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Original Article

Social values of angling tourism in the Garo Hills of Meghalaya, North East India: fish farmers' perspectives

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Abstract
Angling tourism is gaining popularity and offers an alternative livelihood opportunity for the fish farmers of the Garo Hills region of Meghalaya, India. This research aims to provide insights into the social value of angling tourism among the fish farmers involved in angling tourism in the area and to identify its determinants. A sample of one hundred fish farmers was selected using snowball sampling from five districts of the Garo Hills, and data were collected using a semi-structured interview schedule. Most farmers considered fisheries a secondary occupation and were sceptical of angling tourism. The multiple stepwise regression analyses revealed that entry fees for daily angling besides competition and secondary occupation negatively impacted social value scores. In contrast, the educational status of fish farmers, annual investment in angling tourism, fish farming experience, total registered anglers annually, and family type positively impacted social value scores. The study confirmed that angling tourism fosters sustainable development within rural communities by nurturing social values and augmenting biodiversity conservation, and economic benefits. Overall, the study provides valuable information on the scope and prospects of angling tourism in leveraging social values and its potential to uplift rural people's social and financial status.

Keywords: angling tourism; fish farmers; Garo Hills; Meghalaya; rural tourism; social values

1 | INTRODUCTION

The northeastern states of India have witnessed a steady rise in tourist arrivals, reaching 11.8 million in 2022 and 12 million in 2023 (Govt. of India 2024). Among the eight northeastern states, Assam ranked first, with 8.38 million visitors in 2022, maintaining its lead with 7.61 million in 2023. But Meghalaya jumped to second place in 2023 with a tourist arrival of 1.37 million from third place in 2022 with a tourist arrival of 0.93 million (Govt. of India 2024). This surge in tourist arrivals in Meghalaya presents an opportunity to promote fishing tourism as a sustainable livelihood option using the region's aquatic resources.

Meghalaya, one of the eight states in Northeast India, covers about 22,430 km^2 of geographical area, and

the state is one of the world's wettest places, receiving an average annual rainfall of 12,000 mm (Dash *et al.* 2020; Kumar *et al.* 2023). The state's three major hill regions, Khasi Hills, Jaintia Hills, and Garo Hills, range from 150 m to 191 m above sea level (Lahiri *et al.* 2024). Meghalaya is renowned for its stunning natural beauty, including lofty mountain ranges, lush valleys, flowing rivers, vast water bodies, waterfalls, and caves, offering numerous tourist attractions. The state's tourism potential is significant due to its natural resources, diverse ethnic cultures, and societal values (Sangma 2021). Studies found that community stakeholders play critical roles in rural tourism for various reasons (Shil *et al.* 2021; Priyanka and Devarani 2022). Fishing and aquaculture contribute only 1.3% to Meghalaya's Gross State Value Added (GSVA) by economic activity at current prices in the 2023–24 fiscal year (MoSPI 2024), compared to approximately 1.09% to India's Gross Value Added (GVA) in the 2023–24 fiscal year, representing a significant portion of the agricultural GVA at over 6.72% (PIB 2023). It may be due to a lower preference for fish compared to other protein sources like pork among the ethnic people in Meghalaya (Kumar and Lahiri 2023; Sangma *et al.* 2023). Still, the state faces a fish shortage due to inadequate local production (Lahiri *et al.* 2020). This shortage is mainly attributed to a lack of interest in fish farming among the farming communities in the state, as fish farming does not bring lucrative farm income to them like in other northeastern states (Nirmalkar *et al.* 2022; Kechu and Pankaj 2023).

Recognising the need for livelihood diversification, adopting angling alongside aquaculture as a tourist attraction could offer an additional source for increasing farmers' income. As angling tourism gains popularity in the region, it has the potential to improve the socio-economic status of local communities and boost rural tourism. Angling tourism, almost synonymously known as "fishing tourism" or "sportfishing tourism," refers to a specialised form of travel and recreational activity in which individuals or groups visit specific destinations or regions primarily to engage in fishing or angling activities. Angling tourism integrates two distinct elements: the desire to engage in angling and the choice of location for this activity (Bauer and Herr 2004; Laiho *et al.* 2005). Recreational angling also has positive social, economic, and environmental impacts (Brown *et al.* 2009).

