



# BIOAMAZON PROJECT

Conservation of species threatened by unsustainable trade



# ACTO

Amazon Cooperation Treaty Organization

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*Cyathea sp.*

**Cedrela: ACTO supports Amazon countries to develop Non-detriment Findings (NDF)**

**Colombia: Studying and conserving the diversity of Amazon fauna and flora**

This is the Bioamazon Project Newsletter, of the Amazon Cooperation Treaty Organization (ACTO). It is published every two months to disseminate the actions and results of the Project and its partners.



Bolivia



Brazil



Colombia



Ecuador



Guyana



Peru



Suriname



Venezuela

# Dear Readers,

We are pleased to present a new edition of the Bioamazon Newsletter, from the Permanent Secretariat of the Amazon Cooperation Treaty Organization (PS/ACTO).

In this edition, you will be able to learn about the advances in the implementation of the Amazon Regional Observatory (ARO), which will constitute an official information platform for ACTO Member Countries on the Amazon Region, fulfilling the decision adopted during the XI Meeting of Ministers of Foreign Affairs who instructed PS/ACTO to develop the Observatory. We hope that we can implement this important initiative for the Amazon Region in the near future.

This newsletter also contains information about the implementation of the Bioamazon Project. You will be able to update yourself about a specialized consultancy hired to support the Amazon countries in the development of the Non-detriment Finding (NDF), resulting from the inclusion of the genus *Cedrela spp.* on the Appendix II of the [Convention on International Trade in Endangered Species of Wild Fauna and Flora \(CITES\)](#).

You will also be able to know about the new manatee facilities built by the Amazon Rescue Center (CREA), which develops activities for the management of wild and aquatic fauna, ecotourism and environmental education in Iquitos, Peru.

Finally, in the Amazon Countries section, we present the progress of the study on the dynamics and evolution of the international freshwater ornamental rays market, in Brazil, and the studies carried out in Colombia to know and conserve flora species within the scope of CITES.

Greetings, and wishing you a good reading.

**Diego Pacheco**

PS/ACTO Technical Advisor



# Amazon Regional Observatory advances

*Mandate of Ministers of Foreign Affairs instructed PS/ACTO to develop the Amazon regional information platform.*



The development of the Amazon Regional Observatory (ARO) by the Permanent Secretariat of the Amazon Cooperation Treaty Organization (PS/ACTO) is advancing. The conclusion of the conceptual and methodological design of ARO carried out by the consultancy Corporate Excellence (EXCO) allows to take practical steps in the implementation of ARO by PS/ACTO.

The Amazon Regional Observatory is an official information platform for Amazon countries whose development is the result of a decision adopted in 2011 during the XI Meeting of Ministers of Foreign Affairs that instructed PS/ACTO to develop the Observatory. Since then, working groups have discussed the platform's concept, characteristics and format, as well as the basic management structure and the official information transfer processes and mechanisms. A special place in ARO will have the module on biodiversity and CITES species in the eight Amazon countries, as reported in the [Bioamazon Bulletin n. 5](#).

The next step is to hire specialized companies for the creation and implementation of the ARO online platform and the construction and implementation of the CITES thematic module linked to ARO.

As part of the analyzes for the specific scope of the Observatory on biodiversity and CITES, it was identified the need for an assessment of the current state of information systems in each ACTO Member Country - Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela. The analysis carried out by the EXCO consultancy involved visits and dialogue with countries to identify needs, expectations and generate a baseline.

The first phase of operational implementation consists of the development of the platform software as well as the implementation of the CITES thematic module, which will be made possible by the German Development Bank (KfW) which finances the [Regional Project for the Management, Monitoring and Control of Fauna and Flora Species Wild Plants Threatened by Trade](#) (Bioamazon Project).

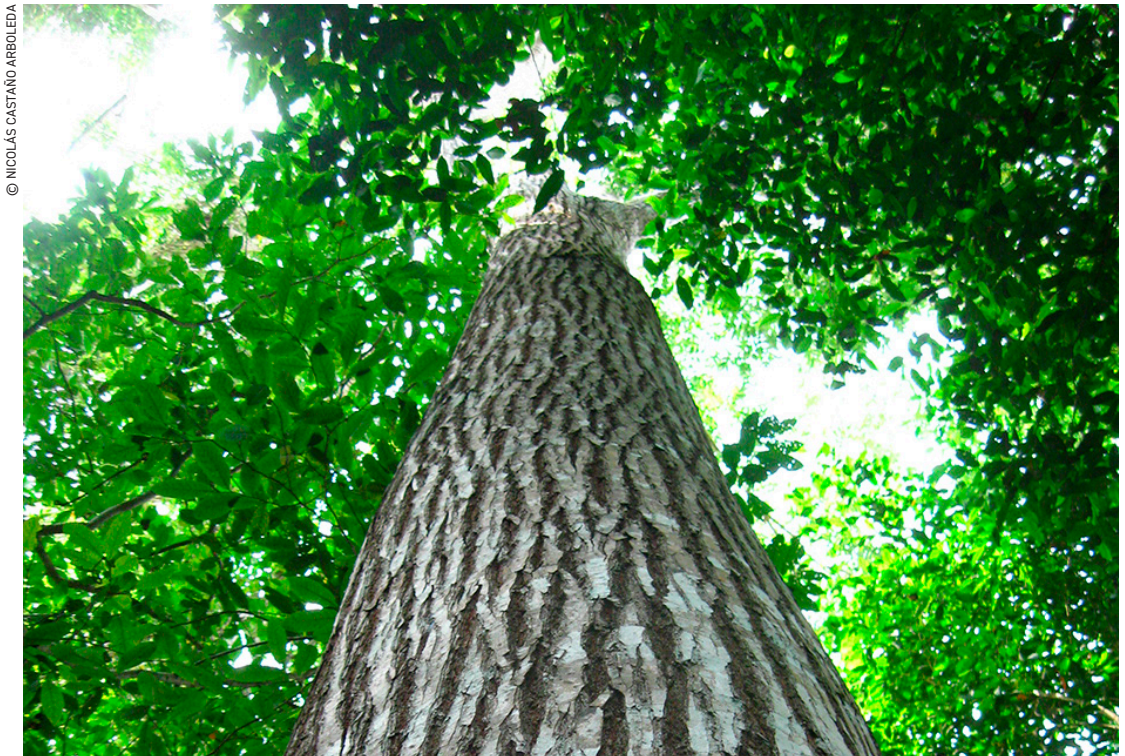
According to ACTO's Technical Advisor, Diego Pacheco Balanza, the development of the Amazon Regional Observatory will generate countless benefits not only for the Amazon countries, but for society in general. Among these benefits are:

- i) Offer a repository of official information from Amazon countries;
- ii) Strengthen the process of exchange of experiences;
- iii) Strengthen the regional Amazon vision;
- iv) Have a record and memory of the region through regional monitoring actions;
- v) Provide data and information to stimulate political and technical dialogue for the discussion of public policies among Amazon countries.

"The Amazon Regional Observatory is a great desire of the Amazon countries that is beginning to become a reality in the current management of PS/ACTO, under the leadership of Alexandra Moreira, Secretariat General of the Organization and a team committed to this goal", said Diego Pacheco.

# ***Cedrela*: ACTO supports Amazon countries to develop Non-detriment Findings (NDF)**

*NDFs are an essential requirement for international trade to enter into force of the inclusion of the genus *Cedrela* in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).*



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The Permanent Secretariat of the Amazon Cooperation Treaty Organization (PS/ACTO) hired a specialized consultancy to guide, train and support the Amazonian Countries in the development of Non-detriment Findings, resulting from the inclusion of *Cedrela sp.* in Appendix II of the [Convention on International Trade in Endangered Species of Wild Fauna and Flora \(CITES\)](#). This action is part of the regional cooperation process promoted by ACTO within the [Bioamazon Project](#).

On August 28, 2020, the inclusion of *Cedrela odorata*, as well as the inclusion of all other species of the genus *Cedrela* (for reasons of similarity) in Appendix II of the CITES with Annotation #6 (Neotropical populations) entered into force, whose proposal was presented by Ecuador and adopted at the eighteenth meeting of the Conference of the Parties to CITES (CoP 18) held in 2019 in Geneva, Switzerland.



One of the fundamental requirements established in the text of the CITES Convention for the regulation of trade in specimens of species included in Appendix II, a Scientific Authority of the State in each party to the Convention declares that an export, import and/or re-export will not harm the survival of a CITES-regulated species. These analysis and evaluation mechanisms have become collectively known as “non-detriment findings” (NDF).

