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Iguazú-Iguaçu National Park(s): In Hope for a Brighter and More Collaborative Future



Figure 1: Iguaçu National Park, Brazil (Therin-Weise, 2006).

It is claimed that when Eleanor Roosevelt first caught sight of the beauty and grandeur of Iguazú Falls, her initial reaction was “Poor Niagra!” as if to say the latter paled in comparison (Sweeney, 2015). Those in the United States or elsewhere, who have had the fortune to see Niagara Falls in person, and not yet having seen Iguazú, can only imagine the magnitude between the two (see Figure 1).

When searching for photos or information on Iguazú as well as more credible references to the above quote, there are at least four different spellings of the name one may find—Iguazú, Iguaçu, Iguassu or Yguazú (Lima, 2007; Iguacu, 2016). All spellings have the same meaning and are derived from the native Guarani people to mean, Big Water. In Guarani, “Y” means water and “Guazu” means big or great. For the ease of understanding, only two of the most popular spellings will be used

throughout this paper, and it is simply to highlight the division between both the Spanish and Portuguese-speaking sides of the falls.

The topic at hand, and what's in a name?

Inadequate transboundary cooperation and legal protections are negatively impacting the area of Iguazú (Iguaçu) Falls. The result has an effect on governance, development projects (both legal and illegal) and climate change. While the confusion on the name spelling may not directly relate to the lack of cooperation between the neighboring countries, it does reflect the difficulty the area has had in coordinating efforts on preserving, maintaining and monitoring the shared protected area (PA).

Located in South America, this magnificent natural wonder is at the tri-state region of Argentina, Brazil and Paraguay. The falls itself and Iguazú River create the natural border separating Argentina and Brazil. The Paraná River, emptying into Iguazú River separates Brazil from Paraguay. The three closest cities are Puerto Iguazú in Argentina, Foz do Iguaçu in Brazil, and Ciudad del Este in Paraguay (see Figure 2). The falls are located within the Atlantic rainforest, one of the last remaining interior rainforests left in South America.



Figure 2: Map depicting the location of Iguazú (Iguaçu) Falls in South America (GSA, 2011).

Unlike its rival in the Northern Hemisphere, Niagara, this Southern Hemisphere cluster of approximately 275 waterfalls is surrounded by natural beauty and wildlife (see Figure 3). Also, unlike Niagara, there are few development projects such as casinos, hotels, and restaurants imposing on the panoramic view, at least so far.

The falls area and surrounding rainforest boasts more than 2,000 plant species, 400 different varieties of birds, 80 types of mammals, and countless numbers of insects and invertebrates. Noteworthy animals include giant anteaters, giant otters, howler monkeys, jaguars, tapirs, coatis, harpy eagles, toco toucans, leopard catfish, and many others.



Figure 3: Aerial image of Iguazú-Iguaçu Falls (Chiu, 1984).

The falls itself stretches 2.7km (1.67 miles) along the Iguazú River and is approximately 150m in length and 80m high, about three times as wide and at least twice the height of Niagara. Currently, it has the greatest average flow of water than any other in the world including Victoria Falls, the tallest waterfall in the world at 108m.

The United Nations Environment Programme's World Conservation Monitoring Centre (UNEP-WCMC) manages the World Database on Protected Areas (WDPA) and provides assistance to other agencies, such as the Convention on Biological Diversity (CBD) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), in order to support biodiversity of species and

habitat. They estimate that the entire transboundary protected area (TBPA) of Iguazú-Iguaçu of 3,427.63 km² or 847,000 acres of land area (see Table 1).

TBPA	Country	PA	IUCN Category	PA Size, km ²	TBPA Area, km ²
Iguaçu-Iguazú	Argentina	Iguazu National Park	WHC	550.00	3,427.63
		Iguaz	II	599.45	
		Iguaz	VI	76.75	
		Urugua-Y	II	840.00	
		Yacuy	II	3.47	
	Brazil	Iguaçu	II	1,700.86	
		Iguaçu National Park	WHC	1,700.00	
	Paraguay	Monumento Científico			
		Moisés Bertoni	Unset	1.99	

Table 1: Abbreviated version of UNEP-WCMC Global List of Transboundary Protected Areas (Lysenko et al, 2007)

