With the participation of the European Union. Project co-funded by the FEDER

The newsletter of Indicang

n°1
November 2004

Implementation of a network of abundance and colonisation level of the **European Eel**

Foto : Pierre ELIE (CEMAGREF)

Foto : (CEMAGREF)

Synopsis

Editorial

The regions of the Atlantic Arc supported the implementation of this project aiming at organising on a European scale, a survey of an important resource for our regional economies and patrimonies : the Eel.

This species is not only socially and economically valuable, but also forms part of complex ecosystems scattered throughout Europe and is the object of a range of cultures and local traditional fishing techniques. So it is a real challenge to insure its sustainability through :

• Setting up locally suitable conditions for the sustainable exploitation of the species and its habitats :

• Implementing a regional network of collaborators to insure a combined approach resulting in positive impacts on the species and its habitat.

To achieve this challenge, the designers of INDICANG focussed their project on the transfer of information and know-how between the different stakeholders located in the Atlantic region : territorial and institutional organisations, communities of fishermen and scientists.

The implementation of partnership mechanisms across the Atlantic Arc in order to maximise the knowledge and evolution of the eel, in terms of habitat and exploitation meets one of the main objectives of the Interreg IIIB programme. In a more general context, this is how the concept of inter-regional cooperation at the heart of Europe was meant to be.

The Eel, an ecological, social and economic challenge

A decreasing species, a European population, a range of degraded habitats, a need for a global management plan, a highly valued fishery, the Eel is a real challenge requiring an approach of local and global management.

A species under pressure

The European Eel (Anguilla anguilla) is an catadromous fish which lives in freshwater and migrates to the Sargasso sea to breed.

Its status was recently defined in the reports of the ICES/EIFAC working group on the eel and was thus declared to be "outside safe biological limits" with critical situations mainly in Northern Europe.

An important fishery

The exploitation of this species is one of the major components of the small-scale coastal and inland fisheries of Southern Europe. The juvenile eels represent the third most important fishery in terms of its commercial value from the Loire River to Portugal. In the European Union, about 25,000 people have an income from this species' exploitation. It is thus an economically important species which is essential for small fisheries in coastal, estuarine and inland waters. These fisheries are highly important for the regional economy of a significant part of the European Atlantic regions.

A bio-indicator of the quality of environment

The eel spends the majority of its life cycle in freshwater. Depending on such factors as site and sex, the growth period of the eel lasts from 3 to 20 years in inland waters. Therefore, it is a good bio-indicator of the quality, accessibility and extent of aquatic habitats : lagoons, rivers, springs, canals, ponds, marshes, backwaters, etc.

Continuously living among the sediments in watercourses means that the eel is likely to accumulate various pollutants such as heavy metals, pesticides and plasticizing compounds, etc. With the improvement of analytical methods, the sub-lethal effects of these contaminants may be studied.

This ability of the eel to migrate both upstream and downstream in rivers is linked to our capacity to manage catchments and to prevent fragmentation of aquatic habitats.

Thus eel survival, its sustainability and even its expansion in inland waters represents a social, economical and environmental challenge across the Atlantic Arc. This characteristic explains why the Eel is taken into account in the INTERREG IIIB programme which aims at favouring the "integration of social, economic and environmental objectives in the sustainable development perspective".

▲ Fishing eel in Minho's river - PORTUGAL

A compulsory interregional dimension

The current state of the species requires a precautionary approach to the management of eel exploitation and its habitats. This implies that any regulation and management of the fishery must be justified as part of a global management plan and fishing effort to be defined according to demographical trends.

In this context, ACFM proposed a restoration plan aimed at increasing the quantity of adult eels escaping from the catchments. It is based upon the reduction of the exploitation rates of all stages (glass eel, yellow and silver eels) and, when necessary, restoration of habitats, improvements in water quality and the removal of migration barriers inside the river systems.

At this point it should be noted that fisheries are not the only factor responsible for the decline of the population.

This prudent management policy of the species will only have a chance to be successful if it is part of a co-ordinated approach implemented at an interregional level involving all those concerned with the management and exploitation of the eel. This is what INDICANG project intends to initiate.

