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Challenges and Advances in the Planning of Tourism with Amazon River Dolphins in the Brazilian Amazon

Marcelo Derzi Vidal, Priscila Maria da Costa Santos, Maria do Perpétuo Socorro Rodrigues Chaves and Robert Swett

Abstract

Being considered charismatic cetaceans are among the animals most sought after in tourist interactions that may involve observation, touch, swimming, and provisioning food. This tourism model has the potential to generate socioeconomic and conservationist benefits. However, when carried out in a disorderly manner, this can have a negative impact on cetaceans and tourists alike. In this chapter, we discuss the challenges and advances within the process of participatory planning of tourism with Amazon River dolphins (*Inia geoffrensis*). Our goal is to present strategies that can support the development of projects and public policies aimed at management of wildlife tourism in other areas. Since its implementation at the Anavilhanas National Park - Brazil, the activity had never had its impact monitored by any competent bodies, and this has led to problems and quick spreading to other sites. The rules and guidelines implemented in have significantly reduced risks for tourists and dolphins alike, improving tourist experience and promoting the awareness of animal life. However, many issues remain and need to be solved, especially in the protected areas. These include reduced staff levels, which limits the ability to implement and monitor planned actions. Such shortcomings lead to setbacks in the development of tourist activities with cetaceans.

Keywords: *Inia geoffrensis*, protected area, public policy, visitors, wildlife

1. Introduction

The settlement and development of the Amazon were started based on the paradigm of a relationship between society and nature, meaning that economic growth is seen as linear and infinite, and on the continuous exploitation of natural resources [1], which has contributed to the depletion or extinction of species, caused environmental imbalances, gaps in knowledge about how many and which species exist in the region, and loss of potentially exploitable economic resources. This has made the search for tools that allow the best use and exploitation of its natural potential imperative [2].

Since the heyday of its colonisation process, the Amazon has gone through a series of economic development cycles, each determined by the expansion and contraction of markets. In the local management plan, among the agents one can observe a strong element of pressure due to the need to enlist their capabilities as a means to build feasible alternatives for the improvement of living conditions [3]. This makes tourism, in its many facets, rank among the services that have stood out in the Amazonian region over the last decades.

Tourism plays a key role in the sociocultural transformation of the nations, while being one of the fastest-developing industries in the World and contributes to economic growth by creating several vocational opportunities [4, 5]. Tourism has become a relevant economic activity, considered one of the main sources of income, with some places relying almost exclusively on such activities [6]. However, with global growth in per capita income, tourists have increased swiftly, and this development of the tourism sector is reflected in the related environmental degradation [7, 8].

Tourism is characterised as dynamic social practice, intertwined with a context of relationships and interrelationships, which can boost different social groups or make them dependant, or even take over territories. In this light, the activity can lead to two outcomes that may oppose each other: one that can boost the emancipation of those involved, and the other that can create a dependency of sorts and even accommodate predatory practices [9]. In this perspective, tourism can generate a negative impact, especially when carried out in uncontrolled fashion and focused within time and space [10].

Several tourism and recreational activities can lead to the displacement of animal habitats and depletion of natural resources [11]. Other authors suggest that leisure and tourism activities can cause major problems for the management of protected areas. For example, when such activities are carried out in a disorderly fashion, without any planning, monitoring or control by managers, they can lead to negative environmental impacts, reduced visitor safety, and, in some cases, increased risk to animal species [12, 13]. Human interaction with wildlife is an activity that has been explored within tourism, most specifically within ecotourism, a segment of tourism that has sustainability as one of its cornerstones.

The Brazilian Amazon, in the north of Brazil, is an important destination for ecotourism in the country. Tourism has been taking shape as an alternative to development in several Amazonian cities, with ecotourism standing out mainly in protected areas. In these places, tourism has the potential to create benefits for the environment and contribute to its preservation, while boosting the economy by creating jobs and income for local populations, thus strengthening its acceptance by society [14]. In some cases, tourism is a source of funding that tops up the household income, assuming a key role for local development which, if planned well, can induce the sustainable use of local resources.

