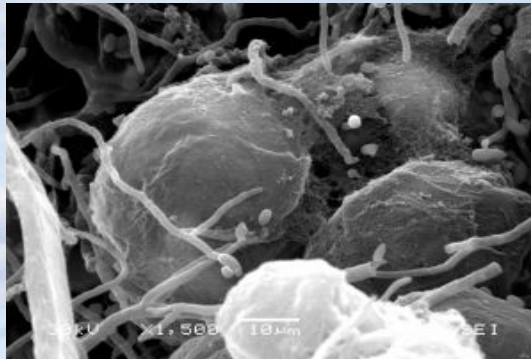




Bienvenue au CEF – Welcome to CFR

Le Centre d'étude de la forêt (CEF) est un regroupement universitaire unique au Québec et au Canada qui étudie le lien entre la compréhension du rôle fonctionnel des organismes et des processus dynamiques dans les écosystèmes forestiers et la conception d'alternatives innovatrices en matière de gestion des forêts.

CFR is built around an overall vision linking the understanding of the functional roles of organisms and dynamic processes in forest ecosystems with the development of innovative alternatives regarding sustainable forest management.

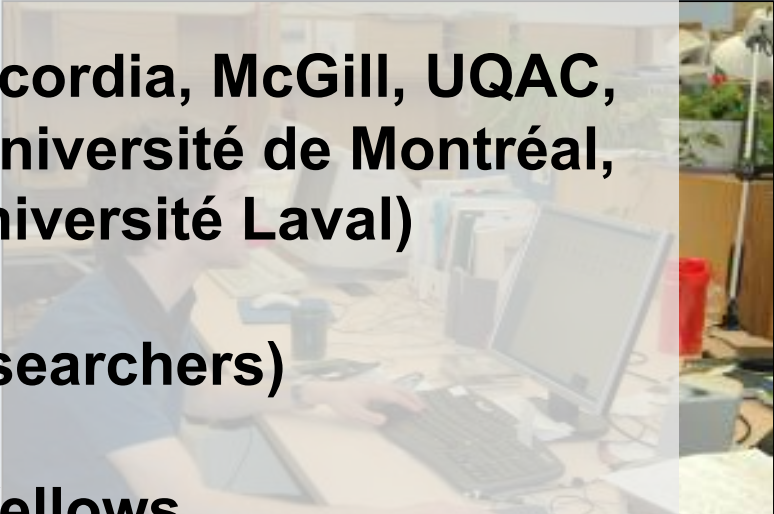





CEF - CFR :

55 researchers in 11 universities (Concordia, McGill, UQAC, UQAM, UQAT, UQAR, UQO, TÉLUQ, Université de Montréal, Université de Sherbrooke et Université Laval)

41 associate members (researchers)



**over 50 post-doctoral fellows
over 220 Ph. D. students
over 175 master's students
10 research professionals**



Ten research professionals spread throughout Québec (Montréal, Québec, Sherbrooke, Rouyn-Noranda)

Research professionals and coordinators employed by the CEF

Research professionals employed by the CEF lend technical support to the scientists and student members of the centre.

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Our mission.....

The scientific mission of CFR is to **better understand** the **functioning and dynamics** of forest ecosystems, the interactions between their components, as well as their distinctive biology, with a perspective that **emphasizes complementarities between biodiversity conservation and sustainable management** of wood products and non-timber values.



Research Themes

1. Genetics, molecular biology and physiology
2. Population dynamics, biodiversity and conservation biology
3. Forest processes and the development of new silvicultural approaches
4. Natural disturbance history and strategies for sustainable forest management



Project Funding in 2013.....

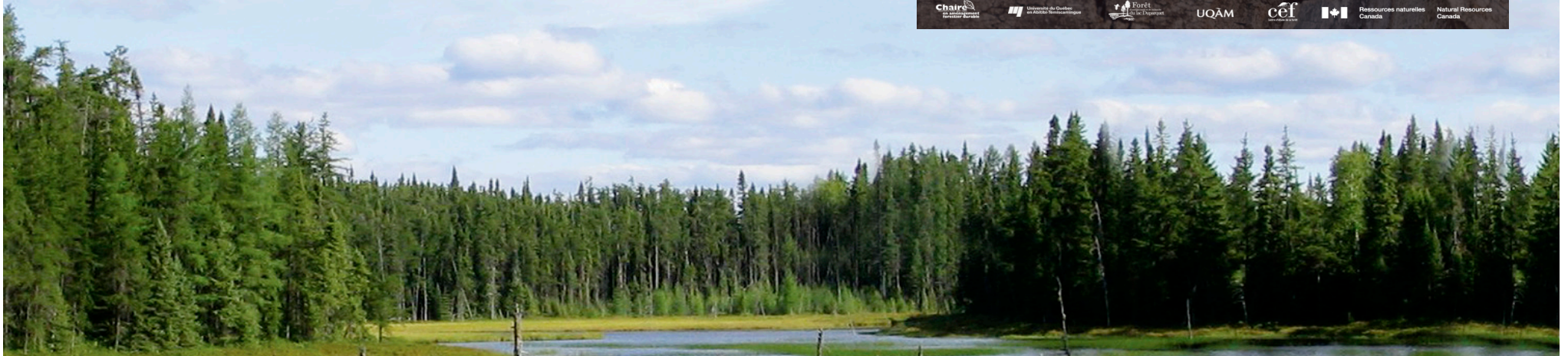
Over 25.3 Million dollars in grants for 233 research projects

Renewal of CEF infrastructure grant for 6 years....



Scientific activities

- Symposiums/Scientific meetings
- Regional workshops
- CEF- CFR Training Workshops
- Summer schools



Next SIX YEARS!!!

- Responding to Québec needs for Highly Qualified Personal (HQP) in forest ecology, biology and management
- Offer an intellectually stimulating environment for the training of graduate students and post-doctoral fellows
- Scientific and technology transfer to partners (industrial, government) and to the public
- Develop within CEF scientific interactions among researchers working on different themes
- Facilitate international collaboration with other forest research centers worldwide



First International Laboratory France-Canada in forest ecology

Fifty French and Canadian senior experts have joined forces to create the International Associated Laboratory (LIA) on mountain (MONTA) and boreal (BOR) forests.

LIA MONTABOR is the result of a fruitful collaboration that has existed for several years between researchers from the two countries. "The great strength of this laboratory undoubtedly lies in the complementary expertise. Five main research areas have been identified: global changes and disturbances, biodiversity, disturbance and ecosystem functioning, carbon footprint and ecosystem management.



Cooperation agreement with two forestry centers of Catalonia

The CFR is now in direct contact with 2 Catalan research centers:

- the Centre Tecnològic Forestal de Catalunya (CTFC)
- the Centre de Recerca Ecològica i Aplicacions Forestals (CREAF)

This agreement aims to provide a formal framework for cooperation, to facilitate and intensify exchanges already underway between particular partners in forest science, sustainable management of natural resources, ecology and forest biology. The collaboration between the three centers will bring benefits to the advancement of science, training of graduate students and for sustainable forest management, more necessary than ever to the threat posed by global changes.



