



We assess and enhance ecosystem services provided by diadromous fishes in a climate change context

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Annual meeting in Lisbon
8-10 July 2020

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#DiadESproject

DIADES IN FULL SWING

Dear readers,

We started to work on DiadES in December 2017 making first contact with partners in early 2018. DiadES was then submitted in June 2018 to the second call of the Atlantic Area Programme. The proposal was finally accepted in October 2018 and project activities were initiated in February 2019. So, efforts in the scope of the DiadES project in order to assess and enhance ecosystem services associated with diadromous fishes started more than two years ago!

To DiadES partners, we can be proud of our partnership and of what has been achieved so far: the kick-off meeting gathered around 45 attendees, three jobs were created, internal management bodies have regular meetings, we had fruitful discussions in 4 workshops. Partners, including the 20 associated partners, were active in communicating the project to a large audience and tweets are weekly published on DiadES activities using the #DiadESproject. It seems that we are dynamic and well-organized. We will do our best to keep it that way.

To all readers, thanks for the interest that you have in our work. In this first newsletter, you will have a broad overview of what has been done so far to improve our understanding of ecosystem services associated with diadromous fishes. This newsletter will provide you with contents to discover our activities towards cohesive, sustainable and territorially-balanced management of diadromous fish resources in a moving future.

We wish all of you a pleasant reading.

Géraldine Lassalle and Patrick Lambert, DiadES coordinators, INRAE.

5 Countries



70 People involved



30 Participant Institutions



OUR ACHIEVEMENTS

- ✓ **Ecosystem services** (ESs) associated to diadromous fishes in the Atlantic Area were identified and listed.
- ✓ A set of methods for the **economic assessment** of ESs were identified;
- ✓ **Existing models predicting diadromous fish distributions** for the upcoming century under climate change are on their way to be critically improved taking into account population dynamics;
- ✓ The **database** used to run these models has been **updated** by the entire partnership with expert knowledge. Simulations of distribution shifts will be our next step;
- ✓ **New biological knowledge is being collected**, and an agreement was reached on the key biological questions to be tackled and how to do so in terms of samples and analyses.

ZOOM ON THE BIOLOGICAL DATA COLLECTION

DiadES ecologists will collect new biological data to feed key processes in the new hybrid species distribution models that will be developed. But which data are more relevant to inform key processes in terms of population dynamics? There are two particular gaps in diadromous fish ecology and biology that DiadES partners decided to tackle:

- (1) connected population dynamics (or metapopulation dynamics), with a focus on shads; and
- (2) marine life-history phase (survival and dispersal at sea).

These two gaps are “black boxes” that prevent, to some extent, management measures from being fully effective.

Therefore, DiadES partners defined the joint studies they wanted to tackle and now, after twelve months and two workshops, the joint methodologies have been discussed and agreed. An important part of the methodologies are the

protocols used for biological data collection, which are being written at this stage of the project in the form of a report and with a special emphasis on environmental DNA (eDNA) and microchemistry.

Sampling for new biological data has already started in the nine case studies that are investigated in DiadES. Among other topics, for the next few months, INRAE will take care of microchemistry analyses, AZTI and Cefas of eDNA analyses, and MARE-UÉ of soft tissues analysis for hybridization purpose at the scale of the project. These 2019-2020 sampling campaigns include water samples, otoliths, scales, soft tissues, and numeric data.

Here is an example from Portuguese scientists of MARE-UÉ. Under the study of the dynamic of mullet movements and their use of freshwater habitats, mullet sampling has been carried in the Mondego River in close collaboration with professional fishermen (Photo 1).



Photo 1: Mullet sampling with gill nets in cooperation with Mondego River fishermen (©Esmeralda Pereira)

ZOOM ON THE BIOLOGICAL DATA COLLECTION

Mullet otoliths have been extracted and collected for microchemistry analysis (Photo 2).



Photo 2: Extraction of mullet sagittal otoliths (©Esmeralda Pereira)

On the other hand, for further interpretation of otolith strontium:calcium (Sr/Ca) and in order to have a proper validation, water samples have been collected along the salinity gradient of the watershed (Photo 3).



Photo 3: Water sampling in Mondego watershed (©Filipa Belo)

EVENTS

DiadES kick-off meeting

The DiadES kick-off meeting took place between 8-10 April (2019). A total of 45 people representing 28 different entities met in Swords, near Dublin (Ireland), hosted by IFI (Inland Fisheries Ireland).

The aims of the meeting were:

- For all the beneficiary and associated partners to meet each other in person;
- To present the goals, tasks and deliverables of the different Work Packages;
- To plan the work for the coming year.

