



Conservation Case Study of Manú National Park

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1. OVERVIEW

1.1 Location

Manú National Park – Peru

Size: 1,716,295.22 ha – 4,241,058 acres

Province: Paucartambo in Cusco and Manú in Madre Del Dios

Capital: Salvación, Madre Del Dios Region

1.2 Creation

Manú National Park, also referred to as the Biosphere Reserve*, was created in 1973 by an executive order of the Peruvian government, as a direct response to exploitation, namely of the rubber trees and the enslavement of native communities by Spanish conquistadors, rubber barons, illegal miners, loggers and hunters.

The initial legislation in 1973 designated 532, 806.00 ha to be conserved, the size of which expanded by nearly 200,000 ha in 2002 to its current dimensions of 1,716,295.22 ha.

In 1977 UNESCO recognized Manú National Park as a Biosphere Reserve and in 1987, the same organization recognized the park as a World Heritage site. (National Service of Natural Protected Areas by the State)

* “Biosphere reserves are ‘Science for Sustainability support sites’ – special places for testing interdisciplinary approaches to understanding and managing changes and interactions between social and ecological systems, including conflict prevention and management of biodiversity.” (UNESCO)

1.3 Management

Today, the national park is under the supervision of Peru’s National Protected Areas Agency (SERNANP), a subdivision of the Ministry of Environment. Between 2013-

2015, SERNANP plans to allocated \$2,702,516 for its management of the Park.
(2013-2015 SERNANP Master Plan)

1.4 Biodiversity

As a result of strict governing conservation laws, Manú National Park is one of the most biodiverse ecosystems in the world.

Estimated figures by UNESCO: between 2000 and 5000 species of plants, well over 1000 vertebrate species, at least 200 species of mammals and over 800 species of birds. (UNESCO)

Estimated diversity figures by SERNANP: contains one sixth of the world's plant species, 5% of world's mammal species, over 500,000 species of arthropods, 997 species of birds, 50 globally threatened endangered species and houses two of the 200 global high-priority conserved ecoregions: the Peruvian Yungas and the humid forests of southwestern Amazon. (2013-2015 SERNANP Master Plan)

1.5 Accessibility

Due to the lack of infrastructure leading to and within the park, Manú National Park is highly isolated.

There is only one road to Salvación from Cusco – a nine-hour winding stretch of dirt road, which crosses the Peruvian Andes east toward the southwestern bank of the Amazon basin.

From Salvación to Boca Manú (entrance of the reserve) is an additional 3 to 4 hours by car and boat. Past Shintuya, the only means by which one can travel toward Boca Manú is by boat: first on Madre Del Dios River, and once inside the reserve on Manú River.

1.6 History

Manú's history is rich and multifaceted. Abundant with life, this land was once home to diverse native tribes, a fraction of which are still in existence – populations either entirely exterminated or dramatically reduced in size.

Rich with natural resources, Manú's forests have long been subject to invasion and exploitation, a pattern that continues to this day.

The destruction that eventually led to the Manú National Park becoming one of the most protected natural lands on the planet began in late sixteenth century with the arrival of the Spanish conquistadors. However, it wasn't until the 1870s when rubber was discovered, that the grand exploitation of Manú – rich with rubber trees – by the *caucheros* (rubber barons) began.

The effects of these vicious attacks on nature, as well as the enslavement and massacre of the natives whose lands were invaded is still alive: the majority of the surviving native communities have made contact and assimilated, though levels of interaction with the outside world varies from one group to another. However, there are still communities referred to as the *uncontacted* natives who live as nomadic, hunter-gatherers and reject or are in preliminary stages of contact.

The rubber boom eventually waned and the Biosphere Reserve was created.

However, starting in the 1980s until today, the illegal extraction of gold in Puerto Maldonado – a village located within the Buffer Zone (maps 3, 10), outside of the reserve – has led to the dumping of massive amounts of mercury in Manú's river systems, affecting local communities, wildlife and the habitat (graphs 1, 2). Raids by government authorities – at times by means of firearms – have in the past shut down these illegal operations, only for new ones (or the same mines) to start back up again.