## Duration and Products

The consultancy contracted by ACTO began on September 22, 2020 and this will be concluded on January 21, 2021. Its implementation will include the preparation of a base document on Non-detriment Finding (NDF) and the inclusion of *Cedrela sp.* in Appendix II of CITES; the holding of a Regional Workshop on NDFs in November 2020 through the Zoom Platform; advice for the formulation of NDFs in ACTO Member Countries and a report that will include a report on the progress of the inclusion of *Cedrela* in Appendix II in ACTO Member Countries. It is also part of the work to organize a base proposal for a Regional Action Plan for the inclusion of *Cedrela* in Appendix II, which will consider the needs and actions to be developed in terms of NDF (scientific aspects) and Legal Acquisition Findings (administrative aspects) to be made available to regional authorities and the CITES Secretariat.

The consulting products will contribute to the Forestry Technology Platform (FTP) and part of the key processes for its implementation will be carried out through the Integrated Information and Knowledge Platform (PRIC), both from ACTO.

## Consultant

The work will be in charge of César Beltetón, Agricultural Engineer in Renewable Natural Resources, Master in Management and Conservation of Species in International Trade, with a Specialization in Forest Governance, who for more than ten years has been working within the framework of CITES with tree species, having chaired several working groups such as: 1) the working group on Broadleaf Mahogany and Other Neotropical Timber Species; 2) the working group on production systems for tree species, plantations and definitions of “artificially propagated”, and 3) the working group on neotropical tree species.

In his experience, it is also highlighted that for nine years he served as the CITES Wood Flora Scientific Authority of Guatemala and is currently a member of the CITES Flora Committee representing Central America, South America and the Caribbean. Among his works related to the subject, he stands out as co-author *ad honorem* of the “Practical guidance for the preparation of Non-detriment Findings (NDF) for tree species included in CITES”.

# Amazon Rescue Center has new spaces for manatees

The Amazon Rescue Center (CREA) built new spaces to receive and care for manatees (*Trichechus inunguis*) that are rescued by the CREA team. The new facilities will allow CREA to provide better care and management until it is time to release the animals into the rivers of the Amazon.

This cooperation to CREA is given by the Amazon Cooperation Treaty Organization (ACTO), with financing from the German Development Bank (KfW), through the Bioamazon Project.

Located in Iquitos, Peru, the Amazon Rescue Center was born with the objective of rescuing and caring for manatees. It has all started when the recently graduated Biologist Javier Velásquez, met for the first time a baby manatee rescued from wildlife trafficking and there was no adequate care for it in an office. The young Javier Velásquez asked for permission to take the manatee and give a care for it. But they replied that a wild animal could not be given into custody to a person, only to an

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*Trichechus inunguis*



institution. Therefore, Javier sought the support of some friends and created the Amazon Rescue Center in 2007.

"At that time there was no institution in Peru that knew how to take care for baby manatees. In 2007, we did our first rescue and the project started in a water tank at the uncle's house. In 2008 we already had four manatees, but the tanks were not enough. The Peruvian Amazon Research Institute (IIAP) allowed us to use tanks that were originally for pirarucus (*Arapaima gigas*). We have taken care of 50 manatees and we managed to return 25 to nature", says Javier Velásquez.

## New facilities

The new manatee tanks were built in a circular format to allow a continuous swim for manatees who need exercise to get stronger. The tanks also have a constant and abundant water supply.

In total there are six new tanks: one for water treatment, four for quarantine with three meters in diameter and a weaning tank with eight meters in diameter. In the latter, manatees stop receiving milk and start eating aquatic plants. The new tanks are in open environments, which facilitates the entry of solar radiation, which contributes to their recovery.

A maloca was also built to allow better awareness and education work with visitors. CREA receives about 35 thousand visitors a year.

"Now, after 12 years of work and with the support of ACTO, we have been able to build permanent facilities for the rehabilitation of animals in a suitable environment to save manatees and give them an opportunity to return to nature," said Velásquez.

## Illegal traffic

Javier Velásquez explains that the Loreto region, in the Peruvian Amazon, is very large and there are many scattered communities who still do not know the fact that the manatee is a species in danger of extinction and that its hunting and commercialization is prohibited.

"Then it happens that the animals are captured to try to be sold as pets in the cities. When the police seize them, they need to send the animals somewhere. There, CREA enters, which receives and cares for these animals until it is possible to return them to nature", Javier explains.

A baby manatee needs to be cared for at least two years of the lactation period. Then they go to a space where they have no contact with people. After six months, in collaboration with park rangers, they are returned to the rivers that are in protected natural areas,

"Before the creation of CREA, all the manatees that were seized in Peru died. Through the work we do, 50 manatees have been rescued, 25 released into the wild and we are preparing another 20 manatees. In November we must release three of them. This is our umbrella species and now we also receive and take care of other animals", Javier informs.



*Trichechus inunguis*

## Environmental education

In addition to rescuing and caring for manatees and other illegally captured animals, CREA does environmental education work with local children and tourists who visit Iquitos. CREA is the most visited place in Iquitos.

CREA has already held environmental education workshops for about 120,000 children in the region and received more than 80,000 tourists from all over the world. Among the most famous are actors such as Harrison Ford, who visited the center in 2015, and Robert de Niro, who met CREA in 2018.

CREA's main ally is *The Dallas World Aquarium*, which since 2007 has supported the institution financially. CREA also has the support of the Peruvian Amazon Research Institute (IIAP) and, this year 2020, it received a support from the ACTO, financed by KfW through Bioamazon Project for the construction of new tanks for manatees.

Learn more about CREA's work by visiting their [website](#), [Facebook](#), [Instagram](#), [YouTube](#), and [Twitter](#).

### Management of wildlife trade in Guyana

ACTO opens a selection process for hiring consultants to develop skills related to the management of wildlife trade in Guyana.

**Deadline for submission of proposals:** November 5, 2020; at 18:00 (Brasilia Time).

**Terms of reference** available [here](#)

### Amazon Regional Observatory (ARO)

ACTO has an open selection process for hiring a company to create and implement the digital platform of the Amazon Regional Observatory (ORA) and its operation within the scope of the Bioamazonia Project.

**Deadline for submission of proposals:** November 9, 2020; 18:00 (Brasília time).

**Term of Reference** available at [this link](#)

### CITES thematic module - ARO

ACTO opens a company selection process for the development and implementation of the digital platform of the CITES module articulated to the Regional Amazonian Observatory (ORA), within the scope of the Bioamazonia Project.

**Deadline for submission of proposals:** November 9, 2020; at 18:00 (Brasília time).

**Term of Reference** available at [this link](#)





Bolivia

# Environment Ministry delivers technological equipment to the National Museum of Natural History to strengthen research

The Environment Ministry of Bolivia (MMAyA) publicized, on its website, a note registering the delivery of 26 electronic equipment to the National Museum of Natural History (La Paz) to strengthen its research units.

This delivery was made within the framework of the Regional Project for Management, Monitoring and Control of Species of Wild Fauna and Flora, supported by the Trade (Bioamazon Project), as part of a commitment between the Amazon Cooperation Treaty Organization (ACTO) and the German Government for the financing of a Regional Project in the biodiversity conservation area through the German Bank of (KfW).

Among the equipment delivered are office computers, laptops, printers, tablets and GPS, the latter for use in the field. These technological equipments will strengthen each of the Zoology, Botany, Paleontology, Diffusion and Environmental Education units for the purposes of research.

[Know more](#)



# Forest Products Laboratory has new equipment

*The new equipment will assist the LPF team in conducting research and projects related to the identification of Brazilian woods.*



Stereomicroscope equipment with motorized focus and fluorescence analysis allows the generation of very high-resolution images, essential to subsidize the construction of electronic wood identification keys.

An electronic microscope and a high-tech stereomicroscope will assist researchers at the Forestry Products Laboratory of the Brazilian Forest Service (LPF/SFB, in Portuguese acronyms) in the study of wood characteristics and in the identification of Brazilian species.

The equipment was acquired through cooperation between LPF/SFB and the Amazon Cooperation Treaty Organization (ACTO), with funding from the German Development Bank (KfW), through the Bioamazon Project.

The new equipment will assist the LPF team in conducting research and projects related to the identification of Brazilian woods.

Learn more about each equipment already available at the Forest Products Laboratory: The new sliding cabinet will allow the enlargement of the collection of tree samples from Xiloteca Dr. Harry Van der Slooten - name given in honor of the founder of LPF - which currently has more than five thousand wood samples of about three thousand species of timber trees.

## S.E.M - Scanning Electron Microscope

The *scanning electron microscope* (SEM) is a type of microscope capable of producing high-resolution images of the surface of a wood sample. Due to the way in which images are generated, SEM images have a characteristic three-dimensional appearance and are useful for assessing the surface structure of the sample. In addition to evaluating the topographical aspects, this technique is also useful to check the composition and other characteristics of the materials, especially the model acquired by the LPF, which has an E.D.S. EDS analyzes are used for qualitative and semi- quantitative microanalysis of chemical elements present in the sample, such as carbon and oxygen.

With this equipment, a new spectrum of the universe opens up to the LPF, allowing analyzes with magnifications above 100,000 times, that is, 100 times greater than the largest increase of the old optical microscope used in the laboratory.

