BOOK OF ABSTRACTS

I. SESSION DESCRIPTION

ID: S3a

Fast-growing forest plantations: what kind of services and disservices?

Format: Hybrid

Hosts

	Name	Organisation	E-mail
Host	Amelie Robert	University of Picardie Jules Verne (UMR EDYSAN)	amelie.robert@u-picardie.fr

Abstract

Face to climate change, forest plantations could appear as a solution for mitigation and adaptation. Indeed, trees sequester carbon, offer renewable resources, bio-sourced materials and planting allows the introduction of species more adapted to tomorrow's climate. As a consequence, forest plantations are encouraged and their area increases worldwide and particularly in Latin America. In particular, this trend is true for fast growing forest plantations. In this session, we will focus on these plantations, which are often monospecific, because they are at the heart of controversies. The session will begin with short presentations (10 min, depending on the number of speakers). Then the participants will debate about the services and disservices that can be associated with plantations: at first sight, we think about provisioning services; what about regulating services (carbon, water), support services (biodiversity) and cultural services (the less studied ones)? and what about disservices? The participants will be polled to measure their opinion on the topic; then group discussions will follow. At the end of the session, each group will present its findings in a final overview discussion.

Goals & Objectives

know the point of view of participants and open discussion on a controversial topic

Planned Output

A joint articles

Session Format

Method: discussion groups - time: 2h30

Acceptance of voluntary contributions

Yes, I allow any abstract to be submitted to my session for review.

Relation to ESP Working Groups or National Networks

Sectoral Working Groups: SWG 3 – ES in Forestry production

II. SESSION PROGRAMME

Date of session: Tuesday 7 November 2023
Time of session: 16:00–18:00

Timetable speakers

Time	First name	Surname	Organization	Title of presentation
16:00	Amelie	Robert	UMR EDYSAN / University of Picardie Jules Verne, Amiens, France	Introduction
16:05	Taryn	Fuentes-Castillo et al	Wildland Ecobenefit Conservancy (WEConserv) Foundation, Facultad de Ciencias Forestales y de la Conservación de la Naturaleza, Universidad de Chile, Santiago, Chile	Estimating Forest carbon stocks from field, satellite and drone observations: Monitoring of Conservation Easements in the Chilean Patagonia
16:20	Luis	Gonzales Carrasco et al.	Centro Latinoamericano de Políticas Económicas y Sociales, CLAPES UC, Chile	From Flames to Financials: An Examination of the Natural Capital and Carbon Sequestration Impacts of the 2017 Chilean Mega Forest Fire
16:35	Cecilia B.	Barriga Bahamonde	George Mason University, USA	Servicio ecosistémicos mediados por mamíferos frugívoros en la Amazonía Peruana

Time	First name	Surname	Organization	Title of presentation
16:50	Luara	Tourinho et al	Institute of Advanced Studies (IEA-USP), University of São Paulo, São Paulo, Brazil	Climate change impacts over ecosystem services provided by Brazilian mammals
17:05	Cesar J	Galarza	FSC International	Verifying the positive impact on ecosystem services in the framework of FSC certification, as an instrument to combat climate change and biodiversity loss and to counteract the inequity that affects forest managers given the existing economic incentives that drive activities that lead to deforestation and forest degradation
17:20	Amélie	Robert	UMR EDYSAN / University of Picardie Jules Verne, Amiens, France	Debate: How to adapt forests to climate change? What kind of forests for tomorrow?
17:30	Amélie	Robert	UMR EDYSAN / University of Picardie Jules Verne, Amiens, France	In the face of climate change, fast-growing forest plantations encouraged because of their ecosystem services
17:40	Amélie	Robert et al	UMR EDYSAN / University of Picardie Jules Verne, Amiens, France	Ecosystem services provided by poplar plantations, from the point of view of local stakeholders and inhabitants in Centre-Val Loire de Loire and Hautsde-France regions in France
17:50	Amélie	Robert	UMR EDYSAN / University of Picardie Jules	Discussion and conclusion

Time	First name	Surname	Organization	Title of presentation
			Verne, Amiens, France	

III. ABSTRACTS

1. *Type of submission*: Abstract / Resumen

S. Sectoral Working Group sessions / Sesiones del Grupo de trabajo Sectoriales: S3a - Fast-growing forest plantations: what kind of services and disservices?

In the face of climate change, fast-growing forest plantations encouraged because of their ecosystem services

First author(s): Amelie Robert

Presenting author: Amelie Robert

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In the face of climate change, forest plantations are encouraged by different stakeholders, at different scales. In this presentation, we will discuss the ecosystem services associated with fast-growing plantations, now and in the future, by various stakeholders. We will base our discussion on semi-structured interviews focusing on poplar and maritime pine plantations in the Centre Val de Loire region of France. We will then look at the example of acacia plantations in Vietnam (Thua Thiên Huê province). Forest plantations are also sources of disservices, which must be taken into account in order to reduce them and maximize the services rendered.

