

# Observatoires et collections, à quoi ça sert ?

Etienne PREVOST



# ORE DiaPFC

Observatoire de recherche  
en environnement  
sur les poissons diadromes  
dans les fleuves côtiers

## Infrastructure de recherche



Saumon atlantique



Truite commune



Anguille européenne



Aloses



Lamproie marine

<https://www6.inrae.fr/diapfc>



# ORE DiaPFC un réseau multi-site



Suivis à  
long terme  
*in natura*



Installations expérimentales





# ORE DiaPFC un réseau multi-site



Suivis à long terme *in natura*

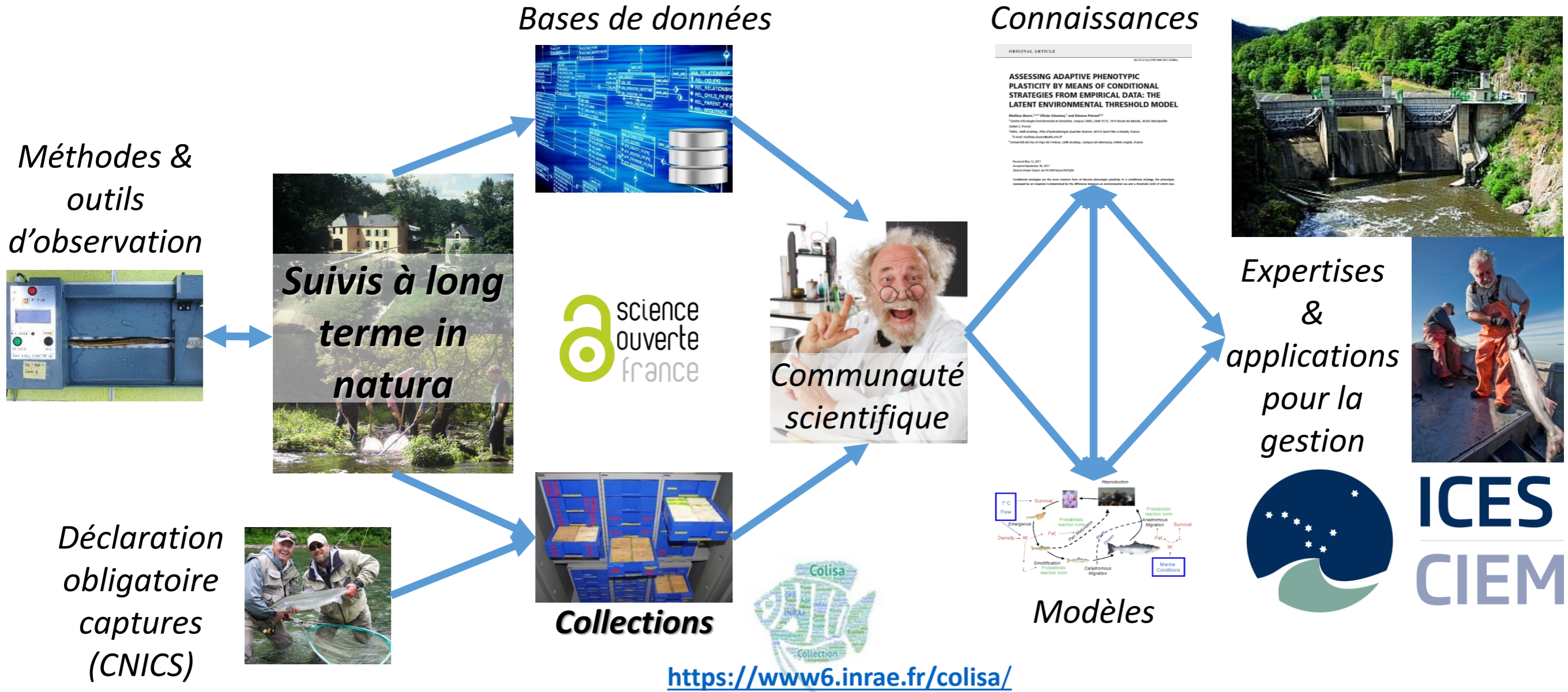


Installations expérimentales





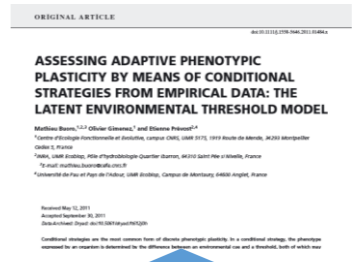
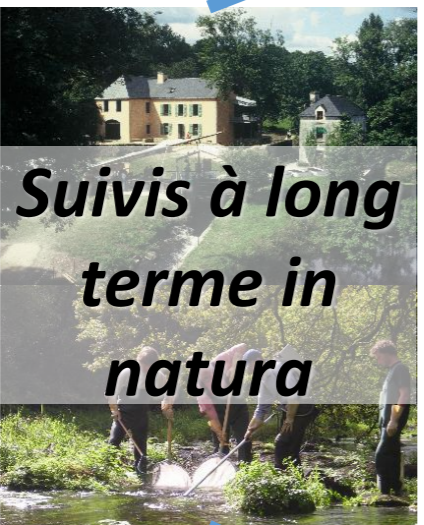
# Observatoire & collection : quels utilisations ?



Bases de données

Connaissances

Méthodes & outils d'observation



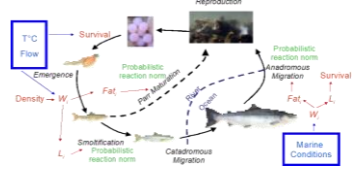
Expertises & applications pour la gestion



Déclaration obligatoire captures (CNICS)



Collections



Modèles



<https://www6.inrae.fr/colisa/>







# Développement de méthodes de suivis à long terme ?

Bull. Fr. Pêche Piscic. (1999) 352 : 19-29

— 19 —

## RELATION ENTRE INDICATEUR D'ABONDANCE DE TYPE CPUE ET ESTIMATION DE DENSITÉ PAR ENLÈVEMENTS SUCCESSIFS POUR LES JUVÉNILES DE SAUMON ATLANTIQUE (*SALMO SALAR* L.) DE L'ANNÉE.

E. PRÉVOST (1) et A. NIHOARN (2)

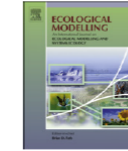


Ecological Modelling 222 (2011) 1069–1079

Contents lists available at ScienceDirect

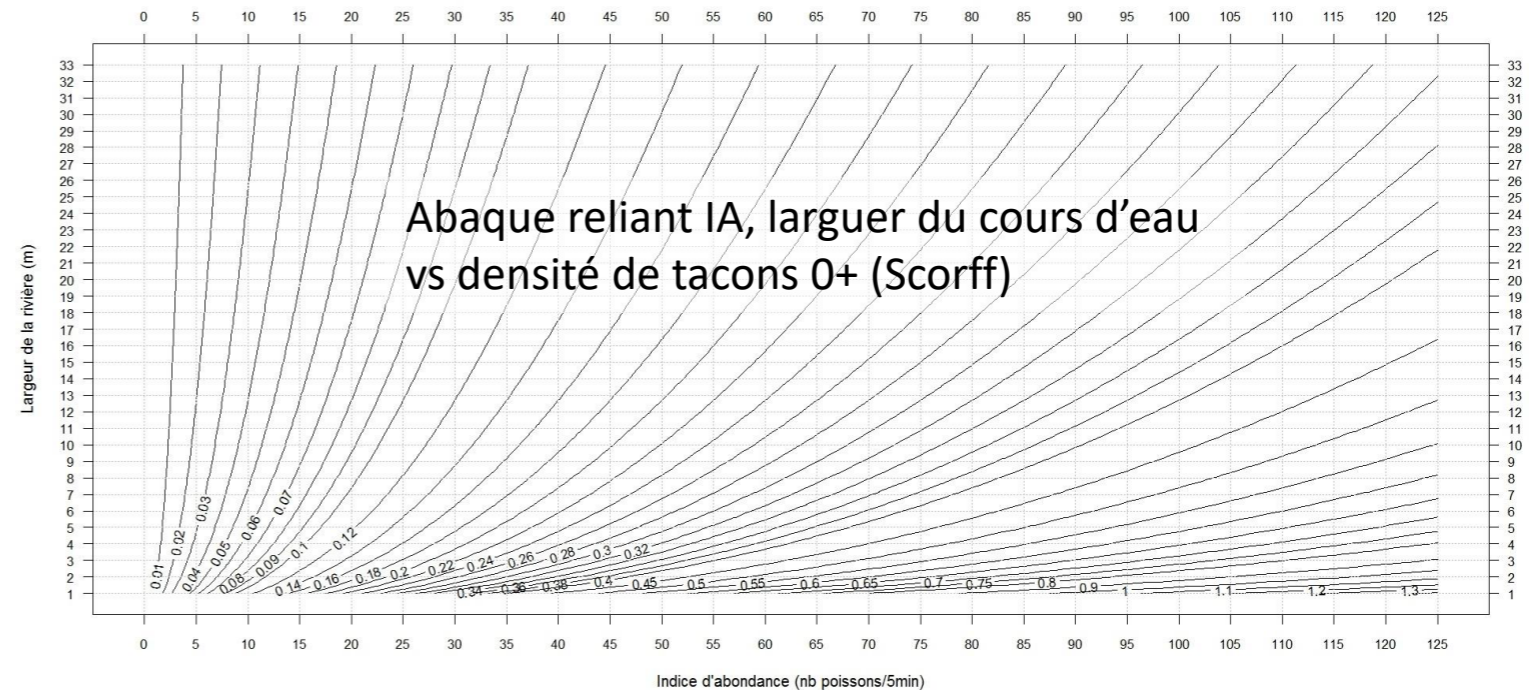
Ecological Modelling

journal homepage: [www.elsevier.com/locate/ecolmodel](http://www.elsevier.com/locate/ecolmodel)