The three-dimensional images allow us to understand in more detail the aspects of the different cellular configurations presented by the immense biodiversity of Brazilian woods, enabling microscopic analyzes even on samples of carbonized wood, impossible to be performed in conventional microscope.

## Stereomicroscope with motorized focus and fluorescence analysis

Despite operating on a macroscopic magnification scale of up to 180 times, this equipment allows the production of very high-resolution images, essential to support the construction of electronic identification keys. In addition, the motorized focus, together with the equipment's software, allows the production of photos with 100% focus, even on samples of uneven surfaces.

Another great advantage of the equipment is the lighting system, capable of producing photos without reflections, essential for the analysis of certain types of wood and coal. This equipment also has a UV light emitter, capable of carrying out analyzes of the natural fluorescence of the woods or accompanying experiments that use contrast markers.



# Dynamics and evolution of the international ornamental market for freshwater rays

Author: **Gregory Prang**, Prang Consulting Services



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The rays of the Potamotrygonidae family, subfamily Potamotrygoninae, are widely used as an ornamental resource by the states of Amazonas and Pará. Freshwater ray fishing for ornamental purposes has been taking place in the Brazilian Amazon for more than three decades. The main markets for potamotrygonids from Brazil were the United States, Japan and Taiwan, where the rays were commercialized through a code system called P-numbers (ARAÚJO, 1998). In this system, each code represents a color pattern and not a species. Within the same species, polychromaticity varies with age and sex (ARAÚJO *et al.*, 2004; ARAÚJO *et al.*, 2006). Today, the P-system is less important because hybrid varieties have become abundant.

The market is selective for certain coloring patterns, and this selection directs the fishing effort to the pattern of greatest interest of importers (ARAÚJO *et al.*, 2005). The demand in the fresh water ray market increased from 20,000 units/year in the 70/80s to 30,000 units/year in the 90s (ARAÚJO, 1998), and increased

to about 50,000 units/year between 2000/2005 (ARAÚJO *et al.*, 2005). These figures represent the legal and illegal market, and one part is from individuals from breeding (ARAÚJO, unpublished data). Brazil is not the only exporting country. Peru, Colombia and Venezuela have also made significant contributions to the international ray market over the past two decades.

**Figure 1: *Potamotrygon albimaculata*, *P. leopoldi* e *P. marquesi* gain prices in Asia, North America and Europe.**



PICTURE: N.L. CHAO

Between 2010-2015 there were seizures of ornamental fresh water rays on the border of Brazil and Colombia. To curb the illegal trade of rays in the ornamental market, Brazil requested the inclusion of the population of the genus *Potamotrygon* in Appendix III of CITES, through Notice Cites no. 2016/056. For the trade to be controlled, the species included must have the trade regulated, and cooperation from other countries is necessary to prevent unsustainable or illegal exploitation.

Given this worrying situation, the “*Study on the dynamics and evolution of the international ornamental market for freshwater rays*,” was demanded by the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), CITES Administrative and Scientific Authority, to the Regional Project for the Management, Monitoring and Control of Species of Wild Fauna and Flora Threatened by Trade (Bioamazon Project), executed by the Amazon Cooperation Treaty Organization (ACTO), with financial cooperation from the German government (KfW).

The general objective of the study is to know the dynamics and evolution of the national and international ornamental market for freshwater rays, with emphasis on species captured in the Middle Rio Negro (Amazonas) and the Xingu and Tocantins River Basins (Pará). Specific objectives include: 1) Identify the species and the main patterns of freshwater ray coloring with distribution in Brazil present in the international market of ornamental fish and their respective economic values, identifying other uses of the species, if any; 2) Identify and characterize the productive chain, from the capture area to the commercialization of the species *Potamotrygon wallacei*, *P. leopoldi* and *P. henlei*; and 3) Identify and characterize the main international markets of freshwater rays occurring in Brazil, coming from nature and from captivity.

The study, still in progress, has already performed several activities:

1. Bibliographic survey on the trade and varieties of rays traded in the ornamental market, as well as the identification of the existence of sustainable breeding and management of freshwater rays at national levels (Amazonian countries);
2. Review of the current legislation of the Amazonian countries;
3. History of ray legislation in Brazil;
4. Semi-structured interviews with actors along the productive chain, academia, NGOs and employees of environmental protection agencies, both national and international;
5. Obtaining data on the trade of ornamental rays in the competent bodies and that are available for public consultation, both national and international;
6. Elaboration of a list with species available in the markets of Europe, North America and Asia;
7. Elaboration on North American, European and Asian market trends;
8. Survey of the main patterns of freshwater ray coloring with distribution in Brazil, allowed or not for export, as well as their prices and use;
9. Beginning of the organization of a database with descriptions and images of the color patterns present in the P System;
10. Beginning of the production of a color pattern guide based on photographs found and provided by the research participants;
11. Request for data on the seizure of ornamental sting rays in the competent bodies, and which are available for public consultation;
12. Elaboration of the international production chain of freshwater rays.

## Preliminary Results

About 1.5 billion ornamental fish are sold on the international aquarium hobby market each year, worth about US\$ 27.2 billion (PLOEG, 2013). Fish represent only 15% of this amount.

Between US\$287-297 million are generated only by fish extracted from continental waters (PRANG, 2007). Within the freshwater species we have the rays of the Potamotrygoninae subfamily,

restricted to the Neotropical region of South America.

In the context of the Amazonian countries, the exportation of continental rays to the aquatics market represents less than 1% of the total commercialized amount (ARAÚJO, com. pes.). The numbers of the ray trade (like most ornamental fish) are often non-existent or, if available, are often reported incorrectly due to exclusion or misclassification from shipping records or through inadequate estimates by exporting and importing companies (RAGHAVAN, *et al.*, 2013).

Brazil was the first country to establish legislation regulating the export of continental rays to the ornamental market under a quota system. The first legislation occurred at the end of the 90's, and contemplated the state of Amazonas. In the following decade, legislation was expanded, including the state of Pará. In the Brazilian management model, initially there was monitoring of ornamental fisheries in the basins of the Rio Negro, Rio Xingu and Rio Tocantins, to protect the natural stocks of endemic species *Potamotrygon wallacei*, *P. leopoldi* and *P. henlei*, respectively. This management model was later adopted by other countries such as Colombia and Suriname.

Due to the high polychromaticity<sup>1</sup> of the group, the rays are marketed through the P system, which was established by Dr. Richard Ross in the late 90's to identify a color pattern (not the species) for the ornamental market, and thus facilitate trade. The first publication occurred in 1999, and also included some patterns without common names, which are indicated in the P system, by the location where they are found. After 2006, hybrid patterns appeared on the market, which are produced from parents selected for

<sup>1</sup> It is said that it has various colors or shades; that it is multicolor or polychrome.

special characteristics, which may come from nature or from breeding, with the objective of creating rays with unique patterns and colors to meet the demand of a dynamic market interested in exotic types and/or colors.

The price of the individual for export purposes varies with the color pattern, size, sex and final market of the species. The comparison of the prices in Real (R\$) between the years 2008 to 2014 indicates that the black species: *Potamotrygon cf henlei*, *P. henlei*, *P. leopoldi* reached individual prices above USD 100.00. Many banned species seem to be exported as allowed species because they earn a higher price than those allowed by legislation (based on past data). An example of this are the sale prices of *P. leopoldi* (P13), where it is embedded, probably, sale prices of *P. albimaculata* (P14), which was negotiated in the Asian market for US\$ 3.000,00 while the species *P. leopoldi* was around U\$ 900,00 and £180,00 - £700,00 in the English market. The *P. wallacei* species of the brown ray group, on the other hand, presented lower unit price of commercialization, and without great fluctuations in the 2008-2014 period. In addition, several traders and researchers have suggested a smuggling route for high-value species from the state of Pará to Colombia through Leticia and from there to Bogotá to avoid the quota system, but there is no specific evidence.

The demand of the breeders for forbidden rays continues because they need the females to ensure genetic stock and to reproduce new varieties for the ornamental market. Some species like *P. wallacei* are difficult to reproduce in captivity, and therefore rarer to be found on the market from breeding.

In addition to smuggling, the freshwater ray researchers interviewed for this research were concerned about the com-



mercialization of rays as edible fish and negative fishing - which consists of sacrificing and/or mutilating the rays as a way to prevent accidents with the tail sting. The main species for edible purposes are *Paratrygon aiereba* (species with prohibited collection, included in MMA Ordinance No. 445 of 2014 as a critically endangered species), *Plesiotrygon iwamae*, *Potamotrygon motoro*, and *P. orbignyi*.