▲ Natural reserve of Voutron - LPO - FRANCE

Survey methodologies and adapted indices What is at stake in INDICANG

One of the aims of the INDICANG project is to create abundance indices for the various life history stages of the Eel and to provide relevant descriptions of their habitat and exploitation.

These indices will enable decision makers and institutions to have a summarised overview of the state of the species at the various levels, catchment, region, and European levels.

Indentify the data available in each river system

These data may have different origins.

Eel presence in various catchments

These are mainly data collected by electrofishing and surveys at migration routes e.g. fish counters, fish passes etc.

Exploitation in various parts of the catchments

This index aims at surveying the exploitation levels in various parts of the catchments (estuary, rivers, ponds, etc).

All of these estimations of exploitation will be provided for each biological stage : glass eel, yellow eel and silver eel.

The estimation of exploitation may be provided for each category of fishermen e.g. professional or non professional. Moreover, this index aims at describing the main fishing gears, and at analysing the main economic and social consequences of these fisheries.

Quality of the environment

Various surveys of environmental quality are often implemented in the catchments by local or national authorities. These data are available in various forms and provide descriptions of dams, wetlands and water quality.

Historical elements are sometimes available to provide data over long periods of time (e.g. 30 years). This data will enable a better assessment of the trends of the extent and quality of the eel habitat.

Share the objectives

The European Union aims to increase the quantity of silver eels escaping to sea for each catchment. Considering the depletion of the population of European stocks, we hypothesise that there is a stock-recruitment relationship. In other words, the quantity of glass eels arriving in estuarine systems depends upon that of silver eels in previous years.

The quantification of yellow eel stocks is not easy and can only be implemented on small river systems where a number of conditions occur. In most catchments, it is more realistic to implement a survey based upon indices which provide information on the relative abundance level of the stock, their distribution range (colonisation level) within rivers and the contexts of exploitation and habitat quality, accessibility and extent. This approach could lead to easier inter-catchment comparisons and to analyse trends within each given system.

Develop adapted indices and related methods

In order to implement reliable surveys of the species status, three types of indices are used: recruitment indices based upon the glass eel abundance in estuarine areas; effective colonisation indices based upon the description of the resident yellow eel stock characteristics within the catchment; escapement indices based upon direct or indirect surveys of the abundance of the downstream runs of silver eels.

For surveys of the eel exploitation and habitat, guidelines will be set up to define the level and the type of exploitation, but also the characteristics of the habitat, the habitat accessibility both downstream and upstream, and the carrying capacity of the system.

After the definition of these indices of species parameters and environmental trends, work must be initiated so that the surveys collect and analyse data using validated and normalised methods. Such validation is the responsibility of the thematic groups which will ensure a transfer of knowledge and techniques and the continuity of actions between laboratories, local surveyors and management authorities.

▲ Glass eels fished in the Oria River - SPAIN

Gather and exchange the knowledge concerning eels and organise a network

The aim of the project is to set up a network of abundance and colonization INDices for the European Eel (ANGuilla anguilla) in the central part of its distribution area.

This project is not only research based but a mission to validate and share knowledge between the stakeholders.

The goal is not to design management rules elaborated by regional, national or European structures that are already well identified, but help to collect, centralise and synthesise observations that can aid these institutions to a better understanding of the constraints that influence the sustainability of this species.

Know-how on the species' management are little synthesised and scarcely transferred to the organisations in charge of the surveys. This induces under-validation of this knowledge, a lack of co-ordination and a lack of standardisation of the management plans initiated in various river systems.

INDICANG aims to develop this knowledge transmission and implement an electronic network of eel websites summarising the situation in each river system. This information will follow three main themes: population indices, exploitation indices and habitat indices.

Knowledge transfer between stakeholders managing this resource

Experience shows that using management rules designed on a one-sided basis and without prior dialogue between the various stakeholders (scientists, administrations, fishermen, politicians) only leads to conflicts and to the rejection of those rules. Conversely, other experiences on a local scale have shown better communication between stakeholders helping to design workable management rules even if they put constraints on the fishermen.

This basic communication and the sharing of knowledge (the fisherman being considered, in this framework, as a technical practician) allows integrating practical working knowledge with the various restraints operating not only on the production of the species (the fisherman are the first witnesses of the deterioration of the aquatic environment, for example), but also on the fishery.

