IOBED - Integrating OBSEA's Biodiversity data into EMODnet Biology

Second DTO-BioFlow Data Grats Holders Workshop

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DTO-BioFlow
Integration of biodiversity monitoring data into the Digital Twin Ocean
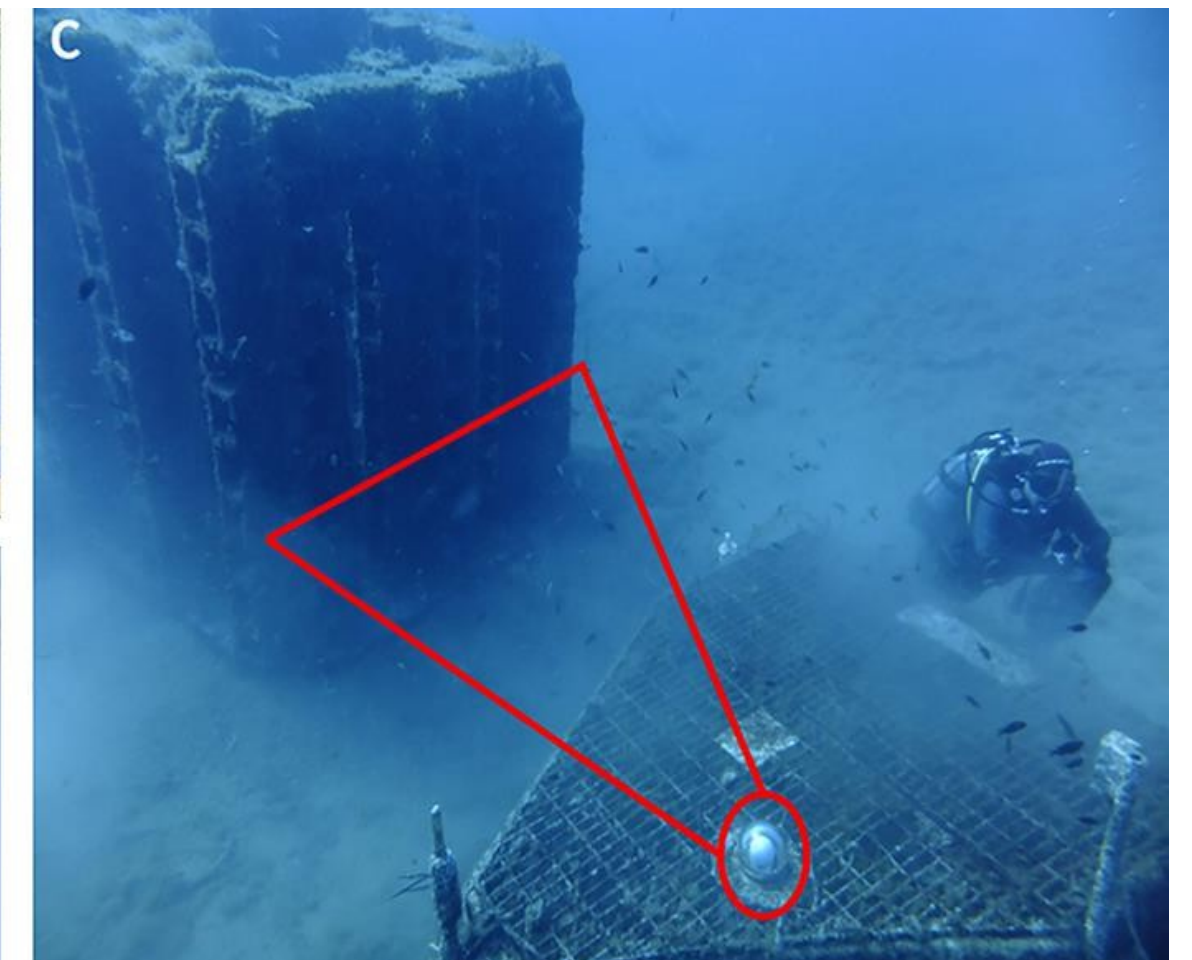
3rd June, Paris

1

OBSEA Seafloor Observatory

- Underwater cabled observatory

- Located at NW Mediterranean Sea

- Shallow waters (20 m depth)