**Figure 2: *Potamotrygon leopoldi* represents one of the most sought after species in the international market.**



PICTURE: N.L. CHAO

For several researchers interviewed, negative fishing is perhaps a more important factor to analyze in the depletion of natural stocks of freshwater rays than exports as ornamental fish. Negative fishing is carried out by riverine residents and fishermen. It seems to be a difficult problem to solve, because it occurs because of the cultural fear of the injuries caused by the incidents with rays, but it is a problem to be faced.

It is worth noting that the traditional form of international marketing of ornamental fish has changed many in recent years, and the traditional production chain of freshwater rays stands out in this context. In traditional commerce, most fish arrive in retail coming from nature or captivity. Nature's fish were mainly caught in Southeast Asia, South America and Africa, while the USA, Singapore, and later the Czech Republic

and Israel, were the main sources of large scale captive bred fish (PRANG, 2007).

The bred fish represent 90% of total exports (*Ibid*). Around the beginning of the 21st century, the commercial trend was the growth of large national pet shops such as Petco and PetSmart, and hypermarkets such as Wal-Mart in the USA. These large corporations preferred the cheapest fish bred in captivity in Singapore and Florida (USA). With this change, many aquarium stores were forced to close. Those who remained began to offer "specialty" fish, including

Loricariidae, Apistogrammas and Corydoras, and rays (*Potamotrygonidae*). Consumers have also become increasingly interested in introducing new varieties of species that can often stimulate hobby enthusiasm. However, recently, social media have been changing relationships within the production chain, which is no longer as linear as before.

Social media has become an increasingly popular platform for legal and illegal wildlife trade (SIRIWAT & NIJMAN 2018; SIRIWAT et al., 2019; MAZZA, 2015). Directly, social media has been used as a tool for advertising, sourcing and online trading of animals and plants. It has also been an indirect stage for the dissemination of viral videos of exotic pets on social media, as well as an area for comments that often induces more people to acquire them. The growth of the Internet and the role of social media platforms in the trade of exotic pets have presented challenges in trade regulation.

WIDJAJA & MEYLIANA (2015) found that social media like Facebook is tending to be a key platform for selling and buying ornamental fish. They identified almost 90 groups related to

ornamental fish with members ranging from 1,000 to 2,000; with a group containing 7,546 members. Most of the sales activities (95%) occur inside the country. Today, the informal aquatic animal trade is highly diffuse and decentralized. Many other trade alternatives have also emerged, such as online stores and auctions. OLDEN et al. (2020) conducted a seven-year study on the aquarium auction site, AquaBid. They documented trade in living organisms between 24,409 unique users from 39 countries and 6 continents, who collectively placed 444,132 bids in 192,227 auctions during the 2011-17 period. The rays were sold for an average of \$ 547.47 a unit.

The sale of freshwater rays for ornamental purposes is no longer dominated by importers and large breeders in Singapore as it was the case 20 years ago. Aquafilism is experiencing an increase in the number of breeders specializing in 'Monster Fish' which includes rays, aruanans (freshwater fish of the Osteoglossidae family) and other large fish. Also, the number of home breeders has increased a lot. Currently, Thailand is growing to be one of the most important countries in the breeding and introduction of new hybrids<sup>2</sup>, even encouraging citizens to enter the business of ray breeding (TIME NEWS, 2020; PHOONPHONGPHIPHAT, 2016)

One consequence of the decentralization of traditional chains over the last 20 years is that professional and amateur breeders have experienced hybridization within and between ray species so much that the variety of patterns

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<sup>2</sup> Hybrids are individuals originating from the breeding of distinct species of rays with color patterns that have the preference of the market, to produce unique color patterns, not observed in individuals from nature (Ex: Hybrid of *Potamotrygon leopoldi* - Black Diamond X *Potamotrygon jabuti*)

and coloring has made the P-System almost useless.

The next steps in this current study include a description of the international trade of ray species listed in the CITES appendices, indicating the international demand for such species, an analysis of the origin of Brazilian species destined for export (nature or breeding), and an analysis and evaluation of the productive chain of freshwater rays present in the Middle Rio Negro (Amazonas) and the Xingu and Tocantins River Basins (Pará).

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# Colombia: Studying and conserving the diversity of Amazon fauna and flora

***Collections of CITES species from the Colombian Amazon Herbarium are digitized and available on the Sinchi Institute website***

*Founded in 1983 by the botanist Miguel Antonio Pabón, the Colombian Amazon Herbarium (COAH) has had continuous growth thanks to great efforts to document the floristic diversity of the Colombian Amazon by the Sinchi Institute and other projects that have deposited their collections, to strengthen this reference collection of the regional flora.*



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*Cyathea sp.*

Colombia, as a member country of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, Article 17 of 1981), assumed the challenge of conserving biodiversity *in situ*, reducing the loss of habitat and its species. In this context and within the framework of the Regional Project for the Management,

Monitoring and Control of Wild Fauna and Flora Species Threatened by Trade (Bioamazon Project); the Sinchi Institute is linked to contribute to the conservation of Amazonian Biodiversity and especially of the species included in CITES.

Since its creation, the Amazonian Scientific Research Sinchi Institute has focused efforts on consolidating biological collections that account for some of the components of the biodiversity of the Colombian Amazon (flora, fish, amphibians, reptiles and aquatic macroinvertebrates); as well as field monitoring actions that allow generating high-level information on the ecology, use and conservation of CITES species.

## Colombian Amazon Herbarium (COAH)

Founded in 1983 by the botanist Miguel Antonio Pabón, it has had continuous growth thanks to great efforts to document the floristic diversity of the Colombian Amazon by the Sinchi Institute and other projects that have deposited their collections, to strengthen this reference collection of the regional flora.

After nearly four decades of continuous work, it has been possible to access innumerable locations, some of great biogeographical interest. At present, it has information on 120,000 (92,000<sup>2</sup>) vascular and non-vascular plant specimens represented in 9,200 (7,770<sup>2</sup>) species. Since 2005, the collection began to be digitized and it is currently available on the Sinchi<sup>1</sup> Institute website.

About 30,000 species of plants in the world are protected by CITES against excessive exploitation due to international trade and are therefore included in the three CITES Appendices (CITES<sup>2</sup>), the herbarium collection houses information on 279 species of plants of the Colombian Amazon (*sensu stricto*<sup>3</sup>) included in the Appendices, among which species of Orchids and Arborescent Ferns are mainly registered, as shown in Table 1; There are also 2 threatened species (*Palo rosa, Aniba rosaeodora* - Lauraceae and *Cedro, Cedrela odorata* - Meliaceae).

**Table 1. Distribution by botanical family of CITES species in the Colombian Amazon**

Family	N° of Species
Orchidaceae	224
Cyatheaceae	31
Fabaceae	11
Zamiaceae	5
Euphorbiaceae	4
Cactaceae	2
Lauraceae	1
Meliaceae	1

Source: Colombian Amazon Herbarium COAH (<https://sinchi.org.co/coah>)

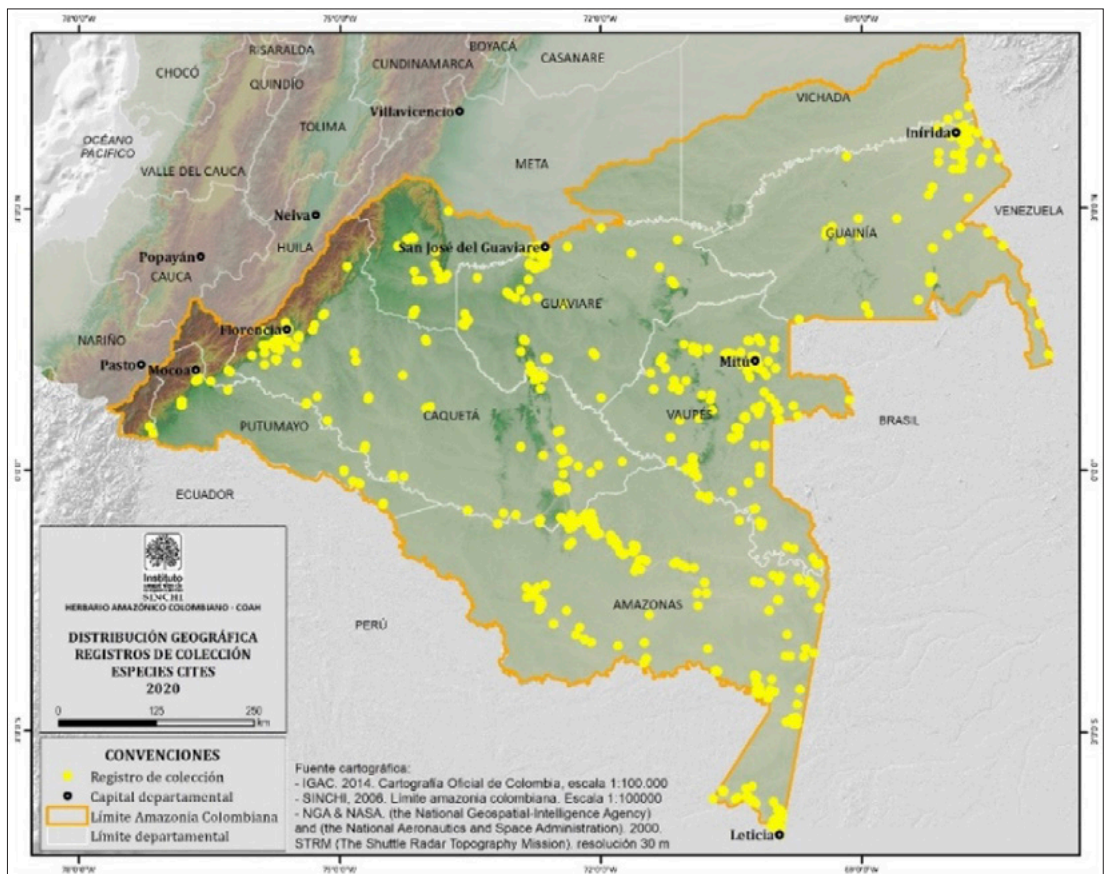
1 <https://sinchi.org.co/coah>

2 *sensu stricto* = Amazon defined as the altitude elevation of 500 msl downwards, since for ACTO it is considered Amazon from the highlands of the Andes (technically Andean Biome).