Manús history, as well as the current state of the land surrounding it, contributed a great deal to the creation of the park in 1977 and the strictness of the conservation laws governing its Biosphere Reserve today. (Anderson, 2016), (López, 2016) (Carnegie Institute For Science)

2. ZONES OF THE BIOSPHERE & THEIR MANAGEMENT

Name	Percentage	Size (ha)
Restricted Zone	84.95	1,458,076.74
Service Zone	10.03	172,096.67
Special Use Zone	2.31	39,697.04
Historical-Cultural Zone	1.07	18,363.24
Recuperation Zone	0.92	15,849.72
Touristic Zone	0.71	12,211.81
Total	100	1,716,295.22

2.1 Restricted Zone: Is the largest and most protected area of the park. SERNANP's conservation laws for this zone reflect what the integrity of the park has come to represent over the years: completely free from human activity and intervention. This goal has so far been possible due to two main factors:

1. Difficult accessibility by boat.
2. Park management's strong presence along the Manú River as well as the outer edges of the zone.

While some research and even less filming (for scientific research) takes place in this area, permits to access are difficult to acquire and all purposes of visits must be reviewed by SERNANP headquarters at an earlier date.

Extreme vetting for entry and the vigilant guardianship of this area is both for the protection of the flora and fauna as well as the natives that dwell within this zone (the numbers of whom are still unknown) from outside pressures and infections. (2013-2015 SERNANP Master Plan)

2.2 Service Zone: An area, naturally less vulnerable than the Restricted Zone, that surrounds the Manú River bank. Exposed to little or no human intervention, the service zone is used by small-sized research, educational groups, as well as tourists.

The activities within the service Zone are heavily monitored and controlled by checkpoints situated along the River as well as by security patrols (map 7).

Boat tours up the Manú river (which can take up to three days) are expensive and only go as far north as the Special Use Zone, beyond which point, all non-native and research-based activities are prohibited or require special permits.

Infrastructure used to house visitors along this zone must be non-permanent and the use of its water supplies, as well as the wildlife is prohibited. (2013-2015 SERNANP Master Plan)

2.3 Special Use Zone: This area, occupied by pre-existing human settlements is divided into two sections:

a. The 800 ha territory occupied by Tayakome (northern banks of Manú river) and Yomibato (along Fierro river). Some agricultural and livestock activities take place here, though they must retain their current traditional format, using manual tools.

b. The rural settlement in the southern, mountainous area of the park along the Callanga River, is occupied by a society of farmers of the Quechua ethnic group. Although they plant several different products, the main one is coffee. The laws of traditional agriculture by means of traditional tools, also applies to the farmers of Callanga.

According to the park's 2013-2018 Master Plan, the expansion of current human settlements in these areas, as well as the creation of new ones, is prohibited and agricultural activities are subject to annual inspections. (2013-2015 SERNANP Master Plan)

2.4 Historic-Cultural Zone: The presence of ancient petroglyphs with unknown origins make this area's historic and archeological value important for researchers as well as tourists.

The structures existing within this territory include non-permanent as well as more permanent* constructions built in par with regulations for conservation.

Due to the presence of tourist groups and the adjacent border with the Buffer Zone (maps 9, 10), SERNANP places high priority on the expansion of security checkpoints and its patrolling of the vicinity.

(2013-2015 SERNANP Master Plan)

*Permanent structures (*cochas*) inside the park refer to simple shelters built of palm woods and palm leaf thatching.

2.5 Recuperation Zone: Refers to the western border of the Restricted Zone bordering the Andean plateau, where extensive farming and mismanaged, prescribed burning of lands have damaged areas within the Biosphere Reserve. Currently, park officials are working with local farmers to educate, as well as provide them with resources

(including fire trucks) to avoid future incidents of the kind. Until damaged territories have reduced in size, officials will monitor farming activities in this region. (map 9) (2013-2015 SERNANP Master Plan)

2.6 Tourist Zone: Consists of small pockets of land, only accessible to tour groups with a certified guide. The building of access routes and permanent structures (no larger than 0.5 ha) are permitted. All research and surveillance activities must be compatible with the development of tourism and in harmony with conservation efforts. (2013-2015 SERNANP Master Plan)

2.7 Buffer Zone – The Challenges Facing The Biosphere Reserve: Though not formally a part of the Biosphere Reserve, the Buffer Zone refers to the areas surrounding the reserve where a number of villages including Salvación and Puerto Maldonado are located. This is where William Forster Lloyd's theory, the Tragedy of Commons presented in Garrett Hardin's 1968 article by the same name, is tangible, and the result can only be defined as chaotic exploitation. In Lloyd's words, "Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all."

