

BOOKLET

ON SPORT FISHING IN BARCELOS,
AMAZONAS, BRAZIL

USERS' VIEWS



LOCAL
COMMUNITY



LOCAL COMMERCE



SPORT-FISHING
ENTREPRENEURS

FISHING GUIDES



SPORT FISHERS



Organized by:
Chiara Lubich, Glenda Bernardino,
Flávia Souza & Carlos Freitas

MANAUS - AMAZONAS
2024

INFORMATION ON:

- DEMOGRAPHIC AND SOCIOECONOMIC PROFILE OF KEY GROUPS;
- PERCEPTION OF KEY GROUPS ON SPORT FISHING IN BARCELOS;
- PERCEPTION OF KEY GROUPS ON ENVIRONMENTAL ISSUES IN BARCELOS, AMAZONAS, BRAZIL

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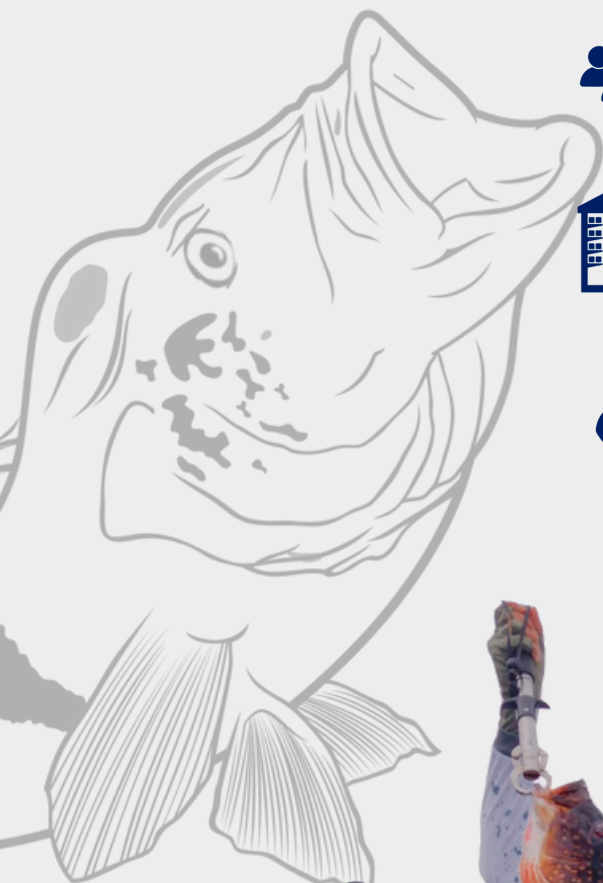
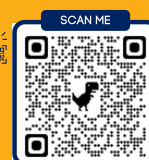


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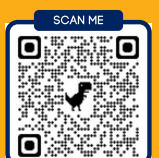


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PRESENTATION

SUMMARY

This booklet is an invitation to you, our reader, to discover, support and value the sport fishing tourism carried out in the middle Negro River Basin, Amazonas, Brazil. By better understanding the various perspectives of the key groups involved and the results generated in Chiara Lubich's doctoral research, we will contribute to the promotion of sustainable tourism, thereby benefiting the region, its people and the environment.

Doctoral research project: The doctoral research project "Sport Fishing in the Middle Negro River Basin, Amazonas, Brazil: Ecological, Economic and Social Assessment" seeks to holistically analyze the aspects and impacts of sport fishing tourism in the region. The research is conducted by Chiara Lubich under the guidance of professors Carlos Freitas and Flávia Souza of the Graduate Program in Animal Science and Fisheries Resources at the Federal University of Amazonas (PPGCARP/UFAM).

Funding: The research project is financially supported by the Fundação de Amparo à Pesquisa do Estado do Amazonas (FAPEAM), through Call No. 008/2022- Kunhã program - C, T&I in Amazonas; support calls FAPEAM-PPG-CARP: POSGRAD 2022/2023 (Resolution 005/2022); and Call No.18/2020 - Graduate Development Program (PDPG - CAPES/FAPEAM/PPGCARP) - Strategic partnerships in the states, support for emerging and consolidating graduate programs in priority areas in the states. It aims to advance the understanding of the sustainability of sport fishing tourism in the Negro River basin, specifically in the region of Barcelos, Amazonas.

Enjoy!

