
Amenazas en el Parque Nacional Canaima

y áreas protegidas por la minería
indígena ilegal en Venezuela

Threats in the Canaima National Park,
and surrounding protected areas,
by the indigenous mining arc in Venezuela

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Resumen

Los nativos americanos han explotado el oro, de manera artesanal, desde antes de la llegada de los españoles. Pero recientemente, algunos indígenas venezolanos abandonaron su modo de vida tradicional y comenzaron a practicar una minería comercial destructiva; devastan los bosques y los suelos y usan mercurio para atrapar el oro. El Arco Minero del Orinoco ha sido objeto de un gran debate; no hubo consultas públicas previas con las comunidades indígenas, lo que viola varias leyes, incluida la Constitución Bolivariana de Venezuela. Pero casi nadie ha analizado la minería indígena y sus consecuencias. Este artículo aborda algunos aspectos de la ubicación de 43 sitios mineros indígenas ilegales en el Parque Nacional Canaima y otras áreas protegidas. Se concluye que la minería comercial no es una opción viable para las comunidades indígenas y puede constituir un proceso de auto-etnocidio para esa población.

PALABRAS CLAVE: patrimonio de la humanidad en peligro; Arco Minero del Orinoco; oro; ecocidio; auto-etnocidio.

Abstract

American natives have exploited gold, in an artisan way, since before the arrival of the Spaniards. But recently, some Venezuelan indigenous abandoned the traditional way of life and began to practice destructive commercial mining; they devastate forests and soils and use mercury to trap gold. The Orinoco Mining Arc has been the subject of a great debate; there were no public prior consultations with the indigenous communities, which violates several laws, including the Bolivarian Constitution of Venezuelan. But almost no one has analyzed the indigenous mining and its consequences. This article addresses some aspects of the location of 43 illegal indigenous mining sites in the Canaima National Park and other protected areas. It is concluded that commercial mining is not a viable option for indigenous communities and can constitute a self-ethnocide process for that population.

KEY WORDS: World heritage in danger; Orinoco Mining Arc; gold; ecocide; self-ethnocide.

1. Introduction

It is widely known that native Americans used gold since before the arrival of the Spaniards. In Venezuelan Guayana this gave rise to the legend of El Dorado and the great city of Manoa, located in the margin of the Parima Lake (Perera, 2000; Ocampo, 2004).

That exploitation was artisanal. Indigenous civilizations lived "... harmoniously with this ecology ... These societies have been able to use natural resources without causing them irreversible damage, since they have valued the integral vocation of the jungle that does not allow violent changes ..." (Luzardo, 1981: 53).

This pleasant vision of the native people can, in many cases, be far from the current reality. The processes of transculturation have generated changes in customs and needs (Ortiz, 1978, quoted by Martí, 2011); novelties are presented in clothing, food, transportation, the use of weapons and household appliances that demonstrate the loss of the ancestral way of life (FIGURE 1).

These changes break the human-nature harmony. The ecosystems of the Venezuelan Guayana are

very susceptible to disturbance (Uhl & Saldarriaga, 1986). The transformation of the way of life produces a direct conflict: "... the conservation of resources by indigenous people was the result of a subsistence economy. To the extent that indigenous groups begin to participate in the market economy, their resource management systems change, resulting in loss of biodiversity and destruction of forest areas..." (Alcorn and Toledo, 1995, quoted by Tresierra, 2000: 11).

Under this scenario, it seems that many indigenous people succumbed to the temptation of mining. Arawacs indigenous were observed doing mine in the Cuyuní River and Pemón in the foothills of the Chiricayén-tepuy (Mansutti, 1981; Cousins, 1991). It is estimated that Venezuelan indigenous mines were isolated cases before 2005; but, in more recent times, there are no doubts that many indigenous people are linked to mining (Yerena, 2011).

The relationship between mining and indigenous peoples has gained great importance due to the government's intention to develop the Orinoco Mining Arc, a project that affects a large area of

FIGURE 1 Satellite television antenna, in an indigenous dwelling, north of El Caura National Park



indigenous territories, for which no environmental impact study nor the corresponding prior consultations were carried out.

This paper aims to show evidence of indigenous mining, their location, and implications for the conservation. Although there is no official statement by the indigenous representatives, we want to prove that there is an 'Indigenous Mining Arc' on the ground and this has significant impacts on the environment and on the indigenous societies involved.

