



Utiliser l'écologie aquatique pour étudier la forêt boréale

Guillaume Grosbois

23^e colloque annuel de la
Chaire en Aménagement Forestier Durable
Amos, 7 Décembre 2021



UQAT
UNIVERSITÉ DU QUÉBEC
EN ABITIBI-TÉMISCAMINGUE

MRC
ABITIBI



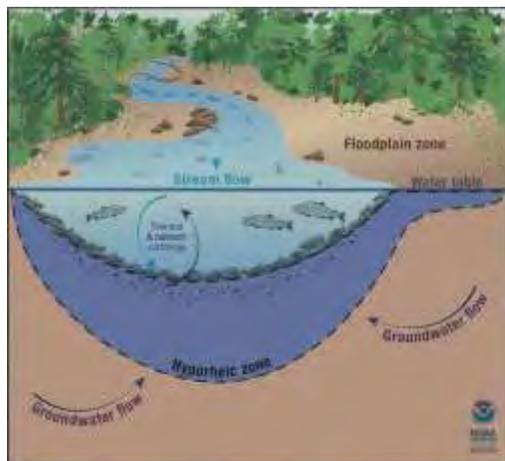
Allo!

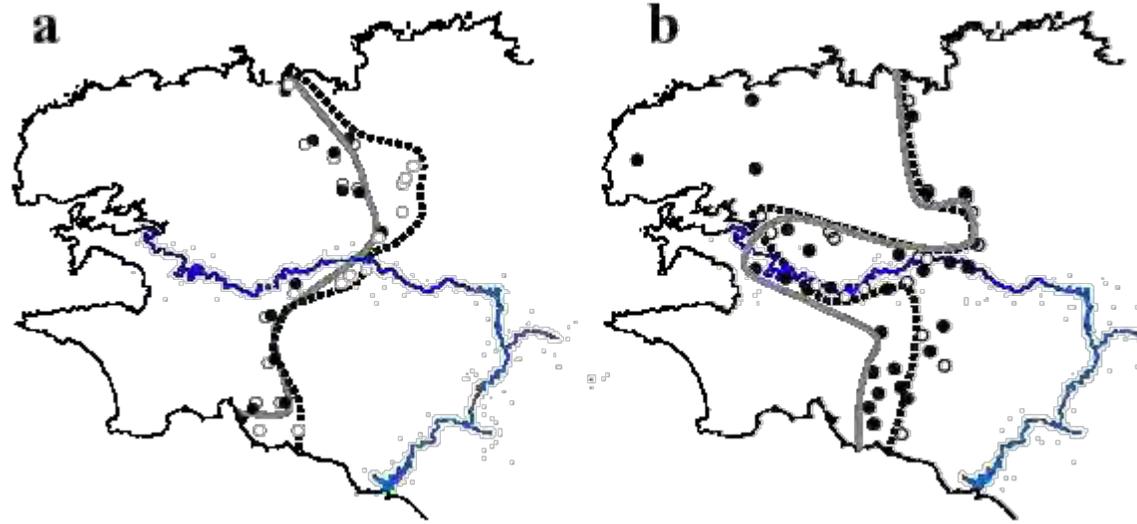


Passé

Présent

Futur





Freshwater Biology

Freshwater Biology (2011) 56, 325–334

doi:10.1111/j.1365-2427.2010.02500.x

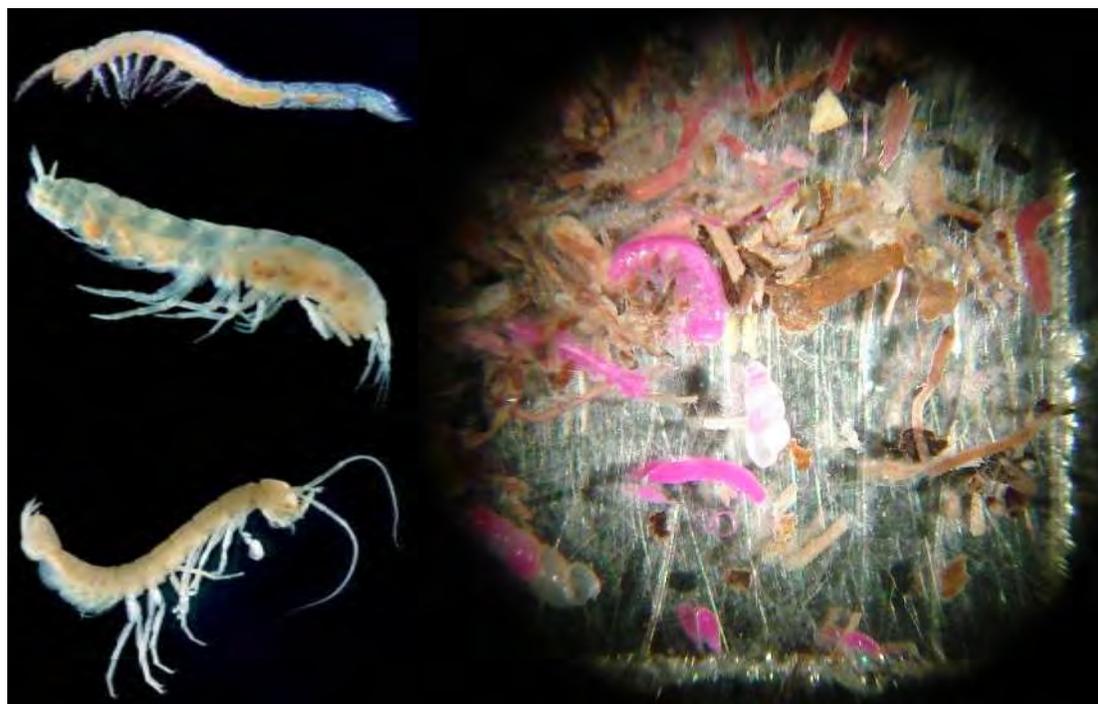
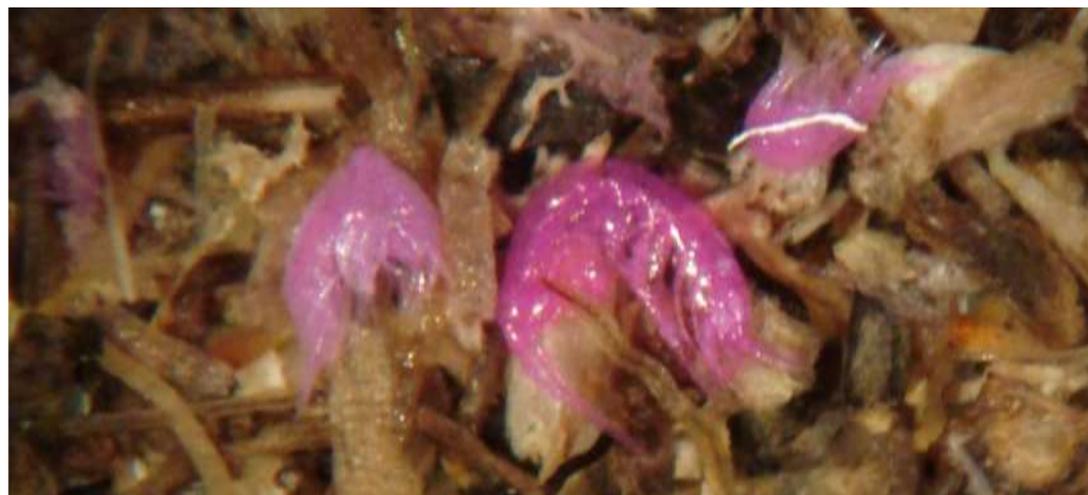
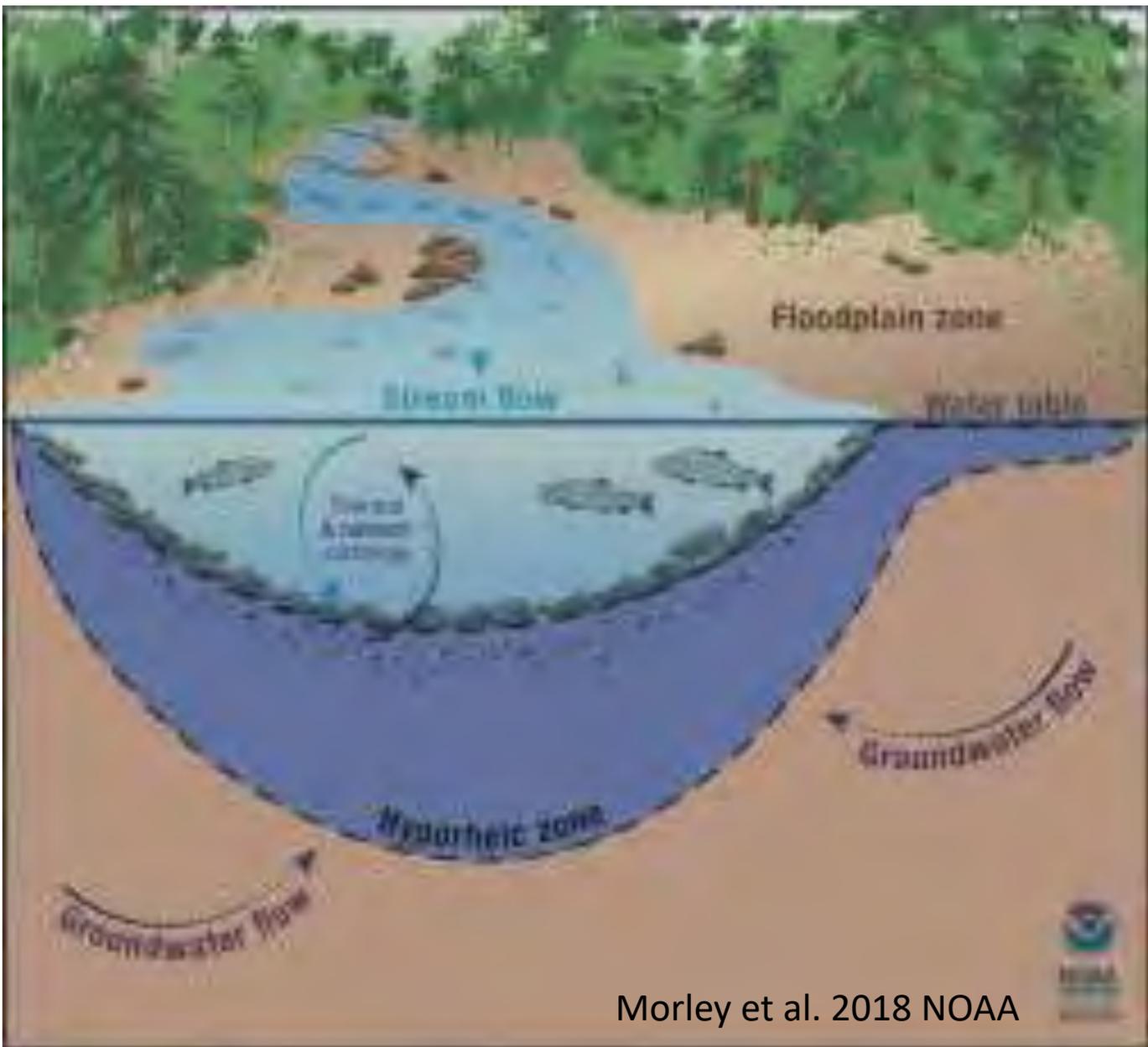
Effects of coexistence on habitat use and trophic ecology of interacting native and invasive amphipods

CHRISTOPHE PISCART^{*†‡}, JEAN-MARC ROUSSEL[‡], JAIMIE T. A. DICK^{*},
GUILLAUME GROSBOIS[†] AND PIERRE MARMONIER[†]

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[†]Université de Rennes1 – UMR CNRS ECOBIO 6553 – Campus Beaulieu, Rennes Cedex, France