The International Union for Conservation of Nature (IUCN) PA categories relevant to Iguazú include II, VI, unset and WHC (see Table 1). Category II covers the national park status of both Argentina and Brazil. Argentina was designated in 1934 and Brazil in 1939. Category IV is for habitat/species management of the area. The World Heritage Committee (WHC) listing was made official in 1984 (Argentina) and 1986 (Brazil). The unset category is for the scientific monument recognized in 1955 in dedication to the Swiss scientist, Moises Bertoni, who lived on site as an advocate for the Guarani people during the latter half of the 19th century until his death in 1929. Since 2011, Iguazú was designated as one of the New Seven Wonders of Nature (New Open World Corporation, 2015) for both Brazil and Argentina.

To be included on the World Heritage List, both Brazil and Argentina were designated based on significant and outstanding universal value. Though listed two years apart, both Iguazú and Iguaçu National Parks are listed under Criteria VII and X. Criteria VII says the area “contains superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance.” Criteria X says the area “contains the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of Outstanding Universal Value from the point of view of science or conservation” (WHC, 2015).

Ecological, cultural and economic interests and threats

The three countries—Argentina, Brazil and Paraguay—have common interests for maintaining the region, as do several other stakeholders. In Argentina, the park is primarily staffed by Park Guard School graduates. In Brazil, Chico Mendes Institute (ICMbio) provides technical staff, and the Paraná State Police Force sends Green

Rangers. Private companies outsource all administration, maintenance and security personnel in regards to public use.

Besides the appeal of tourism for the neighboring three countries, Brazil and Paraguay particularly have interest in running hydroelectric power. The Itaipu Dam sits on the border over the Paraná River. Under the Iguazu Act of 1966 between Brazil and Paraguay, they negotiated terms of payment for electricity. The contract expires in 2023, and apparently, has been a contentious issue between the two countries for quite a while (Paraguay unhappy with the terms). In 1979, the three countries reached an agreement through the signing of the Acordo Tripartite that established a maximum water level for the river (Fajardo, 2004). This was necessary at the time, as all three countries were under dictatorship, and Argentina was concerned their capital city, Buenos Aires, could become flooded due to any upending hostility.

Prior to the European explorers discovering the area back in the 1500s, the land surrounding the falls belonged to the native Guarani people. According to one source, there are not many historical documents indicating when the native people were pushed out of Iguazú, and it is not clear whether it was due to the national park dedication or if it happened much earlier (Freitas, 2015). In 2005, fifty-five Guarani people were caught living in a forested area of Iguazu National Park. Though it was not the first or last time they were documented living there after the national park's existence, the reason they came was primarily due to a shortage in land reserved for the indigenous people. As it stands currently, native Guarani's are not considered in the planning strategy.

Besides the state governments and indigenous people, the TBPA has several other stakeholders. These include research scientists from universities all over the world, the World Heritage Committee, and other international conservation NGOs. It does not appear that Paraguay has been allowed much stake in the PA so far.

PA legislation has been officially on paper since the two designations became established in 1934 and 1939 (Decree-Law 12.103 in Argentina and Federal Decree No. 1035 in Brazil), yet Law 6.712 initiated the legal protection in 1909 (IUCN, 1982). For the first thirty or so years after the decree, park authorities did not have much control or enforcement. It was not until the 1970s that Brazilian authorities tried to gain more control over their territory (Freitas, 2015).

The IUCN World Heritage Outlook assesses the sites that fall within the World Heritage list. Both Iguazú and Iguazu fall under areas of significant concern. There is unease over tourism infrastructure and activities, deforestation and agricultural activities. Other threats to Iguazú National Park include the proposed development of hydropower dams, illegal logging and hunting, uncoordinated development, lack of transboundary cooperation, lack of sustainable financing, problems with public use, and lack of a comprehensive public use plan. Threats to Iguazu National Park

are similar to its sister park with additional pressure to re-open an illegally constructed road (World Heritage Outlook, 2016).

Illegal logging and hunting has been noted since at least the 1980s and is still an ongoing threat (IUCN, 1982; Ministerio de Turismo, 2015). Palm trees are cut for the edible palm hearts, and big cats such as jaguars are killed for the fur. Argentina's State Party claims they have roving patrols on a weekly basis, but there are simply not enough park rangers (Ministerio de Turismo, 2015).

