



# The range of *Clinostomum complanatum* within French freshwater habitats hosting European perch (*Perca fluviatilis*)

MAUREEN DUFLOT<sup>1,2</sup>, FRANÇOISE POZET<sup>3</sup>, SOPHIE LE BOUQUIN-LENEVEU<sup>4</sup>, CÉLINE RICHOMME<sup>5</sup>, ODILE BOURGAU<sup>1</sup>, ISABEL BLASCO-COSTA<sup>6</sup>, MÉLANIE GAY<sup>1</sup>

<sup>1</sup> Anses, Laboratory for Food Safety, Boulogne-sur-Mer, France

<sup>2</sup> UMR BIPAR, Anses, Laboratoire de Santé Animale, INRAE, Ecole Nationale Vétérinaire d'Alfort, France

<sup>3</sup> Jura Departmental Analysis Laboratory, Poligny, France

<sup>4</sup> Anses, Ploufragan-Plouzané-Niort Laboratory, Epidemiology Health and Welfare Unit, Ploufragan, France

<sup>5</sup> Anses, Nancy Laboratory for Rabies and Wildlife, Malzéville, France

<sup>6</sup> Department of Invertebrates, Natural History Museum of Geneva, Geneva, Switzerland

# Context: life cycle

Definitive host  
Parasite present in the **mouth, pharynx**, and upper part of the **oesophagus**

Piscivorous birds as heron, egret, bittern

Rarely reptiles or mammals



Adultes mature and produce eggs by sexual reproduction

Eggs expelled with saliva or bird faeces



## *Clinostomum*

Classification: **Trematoda Digenea**

**Fresh and brackish waters**

(some data in seawater (!!!)), mostly stagnant waters (lakes, ponds, lagoons...) but also described in rivers

Metacercariae are transmitted to bird by predation of infected fish

Evolution of cercariae toward metacercariae

Free swimming cercariae expelled from the snail looks to fish

Eggs hatch in water and evolve toward miracidia

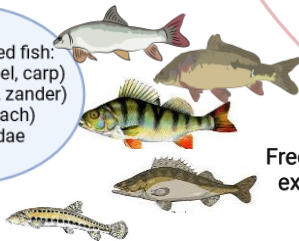
Miracidia get into the snail

Miracidium evolve toward sporocyst which produce cercariae by asexual reproduction

1st intermediate host  
Aquatic snail (Lymnaeidae)

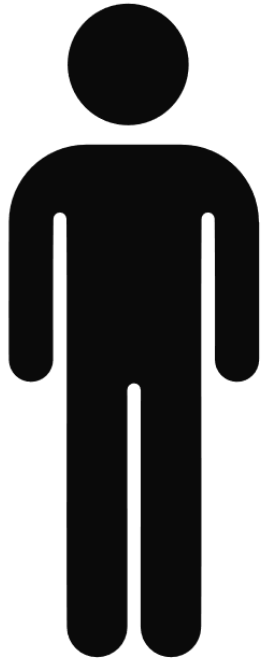
2nd intermediate host  
Presence in **muscle tissues, skin, fins, oral cavity, body cavity, liver, mesenteries, gills**

Wild and farmed fish:  
Cyprinidae (barbel, carp)  
Percidae (perch, zander)  
Cobitidae (loach)  
Centrarchidae



## Clinostomum

# Context: human cases & pathology



## Disease: Clinostomiasis

Human cases following consumption of raw or undercooked fish (carp, perch)

Described in **Japan, Israel, Korea, India and Thailand**

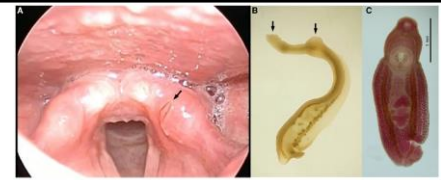
- 19 human cases in Japan (1938-2014)
- 7 human cases in Korea (1995-2023)

Underdiagnosis highly potential due to a lack of diagnostic equipment (endoscopy)

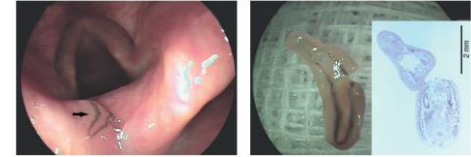
Pathology due to the establishment of worm in the human **pharynx** or **larynx**

- Halzoun syndrom, pains, inflammation, discomfort in the throat, allergic pharyngitis

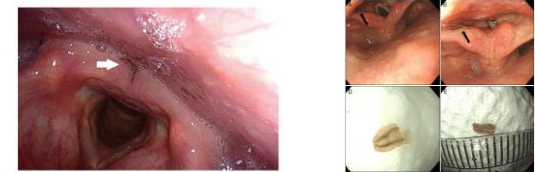
**Remedy = elimination of the parasite by endoscopy**