In the case of the Buffer Zone, the absence of well-defined laws by the local and federal governments has unfortunately resulted in illegal activities, such as mining, logging, overgrazing and prostitution, the effects of which trickle into Manú reserve. In their most recent inspection of the area, UNESCO officials observed,

“The integrity of the property [Biosphere Reserve] could be compromised by inappropriate developments in its vicinity, implying a need to strongly consider the surrounding buffer zone in protection and management efforts.” (UNESCO)

The growth of Evangelicalism in the Buffer Zone also contributes to mismanaged first contact efforts by missionaries, which can have harmful consequences.

(Anderson, 2016)

The diverse objectives and lack of coordination between NGOs and ecotourism companies, obscures conservation efforts best achieved by cooperative measures.

Moreover, as tourism grows, the Buffer Zone has become a more economic space for travelers to visit as the area’s biodiversity provides a glimpse of the Biosphere Reserve. The construction of more tourist lodges are under way and in some cases activities provided for tourists include fishing in Madre Del Dios river and unregulated farming practices.

However, perhaps the most harmful threat to the Biosphere Reserve from the Buffer Zone is the lack of conservation-minded leadership. The regional government of Madre Del Dios has been led by Luis Otsuka since 2014 – a former head of Statewide Miners Association. Because of his favorable views toward mineral extraction, little to none has been accomplished in environmental matters within the region.

(Anderson, 2016)(López, 2016) (SPDA)

SERNANP’s primary role as an environmental organization in this area is that of a mediator between involved actors. The essence of their recommendations and plans of action for this area are as follows:

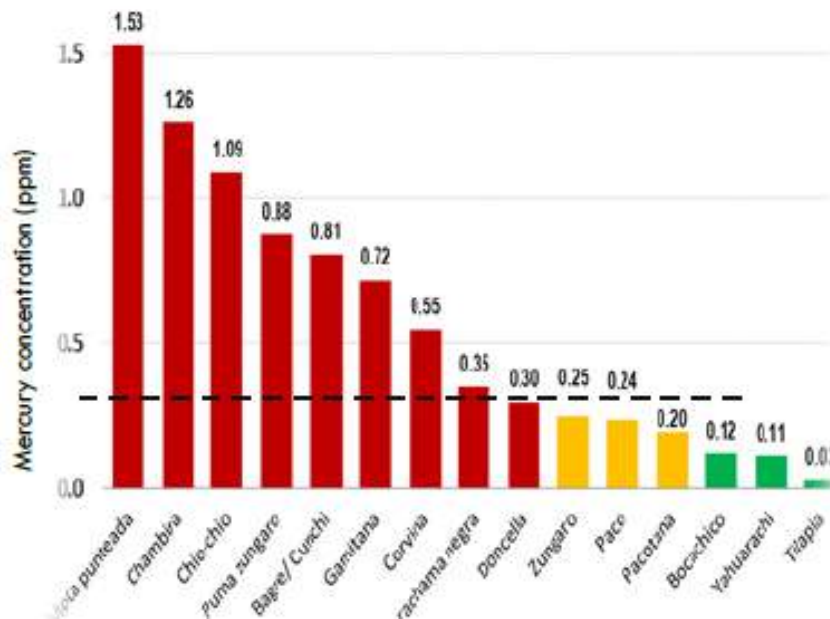
- Create a landfill outside of the Biosphere Reserve to more efficiently collect and dispose of waste produced in the region.
- Cooperate with the government of Madre Del Dios, Paucartambo and the NGOs working in the region to promote sustainability and conservation.
- Promote interest of conservation among the locals by educating and empowering them to make decisions and take action for their communities.
- Advocate for better defined territorial borders between public and private lands.
- Advocate for better defined roles by actors involved in conservation efforts.

As observed, due to SERNANP's marginal role, if there is to be a game-changing strategy for the Buffer Zone, it must come from a change in attitude by the local government and its officials.