The social values of angling tourism refer to the aggregate advantages and positive impacts that recreational fishing-related travel and activities offer to people, communities, and society at large. This incorporates a variety of social characteristics, such as community interaction, cultural preservation, recreational activities, and environmental awareness promotion (Arlinghaus *et al.* 2021). Given its abundant water bodies, the Garo Hills of Meghalaya are well-suited for angling tourism. Recent observations revealed that fish farmers in the Garo Hills have been organising fishing competitions, which have become significant income sources through registration fees, fish sales, and offering recreational amenities like camping and traditional foods to anglers (Govt. of Meghalaya 2021) (Figure 1). Thus, this research aims to assess the social values of angling tourism perceived by the fish farmers involved in the practice in the Garo Hills of Meghalaya and to identify the determinants of social values of angling tourism as perceived by the fish farmers to get a better insight into the assessment of social values of angling to formulate a comprehensive strategy for developing angling tourism as an alternative livelihood source in the region.

FIGURE 1 Angling competition in Garo Hills of Meghalaya.

2 | METHODOLOGY

2.1 Study area

The study was conducted in an exploratory research design in the Garo Hills of Meghalaya, India, where angling has been gaining popularity.

2.2 Sampling protocols

The study focuses on fish farmers who organise fishing competitions in their ponds, rent their ponds for angling, and generate income from some ancillary services like food stalls, camping facilities, and competitions. Due to a lack of proper data regarding the fish farmers who organise fishing competitions in their ponds and rent their ponds for angling, it was difficult to get the actual population size. We collected information about such fish farmers in the Department of Fisheries, Govt. of Meghalaya. By conducting snowball sampling, we came to learn about more such fish farmers who organised fishing competitions in their ponds and rented their ponds for angling. In the process, we found 106 such fish farmers from all five districts of the Garo Hills (North Garo Hills-25, South Garo Hills-07, South West Garo Hills-40, West Garo Hills-10, and East Garo Hills-16), which became the targeted population size of the study. During the survey, six fish farmers

declined to participate in the study. Hence, the sample size became one hundred (100) fish farmers actively involved in angling tourism, and primary data were collected using a semi-structured interview schedule.

2.3 Social value of angling tourism

To assess the social value of angling tourism, the responses were recorded on a 5-point Likert scale adopted by Suni *et al.* (2022). After careful study of the existing literature and discussion with different stakeholders, the scale consists of seventeen statements that include the benefit of angling towards physical well-being, connection with nature, impact on youths, angling's role in community development, seasonality, environmental impact, economic benefits, and threats of angling. The social value scores were calculated against each statement, ranging from (+) 1 to (+) 5 based on the nature of the statements. Similarly, the total social value scores of each respondent were computed by summing the social value scores against each statement of the respondents. The total social value score range was also calculated. The total social value scores were categorised into low, medium, and high using mean and standard deviation on the total social value score range.

2.4 Data analysis

Data were analysed using various statistical methods, including frequency and percentage distribution, arithmetic means, standard deviation for socio-economic profiling of the fish farmers and perceived social values of angling tourism. The independent-sample Kruskal-Wallis test was employed to study the existence of any significant difference in social value scores among the fish farmers from different districts in the study location. The multiple stepwise regression models was administered to identify the prognostic factors affecting the social values of the respondents, taking social value score as dependent variables and 26 selected variables as independent variables (11 socio-economic and 15 operational variables). These independent variables were selected after studying the existing literature in the domain, and only pertinent variables which might have a bearing on the dependent variable, as hinted in earlier studies, were considered. The Garret ranking method (Garret and Woodworth 1926) was used to assess the perceived constraints of angling tourism. SPSS 20.0 and PROC LOGISTIC SAS 9.3 were used for data analysis.

