

RAINFOR People

Flávia Costa, PPBio, Brasil



RAINFOR and PPBio are in the final stages of signing a 5 year cooperation agreement.

Which are your main research interests?

Plant Ecology in general, from broad patterns of plant species distribution and their environmental or anthropogenic correlations, to their mechanistic causes. Although forest herbs are my passion, I've been involved in research of all plant groups, especially those "neglected": lianas, palms, shrubs...

Are you involved in any projects at the moment?

PPBio and the Brazilian Long Term Ecological Research Program (here in Brazil called PELD) are the main umbrella under which my projects are included. Two big projects are running now. The first linking plant species distribution and forest structure to hydrology along a 600 km extension crossing the middle of the Amazon; and the second addresses the long term dynamics of several biotic components (from fish to trees) in non-disturbed to selective logged or fragmented forests.



It has been a few months since our last Newsletter and we have lots of interesting news to share with you about what has been happening within the network!

We invite you to visit <http://www.geog.leeds.ac.uk/projects/rainfor/> for regular news updates.

- **Forest Plots.net** - If you haven't visited Forest Plots (www.ForestPlots.Net) recently, we encourage you to do so. Once you have your login/password combination you can explore the website in more detail. This project is associated with RAINFOR, and provides a web-accessible secure repository for the whole network's forest inventories, of which there are currently over 235 plots, plus hundreds more from across the tropics. Plot owners can safely store, manage, and analyse their data here.
- Read up on the **Field Campaigns** the RAINFOR people have been involved in across Amazonia, on the RAINFOR website: http://www.geog.leeds.ac.uk/projects/rainfor/pages/campaigns_eng.html

Recent fieldtrips include Peru, Venezuela and Guyana!



El Sira, Peru
(2011)



Team – Oxapampa, Peru
(2011)



Venezuela
(2012)



Team - Guyana
(2012)

- **2011**



- **October - November 2011 - Oxapampa, Pasco, Peru**

During a 6 week trip, **Abel Monteagudo** (Missouri Botanical Garden, Peru - RAINFOR), led a team of six Peruvians: Víctor Chama Moscoso, Nadir Pallqui Camacho, Amador Pfuero Tapia, Edith Briceño Huayta and Antonio Pena Cruz (it's important to highlight that many of these researchers are actively involved in numerous RAINFOR campaigns, thus ensuring the strengthening of training on establishment methodologies and remeasurements of permanent plots). This team proceeded to remeasure 7 plots in the central jungle of Peru, through an altitudinal gradient. First they visited, from Oxapampa-Pasco at 1800masl, the lowlands of the National Park of Yanachaga Chemillén, in the vicinity of the Biological Station of Paujil. It was necessary to set-up camp in the Venado ravine, for accessibility, and they then remeasured 5 RAINFOR plots between altitudes of 400-900masl. The team subsequently returned to Oxapampa for a brief rest and to prepare for the next remeasurement of the Yanachaga plot, located at 3200masl, the highest in the central jungle of Peru. Camp was set-up near the plot and after another break the team was prepared for the last fieldtrip to remeasure the plot Oso-Playa at 2400masl and the farthest, located north of the National Park. Once the camp was set-up, the team had to walk for almost two hours through a very rugged trail to get to the plot and the same time to then return back to camp. After several days at the study site, the team was able to complete the remeasurement. Subsequent to fieldwork, during the month of November, the team completed drying the botanical specimens collected from the recruits and left at the Herbarium (HOXA). The data will soon be publically available in the [Forest Plots](#) database.