[‡]INRA – UMR 985 Ecologie et Santé des Ecosystèmes, Rennes Cedex, France



Passé



Rivières intermittentes



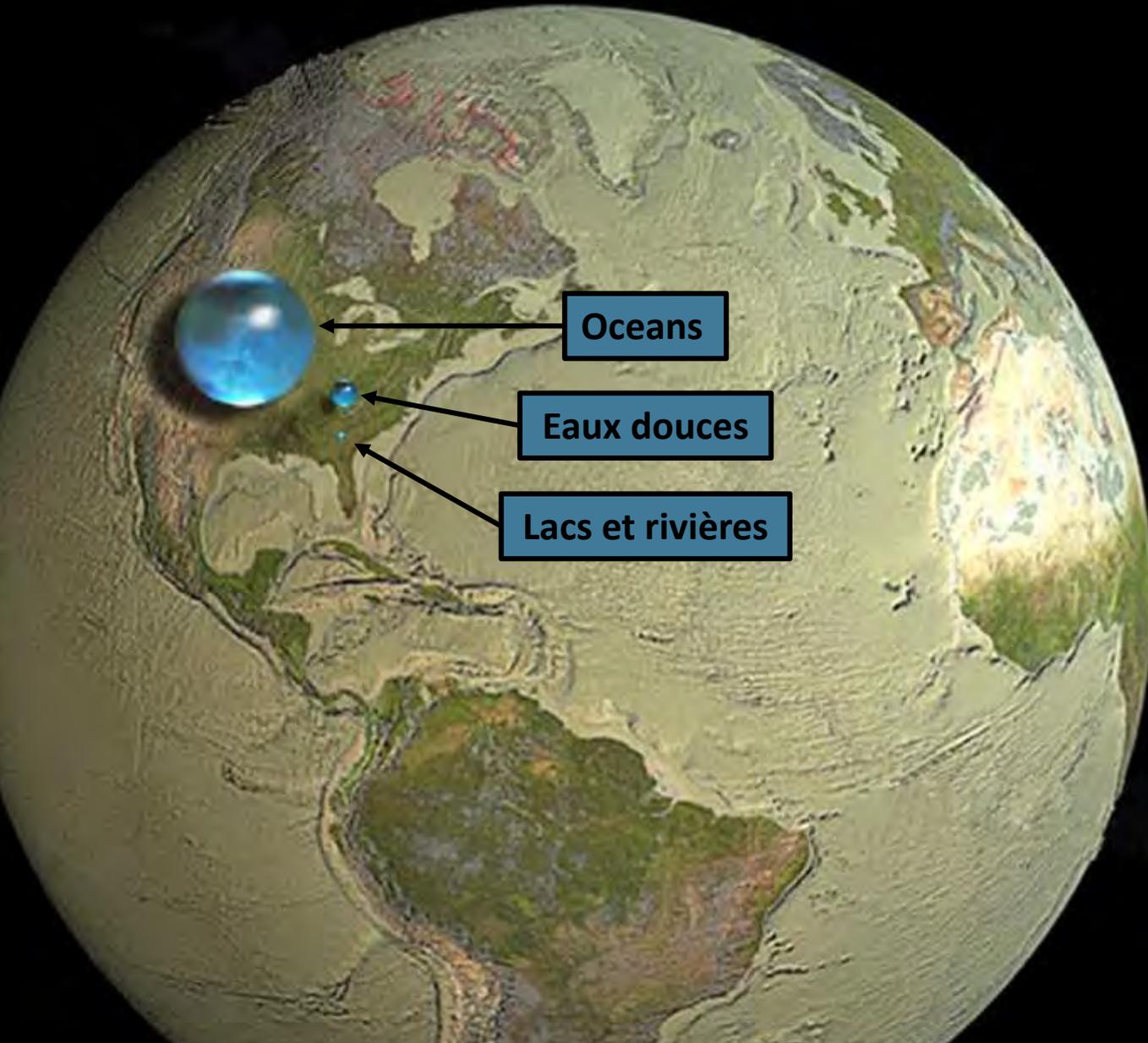
Passé

PhD

Intégration de la
matière organique
terrestre dans les
réseaux trophiques
aquatiques



L'eau dans le monde



Forêt Boréale
= 40% de la surface
lacustre mondiale



Howard Perlman, USGS,
Jack Cook, Woods Hole Oceanographic Institution,
Adam Nieman
Data source: Igor Shiklomanov
<http://ga.water.usgs.gov/edu/earthhowmuch.html>



Quebec, 2018
Lavoie J.
Montoro Girona M.

-

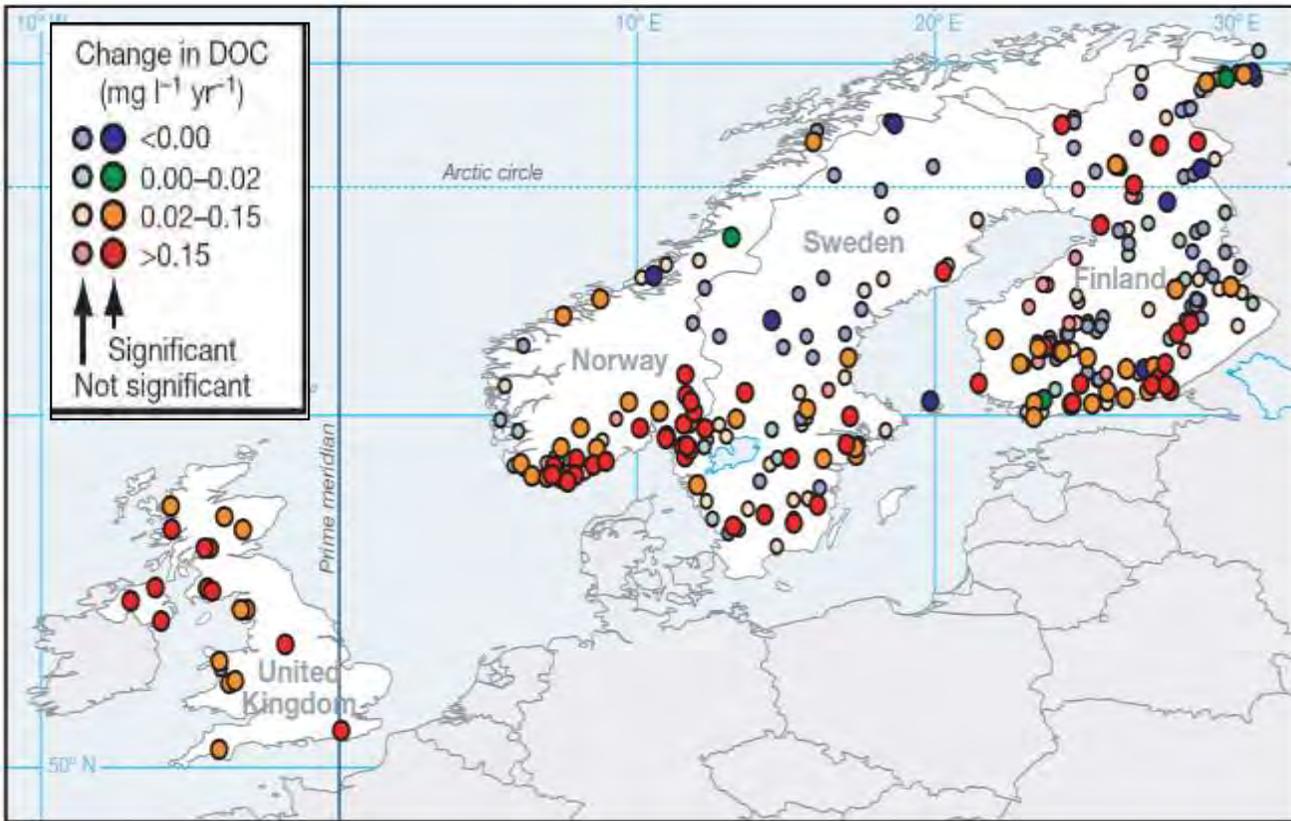
Apports forestiers

+



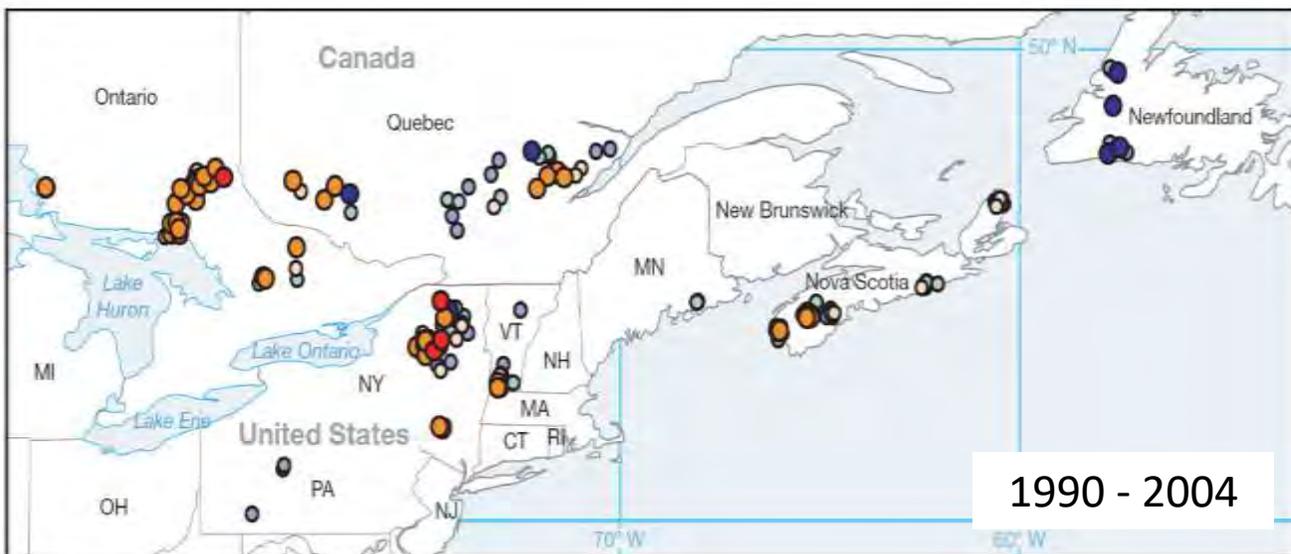
Projet Patrice Blaney 2021

Supervision Grosbois et Girona. Photo: Grosbois



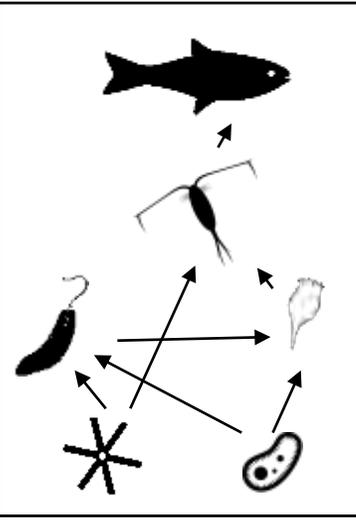
Augmentation des apports forestiers

« Brunissement »
Ou
“Browning”

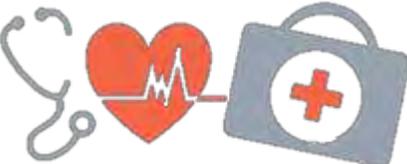




Réseaux trophiques?



Santé ?

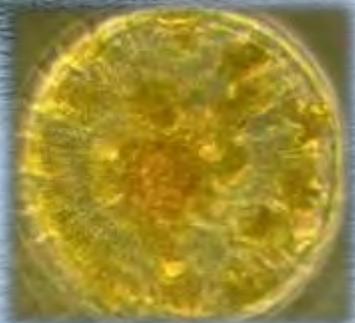


- Croissance
- Reproduction
- Qualité nutritionnelle

Hypothèse

Summer

Winter



Cyclotella sp.