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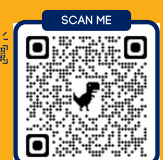


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PRESENTATION

INTRODUCTION

The incredible beauty of the middle Negro River region in the Amazon, represented in the municipality of Barcelos, Amazonas, attracts many people who love sport fishing. The black waters of paradisiacal settings and the unique diversity of plants and animals are so special that not only the fishers, but also other people interested in nature visit the region.

This booklet highlights the importance of sport fishing tourism in the middle Negro River basin and presents results obtained in the doctoral research entitled "Sport Fishing in the Middle Negro River Basin, Amazonas, Brazil: Ecological, Economic and Social Assessment", developed by Chiara Lubich under the guidance of professors Carlos Freitas and Flávia Souza of the Federal University of Amazonas.

As the focal topic of the research, sport fishing tourism plays a crucial role in promoting the conservation of natural resources and stimulating the local economy. In addition to providing unique experiences to sport fishers, the activity generates jobs for guides, traders, business people and other community members. Through this study, it was possible to understand the impact of this activity from different perspectives, which generated important information that contributes to the knowledge of the activity carried out in the state of Amazonas, Brazil.



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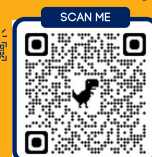


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PRESENTATION

KEY GROUPS

The results presented in this booklet are based on data collected through questionnaires applied to five key groups:

- **Local Community:** The interaction of the local community with sport fishing tourism is crucial in order to understand the social effects of this activity. The engagement of local residents, their attitudes and their perceptions portray the relationship between tourism and everyday life.
- **Local Commerce:** Local businesses play a key role in making products and services available to tourists. Their perspectives on sport fishing tourism provide insights into the direct economic impact on local communities.
- **Sport-fishing Entrepreneurs:** Entrepreneurs have a key role in the organization and management of sport fishing operations. Their opinions on the economic viability of the activity and the challenges faced are necessary for the growth and sustainability scenario of the sector.
- **Fishing Guides:** Guides play a vital role in providing enriching fishing experiences for tourists. The knowledge acquired about the aquatic environments and fish in the region are essential for the development of the activity and environmental conservation.
- **Sport Fishers:** The fishing experience of the sport fishers themselves are crucial in order to understand their motivations for choosing Barcelos as a main destination, as well as their role in the development of the activity in the municipality.



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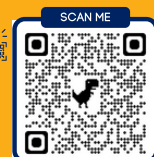


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SOCIAL AND DEMOGRAPHIC INFORMATION

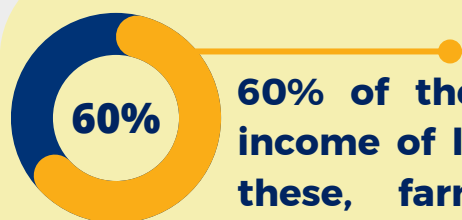
KEY GROUPS INTERVIEWED:

Estimates

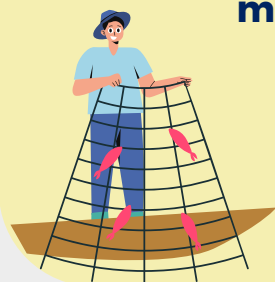
KEY GROUPS	MONTHLY INCOME	AGE AND GENDER
100  Local community	 ≤ US\$ 251,84 (<1 MINIMUM WAGE IN BRAZIL)	52  average age of 44 years 48  average age of 43 years
10  Local commerce	 US\$ 503.68 - US\$ 1,007.36 (2 - 4 MINIMUM WAGES IN BRAZIL)	8  average age of 41 years 2  average age of 46 years
14  Sport-fishing entrepreneurs	 US\$ 1,007.36 - US\$ 1,511.04 (4 - 6 MINIMUM WAGES IN BRAZIL)	13  average age of 44 years 1  33 years (partner)
53  Fishing guides	 US\$ 251,84 - US\$ 503.68 (1 - 2 MINIMUM WAGES IN BRAZIL)	53  average age of 43 years 0 
132  Sport fishers	 > US\$ 1,511.04 (> 6 MINIMUM WAGES IN BRAZIL)	132  average age of 54 years 0 

* Value of Brazilian real (BRL) converted to US dollar (USD) is 5.17 BRL per 1 USD on 25/04/2024.

OBSERVATION:



60% of the local community surveyed has an income of less than one minimum wage. Among these, farmers, cleaners, the self-employed, mechanics, teachers, nurses and fishers stand out.



