TReeS News No.90 March 2022

Newsletter of the Tambopata Reserve Society (TReeS)



Dear TReeS members,

Welcome to this edition of TReeS News, which focuses on our capacity building small grants programme. We are currently assessing the application to receive a grant in 2022, the fiftheenth year in which awards will have been made. Details of the awards will be given in the next newsletter.

This newsletter includes brief reports from five past recipients of a grant (See pages 2-4). Some of them as is often the case, highlight the importance of the TReeS grant in facilitating their fieldwork but also the other benefits that they have experienced as a consequence of spending time in the field.

We should recall that it is only 20 years since the most field guides based at lodges in the area came from abroad. Now the majority are Peruvian as a result of the increased field opportunities available to them through small grants programmes such as the TReeS programme, and improved language skills.

The training of young Peruvian scientists is likely to remain one of the best ways to contract climate change and deforestation in the long-term in the Amazon.

There are updates on TReeS supported initiatives – the El Pilar agro-forestry project, benefitting the higher education students in FENAMAD's students house: Casa Miraflores; and the supply of communications equipment to two remote indigenous communities to enable them to communicate virtually with the outside world during the COVID crisis and beyond.

There is also feedback from the FENAMAD delegation who attended COP26, in Glasgow - it was important for them to be seen, to participate and make their voices heard in person once again at COP.

Finally, FENAMAD's 40th anniversary celebrations were able to go ahead and are reported on.

Articles in this issue include:

-TReeS small grants (becas) 2022 update.

-TReeS small grants recipient feedback.

-El Pilar agro-forestry project update.

-Matsigenka community laptops appeal. Feedback.

-FENAMAD COP26 feedback.

-FENAMAD 40th anniversary celebrations.

-Madre de Dios & Peru News.

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TReeS Becas 2022

For the first time, in 2022, the TReeS small grant application process was promoted by social media and could be accessed on-line. In 2020–21, due to the pandemic, grants were only awarded to students studying at the UNAMAD (University of Madre de Dios), in Puerto Maldonado, but in 2022 students from any University in Peru were welcome to apply. The process was also opened up to all students and not just undergraduates.

The 2022 announcement was viewed over 30,000 times on Facebook, leading to the receipt of fifteen applications from students studying at six different Universities. Most applications were received from students at UNAMAD, in Puerto Maldonado, and UNSAAC, in Cusco.

Over the last 14 years, TReeS has offered 75+ small grants to Peruvian students to undertake their fieldwork in Madre de Dios at a rate of around 5-6 grants per year. Many of them have let us know that TReeS funding was significant in enabling them to complete their studies and establish their careers. Their reports can be found on the TReeS website.

Appeal: £25+ to maintain the small grants programme.

We would also welcome full funding of individual students by those with a specific interest in funding research relating to specific studies of birds, bats, butterflies, mammals, impacts of gold-mining, etc in Madre de Dios.

			P.M.
PHYLLOSTOMIDAE Artibeus Ituratus	PHYLLOSTOMIDAE Artibeus obscurus	PHYLLOSTOMIDAE Artibeus planirostris	PHYLLOSTOMIDAE Carollia benkeithi
PHYLLOSTOMIDAE Carollia perspicillata	PHYLLOSTOMIDAE Dermanura anderseni	PHYLLOSTOMIDAE Desmodus rotundus	PHYLLOSTOMIDAE Glossophogo soricing
R			hat
PHYLLOSTOMIDAE Mesophylla macconnelli	VESPERTILIONIDAE Myotis nigricans	VESPERTILIONIDAE Myotis riparius	NOCTILIONIDAE Noctilio albiventris
PHYLLOSTOMIDAE Phyliostomus hastatus	PHYLLOSTOMIDAE Platymhinus helleri	PHYLLOSTOMIDAE Platymhinus infuscus	PHYLLOSTOMIDAE Sturnira

Quiropteros study © A.Rivera (See page 3)

TReeS small grants feedback

Alejandro Avellaneda Vergara, of the National University of San Marcos, received a small grant (beca) in 2018 to support his study entitled: '*Biología de Arctiinae (Lepidoptera: Erebidae) en los alrededores del Refugio Amazonas, Puerto Maldonado, Madre de Dios.*'

Alejandro writes - "Thanks to the TReeS UK small grants programme I had the opportunity to spend three months in the Tambopata rainforest based at the Refugio Amazonas lodge operated by Rainforest Expeditions.