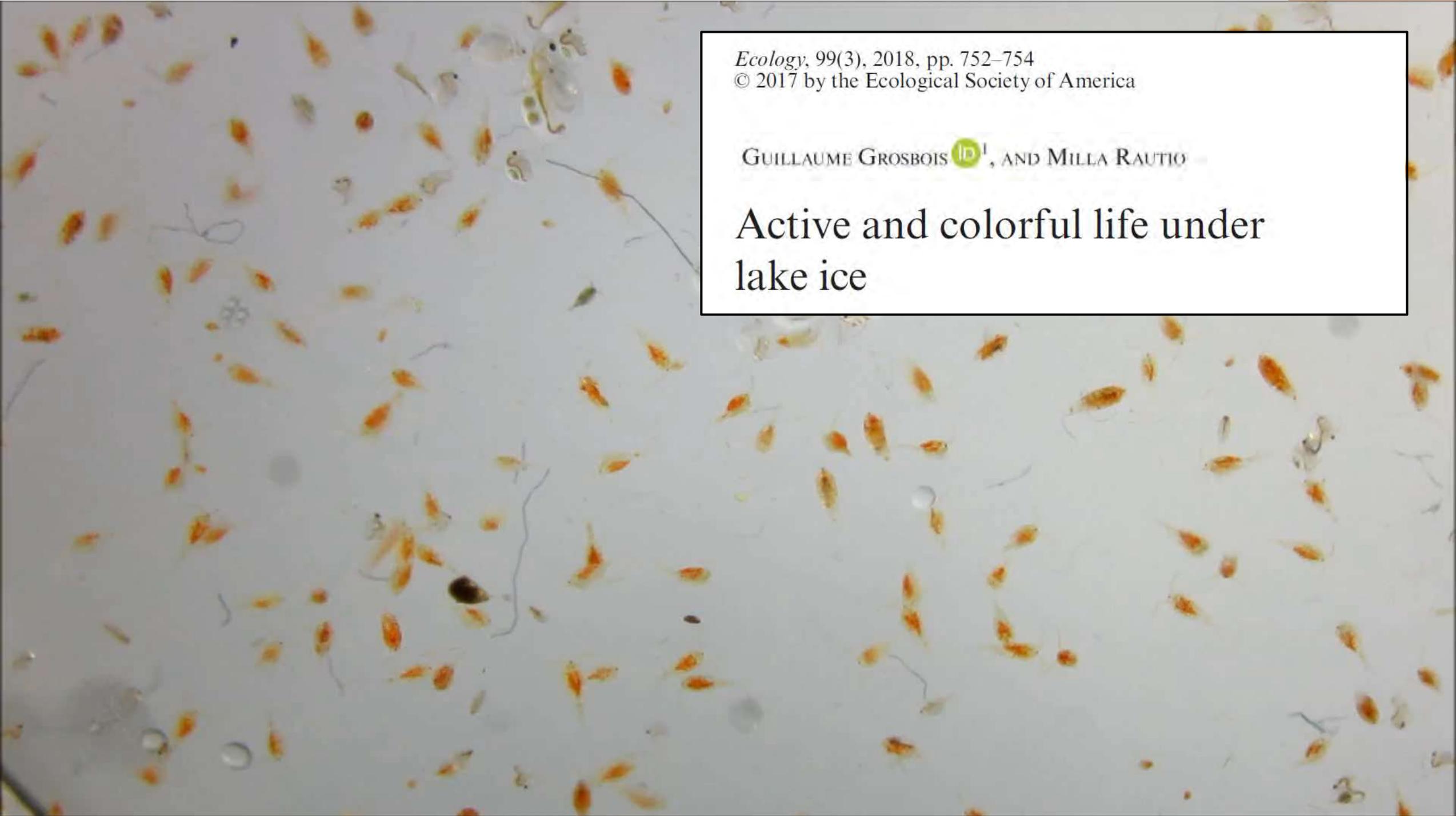


Cryptomonas sp.



t-OM

Zooplankton still active

A microscopic view of lake ice showing a dense population of small, orange-brown organisms, likely rotifers or copepods, swimming in a thin layer of water. The background is a light, translucent greyish-white, representing the ice. Some larger, more complex organisms are also visible, including what appears to be a larger rotifer with a long tail and some smaller, more delicate forms.