- Multiparametric Observatory

Ecosystem Monitoring

- Multiple cameras deployed

- Image archive since 2011

- Fish abundance & behaviour studies
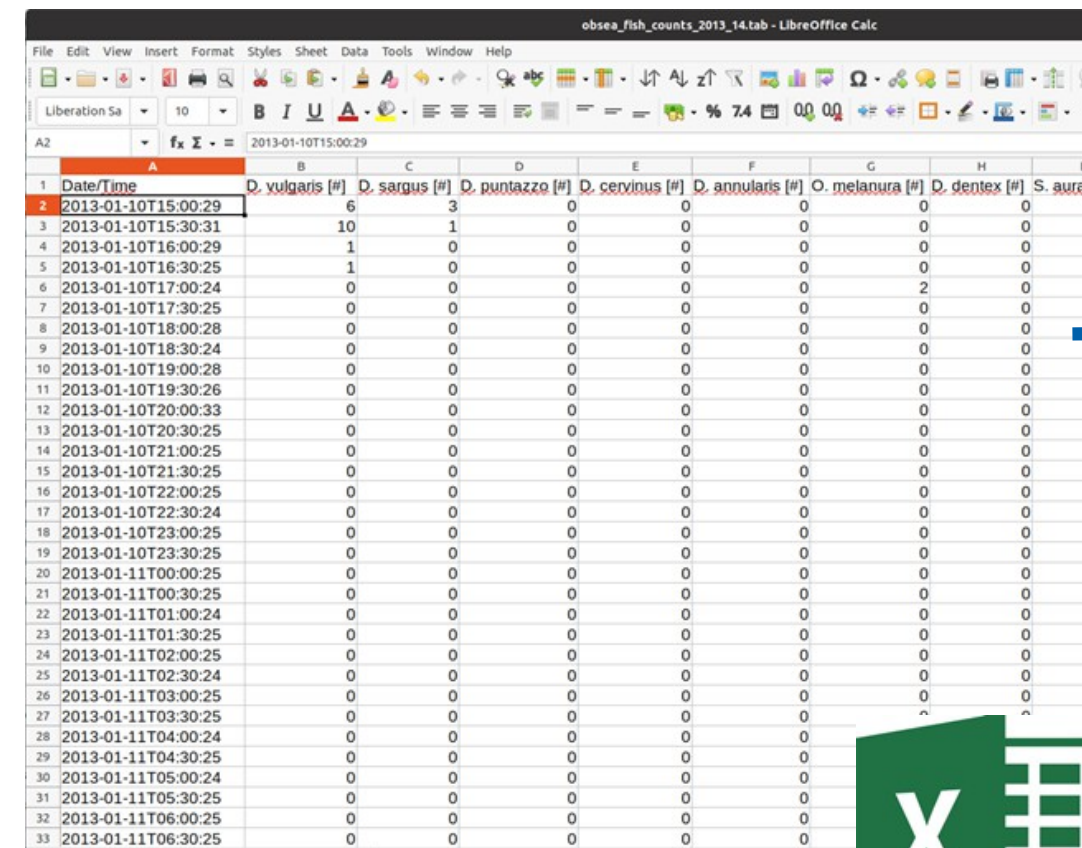
- Image analysis time-consuming!
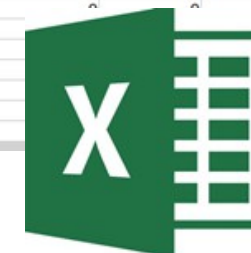
Traditional Ecological Monitoring
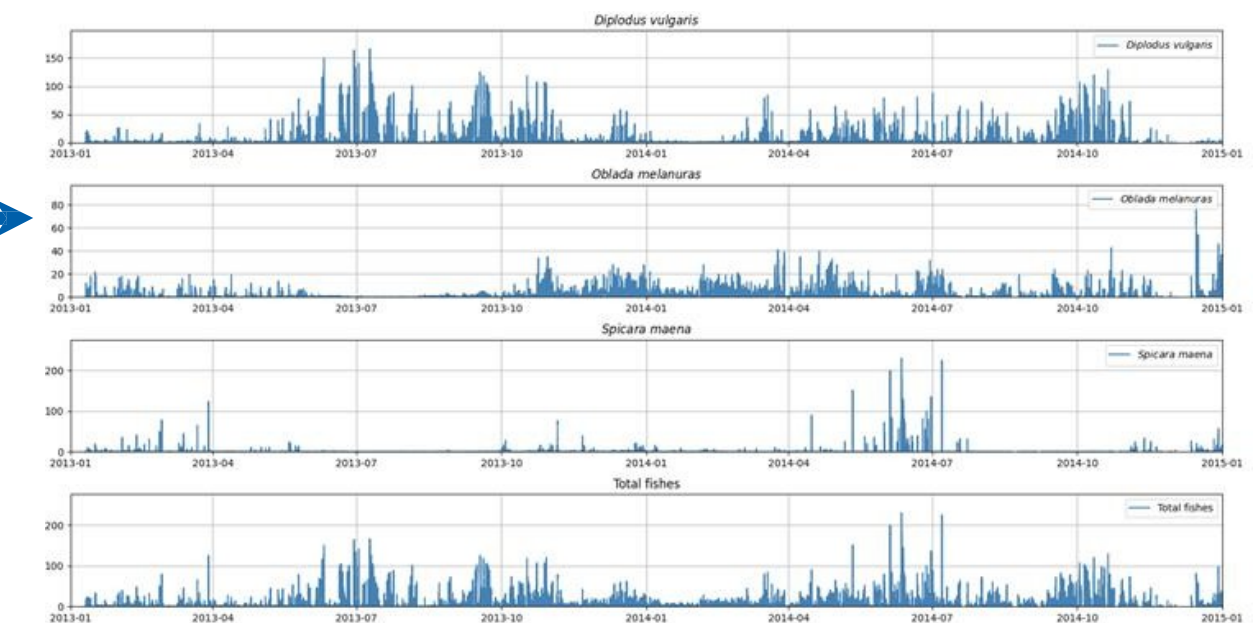

