

FINAL RESUME ON THE RESEARCH UNIT
BIOGECO - Biodiversité, Gènes et Communautés

UNDER THE SUPERVISION OF THE
FOLLOWING INSTITUTIONS AND RESEARCH
BODIES:

Institut national de recherche pour l'agriculture,
l'alimentation et l'environnement - INRAE
Université de Bordeaux

EVALUATION CAMPAIGN 2020-2021
GROUP B



In the name of Hcéres¹:

Mr Thierry Coulhon, President

In the name of the experts committee²:

Mr Christian Parisod, Chairman of the
committee

Under the decree No.2014-1365 dated 14 November 2014,

¹ The president of Hcéres "countersigns the evaluation reports set up by the experts committees and signed by their chairman." (Article 8, paragraph 5);

² The evaluation reports "are signed by the chairman of the experts committee". (Article 11, paragraph 2).

Tables in this document were filled with certified data submitted by the supervising body on behalf of the unit.

UNIT PRESENTATION

Unit name:

Biodiversité, Gènes et Communautés

Unit acronym:

BIOGECO

Current label and N°:

UMR_A 1202

ID RNSR:

200317684N

Application type:

Renewal

Head of the unit (2020-2021):

Mr Christophe Plomion

Project leader (2021-2025):

Mr Christophe Plomion

Number of teams and/or themes:

5

EXPERTS COMMITTEE MEMBERS

Chair:

Mr Christian Parisod, University of Bern, Switzerland

Experts:

Ms Karine Alix, AgroParisTech, Gif-sur-Yvette (representative of CSS INRAE)

Mr Frank Berninger, University of Eastern Finland, Joensuu, Finland

Mr Frédéric Brunet, ENS de Lyon (supporting personnel)

Ms Pilar Catalan, University of Zaragoza, Spain

Ms Julie Leloup, Sorbonne University, Paris (representative of CNU)

Ms Clélia Sirami, INRAE, Castanet-Tolosan

HCÉRES REPRESENTATIVE

Mr Christopher Carcaillet

REPRESENTATIVES OF SUPERVISING INSTITUTIONS AND BODIES

Ms Catherine Bastien, INRAE

Ms Magalie Beaudrimont, Université de Bordeaux

Mr Philippe Moretto, Université de Bordeaux

INTRODUCTION

HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

The research unit 'Biodiversité, Gènes et Communautés' (BIOGECO) involves researchers from the INRAE and the University of Bordeaux working on two 20 km-apart sites around the city of Bordeaux (i.e., INRAE-Pierroton at Cestas and the University campus at Pessac). BIOGECO has regularly been reorganized since its creation in 2003. Following career turnover and national mobility, it has expanded from 31 to 76 permanent researchers benefitting from state-of-the-art infrastructure and experimental/analytical facilities.

Following a bottom-up restructuring in 2018, the unit organised according to a matrix scheme of teams and cross-cutting themes. BIOGECO encompasses multidisciplinary approaches from evolutionary ecology and genomics to address the biodiversity of forest ecosystems and is composed of seven research teams: **(1)** « Diversité des interactions biotiques et fonctionnement des écosystèmes forestiers » (BIODIV, 7 people, 6.45 FTE); **(2)** « Génétique évolutive d'espèces à cycles de vie complexes: données et modèles intégrés » (DMI, 6, 4.25); **(3)** « Écologie et génétique de la conservation et de la restauration » (ECOGERE, 13, 11.45); **(4)** « Évolution dans les écosystèmes forestiers » (E4E, 13, 10.2); **(5)** « Génétique et écologie des maladies des forêts » (GEMFOR, 8, 7.4); **(6)** « Patrons et modèles en biologie computationnelle » (PLEIADE, 5, 3.6); **(7)** « Bois, génomes et sélection anthropique » (XYLOMES, 10, 8.9). Permanent researchers (including one emeritus researcher) and technical staff are currently reinforced by less than 25 % young, non-permanent scientists, mostly PhD students and engineers.

The unit intends to be functioning as a network organized along five transversal research themes and four technical core-services that support internal efficiency among porous teams. It accordingly expects to target ambitious objectives and sharpen a visible national-international profile. Rather than research and technical teams, the present report evaluates cross-cutting themes. The five current themes are: **(i)** « Réponse des populations et des communautés aux changements globaux », **(ii)** « Fonctions et services liés à la biodiversité dans les systèmes forestiers et prairiaux », **(iii)** « Conservation et restauration des populations et communautés », **(iv)** « Mathématique et informatique appliquées », and **(v)** « Biodiversité et société ». For the next years, these 5 themes will be reorganized in four conceptually-centred themes entitled **(i)** « Étudier l'histoire évolutive et la réponse des espèces et communautés aux changements globaux », **(ii)** « Comprendre et prédire les phénotypes complexes », **(iii)** « Comprendre la dynamique et le rôle fonctionnel de la biodiversité », **(iv)** « Comprendre la dynamique et le fonctionnement des socio-écosystèmes pour la gestion, la conservation et la restauration de la biodiversité ». The project contains an additional theme, totally emergent in the French scientific landscape, that is cross-cutting the other four themes by being centred on a biological model with socio-economical concerns: **(v)** Émergence du nématode du pin: anticipation et gestion d'un enjeu sanitaire majeur.