Ecology, 99(3), 2018, pp. 752–754
© 2017 by the Ecological Society of America

GUILLAUME GROSBOIS ¹, AND MILLA RAUTIO

Active and colorful life under lake ice



Lake Simoncouche

May

Jun

Jul

Aug

Sep

Oct

Nov

Dec

Jan

Feb

Mar

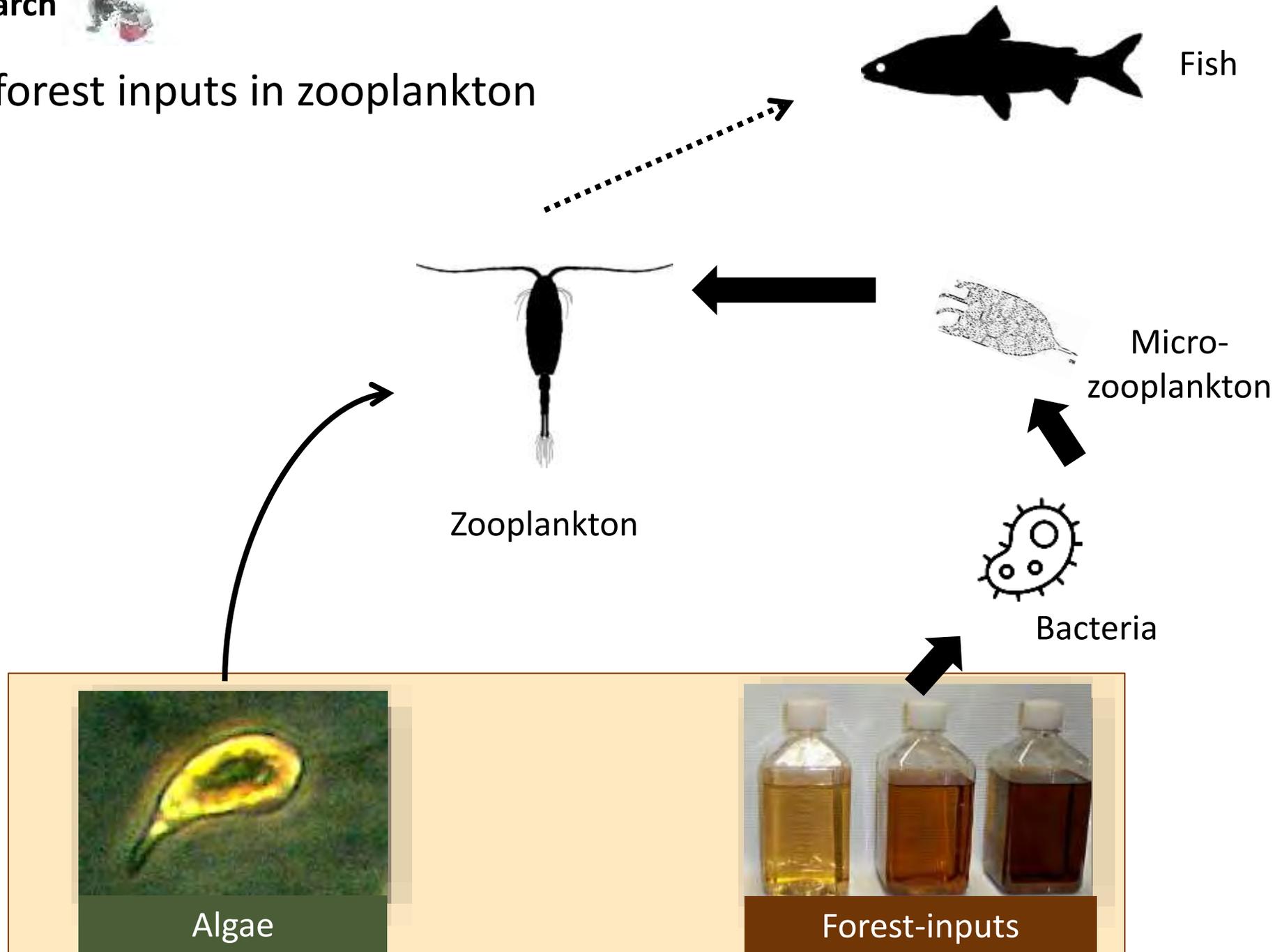
Avr

May



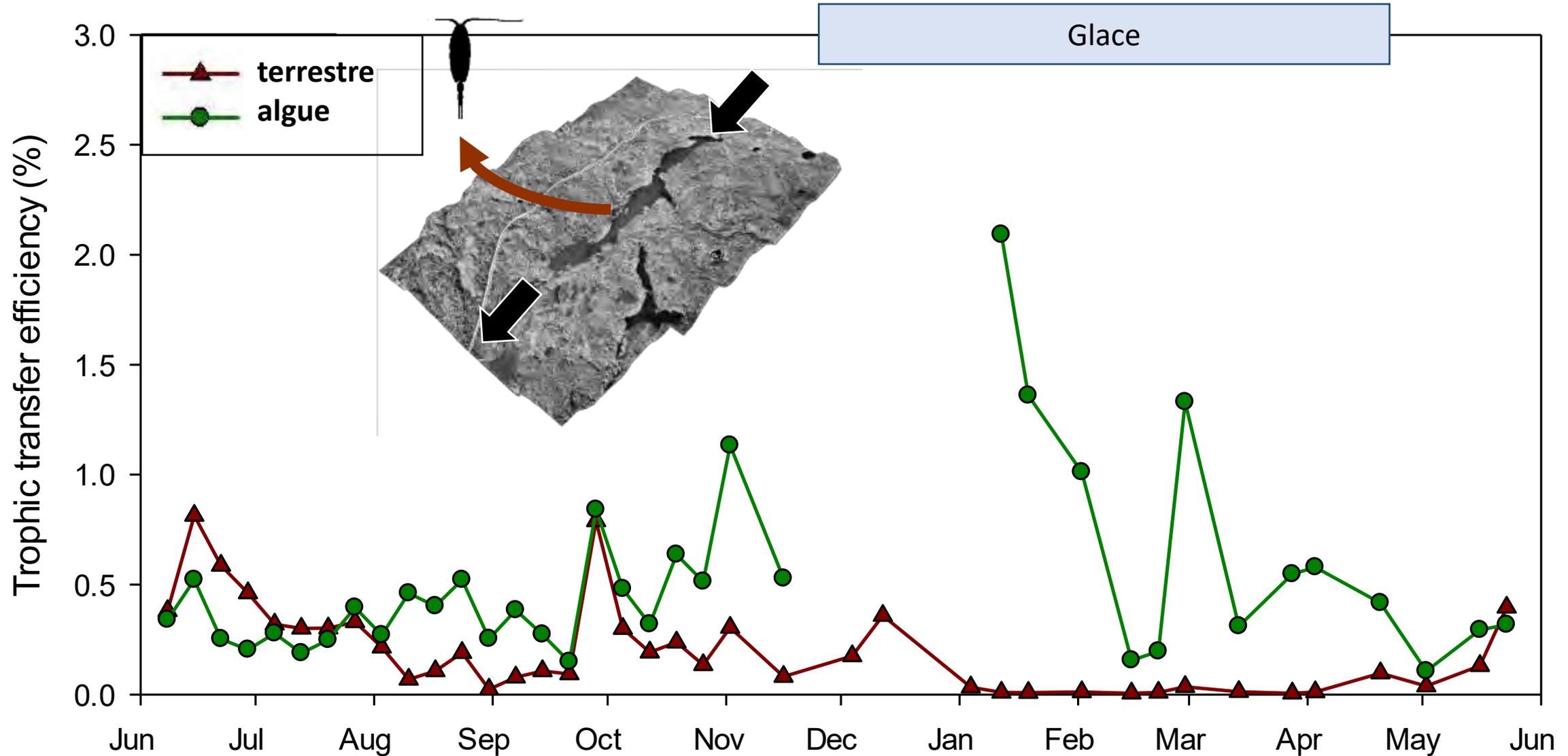


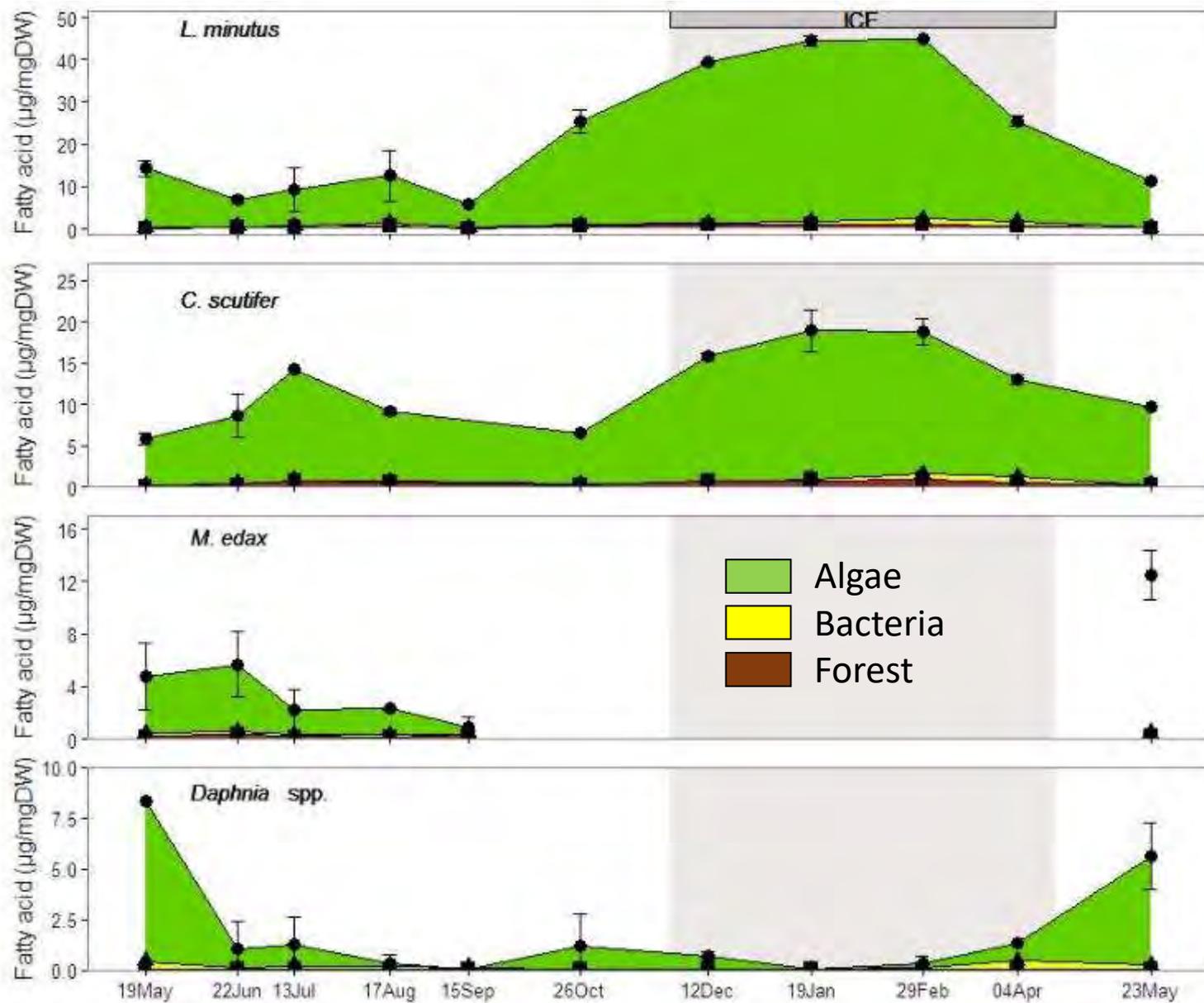
Integration of forest inputs in zooplankton



2 Mes recherches en Abitibi-Témiscamingue

Trophic Transfer Efficiency





Copepods
accumulate
fatty acid from
algae



LIMNOLOGY and OCEANOGRAPHY

ASLO

Limnol. Oceanogr. 00, 2016, 00–00
© 2016 The Authors Limnology and Oceanography published by Wiley Periodicals, Inc.
on behalf of Association for the Sciences of Limnology and Oceanography
doi: 10.1002/lno.10283

Carotenoid accumulation in copepods is related to lipid metabolism and reproduction rather than to UV-protection

Tobias Schneider,^{*1} Guillaume Grosbois,² Warwick F. Vincent,³ Milla Rautio^{1,2}



ORIGINAL ARTICLE

WILEY *Freshwater Biology*

Saving for the future: Pre-winter uptake of algal lipids supports copepod egg production in spring

Tobias Schneider^{1,2}  | Guillaume Grosbois^{1,2} | Warwick F. Vincent^{3,4} | Milla Rautio^{1,2,4}





Michael Power



Cambridge Bay
Nunavut

600 kilometres north of the tree line



Joseph Culp



Post-Doc !



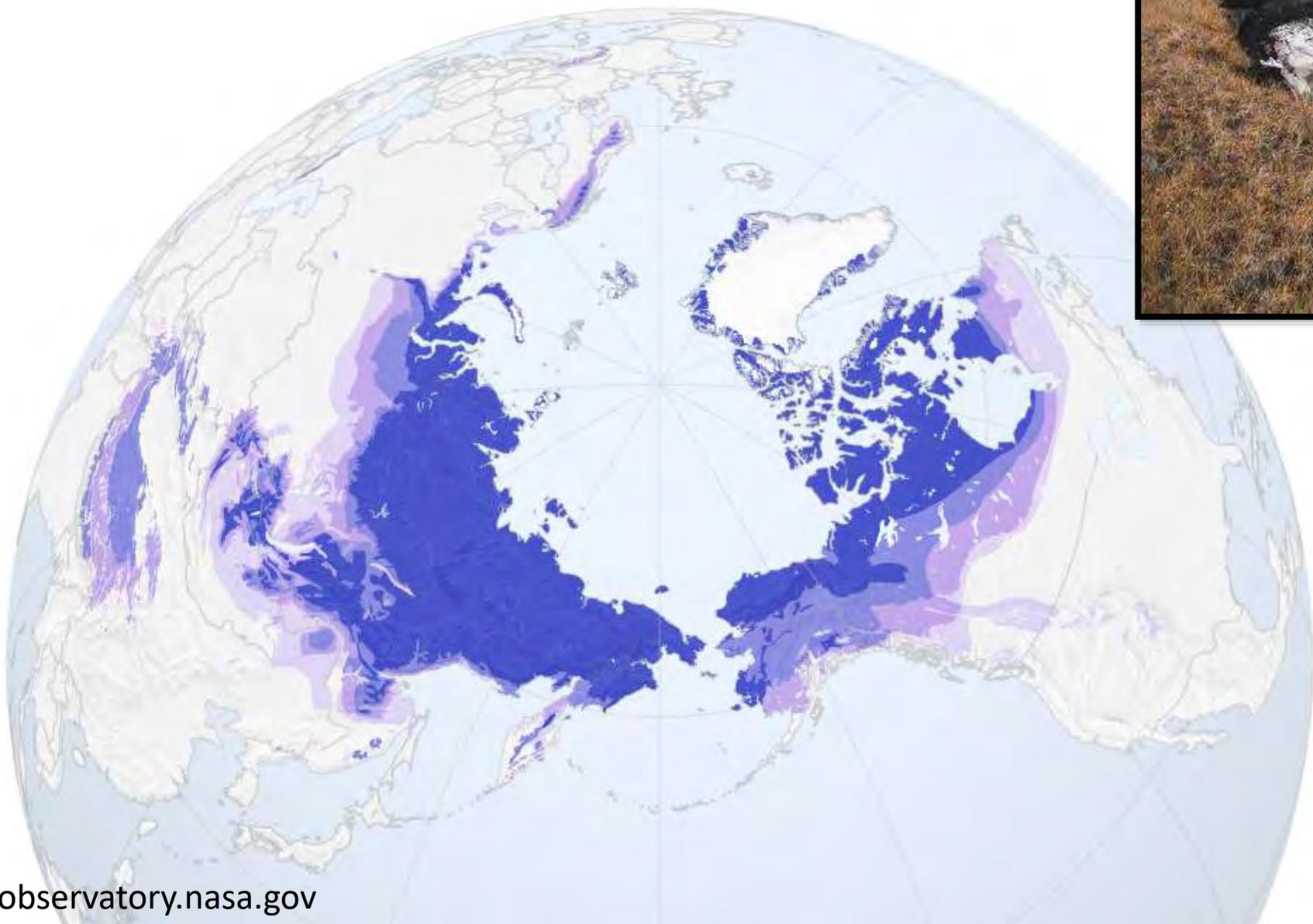
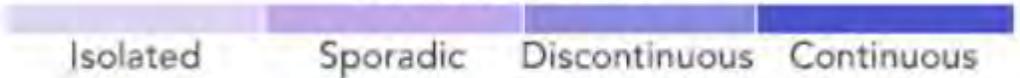
UQAC
Université du Québec
à Chicoutimi

High-Arctic



Photo: G. Grosbois

Permafrost Status



- Pergélisol fond
- Influence terrestre dans les lacs augmente¹

¹ Wauthy et al. 2018, L&O Letters

Zooplankton in lakes and ponds

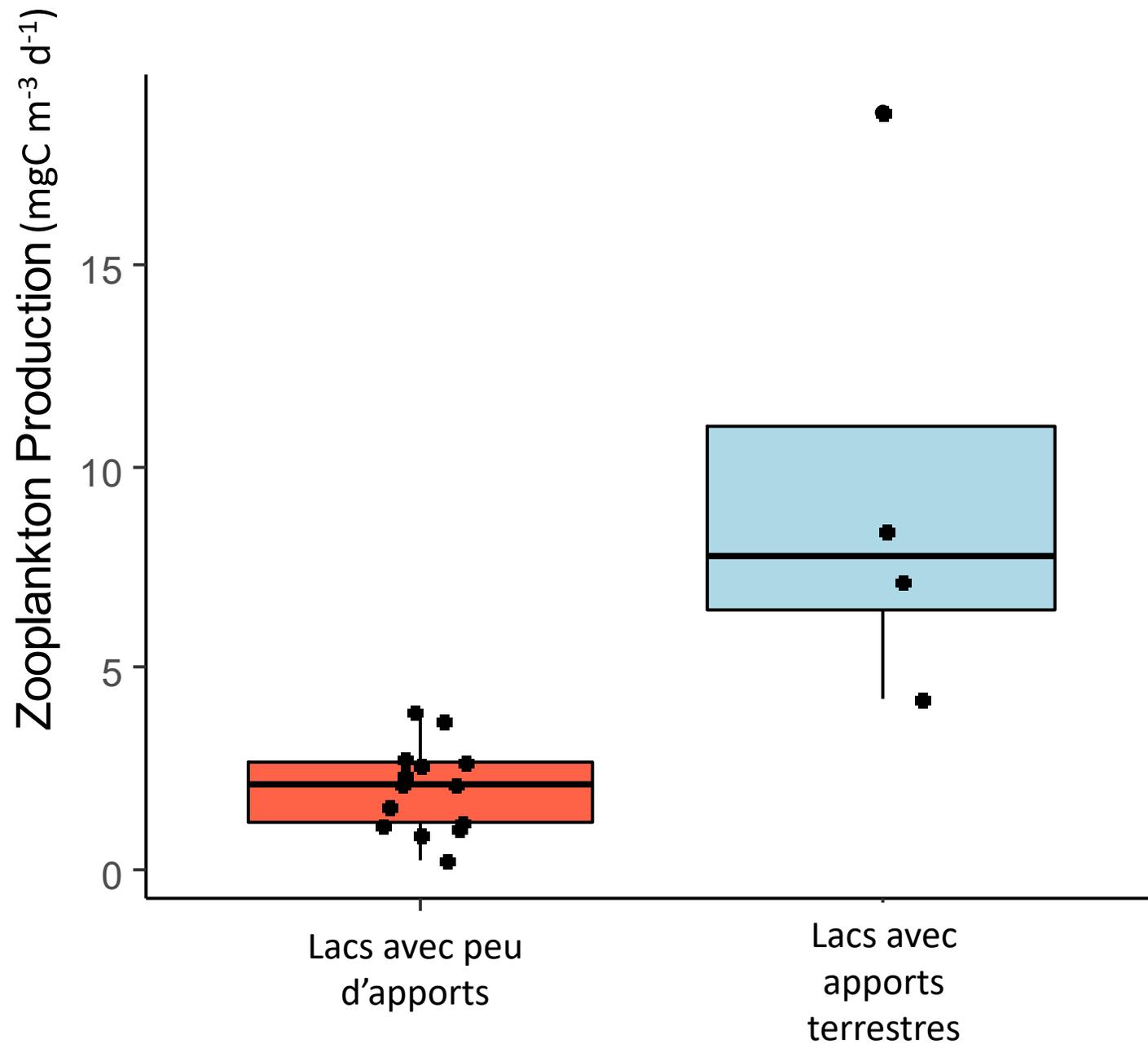
Pénélope Blackburn-Desbiens

M, Rautio (UQAC), M, Power (U. Waterloo), G. Grosbois (UQAT)