NEWFORESTS - EU

CREAF- CTFC – CBAE – CEF (UQAM – UQAT)

The NEWFORESTS exchange program brings together researchers from 5 research institutions: two from public research centres in Spain, Forest Sciences Centre of Catalonia (CTFC) and Centre for Ecological Research and Forestry Applications (CREAF), one French institution, Bio-Archaeology and Ecology Centre (CBAE), and two Canadian Universities (University of Quebec in Montreal, UQAM, and in Abitibi-Témiscamingue, UQAT) hosting two of the main hubs of the Centre for Forest Research (CEF). During three years, a total of 36 senior researchers will participate in the program with a total of 328 man-months including experienced and early stage researcher, technical and management staff from the different centres.

Project number

612645

Project title

NEWFORESTS— New and old World perspectives for forest ecology and management in a context of global change.

Call (part) identifier

FP7-PEOPLE-2013-IRSES

Funding scheme

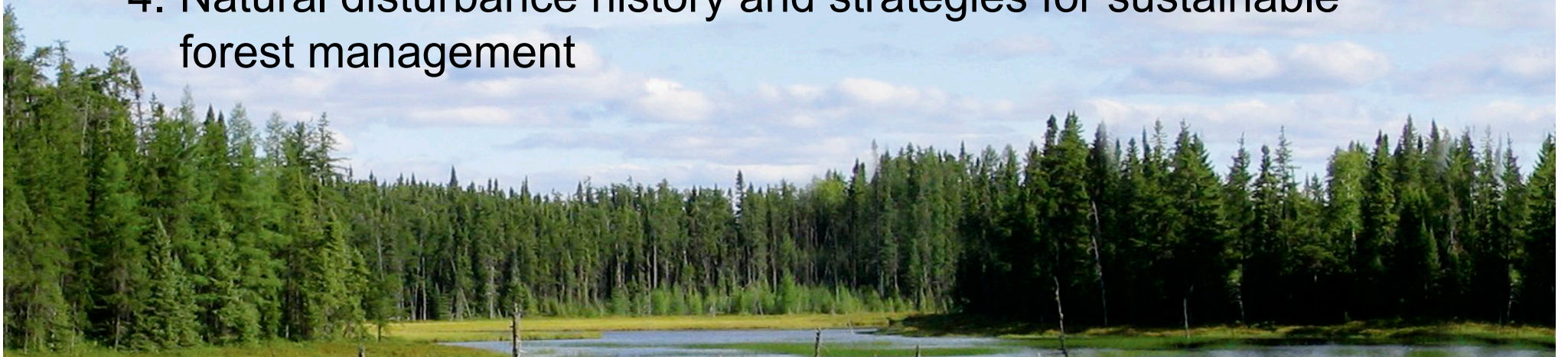
Marie Curie Actions— International Research Staff Exchange Scheme (IRSES)





Research Themes

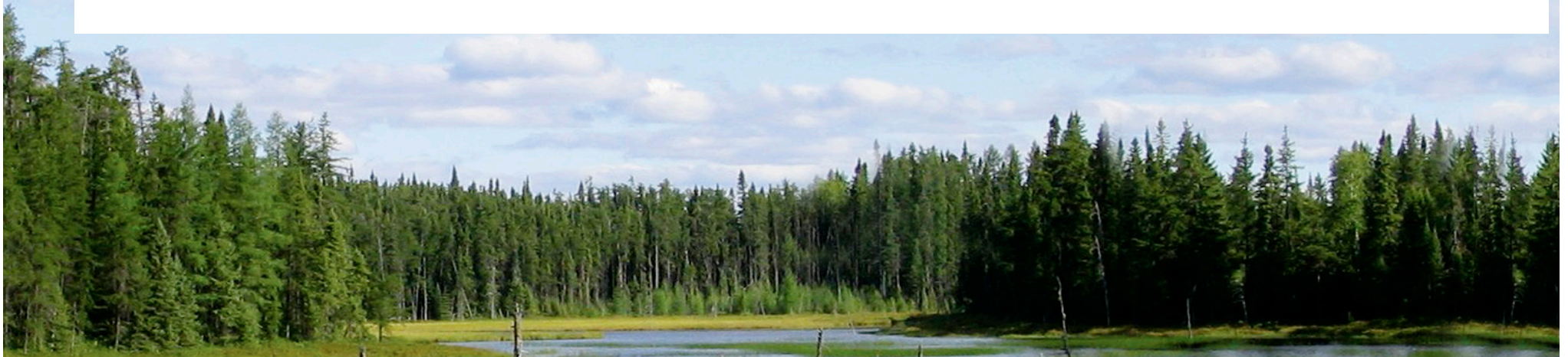
1. Genetics, molecular biology and physiology
2. **Population dynamics, biodiversity and conservation biology**
3. Forest processes and the development of new silvicultural approaches
4. Natural disturbance history and strategies for sustainable forest management



NEWFORESTS

Work package n°	Work title	Beneficiary/Partner organisation short name	Start month	End month
1	Functional diversity and Ecology	CTFC, CREAM, CBAE, CEF (UQAM)	4	36
2	Biodiversity dynamics	CTFC, CREAM, CBAE, CEF (UQAM, UQAT)	4	36
3	Disturbance dynamics	CTFC, CREAM, CBAE , CEF (UQAM, UQAT)	4	36
4	Forest complexity modelling	CTFC , CREAM, CBAE, CEF (UQAM, UQAT)	5	36
5	Forest ecosystem management	CTFC, CREAM , CBAE, CEF (UQAM, UQAT)	5	36
6	Project management	CTFC , CREAM, CBAE, CEF (UQAM, UQAT)	1	36

Leading partner in bold



WP 2 - Biodiversity dynamics

Description of work

Task 2.1. *Determining the role of landscape structure and succession dynamics on forest biodiversity.* Landscape ecology presupposes the existence of relationships between the spatial and temporal patterns of the landscape and the functional processes that take place within it. Changes in land-use are one of the main components of what is known as global change. It is often associated with changes in the ecological quality of forest habitats and landscape structure, especially in size, shape and spatial configuration. All these changes can have a negative impact on the conservation of the most vulnerable organisms, and in some case lead to increases in the risk of habitat invasion by exotic species. The dynamics of land cover and landscape structure in forested landscapes will



WP 2 - Biodiversity dynamics

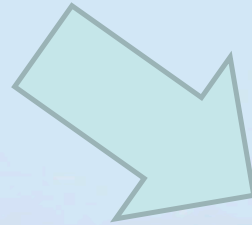
**From an organism perspective
(movement constraints of individuals)**



