

LifeWatch ERIC Internal Joint Initiative : Impact of Non-Indigenous Invasive Species on Marine Ecosystems

By: Christos Arvanitidis, Juan Miguel González-Aranda, Alberto Basset,
Peter Van Tienderen and Lucas de Moncuit de Boisguillé

LW ERIC Internal Joint Initiative (IJI)

- Boost the integration of tools & services into the LifeWatch ERIC web portal;
- Focus on a major scientific issue in biodiversity and ecosystem research with relevant socio-economic implications;
- Produce new and synthetic knowledge needed by institutions, administrations and managers to give solutions to major environmental problems at different scales;



LifeWatch ERIC needs to boost its construction and to engage users in developing their research activities into the Virtual Research Environments of the e-Science infrastructures, by clearly demonstrating and documenting the added value these new technologies bring to address challenging hot topics.

LifeWatch ERIC has started an Internal joint Initiative with the exact aim of addressing these needs and reinforcing the positioning of LifeWatch ERIC within the biodiversity and ecosystem scientific community. As a subject for the demonstration case, LifeWatch ERIC has selected non-indigenous and invasive species (NIS).

If you are interested in the IJI and want to join us on the validation cases, just drop us an e-mail servicecentre@lifewatch.eu.

Validation cases

Nine validation cases have been agreed on by the scientific community representatives focusing on various aspects of NIS invasion, stemming from the desire of the infrastructure to use the most participative interdisciplinary approach to investigate this wide topic.

As an immediate result of this collaboration, scientists and ICT experts jointly outlined a conceptual paper and designed a workflow that will serve as a living timeline along which different e-tools have to be developed to help address relevant issues related to NIS for scientists, managers, decision-makers and society.

1. Combining Modeling and remote sensing techniques to monitor and control the spread of invasive species: the case of *Ailanthus altissima*
2. European ARMS programme: long-term monitoring of hard-bottom communities for invasive marine species
3. Risk assessment of NIS introduction and establishment, habitat vulnerability to NIS and estimation of the impact on Biotopes
4. Functional biogeography of invasive species: the case of two widely-distributed omnivorous crustaceans
5. Successive invasions in the Mediterranean Sea: How the history of *Caulerpa taxifolia* can inform on the new invaders *Caulerpa racemosa* and *Rugulopteryx okamurae*

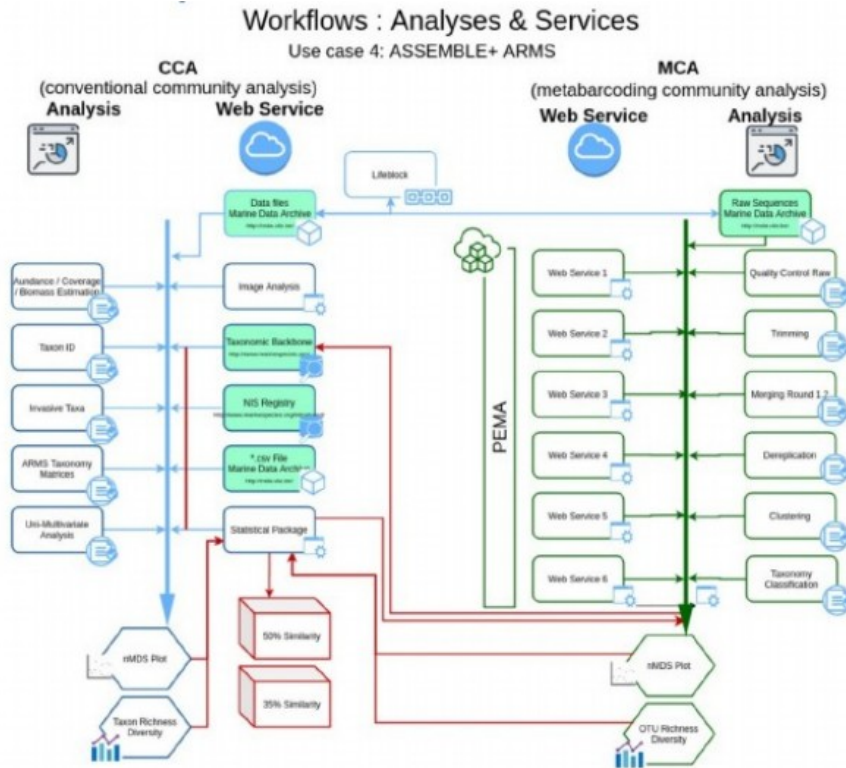
Internal Joint Initiative

- Rationale & Objectives**
- Framework & Knowledge Map**
- Validation Cases**
- Dahlem Type Workshops**
 Rome, 02-06/12/2019
 Sevilla, 14-18/10/2019
- Collaborative Space**