3 | RESULTS AND DISCUSSION

3.1 Socio-economic profiling

The majority (60%) of farmer respondents belonged to the middle age category (above 44–60 age), and the majority of them (48%) had fish farming experience above the 5–10-year category (Figure 2). The less involvement by young respondents (32%) in angling tourism ventures might be due to their preference for the job and less experience in fisheries activities. Interestingly, a considerable number of the respondents (29%) were female, though much less than the males (71%) probably due to the involvement of strenuous physical activities in operating different fishing operations (Carnegie *et al.* 2020). The educational status of the respondents was low, as 57% of them had up to the basic level of education. Results ascertain that 31% of respondents practised fish farming as a primary occupation, and 49% of them practised it as a secondary occupation (Figure 2). Most of the respondents (75%) were smallholder farmers (Lahiri *et al.* 2020), and 90% of them had average pond sizes up to 0.5 ha., resulting in less annual income, as the majority of them (59%) had an annual income between INR 50000 and INR 1 lakh (1 USD$ = 82.618 INR).

3.2 Perceived social values of angling tourism

The perceived replies of the respondents to seventeen statements encompassing various aspects of fishing tourism on a 5-point scale were recorded to determine the social values of angling tourism among fish farmers (Table 1). All the farmers in the study area agreed that angling involves beneficial physical activity, and half of them opined that it offers the opportunity for physical activity in green space. The probable reason is that the act of casting a fishing rod and reeling in the line engages various muscle groups, particularly those in the arms, shoulders, and upper back, and repeating this motion throughout angling can help improve muscle strength and endurance and maintain cardiovascular health (Brown *et al.* 2009). Twenty-three per cent of the respondents perceived that angling tourism restricts free social interactions due to the gathering of different age groups (Arlinghaus *et al.* 2007), but half of the respondents disagreed with that. However, the majority of them (67%) expressed that gathering varied groups of people, irrespective of age and gender, does not violate any ethnic social norms of the Garo communities or Garo customary laws. The majority of respondents (71%) confirmed that angling tourism plays a positive role in fish biodiversity conservation (Salmi and Salmi 2010), and 88% of them suggested angling offers a variety of social and environmental benefits (Zwirn *et al.* 2008). The majority of them (86%) also confirmed that angling is not detrimental to the aquatic environment (Hannonen and Hoogendoorn 2022), but 58% reported that too much participation by anglers causes problems in terms of the neatness and cleanliness of angling sites (Tran *et al.* 2002).

Furthermore, only 23% of the respondents were affirmative to the statement that angling offers physical activity and psychological involvement for differently abled people (Arlinghaus *et al.* 2021). This shows a lack of awareness among the respondents regarding the benefits of angling for differently-abled people, as the studies

show that angling can aid in physical rehabilitation by promoting hand-eye coordination, fine motor skills, and muscle strength (Lindsay *et al.* 2022). However, most respondents (94%) confirmed that angling has no negative impact on older people. However, 90% of the farmers responded that the participation of young people in fishing competitions is hindered due to the relatively high participation fees. The economic benefits of angling tourism were also ratified by farmers in the form of a significant increase in annual income (55%), employment opportunities (100%), and the development of infrastructural facilities for fisheries (Stead 2005), despite some seasonality factors of angling for some farmers (33%; Table 1).