My study was based on breeding tiger moth caterpillars. Little is known about the life cycle of tiger moths but their study demands a great deal of effort because the caterpillars are hard to locate and they appear to breed more parasitic flies than moths. During the three months, I spent 6-8 hours a day in the forest looking for caterpillars along the lodge trails. I found more than 300 although only 44 were tiger moth caterpillars and of these only 14 reached adulthood. Two of the caterpillars stand out from the rest -

A morpho caterpillar, a big hairy caterpillar with black lines on the body, was common but all the ones I found died because they were parasitized by flies. One day I found a super small caterpillar less than 1cm long, so I assumed it was just in its early stages. However, when this caterpillar moulted it was identical to the 4cm caterpillars that I had found many times and a tiger moth of the genus *Melese* emerged. The hypothesis I developed is that the larvae of the parasitic flies inhibits or delays the metamorphosis of the caterpillar though it continues to feed and grow while the fly larvae develops completely.

My study included the Condenado lakes and, one day, arriving at the lake I spotted something swimming in a strange way along the shore. It looked like a caterpillar, but an aquatic caterpillar? It had to have fallen from a tree since water caterpillars are not common - I had only read about them in books and never imagined finding one. I watched it and was able to confirm that it was a caterpillar and that it ate the aquatic plants in the lake. These caterpillars are able to breathe underwater because they have hydrophobic *setae* where they store air bubbles. The next day I found that this caterpillar

had made its cocoon and about two weeks later the adult emerged: it seems to be a new species of the genus *Paracles*.

As a result of this opportunity supported by TReeS, I am sure that I want to dedicate myself to the ecology of insects. I was able to observe many interactions and very interesting behaviours that I would like to study in the future.

Staying at Refugio Amazonas also gave me the opportunity to volunteer with the 'Wired Amazon' programmes:

*Amazon Cam Tambopata studying jaguar populations and other mammals with the help of camara traps in an area of more than 200km²;

*Amazon Aerobotany – using drones to photograph Castaña (brazil-nut) trees to study their phenology and try to predict the castaña harvest to assist the brazil-nut gatherers; and,

*Discovering new species – an attempt to identify more insect species: more than a million species are currently known, but scientists speculate that there must be 8-10 million.

Further details about two of the projects can be found at: www.zooniverse.org

My experiences were very much thanks to the support of TReeS.



Aquatic caterpillar found in Lake Condenado within the Tambopata National Reserve © A.Avellaneda

TReeS small grants feedback continued

Antony Rivera Garcia, of the University of San Antonio de Abad, Cusco, received a grant in 2019 to support his study titled: 'Composición de chirópteros en cultivos y cuerpos de agua en la estación biológica Kawsay en Madre de Dios' / 'Chiroptera composition in crops and water bodies at the Kawsay biological station'.

Antony writes: "Madre de Dios has a great diversity of bats, with 7 families and 137 species reported, representing 71% of the known Peruvian species. The Kaway biological station is located one hour by boat down the Madre de Dios river from P.Maldonado and allows bats associated with bodies of water to be compared to areas impacted by agricultural activities.

The lowland jungle ecosystem is characterised by recovering secondary forest close to the Tambopata National Reserve. It is very humid and temperatures oscillate around 30 °C. There is a huge diversity of flora, dominated by *poaceae* and plants typical of recovering forests.

Ten mist nets of standard size (2.5m x 12m) were located in places of frequent transit by bats (forest clearings, streams, trails, etc) were used to collect samples. The mist nets were also placed in undergrowth and canopy to obtain a greater number of species from different forest strata.

Sampling in the dry season was carried out in September 2019 and in the rainy season in March 2020 – at 2 stations, the first in the area of a stream 1.5 km from Kawasay and the other nearer to Kawasay in a farmed area, near the river Madre de Dios. Sampling was carried out on 6 days at each station, captured individuals were marked with haircuts on the dorsal part to avoid pseudo-replicas.

Morphometric data and photographs were taken of captured species. The sampling effort amounted to 1,440 hrs/ net, as sampling took place from 18:00 hrs until 0:00 hrs each day. The result of the global sampling totalled 166 individuals captured - in the dry season a richness of 15 species and 45 individuals, and in the rainy season 25 species and 121 individuals.