Our article intends to answer the following questions: How is the historical dimension of indigenous mining? What is the influence of indigenous mining in the Canaima National Park and other nearby protected areas? What are the possible biophysical and social impacts of indigenous mining?

2. Methodology

This article was made as a narrative review, that is 'a kind of publication that aims to describe and discuss the state of the science of a specific topic or theme from a theoretical and contextual point of view' (Rother, 2007). To achieve this goal, comprehensive bibliographic sources were considered: Web of Science, ScienceDirect, Scopus, Google Scholar, newspapers, university libraries and social

networks; as it can be seen below, the problem of indigenous mining has not been properly analyzed in scientific documents and we had to consider all possible sources of information. We followed the strategy of locating articles that had some initial key words: mining, Orinoco, Guayana, Canaima, Gran Sabana, Caroní, Caura, Paragua, indigenous. Then we chose the documents related to the protected areas of the Guiana Highlands: National Parks (Canaima, Jaua Sarisariñama, Serranía La Neblina, Parima Tapirapecó, Duida Marahuaca, Yapacana), Forest Reserves (Imataca, La Paragua, Caura, Sipapo), Biosphere Reserve (Alto Orinoco-Casiquiare), Protective Zone (South of Bolívar State) and Natural Monuments (more than 20 mountain ranges and table mountains). We also analyzed some Landsat (30 m) and Sentinel (10 m) satellite images available at free sites like Google Earth and Earth Explorer, from previous and recent years, to digitize the zones where land use change is too obvious. The mining impact is extremely evident in the Gran Sabana landscape (FIGURE 2); mining sites show white or brilliant colors, grassland have soft colors (red, grey or brown), forests have dark colors (green or red). We did not a general supervised classification because sand and stones have the same reflectance value than mining areas. Therefore, satellite images for

FIGURE 2 Contrasting land use at the Gran Sabana landscape and its view from satellite images. G: grassland. F: forest. M: mines



selected areas are evidence for the purpose of this paper; most of the sites we identified as land use change by mining were confirmed by means of personal visit to those locations (throughout a lapse of more than 30 years) and were confirmed with the maps of SOS-Orinoco (2018) and RAISG (2019). We identified a large number of documents and analyzed them in order to meet the objectives of this article, to answer the questions established in the last section and to show the relevance of the hard facts that we want to prove.

3. Mining practiced by members of ye'kwana ethnia in El Caura River basin

In El Caura river basin a forest reserve was established in 1968 and was characterized as “*the last pristine basin*” in the world, because there was no polluted water nor illegal mining (Global Forest Watch, 2002).

Anthropologist Nalúa Silva (2016) said: “*In 2006, a group of indigenous people began to work in small-scale mining, the bulla emerged and that attracted many people*” (García, 2013; *bulla* is a local term that describes the fast arrival of hundreds of people to a very small and wealthy mining area). After few years potentially dangerous mercury contents were registered in fish and human hair (Cortes, 2013). In 2016, the indigenous organizations of El Caura expressed their opposition to the government-mandated Orinoco Mining Arc (Red Ara, 2016). Such a situation raises the following question: why did not they apply their ancestral laws with their own members? This is a right contemplated in Article 260 of the National Constitution and is proclaimed as part of the outstanding demands for indigenous peoples in their struggle for autonomy (Ponte, 2013).

Another version reports: “*...there are no longer natives against the miners. Directly or indirectly all*

(natives) work for them (miners) because it (mining) is much more profitable ... those natives who do not work the mine, sell fuel quota allocated to their community, and in their eagerness to get economic benefits, they risk their life...” (Boccalon, 2016). In a contrasting way, it is affirmed that many indigenous reject mining, for this reason the indigenous people have been divided for years (personal communication by Nalúa Silva, June 20, 2018).

Caura National Park was declared by Decree 2,767 (República Bolivariana de Venezuela, 2017). There was an erroneous interpretation of this decree when considering it as ‘indigenous national park’ (Vitti, 2017); the decree does not mention anywhere the term ‘indigenous national park’ and the Organic Land Use Zoning Law also does not contemplate such category of special administration area (República de Venezuela, 1983). The indigenous representatives reject it and said that the decree violates their territorial rights (GTAI, 2017).