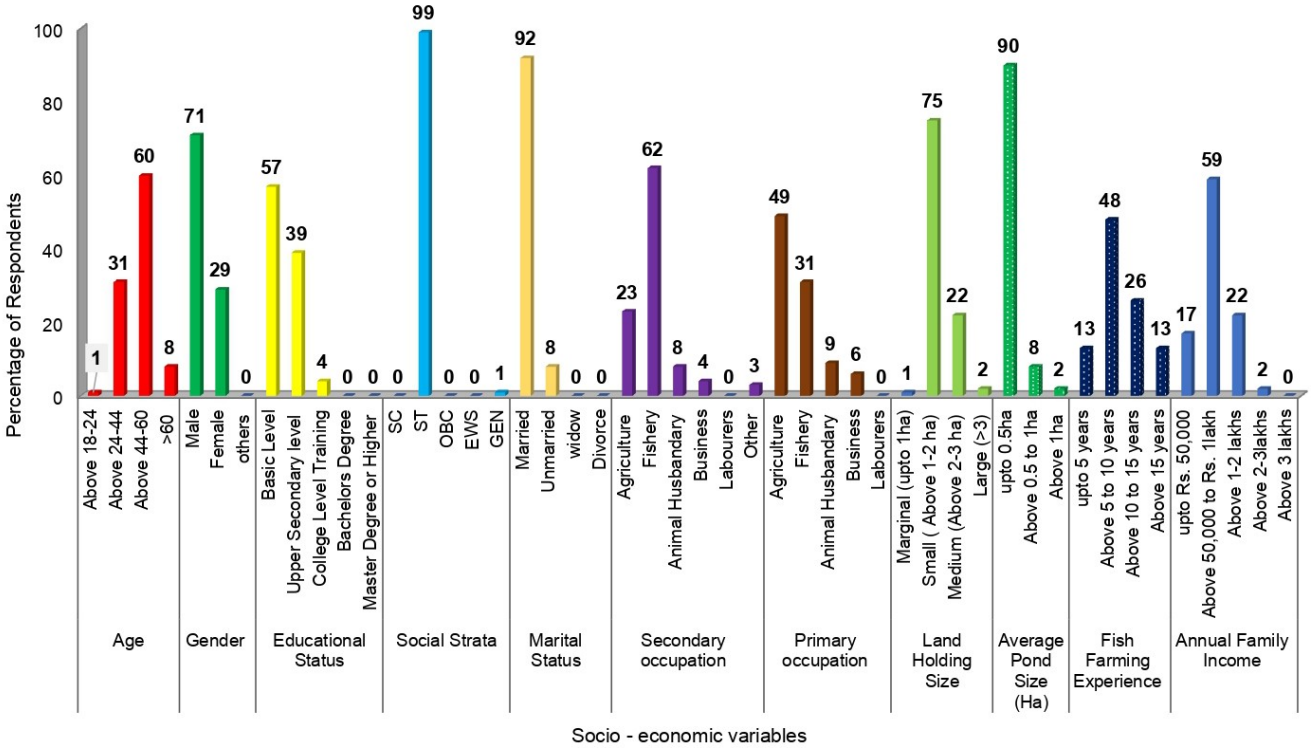

FIGURE 2 Distribution of socio-economic variables of the respondents (*n* = 100).

TABLE 1 Social values of angling tourism perceived by the fish farmers (*n* = 100).

Statements	SA (%)	A (%)	UD (%)	DA (%)	SDA (%)	Social Value (Mean±SD)
Angling involves several participants in a beneficial physical activity. (+)	50	50	0	0	0	3.50 ± 0.50
Angling brings together many people of different age groups, which restricts free social interactions. (-)	3	20	27	45	5	3.29 ± 0.95
Angling encourages bio-rational approaches like the conservation of native species. (+)	2	69	29	0	0	3.73 ± 0.49
The number of participants in fishing competitions is on par with other competitive sports. (+)	14	86	0	0	0	4.14 ± 0.35
The extent and nature of anglers' participation go much beyond the straightforward act of holding a fishing rod, instead of offering a variety of social and environmental benefits through several associated activities. (+)	0	88	12	0	0	3.88 ± 0.33
Angling offers a physical activity and psychological involvement for differently-abled people. (+)	0	23	21	65	12	3.15 ± 0.54
Angling has a negative impact on old people. (-)	0	0	6	94	0	3.87 ± 0.63
Angling offers physical activities in a green space. (+)	2	48	36	14		3.94 ± 0.24
Angling is an integrated sport that involves young and old, male and female, and differently-abled people, which sometimes violates social norms. (+)	1	1	31	66	1	3.38 ± 0.75

TABLE 1 Continued.

