadna Sanglas and Paco Palomares in the Aracena Natural Park within a project to evaluate the population of feral cats. The work of manually reviewing the images takes a great deal of time. First, researchers have to discard blank images, containing no animal, and then, they have to correctly identify the species that do appear on the photography.

The collaboration between the two entities has been favoured thanks to the proximity of their facilities, as both are based on the Cartuja campus. In addition to this, there is the confluence of organisations and their funding, including the LiFE programme, the Ministry of Digital Transformation, the USECHIP Chair and the Complementary Plan in the area of biodiversity (PCBIO).

Delia Velasco-Montero, Jorge Fernández-Berni, Ricardo Carmona Galán, Ariadna Sanglas, Francisco Palomares. **Reliable and efficient integration of AI into camera traps for smart wildlife monitoring based on continual learning.** *Ecological Informatics*. DOI:<https://doi.org/10.1016/j.ecoinf.2024.102815>

**CSIC Comunicación Andalucía y Extremadura**

[comunicacion@csic.es](mailto:comunicacion@csic.es)