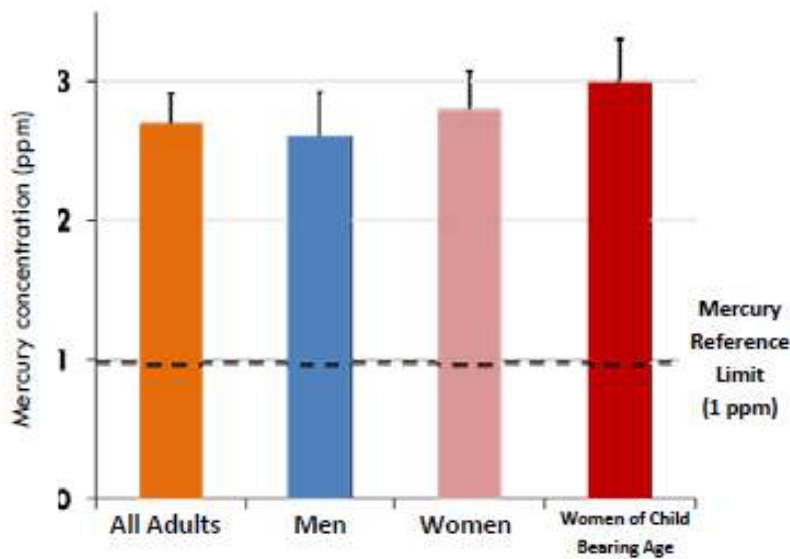
To achieve this, authorities must build strategic alliances with the federal government as well as local and foreign conservation groups to help clean and recuperate the Buffer Zone.

With the rise of ecotourism, there are great economic opportunities on the way for the populations living in this area. That is if the local government's desire for mining shifts to sustainable ecotourism and conservation.