Diversity indices results for the dry and rainy seasons were obtained - Simpson: 0.916 & 0.858; Shannon: 2.87 & 3.631, in each season respectively. A comparison between the two study sites: the stream zone and the cultivation zone, found considerable differences in the composition and community structures of the species.

The family *Phyllostomidae* is a good indicator of the quality of some forests, as their presence is key to the regeneration and dynamics of ecosystems (Medellín, 2000), as it is the most diverse family in terms of morphology, ethology, diet, etc. I found the greatest diversity of frugivorous in the deepest strata of the forest, which are easily captured by mist nets, and this is evident in the results.

The rainy season showed a greater diversity in terms of richness and abundance, due to the availability of more resources in the rainy season compared to the dry season. It is worth noting that there was an anomalous phenomenon of torrential rains in the month of January 2020, which could explain the large variation in the abundance of individuals (45 vs. 121).

Artibeus obscurus was the dominant species in the dry season, while Carollia perspicillata was the dominant in the rainy season. Both species are indicators of recovering secondary forests, but some interesting records of rare species such as Trinycteris nictefori and Thyroptera tricolor, suggest that the forest is recovering adequately and that the protection strategies of research concessions such as Kawsay, are a good way to conserve ecosystems." **Benita Bautista Challco**, of the National University of San Antonio Abad del Cusco, received a grant in 2019 to support her field study titled: '*Diversidad de ciempiés* (*Chilopoda*) en la estación privada de investigación Manu Learning Centre' / 'Diversity of centipedes (*Chilopoda*) at the private research station: Manu Learning Centre (MLC)'. Despite Covid-19, Benita was able to complete her research during 2019 and 2020.

Benita writes: "The *Chilopoda* class is an important group that requires further taxonomic study, and to better understand the roles it plays within ecosystems. There have been no studies to date in the study area.

I undertook my field work at Manu Learning Centre, in the Alto Madre de Dios, run by CREES. The field work consisted of taking soil monoliths and using pitfall traps to capture the centipedes. In total 151 individuals were collected, and 6 families (*Lithobiidae, Schendylidae, Geophilidae, Cryptopidae, Scolopendridae, Scolopocryptopidae*) and 5 genera (*Cryptops, Otostigmus, Rhysida, Scolopocryptops, Newportia*) were identified.

The Orders with the most abundance were *Geophilo-morpha* and *Scolopendromorpha* with 75 individuals each, while the Order *Lithobiomorpha* with only one individual had the lowest abundance. The Order *Scolopendromorpha* had a greater variety of families, the most abundant being *Scolopocryptopidae*, followed by *Cryptopidae* and the least abundant being *Scolopendridae*. Only two families were identified within the Order *Geophilomorpha*, the most abundant family being *Schendylidae* and the least abundant *Geophilidae*. Within the Order *Lithobiomorpha*, the family *Lithobiidae* was identified but with only one individual.

This research work makes an important contribution to the little studied and little known families and genera of *Chilopoda* for the Madre de Dios region."



Fig.8. Scolopocryptops: A.Vista dorsolateral / Dorsolateral view; B.Vista ventra / Ventral view; C.Vista dorsal de la placa cefálica / Dorsal view of cepahlic plate; D.Vista ventral de la placa cefálica / Ventral view of cephalic plate; E. Patas anales / Anal legs.

Scolopocryptops: views from various angles © B.Bautista

TReeS small grants feedback continued

Gorky Flores Castillo, of the National University of Madre de Dios (UNAMAD), received a TReeS small grant in 2020. His field study was entitled: "Evaluación de la Biodiversidad y composición de macrohongos en términos de perturbación del bosque Amazónico de Madre de Dios" / 'Assessment of the biodiversity and composition of macrofungi in terms of disturbance in the Amazonian forest of Madre de Dios'.

Gorki writes: "The study was carried out in two types of forest found in the south of the Peruvian Amazon, in the districts of Tambopata (Inotawa Conservation Area) and Las Piedras (CRIBATAMAD). The main aims were to estimate the abundance and richness of macro-fungi and the relationship they have with both environmental factors (precipitation, temperature, humidity, etc) and anthropic activities (entry of light from the canopy and understory cover).

The sampling technique used consisted of collecting specimens in five plots established for each type of forest, where they were subdivided into 20 subplots of 20m x 10m. The samplings were carried out in the rainy and dry seasons (January, July and October).

The taxonomic richness of the total macro-fungi species of the sampled forests was determined, resulting in 37 orders, 47 families, 52 genus and 88 species being found of which the total abundance was 728 individuals. It was observed that there was a specific richness of 76 species at Inotawa but only 50 species at CRIBATAMAD.