3 <https://www.cites.org/esp/disc/species.php>, downloaded on June 30, 2020

The geographical distribution of CITES species records in the Amazon region of Colombia can be seen in the following map (Figure 1).

**Figure 1. Geographical distribution of records of CITES species in the Colombian Amazon.**



The Colombian Amazon Herbarium (COAH) has supported different actions ranging from forest zoning, management plans for the conservation of threatened species, evaluations of supply of species of interest, categorization of threatened and invasive species, biodiversity inventories and recently the Inventory National Forest - (Amazon chapter). As a strategy to strengthen the quality of the collection, in recent years, efforts have been focused to invite international experts from representative groups to curate their groups in the Herbarium, which has generated a successful refinement of taxonomic determinations and many species new to science have been identified, some already described and others in the process of description.

## CITES plant species monitoring program

As a result of collaborative work with different institutions and efforts of the Sinchi Institute, the Permanent Plots Network of the Sinchi Institute was created, which currently consists of 34 permanent plots of 1 hectare and a Mega Plot of 25 hectares in the Amacayacu National Natural Park, where they monitor about 150,000 individuals of 1950 fully identified species.

This monitoring includes 11 species of trees included in the CITES Appendices, among them *Cedrela odorata* threatened in Colombia and which was recently



included in Appendix II of the CITES Convention (COP 18), in which all the species of the genus *Cedrela* and several species of the genus *Cyathea* (Appendix II).

The Bioamazon Project will strengthen the monitoring of CITES species, through the adaptation of the infrastructure of the Amacayacu National Natural Park, which houses the researchers who carry out monitoring throughout the year. The dissemination capacity of the information generated from the provision of computer equipment will also be strengthened, which will add to the efforts of the Sinchi Institute to have the monitoring information available.

With the support of the Bioamazon Project, the expansion of the Herbarium's facilities will be strengthened and a professional photography team has been provided in order to make the images of all available botanical specimens available online, especially those corresponding to CITES species.

Likewise, the monitoring of the native species of the genus *Vanilla* (Orchidaceae) present in the Colombian Amazon through biological records is being carried out. The importance of monitoring these CITES species is that it is of great impact since there are new records for Colombia for science, new species and species that have aromatic fruits with significant productive potential in the Amazon region.

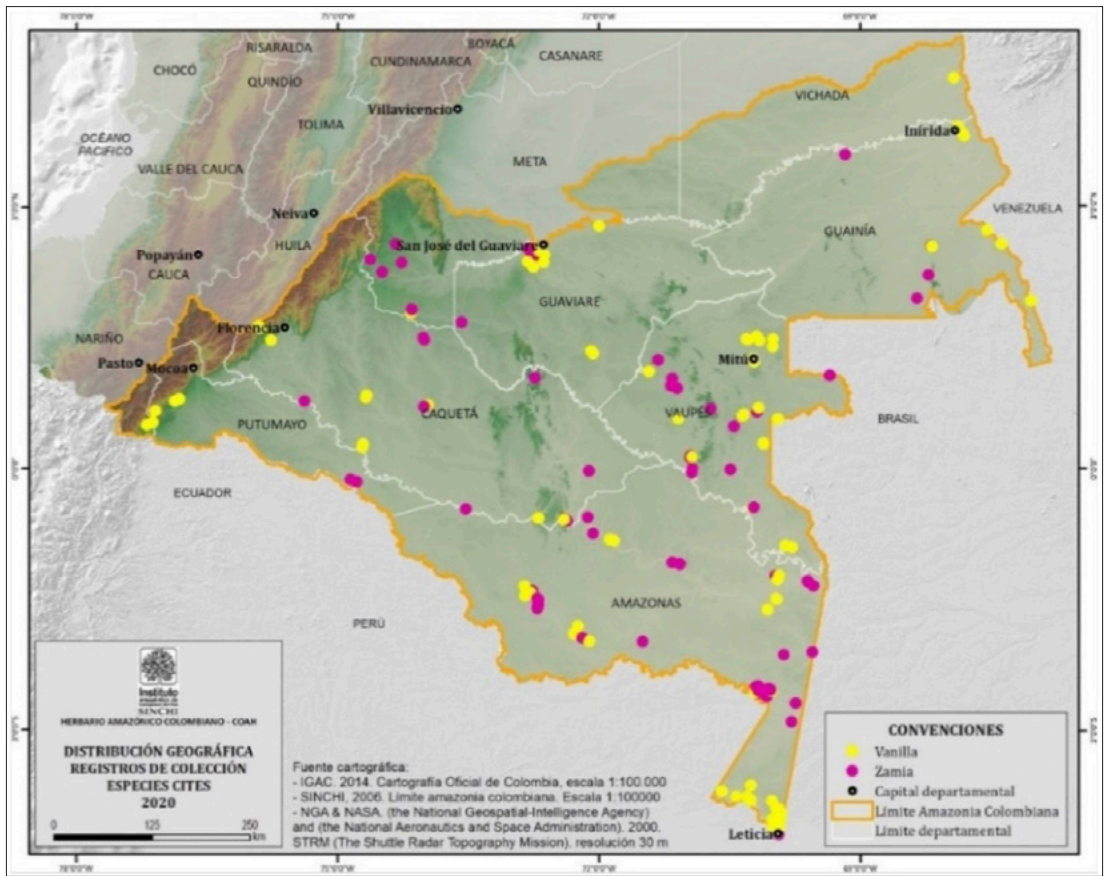


*Vanilla aspericaulis*.

The biological records of the Colombian Amazon Herbarium are fundamental as a support for studies of biodiversity. Through this monitoring, the number of known species for the Colombian Amazon went from 8 to 16 species and additionally 120 specimens of the genus *Vanilla* were incorporated into the herbarium, making this the most complete collection of vanillas in the Colombian Amazon, an important CITES species subject to monitoring in the region. (Figure 2)

Monitoring of *Zamia hymenophyllidia* in the Amacayacu National Natural Park is also being carried out. In 2019, the monitoring of 278 individuals was consolidated, where information about the spatial location of each individual in the permanent plot (X and Y coordinates), stem height, number of total leaves, number of new leaves and measurements of the leaves (petiole, lamina and pinnae). Of other species such as *Zamia amazonum*, *Zamia lecointei*, *Zamia macrochiera* and *Zamia ulei*, there are natural populations identified and will be subject to monitoring. (Figure 2).

Figure 2. Geographic distribution of the *Zamia* and *Vanilla* species in the Colombian Amazon.



Currently, all the information is available on the web page of the Amazonian Scientific Research Sinchi Institute: <https://sinchi.org.co/coah>. Similarly, a mini site is being built where it will be possible to consult botanical information on CITES species from the Colombian Amazon, which includes images of specimens and geographic coordinates of all existing records in COAH.

# Local management and traceability of yellow-spotted river turtle (*Podocnemis unifilis*) in the department of Loreto

Author: **Joao Diego Freitas Cordova**, Wildlife Management Ecologist

**ABSTRACT:** Analysis on management and commercialization of yellow-spotted river turtle (*Podocnemis unifilis*) in communities outside Natural Protected Areas in the Department of Loreto, Amazon, Peru. It was found that six communities outside Natural Protected Areas in the region of Loreto carried out management and commercialization of yellow-spotted river turtle, each one having its own Management Plan and Natural Resources Management Association. Data obtained in the management of the terracay show that communities working outside Natural Protected Areas (NPAs) have little experience compared to those communities working within NPAs. This analysis made it possible to describe and outline the process of exploitation of the species, including the previous stages. The next stage of the study will verify the entire marketing process.