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PERCEPTION OF SPORT FISHING

ENVIRONMENTAL ASPECTS

Results based on the opinions of the five key groups interviewed

ENVIRONMENTAL DEGRADATION

pollution of the environment (rivers, lakes) as a result of sport fishing

NEGATIVE ENVIRONMENTAL IMPACT

that sport fishing causes in the environment, in Barcelos

CHANGES IN FISH SIZES

based on past experiences



Local
community

- 48% none or low
- 30% medium
- 22% high or very high

- 38% none or low
- 33% medium
- 29% high or very high

- 73% sizes are decreasing
- 15% sizes are increasing
- 12% sizes remain the same



Local
commerce

- 58% state that there is no degradation
- 42% state that there is degradation

There is/was no change in this category for the interviewees

There is/was no change in this category for the interviewees



Sport-fishing
entrepreneurs

- 61% state that there is no degradation
- 39% state that there is degradation

There is/was no change in this category for the interviewees

There is/was no change in this category for the interviewees



Fishing guides

- 64% none or low
- 20% medium
- 16% high

- 50% none or low
- 30% medium
- 20% high or very high

- 48% sizes are increasing
- 40% sizes are decreasing
- 12% sizes remain the same



Sport
fishers

- 86% none or low
- 10% medium
- 4% high

- 82% none or low
- 10% medium
- 8% high or very high

- 37% sizes remain the same
- 29% sizes are increasing
- 17% sizes are decreasing
- 17% first visit

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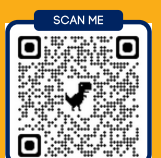


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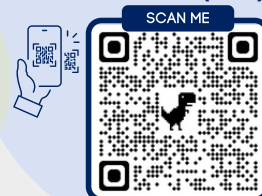
ENVIRONMENTAL ASPECTS

SPECIES CAUGHT IN SPORT FISHING IN BARCELOS



Declining species citation rank among respondents

List of species of
interest in sport fishing:
Lubich et al. (2023)



COMMON NAME: TUCUNARÉ PACA,
AÇU, PACA-AÇU

SPECIES: *Cichla temensis* Humboldt 1821

LENGTH (CM): 99.0



COMMON NAME: TUCUNARÉ
BORBOLETA

C. orinocensis Humboldt 1821

LENGTH (CM): 61.70



COMMON NAME: TUCUNARÉ
POPOCA

C. monocus Agassiz 1831

LENGTH (CM): 70.0



COMMON NAME: PIRANHA
GENUS: *Serrasalmus* spp.
Pygocentrus spp.

LENGTH (CM): 26.4 - 50.0



COMMON NAME: BICUDA

Boulengerella spp.

LENGTH (CM): 88.0



COMMON NAME: TRAÍRA

Hoplias spp.

LENGTH (CM): 65.0



COMMON NAME: ARUANÃ
GENUS/SPECIES: *Osteoglossum* spp.

LENGTH (CM): 90.0



COMMON NAME: PIRARARA

Phractocephalus hemiliopterus

LENGTH (CM): 135.0



COMMON NAME: PIRAÍBA

Brachyplatystoma spp.

LENGTH (CM): 360.0

Maximum length (cm) was obtained from the list in the article by Lubich et al. (2023) (QRCode above) and from the IGFA website.

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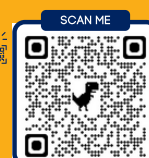


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PERCEPTION OF SPORT FISHERS

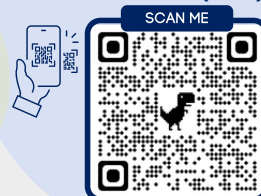
ENVIRONMENTAL ASPECTS

SPECIES CAUGHT IN SPORT FISHING IN BARCELOS



Declining species citation rank among respondents

List of species of
interest in sport fishing:
Lubich et al. (2023)



COMMON NAME: JACUNDÁ

GENUS: *Crenicichla* spp.

LENGTH (CM): 30.0



ARACÚ | PIRAPARA

Leporinus spp.
Megaleporinus spp. etc
76.0



PESCADA | CORVINA

Plagioscion spp.
99.0



TUVIRA | SARAPÓ

Gymnotus spp.
76.0



COMMON NAME: CACHORRA

GENUS: *Hydrolycus* spp.
Rhaphiodon spp.
Cynodon spp.