Estimating an homogeneous series of a population abundance indicator despite changes in data collection procedure: A hierarchical Bayesian modelling approach

Mélanie Brun<sup>a,b,d,e,\*</sup>, Christophe Abraham<sup>d,e</sup>, Marc Jarry<sup>a,c</sup>, Jacques Dumas<sup>a,b</sup>, Frédéric Lange<sup>a,b</sup>, Etienne Prévost<sup>a,b</sup>





# Observatoire & collection : quels utilisations ?

Méthodes & outils d'observation



Déclaration obligatoire captures (CNICS)



Bases de données

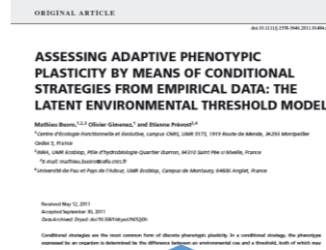


Collections

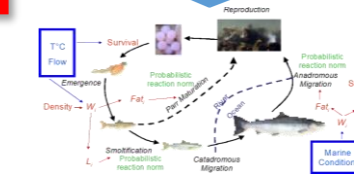
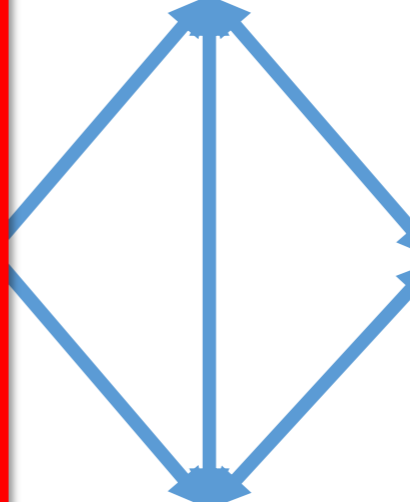
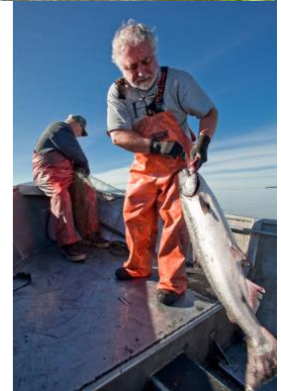


<https://www6.inrae.fr/colisa/>

Connaissances



Expertises & applications pour la gestion

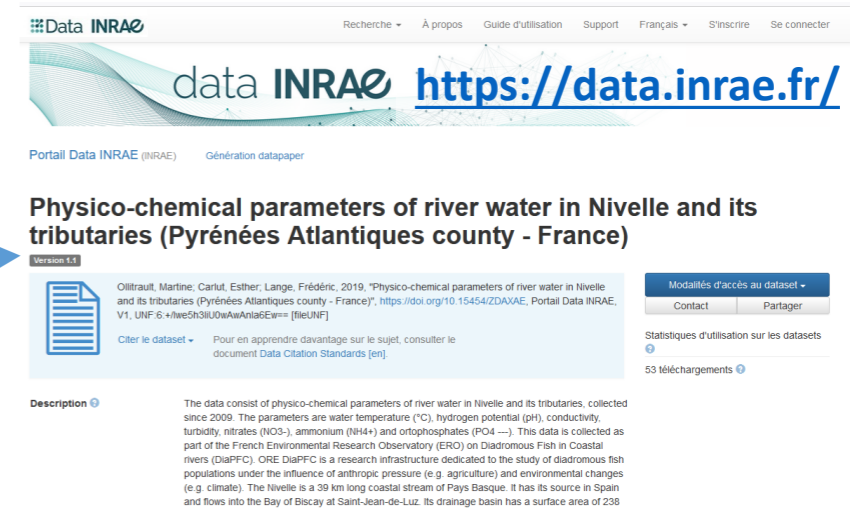


Modèles



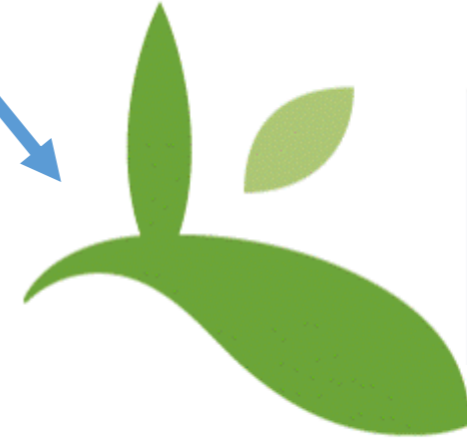
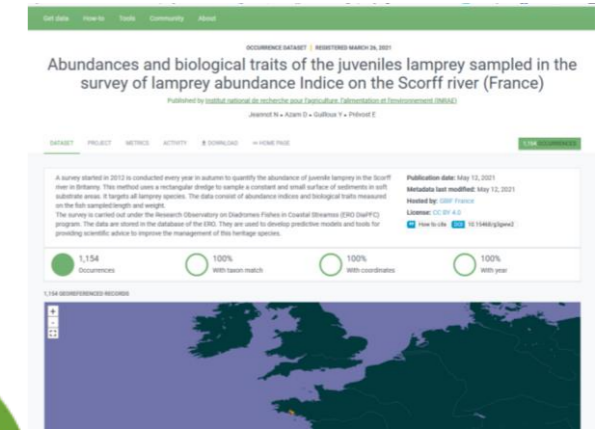


# Comment accéder aux données des suivis à long terme ?



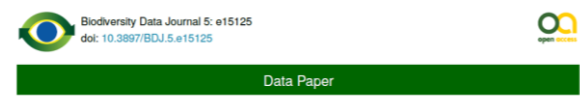
*Demandes particulières*

*Data paper*



**www.gbif.org**

**GLOBAL BIODIVERSITY INFORMATION FACILITY**



**Abundance indices and biological traits of juvenile salmon (*Salmo salar*) sampled in three rivers on the Atlantic and Channel coasts (France)**

Frédéric Marchand<sup>‡§</sup>, Laurent Beaulaton<sup>‡</sup>, Etienne Prévost<sup>‡</sup>, Richard Delanoë<sup>‡</sup>, Jean-Pierre Destouches<sup>‡</sup>, François Gueraud<sup>‡</sup>, Yoann Guilloux<sup>‡</sup>, Nicolas Jeannot<sup>‡</sup>, Emmanuel Huchet<sup>‡</sup>, Frédéric Lange<sup>‡</sup>, Jacques Rives<sup>‡</sup>, Julien Tremblay<sup>‡</sup>, Nadine Herrard<sup>‡</sup>, Didier Azam<sup>‡</sup>

<sup>‡</sup> USE, Ecologie et Ecotoxicologie aquatique, INRA, pôle Gest'Aqua, 35042 Rennes, France  
<sup>§</sup> AFB, pôle Gest'Aqua, 35042 Rennes, France  
<sup>|</sup> ECOBIOP, INRA, University Pau & Pays Adour, Aquaspole, Quartier Ibarrou, 64310 Saint-Pée-sur-Nivelle, France  
<sup>¶</sup> Fédération du Morbihan pour la Pêche et la Protection du Milieu Aquatique, 56890 Saint-Avé, France



# Observatoire & collection : quels utilisations ?

Méthodes & outils d'observation



Suivis à long terme in natura

Déclaration obligatoire captures (CNICS)