Underwater pictures

Manual fish counts

Spreadsheet with counts

Abundance   time-series

AI-based Ecological Monitoring

Underwater pictures

Store predictions
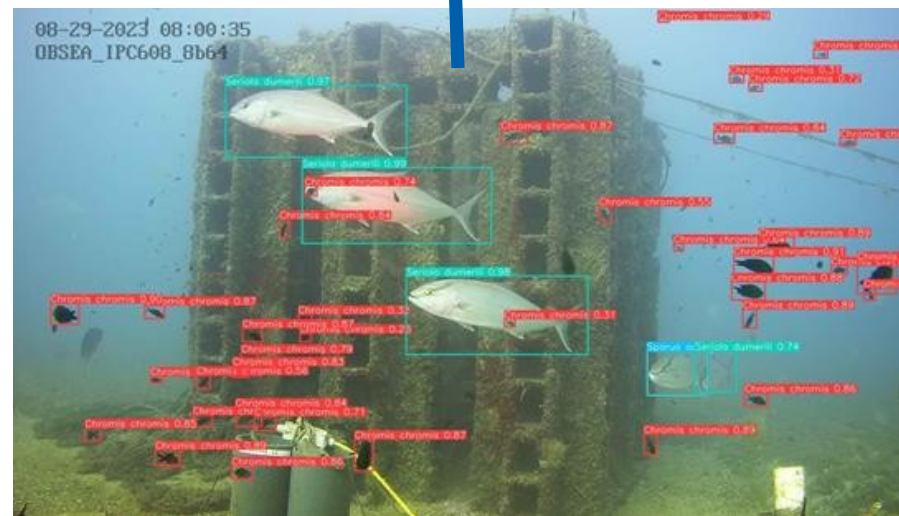
Abundance time-series

Object detection model

detections
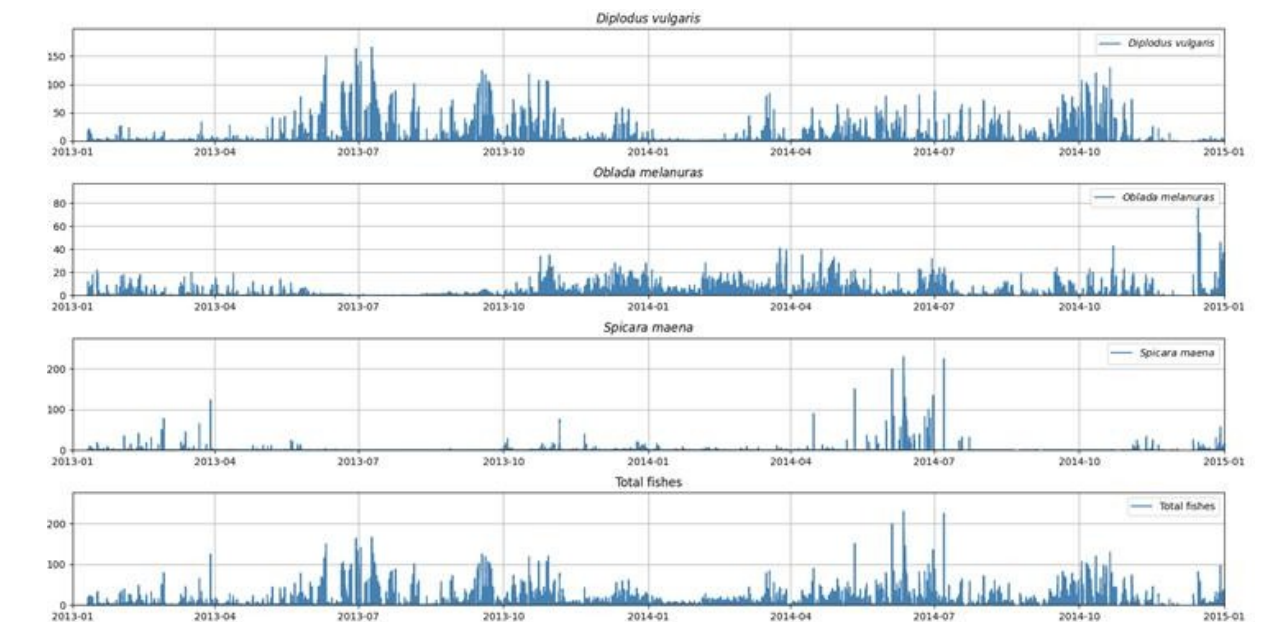
Some Results

Dataset with 400 pics

Biodiversity Time Series

Ecological Monitoring at OBSEA

- Long-term ecological monitoring

- Imagery data archive since 2009:
  - Low quality pictures from 2009 to 2023
  - HD cameras from 2023 to now

- Analysis of HD cameras 2023-2025

- more data coming soon…

Get the data!