LENGTH (CM): 76.0



PEIXE CACHORRO

Acestrorhynchus spp.
30.0



ACARÁ-AÇU

Astronotus spp.
45.7



MANDI

Pimelodus spp.
35.0



COMMON NAME: LAMBARI

GENUS: *Tetragonopterus* spp.

LENGTH (CM): 11.2



PIRARUCU

Arapaima gigas

450.0



SORUBIM | PINTADO

Pseudoplatystoma spp.

105.0



FERAS
DIFFERENT SPECIES OF
CATFISH

Order Siluriformes

REACH DIFFERENT SIZES

Maximum length (cm) was obtained from the list in the article by Lubich et al. (2023) (QRCode above) and from the IGFA website.

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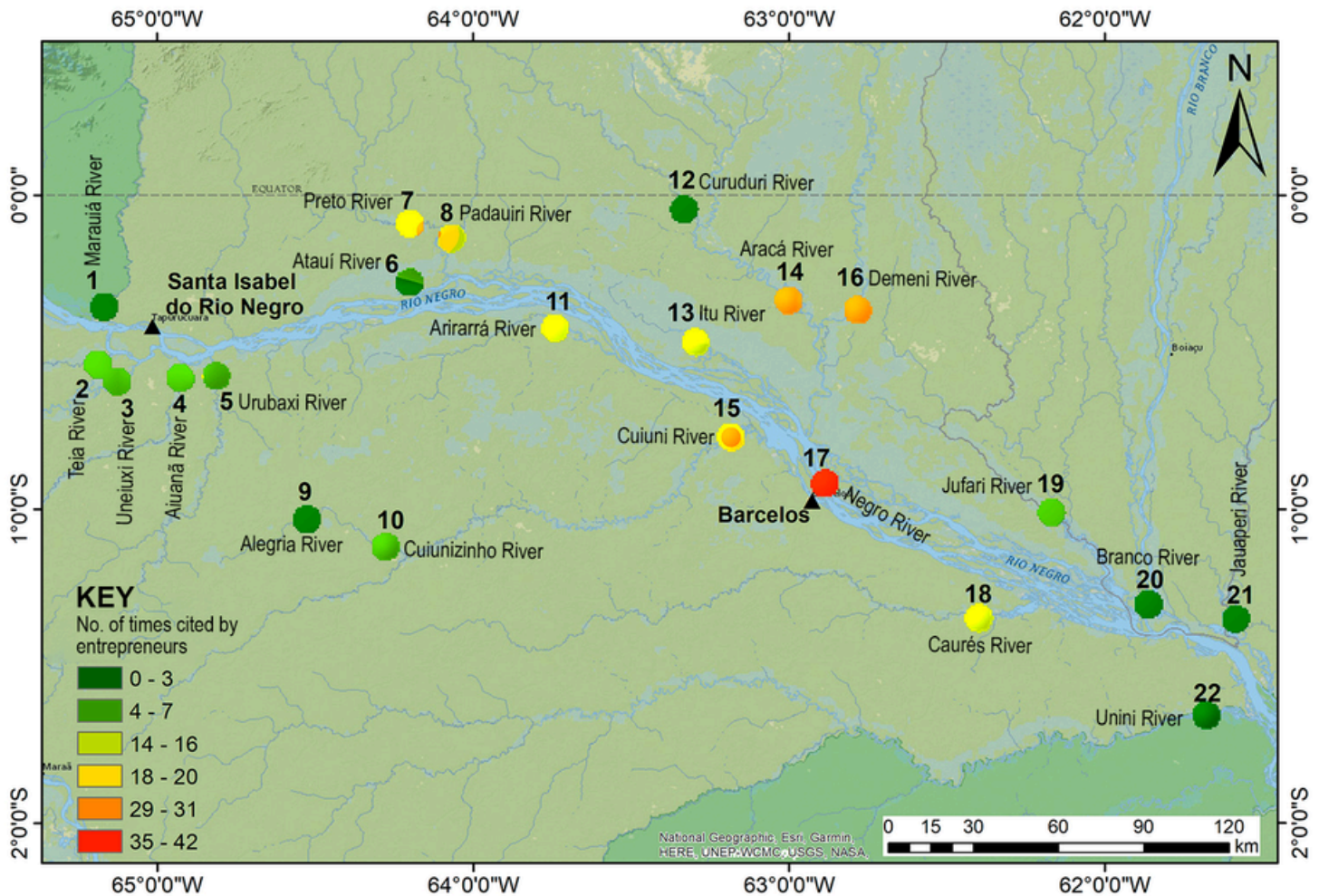
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PERCEPTION OF SPORT FISHERS