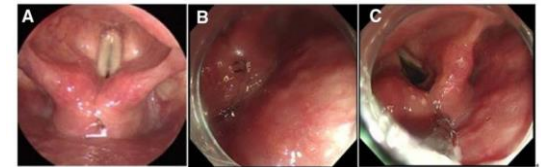
Song et al., 2018 ; Corée



Park et al., 2009 ; Corée



Lee et al., 2017 ; Corée Kim et al., 2019 ; Corée



Kim et al., 2023 ; Corée



Ermakiova et al., 2024 ; Tambov region, Russia

# C. complanatum in Europe and France

Characteristic white-yellow  
cysts of 6mm to 2mm

→ Confirmed by molecular method



*C. complanatum*  
Rochat et al. under review  
(Jura, France)  
*Perca fluviatilis*



## Découverte d'un nouveau parasite de la Perche fluviatile dans le département de l'Aisne

Un parasite trématode digène, le *Clinostomum complanatum* a été détecté dans un lot de perches  
fluviatiles dans un plan d'eau proche de Laon, dans l'Aisne. L'identification a été confirmée par le  
Laboratoire Départemental d'Analyses du Jura (LDA39).

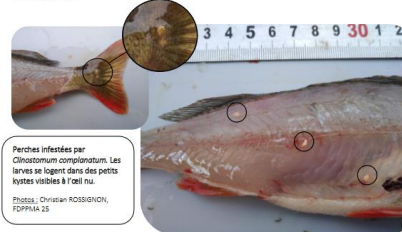
Peu répertorié en France, il avait été détecté pour la première fois en 2019 dans le Jura et en 2020 dans  
le Doubs. Sa présence était auparavant confirmée en Allemagne et dans les lacs d'Italie du Nord.

### Avis aux consommateurs

La présence de ce parasite n'est pas complètement anodine. En effet, il est capable dans certains  
cas de se loger dans l'osseophage humain, provoquant des symptômes inflammatoires. Il est alors  
nécessaire de recourir à une opération chirurgicale pour s'en débarrasser.

Pour éviter les désagréments, il est recommandé de bien cuire les filets avant consommation. La  
congélation préalable ne semble elle pas permettre de neutraliser le parasite.

### Description

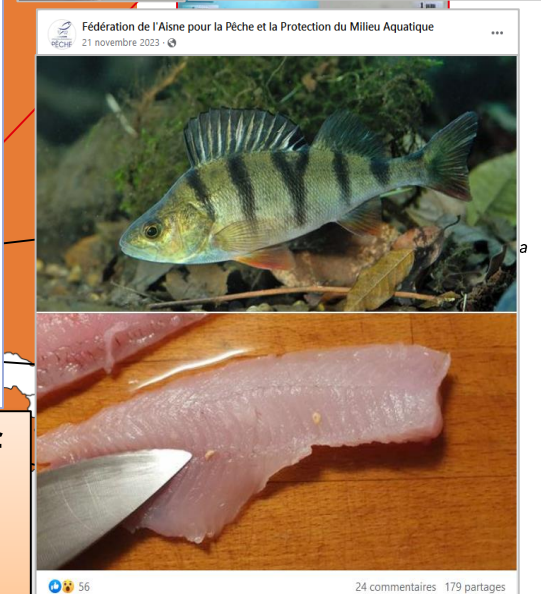
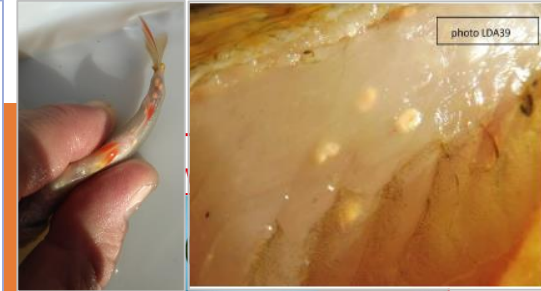


Perches infestées par  
*Clinostomum complanatum*. Les  
larves se logent dans des petits  
kystes visibles à l'œil nu.

Photos: Christian ROSSIGNOL,  
FDPM44 25

Fédération de l'Aisne pour la Pêche et la Protection du Milieu Aquatique  
3 Chemin du Pont de la Pranche - 02200 BARENTON SURGIVY - Tél. 03.23.23.33.56 - E-mail : contact@peche02.fr

→ Characterize the range of  
*Clinostomum complanatum*  
within French freshwater  
habitats.





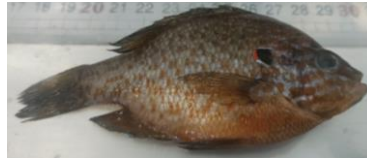
# Distribution of *Clinostomum* in France \_ Sampling



**European perch**  
(*Perca fluviatilis*)



**Rudd**  
(*Scardinius erythrophthalmus*)



**Pumpkinseed**  
(*Lepomis gibbosus*)

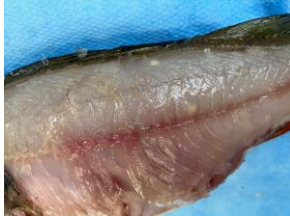
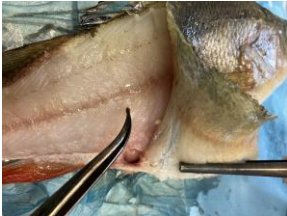
Biometric  
measures

Abiding to the confidentiality agreement  
with the contributors of fish samples, the  
precise location of the batches won't be  
provided and the data was displayed and  
analysed at the departmental level.