- **Reserva Comunal el Sira, Puerto Inca, Huánuco, Peru**

From July 2010 throughout 2011, research was carried out as part of the project 'Conservation of the biodiversity of Peruvian tropical forests, taking into account aspects of climate protection', SERNANP-MINAM and RAINFOR, in the El Sira Reserva Comunal. **Luis Valenzuela Gamarra** with the support of national research assistants and adjacent localities established and completed the collection of botanical samples from five 1.0-ha permanent plots across the altitudinal gradient (250masl Amazon Forest of Llanura, 845masl Transitional Forest, 1391masl Montane Forest, 1568masl Cloud Forest, 2230masl Sclerophyll Forest, and associated studies on the flow of carbon (above and below ground) that contribute to the calculation of CO₂ in the El Sira Reserva Comunal. During the months of March and April of 2011, we completed the installation of the fifth plot in the lower altitudinal transect; and 3253 botanical specimens were also collected from these five permanent plots; these botanical specimens were dried and processed during the months of June and July 2011 at the Regional Herbarium (HOXA) of the Central Jungle of Peru, located in the province of Oxapampa. Currently these botanical collections are at the plant mounting and identification stage. For this phase we acquired via RAINFOR the necessary shelving units for their storage and thus ensuring their preservation for future research. The data will soon be publically available in the [Forest Plots](#) database.

- **Amacayacu News (Colombia) – October – December 2011**

Our colleague **Adriana Prieto Cruz** (Instituto de Ciencias Naturales de la Universidad Nacional de Colombia) sent us detailed report on their recent fieldtrip to the Amacayacú National Natural Park to carry out the 2011 census of the plots there. Please find a copy of the report attached to this Newsletter or visit http://www.geog.leeds.ac.uk/projects/rainfor/pages/campaigns_eng.html



- **January 2012**

- **Forest Plots.net** - We are looking to update our Plots map on the website. Currently the only link we have from each Plot Placemark is a link back to the Rainfor website.

If any collaborators would like a link to their Project(s) or Organisation(s) websites from their plots, please email **Georgia Pickavance** (G.C.Pickavance@leeds.ac.uk) with the details. Also if you have a photo which you would like to represent all or some of your plots, please also email these to Georgia.

- **February 2012**



Venezuela Team

- Oliver Phillips gave an invited research talk about our Amazon research findings at the Universidad de Los Andes, Merida, Venezuela, on 06 February. With Emilio Vilanova he then led a group of Peruvian and Venezuelan botanists and foresters in recensuses of long-term forest plots at the Reserva Forestal de Caparo. This area has one of the last remaining fragments of the extensive tropical forests which once cloaked the eastern slopes of the Andes and the western llanos in Colombia and Venezuela. The work contributes to RAINFOR's effort to quantify and understand the impact of the 2010 drought on neotropical forests, supported by the Moore Foundation.

- **Venezuela – February – March 2012**

With the support of RAINFOR, a total of 26 permanent plots distributed in several areas were remeasured during a period of 4 weeks from 06 February to 4 March 2012. This group of plots has been maintained in its early life in the 70s by Pierre Jean Veillon and subsequently by the Biodiversity Research Group and Sustainable Development (BIODESUS) of the Universidad de Los Andes, currently under the coordination of Dr. Hirma Ramírez Angulo. First, a team comprised of Dr. Oliver Phillips (Leeds - UK), Victor Chama (Peru), Nadir Pallqui (Peru), Emilio Vilanova (Venezuela) and Pedro Salcedo (Venezuela) worked for 4 days to remeasure and place tags at six (6) plots established in 1991, at the Reserva Forestal Caparo in the western plains of the country. Then, after the departure of Dr. Phillips, the same team, this time with Julio Serrano (Venezuela), worked for a week at six (6) plots established between 1961 and 1968, in the cloud forests of San Eusebio in the Venezuelan Andes. To continue reading about this fieldtrip, please visit: http://www.geog.leeds.ac.uk/projects/rainfor/pages/campaigns_eng.html



- **Contribution from Bill Laurance: 'Are the World's Biggest Trees in Trouble?'**

Big trees are incredibly important for forests - they store much of its carbon, are competitively and reproductively dominant, and are breadbaskets and shelters for much of a forest's animal life. They are also suffering a range of modern maladies.

Writing recently in *New Scientist*, William Laurance, a research professor at James Cook University in Cairns, Australia, argues that big trees are declining throughout the world. They have been greatly reduced in number by land-clearing and logging, but beyond this they are often vulnerable to habitat fragmentation, droughts, storms, aggressive weeds, altered fire regimes, a collapse of native seed dispersers, and exotic pathogens and pests. These environmental insults can affect big trees at every stage of their life cycle - from seeds to senescence.