Biodiversity Time Series: Slagreef

Slagreef Project

- Project to produce 3D printed artificial reefs

- Reuse waste from the steel industry (slag)

- Ecosystem and shoreline protection

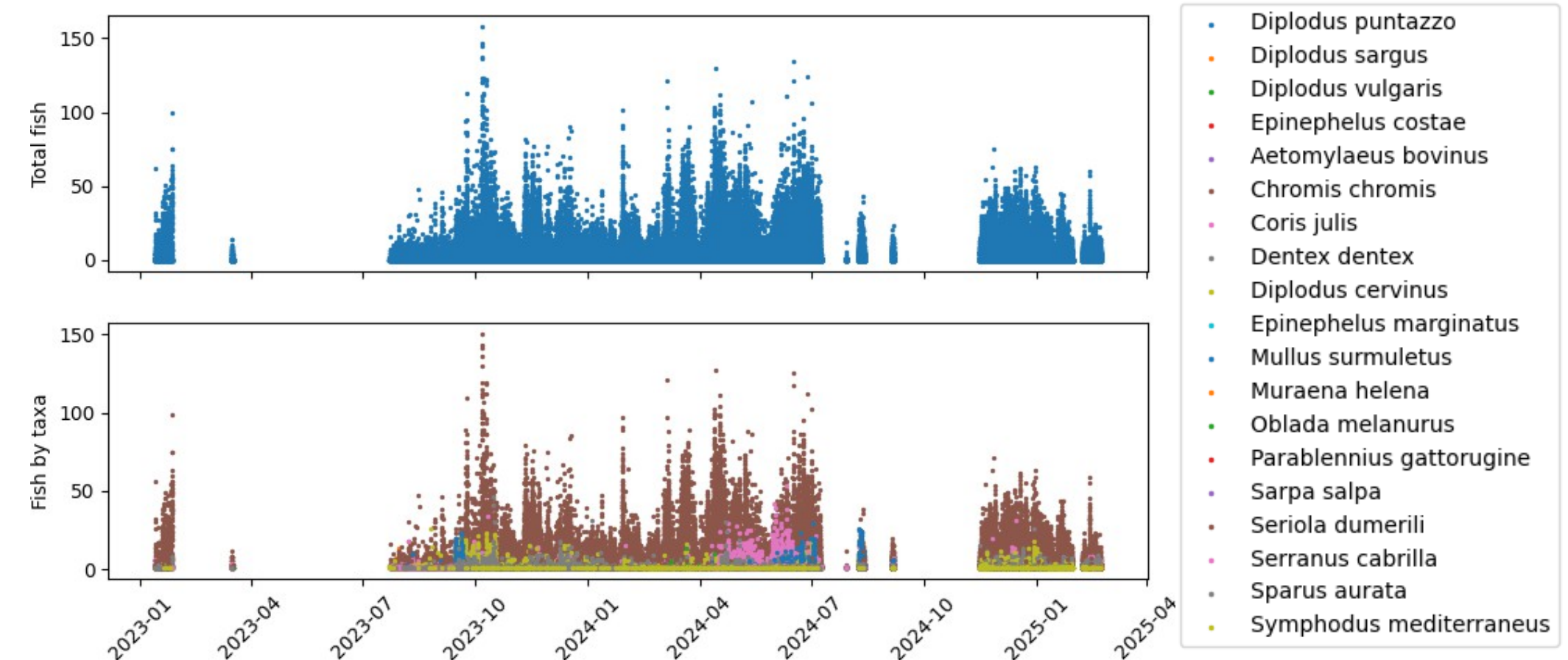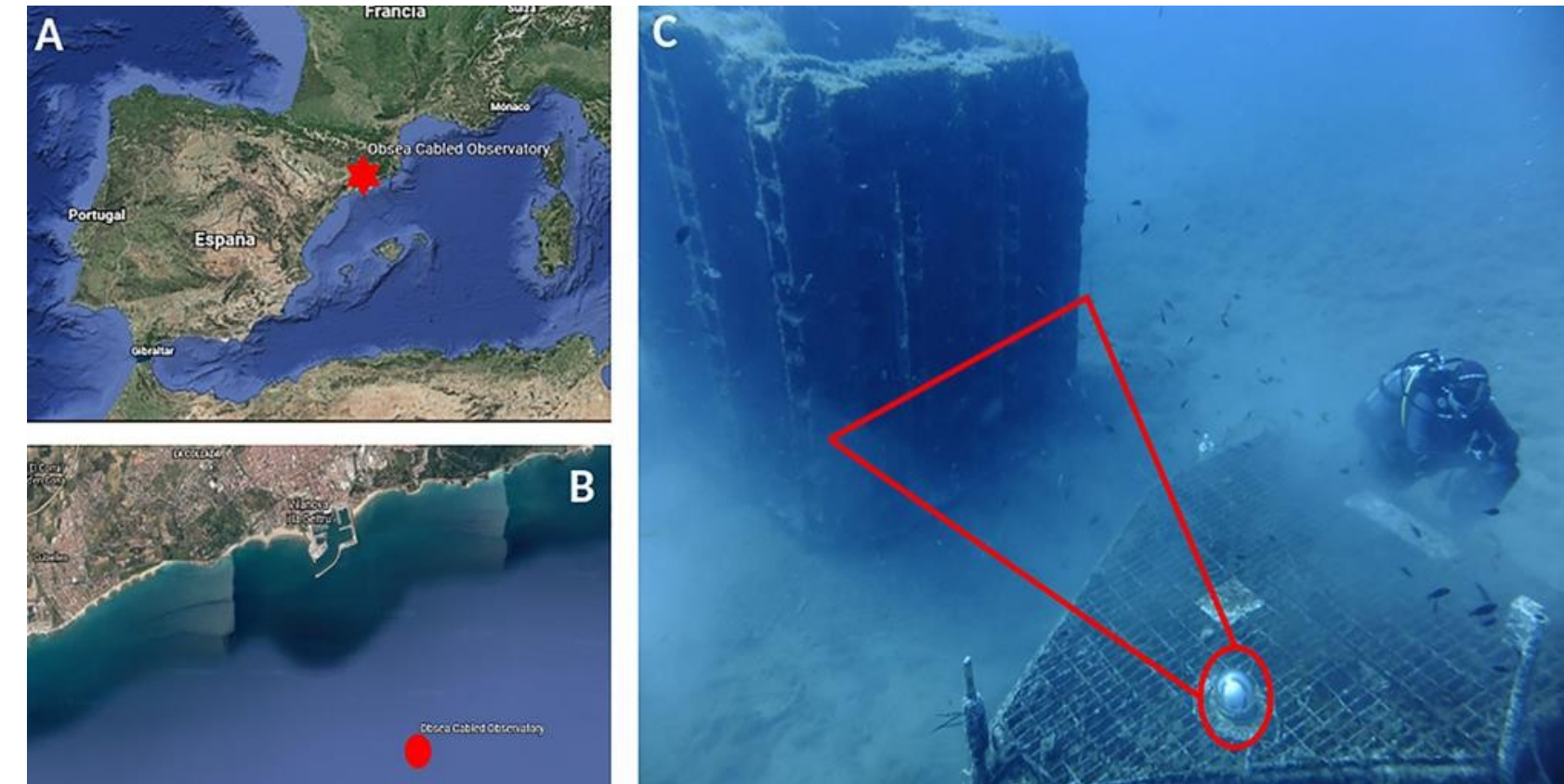- AI-monitoring to assess its ecological impact