Another serious problem is the neo-slavery suffered by members of the Sanema ethnic group, since they are almost forced to work as porters in exchange for food and liquor (García, 2013). An added cruelty episode was an alliance between creoles and members of the Sanema ethnic group that confronted members of the Hibi ethnic group, in order to gain control of a mine, and there were 6 deaths (El Universal, 2018).

4. Mining practiced by members of pemón ethnia in the basins of the paragua and caroní rivers

The Paragua River is one of the tributaries that fill the Guri hydroelectric lake. In 2011-2012 was reported that Pemón people dominated mines in El Casabe and Tonoro (Noticiero Digital, 2011; López, 2012).

Canaima National Park, declared in 1962, covers 3 million ha, the upper basin of the Caroní River and ancestral territory for the Pemón ethnía. In 1994 this park was declared World Heritage Site by UNESCO. The construction of the road to Brazil, was a determining factor for the acceleration of transculturation process of the Pemón people; in addition, “communal councils” were created, as a socialist scheme, which added greater distortions against their ancestral customs (Paredes & Viera, 2010).

Between the Canaima lagoon and the Kamarata village, members of Pemón ethnía began mining in 2010, in places near the table mountain of Auyantepui, where Angel Falls is born (Ramírez, 2016). These mines are next to Carrao and Acanán rivers and some of them are less than 8 km from Auyantepui.

Several mines, inside the Guiana Highlands are characterized by the common pattern of hydraulic monitor mining, with deforestation, soil scouring and large pits, typical of ‘garimpeiro’ work style. Some of them are evident in true color satellite images (FIGURE 3); others are noticeable by comparing old and new false color satellite images (FIGURE 4).

As examples, it can be mentioned that Campo Alegre mine, located about 10 km in a straight line southwest of the checkpoint (National Guard) of San Ignacio de Yuruaní, in the eastern sector of Canaima National Park (Gran Sabana), began approximately in 2010, whose polluted water goes to the Kukenán river. Las Calaveras mine began apparently in 2017 (personal observation); this is beside the road that goes to Paraitepuy de Roraima, the start point of the Mount Roraima trekking activities.

In 2013, the Pemón community of Urimán, inside the Canaima National Park, was recognized as a town with a long mining history (Angosto, 2013). The army was sent to control the situation, but soldiers were dominated and tied by the natives (FIGURE 5). A negotiation was established to free

the soldiers and announcements were made such as: “...only the indigenous people can work the mine without affecting the riverbed and seeking to gradually eliminate alluvial mining...” (El Universal, 2013).

In 2017, evidence appeared of the ‘Pemón Territorial Guard’ an indigenous paramilitary gangs that have confronted the creoles for control of the territories in the Icabarú mining area (Blanco, 2017; Izquier, 2017); as a consequence of this violence the commander of this group was lately killed (Rangel, 2018).

The large number of mines that exist in and around Canaima National Park also have been identified by other documents; SOS-Orinoco (2018) points out that there are 33 mines in this zone and therefore that protected area should be placed on the List of World Heritage in Danger. As a synthesis, we determined that there are at least 43 indigenous mines in the Guiana Highlands and all of them are in various types of protected areas, with a greater concentration in the Canaima National Park and surroundings (FIGURE 6).

5. The impact of mining executed in the Amazonas state on the indigenous people

In the Amazonas state the situation is completely different. There, indigenous people are being victims of mining activities (and correlated violence) carried out by people completely foreign to their ethnicity (Venezuelans, Colombians, and Brazilians). Decree 269 (República de Venezuela, 1989) prohibits mining in the Amazonas state; but, it was not applied and there are currently damages caused by “... 8,000 to 10,000 people ... in areas such as Yapacana National Park, and in the rivers Orinoco, Atabapo, Guainía, Sipapo, Guayapo, high Cuaao, Ocamo, Maniapiare, Ventuari, Parucito-Majagua, Parú, Asita, Siapa and others ...” (Faría, 2017).