**KEYWORDS:** Yellow-spotted river turtle; *Podocnemis unifilis*; management; trade; Amazon; Department of Loreto; Peru; National Forest and Wildlife Service (SERFOR); Bioamazon Project..



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*Podocnemis unifilis*.



Yellow-spotted river turtle (*Podocnemis unifilis*) are reptiles culturally very appreciated by the communities of the Amazon, both for consumption and source of protein as well as for trade.

In Peru, the management and trade of yellow-spotted river turtle is allowed by Law No. 29763 - Forestry and Wildlife and Law No. 29763 of Natural Protected Areas and their respective regulations. In addition, international trade is framed within the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) which was implemented in Peru through Decree Law No. 21080 in 1975.

The National Forest and Wildlife Service (SERFOR) has requested a diagnosis on the local management of yellow-spotted river turtle in the department of Loreto, in the Peruvian Amazon. The study is

supported by the Bioamazon Project and is based on analysis of data from official institutions in Peru over the last five years and information gathered during field visits.

It was found that six communities outside Natural Protected Areas in the region of.

Loreto carried out management and commercialization of yellow-spotted river turtle, each one having its own Management Plan and Natural Resources Management Association.

They are: Puerto Pirumba (close to Nueva Unión), Huambracochoa, Musakarusha, Nuevo San Juan, Ollanta and Santa Rosa de Lagarto (Figures 1 and 2), each community has approximately 15 members, each representing a family in the community.

**Figure 1. Map of the region of Loreto (Peru) indicating the communities that manage yellow-spotted river turtle outside National Protected Areas (NPAs).**

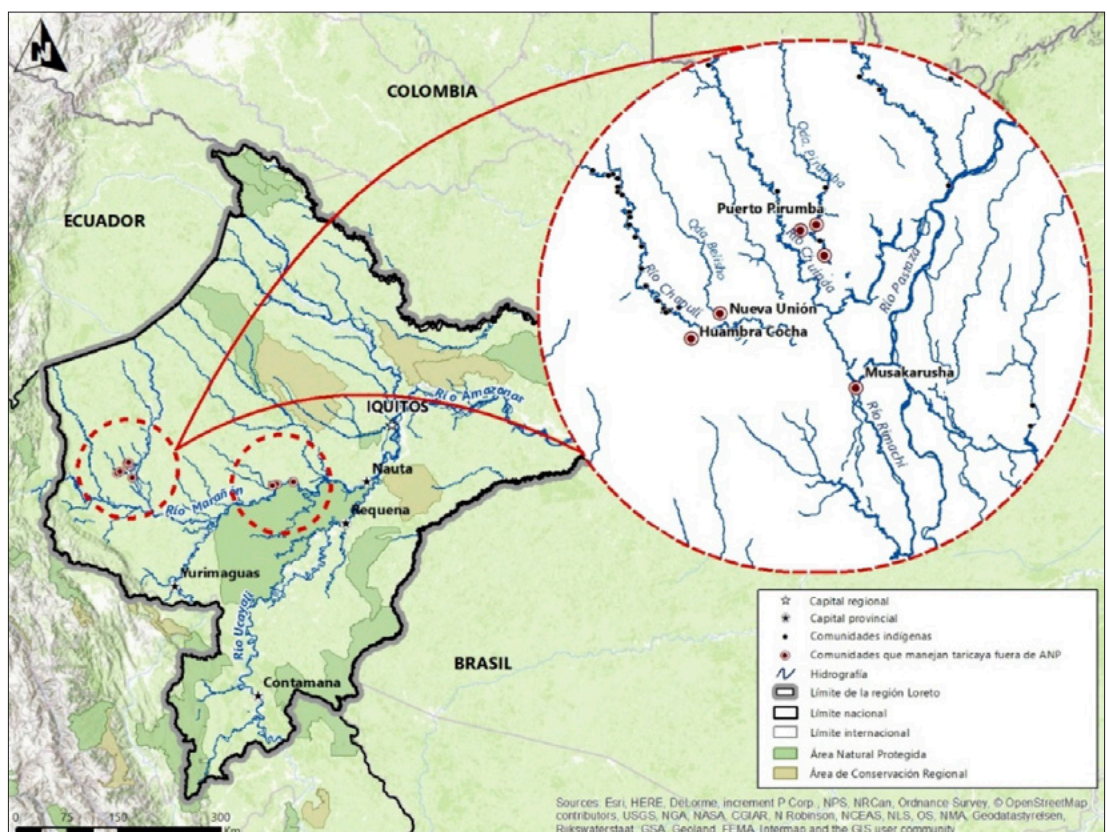
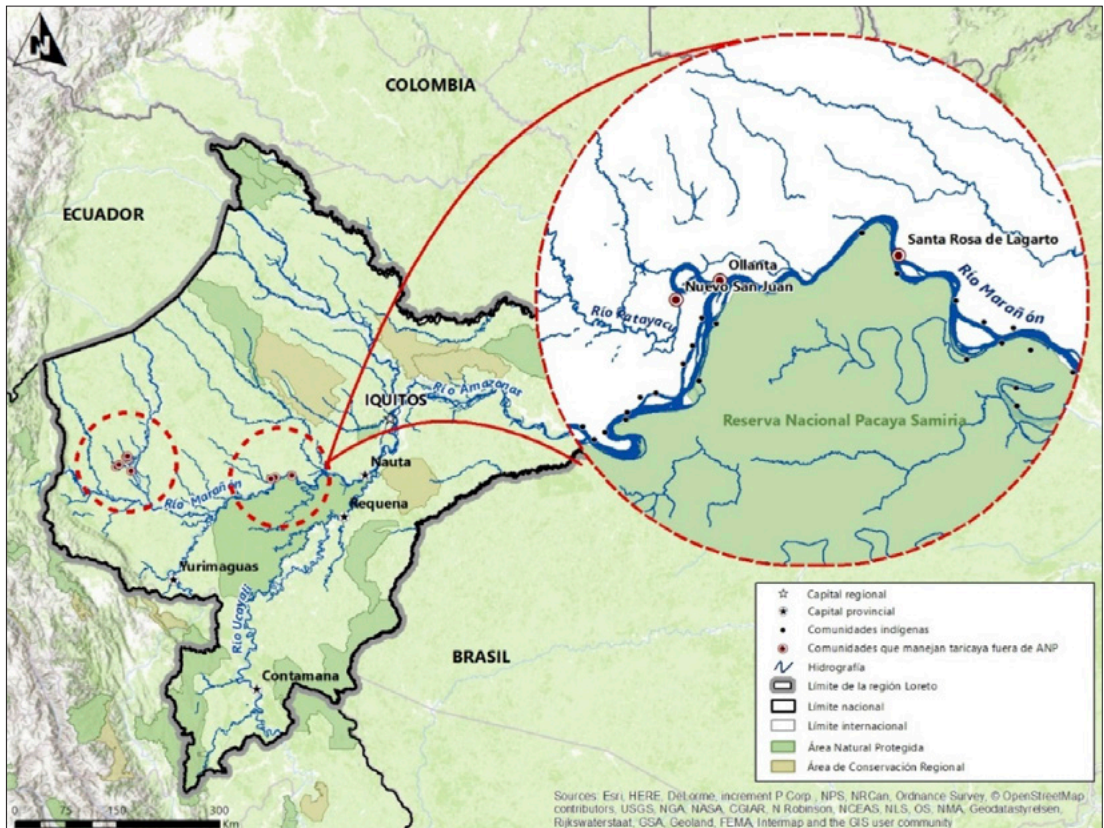


Figure 2. Map of the region of Loreto (Peru) indicating the communities that manage yellow-spotted river turtle outside National Protected Areas (NPAs).