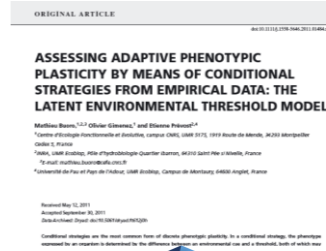
Bases de données



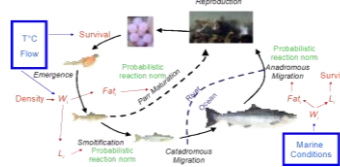
Collections



Connaissances



Communauté scientifique



Modèles



Expertises & applications pour la gestion



ICES  
CIEM

<https://www6.inrae.fr/colisa/>





# Productions de connaissances

Saumon atlantique



ORIGINAL ARTICLE  
doi:10.1111/j.1558-5646.2010.01929.x

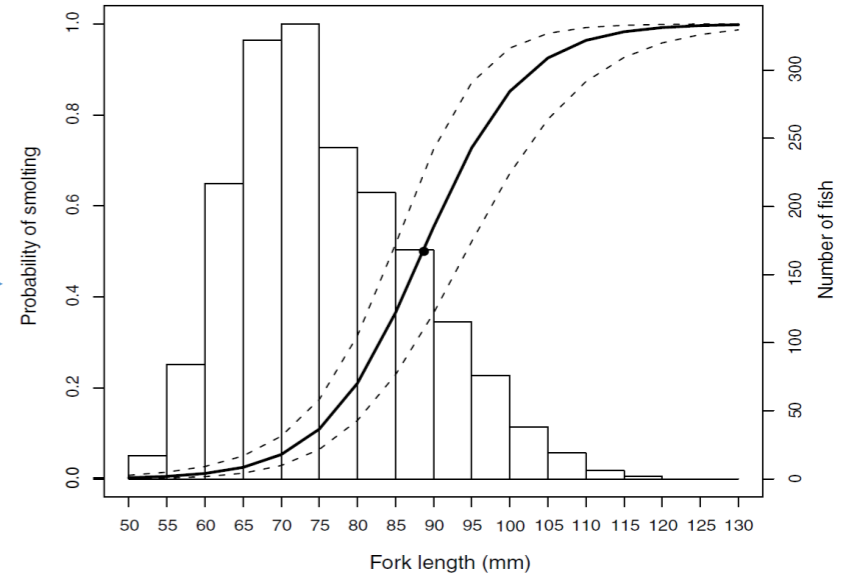
**INVESTIGATING EVOLUTIONARY TRADE-OFFS IN WILD POPULATIONS OF ATLANTIC SALMON (*SALMO SALAR*): INCORPORATING DETECTION PROBABILITIES AND INDIVIDUAL HETEROGENEITY**

Mathieu Buoro,<sup>1,2,3</sup> Etienne Prévost,<sup>2,4,5</sup> and Olivier Gimenez<sup>1,4</sup>

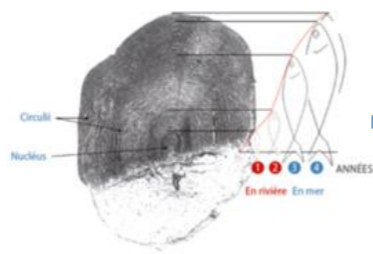
<sup>1</sup>Centre d'Ecologie Fonctionnelle et Evolutive, campus CNRS, UMR 5175, 1919 Route de Mende, 34293 Montpellier Cedex 5, France  
<sup>2</sup>INRA, UMR Ecobiop, Quartier Ibarron 64310 Saint Pie Stivelle, France  
<sup>3</sup>E-mail: mathieu.buoro@cefe.cnrs.fr  
<sup>4</sup>Université de Pau et Pays de l'Adour, UMR Ecobiop, Campus de Montaurou, 64600 Anglet, France  
<sup>5</sup>E-mail: eprevost@st-pee.inra.fr  
<sup>6</sup>E-mail: olivier.gimenez@cefe.cnrs.fr

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 Evolution 64:9: 2629–2642

*Buoro et al. 2010*



## Ages de rivière et de mer dépendent de la croissance



ARTICLE

**Growth during the first summer at sea modulates sex-specific maturation schedule in Atlantic salmon**

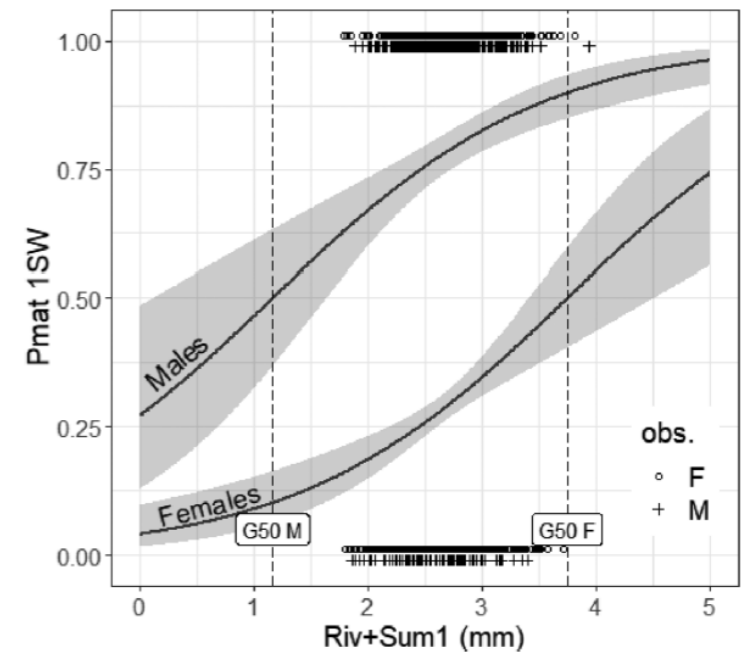
Cécile Trehin, Etienne Rivot, Ludvine Lamireau, Lisa Mestier, Anne-Laure Bernard, Stephen D. Gregory, and Marie Nevoux

Received 20 June 2020; Accepted 12 December 2020

© Trehin, Lamireau, and A.-L. Bernard. 2020. Ecology and Ecosystem Health, Institut Agro, INRAE, 35042 Rennes, France; Rivot and M. Nevoux, 1300 Ecology and Ecosystem Health, Institut Agro, INRAE, 35042 Rennes, France; Mestier, Management of Diadromous Fishes in their Environment, INRAE, Institut Agro, 43000 Clermont-Ferrand, France; Lamireau, INRAE, pole PNB-INRAE-Institut Agro-UMRI 1015 MIAGE – Management of Diadromous Fish in their Environment, UFR, F-35042, Rennes, France; S.D. Gregory, Salmon and Trout Research Centre, Game and Wildlife Conservation Trust, FFA River Laboratory, Waulkerburn, Dorset, BH20 4AR, UK. Corresponding author: Cécile Trehin (trehin.c@inrae.fr).  
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Can. J. Fish. Aquat. Sci. 78: 659–669 (2021). doi:10.1139/cjfas-2020-0236. Published at www.nrcresearchpress.com/cjfas on 19 December 2020.

*Trehin et al. 2020*





# Observatoire & collection : quels utilisations ?

Méthodes & outils d'observation



Déclaration obligatoire captures (CNICS)



Bases de données



Communauté scientifique



Collections



<https://www6.inrae.fr/colisa/>

Connaissances

ORIGINAL ARTICLE

ASSESSING ADAPTIVE PHENOTYPIC PLASTICITY BY MEANS OF CONDITIONAL STRATEGIES FROM EMPIRICAL DATA: THE LATENT ENVIRONMENTAL THRESHOLD MODEL

Mathieu Buisson,<sup>1,2</sup> Olivier Gimenez,<sup>1</sup> and Etienne Privat<sup>1\*</sup>

<sup>1</sup>Centre d'Ecologie Evolutive et Fonctionnelle, CNRS, UMR 5175, 918 Route de Mende, 34293 Montpellier Cedex 9, France

<sup>2</sup>INRAE, UR1213, 1705 Route de Saint-Hippolyte, 34293 Montpellier Cedex 9, France

\*Correspondence: [etienne.privat@cefe.cnrs.fr](mailto:etienne.privat@cefe.cnrs.fr)

Received May 12, 2021  
Accepted November 20, 2021  
Data Availability: <https://doi.org/10.1101/2021.11.20.461026>

Conditional strategies are the most common form of phenotypic plasticity. In a conditional strategy, the phenotype expressed by an organism is determined by the phenotypic trait environment (or trait threshold), both of which may