Video: Guillaume Grosbois

3 Changements climatiques et biodiversité



Apports nutriments

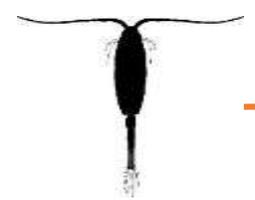


Peu de nutriments

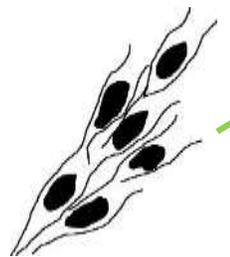
Results



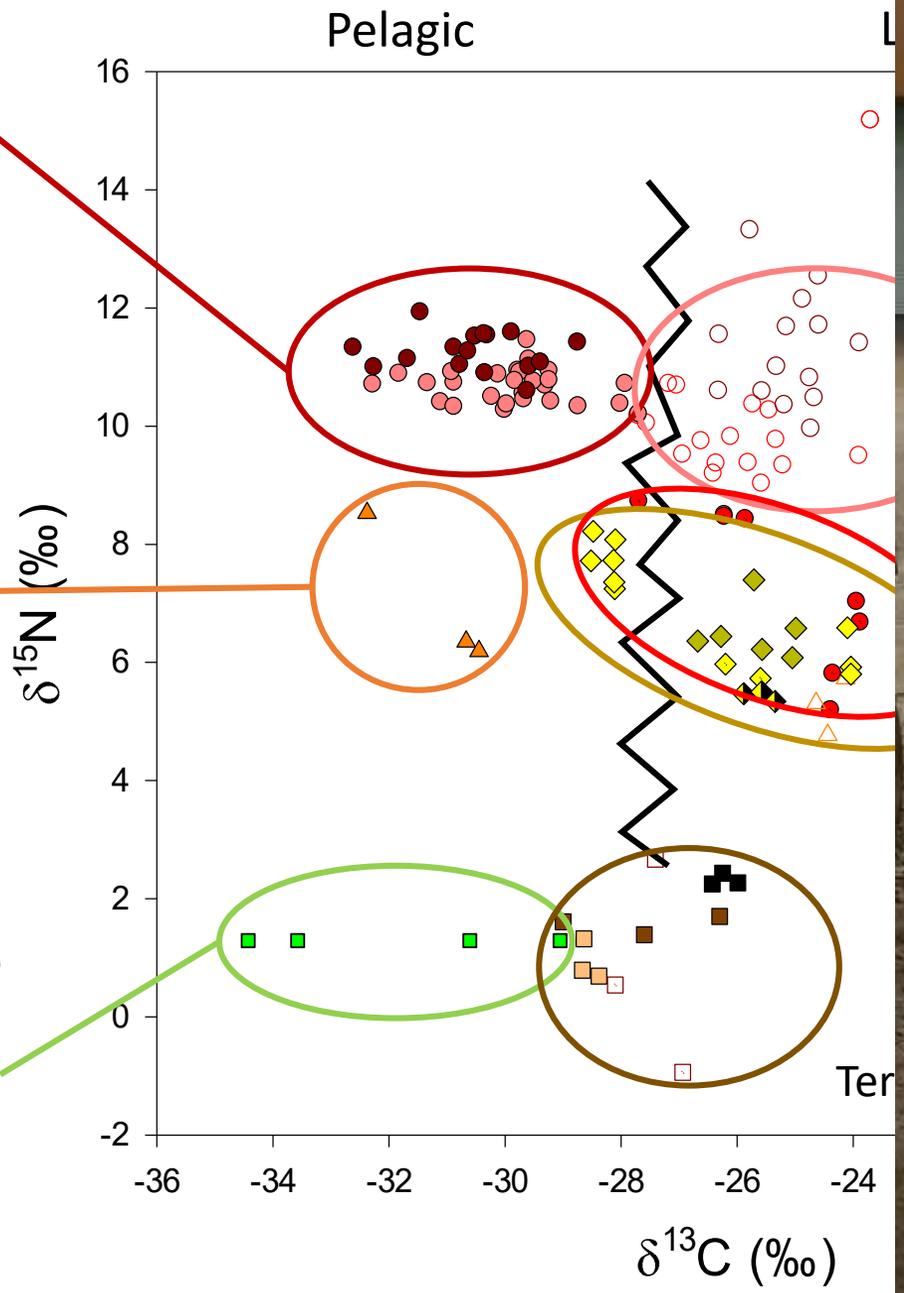
- Lake whitefish
- Least cisco



- ▲ Zooplankton



Pelagic



On-going research



Filling gaps in Arctic freshwater biodiversity knowledge



Qualité nutritionnel des apports terrestres pour les milieux aquatiques

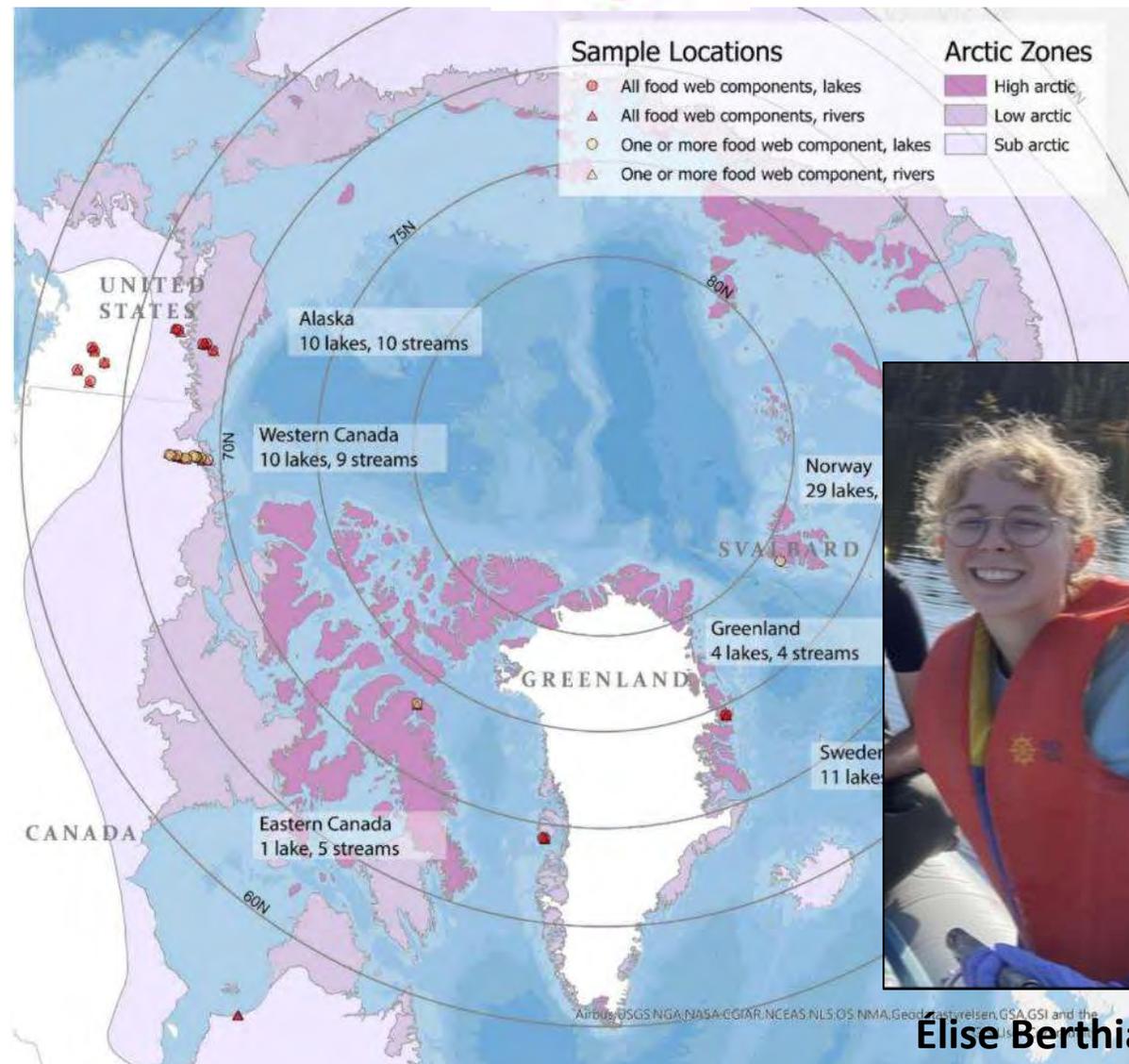
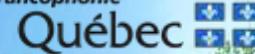


UiO : Universitetet i Oslo



Guillaume Grosbois,
Annie Desrochers,
Willem Goedkoop,
Dag Hessen,
...

Relations
internationales
et Francophonie



Elise Berthiaume

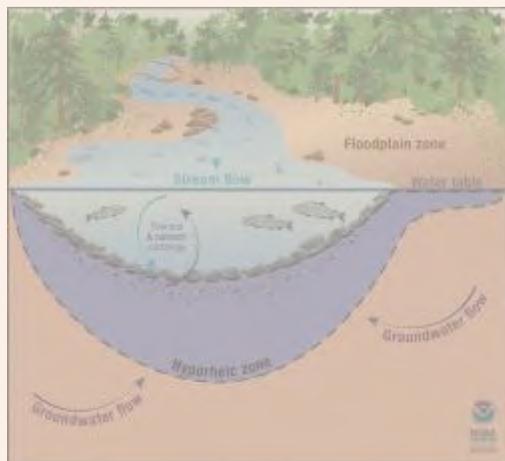
Mer de Norvège
Nordic Council of Ministers