Keywords: Forest plantations, France, Vietnam, poplar, maritime pine, acacia

2. *Type of submission*: Abstract / Resumen

S. Sectoral Working Group sessions / Sesiones del Grupo de trabajo Sectoriales: S3a - Fast-growing Forest plantations: what kind of services and disservices?

From Flames to Financials: An Examination of the Natural Capital and Carbon Sequestration Impacts of the 2017 Chilean Mega Forest Fire

First author(s): Isidora Lara Ochoa

Presenting author: Isidora Lara Ochoa

Other author(s): Isidora Lara Ochoa, Joaquín Vial Ruiz-Tagle

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Forest fires are part of the natural world in which we live. However, they are becoming more frequent and intense due to climate change. In the case of Chile, these events are exacerbated by cyclical climatic and institutional factors. This paper estimates the cost of the 2017 mega forest fire, which affected 518,174 ha and was the largest recorded in Chile's history. The cost of the fire is estimated in terms of natural capital, specifically plantations, and the impact on an ecosystem service, carbon sequestration. Taking into account a fifty per cent damage rate and valuing the replacement cost of plantations (by species) at non-productive ages and the potential productive volume of trees at productive ages, the loss of natural capital in plantations is estimated at USD 1,046 million. On the other hand, the 68.2 million tonnes of CO_2 eq emitted by the fire and the 547 million tonnes of CO_2 eq of sequestration capacity lost over the period due to the fire are valued at Local Social Carbon Cost (LSCC) and EU-ETS prices, resulting in estimated damages of USD 2,983 million and USD 18,666 million respectively with the LSCC valuation. Understanding the economic impact and loss of natural capital due to forest fires is crucial for informing sustainable forest management practices, climate change policies, and strategies for the conservation and restoration of ecosystems in Chile and beyond.

Keywords: Forest fires, carbon sequestration, ecosystem services, natural capital, Chile.

3. *Type of submission*: Abstract / Resumen

S. Sectoral Working Group sessions / Sesiones del Grupo de trabajo Sectoriales: S3a - Fast-growing Forest plantations: what kind of services and disservices?

Climate change impacts over ecosystem services provided by Brazilian mammals

First author(s): Luara Tourinho

Presenting author: Luara Tourinho

Other author(s): Danilo Boscolo, Mariana M. Vale

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Considering Brazil's central role in the ecosystem services (ES) provision worldwide, we assessed the main ESs provided by Brazilian mammals under climate change. To do so, we created a database comprising 11 ES provided by 701 Brazilian mammals, based on functional traits and trophic interactions. Next, we mapped their diversity patterns under current and future conditions, for each Brazilian phytophysiognomy domain. We assessed ES vulnerability by summing the provider distributions and estimating richness, delta and beta patterns. Although most species experienced a loss in distribution, overall richness increased. The results among domains were idiosyncratic: in general, ES provision in Amazon is expected to expand (+55%), while in southeast of Atlantic Forest, especially in the region of São Paulo state, it is expected to contract (-21% and -65%, for seed dispersal and pollination, respectively). Beta patterns for all ESs indicated great changes in composition for Caatinga, Cerrado, and eastern limits of Amazon. This study has also the potential to contribute to effective nature-based solutions from an applied perspective. For example, local governments have settled instruments to enforce the maintenance of native vegetation on rural properties, intensifying supervision, and encouraging restoration efforts to address vegetation deficits. Considering the potential of seed dispersal and pollination services to reduce the cost of restoration process by facilitating natural regeneration, we are evaluating the ES chain of the ecosystem restoration process, focusing on these two services provided by mammals, in São Paulo — the state with the largest economy, situated within two biodiversity hotspots but facing a significant deficit in native vegetation. Therefore, mapping the diversity and distribution of species that provide ES, while considering the global change impacts, can assist governments and landowners in identifying areas with high ES potential, directly (e.g. lower restoration costs) and indirectly (e.g. increasing provision of services to agricultural systems).

Keywords: biodiversity, ecosystem service deliverers, nature's contributions to people, supporting species, ecosystem restoration

4. *Type of submission*: Abstract / Resumen

S. Sectoral Working Group sessions / Sesiones del Grupo de trabajo Sectoriales: S3a - Fast-growing Forest plantations: what kind of services and disservices?