FIGURE 3 Evidence of 'garimpeiro' style mining in the Canaima National Park and surroundings**A** Carrao River, 5°58'30" N, 62°19'27" W**B** Campo Alegre, 4°55'43" N, 61°12'08" W**C** Uaiparú, 4°29'41" N, 61°44'21" W**D** Parkupí, 4°24'13" N, 62°10'57" W**E** Pirma, 4°51'00" N, 62°24'32" W**F** Surunkún, 4°37'23" N, 61°28'15" W

One of the most affected ethnic groups is the Yanomami. In 1993 the Haximu massacre occurred where Brazilian 'garimpeiros' murdered several Yanomami people, with the purpose of mining their territories (Turner, 1994). In 2012 there was a complaint about a new massacre of members of the Yanomami ethnic group in the Irotatheri community; the government denied this accusation, but it has been pointed out that the area is very difficult to access and there are serious doubts that the official commission has arrived exactly to the place denounced (Divassón, 2012).

6. Discussion

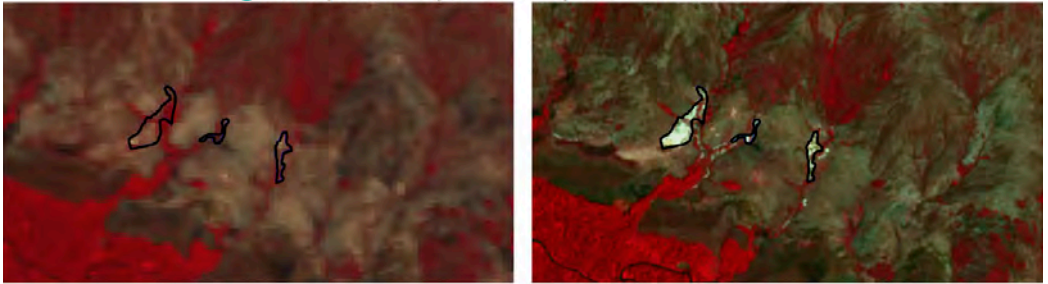
All the mining places executed by indigenous people in Bolívar state are within different types of protected areas. No law permits mining in those places. These activities violate regulations contained in various laws, just like the Organic Land Use Zoning Law (República de Venezuela, 1983).

Commercial mining is not part of the ancestral or traditional way of life, which is protected in the National Constitution (República Bolivariana de Venezuela, 1999) and the Law on Demarcation and Guarantee of Habitat and Lands of Indigenous

FIGURE 4 Noticeable land impact of mining (black lines), in the Canaima National Park and surroundings. Assessment between former Landsat images (left) versus current Sentinel images (right)