Network of knowledge and of technical structures

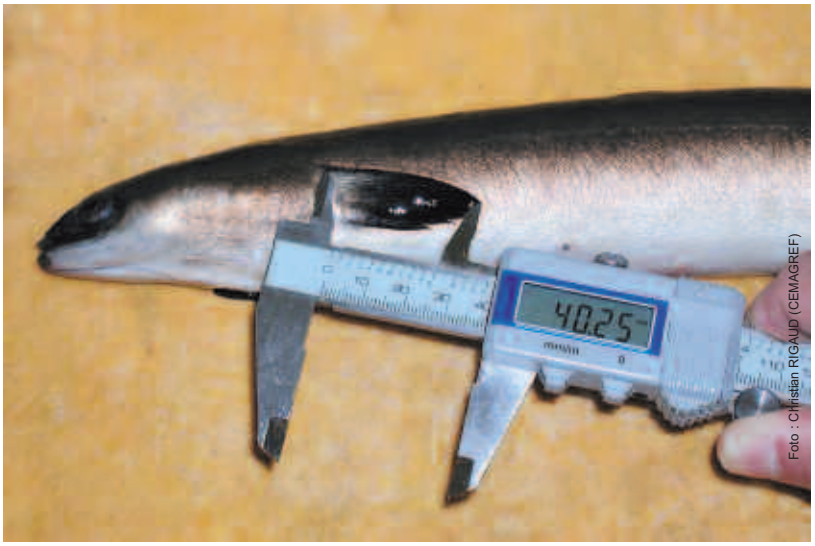
One of the first results of this project, through the conception of this document, was the creation of a network of partners (see list in page 6). The preparation of the project, involved an intense phase of communication (almost a year's work), that helped design an initial list of stakeholderswilling to work together who were concerned with survey, exploitation and management of the eel resource in a main part of the Atlantic Arc

▲ **Meeting of the steering committee, 7 & 8 October 2004, SAN-SÉBASTIAN (Spain)**

The synthesis of knowledge will be made through gathering information on eel biology and the fishery, and placing them in a framework that also describes the quality of the aquatic environment (both chemical and physical) and its historical changes. A "systemic" approach has to be undertaken to avoid redundancy (i.e. not collecting information already analysed elsewhere). Thus, it is necessary to make a prior analysis of the data already available in each basin i.e. only those data related to the final objective of this INTERREGIII project and linking the information gathered in the project framework with other data bases.

Computerized network as final objective

The final objective is to design a computerized network of eel websites providing a detailed diagnosis on the status of the resource and the nature of the main factors influencing the eels future, both on a local scale (basin) and on the central part of its distribution area i.e. from Northern Portugal to Southern United Kingdom (the network of pilot sites - see map).



▲ **Measure of the length of a pectoral fin**

Getting organised to be effective

Implementation of INDICANG project is based upon a thematic and geographical organisation.

A Steering Group

The lead partner of the project is IFREMER (a French public institute for Oceanographic research and commercial interests) which reports to the INTERREGIII project committee about the progress of the work and its conformity with the contractual objectives which were approved by the management commission of INTERREGIII.

It is assisted by an administrative co-ordinator, the council of Gironde, which is in charge of setting up the links between institutions and territorial areas involved in the project.

The steering group is assisted by financial staff for financial management and the certification of expenses.

A Steering committee

An internal evaluation of the project and the achievement of the objectives is ensured by the steering committee which assesses the quality of the deliverables.