ENVIRONMENTAL ASPECTS

RIVERS USED BY SPORT FISHING OPERATIONS IN BARCELOS, AMAZONAS



Source: Scientific article published by Chiara Lubich, Flávia Siqueira-Souza and Carlos Freitas in 2023.
Freshwater sport fishing: characterization of operations in the middle Negro River, Amazonas, Brazil

Use your phone's camera to access the full article



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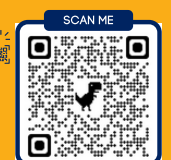


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ECONOMIC ASPECT

PERCEPTION OF SPORT FISHERS



26%

RESIDE OR HAVE RESIDED WITH PEOPLE WHO WORK IN SPORT FISHING. THEREFORE, MOST OF THE FAMILY INCOME WAS OBTAINED FROM SERVICES PROVIDED TO SPORT FISHING COMPANIES

74%

HOUSEHOLD INCOME COMES FROM AGRICULTURE, SELF-EMPLOYMENT, COMMERCIAL FISHING, BUSINESS ADMINISTRATION, OR CIVIL SERVICE (MUNICIPAL AND STATE)



On average, residents of Barcelos who work in sport fishing earn about R\$ 700,00 (US\$ 135.40)per week in the high season.



FISHING GUIDES (82%) & ENTREPRENEURS (68%) EARN MOST OF THEIR FAMILY INCOME THROUGH SPORT FISHING

Both actors have a secondary income that complements family income

Despite there being > 100% growth in the local market during the high season, most of the traders' income comes from selling goods to people living in Barcelos



LOCAL COMMUNITY (73%) & LOCAL COMMERCE (51%) DERIVE MOST OF THEIR FAMILY INCOME FROM DIFFUSE ACTIVITIES (Ex: agriculture, self-employment, civil service, etc.)



DEGREE OF SATISFACTION WITH THE ENVIRONMENTAL TAX PAID BY SPORT FISHERS



- 57% of the **local community** claims no or low satisfaction;
- 42% of **fishing guides** claims no or low satisfaction;
- 64% of **fishers** claims no or low satisfaction;
- 93% of the **sport-fishing entrepreneurs** claims no or low satisfaction;

"The low level of satisfaction is due to the majority of respondents not seeing the application of the money raised and the lack of transparency of this resource."
In the case of the **guides**, many say that the tax influences the value of the tip they get

No data were collected on the degree of satisfaction of **local merchants**.

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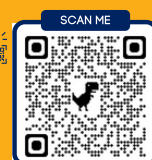


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PERCEPTION OF SPORT FISHERS

SOCIAL ASPECTS

GOOD SIDE



GENERATES MORE JOBS



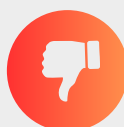
GENERATES INCOME



**GROWTH IN LOCAL
COMMERCE (ECONOMY);**



BAD SIDE



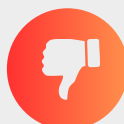
SOCIAL VULNERABILITIES

(Sexual exploitation and narcotics trade)*



REGARDING THE FISH CAUGHT:

AFFECTS FISH HEALTH



INCREASED FISH MORTALITY

* **Sexual exploitation:** The increase in economic activities, such as trade, mining and tourism, can lead to greater trade, which makes the municipality more vulnerable to sexual exploitation due to the social and economic conditions of the local population.

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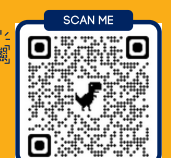


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PERCEPTION OF SPORT FISHERS

SOCIAL ASPECTS

GOOD SIDE



BAD SIDE



Local community

- Generates more jobs;
- Generates income;
- Growth in local commerce (economy);

- Social vulnerabilities* and crime;
- Affects fish health;
- Illegal fishing and increased fish mortality;



Local commerce

- Generates more jobs;
- Generates income;
- Growth in local commerce (economy);

- Social vulnerabilities; *
- Lower quality of fish;
- Affects fish health and increased risk of oil spillages in the river;



Fishing guides

- Generates more jobs;
- Generates income;
- Growth in local commerce (economy);

- Social vulnerabilities; *
- Employment and income only during the high season;
- Increased fish mortality;



Sport-fishing entrepreneurs

- Generates more jobs;
- Generates income;
- Growth in local commerce (economy);

- Social vulnerabilities; *
- Lack of organization in the municipality;
- Environmental unsustainability;

* Social vulnerabilities (sexual exploitation and narcotics trade)

Sexual exploitation: The increase in economic activities, such as trade, mining and tourism, can lead to greater trade, which makes the municipality more vulnerable to sexual exploitation due to the social and economic conditions of the local population.