Conservation issues that have been noted include the fact that outstanding universal value as declared by WHC still applies, yet it is impaired and under threat. Since the water volume changes on a weekly basis due to the Salto Caxias Dam along the Iguazu River in Brazil, the scenic and biological value has been significantly degraded. When demand for electricity is lower, such as on the weekends, the dams are closed. This affects both flora and fauna, as well as severely impacts the rate of water flow to the falls.

The scenic value has been degraded by poor public use infrastructure in both Brazil and Argentina. It is noted that visual integrity has also been greatly diminished due to "thrill-seeking" tourist activities. An old elevated walkway on the Argentinean side has never been removed properly and also presents concern in regards to visual degradation. There are continued threats over the potential for more hydroelectric dams being built in both Iguazú and Paraná Rivers.

The lack of transboundary cooperation between the two, and possibly three, countries is also a significant threat. There is not a formal mechanism in which to cooperate in regards to resource protection, research and public use. Cooperation has mostly been informal up to this point. In 2003, the two countries determined to work together on a more coordinated basis. Coordinated tasks posed included research and monitoring, sustainable development, management and public use plan updates, education and training and capacity building (WHC, 2014).

Another significant threat is the fact that there is still not an updated management plan or a public use plan in place for either national park. In 2008, the two countries planned to meet in order to update the completely out of date management plans. Since the public use plans were never properly approved, that was also on the list to revise. Besides informal meetings, plans have still not been updated or finalized (Ministerio de Turismo, 2015; Ministério do Meio Ambiente, 2015).

There is also not a formal agreement between the two countries for conservation efforts. Data on the various flora and fauna species is sparse. In 2015, research was conducted to create a fish inventory and the some research on the endangered jaguar. Animals such as the coatimundi are having problems, as tourists continue to feed them. This has significantly altered the eating regimen of this species as well as the howler monkeys no longer search for food in the rainforest, since it is easier to take an unsuspecting visitor's bag.

Management and Monitoring

The National Parks Administration, an institution that falls under Argentina's National Tourism Secretariat, manages Iguazú National Park. As of 2008, the park received over 1.3 million visitors per year and continues to grow. A committee that attempts to follow international standards monitors the private companies who run the public use activities. In Brazil, the Iguacu National Park is managed by Chico Mendes Institute, which falls under Brazil's Ministry of the Environment.

The parks attempt to deter and detain hunters who go after wildlife, but even with the monitoring and risks to the hunters, many still come back.

From 1999-2001, Iguacu National Park (but not Iguazú National Park) was placed on the World Heritage in Danger List. Once the illegal road was closed, the listing was removed. In order to stress that the road was indeed closed, the Brazilian government destroyed parts of it, established a guard post, and planted 5,000 tree seedlings along its path with 20,000 more planned for later in the same year (WHC, 2002).

In a formal report, the World Heritage Committee stated their regret for the State Party of Argentina and Brazil (separately) in not having previously addressed the conservation issues such as the significance for transboundary cooperation, the variable water flow or the alien invasive species (AIS). They also stated their regret to the State Parties for not having made "tangible progress in formalizing and operationalizing transboundary cooperation" (WHC, 2014 p134).

WHC requested from Iguacu (Brazil) several additional items, including an Environmental Impact Assessment (EIA) on one of the proposed dams, Baixo Iguacu Hydroelectric (WHC, 2014). They also highlighted significant concern over a proposed bill (Bill 7123/2010) that is currently under consideration in congress that would allow not only "Settler's Road" but other roads to be constructed within the PA. They stressed this concern, as the "illegal opening of the road in 1997" led to the property getting listed on the WHC Danger List (WHC, 2014 p135). They also suggested the State Party of Brazil that they invite a representative from IUCN to monitor and assess the status of the Baixo Iguacu Dam and Settler's Road.

The response back from the State Party in Argentina acknowledged the lack of information and included a report specific to planning, monitoring, public use, and cooperation as it relates to the environment. Their response also mentioned that informal discussions have already taken place between the two countries (Ministerio de Turismo, 2015).

The response from Brazil mentioned the government is against the re-opening of Settler's Road (also referred to as Colono Road). In regards to the Baixo Iguacu Dam, the government already permitted a license for installation. They feel they are now under obligation to honor the license. They acknowledged that there will be an

impact to water flow and that there is a monitoring program in place (Ministério do Meio Ambiente, 2015). Regarding coordination of the management plan, Brazil stated that they began reviewing and updating the 24-year old plan in August 2015. They estimate that the finished management plan will be complete by July 2017.