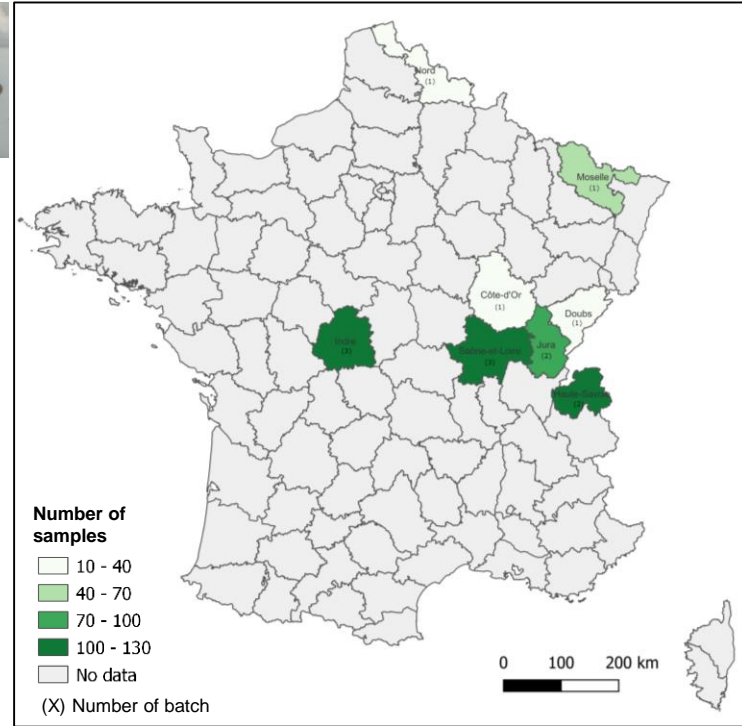
Weight

Isolation of cysts

Molecular  
identification



100% of  
identifications =  
*Clinostomum*  
*complanatum*



30 to 50  
individuals/ batch

14 batches  
526 fish

# Infestation levels and genetic diversity of *Clinostomum* infestation

Results have been recently submitted.  
Please see our publication for results or contact us for more details  
[Maureen.duflot@anses.fr](mailto:Maureen.duflot@anses.fr) and/or [melanie.gay@anses.fr](mailto:melanie.gay@anses.fr)

# Conclusions

Preliminary attempt to elucidate the distribution of *C. complanatum* in French freshwater ecosystems, with a focus on European perch



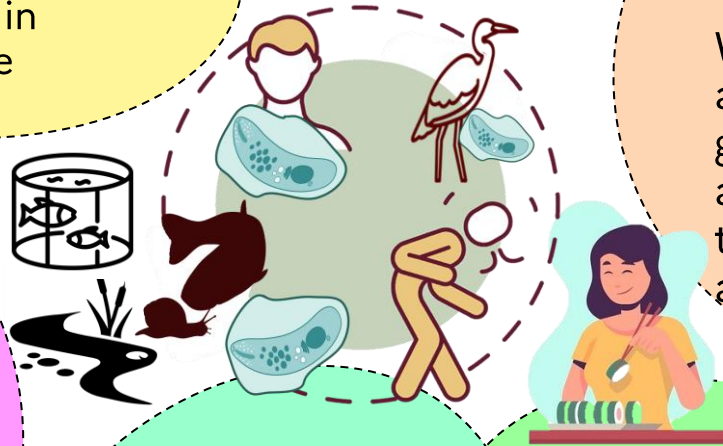
Observations of metacercariae in fish were reported from 5 out of 8 sampled departments in continental France, suggesting wider distribution of this parasite in France than expected

Low genetic diversity was observed on the generated *cox1* sequences. Similarity between the sequences of *C. complanatum* from France, Italy, Iran and Turkey was observed however European *C. complanatum* seems to differ genetically from the one of the East of Asia

# Outlooks

Further, broader investigations, to better characterize the presence of *C. complanatum* in France

Characterize the **zoonotic potential** of the *C. complanatum* present in Europe. Future human case declaration across Europe will be precious and need to be characterized cautiously.



**Environmental factors** : T°C, flow, habitat characteristics, fish communities.

Wider variety of **fish species** and complete missing geographical data > to better assess the potential risk for the consumer and the aquaculture sector

**Safety guidelines** to control the dispersion of these parasites

Understand **origin of *C. complanatum***: hosts, by migration or following stock river

Description/  
DNA of  
*Clinostomum* sp.

Please don't hesitate  
to contact us







Lda39

mséum  
genève

Thank you  
for your  
attention

anses

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genève

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[Melanie.gay@anses.fr](mailto:Melanie.gay@anses.fr) and [Maureen.duflot@anses.fr](mailto:Maureen.duflot@anses.fr)