2. Tourist interactions with cetaceans and Brazilian environmental legislation

Cetaceans, regarded as charismatic animals that are easily spotted in their natural habitat, are part of a growing demand for tourist-animal interactions throughout the world [12, 15]. These interactions consist of watching whales and dolphins from bases on shore or ships, swimming, and dolphin feeding programmes [16–20].

In Brazil, recognised tourist interactions with cetaceans occur in some protected areas. The Abrolhos Marine National park off the southern coast of Bahia welcomes

hundreds of visitors annually, seeking to watch the reproductive migration of the humpback whale (*Megaptera novaeangliae*) [21]. Further north, the Fernando de Noronha Marine National Park in the state of Pernambuco is a tourist spot for observing spinner dolphins (*Stenella longirostris*) [22]. In the Baleia-Franca Environmental Protection Area on the coast of Santa Catarina, the mating and parental care of southern right whales (*Eubalaena australis*) are the main attractions [23]. In the mosaic of protected areas along the Lower Negro River, in the state of Amazonas, there is tourism based on feeding Amazon River dolphins (*Inia geoffrensis*) [24]. In these protected areas, tourism has developed a chain of services; local involvement and research activities have generated vital biological information for the preservation and handling of these species.

Artificial dolphin feeding as a tourist attraction is practised in many countries, such as Australia, the United States, New Zealand and Cuba [25–29]. However, currently, this activity is enshrouded in controversy [30] due to negative consequences, such as changes in animal diet, changes in territorial behaviour, problems associated with the ingestion of non-fresh food products, and consumption of harmful food products due to inappropriate food supply. At the same time, the artificial supply of food can lead dolphins to beg people to give them food, which can lead to an increase in the number of human-induced injuries, such as being run over by ships, or dolphins being caught in fishing traps or ingesting hooks and other fishing-related paraphernalia [29, 31, 32].

Brazilian environmental legislation does not contain any regulations prohibiting the artificial feeding of wildlife. However, such activity is banned by the internal regulations of protected areas such as Serra dos Órgãos National Park, in Rio de Janeiro, and Iguazu National Park in Paraná [33, 34]. Despite the lack of a federal regulation banning the feeding of wildlife, Law 9,605/1998 does establish a penalty of three months to one year of imprisonment, plus a fine, to any person involved in harassment, mistreatment, harm or mutilation of wild animals, domestic or domesticated, native or exotic. Likewise, Article 30 of Presidential Decree 6.514/2008 establishes fines for anyone intentionally harassing any kind of cetacean, pinnipeds (seals) or sirenians (sea cows and manatees) in Brazilian waters.

Considering this scenario, this chapter discusses the challenges and advances related to the process of participatory planning of tourism with Amazon River dolphins in the Brazilian Amazon, which has resulted in the passing of a series of guidelines and regulations that significantly reduce the risks for tourists and dolphins alike, improving the tourist experience and promoting the population's awareness of animal life. Our goal is to present means and strategies that can support the development of future projects and public policies aimed at management of wildlife tourism in other areas.

3. Interactive tourism with Amazon River dolphins

Tourist interaction with Amazon River dolphins began in the Amazon in 1998 at the Anavilhanas National Park [35], located in the city of Novo Airão, Lower Negro River, in the state of Amazonas, Brazil. The city is located on the right bank of the Negro River, a 183 km drive from the state's capital, Manaus. The municipality occupies an area of 37,771 km², with 18,133 inhabitants [36]. Due to its proximity to Manaus, Novo Airão is now one of the main tourist destinations for people visiting the Amazon, and for inhabitants of Manaus and other cities close by, mainly for its natural attractions [37].