Modèles



Expertises & applications pour la gestion



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Saumon atlantique

# Agrégation des connaissances par des modèles

Ecological Modelling 231 (2012) 37–52

Contents lists available at SciVerse ScienceDirect

Ecological Modelling

journal homepage: www.elsevier.com/locate/ecolmodel



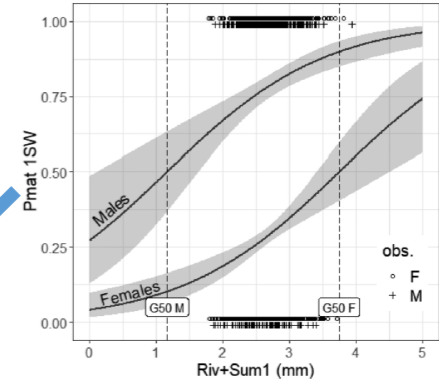
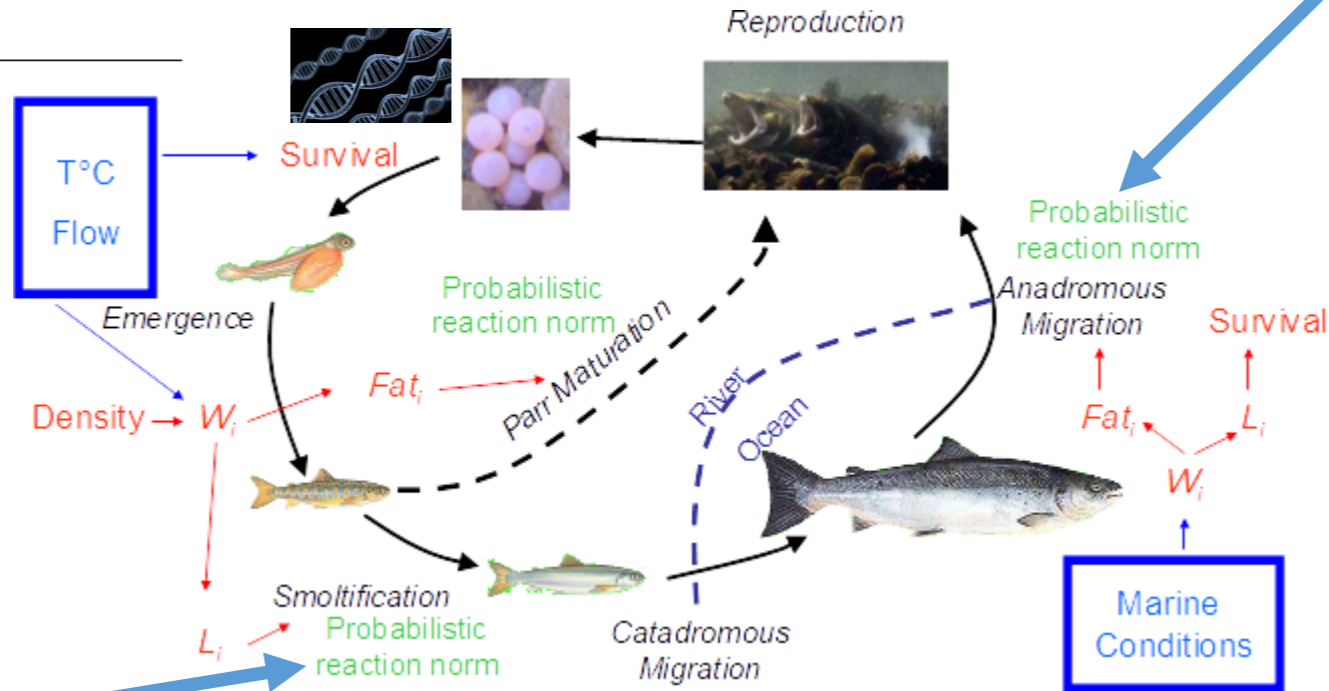
A demo-genetic individual-based model for Atlantic salmon populations: Model structure, parameterization and sensitivity

Cyril Piou<sup>a,b,\*</sup>, Etienne Prévost<sup>a,b</sup>

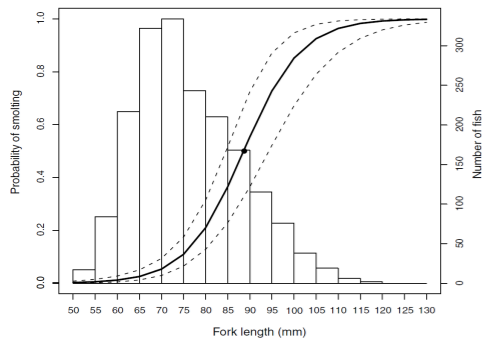
<sup>a</sup> INRA, UMR ECOBIOP, Station Hydrobiologique INRA, Quartier Itharon, 64310 St-Pée sur Nivelle, France  
<sup>b</sup> UPPA, UMR ECOBIOP, UFR Sciences et Techniques Côte Basque, Campus Montoury, 64600 Anglet, France

## IBASAM

### Simulateur démogénétique



Synthétise et articule les connaissances disponibles sur les processus démogénétiques chez le saumon atlantique : plasticité, génétique explicite, forçage environnementaux



Chaque individu explicitement représenté de sa naissance jusqu'à sa reproduction et/ou sa mort



# Observatoire & collection : quels utilisations ?

Méthodes & outils d'observation



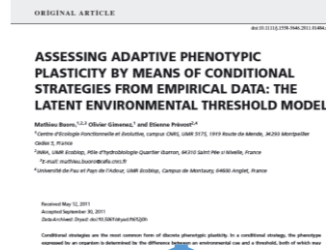
Déclaration obligatoire captures (CNICS)



Bases de données



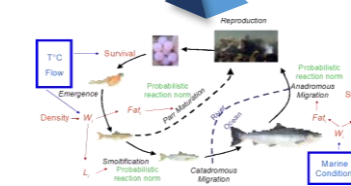
Connaissances



Communauté scientifique



Collections



Modèles



Expertises & applications pour la gestion



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<https://www6.inrae.fr/colisa/>





Saumon atlantique

# Calibration des modèles par des séries de données à long terme

Ecological Modelling 231 (2012) 37–52

Contents lists available at SciVerse ScienceDirect

Ecological Modelling

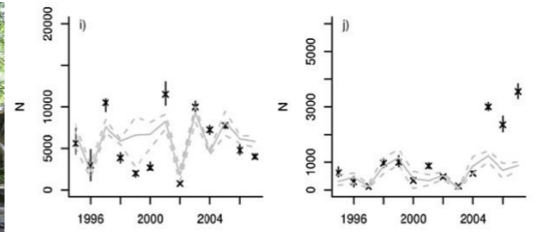
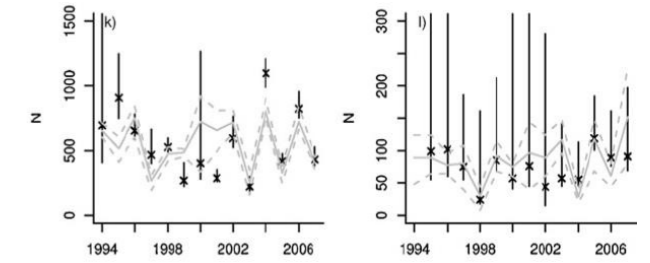
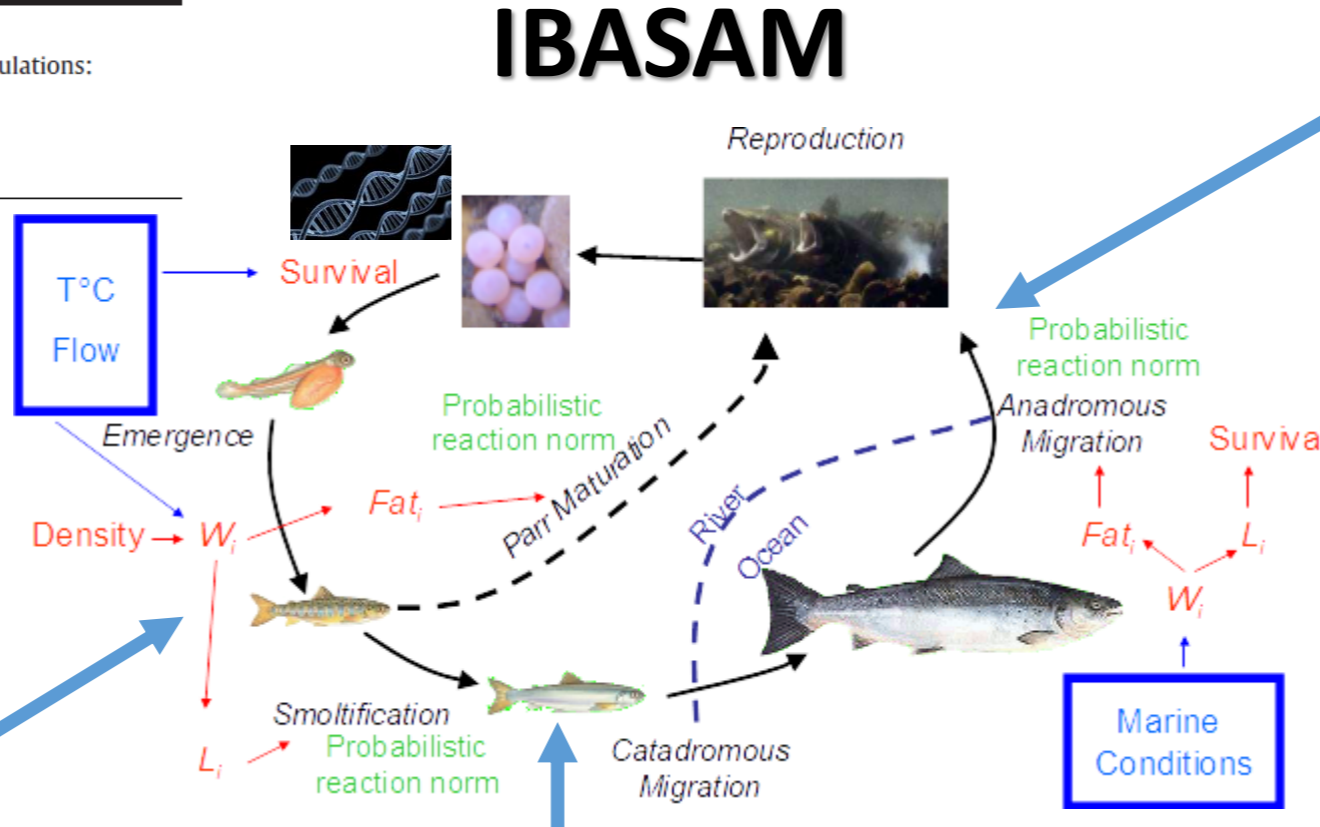
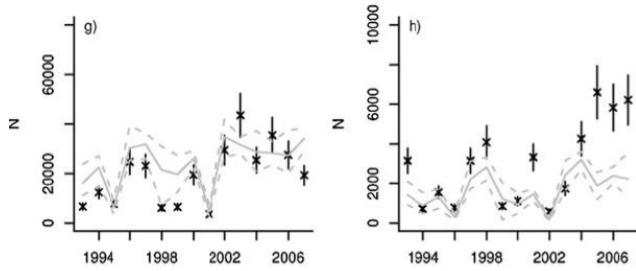
journal homepage: www.elsevier.com/locate/ecolmodel