During the first day, the Steering Committee met to discuss organisational and administrative matters and then Work Packages and Case Studies were presented in plenary during the first and second day. Associated partners gathered in the Independent Advisory Board to guide DiadES objectives and workplan with their opinions and advice.

In addition, three workshops were held on:

- Ecosystem services listing;
- Joint methodologies in ecological field works; and
- Large-scale and long-term issues in diadromous fish management.

During the breaks, several participants were filmed by our contracted filming company Chocolate Films, for **the first video clip of the project**, presenting the objectives and partners. Share it in social networks with #DiadESproject !!



Photo 4: Plenary session of the kick-off meeting.



EVENTS

A workshop to list ecosystem services linked to diadromous fishes

Last September 17-18 (2019), members of DiadES (UoP, MARETEC/IST, Cefas, INRAE, and AZTI) met in Sukarrieta (Spain) at AZTI's headquarters to discuss the ecosystem services (ESs) provided by diadromous fishes.

During the first day, results from the workshop held at the kick-off meeting, where beneficiary and associated partners contributed, were checked against the literature review conducted since the kick-off meeting. From the whole list of ESs identified, a smaller number was chosen based on specific criteria (such as whether the species already provides ESs with solid proofs). Furthermore, the group discussed which methodologies should be used for the economic quantification of the different ESs.

Data needed to develop the economic assessment of selected ESs were debated on the second day as well as the links between the new species distribution models that will be developed and the economic assessment.



Photo 5: Participants of the ESs workshop outside AZTI's premises at Sukarrieta (Spain) well protected from the sun by the DiadES hats.

Attendance to the ICES/EIFAC/GFCM WGEEL (Working Group on Eel)

Several DiadES members (Hilaire Drouineau from INRAE, Estibaliz Díaz from AZTI and Tea Basic from Cefas) participated in the ICES/EIFAC/GFCM WGEEL held in Bergen, Norway from 26 August to 2 September (2019).

In this group, they participated in the annual assessment of the state of the European eel stock. The ICES results and advice for the European eel are available [here](#).

Participation at the 10th World Conference of Ecosystem Services Partnership

Arantza Murillas (AZTI) participated in the 10th World Conference organised by Ecosystem Services Partnership (ESP) in Hannover, Germany from 21-25 October (2019).

She delivered a talk entitled *Improving knowledge on the link that exists between diadromous fish and the total benefits gained through identifying ecosystem services provided in EU Atlantic river ecosystems* where she presented the work done on ecosystem services valuation in DiadES.

In particular, she explained the ecosystem services based on a literature review and also those ESs identified by beneficiary and associated partners of DiadES. Additionally, she showed a summary of the methodologies selected for the economic assessment of the ESs that will be implemented in 2020.

A DiadES meeting on biological data collection

Cefas organised a two-day meeting at University of East Anglia (UEA), UK, (19-20 November 2019) with the help of work-package leader, IFI.

The meeting focused on the identification of common methods for biological data acquisition and it was attended by 22 researchers from France, Ireland, Portugal, Spain and the UK.

The presented objectives included joint studies using:

- Microchemistry under the supervision of INRAE but with contributions of most partners,



Photo 6: Participants of the UEA meeting wearing the cool DiadES hats.



EVENTS

- Environmental DNA (eDNA) at Cefas, IFI, EHEC/USC), INRAE and AZTI,
- Telemetry at MARE-UÉ, IFI, INRAE, MNHN and Cefas, and
- Population modelling and database creation at INRAE to integrate and secure the collected data.

Agreements were reached on the coordination of efforts by partners contributing to these objectives, including 1) shad meta-population dynamics and their hybridisation across the Atlantic Area, and 2) potential for future works on other data-limited diadromous species such as mullet and flounder that express highly variable life-history strategies.

Also, progress updates and data collection requirements from other work packages were presented by researchers working on the evaluation of ecosystem services and on species distribution modelling to emphasize how work packages are tightly linked in the DiadES work plan and how the one on biological data collection is central.

European Researchers' Night: Fish go out at night, too

On the 27th of September (2019), University of Évora (MARE-UÉ) joined for the first time the European Researchers' Night, an initiative launched in 2005 that seeks to break down the barriers separating science from citizens and demystify the distant image of the scientist.

DiadES researchers from MARE-UÉ, Catarina Mateus and Sílvia Pedro were present in the event "Coffee with Science", with the talk entitled: "*Os peixes também saem à noite* aka *Fish go out at night, too*", that allowed to present DiadES to the citizens and explain the importance of such projects for local human community welfare (Photo 7).

Annual meeting in Lisbon 8-10 July 2020



Photo 7: DiadES researchers from MARE-UÉ attending the European Researchers' Night (© Mélanie Costa)

Beneficiary Partners



Associated Partners