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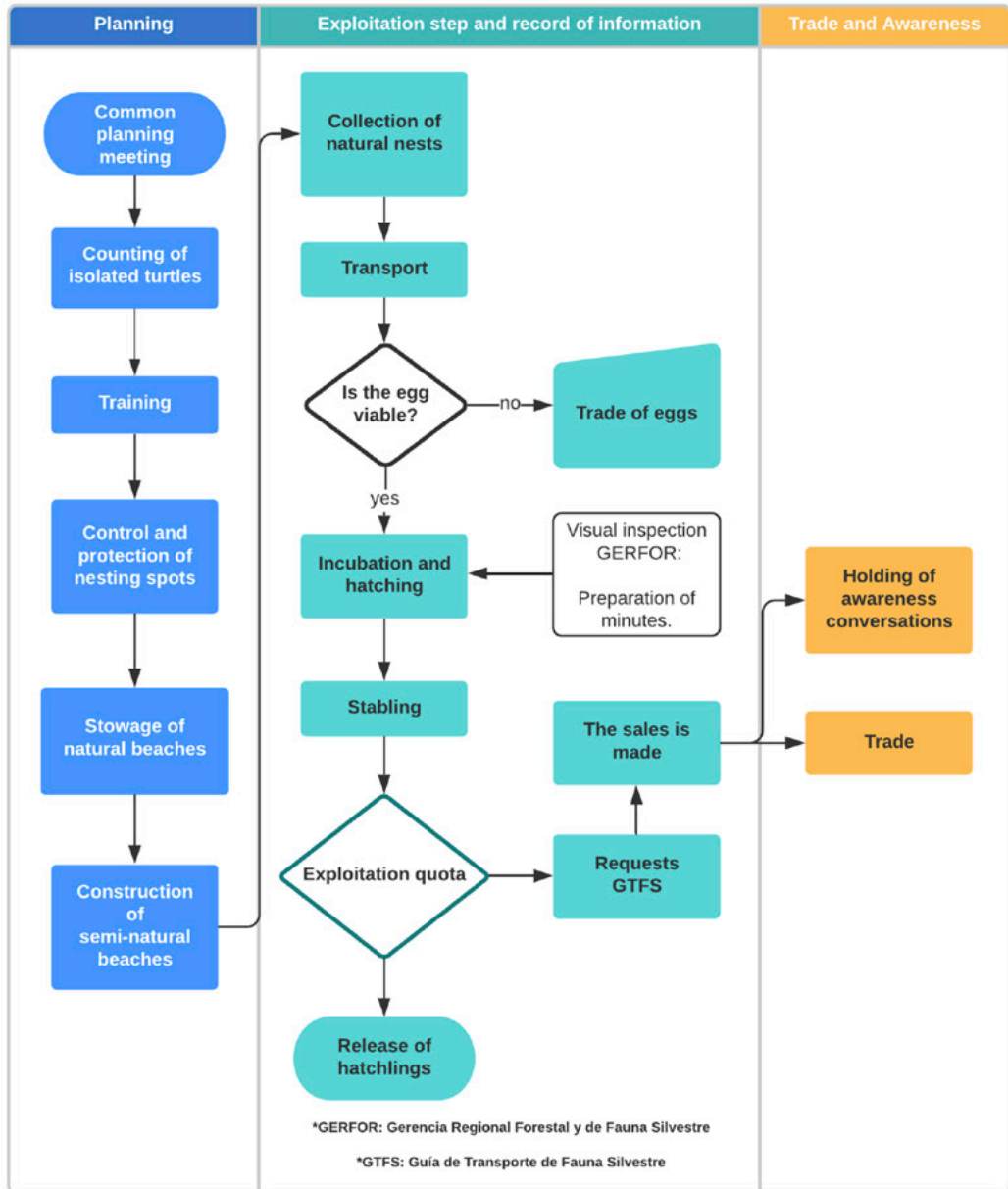
In the analysis of information it was found that in 2015 and 2016 the greatest increase in the management of yellow-spotted river turtle was presented for the 6 communities and the mortality in each community was variable; however, it is considered that the mortality registered in all the studied period is mainly due to human and logistic factors in the different stages of management. These data are shown in standardized tables by means of the following points: Egg count, birth rate, death rate and hatchlings released.

Data obtained in the management of the teracay show that communities working outside Natural Protected Areas (NPAs)

have little experience compared to those communities working within NPAs. According to the analysis, the peasant communities of Ollanta, Nuevo San Juan and Santa Rosa de Lagarto, between 2012 and 2016, collected 152,617 eggs resulting in 92,667 hatchlings and the release of 43,221 hatchlings. While in the communities of Mushakarusha, Puerto Chingana and Humbracochoa, with different years of management, they collected 159,663 eggs resulting in 112,832 hatchlings and the release of 62,905 hatchlings. This analysis made it possible to describe and outline the process of exploitation of the species, including the previous stages (Chart 1).

Chart 1. Process of exploitation of the species *Podocnemis unifilis*, including the previous stages.

Layout of the exploitation steps of *Podocnemis unifilis*



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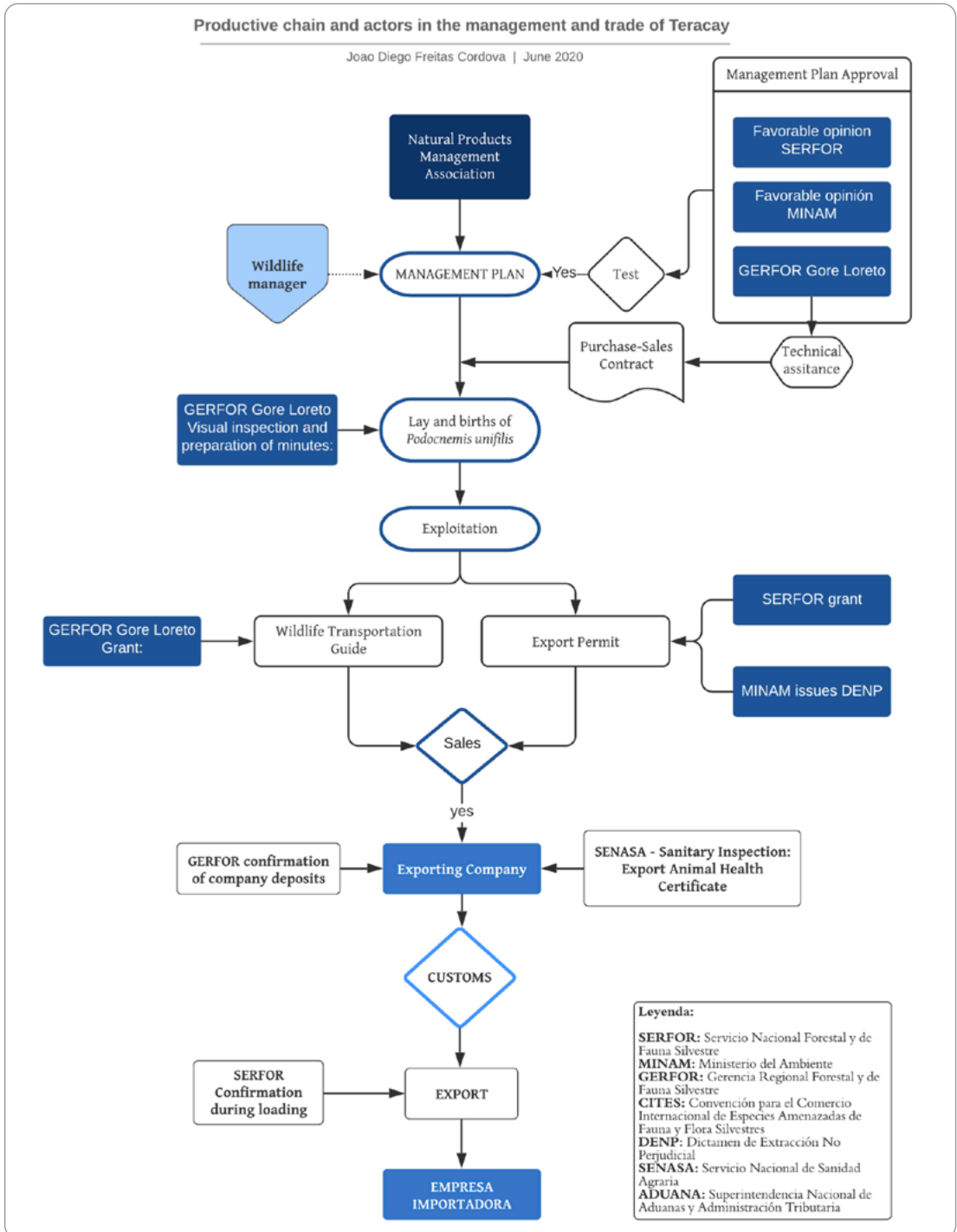
In the case of marketing there are 9 main actors involved in the production chain which are the community, associations, Regent of Wildlife, Loreto Regional Forest and Wildlife Management (GERFOR), National Forest and Wildlife Service (SERFOR), National Agricultural Health Service (SENASA), National Superintendence of Customs and Tax

Administration, export company, import company.

Nine companies were identified which, between 2015 and 2019, exported 2,401,184 yellow-spotted river turtle, corresponding to a total amount of US\$ 7,089,776.00, being the year 2017 where the highest amounts in quantity and amount exported were found.



Chart 2. Production chain and actors in the management and commercialization of teracay (*Podocnemis unifilis*).



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Regarding the strengthening of management capacities, the registration and storage of management data is the one that requires more attention from the communities, because inconsistencies were detected in the registration and storage of information on the management of teracay; while, in aspects

of marketing, more training is needed on purchase and sale agreements, because prices recorded a significant decline in recent years, these agreements will help obtain good prices for the sale of teracay. The management and commercialization of teracay is an important source of resources to increase the income of the

families. However, the activities need to be monitored to avoid overexploitation and to ensure the conservation of the species.

The next stage of the study will verify the entire marketing process in order to detect mortality at each stage until export; this will allow the identification of critical points and issue more recommendations for the improvement of the activity and access to economic benefits from the management of the species.