Imbeau



Drapeau



**To a population and community perspective
(pop numbers – community composition)**



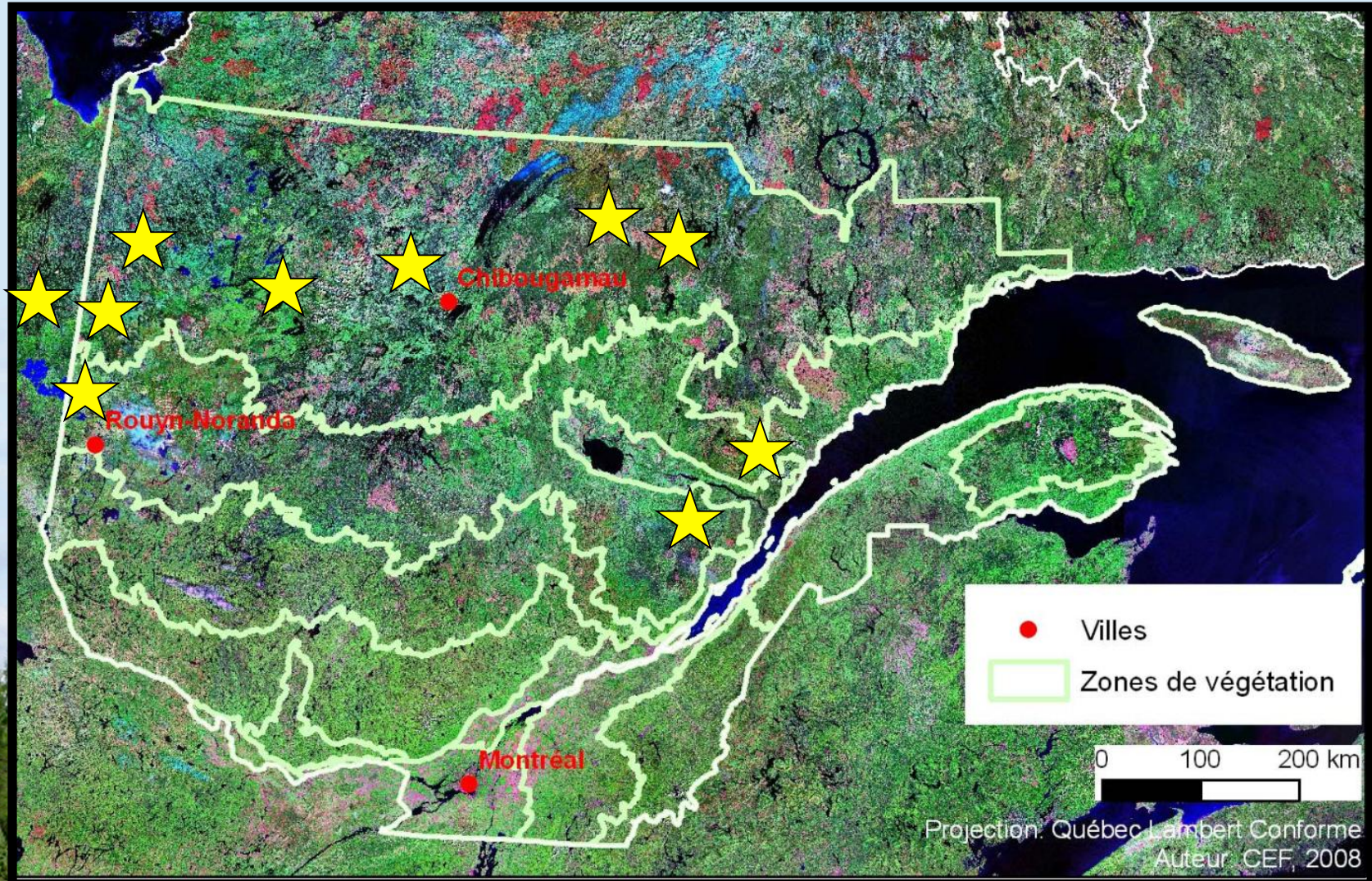
Desrochers



Fortin



Bird data sampling - 1994 - 2013

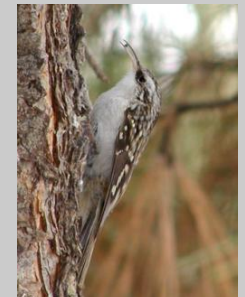
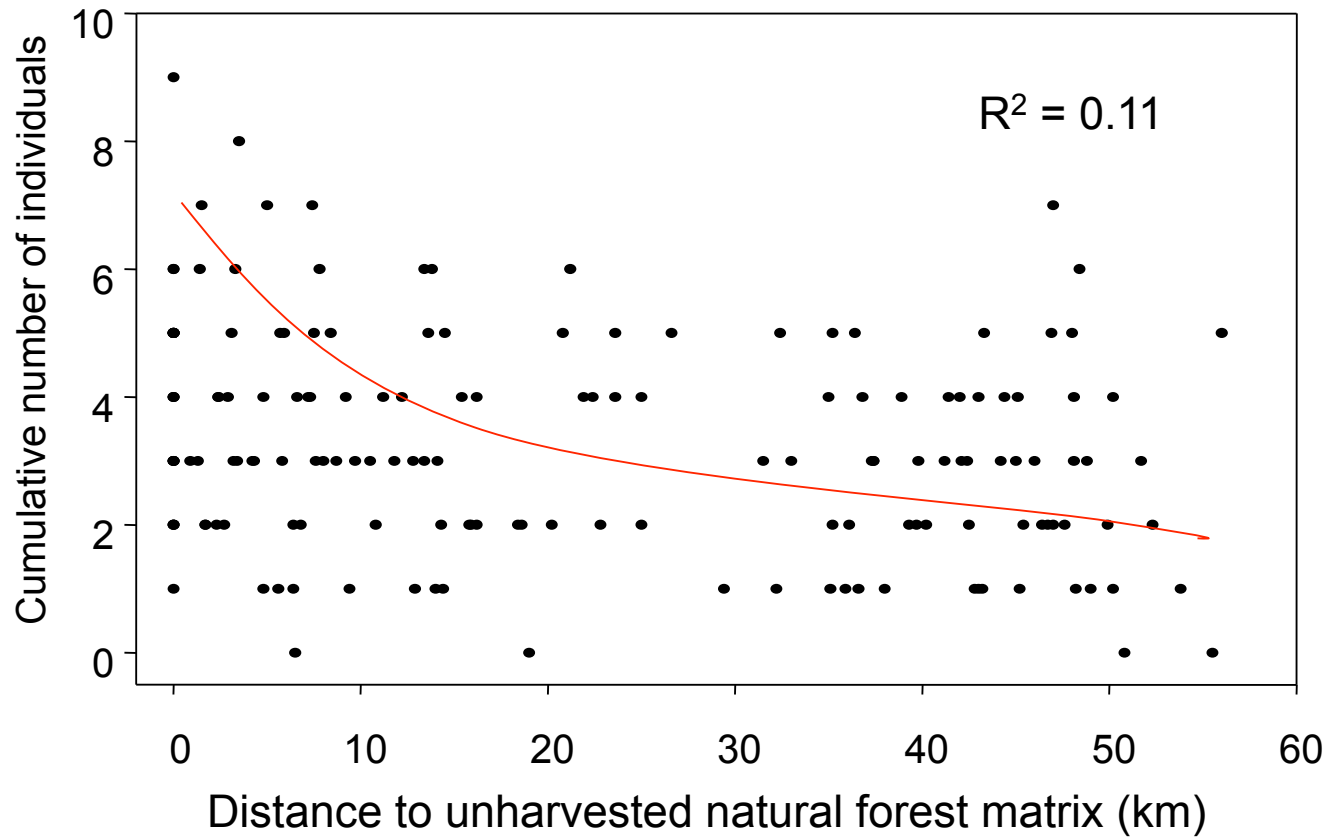


Remnants in managed landscapes.....