Created in 1981 as an Ecological Station and reclassified in 2008 as a National Park, Anavilhanas is managed by the Chico Mendes Institute for Biodiversity Conservation (ICMBIO, acronym in Portuguese), the Brazilian government entity responsible for the management of federal protected areas. With an area of approximately 350,000 hectares, the Park is comprised of *terra-firme* forests (unflooded areas) as well as *igapós* (periodically flooded areas), besides various streams, lakes,

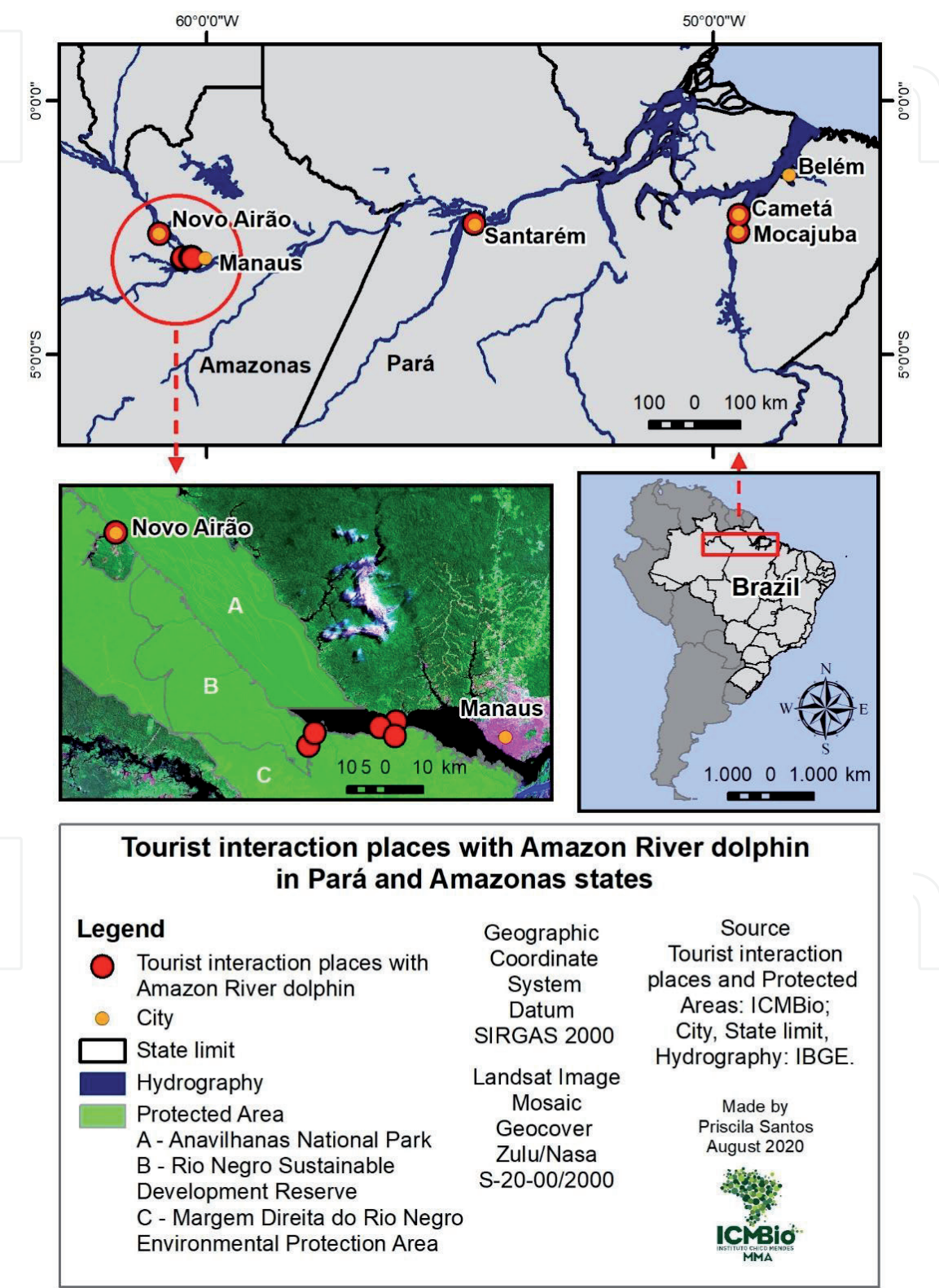


Figure 1.
Map identifying the areas where tourist interactions with Amazon River dolphins occur in the Brazilian Amazon.

channels, waterways and about 400 islands, making it the second largest river archipelago in the world [38].