3. GRAPHS

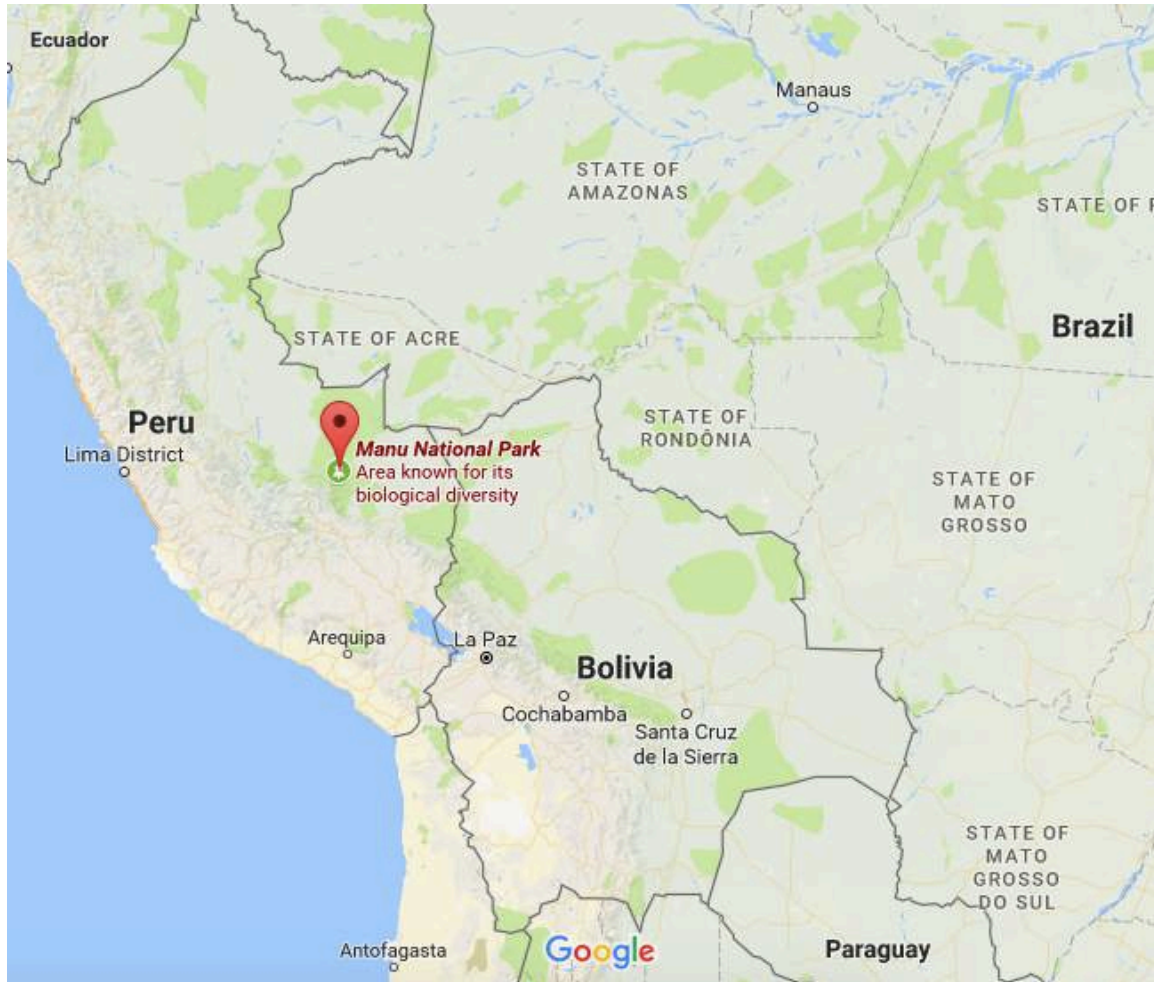


Graph 1 – Average levels of mercury in consumed fish in Puerto Maldonado, compared to the reference limit for mercury in fish (0,3 ppm). (Carnegie Institute For Science)



Graph 2 – Mercury levels of 226 adults in Puerto