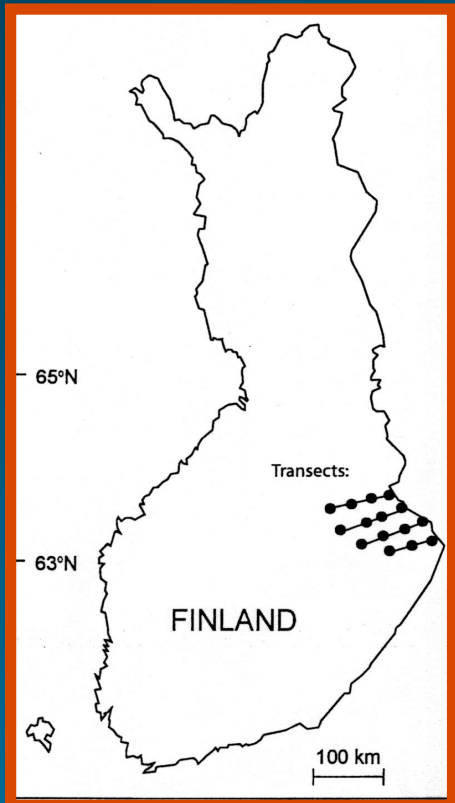


➤ **Occupancy by boreal bird communities?**

Fragmentation Effects - Functional group level



Leboeuf (M.Sc. Thesis 2004)



Kouki et Väinänen 2000

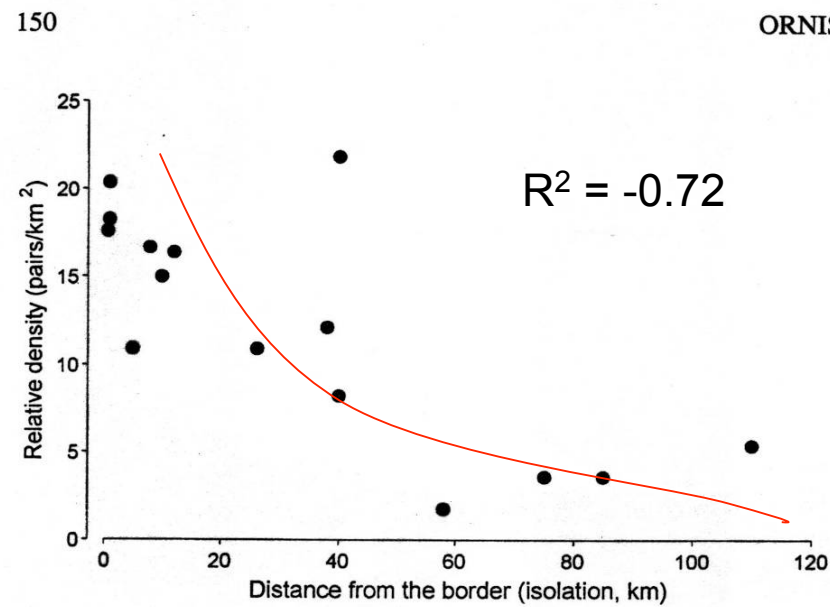


Figure 2. Average relative density indices of the ten forest-dwelling species in relation to the distance from the Russian border ($r_s = -0.720$, $P = 0.0023$). Census conducted in a 50–60 ha area in each of the 15 forests.

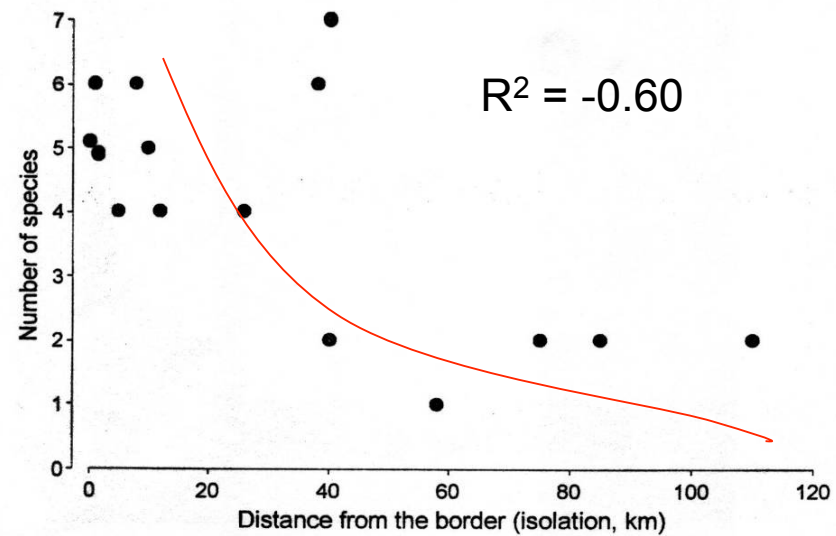
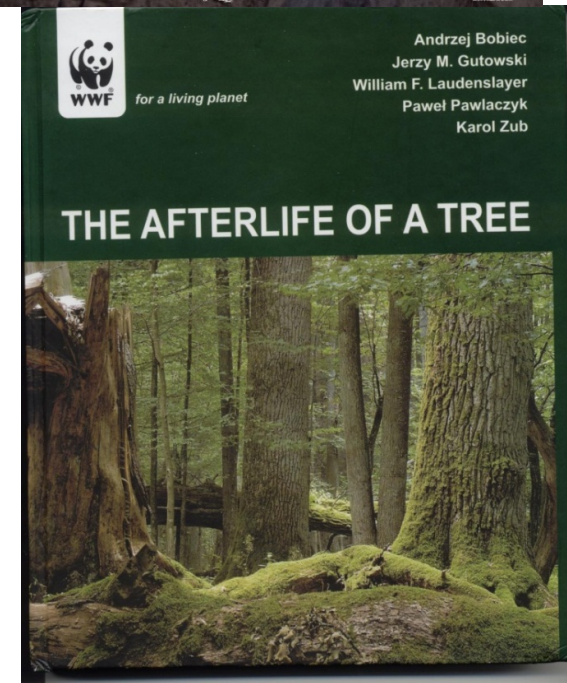
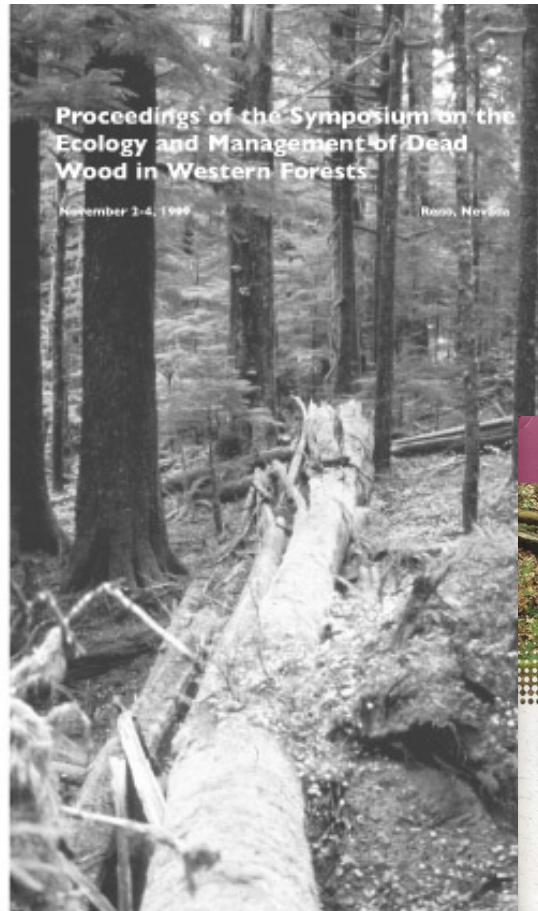