The abundance of macrofungi at each site demonstrates significant variation (T = 3.18, p-value = 0.005), whereas Inotawa shows the greatest abundance of macrofungi, as well as diversity. Regarding the months of collection, it can be observed that there were no significant differences (Anova, F = 1.68, P = 0.431). On the other hand, there was a significant and positive relationship between the understory vegetation cover and the abundance of macro-fungi species (T = 3.69, P = 0.002) and for the entry variable of light to the canopy there were also significant differences (T = 3.69, P = 0.002). With respect to the precipitation, temperature and humidity, it was not found that there was a relationship with the abundance and diversity of macro-fungi."

Jerica Ommia Morimo & Julia Tinco Salcedo of the National University of Madre de Dios (UNAMAD), received a TReeS small grant in 2020. Their field study



The morphology of the macrofungi collected at Inotawa @ G.Flores



Placing 'leaf packs' in the river @ J.Ommia

was entitled: 'Efecto de la actividad minera en la calidad de agua en 4 quebradas de San Jose de Karene' / 'Impacts of mining activities on the quality of wáter in four quebrada streams in the native community of San Jose de Karene'. Despite Covid-19 related restrictions and delays, they persevered and, finally, in March 2021 they were able to begin

their fieldwork which ran from the wet season in to the drier season.

Jerica writes: "We investigated the impact of gold-mining on water quality in four streams (quebradas) that run through the Harakbut community of San Jose de Karene, adjoining the Amarakaeri Comunal Reserve, in central Madre de Dios. The native community of San José de Karene cover 23,750 hectares and has a population of approx.450 people, and lies downstream of the well-established Huaypetue gold-mining area.

The study focused on four quebradas (streams): Kiraswe, Wepabendwe, Wacwe and Baraywe. Two have been affected by gold-mining and two have not been affected. We identified three points in each quebrada from satellite images where samples would be taken and then made field visits to confirm their suitability. In subsequent field visits, we measured the physical characteristics of the channels: width, depth, ... and physical-chemical characteristics of the water: temperature, turbidity, pH, dissolved oxygen, nitrate & phosphate levels, etc which we hope will provide an indication of the impacts on water quality of the upstream gold-mining on two of them.

We also sampled the macro-invertebrates present in each channel using the 'leaf packs' method: 30 grams of leaves of the *Inga edullis* species collected at each site, were placed in a plastic mesh bag (packs) and submerged in the flowing river. The bags were secured with a cord to a nearby fixed point such as a submerged tree trunk. At each sampling point at least six packets were placed to ensure that at least several samples could be retrieved later on and the macro-invertebrates present recorded."

El Pilar agro-forestry project update

Casa Miraflores students managed to plant more seedlings at the El Pilar chacra despite covid related disruptions in the second half of 2021. The students living at Casa Miraflores, the FENAMAD residence for higher education students in P.Maldonado, maintain the plot where they also grow food to supplement their diet. The pandemic meant that not only were there fewer students living in the house but also it wasn't possible to visit the chacra so often. The arrival of the rainy season also impacted on activities.

During their visits to the chacra, they cleared weeds and vines from seedlings and crops such as yuca, camote (sweet potato) and maize were harvested. Over 100 new seedlings, including *caoba, copoazú, pijuayo, camu-camu, casharona, caimito asai* and *tornillo* were planted under the guidance of L.Farfan of the Asociación de Agricultura Ecológica. An increased number of timber species were planted in-line with project objectives to integrate the planting of crops, fruit and timber species that gradually involves a switch towards the latter as the shade from the crops and fruit trees reduces the ground cover and facilitates the growth of the timber seedlings. The integrated planting of crops, fruit trees and timber seedlings also provides nutritional benefits to the soil.

During recent months a small storehouse cum shelter was constructed at the chacra which is located some distance from the centre of the community, to store equipment and provide protection during heavy rains for those working on the chacra. Additional tools and protective clothing for the students to wear when working on the chacra have also been purchased.

Discussion are currently taking place with respect to the next phase of the project.

TReeS funds Matsigenka community laptops

Thanks to the generosity of TReeS members, supporters and the technology company 'Softwire', funds were raised to supply equipment to enhance communications in two remote Matsigenka communities, located within Manu National Park.