RESEARCH ECOSYSTEM

BIOGECO is at the interface between the Environmental Sciences department at the University of Bordeaux and the Nouvelle-Aquitaine INRAE centre. It is noticeably involved in extensive international collaborations through competitive funding and is further pivotal to a large network of local partners from other research units as well as experimental and applied units from the University of Bordeaux, INRAE, CIRAD, INRIA, and Bordeaux Sciences Agro (BSA). It benefits from substantial funding and visibility through two LabEx (i.e., COTE and CEBA) as well as recurrent fellowships from the "Nouvelle-Aquitaine Région" and the Doctoral School "Sciences et Environnement".

HCÉRES NOMENCLATURE AND THEMATICS OF THE UNIT

SVE1_2; SVE2_2; ST1_2

MANAGEMENT TEAM

BIOGECO has been headed by Mr Rémy PETIT (INRAE) until 2018. Since the beginning of 2019 and for the next contractual period, it is headed by Mr Christophe PLOMION (INRAE) as well as two adjuncts directors: Ms Cécile ROBIN (INRAE), and Mr Emmanuel CORCKET (University of Bordeaux).

UNIT WORKFORCE

Active staff	Number 06/01/2020	Number 01/01/2022
Full professors and similar positions	1	1
Assistant professors and similar positions	5	5
Full time research directors (Directeurs de recherche) and similar positions	13	12
Full time research associates (Chargés de recherche) and similar positions	13	14
Other scientists ("Conservateurs, cadres scientifiques des EPIC, fondations, industries, etc.")	1	1
High school teachers	0	0
Supporting personnel (ITAs, BIATSSs and others, notably of EPICs)	41	36
Permanent staff	74	69
Non-permanent professors and associate professors, including emeritus	1	
Non-permanent full time scientists, including emeritus, post-docs (except PhD students)	1	
PhD Students	10	
Non-permanent supporting personnel	17	
Non-permanent staff	29	
Total	103	69

GLOBAL ASSESSMENT OF THE UNIT

BIOGECO is at the forefront of research in tree biology in Europe and, in the world, for tree genetics having, in particular, outstanding reputation in tree physiology, ecogenomics and evolution. This outstanding reputation results notably from studies implemented in the Theme 1 dedicated to the study of populations' and communities' responses to global changes, although evolutionary and ecogenomics questions are mostly realized with similar remarkable success in Themes 2 (function and services linked to biodiversity), 4 (applied mathematics and informatics for genomics). During the last period (2015-2020), BIOGECO secured solid funding through mainly competitive third-party grants and further hosted about a total of 270 non-permanent scientists (84 technical and research staff, 42 PhD candidates and hundreds of short-term visitors). BIOGECO presents an excellent scientific output and benefits from an outstanding reputation locally and regionally with socio-economical partner as well as in the scientific international arena. Performing excellent research, BIOGECO is appealing and benefits from excellent networks with both academic and non-academic stakeholders. A considerable proportion of publications from BIOGECO is accordingly in collaboration with international scientific consortia and the unit fosters cooperation with national actors in forestry and biodiversity.

Benefiting from a good technocratic organization, members of BIOGECO enjoy a very good life at work. Multiple permanent researchers have joined the unit in the last years and have assembled into a closed team that openly determined very good plans for inclusive research themes to be addressed in the future. Despite shortage of effective scientific animation and coordination among research teams and themes, BIOGECO highlighted a good strategy for explorative research in the coming years, with ambitious projects to be further consolidated, and made integrative based on available expertise. Offering good to very good training through research to a few Master and PhD students as well as postdoctoral researchers, BIOGECO has opportunities to seize to concretize its strong potential as an excellent training centre for the next generation of scientists at an international level.

The recent reorganization of transversal teams across BIOGECO has increased the efficiency of technical support, but concomitantly eroded the proportion of skilled supporting staff. Although still very high as regards to international standards, technical support now has to be strengthened with newcomers and continuing education to continuously cope with emerging technological challenges. Available infrastructure supporting long-term experiments is a major originality of BIOGECO, enabling to address critical questions about the evolutionary ecology of trees and to attract numerous externally-funded research projects at an international scale. Structural support to maintain such resource- and staff- demanding infrastructures at highest standards of performance is of great potential to promote outstanding science at BIOGECO.

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