Maldonado, compared to the reference limit for mercury in human hair (1,0 ppm). (Carnegie Institute For Science)

4. MAPS of MANÚ NATIONAL PARK



(Google Maps)



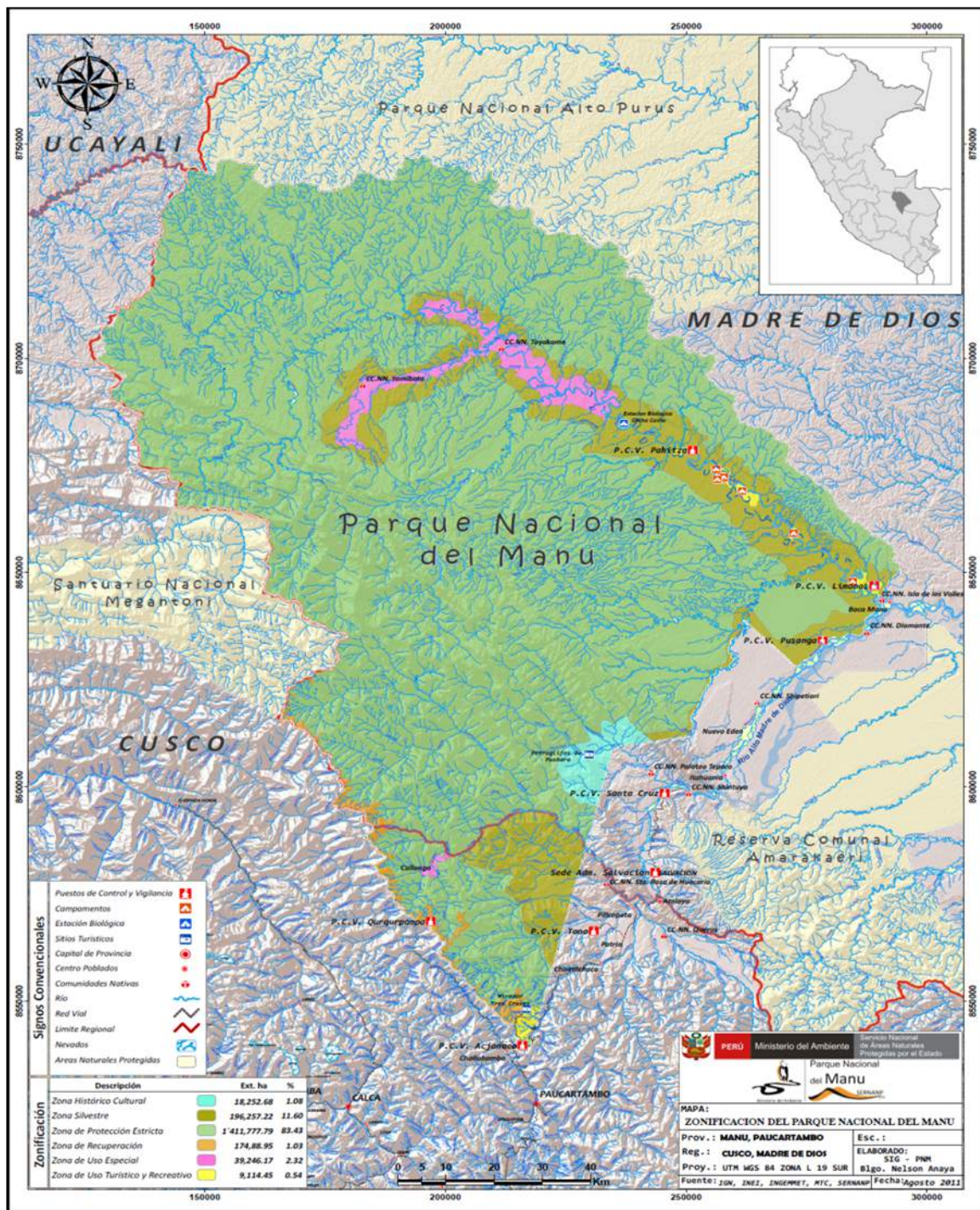
Map 1 – Salvación’s Geographic Location In Relation To Manu National Park (Google Maps)