Passé

Présent

Futur



Impact des coupes forestières sur le fonctionnement des lacs en Abitibi

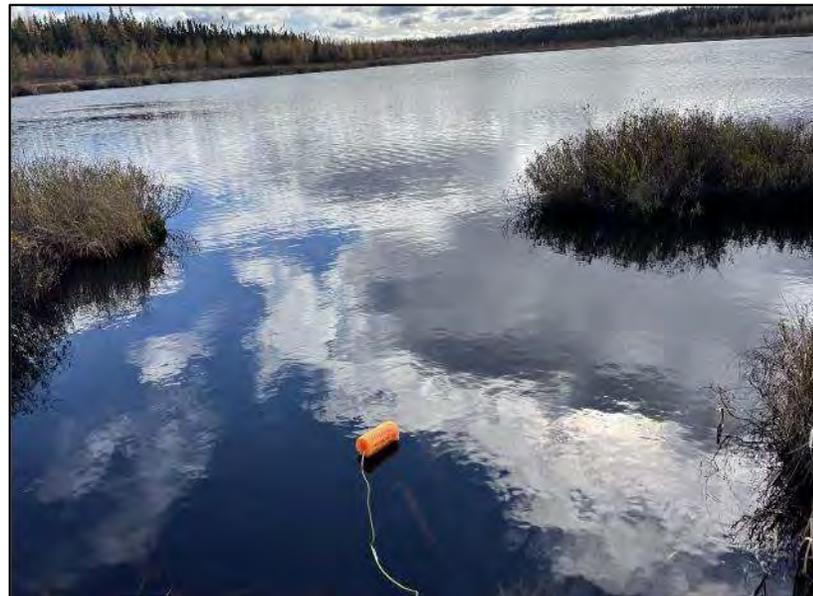


Affiche 7



Guillaume Grosbois, Miguel Montoro Girona, Milla Rautio

Hengyi Bai, doctorat



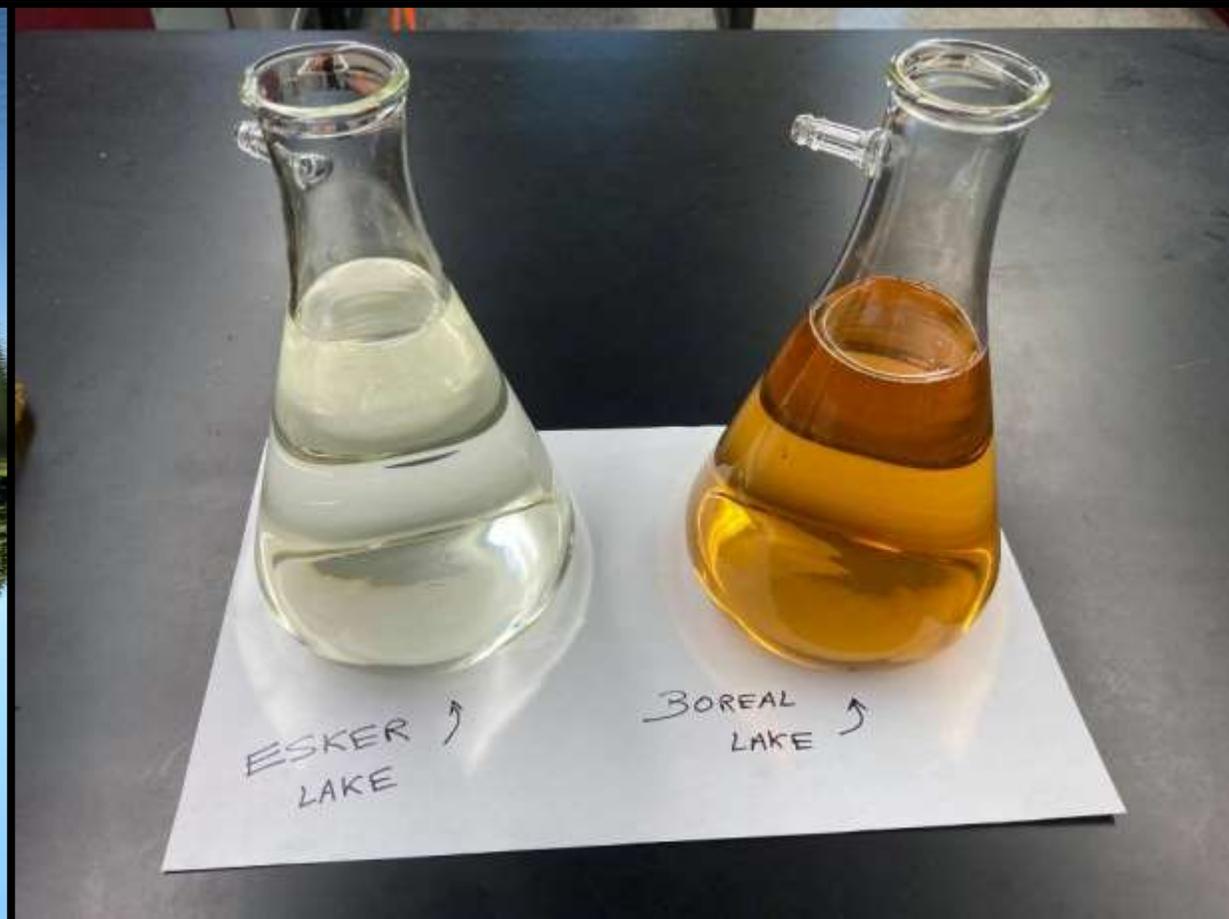
Biodiversité des lacs sur eskers et sur argile



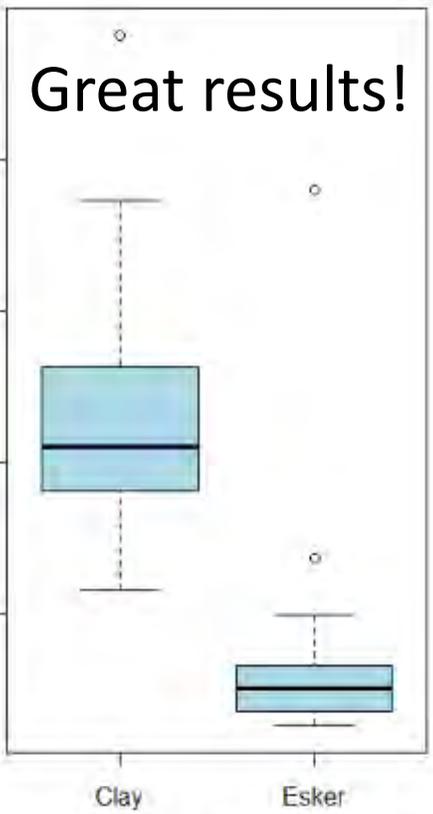
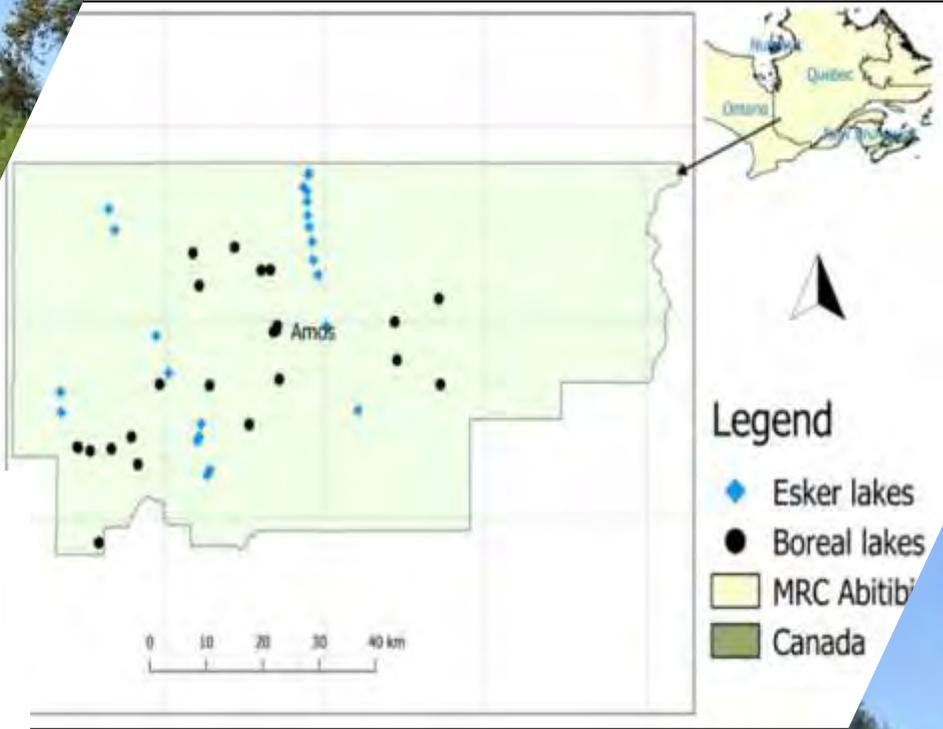
Miguel Montoro Girona,
Guillaume Grosbois,
Louis Imbeau,
Jen Lento
Anouchka Hof



Akib Hasan, Maîtrise



Affiche 14



Vulnérabilité des milieux humides face aux perturbations humaines

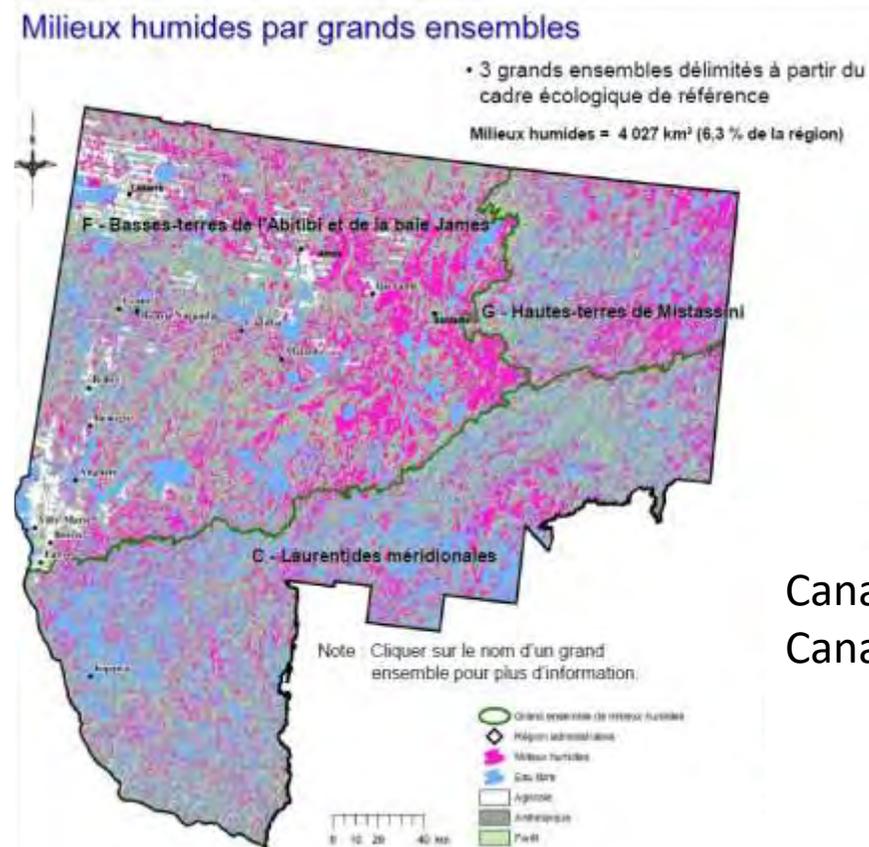
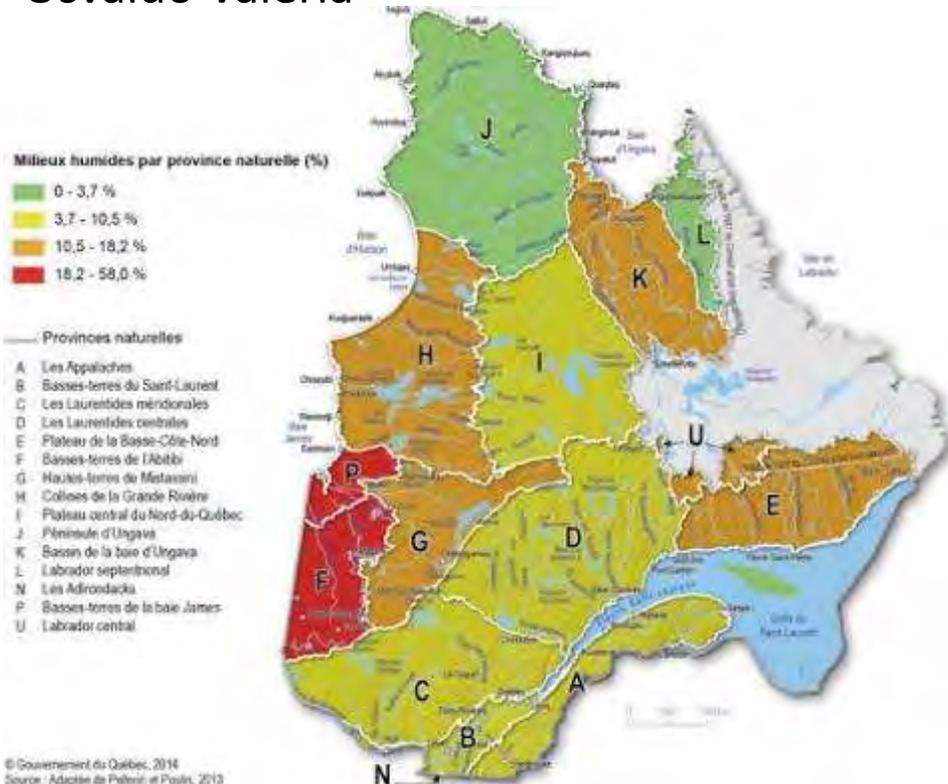