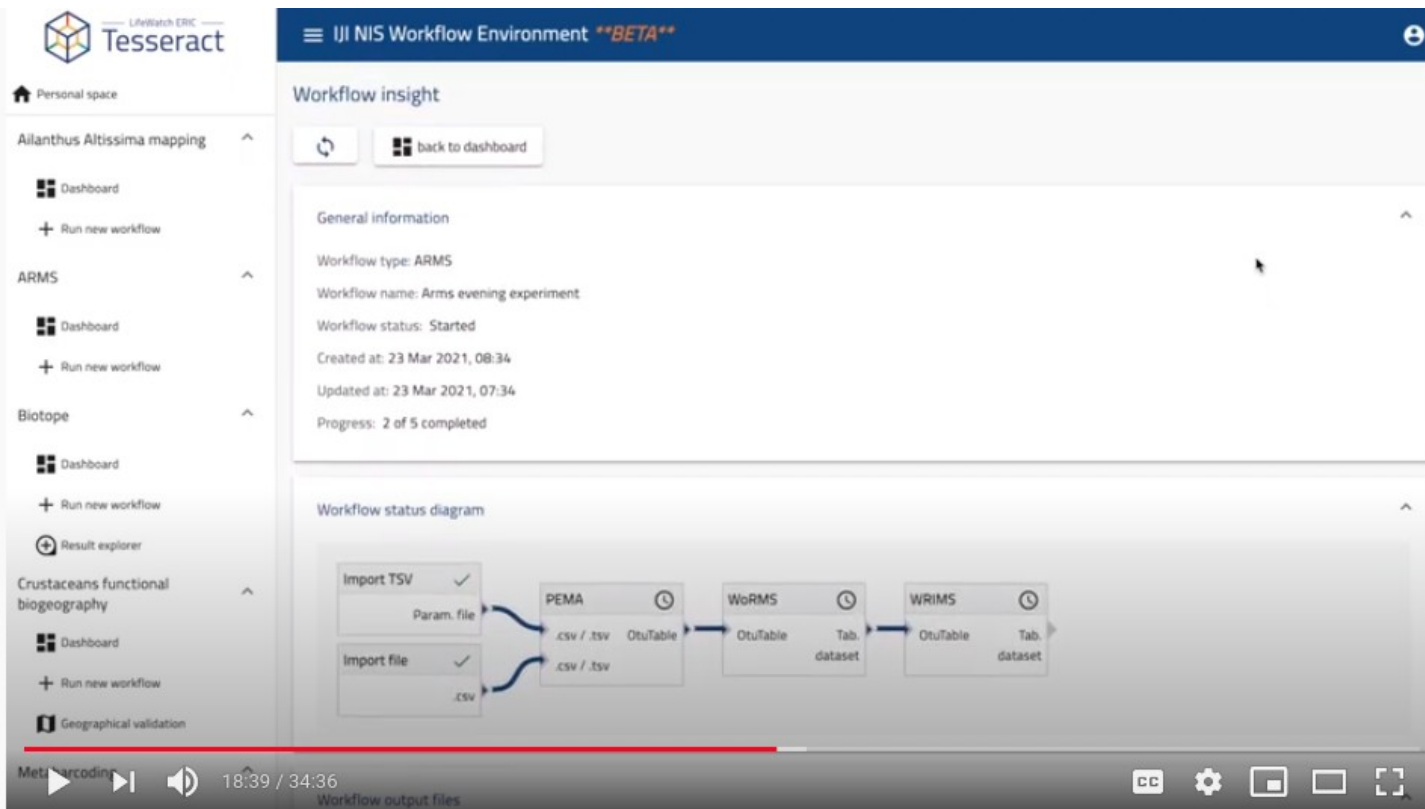
LW ERIC IJI: ARMS on NIS

<https://www.youtube.com/watch?v=HtDzII9dN4k&feature=youtu.be>

- 2 Dahlem Type Workshops in 2019 (Seville & Rome);
- 5 Validation cases identified;
- Teams formed;
- Workflows designed;
- 1 scoping paper on its way.



LW ERIC IJI: ARMS on NIS



The screenshot displays the 'IJI NIS Workflow Environment' interface, which is currently in a 'BETA' state. The interface is divided into a left-hand navigation pane and a main content area.

Navigation Pane (Left):

- Personal space:** Contains 'Ailanthus Altissima mapping' with sub-options for 'Dashboard' and 'Run new workflow'.
- ARMS:** Contains 'Dashboard' and 'Run new workflow'.
- Biotope:** Contains 'Dashboard' and 'Run new workflow'.
- Crustaceans functional biogeography:** Contains 'Dashboard', 'Run new workflow', and 'Geographical validation'.
- Other options:** 'Result explorer' and 'Geographical validation' are also visible.

Main Content Area (Right):

The main area is titled 'Workflow insight' and features a 'back to dashboard' button. Below this, the 'General information' section provides the following details:

- Workflow type: ARMS
- Workflow name: Arms evening experiment
- Workflow status: Started
- Created at: 23 Mar 2021, 08:34
- Updated at: 23 Mar 2021, 07:34
- Progress: 2 of 5 completed

The 'Workflow status diagram' section shows a flowchart of the workflow steps:

```

    graph LR
      A[Import TSV  
Param. file ✓] --> B[PEMA  
.csv / .tsv  
OtuTable]
      C[Import file  
.csv ✓] --> B
      B --> D[WoRMS  
OtuTable  
Tab. dataset]
      D --> E[WRIMS  
OtuTable  
Tab. dataset]
  
```

At the bottom of the screen, a video player interface is visible, showing a progress bar at 18:39 / 34:36 and standard playback controls.

LW ERIC IJI: Where from here? ENVRI FAIR

- Cross-domain exercise: How to make RI assets to communicate to each other? Working Groups
- Data standards, annotation, ontologies, catalogues – FAIR Data, within the ENVRI FAIR Science Cluster
- Vertical and Horizontal Composability of services (e.g. Tesseract), within the ENVRI FAIR Science Cluster

LW ERIC IJI: Where from here? EOSC Future

- Cross-domain exercise: Two Test Science Projects within EOSC
- Climate Change Impact on Biodiversity and Ecosystems in Europe - Assessing the impact of Non-Indigenous Invasive Species (NIS) in European ecosystems (NIS-Impact) (ENVRI FAIR, EOSC-Life, SSHOC)
- Dashboard on the State of the Environment (ENVRI FAIR)

Thank you for your attention

email: ceo@lifewatch.eu

Website: www.lifewatch.eu

Twitter: @LifeWatchERIC