Map 2 – Entrance to Manu Biosphere from Boca Manu by boat (Google Maps)









Map 3 – Puerto Maldonado Geographic Location In Relation To Manu National Park (Google Maps) (2013-2015 SERNANP Master Plan)





Map 4 – Biosphere Reserve.

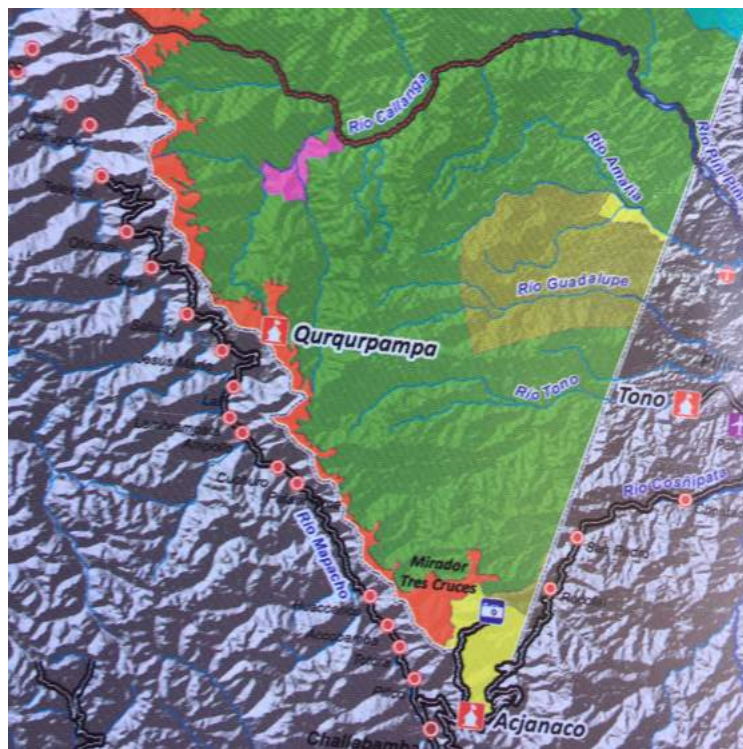
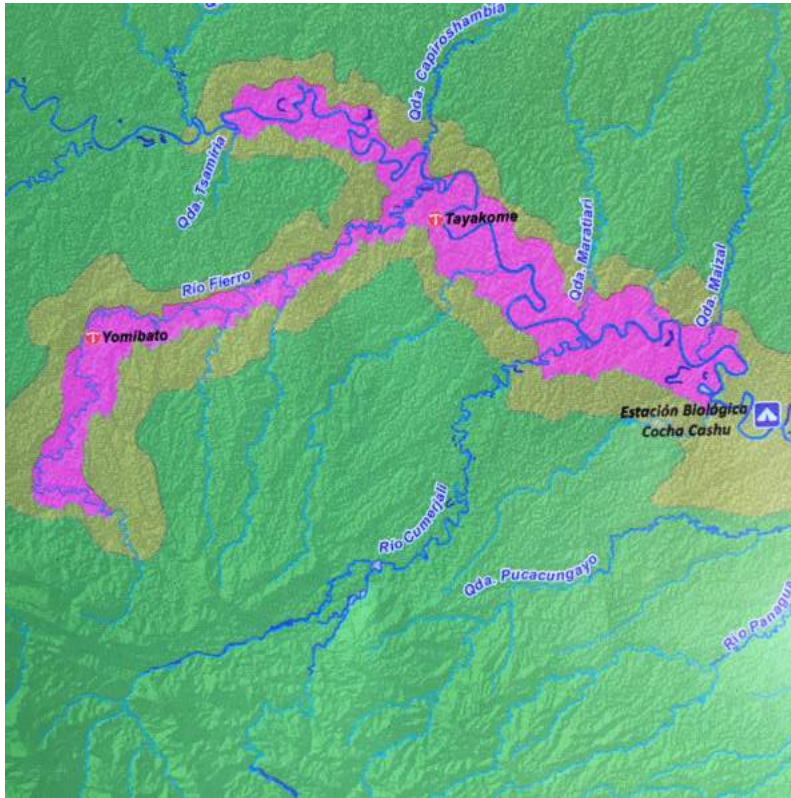
In the order of color represented in the map’s legend (bottom-left, Zonification): Historic-Cultural Zone (turquoise), Service Zone (olive) Restricted Zone (green), Recuperation Zone (red), Special Use Zone (pink), Tourist Zone (Yellow) (2013-2015 SERNANP Master Plan)