COHARYIMA, FENAMADs representative organisation in the Alto Madre de Dios, have confirmed the delivery and installation of the equipment. The equipment was purchased in Cusco by the President of COHARYIMA who then travelled by bus and boat to the settlement of Boca Manu at the confluence of the Alto Madre de Dios and Manu rivers. There, he handed over the equipment to a locally based COHARYIMA leader who co-ordinated delivery to Sarigmeniqui and Yomibato, in conjunction with the Presidents of each community. In the end, delivery took a week due to the distance and the risks due to the fluctuating river flow, involved. Overall, the whole process took nearly a month to effect, reflecting not only the many challenges in accessing these remote communities but also the Covid restrictions in place.

The community of Sarigmeniqui received a laptop, printer, various accessories and stationary, and Yomibato received a solar panel kit with accessories. The Presidents of both communities expressed their huge thanks to TReeS and confirmed that both assets are actively in use and proving invaluable to community activities and organisation.

Appeal: £1,250 to fund the purchase and delivery of a laptop and associated equipment to a third Matsigenka community (We would welcome sponsorship from another technology company). <u>https://gofund.me/bb2a3678</u>



The plot prepared for the planting of seedlings © FENAMAD



Caoba seedlings ready for planting © FENAMAD



Planting seedlings in a cleared area © FENAMAD



President & members of Sarigmeniqui receive the equipment © FENAMAD

FENAMAD attends COP26

Overall, COP26 may have agreed on the 'rules' underpinning the COP21 Paris Agreement, and multinational initiatives on issues such as deforestation but the national commitments that would limit global warming to 1.5°C appear to be insufficient.

FENAMAD felt that it was important to send a delegation to COP26, to be seen and heard in person. Along with the representatives from other indigenous organisations they focused on influencing negotiations in terms of securing -

-respect for the territorial rights of indigenous peoples;

-ensuring forest defenders/leaders are not criminalized;

-implementing direct mechanisms for indigenous funding; -the recognition of indigenous peoples/cultures;

FENAMAD hosted two meetings & co-hosted four others in the 'side events' programme, including one in which Julio Cusirichi spoke on '*Indigenous Territorial Governance*'. COHARYIMA presented the application of REDD+ Indigena Amazónica (RIA) in Manu National Park: it proposed proceeding with the second phase of RIA; and leadership training in communities within Manu N.P.



COP26 advert for the presentation by indigenous leaders from Madre de Dios © COP26

COP26 recognised the role of indigenous peoples, in "averting, minimizing and addressing loss and damage associated with the adverse effects of climate change" and the "importance of protecting, conserving and restoring ecosystems to deliver crucial services, including as net carbon sinks, reducing vulnerability to climate change impacts and supporting sustainable livelihoods".

However, overall, indigenous peoples see too much indecision between developed and developing countries, with the develop -ed nations blocking much-needed agreements on rights and funding. And, overall progress towards implementing the commitments made in Paris is too slow.

Donors committed \$1.7bn to indigenous peoples to protect their forests, but there is a fear that they will go through intermediaries such as states or big conservation organisations.

A protocol adopted could mean indigenous peoples can further develop and strengthen their traditional knowledge, practices and innovations with respect to mitigation and adaptation. Mechanisms mentioned the need to respect indigenous peoples' rights, however, they didn't mention the need to obtain their free, prior and informed consent.

A report on FENAMADs COP26 presentation can be found at: <u>https://minorityrights.org/2021/11/08/cop26/</u>

FENAMAD celebrates 40th anniversary

Despite Covid restrictions and following a series of strict protocols, FENAMAD was able to organise their 40^{th} anniversary celebration in the community of El Pilar, close to Puerto Maldonado, on 18^{th} January 2022.

The Governor of Madre de Dios was one of many local dignitaries present along with representatives from AIDESEP (Interethnic Association for the Development of the Peruvian Rainforest), FECONAU (Federation of native communities of Ucavali & its tributaries) & COICA (Coordinator of Indigenous Organizations of the Amazon River Basin) as well as FENAMADs sister organisations COHARYIMA (representing communities in the Upper Madre de Dios) and COINBAMAD (Lower Madre de Dios). Local NGOs attending included the Frankfurt Zoological Society, AIDER (Association for integrated investigation and development) and ACCA (Association for the Conservation of the Amazon river basin), and international NGOs including Rainforest Foundation UK, Rainforest Foundation Norway and TReeS. However, due to the risks presented by the pandemic representatives didn't attend from every native community in Madre de Dios.