Big trees are adapted for longevity and stability - commodities that are in short supply in our rapidly changing modern world. Whether hit by subtle afflictions or the ecological equivalent of a sledgehammer blow, Laurance argues, big trees are declining across much of the world.

Reference: Laurance, W. F. 2012. How the mighty are fallen. *New Scientist*, 28 January, pp. 39-41.

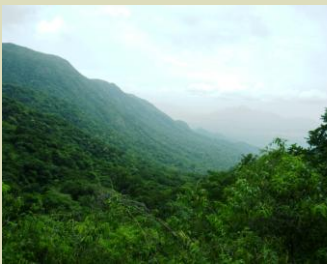
Available to download from the RAINFOR website:
http://www.geog.leeds.ac.uk/projects/rainfor/pages/publications_eng.html



William Laurance, shown here in Suriname, believes the world's biggest trees are in trouble.



Choco Team



Dry Forest in the
Ecoparque Los Besotes
(Valledupar, Caribe Coast,
Colombia)



Guyana Team



- **March 2012**

- Esteban Alvarez and Alvaro Cogollo have been successful in their application to the Colombian National Science Foundation (COLCIENCIAS) for a large grant to support intensive carbon cycle measurements between 2012 at 2014. These will be at four contrasting RAINFOR sites in Colombian forests (Amazon moist forest, Choco wet forest, coastal dry forest, and Andean cloud forest). To read more, visit: http://www.geog.leeds.ac.uk/projects/rainfor/pages/news_eng.html

- **March - April 2012**

- **Guyana Field Campaign** – Ted Feldpausch and Nikée Groot led a fieldtrip, in cooperation with the Guyana Forestry Commission and the Iwokrama International Centre for Rainforest Conservation and Development, to the interior of Guyana for the remeasurement of 12 one ha permanent sample plots. The work was supported by an “urgency” grant from the Gordon and Betty Moore Foundation and NERC-funded AMAZONICA. These plots had been remeasured and added to the RAINFOR network in 2010 by a team led by Roel Brienen and Abel Monteagudo. The 2012 recensus should help establish to what extent the 2010 drought affected the white sand, brown sand and mixed forests in Mabura Hill, Pibiri and Iwokrama. Included in the team was Martijn van Berlo, an MSc student of the University of Utrecht, who is currently doing his thesis on the phylogeography of *Eperua falcata* and *Eperua grandiflora* across the Guianas, by collecting DNA samples and GPS coordinates.

- ***Contribution from John Forrest***

Research support for Peruvian students in southern Peruvian Amazonia

‘Modelamiento de hábitat del río Tambopata’ by Maria Quezada and ‘Evaluación de la fauna malacológica en la cuenca del río Bajo Madre de Dios’ by Andre Ampuero, are the titles of two recent research projects undertaken in the Madre de Dios region of south-east Peru and supported by the Tambopata Reserve Society (TReeS), a UK registered charity. TReeS has offered small-scale grants to Peruvian students undertaking research in the highly biodiverse Madre de Dios region for several years. Details of the grants programme and the reports of past recipients can be found at – www.tambopata.org.uk

- Ima Vieira informed us that **Dr Leandro Ferreira**, researcher at the Museu Goeldi, is continuing the work of our dearest colleague Samuel Almeida in Caxiuanã. Leandro has sent the following update on the intensive plot monitoring measurements at the RAINFOR plots, in Caxiuanã: “1. Coleta de liteira quinzenal (25 armalhadas por parcela); 2. Medida de biomassa aérea trimestral (árvores com DAP>10cm); 3. Medida de biomassa de raízes bimestral (16 ingrowth core p/ parcela); 4. Medida de crescimento de raízes bimestral (9 rhizotron p/ parcela); 5. Medidas de fluxo de carbono no solo mensal (25 pontos p/ parcela); 6. Medidas de fluxo de carbono no tronco de árvores bimestral (25 árvores p/ parcela); 7. Fotografias hemisféricas mensais (25 pontos p/ parcela); 8. Medidas de necromassa bimestral (4 transectos de 1m x 100m p/ parcela); 9. Medidas de herbivoria bimestral (25 trampas p/ parcela)”.