The participation expenses cause barriers to young people joining fishing competitions as anglers. (-)	13	77	9	0	1	3.65 ± 0.58
Angling plays a crucial role in the construction of new ponds and new community facilities to promote tourism. (+)	13	77	9	0	1	4.01 ± 0.56
Angling is detrimental to aquatic environments. (-)	1	2	11	49	37	4.19 ± 0.79
Angling tourism can play a significant role in income generation and employment opportunities in remote rural areas. (+)	57	43	0	0	0	4.57 ± 0.50
Angling can only be done in the summer season, which means less income during the off-season. (-)	8	25	5	38	24	3.45 ± 1.31
The annual income of the fish farmers increases significantly after getting involved in angling tourism.	12	43	29	12	4	3.64 ± 0.34
Angling poses a threat to human consumption if the hooks are not removed properly. (+)	28	72	0	0	0	4.28 ± 0.45
Too much participation by anglers causes no problem in terms of the neatness and cleanliness of angling sites. (-)	1	41	0	45	13	3.28 ± 1.16

SA, Strongly Agree; A, Agree; UD, Undecided; DA, Disagree; SDA, Strongly Disagree;
(+) and (-) symbols suggest the nature of statements

The total social value scores were categorised into low, medium, and high using mean and standard deviation on the total social value score range. It was evident from the results that 73% of farmer respondents had a medium social value score (57.10 – 63.45; Table 2), indicating that angling brings social interactions, fosters a friendly approach among participants, and conserves native species collectively (Arlinghaus *et al.* 2007). The independent-sample Kruskal-Wallis test was applied to study the existence of any significant difference in social value scores among the fish farmers from different districts in the Garo Hills. A significant difference ($p < 0.01$) in the social value score of respondents among the five different districts in the Garo Hills was found in the test. This may be because of social, economic, demographic, and geographic factors, such as proximity to urban areas (Nath 2022).

TABLE 2 Distribution of respondents according to their social value scores.

Levels of social values	*N*	%	Range of total social value score
Low (<57.10)	22	22	54–57
Medium (57.10 – 63.45)	73	73	58–63
High (>63.45)	5	5	64–68

3.3 Determinants of social values of angling tourism

The authors administered multiple stepwise regression analyses to identify the determinants of the social values of angling tourism as perceived by the fish farmers. The social value of angling tourism depends on some prognostic factors in the form of independent variables (Table 3). The daily entry fees for angling besides competition (–0.389), secondary occupation (–0.286), educational status (0.177), annual investment (0.225), fish farming experience (0.181), total registered anglers annually (0.171), and family type (0.168) had significant bearings on the social values of angling tourism as perceived by the fish farmers. Results show that entry fees for daily angling besides competition and secondary occupation, had negative impacts, while others positively impacted social value scores. Curtis *et al.* (2017) also confirmed that recreational fisheries' expenditure impacted the participation of non-British anglers at Irish angling tournaments. In the case of occasional trout fishermen in the USA, Bryan (1977) found that angling is usually secondary to other activities. On the other hand, fish stock investment was found to have positive bearings on cost-effectiveness by Hunt et al. (2017) in the culture-based recreational fishery at Lake Purrumbete, Australia.

TABLE 3 Prognostic factors affecting the social values score of the respondents.

Model	Standardised Coefficients (Beta)	*p*-value
Entry fees for daily angling besides competition	–0.389	<0.001
Secondary occupation	–0.286	<0.001
Educational status	0.177	0.028
Annual investment	0.225	0.005
Fish farming experience	0.171	0.034
Total registered anglers annually	0.181	0.033
Family type	0.168	0.033

3.4 Perceived constraints of angling tourism

Several constraints perceived by the fish farmers in operating angling tourism activities were identified in the study to get more insight into the assessment of the social values of angling tourism. The Garret ranking score in Table 4 ascertains that the risk of financial loss to organise fishing competitions in their ponds ranked first, while

conflict among organisers was second, and unavailability of an appropriate size of fish for competition ranked third, as appropriate-sized fish were expensive to farmers due to their higher market value. Floods during the rainy season ranked fourth, primarily affecting the South Garo Hills and the South West Garo Hills districts. Overcrowding anglers, unexpected weather, poaching, and overfeeding ranked fifth, sixth, seventh, and eighth, respectively.

TABLE 4 Comparison of perceived constraints using average Garrett's score.