Monitoring and Research of Ecological and Climate Concerns

In Argentina, there are 26 research studies taking place, and in Brazil, there are two (Ministerio de Turismo, 2015; Ministério do Meio Ambiente, 2015). The only overlap and collaboration mentioned is in regards to the tracking and monitoring of the 71 adult jaguars currently present in the two national parks. The nine research projects noted in the State Party Reports are noted in Table 2. None of the listed research projects mention climate change. It is not clear that the updated management plan will address the threats to climate change for either Iguazú or Iguazu; however, there has been concern over the impacts of flooding in relation to the climate change (Alvarez, 2012).

Research Project	Organization	Partner Org.	Highlights
Fish Inventory	University of La Plata	Otamendi Nature Reserve	Survey has resulted in the discovery of new species of fish for the park, Argentina and science.
Apepú Station	National Park Administration (Argentina)	External researchers	Updated baseline information on wildlife.
Jaguar Natural Monument	Iguazú National Park	Northeast Regional Delegation	Project keeps count of the current number of adult jaguars within PA (71).
Alien Species	Iguazú National Park rangers	None	Eradication of invasive plant species.
Run over wildlife	Iguazú National Park	National Highway Direction; Wildlife Argentina Foundation; Guirá Oga Recovery Centre; Ministry of Ecology and Renewable Natural Resources; CeIBA Foundation; Conservation Argentina Foundation; Red Yaguareté	Launched "Animal, watch out" campaign; speed reduction zones; creation of signage.

Environmental Impact Assessments	National Park Administration (Argentina)	Unspecified	Assessments of infrastructure projects and services.
Vertebrate Species of Special Value (EVVE) Update	Unspecified	Unspecified	Identification, protection, monitoring, intensify sanctions and research of species of conservation importance.
Feline Research Project	Iguaçu National Park	Unspecified	Monitors jaguar population; similar to Argentina's project; though different, remains collaborative on schedule of activities.
Surroundings	Iguaçu National Park	World Wildlife Federation (WWF)	Seeking partnerships and raising awareness with neighboring communities.

Table 2: Research projects related to Iguazú-Iguaçu as specified by State of Conservation Reports (2015).

Moving Forward

It is claimed that steps are currently in place by both administrations to coordinate management efforts, however, this has been several years in the making and not much has come out of it yet. There are significant threats located just outside both parks, but little has been done to address the issue. In 2015, it was highlighted in the State of Conservation Report that an environmental consultant was hired to help the two parks update the management plans. According to Argentina, these plans are supposed to be presented in June 2016 (Ministerio de Turismo, 2015). However, Brazil states that they began reviewing and updating the 24-year old plan in collaboration with Argentina beginning in August 2015. They estimate that the finished management plan will not be complete until July 2017 (Ministério do Meio Ambiente, 2015).

Both countries claim that they are working in a “cooperative, coordinated and confluent manner” and that both sides are “fully satisfied” with the dialogue between management and staff (Ministério do Meio Ambiente, 2015 p2). Yet, they do not appear to be talking enough even to agree on when the management plans will be in place.

Another concern is that Iguazú has been classified TBPA due to the nature of the shared space, not an Indigenous Protected Area (IPA). It would reason that the Guarani natives should still be included in planning and protection of the parks. It would also stand to reason that nearby Paraguay should also be involved.

Have the management plans addressed mitigation and adaptation? Clearly, no. The plans are severely outdated, and updates have supposedly been in the works for nearly a decade. It is highly concerning, as climate change does not even begin to appear on state reports.

Argentina appears to be supporting more scientific study in regards to impact and threats of various plant and animal species. Much more could be done, and it would be helpful if both Brazil and Paraguay became more involved.

Wrapping up, this brings us back to the original question. What is in a name? The countries of Iguazú and Iguacu National Parks could be doing considerably more to establish effective transboundary cooperation. For one, it is time to unify the parks. Even if no one can decide on a name, there needs to be more collaboration between all parties involved, and that includes Paraguay and the native Guarani people. The countries holding the keys to this magnificent beauty must move away from the status of merely a paper park and one that evolves and supports the changing status of nature.

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