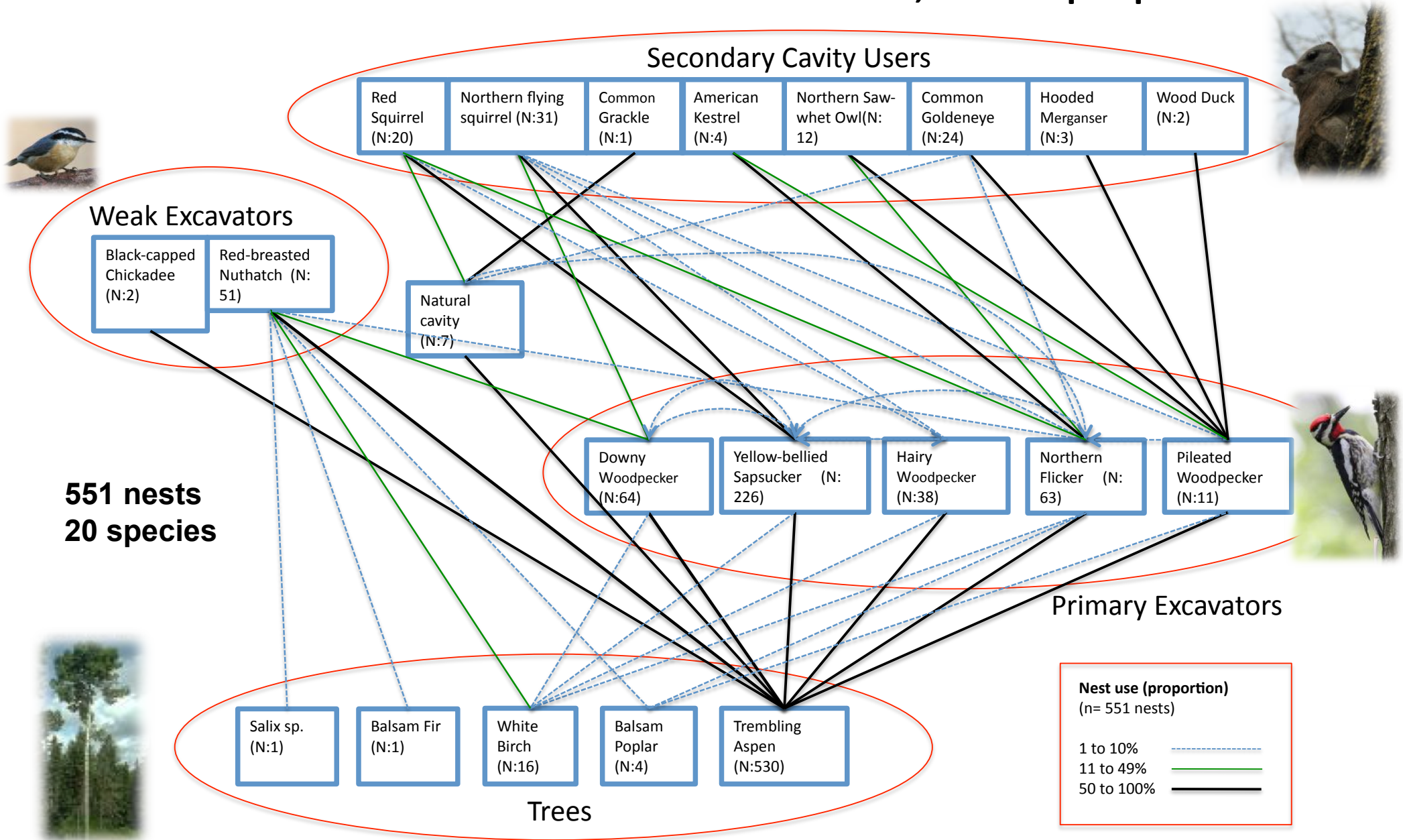
Figure 3. Average number of species in the studied forest fragments located at different distances from the Russian border ($r_s = -0.600$, $P = 0.0182$). Census conducted in a 50–60 ha area in each of the 15 forests. Two points close to the y-axis have been slightly displaced to avoid overlap.

Deadwood, a worldwide issue for biodiversity conservation in forest ecosystems.....

USDA
United States
Department of
Agriculture
Forest Service
Pacific Southwest
Research Station
General Technical Report
GTR-359-181



North American eastern boreal mixedwood nest-web, Lake Duparquet - Abitibi



Temperate Forest - Poland

J Ornithol (2007) 148 (Suppl 2):S395–S405
DOI 10.1007/s10336-007-0198-1

REVIEW

Lessons from long-term hole-nester studies in a primeval temperate forest

Tomasz Wesolowski

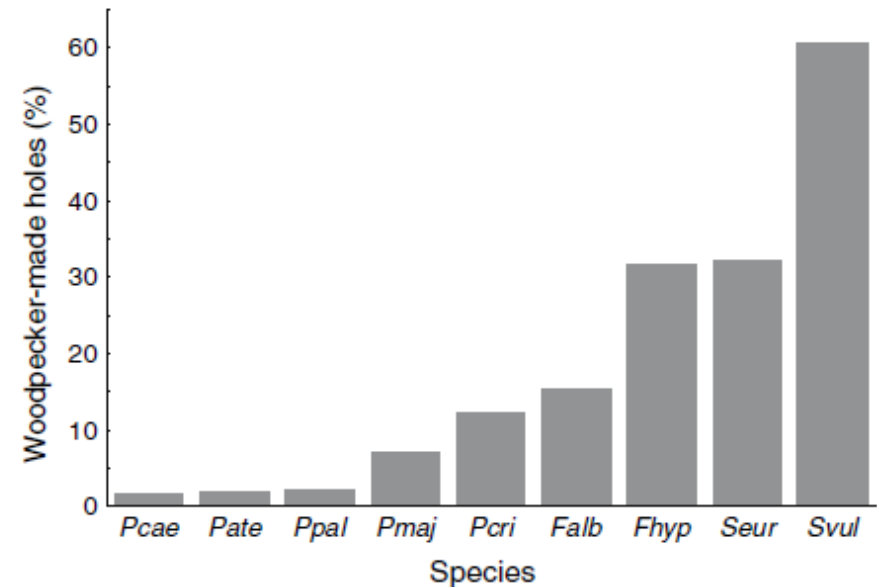
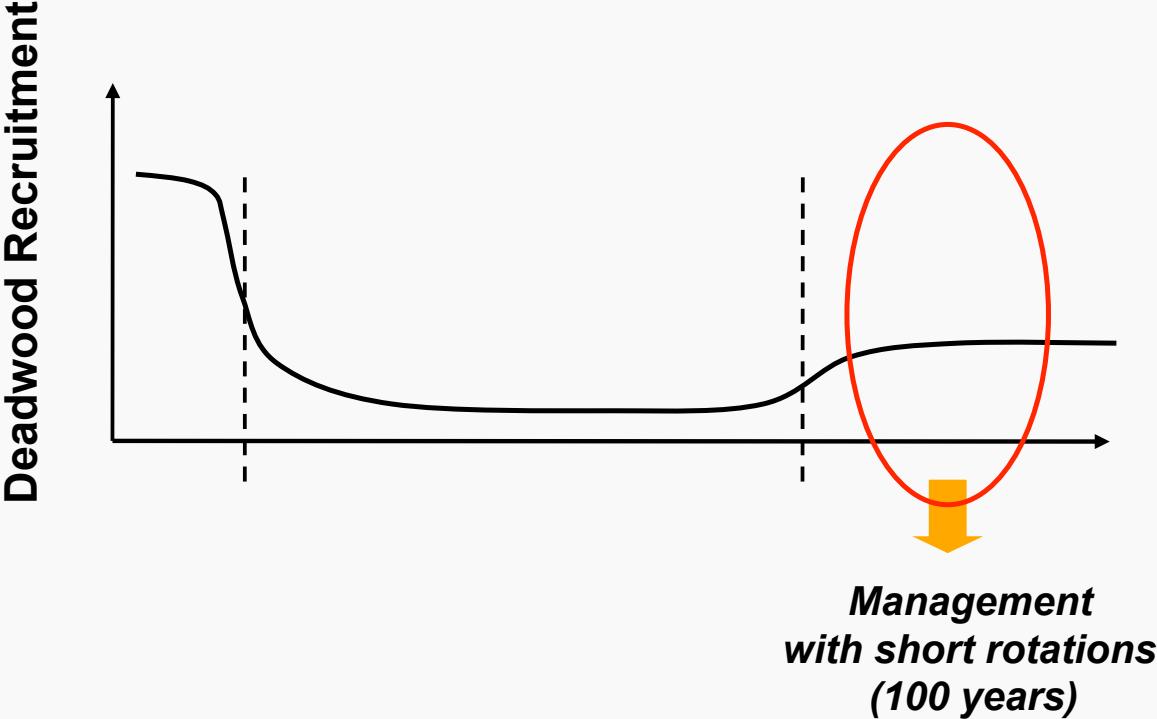