A demo-genetic individual-based model for Atlantic salmon populations: Model structure, parameterization and sensitivity

Cyril Piou<sup>a,b,\*</sup>, Etienne Prévost<sup>a,b</sup>

<sup>a</sup> INRA, UMR ECOBIOP, Station Hydrobiologique INRA, Quartier Itharron, 64310 St-Pée sur Nivelle, France  
<sup>b</sup> UPPA, UMR ECOBIOP, UFR Sciences et Techniques Côte Basque, Campus Montoury, 64600 Anglet, France



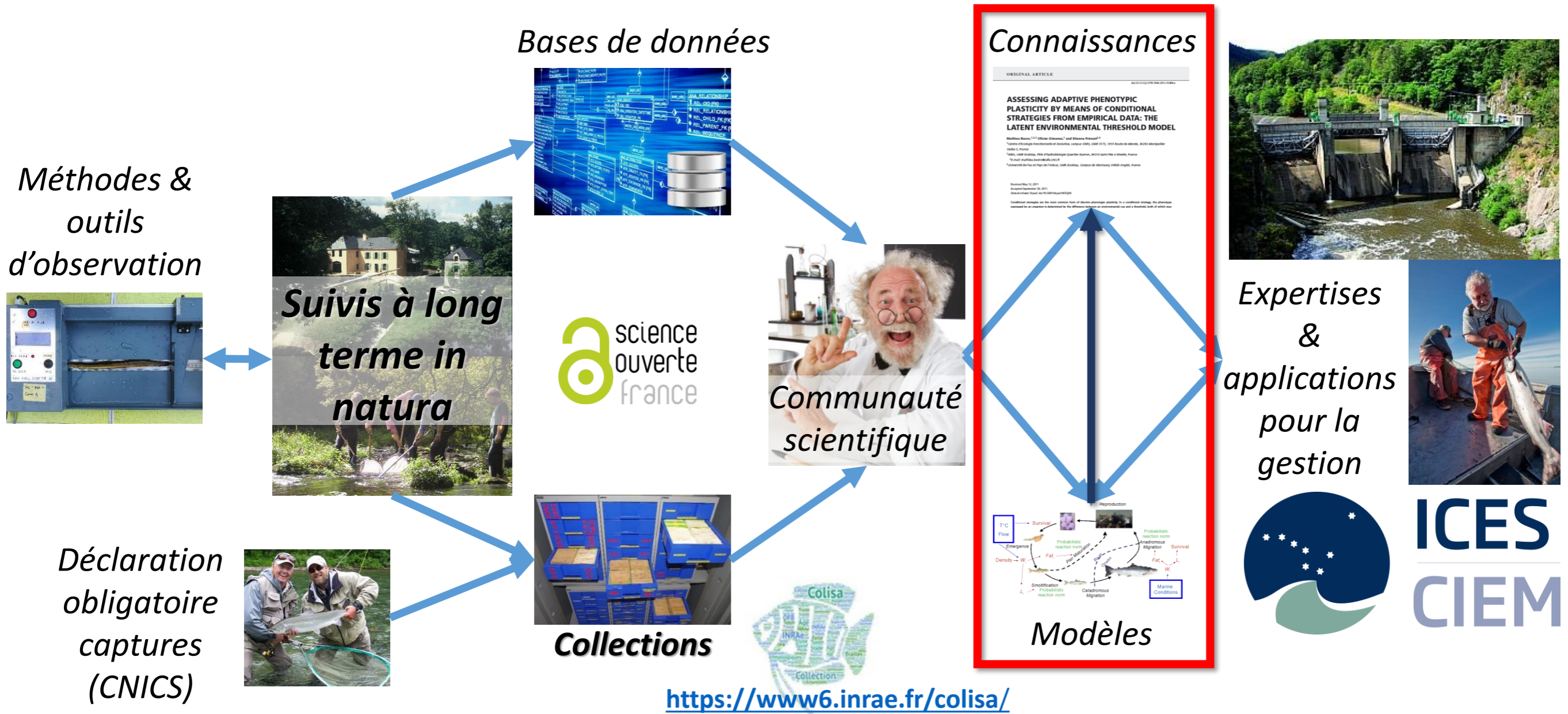
Observatoire et collections, à quoi ça sert ?