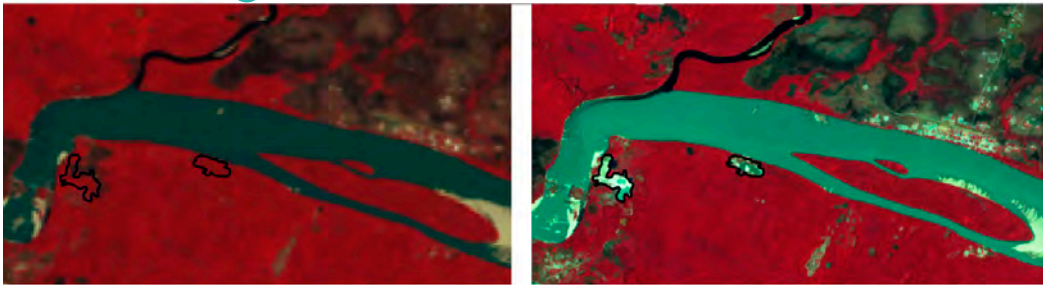
A

Mowak, 5°28'09" N, 61°45'15" W, 03/11/2007 vs 02/18/2018



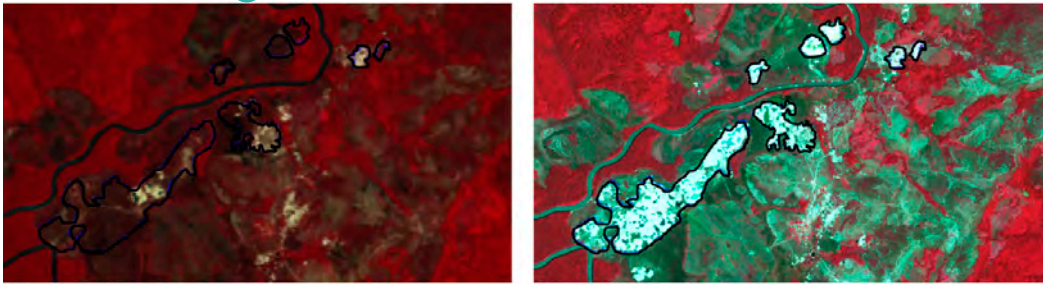
B

Uriman, 5°21'06" N, 62°42'20" W, 03/11/2007 vs 03/15/2018



C

Apoipó, 4°45'38" N, 61°29'46" W, 03/21/2005 vs 01/29/2018



D

Las Calaveras, 45°00'04" N, 61°00'13" W, 03/07/2014 vs 03/15/2018

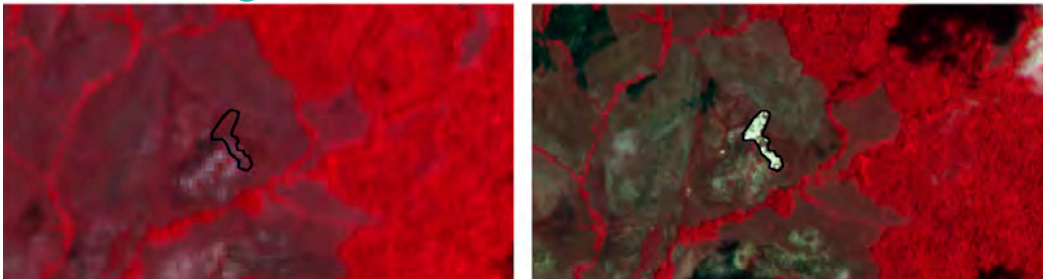
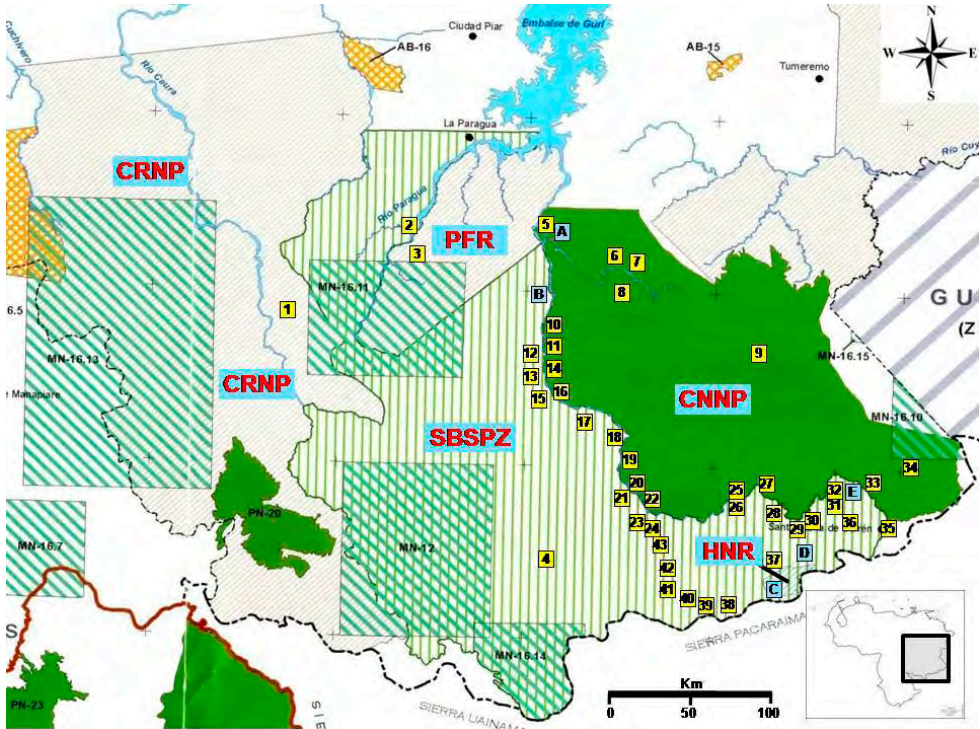


FIGURE 5 Soldiers submitted by indigenous miners in Urimán (El Universal, 2013)



