



A Study on Effectiveness of Tabos and Cultural Practices on Bio-diversity Conservation in Eastern Ghats of Tamil Nadu, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Taboos and cultural practices regulate the way people interact with the world around them by prohibiting the use of items considered as sacred. Sacred grooves are one of the valuable, but primitive practices of nature that play an important role in biodiversity conservation. The present study was conducted to find out the effectiveness of taboos and cultural practices on biodiversity conservation in the Eastern Ghats of Tamil Nadu. Of the thirty-eight districts of Tamil Nadu, Salem and Tiruvannamalai districts were purposively selected based on the high tribal population. From each district, one block was selected namely the Pethanaickenpalayam block from Salem district and Jawadhu hills block from Tiruvannamalai district respectively. Totally 182 tribal respondents

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were selected by using the Proportionate Random Sampling method. The data was collected through a personal interview method by using well-structured interview schedule. Percentage analysis, and Cumulative Square Root of Frequency methods (Descriptive statistics) were used to analyze the collected data. Findings were meaningfully interpreted and relevant conclusions were drawn. Overall results show that above half (53.29 percent) of the respondents were found to have a moderate level of effectiveness with taboos and cultural practices on biodiversity conservation followed by more than two fourth (44.52 percent) of the respondents with a lesser level of effectiveness and only 2.19 percent of the respondents with a high level of effectiveness.

Keywords: Bio-diversity; culture; conservation; effectiveness; taboos; tribals.

1. INTRODUCTION

Taboos and cultural practices regulate people the way they interact with the world around themselves by prohibiting the use of items considered as sacred. The role of cultural practices in conservation of bio-diversity has recently attracted more global attention. Sacred grooves are one of the valuable, but primitive practices of nature which play an important role in biodiversity conservation. Thus sacred grooves are a perfect system of conservation, where in an entire ecosystem is protected and conserved for the sustainable development Manikandan et al. [1]. Banerjee [2] revealed that various songs reflect their emotional attachment to the forest and the environment. Their major festival is Baha or Sarhul in which they worship the flowering tree of Sal (*Shorea robusta*) as a Goddess. The theme song at the Baha festival in their local dialect means Felling of flowering branches will destroy life. This song indirectly preaches about protecting flowering branches of the trees to ensure reproduction. The people protect their habitat, Colobus monkey and Mona monkey through their beliefs and traditions. They believe that Colobus monkeys are sons of gods which will protect their community [3,4]. Hence, it will not be disturbed, killed or captured which has attracted other species of monkeys into that area and little wonder this is the only place in Ghana where you still find large numbers of monkeys. The author also observed in the particular area there has been belief in life after death and human spirit is transformed into animals and other objects. Hence, in the study area most of the animals were considered as spiritual. The animals like lion, leopard, elephant, python and buffalo represent the spirit of a deceased which cannot be tampered with or without the permission Abugiche et al., [5]. The protection and conservation of plants and animals through the religious belief system like totemism and sacred grooves. The practice of totemism

ensures the protection and conservation of a large population of flora and fauna which are either threatened or in the category of endangered species. The practice of totemism by tribes not only maintains the ecosystem balance, conserving and protecting biodiversity, but also sustains their amicable relationship with nature. Religion is a powerful tool to motivate a community for a particular cause. Jharkhand is inhabited by a large number of ethnic groups. Their religious belief systems, like any other indigenous community, are built around their dependence on natural resources for sustenance and survival. A number of scientific reports from different parts of the world suggest that the religious practices and traditional belief systems of indigenous society helped in biodiversity conservation through the concept of totems, sacred grooves and some taboos Singhal et al., [6]. With this background, the main aim of the study was to find out the Effectiveness of taboos and cultural practices on bio-diversity conservation among tribes in Eastern Ghats of Tamil Nadu.

2. METHODOLOGY

The study was carried out in Eastern Ghats of Tamil Nadu by using the Ex-post facto research design. Among the thirty two districts, Salem and Thiruvannamalai district was selected purposively, since tribal population was high. Pethanaickenpalayam block of Salem district and Jawadhu hills block of Salem district was purposively selected based on higher population. The respondents were selected from the four villages namely Chinna kalrayan vadaku and Periya kalrayan keelnadu villages of Salem district and Kovilur and Nammiyampattu villages of Thiruvannamalai district were purposively selected. From the villages 0.5 per cent of the population was selected as a sample for the study. Totally, 182 sample was derived from the four villages by using the proportionate random sampling method. Data was collected through

personal interview method by using the well-structured interview schedule to the tribal respondents. Percentage analysis and cumulative square root of frequency was used for analysing the data. After contacting the respondents the collected data were subjected to statistical analysis for get better interpretations.