OFB-INRAE-Agrocampus Ouest-UPPA

Pôle MIAME



# Observatoire & collection : quels utilisations ?



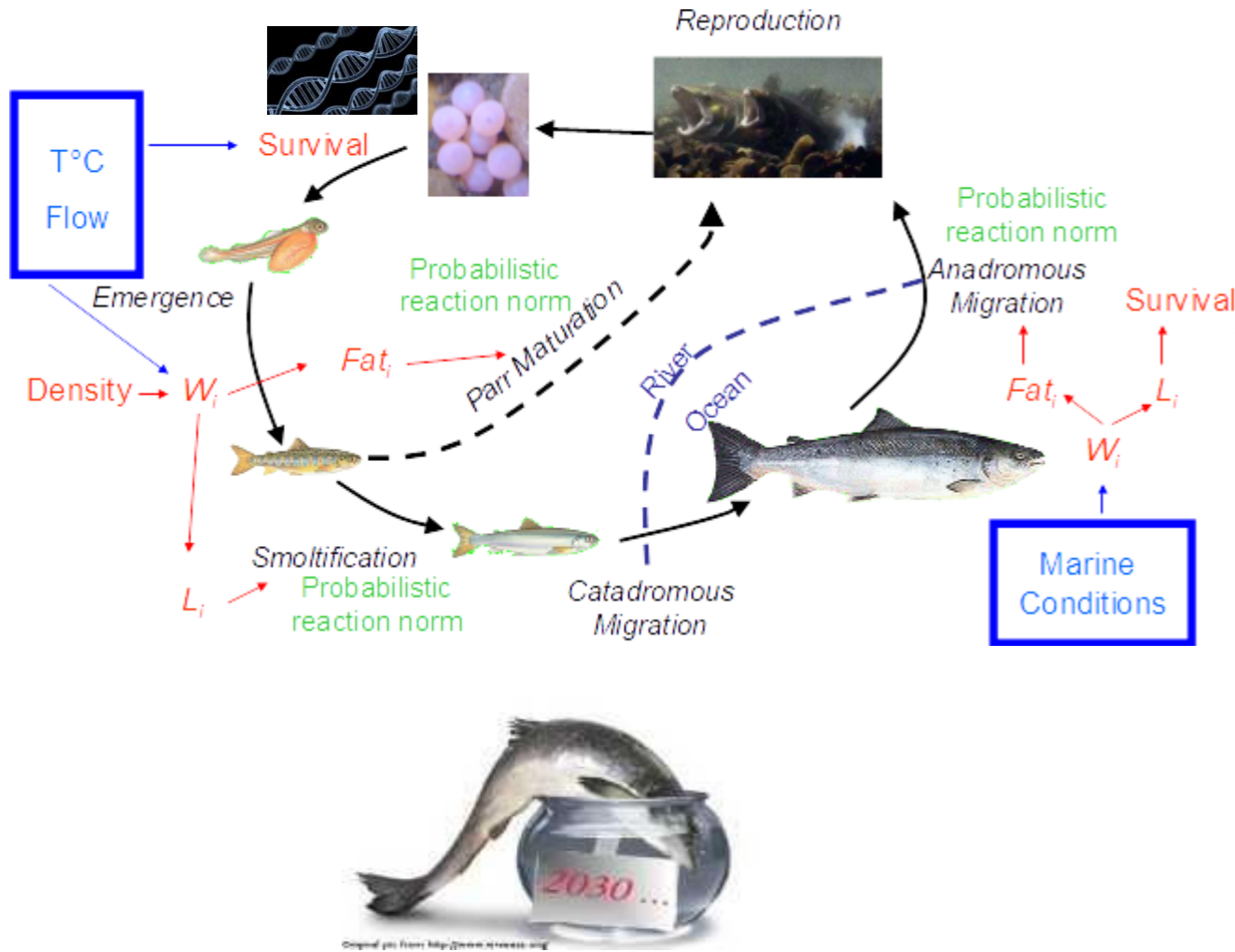




Saumon atlantique

# Production de connaissances à partir des modèles

## IBASAM



## Global Change Biology

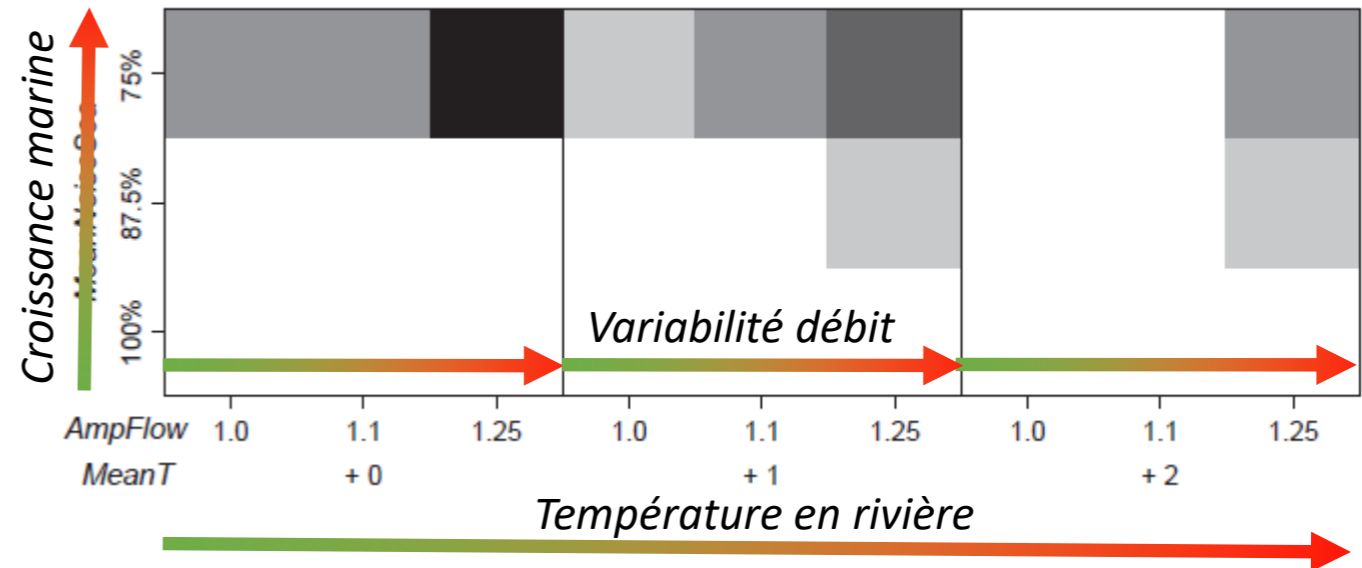
Global Change Biology (2013) 19, 711–723, doi: 10.1111/gcb.12085

### Contrasting effects of climate change in continental vs. oceanic environments on population persistence and microevolution of Atlantic salmon

CYRIL PIOU\*†‡ and ETIENNE PRÉVOST\*†

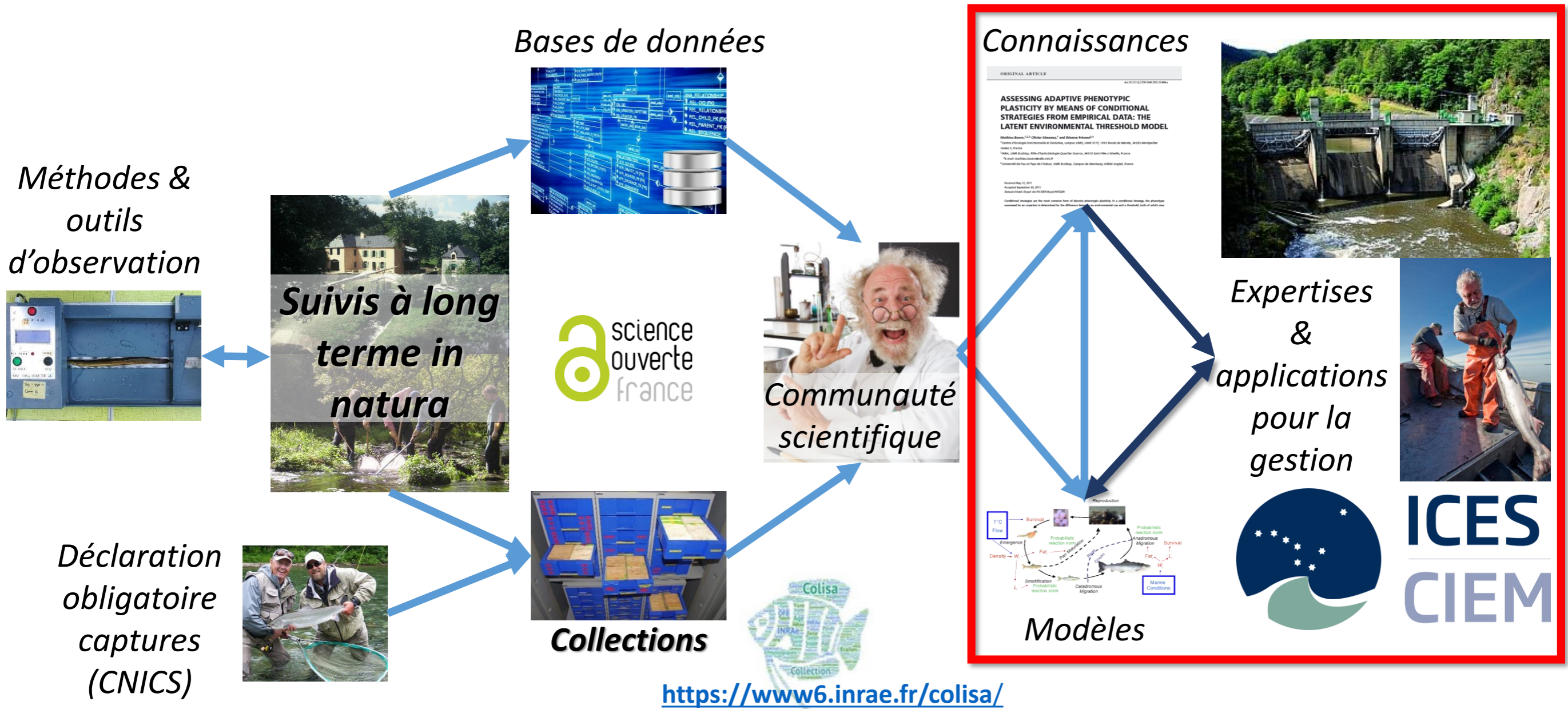
\*INRA, UMR 1224 ECOBIOP, Aquapôle, Quartier Ibaron, Saint-Pée sur Nivelle 64310, France, †Pau and Pays Adour University, UFR Sciences et Techniques Côte Basque, Campus Montaury, Anglet 64600, France, ‡CIRAD, UPR Bioagresseurs analyse et maîtrise du risque, Montpellier F-34398, France

### Risque d'extinction à 50 ans





# Observatoire & collection : quels utilisations ?



**Connaissances**

ORIGINAL ARTICLE

ASSESSING ADAPTIVE PHENOTYPIC PLASTICITY BY MEANS OF CONDITIONAL STRATEGIES FROM EMPIRICAL DATA: THE LATENT ENVIRONMENTAL THRESHOLD MODEL

Mathieu Buisson,<sup>1,2,3</sup> Olivier Gimenez,<sup>1</sup> and Etienne Privat<sup>1,4</sup>

<sup>1</sup>Centre d'Ecologie Evolutive et Fonctionnelle, CNRS, UMR 5175, 9119 Route de Mantes, 92000 St-Germain-en-Laye, France

<sup>2</sup>INRAE, UR1213, 83100 St-Paul-de-Trois-Châteaux, France

<sup>3</sup>INRAE, UR1213, 83100 St-Paul-de-Trois-Châteaux, France

<sup>4</sup>Université de Poitiers, 86300 Poitiers, France

Received May 12, 2021  
 Accepted November 20, 2021  
 Data Archival: <https://doi.org/10.1093/iad/abq028>

Conditional strategies are the most common form of discrete phenotypic plasticity. In a conditional strategy, the phenotype expressed by an organism is determined by the discrete latent environmental cue and a threshold, both of which may