FIGURE 6 Mining affecting protected areas in the Guiana Highlands: El Caura National Park (CRNP), La Paragua Forest Reserve (PFR), South of Bolívar State Protective Zone (SBSPZ), Hydric National Reserve (HNR), Canaima National Park (CNNP). Indigenous mines: 1 Caura, 2 El Casabe, 3 Tonoro, 4 Alto Karún, 5 Carrao 1, 6 Carrao 2, 7 Wadetej, 8 Kuana, 9 Mowak, 10 Asapatí, 11 Chicharrón 1, 12 Chicharrón 2, 13 Guacharaca 2, 14 Guacharaca 1, 15 Boquini 2, 16 Boquini 1, 17 Urimán, 18 Pempa, 19 Tirica, 20 Pirma 1, 21 Pirma 2, 22 Apremè 1, 23 Apremè 2, 24 Aripichí, 25 Amac 1, 26 Amac 2, 27 Acairedén, 28 Yacrimá, 29 Surunkún, 30 Apoipó, 31 Salva La Patria, 32 San Luis de Kukenán, 33 Campo Alegre, 34 Las Calaveras, 35 Sampay, 36 Chiricayén, 37 Uaiparú, 38 Eurobary, 39 Hacha, 40 Toco-roca, 41 Parkupí, 42 Couripí, 43 Arampú. Creoles mines: A Carrao, B San Salvador de Paúl, C Icabarú, D El Polaco, E El Mosquito. Adapted from: Bevilacqua *et al.*, 2005



Peoples (República Bolivariana de Venezuela, 2001). Indigenous rights cannot be invoked because the Organic Law of Indigenous Peoples and Communities (República Bolivariana de Venezuela 2005, Article 48) expressly states that “... *indigenous... shall contribute to the protection of the environment and natural resources, especially national parks, forest reserves, natural monuments ...*” In any case, we do not justify the violation of human rights and homicides committed by government officials when they attacked some indigenous miners in Canaima National Park, as reported by Rodríguez (2018).

It is a disaster that the natives currently practice a commercial mining using hydraulic monitors that destroy forests and soils to obtain the mineral (FIGURE 7). They also use mercury to trap small particles of gold. The most important environmental impacts are: destruction of ecosystems and rivers topography, habitat fragmentation, death and displacement of fauna, pollution of water and fish by sediment and mercury, mercury-borne diseases, favorable habitats for malaria-carrying mosqui-

toes, increased incidence of malaria, emergence of criminal armed groups, increased incidence of prostitution and violent deaths, as well as misuse of drug and liquor (Milano, 2008; Grillet *et al.*, 2009; Lozada, 2017; Vitti, 2018).

Indigenous mines are no longer isolated; this paper shows sufficient evidence of the existence, in the Guiana Highlands, of an Indigenous Mining Arc (IMA) and this has significant impacts on the environment and on the indigenous societies involved. IMA is consolidating and that has almost no analysis in the scientific community. With two exceptions (Mansutti, 1981; Cousins, 1991), the abundant and long trajectory in studies of indigenous communities does not seem to have foreseen the impact of mining. There were also countless works oriented to the valuation of biodiversity and ecosystem services in the indigenous territories; this activity seems to have focused on the study and maintaining the pristinity of indigenous societies and of the ecosystem as a research objective. There was little effort to

FIGURE 7 Destruction produced by hydraulic monitors mining, an example at Las Claritas mine



prepare indigenous communities to maintain an appropriate balance between their ethnic identity and adequate standard of living, in the face of the processes of the unavoidable transculturation. SOS-Orinoco (2018) has said "... *there has been a kind of tacit agreement of environmentalists and politicians for not highlighting the situation...*"; we are partially in agreement with that statement, but we believe that the key aspect is that almost nobody wants to assign the indigenous people their share of responsibility in the destruction that is taking place.

In recent years, some indigenous people have expressed rejection of protected areas and defense of mining, as can be seen in the following arguments:

- "... *They have decreed our lands as national parks to one day be exploited, but not by us, not by the poor, but by the rich people ...*" (Roroimökok Damük, 2010: 11).
- "... *the Park is in the Pemón People's Territory and not the Pemón within the National Park...*" (Consejo de Caciques Generales del Pueblo Pemón, 2018).
- "... *pemon people will not hand over the mines to transnational companies...the indigenous people have executed mining since ancestral times... mining is the main source for indigenous communities to guarantee their food, health and education...*" This was the statement of an indigenous leader and Mayor of Gran Sabana Municipality (González, 2018).
- Ecotourism journalist Valentina Quintero published a video on social networks and denounced indigenous mines. As a result, she was declared a 'non-grata' person in the Canaima National Park by the Caciques General Council (Tal Cual, 2018).