- A Workshop took place on the 25th April, at the Reserva Comunal El Sira, Pucallpa-Peru with the aim of building a monitoring network between several NGOs (for e.g. SERNANP, SENAMHI and CORBIDI) and universities, in future research works within Sira.





Vianet Mihindou
weighing coarse litter in
Lope, Gabon



Tower Tambopata March
2012



- Luis Valenzuela who is working at the Reserva Comunal El Sira, led the fieldwork on behalf of RAINFOR and in collaboration with SENAMHI, CORBIDI and SERNANP del Sira, Yanachaga, Alto Purus, Lima and several other ONGs and universities. This work is to establish and monitor biodiversity plots in an elevation transect, in an isolated native community territory, in Eastern Peru.

- **June 2012**

- The new RAINFOR-GEM manual (v2.2) is now finished and has been uploaded on the GEM website at <http://gem.tropicalforests.ox.ac.uk> (click "Protocol documents" left). This manual is an update on Dan Metcalfe's manual (v1.0) currently uploaded on the RAINFOR manuals page http://www.geog.leeds.ac.uk/projects/rainfor/pages/manuals_eng.html (under "Measuring tropical forest carbon allocation and cycling").

Latest RAINFOR publications

Herrera R. and Chacón N. (2012) **Large-scale spheroidal redoximorphic features around plinthite nuclei in Orinoco River sediments reflect mean seasonal fluctuation in river stage and ENSO-related anomalies.** *Biogeochemistry*, 1-12.

Laurance W.F. (2012) **How the mighty are fallen.** *New Scientist*, pp. 39-41.

Malhado A.C.M, Malhi Y., Whittaker R.J., Ladle R.J., ter Steege H., Fabré N.N., Phillips O.L., Laurance W.F., Aragão L.E., Pitman N.C., Ramírez-Angulo H. and Malhado C.H.M. (2012) **Drip-tips are associated with intensity of precipitation in the Amazon Rainforest.**, *Biotropica*, DOI: 10.1111/j.1744-7429.2012.00868.x

Patiño S., Fyllas N.M., Baker T.R., Paiva R., Quesada C.A., Santos A.J.B., Schwarz M., ter Steege H., Phillips O.L. and Lloyd J. (2012) **Coordination of physiological and structural traits in Amazon forest trees.** *Biogeosciences*, 9, 775–801.

Contact us for a pdf copy of this article or visit:

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AMAZONICA NEWS

- **2011**

- **Contribution from Tomas Domingues: Tambopata Tower update**

Since September 2011, the Ramiro-Chacon/SAGES tower is operating at the Tambopata Rainforest as a result of noteworthy collaboration between Servicio Nacional de Áreas Naturales Protegidas por el Estado (SERNAMP), Asociación para la Investigación y Desarrollo Integral (AIDER), Pontificia de la Universidad Católica del Perú (PUCP), Explorer's Inn Rainforest Lodge, University of Edinburgh, University of Oxford and University of São Paulo. Bird-watchers and tourists are taking advantage of the 42 meters height tower for peeking inside the forest canopy. The top platform of the tower, however, is reserved for an assemblage of 15 scientific sensors supported by solar panels and batteries. They are recording dozens of meteorological variables, such as precipitation, light levels and wind speed/direction. Those serve as auxiliary data for the main purpose of the tower, which is to continuously monitor exchange of Carbon between the forest and the atmosphere in order to evaluate if the region is serving as a sink or a source for that element. The system have endured the peak of the rainy season and data generated so far is being processed for presentation at the next ATBC meeting in Bonito/Brazil (17-23rd June).



Thief caught on automatic camera 'red-handed' stealing solar panel.

- 20th – 23rd March 2012

The NERC - AMAZONICA consortium project meeting in Ubatuba, Brazil, brought together over 40 participants from around the globe to focus on the carbon balance of the Amazon region. **AMAZONICA** seeks to measure the carbon balance of the 6 million km² Amazon basin and understand its variability and drivers of the dominant fluxes, by integrating atmospheric, vegetation and hydrological approaches.