**Modèles**

Reproduction

Survival

Emergence

Density

W

Probabilistic reaction norm

Probabilistic reaction norm

Stochastic reaction norm

Stochastic reaction norm

Probabilistic reaction norm

Probabilistic reaction norm

Marine Conditions

**ICES**

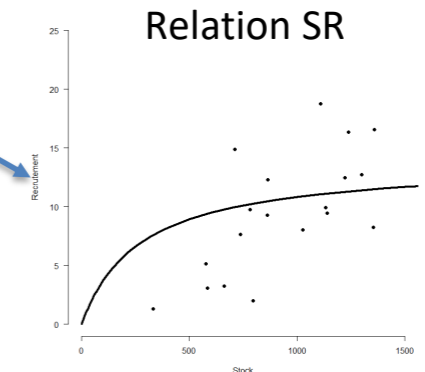
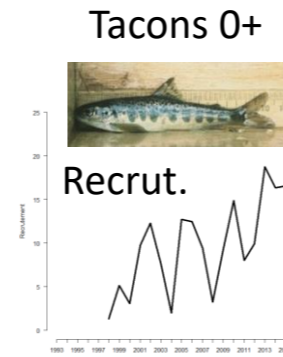
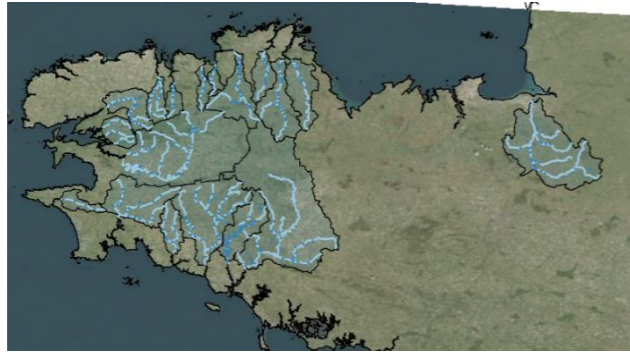
**CIEM**





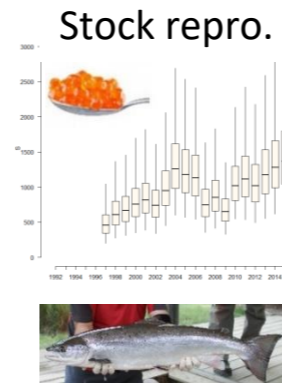
Saumon atlantique

# Application pour la gestion : limites de conservation



**LC**

- LC = référence basse → en dessous : danger
- LC : seuil de stock reproducteur qui évite les faibles recrutements
- Repartir d'une analyse de relation stock-recrutement (SR)







Saumon atlantique

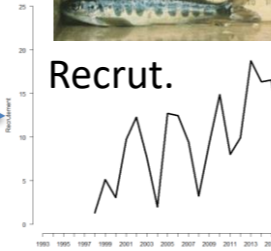
# Application pour la gestion : limites de conservation



Tacons 0+

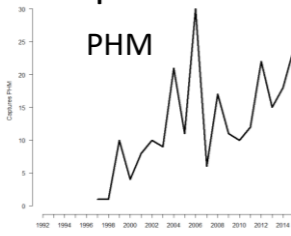


Recrut.

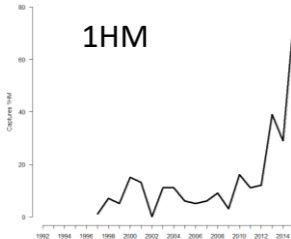


Captures

PHM

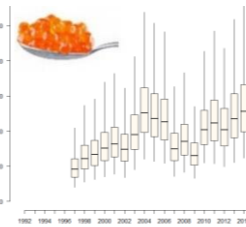


1HM

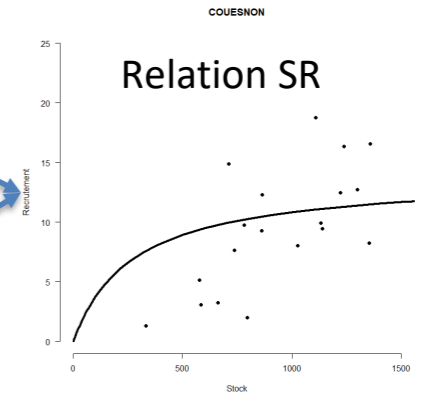


Taux expl.

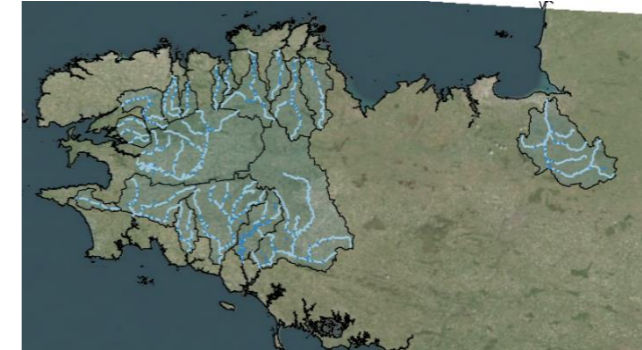
Stock repro.



Relation SR



LC







Saumon atlantique

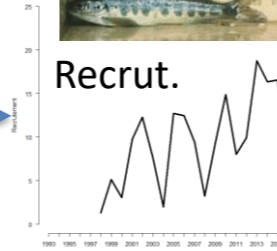
# Application pour la gestion : limites de conservation



Tacons 0+

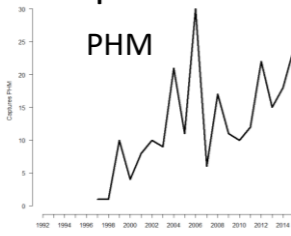


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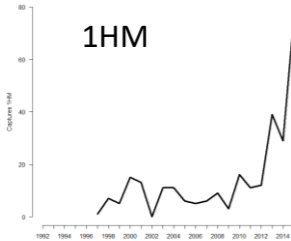


Captures

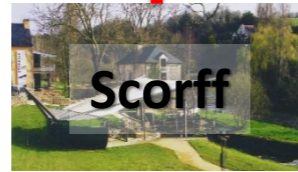
PHM



1HM



Taux expl.



Dénombrements adultes & captures

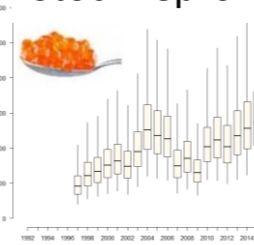
Relation SR



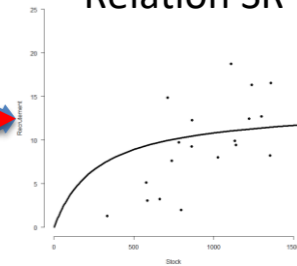
Scorff



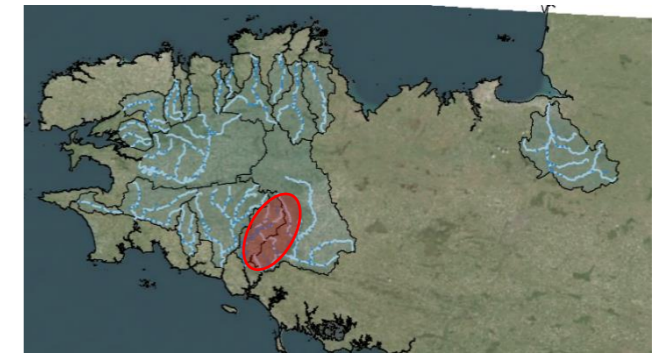
Stock repro.



Relation SR



LC







Saumon atlantique

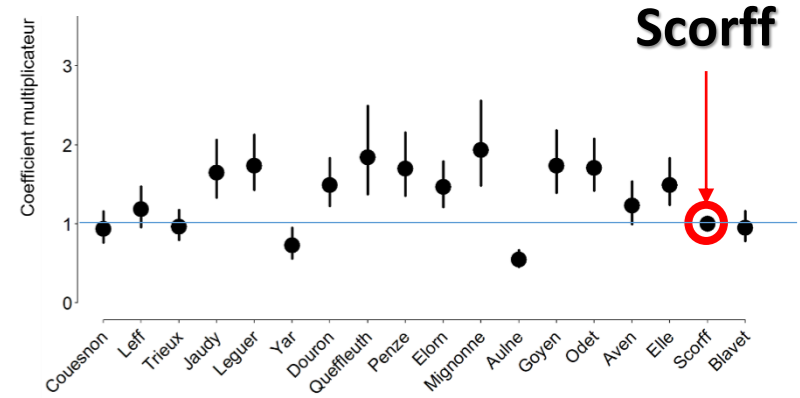
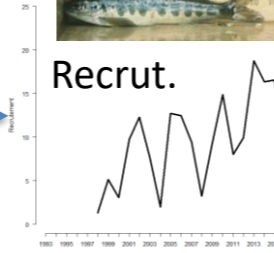
# Application pour la gestion : limites de conservation



Tacons 0+

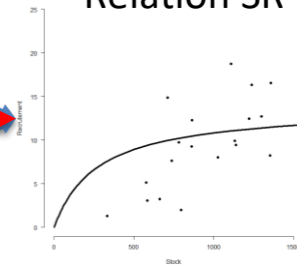


Recrut.