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*Podocnemis unifilis*.

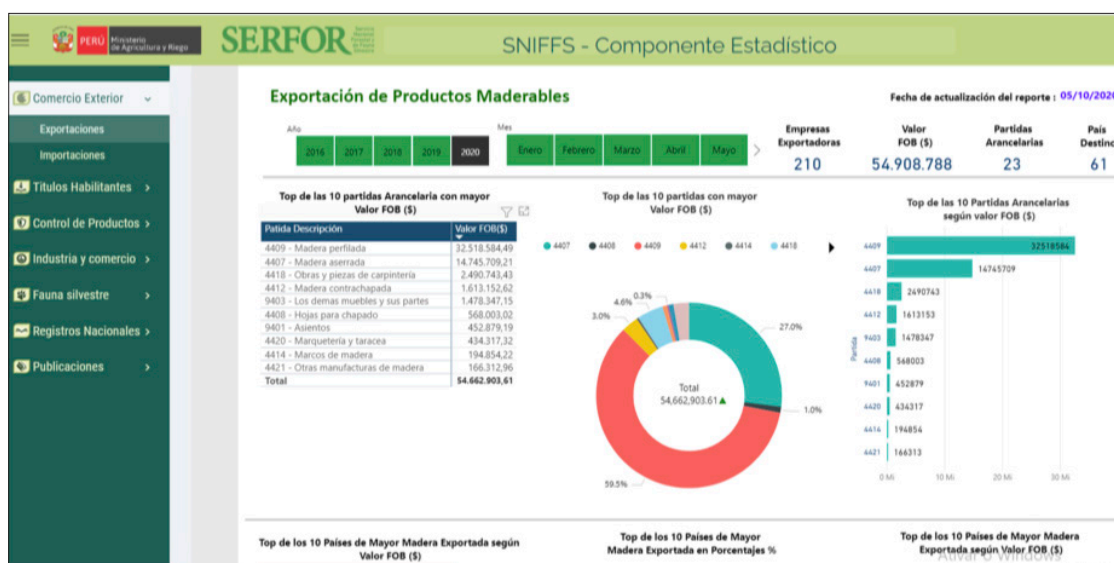




# SERFOR receives the support of ACTO to strengthen the registration of forest and wildlife information

The National Forest and Wildlife Service (SERFOR), an entity that belongs to the Ministry of Agriculture and Irrigation (Peru) received support from the Amazon Cooperation Treaty Organization (ACTO) to strengthen the System of Information and Registry (SIR), developed by the Directorate of Information and Registration (DIR) of the General Directorate of Information and Forest and Wildlife Management of SERFOR.

The SIR is a tool that allows to validate, standardize and update information from its origin; and includes the registration of enabling titles (concessions, authorizations, permits), confiscated specimens, wildlife transport guides, hunting license and authorization, forest use management plans, national registry of offenders, transfer contracts in use and exchange of use.



Thus, ACTO, through Component 1 of the Bioamazon Project - National and Regional Information and Knowledge Management Systems -, supported the quality assurance and control process for the early identification of defects and improvements of the SIR before its implementation and the identification, analysis, design and documentation of the processes for registering forest and wildlife information such as hunting licenses, foreign trade and offenders.

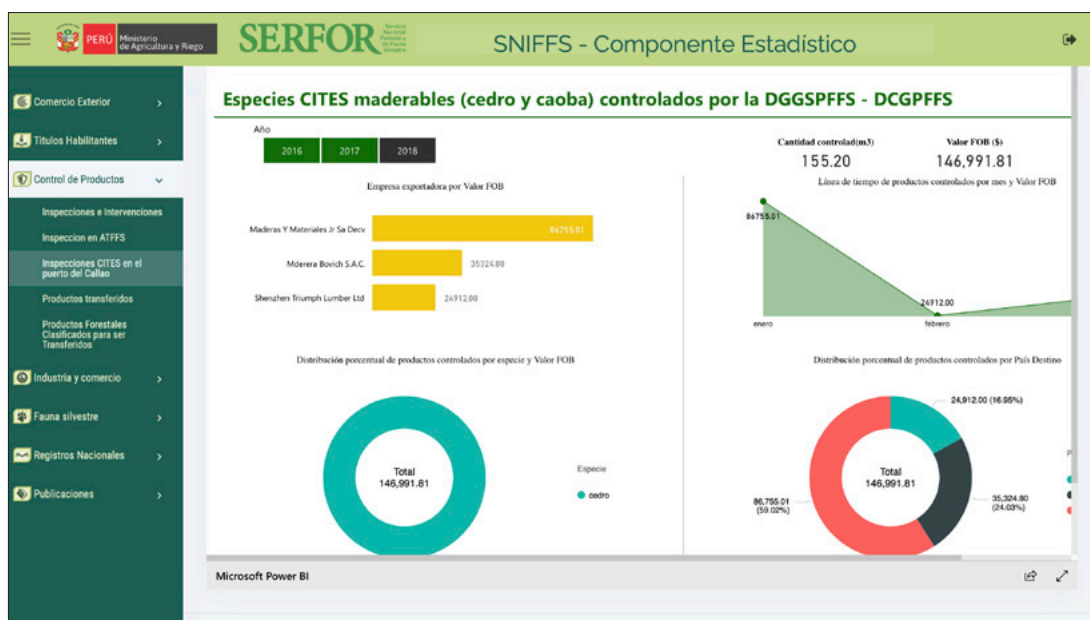
This has made it possible to reduce risks when implementing the application in the regions, avoiding inconveniences for the end user, as well as reducing costs in the

implementation stage. Likewise, it has been possible to identify the shortcomings of the current processes, needs and critical points and simplification of the records of forest and wildlife information, improvements and new controls for the System of Information and Registry (SIR). This will facilitate the implementation of technological solutions to strengthen SERFOR in its mission of sustainability and conservation of Wild Flora and Fauna in Peru, especially of species included in CITES and those in a category of threatened.

It should be remembered that the SIR will provide information to the Statistical Component of the National Forest and Wildlife Information System (SNIFFS), which provides forest and wildlife statistical information that includes CITES and those of threatened species, based on the collection, systematization and the analysis of the data from the information records of the regional forest and wildlife authorities (ATFFS and GORE).

This information allows timely decision-making in forest and wildlife management, at the level of SERFOR as the National Forest and Wildlife Authority, as well as regional forest and wildlife authorities (ARFFS), local governments (provincial and districts), public and private institutions, civil society organizations, academia and in general, people linked to forestry, wildlife and related activities (production, promotion, research, etc.).

To access the SNIFFS Statistical Component, enter: <http://sniffs.serfor.gob.pe/estadistica/es>



# Technology to conserve forests

*The equipment was bought in July with resources provided by the Bioamazon Project. This drone will also be used for data collection on the field.*



The Nature Conservation Division of the Suriname Forest Service (Ministry of Spatial Planning, Land and Forest Management) can count now with a drone to help forest guards to monitor forests and activities and to do the enforcement in remote areas, as the interior and coast of the country, where there are challenges with lack of adequate infrastructure to reach those areas. The equipment was bought in July with resources provided by the Bioamazon Project. This drone will also be used for data collection on the field.

[According to Forest Legality Initiative](#), Suriname's forests are located within the broader Guianan Moist Forests area, one of the largest continuous tracts of relatively pristine lowland tropical rainforest in the world. Suriname has 15.3 million hectares of forest covering approximately 94% of the country's surface area (FAO, 2015). 91.4% of Suriname's forest area is primary forest, 8.5% is naturally regenerated and only 0.1% planted. Forestry activities contributed roughly 2% to annual national GDP in 2011, while providing employment for approximately 9000 people (Global Forest Watch, 2015). Suriname's estimated annual deforestation rate is approximately 0.02%, with mining for bauxite, gold and kaolin as the main driver of deforestation and degradation. While most of the country is forest covered, the northern half of the country is where the logging concessions are located.



## About the Bioamazon Project

Bioamazon is a **regional project in the ACTO's framework** that contributes to the conservation of Amazon Biodiversity, especially the species included in the CITES Convention.

To this end, **it seeks to increase the efficiency and effectiveness of the management, monitoring and control of species of wild fauna and flora threatened by trade** in ACTO member countries: Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela.

It is part of a financial cooperation agreement between the Federal Government of Germany and ACTO with implementation through the KfW.

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**Amazon Cooperation Treaty Organization – Permanent Secretariat (PS/ACTO):** Secretária General Secretary, Alexandra Moreira López. Executive Director, Carlos Alfredo Lazary. Administrative Director, Carlos Salinas Montes. Communication Advisor, Frida Montalván. Interns: Heeyeon Oh and Donghyeon Kim (Republic of Korea).

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Bolivia



Brazil



Colombia



Ecuador



Guyana



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Suriname



Venezuela