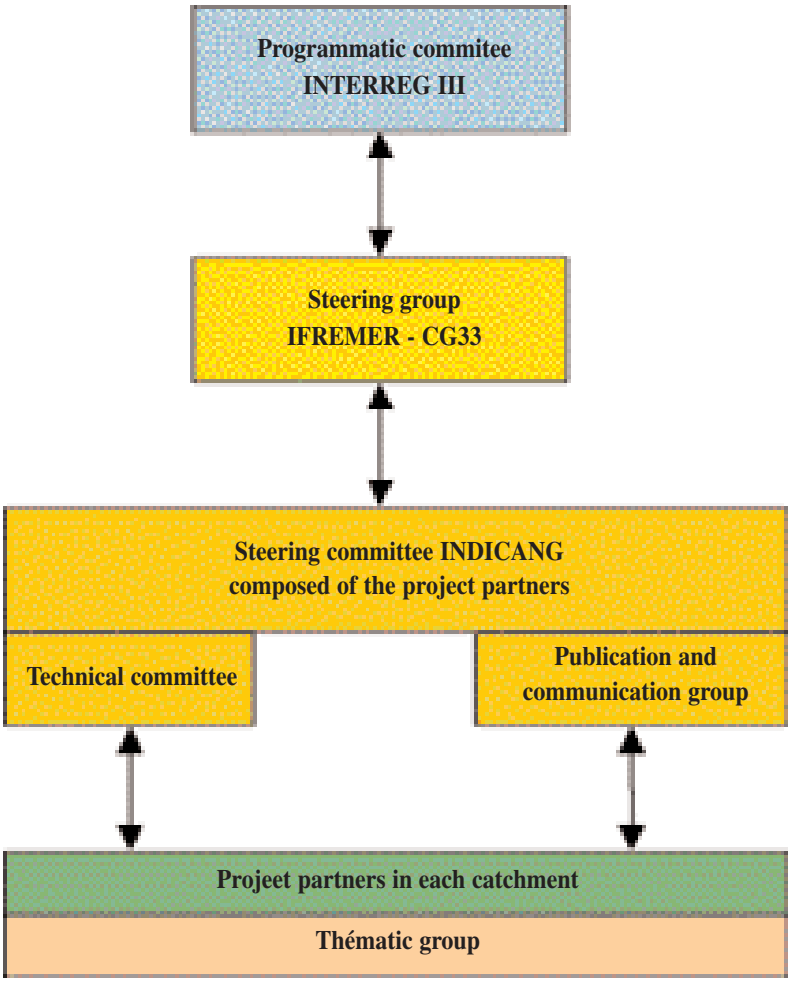
Its role is also to steer and place in their context the actions which are implemented in the catchments by the technical partners or by various stakeholders of the project.

The organisations involved in the steering committee are indicated on page 7. They include the partners to the agreement, the funding organisations and various groups involved in the project.

Project Partners in each catchment

Project Partners are responsible for the organisation of the project with the consensus of the steering group, regarding the collection and transfer of knowledge within each catchment.

The partnership between technicians, users and managers will enable them to elaborate and give a synopsis of each catchment. The inter catchment coherence of data sets is ensured by the steering group and that of project partners.



Thematic Groups

In order to ensure an inter-catchment comparison of indicators, data must be collected and analysed in each catchment according to a standard methodology approved by each of the 4 thematic groups :

- Recruitment indices (glass eels) ;
- Colonisation indices (yellow eels) ;
- Downstream migration indices (silver eels) ;
- Environmental indices (habitat extent, accessibility and quality).

The expected outcome would be a “simplified guide book to assess the state of the eel resource and the potential production of the river system. This area is under the responsibility of the thematic group in agreement with the scientific co-ordinator.

Technical committee

A technical committee is formed from the catchment project leaders and thematic groups. Its task is to prepare, with the Scientific leader, a summary of results and

publication and communication Committee

Lastly, a Committee for publication and communication is in charge of evaluating, on behalf of the Steering committee, the quality of the documents presented and their legibility by the users (stakeholders of management and restoration).

It is also in charge of developing, in connection with the technical Committee, the basic model of the "eel website by river basin" and of the network of "eel websites", such as it will be submitted at the time of the final Conference to the Steering committee.

Principal actors of the project

Steering Group

Partnership	Fonction	Partner	contact	email
Steering group	Lead partner	IFREMER	Prouzet P.	pprouzet@ifrmer.fr
Steering group	Institutional relation aspects	Conseil Général de Gironde	Rousseau M.	m.rousseau@cg33.fr
Steering group	Financial aspects	IFREMER	Nouhant S.	snouhant@ifremer.fr
Steering group	Juridical aspects	IFREMER	Rebardy X.	xavier.rebardy@ifremer.fr

Communication Group

Partnership	Fonction	Partner	contact	email
Communication Group	Responsible	DIREN Aquitaine	Adam.G	gilles.adam@aquitaine.ecologie.gouv.fr
Communication Group	Communication operations	Conseil Général Gironde	Audy.O	o.audy@cg33.fr