Questions	Total Garret Score	Rank
Risk of financial loss to organise fishing competitions in their ponds	6754	1
Conflict among the organisers	5956	2
Unavailability of an appropriate size of fish for competition	5903	3
Floods during the rainy season	5670	4
Overcrowding of anglers	4698	5
Unexpected weather conditions	4300	6
Poaching	4284	7
Overfeeding the fish before the competition	2645	8

4 | CONCLUDING REMARKS

In this study, we tried to assess the social values of angling tourism based on the perceived responses of the fish farmers who were involved in angling tourism. The study indicates that the majority of farmers had a medium social value score. However, the study ratified that angling tourism has tremendous potential for the sustainable development of rural communities by adding social values in the form of environmental benefits, improving health and well-being status, providing employment opportunities for rural youth, addressing seasonality issues, and conserving biodiversity, in addition to economic benefits (Krishna *et al.* 2021).

This study reveals that entry fees for daily angling had a significant impact on farmers' income as they provided them with additional income apart from competitions, which are usually conducted only once or twice a month. Annual investment and fish farming experience also showed a significant impact on the social values of angling tourism (Hunt *et al.* 2017), as the more experienced farmers have better knowledge and decision-making abilities with scanty resources. However, the farmers in the Garo Hills were sceptical about angling tourism ventures in the study location, as fisheries were a secondary occupation for the majority of the respondents. The small landholding status and relatively lower annual income of most farmers might have also made them cautious about angling tourism. The inclusion of rural youth in angling tourism may change the scenario. It is believed that young farmers and their elevated social standing functioned as a conduit for technological transmission in their community (Nath 2022). As the participation of young farmers is lower in the study area, a youth-oriented strategy is required to inform and sensitise them about the social and economic benefits of angling tourism that will give them employment opportunities.

However, angling tourism poses some threats to fisheries and aquaculture. Informal discussions with farmers during the study revealed that most of the time, farmers stock fish like Pacu (*Piaractus brachypomus*; Cuvier, 1818) because Pacu is aggressive and good for the competition from the farmers' perspective. However, Pacu is highly detrimental to the habitat due to their carnivorous and voracious feeding habits and high fecundity rate (Singh and Lakra 2011; Esmaeili 2021). Thus, a meticulous strategy with synchronous coordination among different departments (fisheries, agriculture, tourism, health, rural development, etc.) of public and private agencies is required to exploit the potential social values of angling tourism for the sustainable development of rural communities.

The assessment of the social values of angling tourism in the Garo Hills of Meghalaya provides valuable information on the scope and prospects of angling tourism in leveraging social values and its potential to uplift rural people's social and economic status. Adopting angling tourism by some fish farmers in the Garo Hills of Meghalaya has indicated a positive impact due to its social values, which could be a potential livelihood option for the sustainable development of rural communities. Angling tourism can offer new opportunities for income diversification, community engagement, and sustainable land use, contributing to the overall vitality of rural farms by adding social values, comprising economic benefits, environmental benefits, health and well-being benefits, employment opportunities for the rural youth, addressing seasonality issues, and biodiversity conservation. As the participation of young farmers is less in the study area, a youth-oriented strategy is required to develop in coordination with the Ministry of Youth Affairs and Sports, the Ministry of Fisheries of central and state Governments, and Krishi Vigyan Kendras of the Indian Council of Agricultural Research (ICAR) to inform and sensitise them about the social and economic benefits of angling tourism which can provide them employment opportunities. The State Department of Fisheries, along with local angling clubs or organisations, should raise awareness among fish farmers against stocking invasive species like Pacu in angling tourism. The study shows that angling can be therapeutic for individuals dealing with stress, anxiety, and mental health issues. The State Health Department, in collaboration with angling organisations, may offer therapeutic angling sessions for the stressed individuals, and a proper health policy may be formulated in this regard. Thus, the outcome of this study could provide valuable insights for

policy formulation and opportunities for further future research to standardise the angling tourism model for sustainable community development.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

AUTHORS' CONTRIBUTION

BL conceptualised and supervised the work, interpreted the results, and drafted and edited the manuscript. ASS made the initial conceptualisation, recorded the data and made the initial draft. PP made the data curation, data analyses, and interpretation. AG, SKG, and MBT helped draft and edit the manuscript, while MM and AKC helped record the data, data tabulation, and preparation of the initial draft.

DATA AVAILABILITY STATEMENT

The data findings of this study are presented in this article.

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