Human interactions with the Amazon River dolphin at Novo Airão started by accident, when a child started offering fish to a dolphin that was roaming around the surroundings of a houseboat restaurant anchored in the south-central region of Anavilhanas National Park, right in front of the major urban beach of the city of Novo Airão [35, 39]. As time went by, other Amazon River dolphins were attracted



Figure 2.
Negative activities carried out before the implementation of visitor management. (A) Visitor “tricking” the dolphins, behaviour which frequently lead to bites on the hands of those visitors; (B) fish to be offered to dolphins placed on the ground, in a place where visitors circulate.

by the food and the child started swimming with the animals, which caught the eye of people visiting the city, who in turn started to buy portions of fish in the restaurant to feed the dolphins too [32].

Since then, interactive tourism between people and Amazon River dolphins in Novo Airão, based on the feeding of the cetaceans, has become well known among Brazilian and foreign tourists. Thus, the activity has become a major tourist attraction in both the city and Anavilhanas National Park [35, 40].

The dissemination of Amazon River dolphin related tourism at Anavilhanas National Park led to the activity being carried out in six other places along the Lower Negro River over time, each one located within state protected areas [34, 37], and at three other locations in the municipalities of Cametá, Mocajuba and Santarém, in the state of Pará (**Figure 1**).

However, several studies [13, 24, 35, 37] suggest that the replicability of the experience in Anavilhanas occurred without the establishment of any standards and monitoring of tourist practices, that involve the swimming and artificial feeding of Amazon River dolphins, in turn leading to negative consequences for those involved, such as a high number of tourists interacting with a handful of animals; tourists swimming with the dolphins and trying to hold them by force; the offering of objects and food products that were not part of the animal's natural diet, such as chips, beer, sausages and bread; tourists accidentally bitten or otherwise harmed by the animals during artificial feeding activities; fish sold to tourists and offered to dolphins while still frozen and poorly handled, from a hygienic standpoint; absolutely no control of the quantity of fish given to each dolphin daily (**Figure 2**).

This scenario created the need to discuss alternatives to reduce the various issues prevalent in interactive tourism with Amazon River dolphins in the Amazon region, especially at Anavilhanas National Park, where the activity has been going on for longer.

4. The participatory planning of the activity

Problems related to interactive tourism with Amazon River dolphins in Anavilhanas National Park led to the March 2010 establishment of a Work Group for the planning of tourism with Amazon River dolphins. This Work Group included representatives from several stakeholder groups: researchers, government bodies (technicians from the environment, tourism and education departments), the private sector (hotel and restaurant owners), organised civil society (fishing colonies, tour operator associations) and the Consulting Board of Anavilhanas National Park. The Work Group, led by ICMBIO, was given the task of drawing up a plan for tourist activities with Amazon River dolphins, via participatory actions, including relevant environmental, economic and social aspects [37].

The Work Group held several meetings and seminars to exchange information and knowledge among members and to discuss themes such as the positive and negative impacts of interactive tourism with dolphins at the Anavilhanas National Park; tourist experiences with cetaceans in other protected areas and regions of the country; and the biological and preservation aspects of the Amazon River dolphin. A planning proposal for tourist activities with the dolphins was drafted for the entire Amazon, as these activities had been quickly spreading throughout the states of Amazonas and Pará (**Figure 3**).