The community of El Pilar spent a week preparing for the event which, on the day, consisted of -

-a minutes silence to remember those no longer present;
-a historical summary of FENAMAD's first 40 years;
-words of congratulations from the dignitaries present;
-words of congratulations received from those unable to attend, including TReeS UK;
-a speech by the FENAMAD President: Julio Cusirichi;

-a 'toast' with *masato* (fermented yuca drink) then lunch; -the taking of commemorative photos of those assembled; -dance performances presented by members of El Pilar; -the presentation of the publications: '*Plan de Vida*, *FENAMAD*, 2019-2023' & 'Agenda Mujer Indigena'. Finally, a series of sporting contests – football for the men and *fulbito* for the women - took place accompanied by music from Macana, a band from the native community of Shupihui Nueva Oceania.



Poster announcing the 40th anniversary celebrations of FENAMAD © FENAMAD

Covid in Peru & Madre de Dios

In the second half of 2021, Peru managed to bring the covid pandemic under a significant degree of control, through a range of measures, including the compulsory wearing of double masks in all urban areas and on all transport. However at the start of 2022 the omicron variant arrived. The number of cases peaked around 30,000 per day and almost all ICUs were fully occupied by late January but the number of cases has now declined back to around 10,000 per day.

The total number of cases now stands at 3.53 million (UK: 19.25m), with 211,200 deaths (UK: 162,150), and the deaths to population ratio is 650 per 100,000 (UK: 243).

For the latest updates visit: https://data.larepublica.pe/envivocasos-confirmados-muertes-coronavirus-peru/

A state of emergency remains in all regions with night-time curfews depending on infection levels. Over 62.5 million (UK: 140m) vaccine doses have been given in large-scale '*vacunathons*', with the Pfizer vaccine offered for the third booster jabs as many rejected the Chinese made vaccines.

Officially, Madre de Dios has recorded over 17,500 cases at a rate of 10,150/100,000 people - the 10th worst proportion of cases to population in Peru, and 840 deaths. Within the department, Iñapari and Iberia in the north, remain much the worst affected places. Indigenous communities continue to control the spread by locking down and restricting entry.

A \$100m bonus was paid out to around 13 million people in need and several short-term government projects were set up to provide work to the newly unemployed: there has been a 13% increase in those living in poverty - the worst in South America, returning poverty levels to those of 2008.

New Conservation areas created in Madre de Dios

Three private conservation areas (PCAs) have been granted in Madre de Dios -

*Los Amigos: 140 hectares located on the Rio Los Amigos which has been run by ACCA (Áreas para Conservación en Conservación Amazónica) since 2001;

***Tambopata Ecolodge:** 180 hectares located on the river Tambopata, adjoining Lake Sachavacayoc which has been run by the company Inversiones Maldonado since 1989. This adds to the 1,065 hectares PCA granted in 2016.

***Nihii Eupa Francisco**: 2,103 hectares located within the native community of Boca Pariamanu and covering land within the Las Piedras and Pariamanu river basins, which will be managed by the community.

Peru News

Just over six months since his election, President Castillo is struggling to govern. He has now appointed his fourth Prime Minister and cabinet, but there is no guarantee that they will last—approval is still awaited. Not only is he opposed by the big right-wing majority in Congress but often also by those of the party that supported his election – Peru Libre. It is not surprising that his regime is struggling to function and Castillo is now facing a second impeachment charge brought by Congress.

Only Acción Popular remains of the established political parties of the last 50 years after APRA – last in power 2006-11 (Alan Garcia) – was deregulated as a political party due to its poor showing in recent elections.

The weaknesses of Peruvian democracy is reflected in the weak party system with most political parties more dependent on the whims of a figurehead than any clear ideology. In a recent LAPOP survey¹ only 11% thought the politicians were serving the wider population while 86% thought they were benefitting the elites.

Over thirty construction companies have been fined nearly \$700m for operating a secret cartel that controlled the pricing and securing of contracts for over a hundred road projects (2002-16) such as the Interoceanic highway through Madre de Dios.

The global rise in the price of natural resources is likely to benefit Peru and its pandemic recovery. For every 1% rise in copper prices, for example, Peru gains \$50m.