Fig. 5 Frequency of use of woodpecker-made holes by different species of secondary hole-users in the Białowieża National Park. After Wesolowski (1996), Czeszczewik and Walankiewicz (2003), Wesolowski and Rowiński (2004), and supplemented by unpublished data from the Białowieża hole monitoring scheme. *Pcae*, *Parus caeruleus*, $n = 367$; *Pate*, *Parus ater*, $n = 49$; *Ppal*, *Parus palustris*, $n = 828$; *Pmaj*, *Parus major*, $n = 239$; *Pcri*, *Parus cristatus*, $n = 33$; *Falb*, *Ficedula albicollis*, $n = 1548$; *Fhyp*, *Ficedula hypoleuca*, $n = 123$; *Seur*, *Sitta europaea*, $n = 1067$; *Svul*, *Sturnus vulgaris*, $n = 654$

Deadwood in Older Forests

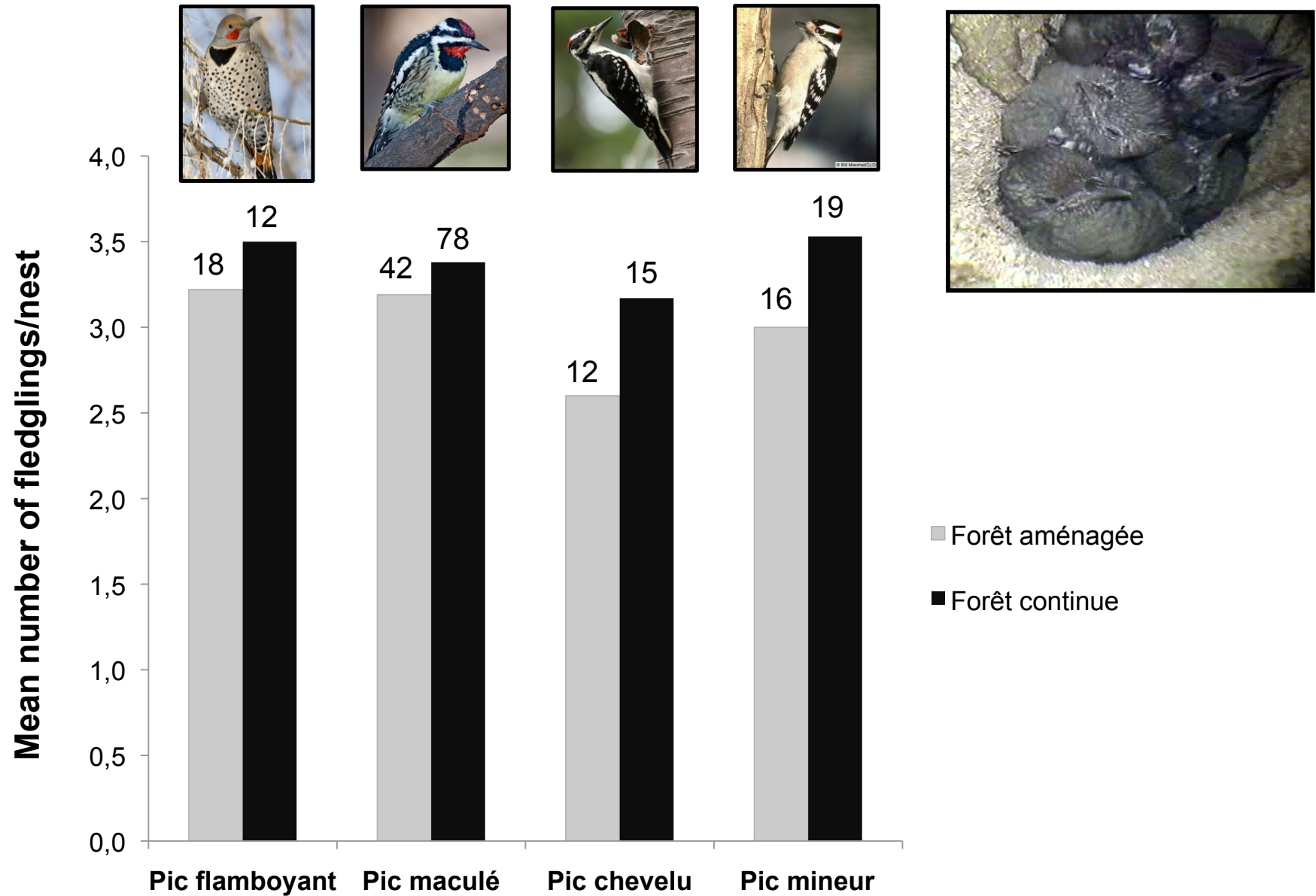


WP-2 Biodiversity dynamics in remnants



➤ **Quality habitats for cavity nesting communities??**

Productivity of woodpeckers in managed landscapes over 4 yrs



WP-2 Biodiversity dynamics in remnants

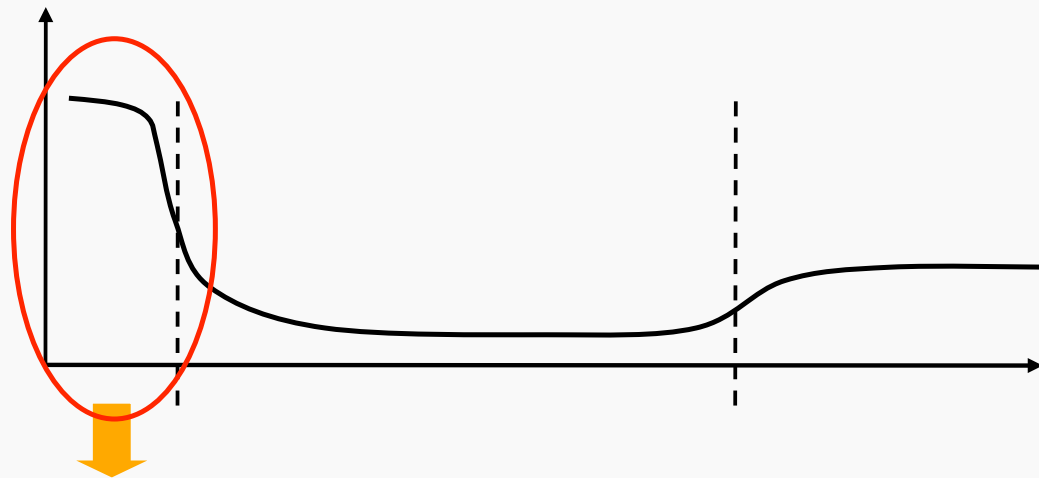


➤ Long term persistence of cavity nesting communities ????