The proposal included aspects such as the number of visitors, minimum infrastructure and location of the houseboat where the interaction takes place, and duration of animal watching, as well as some more restrictive rules regarding the touching and the feeding of the dolphins [37]. In October 2010, the

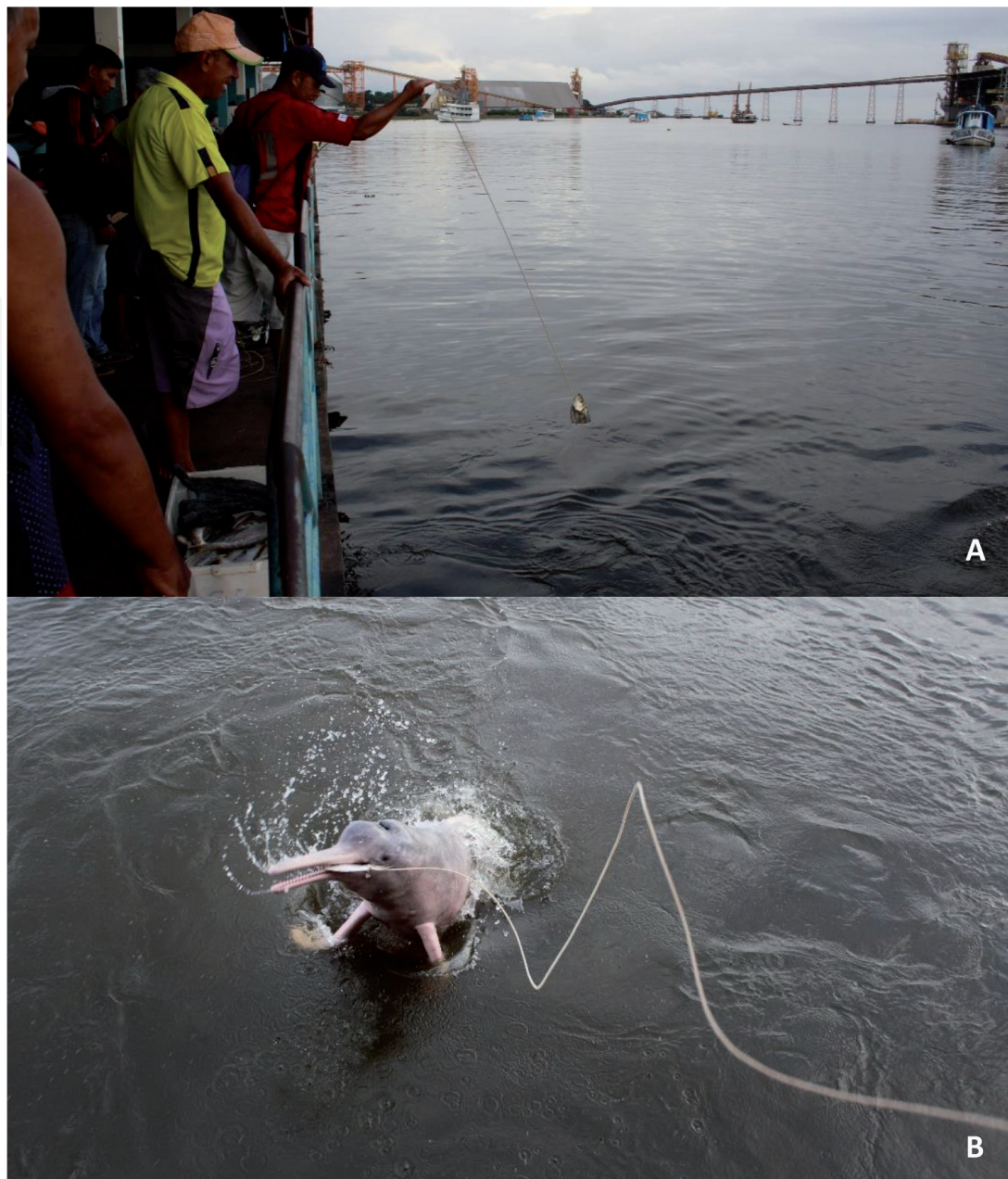


Figure 3.
Visitors observing Amazon River dolphins feeding in the fish market in Santarém, Brazil. (A) Market vendor throwing fish tied to a rope to attract the dolphin; (B) dolphin capturing the fish.

proposal was forwarded to the ICMBIO's Board of Research, Evaluation and Monitoring of Biodiversity. Additionally, ICMBIO Directive No. 47/2012 set out that visitors are strictly forbidden from feeding the dolphins in Anavilhanas National Park.