Oswaldo Valeria, Guillaume Grosbois

Anouk Paradis, Doctorat



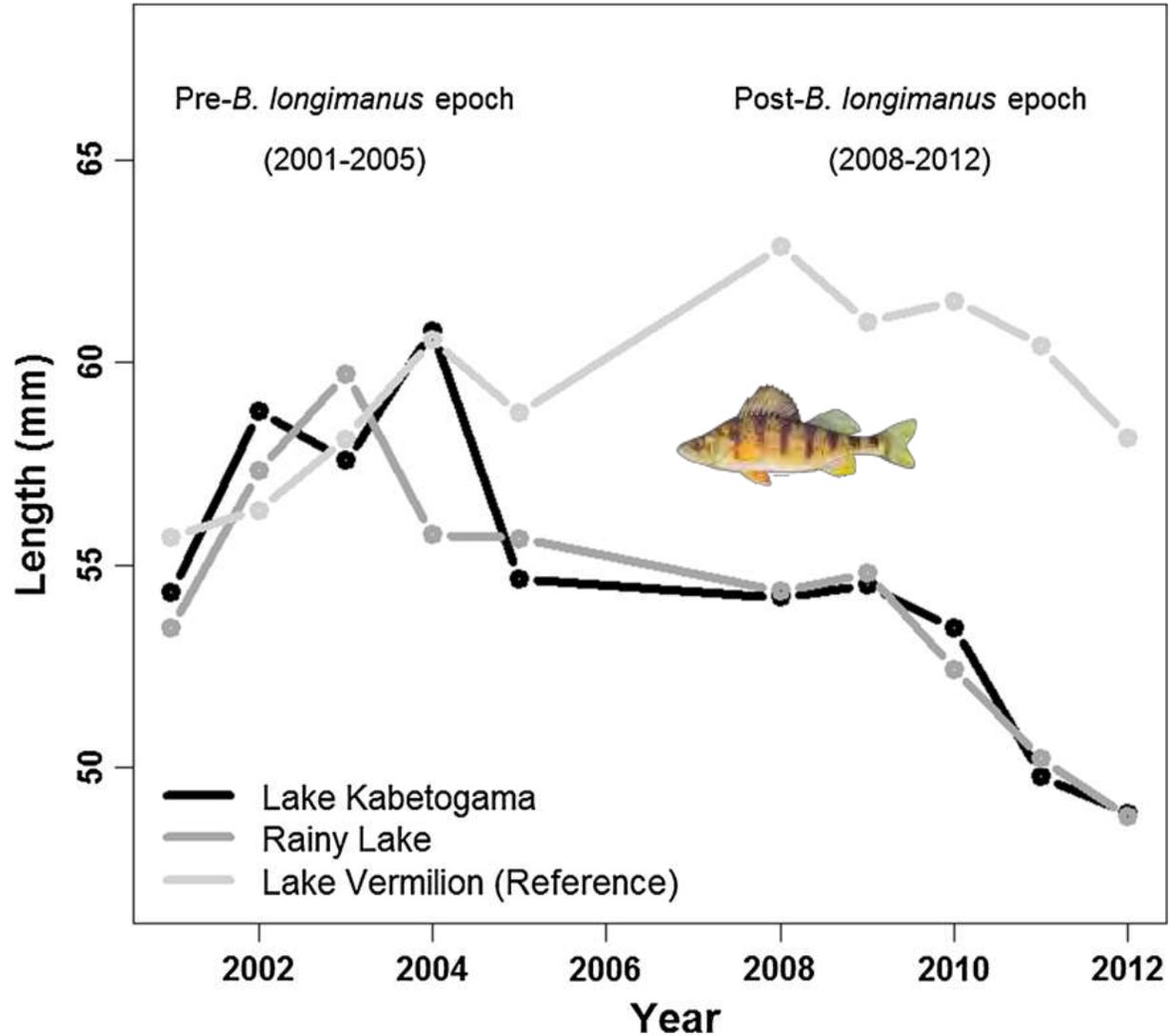
Oswaldo Valeria



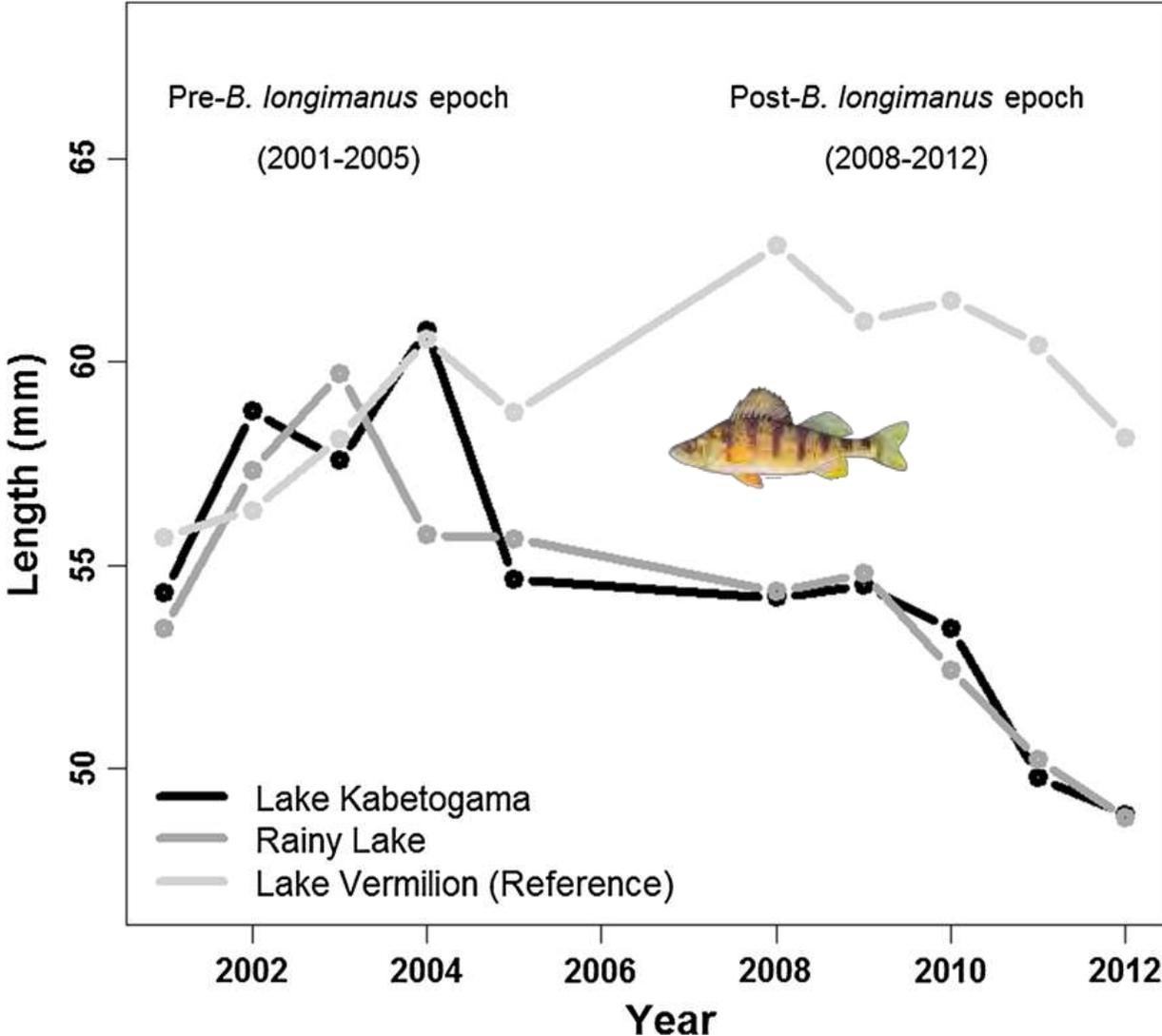
Canards illimités
Canada

Espèces Exotiques Envahissantes

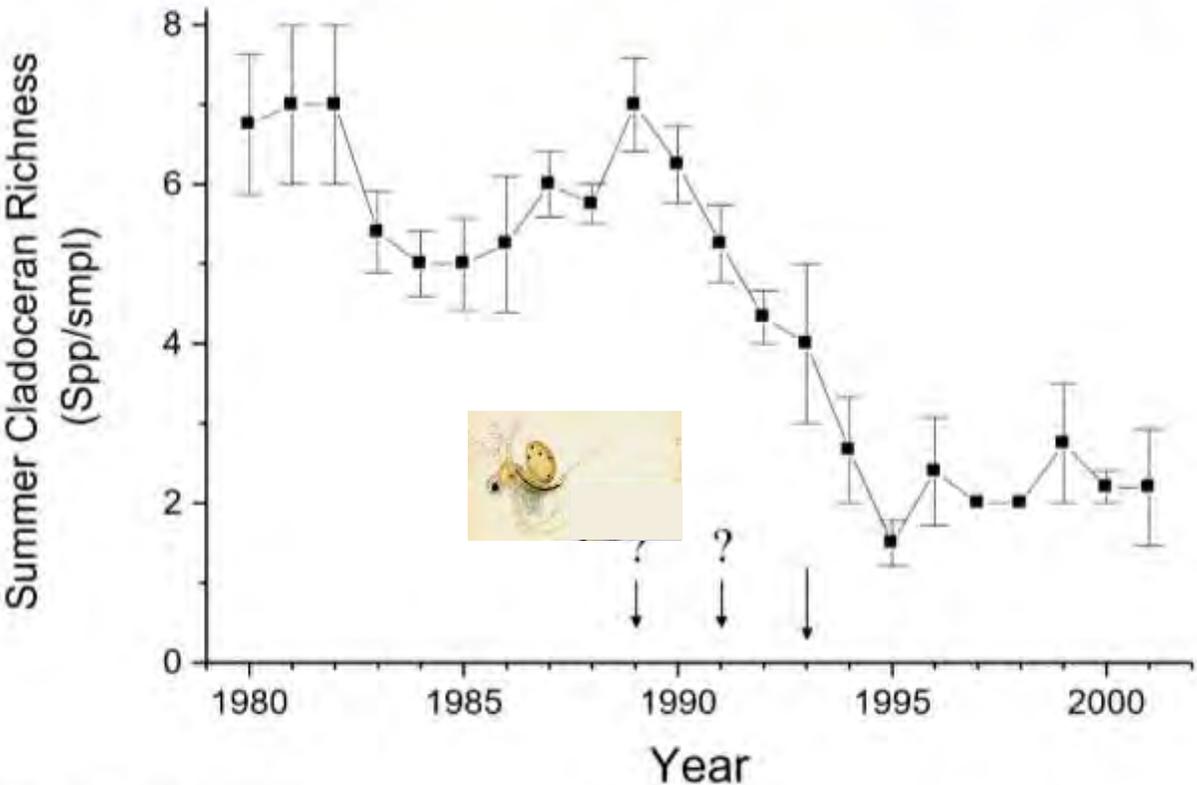
Le cladocère épineux



Espèces Exotiques Envahissantes



It has caused damage:
summer Cladoceran richness in Harp Lake, ON



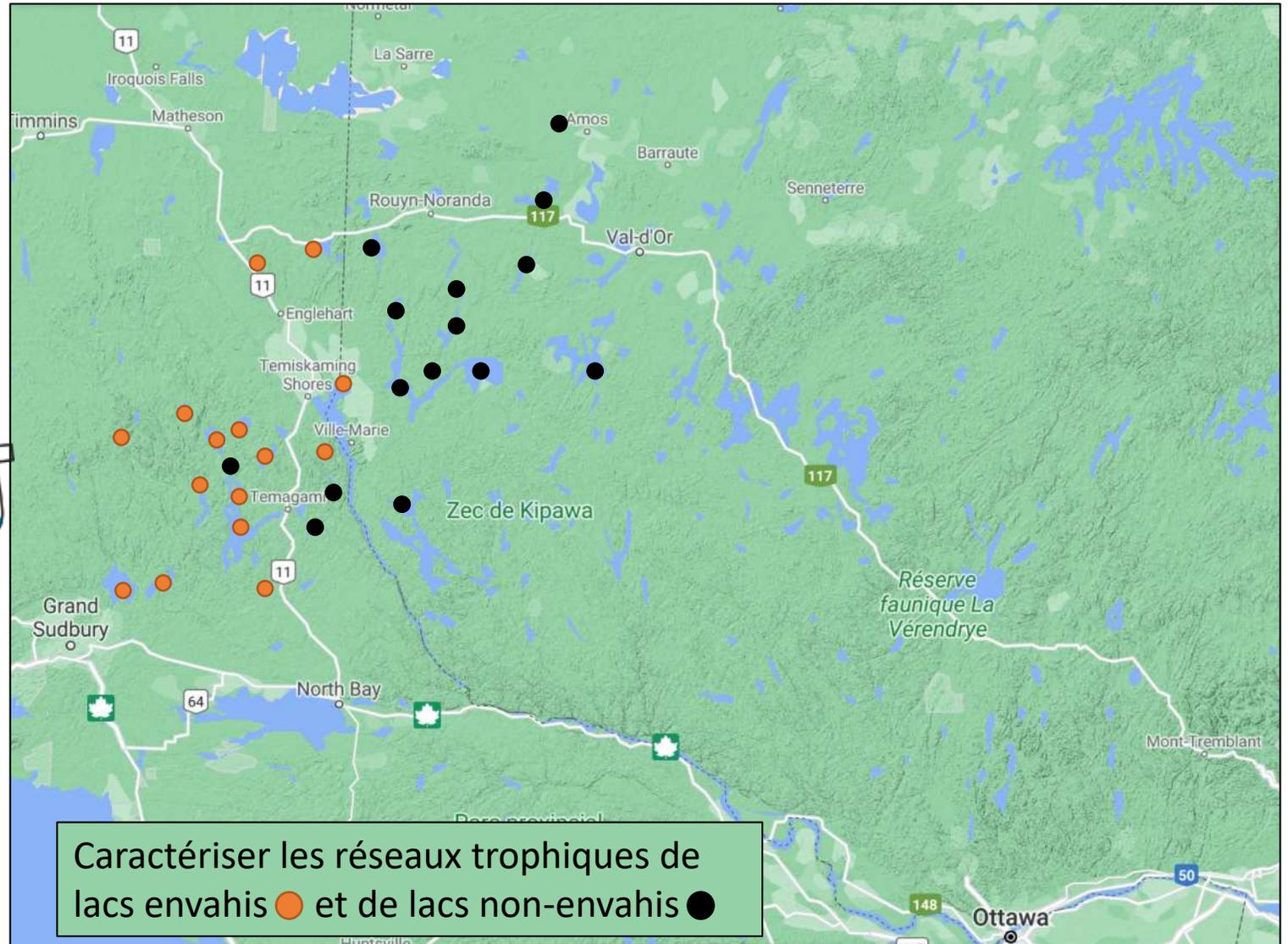
et al. 2002, & unpub

Impact du cladocère épineux sur les réseaux trophiques aquatique de l'Abitibi-Témiscamingue et dynamique spatiale