	<i>Zona Histórico Cultural</i>	18,363.24	1.07
	<i>Zona Silvestre</i>	172,096.67	10.03
	<i>Zona de Protección Estricta</i>	1'458,076.74	84.95
	<i>Zona de Recuperación</i>	15,849.72	0.92
	<i>Zona de Uso Especial</i>	39,697.04	2.31
	<i>Zona de Turismo y Recreación</i>	12,211.81	0.71
	TOTAL	1'716,295.22	100

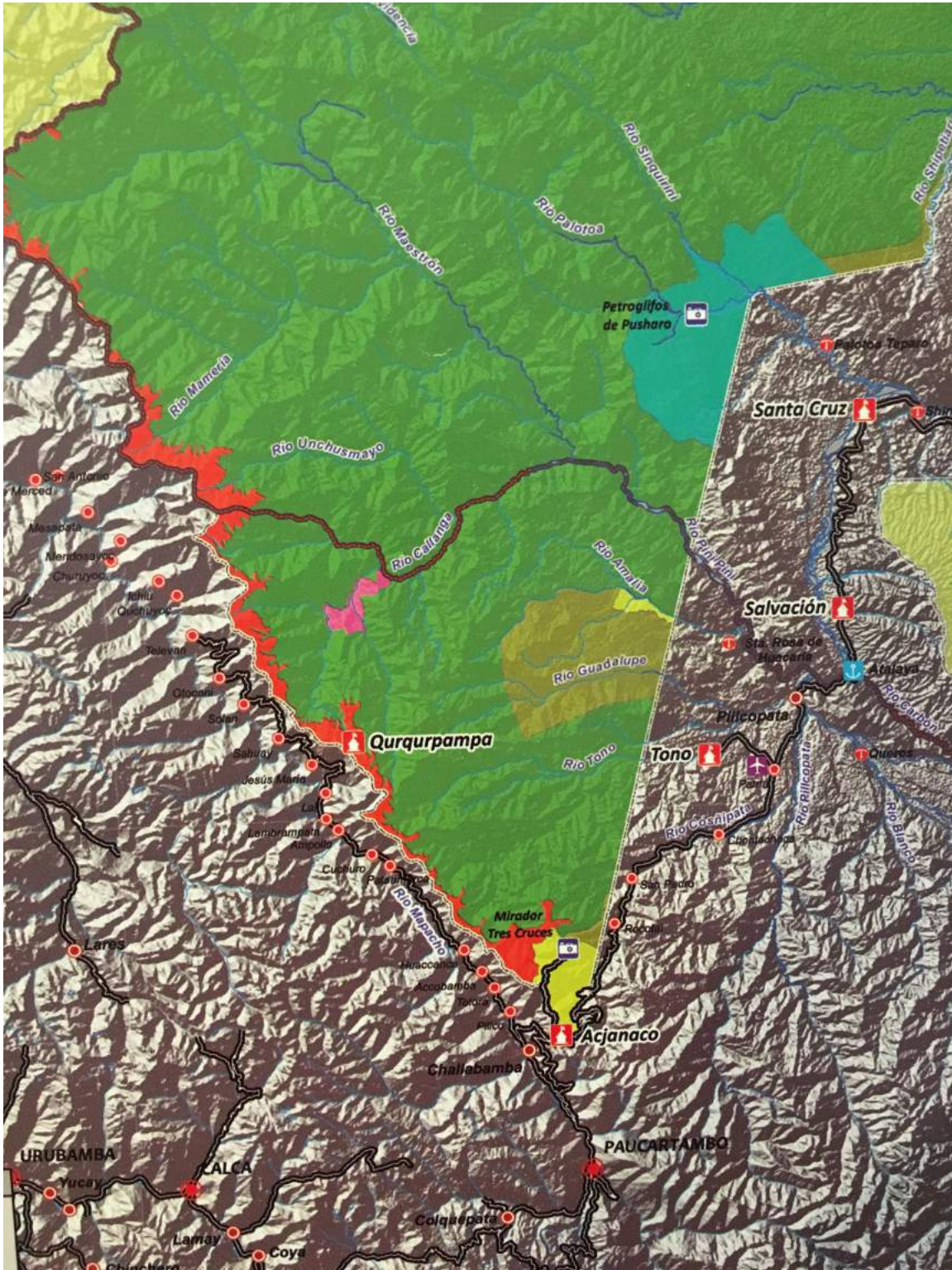
Map 5 - Legend Translation: Zona Histórico Cultural (Historic-Cultural Zone), Zona Silvestre (Service Zone), Zona de Protección Estricta (Reserved Zone), Zona de Recuperación (Recovery Zone), Zona de Uso Especial (Special Use Zone), Zona de Turismo y Recreación (Tourism Zone)
(2013-2015 SERNANP Master Plan)

<i>Puestos de Control y Vigilancia</i>	
<i>Estación Biológica</i>	
<i>Sitios Turísticos</i>	
<i>Aerodromo</i>	
<i>Embarcadero</i>	
<i>Comunidades Nativas</i>	
<i>Capitales Provinciales</i>	
<i>Capitales Distritales</i>	
<i>Centros Poblados</i>	
<i>Limite Regional</i>	
<i>Red Vial</i>	
<i>Rio</i>	
<i>Cocha</i>	
<i>Limite del Parque Nacional del Manu</i>	

Map 6 – Signs (in order from top to bottom): Guard Box, Research Station, Tourist Sites, Airport, Pier, Native Community, Capital of Province, District Capital, Population Concentration, Regional Limit, Road, River, Campsite, Park Limits. (2013-2015 SERNANP Master Plan)



Map 8 – Map of Special Use Zone with view of Tayakome and Yomibato Tribes. (2013-2015 SERNANP Master Plan)



Map 9 – Southern hemisphere of the reserve
 (2013-2015 SERNANP Master Plan; National Service of Natural Protected Areas by the State)



Map 10 – Map of Buffer Zone (depicted in orange stripes)

5. PICTURES



Left to right from top to bottom : 1.
Condition of road where majority of
the journey to Manú National park
takes place.

2. A two-story cocha in Otorengo Blanco, Salvación

3. Banana farm, Salvación – the land was recently deforested and burnt to be prepared
as a farm.

(pictures by Soheil Sassani)





Top & Bottom: Madre Del Dios River (pictures by Soheil Sassani)

6. SOURCE LIST

SERNANP Masterplan, Dr. Manuel Pulgar-Vidal Otálora, Dr. Pedro Gamboa Moquillaza, Parque Nacional Del Manu Master Plan 2013-2015, Published in 2014

United Nations Educational, Scientific and Cultural Organization (UNESCO), Manú National Park, <http://whc.unesco.org/en/list/402>

National Service of Natural Protected Areas by the State, Del Manu, <http://www.sernanp.gob.pe/del-manu>

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