2.1 Cumulative Square Root of Frequency (CSRF)

There are several stratification methods available, one of which is the Cumulative Square Root of Frequency, which provides higher efficiency in determining strata boundaries. This method was proposed by Raghavarao [7] to categorize the respondents into low, medium and high groups based on the total score obtained by the respondents. The calculation of the Cumulative Square Root of Frequency method is given below.

Steps involved

1. No. of classes and Class interval is determined using the following formulas:

$$\begin{aligned} \text{Number of classes} &= 2.5 \times (\text{Number of samples})^{1/4} \\ \text{Class interval} &= \frac{\text{Largest figure} - \text{Smallest figure}}{\text{Number of classes}} \end{aligned}$$

2. Based on the score values, the number of respondents belonging to each class was determined.
3. The square root of frequency for the first class was calculated. Then the square root of the frequency of the next class was calculated. This process was continued for each of the classes.
4. Cumulative square root frequency of the second class was calculated by the sum of the square root frequency of the first and second class; the sum of the first, second and third gives the cumulative square root frequency of the third class and so on for all the classes.
5. The cumulative square root frequency value of the last class is multiplied by 1, 2, ..., i. and divided by the number of sample strata desired (i.e. 1/3 and 2/3 in this case) to get the cumulative square root (L_i) value for determining the boundary values of strata.
6. Then the boundary values of the strata were calculated by using the formula.

$$L = K + \left[\frac{L_i - C}{\sqrt{f}} \right] \times n$$

Where,

- K - Lower limit of the class in which L_i lies
- L - Cumulative square root value i.e. L_1, L_2, \dots, L_i
- C - Cumulative square root of the frequency of the preceding class in which L_i lies
- N - Interval of the class
- F - Square root of the frequency of the i^{th} class in which L_i lies

In the same way, subsequent three strata were formed as detailed below:

- Below L_1 value - Low
- Between L_1 and L_2 values - Medium
- Above L_2 values - High

3. FINDINGS AND DISCUSSION

3.1 Effectiveness of taboos and cultural practices on bio-diversity conservation

Taboos and cultural practices are regulating people the way interact with the world around themselves by prohibiting the use of items consider as sacred. The role of cultural practices in conservation of bio-diversity has recently attracted more global attention. Hence, effectiveness of the taboos and cultural practices on bio-diversity conservation in the study area have been collected and the results has been tabulated below in Table 1.

The results shows that half (56.17 per cent) of the respondents in Salem district have lesser effective followed by more than two fifth (43.83 per cent) of the respondents have moderately effective and there is no person in Salem district with highly effective with taboos and cultural practices on bio-diversity conservation. Since, in Salem district there is a great influence of globalization and urbanization which leads to less following of traditional cultural practices. Whereas, in Tiruvannamalai district more than three fifth (62.36 per cent) of the respondents with moderately effective on taboos and cultural practices followed by one third (33.33 per cent) of the respondents with less effectiveness and only 4.31 per cent of the respondents with high levels of effectiveness.

Overall results shows that above half (53.29 per cent) of the respondents found to have moderate level of effectiveness with taboos and cultural practices on bio-diversity conservation followed

by more than two fourth (44.52 per cent) of the respondents with lesser level of effectiveness and only 2.19 per cent of the respondents with high level of effectiveness.

Greater influence of urbanization, tribal development programmes and other developmental activities in tribal areas affects the culture followed by the tribal people. Influence of tourist people and also immigration of the other people also influence the people to change from their own cultural practices. This might be the reason for most of them with lesser to moderate effectiveness of taboos and cultural practices on bio-diversity conservation in both the districts.

From the Table 2, it could be inferred that more than half (58.79 per cent) of the respondents agreed with the statement 'Sacred grooves plays an important role in conservation of soil' followed by more than one fourth (27.47 per cent) of the respondents shows undecided with the statement and 13.73 per cent of the respondents were disagreed with the statement. Since, sacred grooves are highly grown in the tribal areas the residues from the sacred grooves enhances the soil conservation. The statement 'Tribal people's belief serve as an instrument for protection of extinct plant/animal species' had the response with 49.45 per cent were agreed followed by 29.67 per cent with undecided and 20.88 per cent with disagreed to the statement.

Nearly three fourth (71.98 per cent) of the respondents disagreed to the statement 'Forest protected by taboos is highly valuable for conservation of regional bio-diversity' followed by one fifth (19.23 per cent) of the respondents were undecided attitude to the statement and 8.8 per cent of the respondents agreed to the statement. More than two fifth (44.50 per cent) of the respondents were agreed with the statement 'Planting of saplings in special occasions helps in managing landslides and other natural hazards' followed by one third (36.81 per cent) of the

respondents with undecided attitude and 18.68 per cent of the respondents with disagreed to the statement. Planting of tree saplings prevent the soil erosion which helps to mitigate the land slides in hilly areas.