Estimating Forest carbon stocks from field, satellite and drone observations: Monitoring of Conservation Easements in the Chilean Patagonia

First author(s): Taryn Fuentes-Castillo

Presenting author: Taryn Fuentes-Castillo

Other author(s): Adrián Pascual Arranz, Jorge Perez-Quezada, Aarón Grau-Neira, Franco Cereceda-Espinoza

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Chilean Patagonia (ChP) is a remote landscape characterized by old-growth forests and fiords in southern South America. Monitoring Conservation Easements (CE) is an opportunity to quantify carbon stocks from aboveground biomass (AGB) data over time, which allows for studying complex ecosystem dynamics. Quantifying carbon stocks from native forests across this important ecoregion critically informs our capacity to formulate key climate change mitigation strategies and enhance the role of CE in conservation. Performing this task is a challenge that requires deploying modern remote sensing technology.

Since 2022, the WEConserv Foundation (landtrust), The Real Eco State, and the GEDI program (University of Maryland and NASA) are using LiDAR technology, which is critical to mapping forest canopy height and AGB to improve the trustworthiness and efficacy of data in CE-protected areas in the ChP. Also, WEConserv has tested a specialized LiDAR drone to calibrate and validate the accuracy of GEDI products and improve WEConserv's capacity to detect fine-scale CE non-compliance. We present two levels of analyses (1) we compared different spatial carbon stocks databases in the ChP including GEDI-L4A data, and (2) we estimated carbon stocks by using the finest LIDAR technology in five study areas protected by CE.

Main results suggest that LiDAR-drone estimations, Perez-Quezada et al. (2023) and GEDI-L4A have not only highest precision in comparison with conventional remote sensing databases but are also capable of identifying detailed spatial patterns. Regarding the CE-protected areas, we demonstrated a better performance to estimate carbon stocks using a LiDAR-drone approach (50.34 Ton C/ha ±30.85), in comparison to global classifications obtained with only remote sensing data (140.90 Ton C/ha ±89.82). Also, GEDI-L4A proved to be a reliable data source in the CE-protected areas. This project contributes to

disentangling part of the complex carbon dynamics and highlights the importance of conserving the native forests in ChP.

Keywords: Carbon Stocks, Conservation Monitoring, Ecosystem Services, Aboveground biomass, GEDI, LiDAR, Chilean Patagonia.

5. *Type of submission*: Abstract / Resumen

S. Sectoral Working Group sessions / Sesiones del Grupo de trabajo Sectoriales: S3a - Fast-growing Forest plantations: what kind of services and disservices?

Servicio ecosistémicos mediados por mamíferos frugívoros en la Amazonía Peruana

First author(s): Cecilia Beatriz Barriga Bahamonde

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La Amazonía sur del Perú es uno de los sitios más biodiversos del planeta donde múltiples servicios ecosistémicos son provistos. Al mismo tiempo, es hogar de un gran número de comunidades nativas y colonos. Los mamíferos frugívoros como los primates, roedores medianos y el tapir cumplen un rol muy importante en el funcionamiento del ecosistema como dispersores de semillas. Es conocido que cambios en la estructura comunitaria de vertebrados grandes afecta el funcionamiento del ecosistema. Sin embargo, cambios en la demografía de la selva y desarrollos tecnológicos incrementan la presión sobre estos animales. Mi investigación se centra en mamíferos que son importantes para la dispersión de semillas y como carne de monte, y en plantas que son utilizadas por comunidades nativas. El objetivo de mi investigación es averiguar cómo se relaciona la estructura comunitaria de mamíferos frugívoros y los servicios ecosistémicos de provisión de carne, frutos silvestres y materia prima. Elegí tres comunidades nativas: Boca Pariamanu, Infierno y Masenawa, y tres áreas protegidas: Hoja Nueva 2, Refugio Amazonas y Los Amigos en Madre de Dios, Perú, donde muestreé mamíferos arbóreos y terrestres entre enero y julio del 2020 y 2021 y evalué los servicios ecosistémicos mediante cuestionarios. Dasyprocta variegata y Callicebus toppini fueron los mamíferos más abundantes y Los Amigos el lugar con mayor diversidad de mamíferos frugívoros. Masenawa fue la comunidad con mayor aprovechamiento de carne de monte por vivienda y Boca Pariamanu de frutos silvestres. Ambas presentan mayor diversidad de mamíferos, lo que contribuye a un mayor aprovechamiento, en comparación a Infierno. Los resultados dan indicios que un aprovechamiento moderado en conjunto con el establecimiento de áreas de recuperación promueve la conservación de la diversidad de mamíferos frugívoros y las plantas que ellos dispersan.

Keywords: Dispersión de semillas, caza, frutos silvestres, materia prima, Madre de Dios

forwarded you an email concerning T6b. One speaker has cancelled, and the other has requested to change sessions. Do you have suggestions or guidance on how we should address this?