Scientific and technical group

Partnership	Fonction	Partner	contact	email
Scientific and technical group	Responsible	Université La Rochelle/LBEM	E. Feunteun	eric.feunteun@univ-lr.fr

Project Partners in catchments

Partnership	Fonction	Partner	contact	email
Project Partners in catchments Tamar, Camel, Severn (UK)	Responsible	Westcountry Rivers Trust	D. Bright	dylan@wrt.org.uk
			P. Bown	polly@wrt.org.uk
Project Partners in catchments Loire et Sèvre Niortaise (FR)	Responsible	LOGRAMI	A. Baisez	tableau-anguille-loire@ifrance.com
Project Partners in catchments Gironde-Garonne-Dordogne (FR)	Responsibles	AAPPED-Gironde	N. Susperreguy	nspeche@aol.com
		EPIDOR	O. Guerri	o.guerri@eptb-dordogne.fr
		MIGADO	S. Boyer	Boyer.migado@wanadoo.fr
Project Partners in catchments Adour (FR)	Responsibles	Institution Adour	F.-X. Cuende	f.cuende@cg64.fr
		MIGRADOUR	S. Marty	migradour@migradour.com
Project Partners in catchments Oria (SP)	Responsible	AZTI	A.Bilbao (M.Santurtun)	abilbao@suk.azti.es
				epuente@suk.azti.es
Project Partners in catchments Esva et du Nalon (SP)	Responsible	MNCN	J. Lobon-Cervia	MCNL178@mncn.csic.es
Project Partners in catchments Minho (PORT)	Responsible	CIIMAR	C. Antunes	cantunes@cimar.org

Thematic Committee

Partnership	Fonction	Partner	contact	email
Thematic Committee RECRUITMENT INDICES (GLASS EELS)	Responsibles	UPPA	S. Dossou-Gbete	simplice.dossou-gbete@univ-pau.fr
		ADERA/CERECA	M.-N. De Casamajor	marie.noelle.de.casamajor@ifremer.fr
Thematic Committee COLONISATION INDICES (YELLOW EELS)	Responsibles	CEMAGREF	C. Rigaud	christian.rigaud@cemagref.fr
		CSP	Th. Changeux	thomas.changeux@csp.environnement.gouv.fr
		Un. Rennes	P. Laffaille	pascal.laffaille@hotmail.com
Thematic Committee DOWNSTREAM MIGRATION INDICES (SILVER EELS)	Responsibles	Un. La Rochelle/LBEM	E. Feunteun	eric.feunteun@univ-lr.fr
		MNCN	J. Lobon - Cervia	MCNL178@mncn.csic.es
Thematic Committee ENVIRONMENTAL INDICES (HABITAT EXTENT, ACCESSIBILITY AND QUALITY)	Responsibles	Inst. Milieux Aquatiques	S. Muchiut	ima.muchiut@ima.com
		CSP	Th. Changeux	thomas.changeux@csp.environnement.gouv.fr

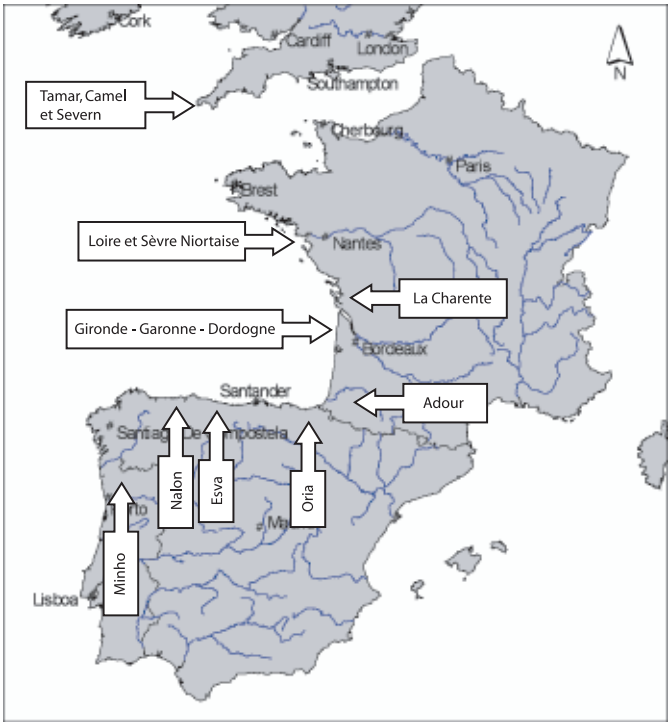
Technical structures in position in their areas

Putting in place an organisation to monitor the principal "ecophases" of the eel is one of the key objectives of the project.