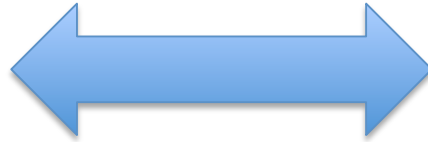
Deadwood in Recent burns

Deadwood Recruitment



***Salvage logging in Recent burns
without sustainable management guidelines***

WP2
Biodiversity
dynamics



WP3
Disturbance
dynamics

Global changes
Climate – Fire
Timber harvesting



Population dynamics of
a fire specialist

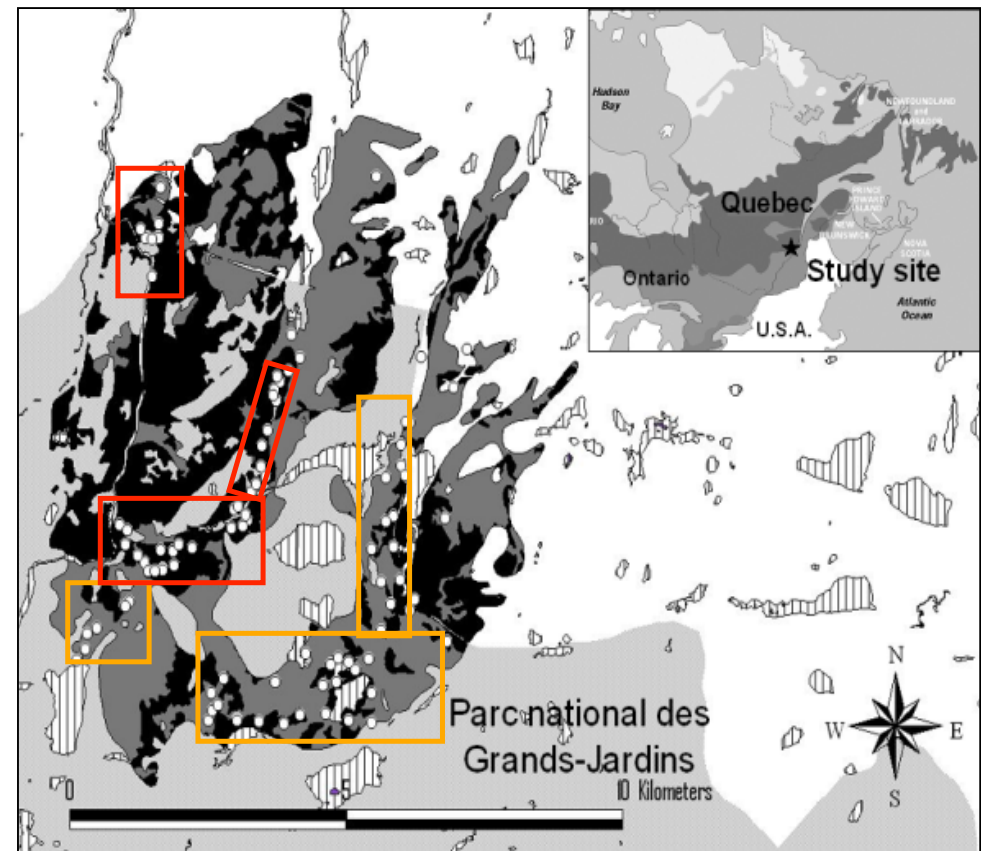
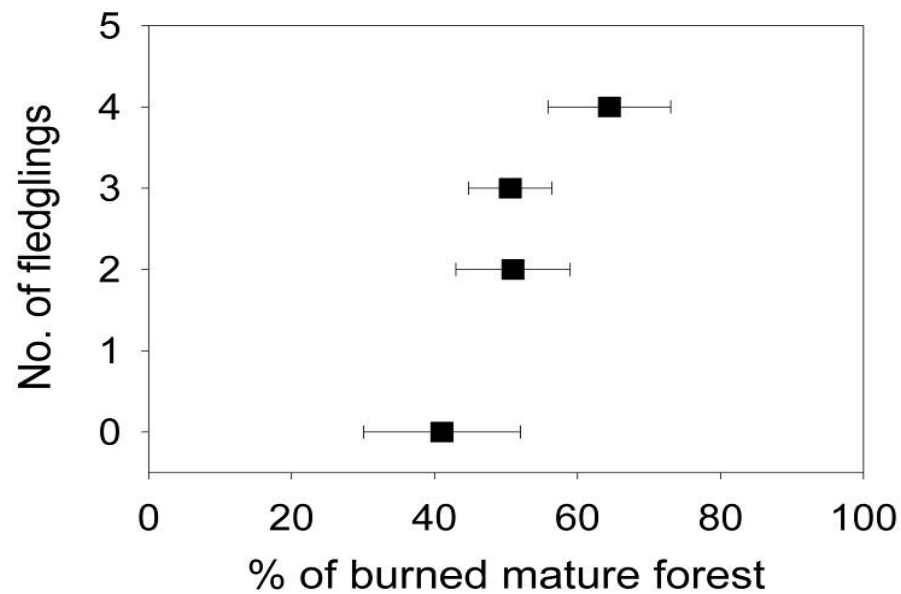


Reproductive success of the black-backed woodpecker (*Picoides arcticus*) in burned boreal forests: Are burns source habitats?