- 26th March - 2nd April 2012

- *Contribution by Professor John Grace (University of Edinburgh)*

Report of maintenance visit to the tower at Explorer's Inn by JG, EG, TD, FL, Duda:

1. **Mend faulty weather station** The rain gauge has been blocked with insect wings; repair to the anemometer cable; note insect damage to cable; fix a program fault with the humidity sensor; install a new humidity sensor.
2. **Adjust radiometer cables** to get the sensors properly horizontal. The fittings provided by Cecilia enabled the 6 metre pole to be easily withdrawn for maintenance.
3. **Repair connections to solar panel** the system now charges the seven batteries at about 15 amps rather than 10 amps. There is no doubt that the system of five panels and seven batteries is adequate for running the existing sensors- need to evaluate further to judge how much spare capacity we have for profiling system. On one of the last days a solar panel was stolen (thieves recorded on camera trap).
4. **Check data so far.** CO₂ values too low, need to replace the small chemical capsules in the 7200 sensor! CH₄ values look good, less noisy than in September last year when insects were more abundant; mirror washing once a day seems fine although fine tuning of washing regime needed. We cleaned with isopropyl alcohol swabs, then polished with filter papers).
5. **Buy safety harness** we will need to get another (for use by researchers or tourists who have vertigo or other medical condition).
6. **Install a profiling system** we aim to measure storage of CO₂ (later, CH₄) in the canopy. Installed sample tubes (Decabon) at 8 different heights: 0.5, 1, 2, 4, 8, 16, 32 and 42 metres. We encountered problems. Discover that PP Systems Ciras analyser requires 15 volts not 12 volts, so will need to procure appropriate voltage converter (and suffer energy losses). Later, we discovered that the PP Systems Ciras analyser does not work! JG will take it to UK for repair. Duda assembled box at 42 m with Clippard connectors, valves and Campbell logger and relays. We expect to be able to run profiler in campaign mode. Probably use N₂ in small cylinders for zero control, not the large heavy N₂ cylinder already at lodge.
7. **Security gate** AIDER have installed a steel gate at two levels below the top to restrict tourists to the first 38 metres of the tower. So far, tourists led by guides have been visiting the tower in the late afternoon to view the sunset. The gate will remain in place, and AIDER have kindly offered to complete the fence at the main platform level.
8. **Briefed RN Kester** on the use of the 'new' laptop for data download; learned that External Drive used for data storage has stopped working; we have replaced it with two 4GB USB drives.
9. **Fabian had difficulty downloading Cecilia's data** traced the problem to faulty cable and was able to download successfully with another cable.
10. **JG visited Max Gunther's office** at Peruvian Safaris before and after the visit to discuss the general situation of the lodge. There is a new manager at Explorer's Inn, Liz Paipay; she has relevant experience and is expected to be able to make significant improvements.

- **Update from the University of Glasgow**

Leena Vihermaa is carrying out her third (and last in Amazonica) field season in Tambopata and a new focus this time is on characterising the C budget on trunk run-off and also to measure the age of carbon dioxide effluxes from the river to assess if it is from weathering derived or ecosystem derived C.

Latest AMAZONICA publications

Anderson L.O. (2012) **Biome-Scale Forest Properties in Amazonia Based on Field and Satellite Observations**. *Remote Sensing*. ; 4(5):1245-1271. doi:10.3390/rs4051245.

Arai, D., Arai, E., Shimabukuro, Y., Adami, M., Suguwara, L., Freitas, R.M., Anderson, L.O. Avaliação temporal de padrões de fogo, uso e tipo de cobertura da terra. Anais XV Simpósio Brasileiro de Sensoriamento Remoto - SBSR, 2011, INPE p.6278 - 6284.

Soares-Filho B., Silvestrini R., Nepstad D., Brando P., Rodrigues H., Alencar A., Coe M., Locks C., Lima L., Hissa L. and Stickler C. (2012) **Forest fragmentation, climate change and understory fire regimes on the Amazonian landscapes of the Xingu headwaters**. *Landscape Ecol*, Volume 27, Number 4, 585-598.

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Announcement:

Joana Ricardo, Project Administrator for the RAINFOR and AMAZONICA Projects, will be going on Maternity Leave for 9 months (15th June 12 – 31st March 2013).

If you have any feedback, comments or ideas for the next Newsletter, please email:

Georgia Pickavance (G.C.Pickavance@leeds.ac.uk)