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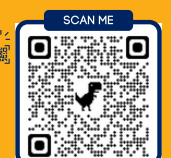


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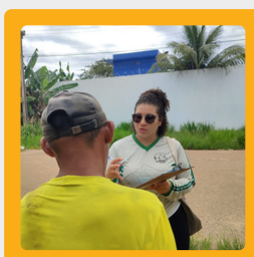
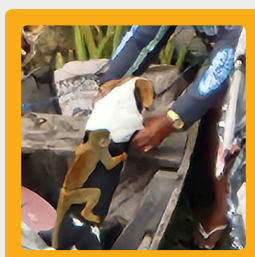
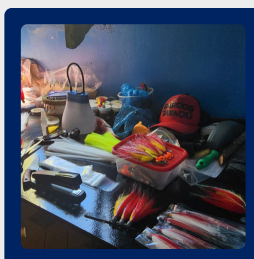
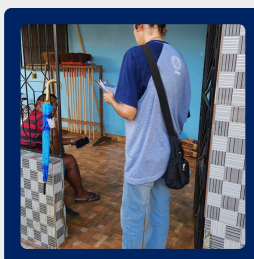
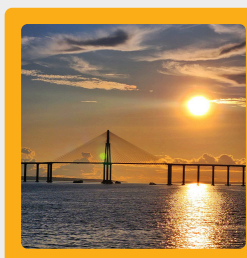
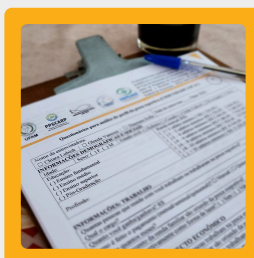
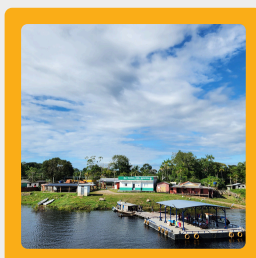
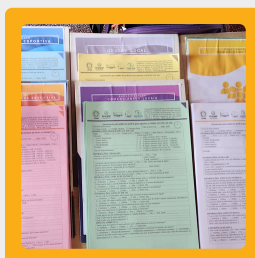
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FIELD PHOTO ARQUIVE



To protect the identity of the interviewees, their faces have been blurred.



Photos: Chiara Lubich (October 2022 and April 2023)

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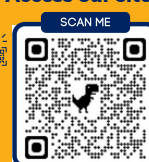


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COORDINATION

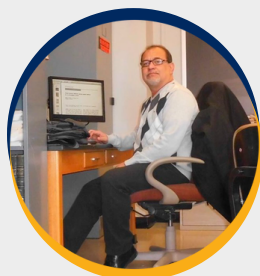


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Masters in Ecology with emphasis on population ecology from INPA

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Programa de Pós-graduação em
Ciência Animal e Recursos Pesqueiros

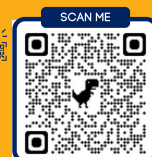


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ACKNOWLEDGMENTS

Our sincere thanks to everyone that participated in the interviews in the study. Our gratitude goes especially to the people of the local community and the sport fishing guides who welcomed us into their homes, even at night, with patience and generosity, as well as to the sport fishing entrepreneurs who gave us their time. Their contributions have brought the data to life, offering a very solid perspective on the sport fishing in the municipality of Barcelos, Amazonas state.

The collaboration of each of you was fundamental to the success of this study. Your stories, experiences and knowledge have enriched our understanding of the sport fishing activity and have provided much valuable information.

We hope that these results will help to understand sport fishing and benefit the people of Barcelos by promoting sustainable fishing tourism and bringing benefits to the region and the environment.

THANK YOU SO MUCH!

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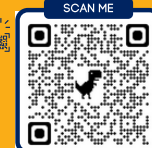
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2024**



LOCAL COMMUNITY

FISHING GUIDES



SPORT FISHERS



**LOCAL
COMMERCE**



**SPORT-FISHING
ENTREPRENEURS**



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