Majority (88.45 per cent) of the respondents were disagreed with the statement 'Sacred plants are maintained only by the religious head of the villages conserves the bio-diversity' followed by 11.53 per cent were undecided category and surprisingly none of the respondents were agreed with the statement. This kind of principles were not adopted by the tribal people in the study area. More than two fifth (42.31 per cent) of the respondents found to agree with the statement 'Social structure plays an important role in defining norms and codes for the management and conservation of sacred grooves' followed by less than one third (31.87 per cent) are under undecided category and one fourth (25.82 per cent) of the respondents were disagree to the statement. Sacred grooves were highly conserved by the social system which helps to conserves the sacred grooves.

Nearly half (46.16 per cent) of the respondents were disagreed to the statement 'Taboos help in protecting the exploitation of plants and animal species followed by more than one third (35.16 per cent) of the respondents under undecided category and 18.68 per cent of the respondents agreed to the statement. Since, there is no taboos followed by the tribal people in the study area but, forest department prohibits the over exploitation of forest resources. More than one third (36.26 per cent) of the respondents agree the statement 'Conservation of sacred grooves also helps in protecting the valuable medicinal and aromatic plant species followed by 32.42 per cent were undecided and 31.32 per cent of the respondents are disagreed to the statement. In this statement all the category shows almost with same percentage.

Table 1. Distribution of respondents based on their effectiveness of taboos and cultural practices on bio-diversity conservation (n=182)

S. No.	Category	Salem (n=89)		Tiruvannamalai (n=93)		Total (n=182)	
		No.	%	No.	%	No.	%
1.	Less effective	50	56.17	31	33.33	81	44.52
2.	Moderately effective	39	43.83	58	62.36	97	53.29
3.	Highly effective	0	0	04	4.31	04	2.19
	Total	89	100.00	93	100.00	182	100.00

Table 2. Distribution of respondents based on effectiveness of taboos and cultural practices on bio-diversity conservation n=182

S. No.	Statement	Strongly agree		Agree		Undecided		Disagree		Strongly Disagree	
		No.	%	No.	%	No.	%	No.	%	No.	%
1.	Sacred grooves play an important role in conservation of soil.	54	29.67	53	29.12	50	27.47	14	7.69	11	6.04
2.	Tribal people's belief serves as an instrument for protection of extinct plant/animal species.	40	21.98	50	27.47	54	29.67	25	13.74	13	7.14
3.	Forest protected by taboos is highly valuable for conservation of regional bio-diversity.	7	3.85	9	4.95	35	19.23	51	28.02	80	43.96
4.	Planting of saplings in special occasions helps in managing landslides and other natural hazards.	30	16.48	51	28.02	67	36.81	24	13.19	10	5.49
5.	Sacred plants are maintained only by the religious head of the villages conserves the bio-diversity	0	0	0	0	21	11.53	94	51.64	67	36.81
6.	Social structure plays an important role in defining norms and codes for the management and conservation of sacred grooves.	36	19.78	41	22.53	58	31.87	28	15.38	19	10.44
7.	Taboos help in protecting the exploitation of certain plants and animal species.	12	6.59	22	12.09	64	35.16	44	24.18	40	21.98
8.	Conservation of sacred grooves also helps in protecting the valuable medicinal and aromatic plant species	31	17.03	35	19.23	59	32.42	34	18.68	23	12.64
9.	Protection of both plants and animals is essential to maintain ecological balance	55	30.22	39	21.43	42	23.08	30	16.48	16	8.79
10.	Traditional festivals and rituals are one of the integral part in conserving the bio-diversity of tribal areas	25	13.74	43	23.63	55	30.22	39	21.43	20	10.99

Above half (51.65 per cent) of the respondents were agreed with the statement 'Protection of both plants and animals is essential to maintain ecological balance' followed by one fourth (25.27 per cent) disagreed to the statement and 23.08 per cent of the respondents were under undecided category. The statement 'Traditional festivals and rituals are one of the integral parts in conserving the bio-diversity of tribal areas' are agreed by 37.37 per cent of the respondents followed by 32.42 per cent of the respondents disagreed with the statement and 30.22 per cent of the respondents under the category of undecided.

4. CONCLUSION

Greater influence of urbanization, tribal development programmes and other developmental activities in tribal areas affects the culture followed by the tribal people. Influence of tourist people and also immigration of the other people also influence the people to change from their own cultural practices which results in moderate to low level of effectiveness of taboos and culture on bio-diversity conservation. The efficiency of the application of traditional conservation measures. Nevertheless, adaptation of some aspects of these taboos may be valuable for bio-diversity conservation.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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