On the other hand, an academic of the Wayúu ethnic group indicates that "... *the pre-Hispanic aborigines did not assume a condition of miners ...*

the mining practice is not part of their way of life ... the commercial relations of the indigenous peoples of Guyana are established on activities based on fishing practices, fruit harvesting and agricultural production through family farms ..." (Pérez Palmar, 2018: 51-54).

Therefore, it is interpreted that there is no homogeneity in the opinion of the indigenous people. The ancestral way of life is compatible with the figure of national park; but these protected areas are an obstacle to the current IMA, that is the reason for the attack that some indigenous representatives are now making to the Canaima National Park and to the people who denounce their mining activities.

The Orinoco Mining Arc deserves a special mention; it was decreed by the government in 2016 to exploit several minerals in an area exceeding 11 million ha. There was no prior public consultation to the indigenous communities or to the general population that is contemplated in articles 120 and 128 of the National Constitution (República Bolivariana de Venezuela, 1999). The environmental and socio-cultural impact study, indicated in Article 129 of that Constitution, was not made. Within, or in the area of influence, are the Pumé, Kari'ña, Warao, Pemón, Sapé, Uruak, Arutani, Sanema, Hoti, Eñe'pa-Panare, Wanai-Mapoyo, Piaroa and Hiwi ethnies (Silva, 2016).

Like the majority of Venezuela's population, indigenous peoples suffer from the current economic crisis; all Venezuelans are in an agonizing situation. Therefore, indigenous also require humanitarian aid, which could also contribute to preserve their culture and the environment where they live. However, that does not justify appealing to mining as a lifeline, it must be remembered that at long term, the expansion of mining represents environmental and social costs that outweigh the expected benefits (Miranda *et al.*, 1998).

The hyper-complexity of this whole problem is recognized, multi-disciplinary work teams are

needed to face the situation and to come up with possible solutions; some questions are set for a possible orientation of further analysis:

- What extent has the loss of the ancestral way of life of the indigenous people (transculturation) penetrated?
- What do the older say about this whole problem?
- What is the effect of the Government policies in that process?
- Are they aware that commercial mining, as a not a traditional and non sustainable economic activity, reduces their credibility in their struggle for autonomy and demarcation of territories?

7. Conclusions

Indigenous commercial mines have been in operation for at least 12 years and currently affect no less than 43 sites in protected areas of the Guiana Highlands. Commercial mining is not part of the ancestral way of life, but, currently, indigenous leaders justify and execute it in the worst possible way: hydraulic monitors that destroy ecosystems, pollute rivers, and potentially can affect people by mercury.

Transculturation existed in the indigenous communities before they initiated mining; that was the initial cause, that is to say, mining was the consequence of transculturation, not the opposite. It is clear that traditionally no indigenous people were miners in the commercial way (Vitti, 2018). Under current conditions, indigenous mining communities cannot aspire to the assignment of collective property rights in their ancestral territories.

The words of the anthropologist Nalúa Silva are the best synthesis of the problem analyzed: *“The mine has a devastating effect not only on nature, but on ethnocide. The end result is the loss of cultural identity and the disappearance of the indigenous people*

as such. They are ecocide and ethnocide processes.” (López, 2102). If that mining is carried out by the natives themselves, then a sort of self-ethnocide might be spoken of. A calamity which has never been reported anywhere else.

No law permits mining within protected areas; the only alternative is to carry out activities according to regulations and management plans protecting the nature and human population, within the framework of a planning process with the indigenous people following the constitutional principles of sustainability, participation and co-responsibility (Hernández *et al.*, 2005). This may include the development of agricultural, livestock or agroforestry systems compatible with the environment, tourism activities and payment of environmental services, which must have the corresponding infrastructure support (roads and lodges) in order to enable its execution and allow an acceptable standard of living.

It is necessary that there be more detailed further studies under the focus of multidisciplinary teams. It would be disastrous if that environmental devastating behavior expand to other places.

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