This is why the Indicang Project concentrates on the assistance of local partners in 12 river basins. These are situated in 4 countries: France, Spain, United Kingdom and Portugal.

This puts into play collaboration between partners which belong to seven regions: Cornwall (UK), Pays de Loire, Poitou-Charentes: Acquitaine, Pais Vasco, Asturias and North Portugal.

The choice of these river basins is tied to the existence of local scientific teams, and their technical structures which already work on river fisheries and the biology of this species.

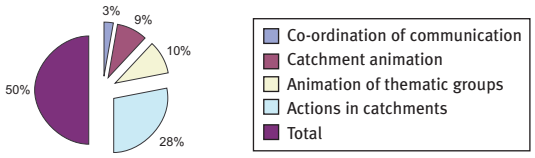


The gathering of data by the scientific organisations is not in itself an assurance of long-term information. Collaboration with local scientific bodies ensures the pooling of tools and knowledge. This is one of the great strengths of the projects which will permit an understanding of techniques, and a well researched continuity of data.

The budget of the project

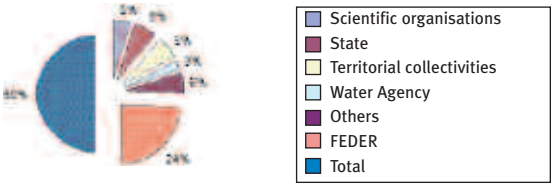
Action's program	Valor
Co-ordination of communication	193 288 €
Catchment animation	662 478 €
Animation of thematic groups	735 338 €
Actions in catchments	2 014 300 €
Total	**3 605 404 €**

Diagram of the expenditure



Financal partners	Participação
Scientific organisations	359 906 €
State	446 355 €
Territorial collectivities	430 940 €
Water Agency	203 042 €
Others	401 957 €
FEDER	1 763 204 €
Total	**3 605 404 €**

Diagram of the receipts



A note for your diaries

Editing and Publication committee December 7 and 8 at Rochefort

Recent Information

On the 17 September 2004 a Workshop on the Management of the Eel population of Europe was held in Brussels. The objective was to take urgent measurers to protect this species not only by the adoption of an EU ruling, but also by the closing of eel fishing, bearing in mind its "life history phase" but also the adoption of an eel directive regarding other environmental issues.
Professional eel fishers are organising themselves to engage this new menace for the survival of the species

In our next communication

We propose to elaborate :

- The state of health of the eel population by life history phase and the known factors of change.
- A comparative analysis of the situation in two chosen river basins

Foto : (CEMAGREF)

Financiers signatories partners

With the participation of the European Union. Project co-funded by the FEDER

Others financial partners

AAPPEDG

Parc Interrégional du Marais Poitevin

Associated partners

Direction Interrégionale des Affaires Maritimes

Director of Publication :
Coordinator of the project INDICANG

Co-director of Publication :
Gérard MARTY (CG33)

writers :
Patrick PROUZET
Michel ROUSSEAU (CG33)
Olivier AUDY (CG33)
Gilles ADAM (DIREN Aquitaine)
François-Xavier CUENDE
(Institution Adour)

Committee of re-reading :
Gilles ADAM
François-Xavier CUENDE
Christian RIGAUD (CEMAGREF)
Olivier AUDY
Gilbert MIOSSEC (FMA)

translation :
Spanish : F-X. CUENDE
English : Eric FEUNTEUN, F-X. CUENDE
Basque : Iñigo MENDIOLA, Araitz BILBAO
Portuguese : Alfredo OLIVEIRA (CIIMAR)

Internet :
http //www.ifremer.fr /indicang /

entering at stationers'hall :
to publication

ISSN : in hand

photographic credits on each photograph

realization impression conception :
Général Council of Gironde,
Communication Directory,
Departement Print

Publication : Nov. 2004