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Get the data!

zenodo
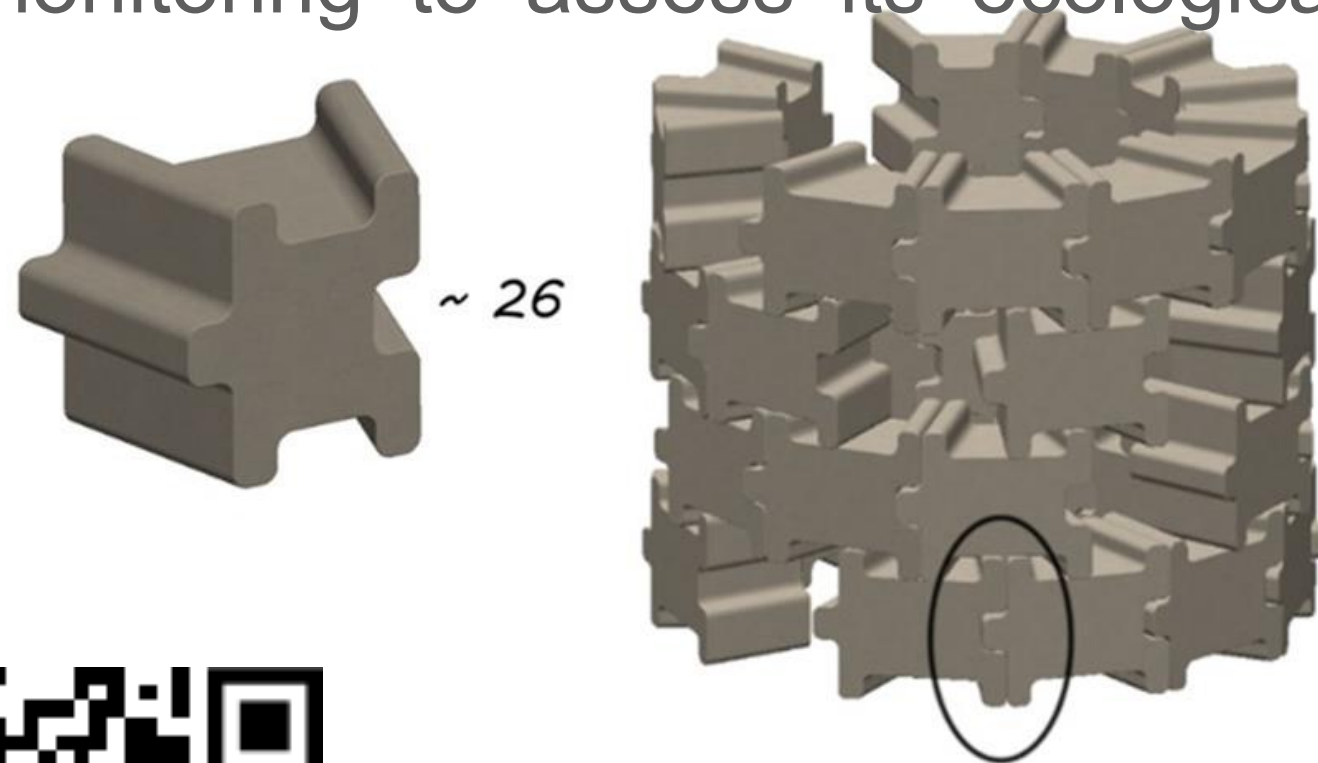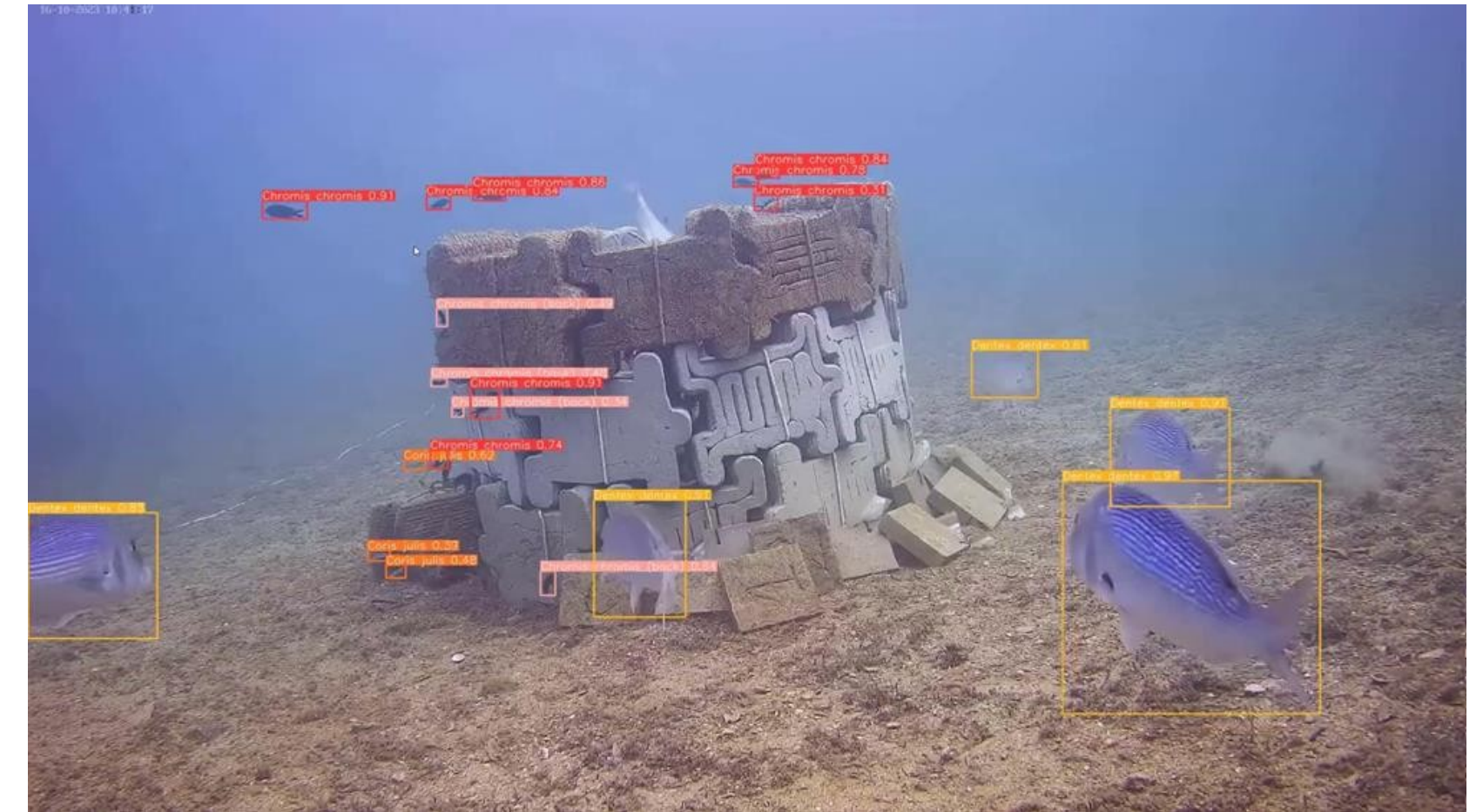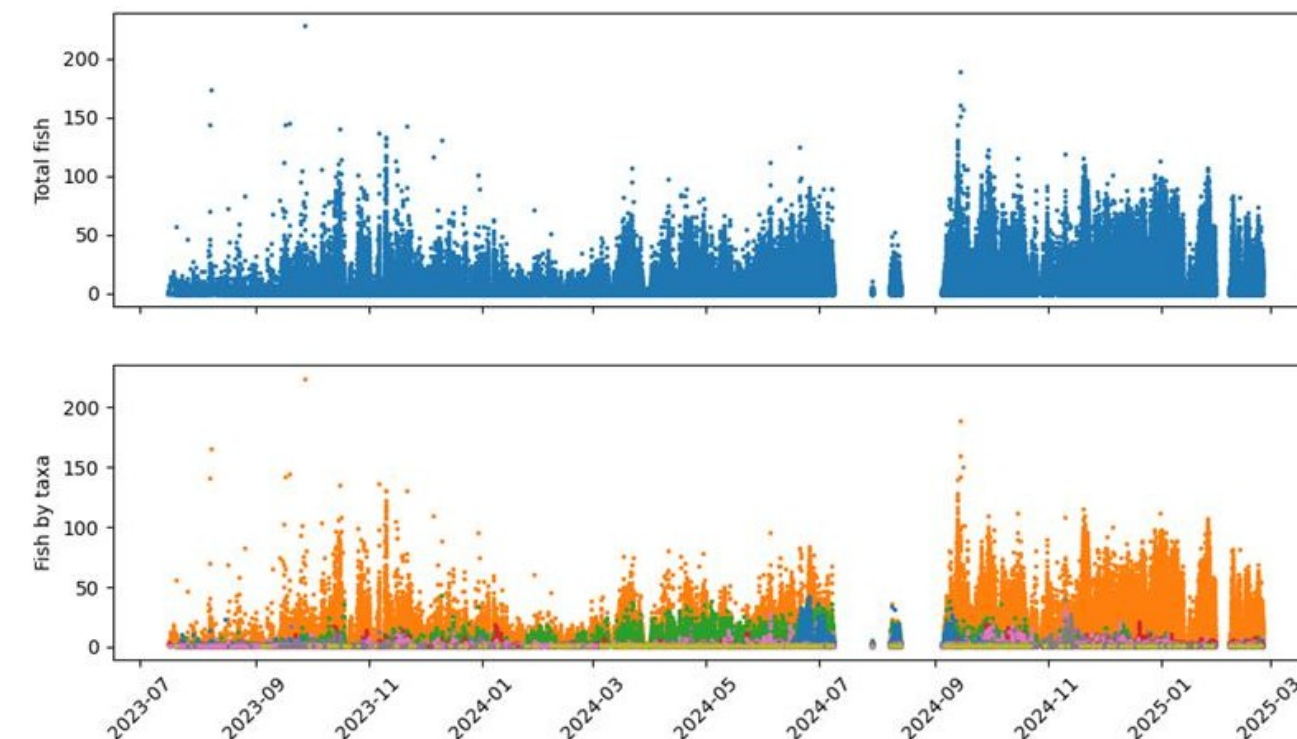
Legend:
- Aetomylaeus bovinus
- Chromis chromis
- Coris julis
- Dentex dentex
- Diplodus cervinus
- Diplodus puntazzo
- Diplodus sargus
- Diplodus vulgaris
- Epinephelus costae
- Epinephelus marginatus
- Mullus surmuletus
- Muraena helena
- Oblada melanurus
- Parablennius gattorugine
- Sarpa salpa
- Seriola dumerili
- Serranus cabrilla
- Sparus aurata
- Symphodus mediterraneus