Guillaume Grosbois,
Philippe Marchand (UQAT),
Beatrix Beisner (UQAM)

Ministère des Forêts,
de la Faune
et des Parcs

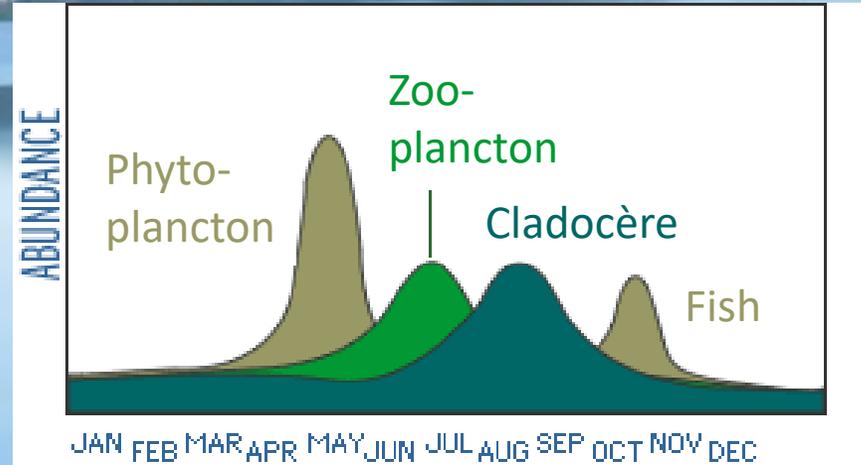
Québec



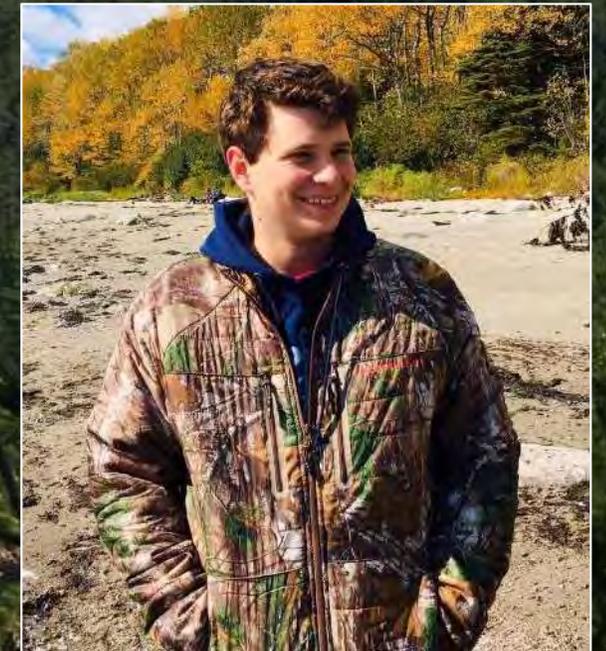
Phénologie du cladocère épineux dans le lac Témiscamingue

Mieux comprendre la biologie et la dynamique saisonnière du cladocère épineux

Lac
Témiscamingue



William Vincent, Maitrise



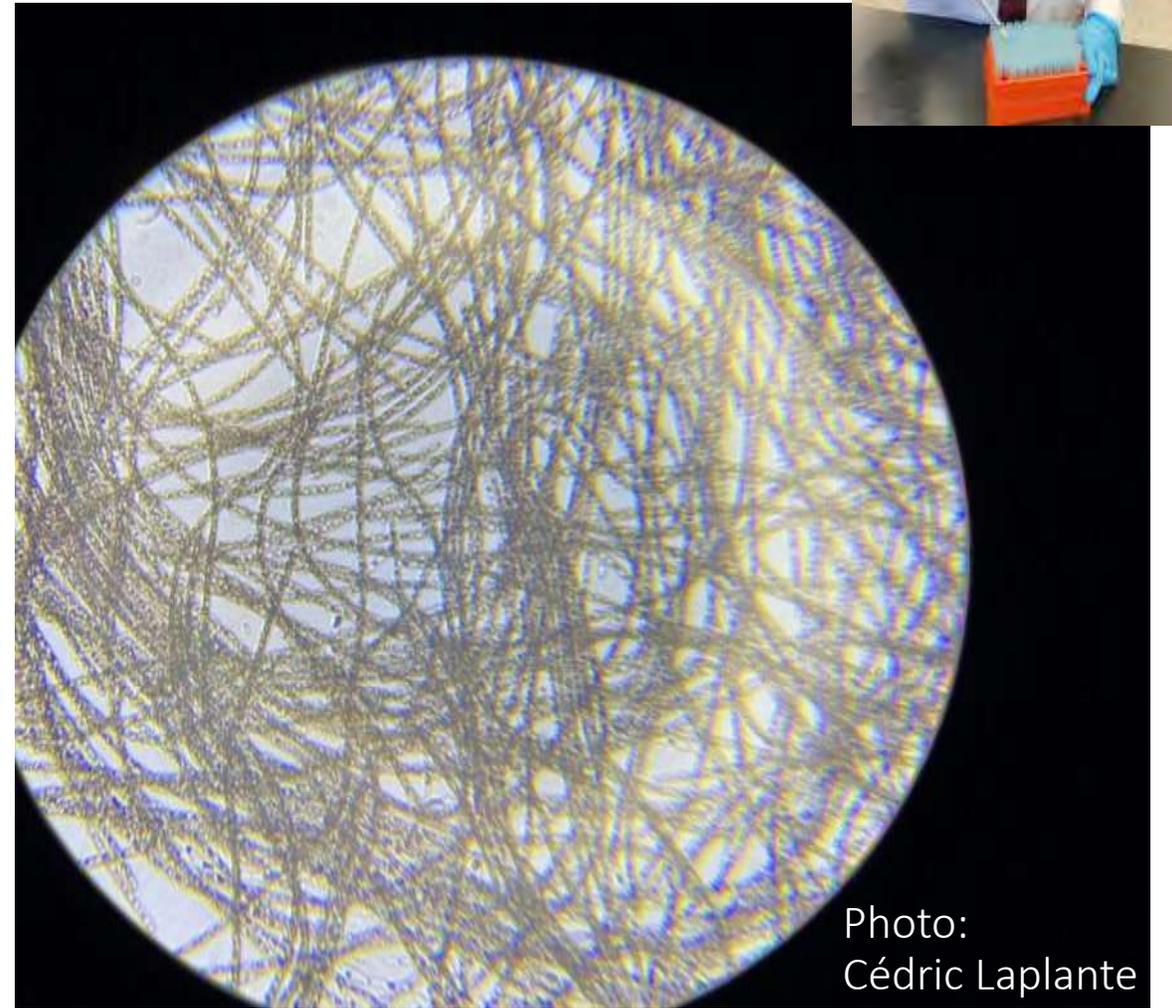
Bythotrephes longimanus

Guillaume Grosbois, Shelley Arnott, Miguel Montoro

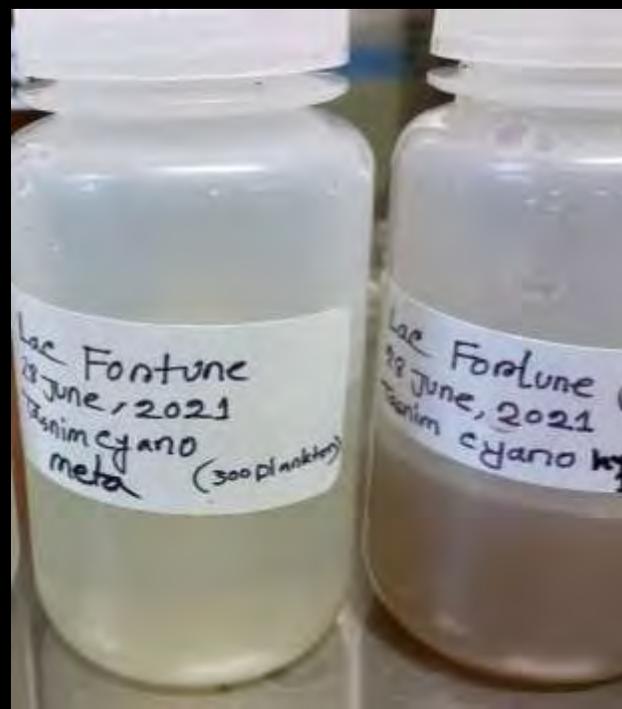
Dynamique saisonnière des cyanobactéries

Guillaume Grosbois, Miguel Girona, Elisabeth Janssen (EAWAG)

Tasnim Mou, Maitrise



Affiche 8

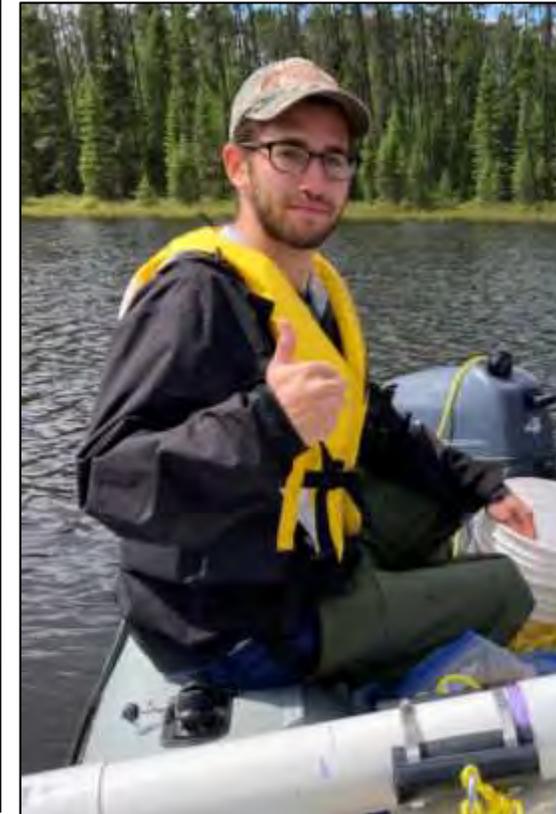


Impact des perturbations historiques sur les écosystèmes aquatiques et potentiel de restauration

Guillaume Grosbois, Miguel Girona, Maikel Rosabal (UQAM)



Restauration du lac Osisko et impact sur la faune aquatique



<https://numerique.banq.qc.ca/patrimoine/>

Dynamique spatio-temporelle de l'occupation du castor en forêt boréale

Miguel Montoro Girona, Guillaume Grosbois



Mélanie Arsenault,
Maitrise



- Collecte des individus par les trappeurs
- Échantillonnage l'été prochain

#DÉFI

Affiche 18!

Rôle et vitalité des bandes riveraines

Miguel Montoro Girona, Guillaume Grosbois



- Mortalité par chablis
- Protection des milieux aquatiques
- Connectivité pour faune



Michel Guimond
Maitrise

Affiche 3!





Questions?

Guillaume.grosbois@uqat.ca

 @BraboisGui