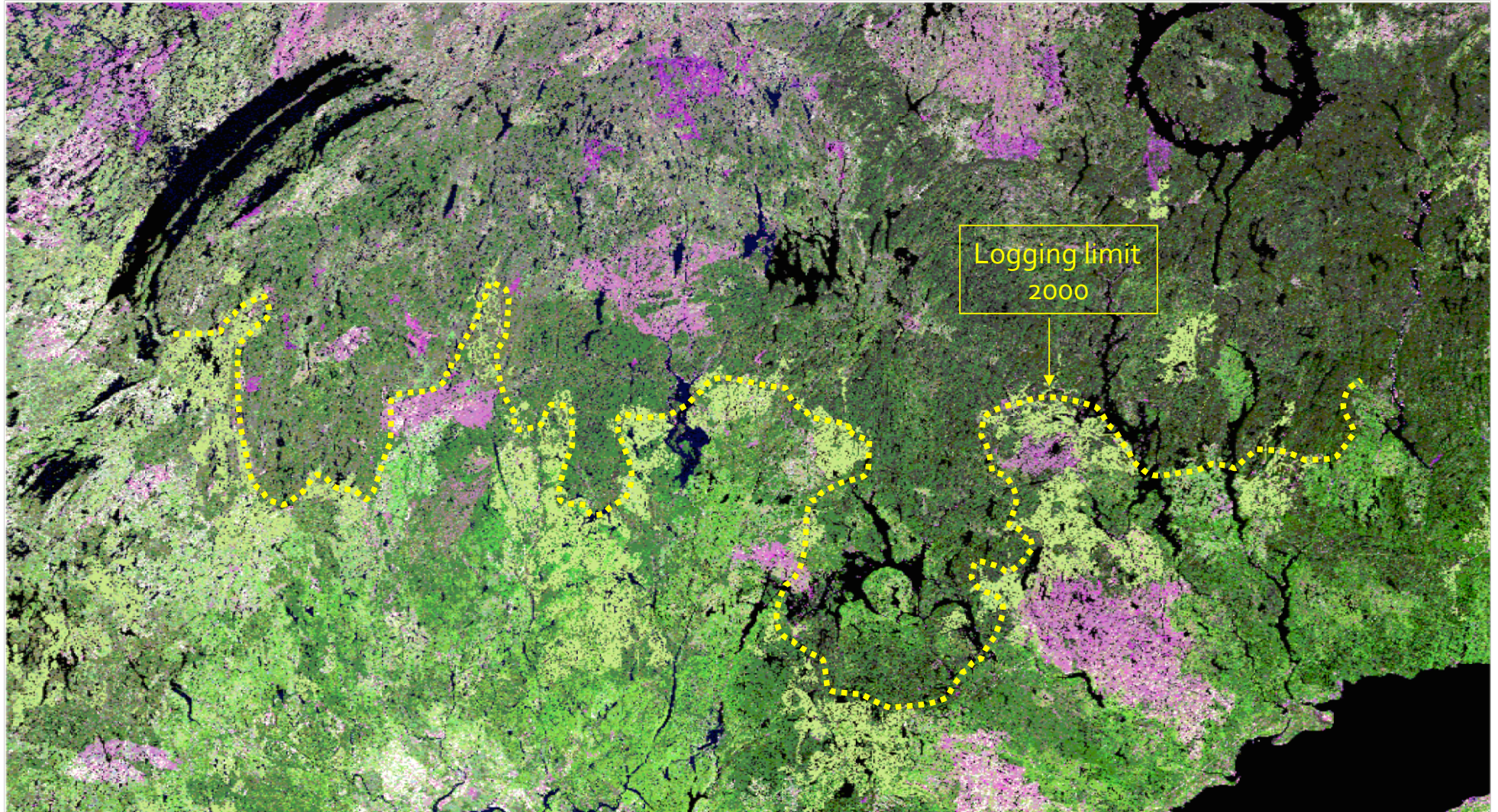
Antoine Nappi*, Pierre Drapeau

Spatial variation in reproductive success

Pre-fire conditions



Extensive Clearcutting of Québec's boreal forest





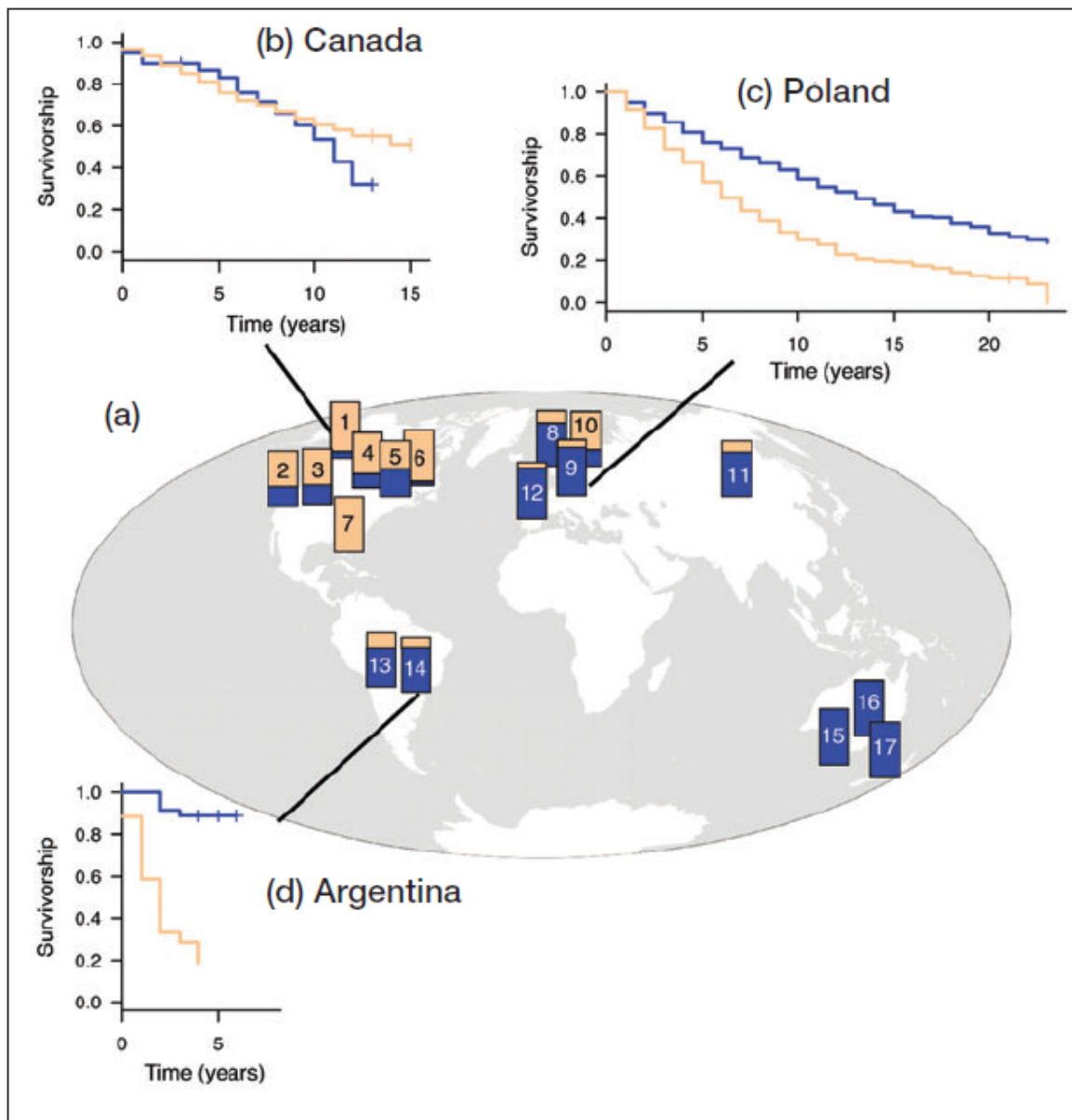


Figure 2. (a) Proportion of non-excavator nests in excavated (orange) versus nonexcavated (blue) cavities in 17 community studies around the world: (1) Aitken and Martin (2007); (2) Waters (1988); (3) Raphael and White (1984); (4) Stauffer and Best (1982); (5) Bavrlic (2008); (6) **Drapeau (pers comm)**; (7) Blanc and Walters (2008); (8) Carlson et al. (1998); (9) **Wesołowski (2007)**; (10) Remm (pers comm); (11) Bai et al. (2003); (12) Robles (pers comm); (13) Politi in Cornelius et al. (2008); (14) Cockle (2010); (15) Koch et al. (2008b); (16) Gibbons and Lindenmayer (2002); (17) Blakely et al. (2008). (b–d) Survivorship of excavated and non-excavated cavities at sites in Canada, Poland, and Argentina. Crosses on the lines indicate censoring in the data (eg cavities still standing at the end of the observation period).

Cockle, Martin and Wesołowski 2011.
Frontiers in Ecology and Environment
doi:10.1890/110013