At the same time, changes in tourism with Amazon River dolphins were implemented at Anavilhanas National Park through an action plan based on the planning proposal with short, medium- and long-term goals [37]. Among the key changes applied to the activity (**Table 1**), visitors must receive guidance regarding biological and preservation aspects of Amazon River dolphins before any interaction can take place; only employees of the establishment are authorised to feed animals; feeding can only take place during pre-set hours; the amount fed to each individual dolphin is limited; the number of visitors and allotted time on observation platforms is limited (**Figure 4**); and swimming with dolphins is no longer allowed, although visitors are allowed to stand passively, on a submerged platform, with mandatory use of life jackets.

Before planning	After planning
No monitoring during visitation.	Monitoring of the profile and perception of visitors regarding the activity being carried out.
No prior information given to the visitors.	Prior to the interaction, visitors attend a lecture about dolphin biology, legends surrounding the animal, the main threats to the species, and the rules for interacting with the animals.
The visitors would feed the dolphins (which would occasionally lead to bites on the hands of those visitors who were “tricking” the animals).	Only employees of the establishment can feed the animals at pre-established times.
No control regarding the quantity and quality of food being offered to the animals (examples: frozen fish, sausages, beer, chips).	Only refrigerated fish can be fed to the dolphins. There is a limit of 2 kilos of fish a day per individual.
No information available on the possible dependency of dolphins on artificial feeding supplied by establishments.	Each dolphin attending a feeding session is logged. This information will allow for a reduction in the amount of food offered to the dolphins, thus stimulating their natural instinct to capture fish in the wild.
No information regarding the distribution of dolphins in Anavilhanas National Park.	The main areas for the observation of dolphins in Anavilhanas National Park are being mapped. This information will help foster vessel tours to observe dolphins, without artificial feeding.
No restrictions regarding the number of visitors on the interaction platform.	Limited number of visitors on interaction platforms, based on ergonomics, platform size, and technical standards.
Visitors were allowed to swim with dolphins (which enabled animal harassment and increased the risk of negative incidents affecting visitors and dolphins alike).	Visitors are only allowed to enter the water by standing on a submerged interaction platform that is 1.20 m deep. Visitors must remain passive. The use of life jackets is mandatory.
No restrictions regarding vessel navigation in the vicinity of establishments, which increased the risk of accidents involving dolphins/visitors and any nearby vessels.	Buoys were installed around the houseboat, significantly decreasing the risk of accidents involving dolphins/visitors and vessels.
Bathroom waste was poured directly into the water.	Bathrooms now have waste treatment.

Table 1.
Key changes made to interactive tourism with Amazon River dolphins in Anavilhanas National Park, Novo Airão, Brazil.

Participatory training in Amazonian Ecology, Biology and Preservation of Cetaceans, as well as Sustainable Tourism have been offered in order to strengthen environmental awareness, improve tourist services and help to preserve the dolphins (**Table 2**). To date 106 people involved in interactive tourism with the Amazon River dolphin in Anavilhanas National Park and in state protected areas have attended, including technicians from environmental and tourism agencies, hotel and restaurant owners, tour guides, and houseboat employees, among others. Attendees were selected based on nominations made by their own institutions, while also considering criteria such as a participant’s capacity to apply and multiply the knowledge acquired and recognition of the nominee as a leader in his/her group.

A poster (**Figure 5(A)**) was developed to publicise information about planning for Amazon River dolphin tourism and the main anthropic effects on the species. Over 200 copies of the poster, in Brazilian Portuguese and English, were distributed to hotels, inns, restaurants, the local airport, and tourist operators. Banners



Figure 4.
Tourists interacting with Amazon River dolphins in Anavilhanas National Park, Novo Airão, Brazil.