Dolphin Carcass Experiments

Carcass of a stranded dolphin

- Deployed in a known environment (OBSEA)
- Scientific objectives:
  - Ecological changes by mammal carcass fall
  - Determine species with scavenging behaviour
- Experiments monitored with AI
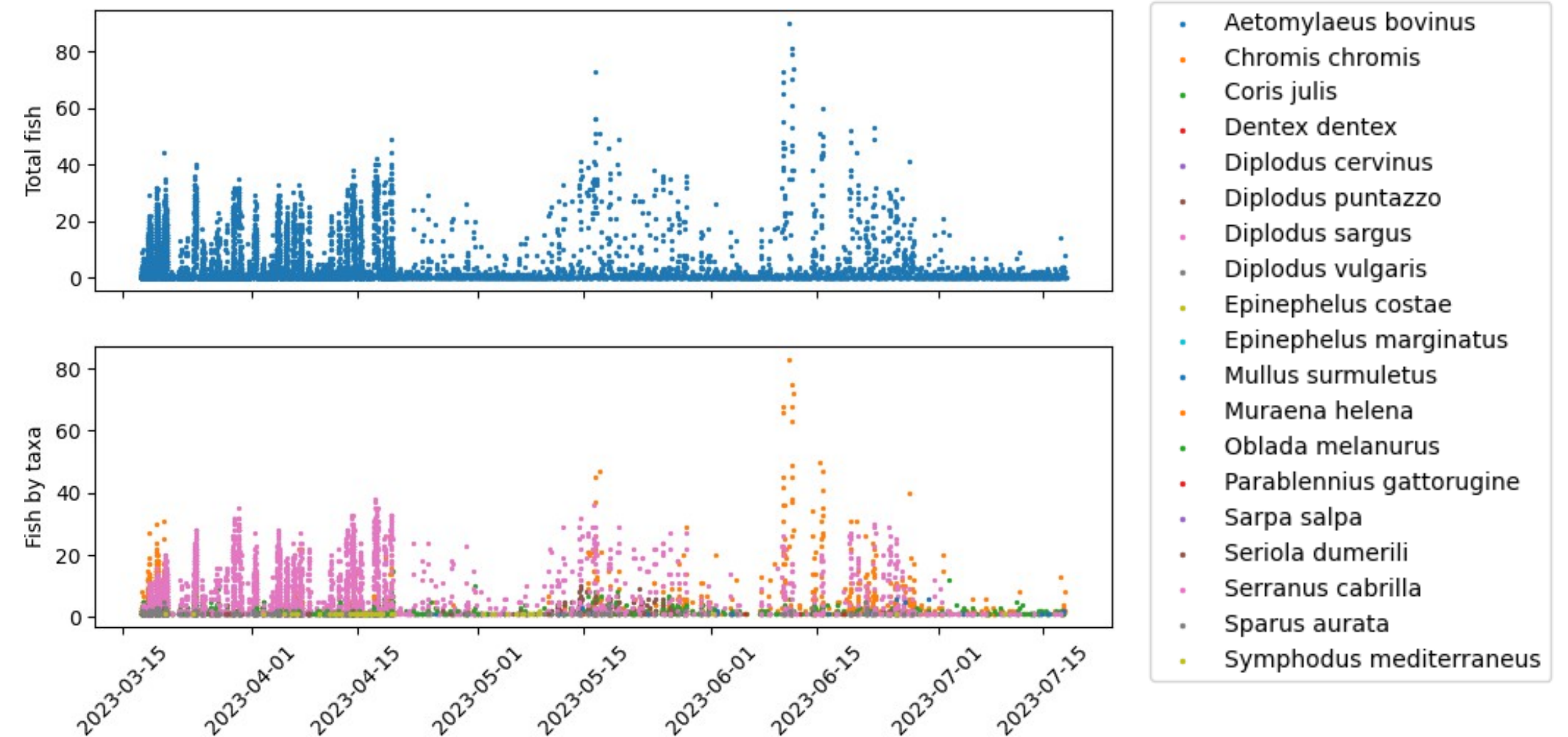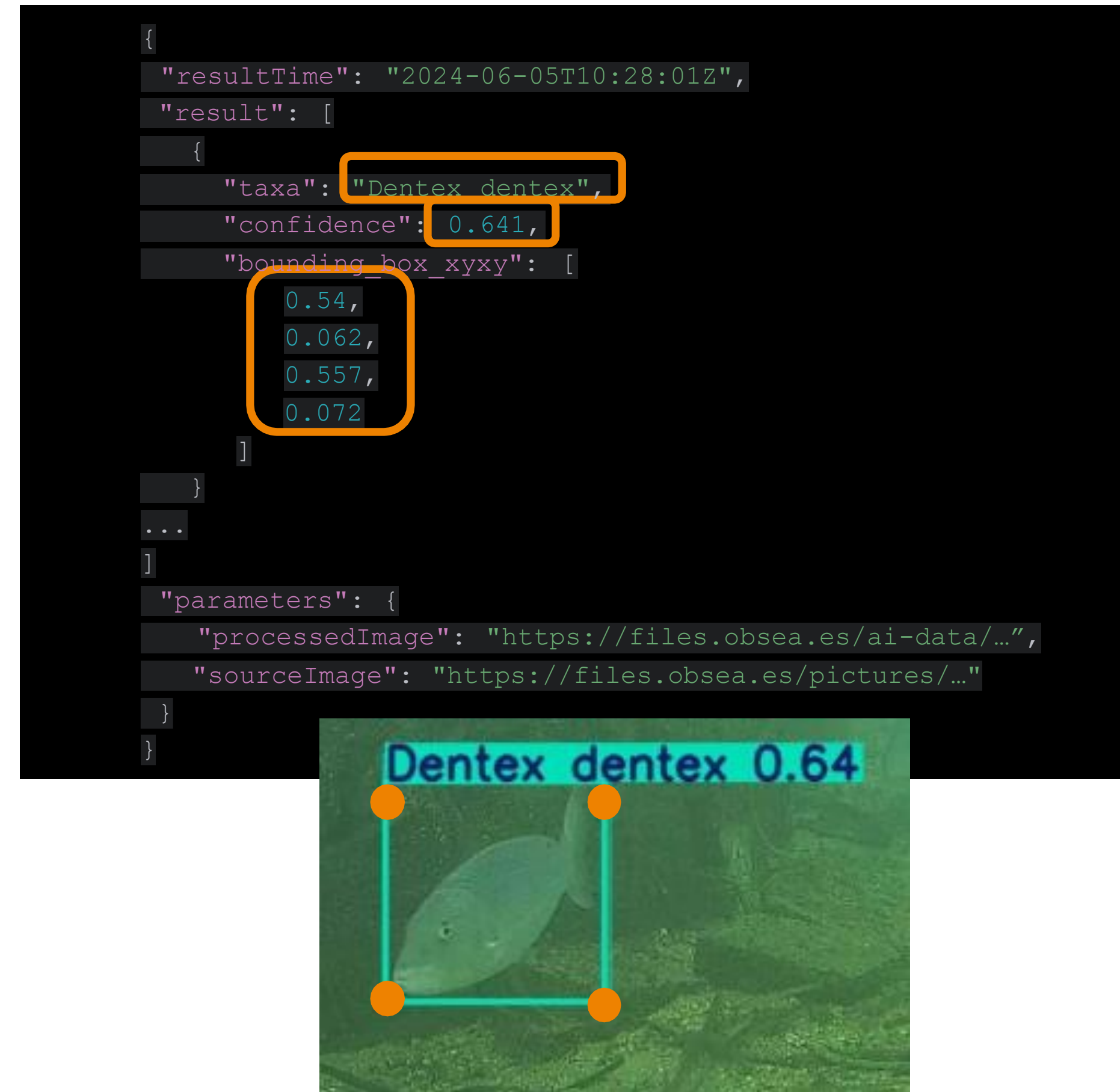 - March-July 2023   May-July 2024

Get the data!

M2M Real-time Data Access

OBISEA AI e-Infrastructure

- API for machine-to-machine interactions:
  - Pictures (source / processed)
  - AI predictions
- Queries available for species / picture
- Standard technologies:
  - SensorThings API / NGINX
- Datasets periodically exported to Zenodo

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Dentex dentex 0.64

Thank you for your attention!

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