The volcanic eruption in Tonga sent a tsunami wave nearly a metre high onto Peruvian beaches, tragically drowning two young women near Chiclayo. The wave coincided with the worst oil spill in Peru's history at the Repsol refinery near Callao – later blamed on poor maintenance - which spilt nearly 12,000 barrels of oil into the sea creating a slick that affected 30 beaches as far north as Chancay. A major cleanup operation was undertaken to rescue bird and marine life.

Peru's Supreme Court ruled that the Law of Prior Consultation requiring indigenous and local communities to be fully consulted about any projects that could impact upon them, should also be applied to public projects: highways, dams, airports, and that it should be applied retrospectively to 2012.

1. https://vanderbilthustler.com/44789/featured/vanderbilt-lapop-lab-releases-2021-americasbarometer-survey-results/

Thanks also to the Peru Support Group: www.perusuportgroup.org.uk

Recent information sources linked to Tambopata & Madre de Dios

The following articles, documents, reports and publications about Tambopata and Madre de Dios have recently been sighted.

The following publications can be accessed through the 'MAAP' website: www.maaproject.org

*'Carbon loss & protection in the Peruvian Amazon', MAAP 148, Nov.2021;

The following publications (in English) were also sighted by TReeS -

*'Amazon forests capture high levels of atmospheric mercury pollution from artisanal gold-mining', J.F.Gerson, Nature Communications Vol.13, Jan.2022;

*'Browse from three tree legumes increases forage production for cattle in a silvopastoral system in the southwest Amazon', L.Dablin et al, Animals Vol.11, Dec.2021;

*'Carbon loss & protection in the Peruvian Amazon', G.Asner et al, MAAP 148, Nov.2021;

*'Evaluating the impact of REDD+ interventions on household forest revenue in Peru', D.Solis et al, Frontiers in Forest & Global change, Vol.4, March 2021;

*'Financing conservation and sustainable land use in the Amazon Althelia's Tambopata-Bahuaja REDD+ & Agroforestry Project', L.Ormeño & J.Gregory, Forest Trends report, Dec.2017;

*'Fire in the Amazon - EU policy approaches and climate action in the Americas', A.Ayuso, Wilson Center, Jan. 2022;

*'Nivel de referencia de emisiones forestales por deforestacion bruta del Peru en el bioma Amazonico', MINAM, Feb.2021;

*'Primary modes of tree mortality in southwestern Amazon forests', E.de Castro Lima et al, Trees, Forests and People Vol.7, Jan 2022;

*'Variation of non-structural carbohydrates across the fast-slow continuum in Amazon forest canopy trees', C.Signori-Muller et al, Functional Ecology Vol.1, 2021;

Every young adventurer should read this book KATE WINSLET



Journey To The Last River Shortlisted for the Stanford's Travel Book of The Year

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General enquiries

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Details of **TReeS merchandise** can be found on the website: **www.tambopata.org.uk**

TReeS committee 2021-22

Chair: Lucy Dablin Treasurer: John Forrest Helen Newing Secretary: Cecilia Montauban Holly O'Donnell

TReeS is UK registered charity no. 298054

Summer is coming - time to buy a TReeS T-shirt?

*'**Tarantula'** (pictured) – based on a black & white line drawing by Laurel Hanna.

Price: £10.00 (M & L). TReeS members special price: £8.00

*'**Tambopata satellite image**' (pictured) – features a full colour Carnegie Scientific Institute (G.Asner ©) satellite image of the confluence of the La Torre & Tambopata rivers.

Price: £12.00 (L). TReeS members price: £10.00 (L).

*'Curl-crested Aracari' - based on an oil painting by rainforest artist Eustace Barnes.

Price: £12.00 (XL only). TReeS members price: £10.00 (XL).

*'Earth Warrior' (pictured) - a design based on one of the Nazca lines, in dark red. Unbleached cotton.

Price: £9.00 (XL only). TReeS members price - £7.50 (XL).

Prices include UK P&P, please add £1.50 for European postage.

Gift Aid

Please consider 'gift aiding' your TReeS donations - we can claim back 20p in the pound for each donation gift aided.

Please also tell us if the 'gift aid' option applicable to your donations comes to an end.

TReeS Membership

Annual membership fees $(\pounds 15)$ are due on 1^{st} January each year. On-line payments can be made direct to the TReeS bank account at - Lloyds Bank PLC

Sort code: **30 99 83** Account no. **00574637**

Cheques, made out to 'TReeS', can be posted to -P.O.Box 33153, London NW3 4DR