Training	Number of participants
Amazonian Ecology	22
Biology and Preservation of Cetaceans (1st edition)	34
Biology and Preservation of Cetaceans (2nd edition)	24
Sustainable Tourism	26
Total	106

Table 2.
Training sessions offered and the number of participants in each.

(**Figure 5(B)**) were placed at locations where interactive dolphin tourism occurs and included information on the biology and anatomy of the species.

In 2013, following the example implemented in the Anavilhanas National Park, the Amazonas State Secretary for the Environment created a work group to build a state proposal (based on the one drawn up at the federal level) that would establish rules for this type of tourism. Thus, after a long process of technical and legal wrangling, in January 2018, the Amazonas State Environmental Council Ruling No. 28 was published, establishing guidelines and procedures to be followed in the approval and development of interactive tourism with dolphins in the State of Amazonas.



Figure 5. Poster regarding the planning of tourism with Amazon River dolphins and the major anthropic effects on the species (A); visitor observing a banner presenting information on the biology and anatomy of the Amazon River dolphins (B).

Subsequently, in January 2019, the National Action Plan for the Preservation of Endangered Amazon Aquatic Mammals was set up, incorporating key activities to quantify and qualify the impacts of tourist practices on species, identifying new forms of low impact tourism involving dolphins, and propose normative acts related to tourist activities involving aquatic mammals in all the states of the Brazilian Amazon.

5. Conclusions

Due to the relevance of tourism in this day and age, it is understood that studies in this area are far too recent and lack expansion to step up the generation of knowledge that enables the comprehension of the multiplicity of social, environmental, economic, political and cultural relationships reached through its practices, this being a condition that qualifies it as a major subject of study.

Like other places in the world, tourism in the Brazilian Amazon has seen a great increase in the number of tourists over the past few years. The challenges now lie in the ability to create greater economic benefits from industry, while ensuring the sustainability of the tourism assets [41].

The use of food to attract wildlife is a strategy employed by tourists and tour operators because it increases the likelihood of sighting animals and getting close to them [30]. However, long-term planning and monitoring of tourism focused on the supply of food for dolphins is essential to ensure the safety and well-being of cetaceans and tourists [42]. Unfortunately, the most common approach for handling activities of artificial feeding of wild fauna is the prohibition of such practices, which, however, has proved to be extremely difficult to apply and, frequently,

presents low levels of compliance [22, 30]. Thus, the most appropriate approach would be to actively manage activities aimed at feeding wildlife, allowing its occurrence, but exercising strong control and monitoring, in order to reduce the potential risks for animals and tourists [30]. Despite the variety of impacts that can stem from interactive tourism to feed wildlife, one may not assume that they are all negative. It is important to acknowledge the fact that economic, social, psychological and preservationist benefits may also result from this model of tourism [30].

The planning of Amazon River dolphin tourism is a very recent experience, whose challenges match its geographical extension, and actions in this regard need the support of research to reach a level of excellence in both structure and quality. However, the changes made to date are perceived as positive by managers, partners and visitors, both in regard to the structure of the enterprises, as to well as the development of the activity.

Other positive aspects worth mentioning include the process of coming up with regulations. Part of the success of this planning is attributed to the democratic and participatory nature of the Work Group involved, which considered the environmental, economic and social dimensions of the activity.

Local communities consider Amazon River dolphin tourism, an activity that involves interaction with a wild species, to be a major alternative source of income than can help to increase quality of life. This is significant given that much of this population faces much hardship in terms of the acquisition of consumer goods, as well as social goods and services.

Major issues regarding Amazon River dolphin tourism in the Amazon, especially in the protected areas, remain and need to be solved. These include reduced staff levels, which limits the ability to implement and monitor planned actions. Such shortcomings lead to setbacks in the development of tourist activities with cetaceans. However, the proactive strategy behind participatory planning, based on research and on interpretational and educational activities, shows itself to be the best way to make sure of visitors' satisfaction, income generation to local residents and preservation of the Amazon River dolphin.

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Conflict of interest

The authors declare no conflict of interest.

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