Scorff

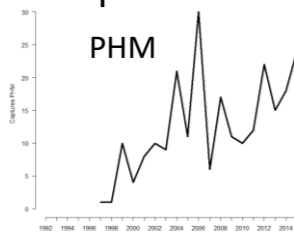
Relation SR



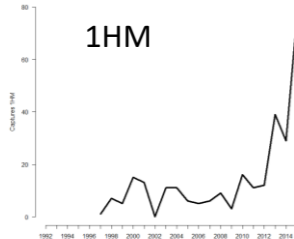
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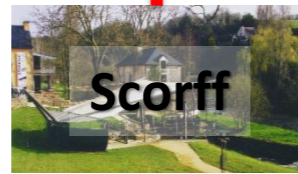
Captures



1HM



Taux expl.



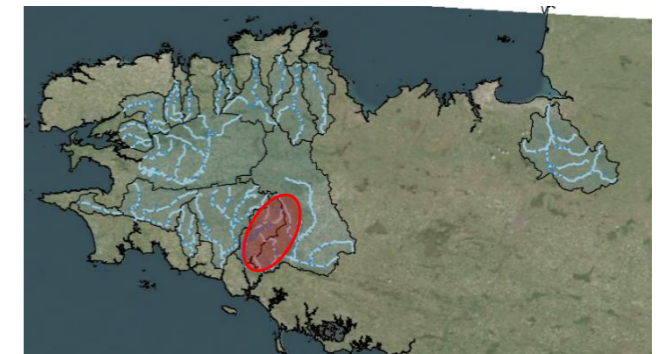
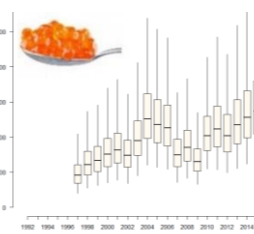
Dénombrements adultes & captures

Relation SR

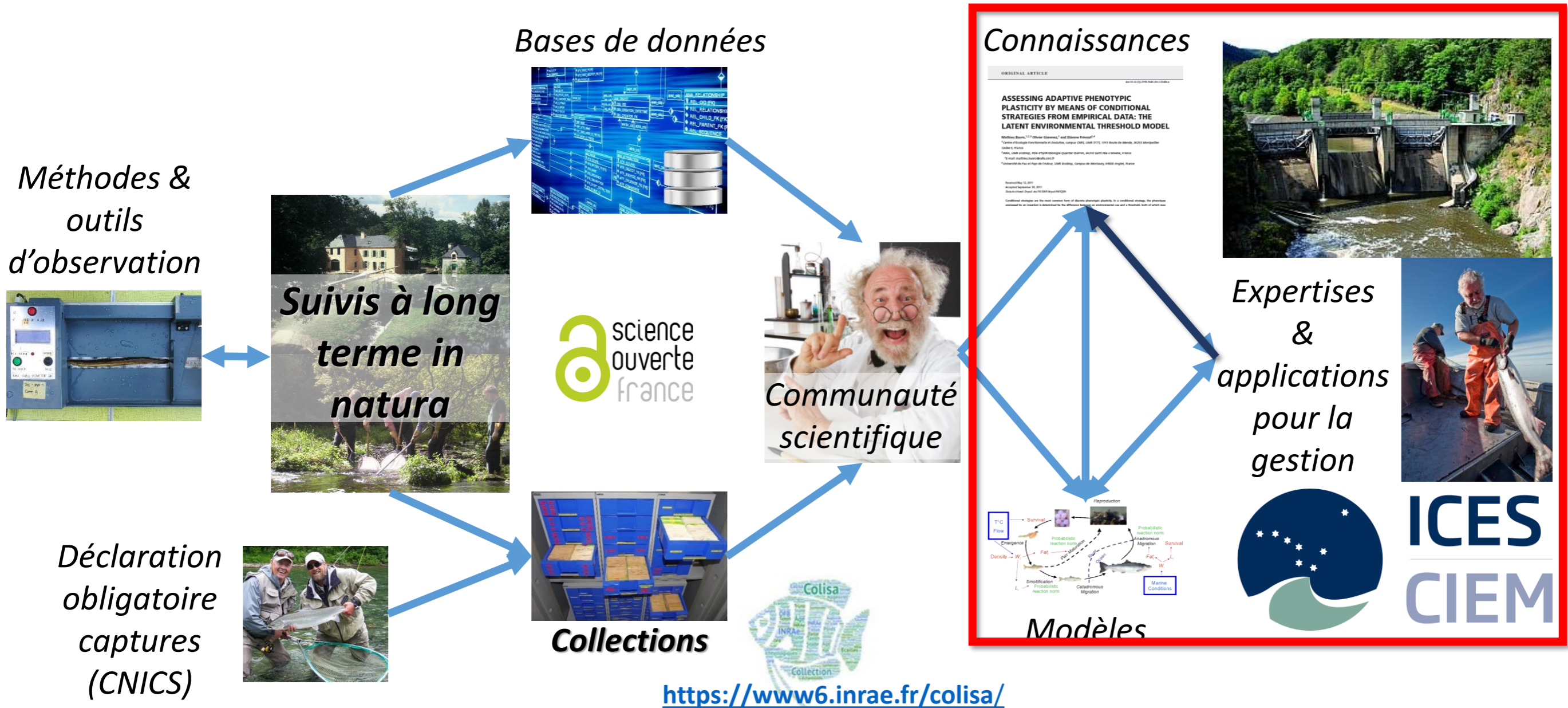


Scorff

Stock repro.



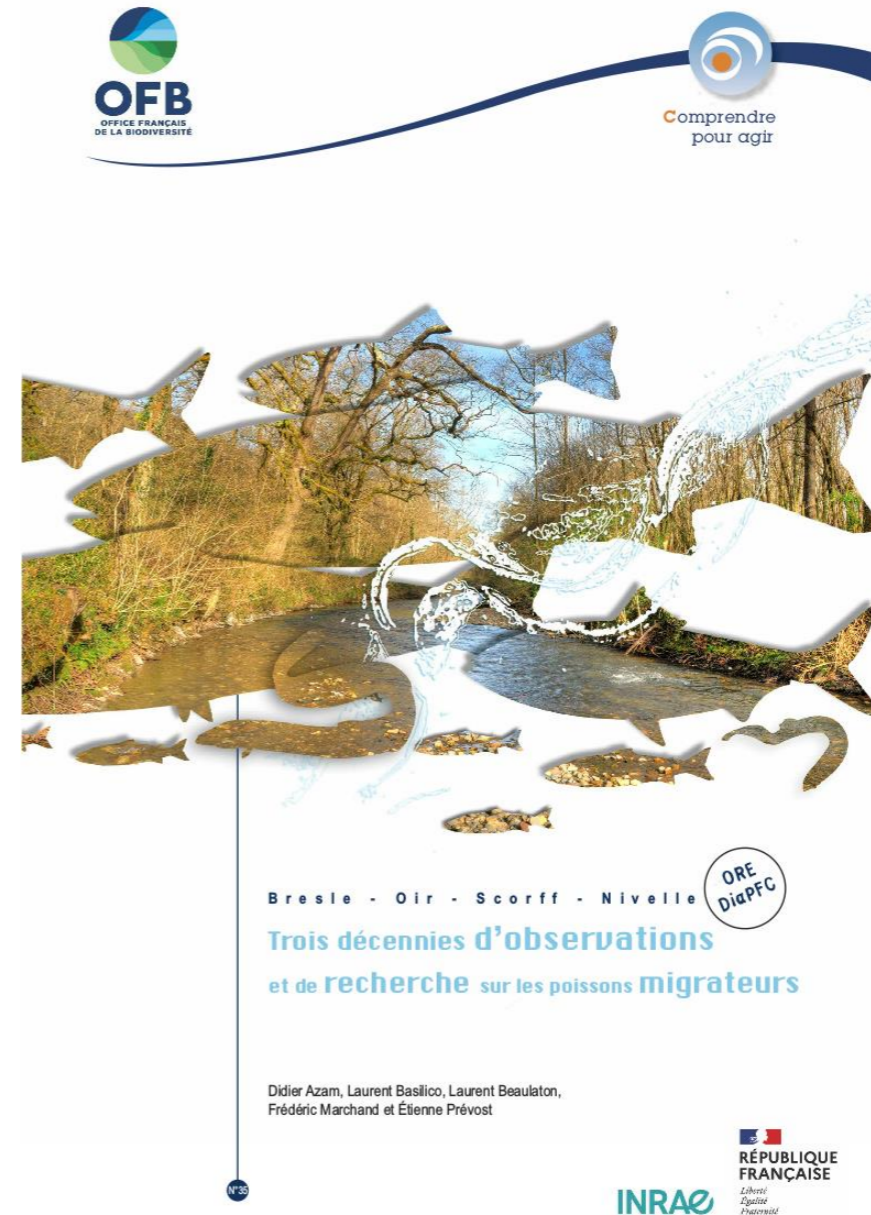
# Observatoire & collection : quels utilisations ?





# Pour en savoir plus

<https://professionnels.ofb.fr/fr/doc-comprendre-agir/trois-decennies-dobservations-recherche-poissons-migrateurs-bresle-oir-scorff>







**Merci de votre attention**