

Eco-tourism and Institutions - Comparison of Turtle Sites in Goa and Maharashtra.

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Abstract: Sea turtle population faces increasing threats in India due to multiple reasons. We studied two turtle nesting conservation sites in Goa and Maharashtra to understand the dynamics of tourism and turtle conservation in these areas. The turtle nesting period which starts from October to March coincides with the tourist season in both the states. The two different models of turtle conservation - on the one hand in Goa, there is a conflict of interest between tourism and conservation goals. And on the other hand in Maharashtra, tourism activities with collective action are used as a strategy to promote turtle conservation.

Our study finds that with community involvement alongwith turtle conservation eco-tourism could be promoted without any conflict. The Velas model of turtle conservation and nature-based tourism followed in Maharashtra has possibilities of replication to other nesting sites and may have solutions to the sustainability of turtle conservation in this country.

Keywords: *Turtle conservation, Community involvement, Eco-Tourism, Home stay, Sustainable Development.*

1 Introduction:

Tourism is seen as a major industry contributing towards economic growth.

Tourism is included in the Sustainable Development Goals in Goals 8, 12 and 14, for its capacity to contribute to inclusive and sustainable economic growth, Sustainable Consumption and Production (SCP) and the sustainable use of oceans and marine resources. Eco-tourism was defined by Ceballos-Lascurain as "Environmentally responsible, enlightening travel and visitation to relatively undisturbed natural areas in order to enjoy and appreciate nature (and any accompanying cultural features both the past and present) that promotes conservation, has low visitor impact, and provides for the beneficially active socio-economic involvement of local populations"¹.

According to this definition eco-tourism activity should benefit the local community and locals should be part of it. Presently there is a lot of upsurge for the promotion of eco-tourism in developing countries. There are lots of tourists attracted to the remote areas which do not come under the purview of development. Development in the name of promoting tourism by providing water sports, beach tourism endangering

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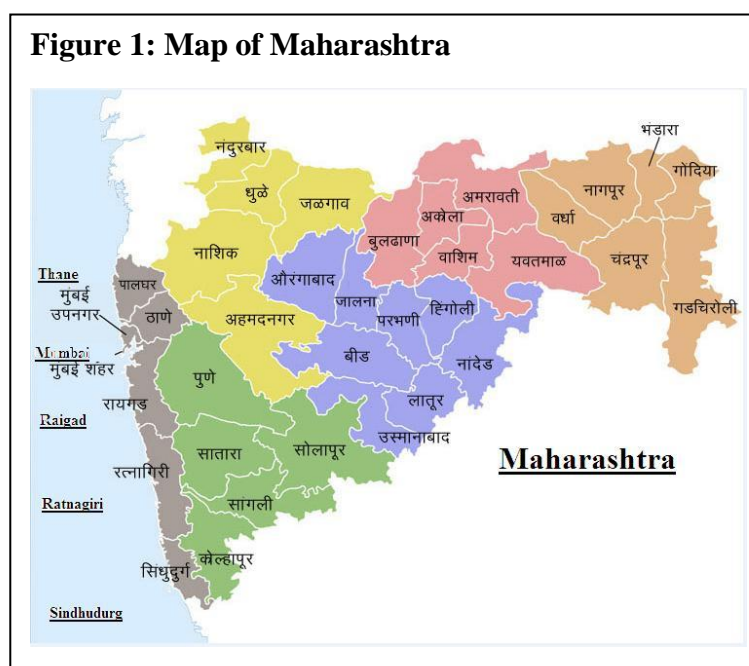
Nandan Nawn and Joy Elamon, eds., 2018, *Sustainability, Institutions, Incentives: Voices, Policies, and Commitments: Conference Proceedings*, Indian Society for Ecological Economics, Delhi

¹ Scheyvens, "Ecotourism and the Empowerment of Local Communities."

marine species, dolphin rides, snorkeling etc are at stake. Local communities are not connected to the tourism activities and are unaware of the repercussions on the environment. Ecotourism ventures should only be considered “Successful” if local communities have some measure of control and equitable share of benefits².

2 Literature Review

In early 1970’s, following a survey of the Orissa coast and the report that Gahirmatha might be the “World’s largest Sea Turtle Rookery”, Sea turtles were brought into the conservation agenda of the Government of India (GOI).



In spite of the legal protection offered in the Act of 1972, large scale mortality of breeding adults along the Indian coastline continued to be a major concern, and numerous publications emphasized the need to initiate a project for the conservation of sea turtles in India. Followed by Northern Indian Ocean Sea Turtle Workshop in Bhubaneshwar in January

1997, Ministry of Environment and Forest (MOEF) developed India’s sea turtle conservation agenda and the ministry launched Project Sea Turtle at National level in 1999³.

According to the survey reports⁴ along the five coastal districts of Maharashtra (see Figure 1) there were reports from 60 localities confirming the nesting of Olive Ridley, Green Turtles, Leatherbacks, and hawksbills (see Table 1). According to the survey, Goa has a record of three species of sea turtles namely, Olive Ridley, Leatherback, and Green Turtles⁵.

Recent records indicate the nesting of only Olive Ridley Occurrences of Olive Ridley, Green Turtles and Leatherbacks were reported in 19 localities in Goa (see Table 1).

In view of the decline of sea turtle population; a survey was conducted in March 2000-March 2001 along the coast of Maharashtra and Goa revealed that there is lack of literature on the Social and ecological interactions with respect to turtle nesting sites⁶. Sea turtles face a variety of threats and it varies geographically. The overall

² Scheyvens.

³ Shanker and Choudhury, *Marine Turtles of the Indian Subcontinent*.

⁴ Giri and Chaturvedi, “Status of Marine Turtles in Maharashtra, India.”

⁵ Giri and Chaturvedi.

⁶ Giri and Chaturvedi.

impact of threats on these populations is unknown due to lack of information making it difficult in designing effective sea turtle conservation policy ⁷.

Table 1: Records of nesting of sea turtles in Goa and Maharashtra

District	Locality	Species	Poaching
Maharashtra			
Thane	Bordi, Gholvad, Dahanu, Chinchner, Shirgaon, Arnala, Vasai	Olive Ridley	No
Mumbai	Manori, Gorai, Versova, Worli, Vashi Creek	Olive Ridley, Green Turtle	No
Raigad	Mandve, Kihim, Nagaon, Revdanda, Korlai, kashid, Nandgaon, Hareshwar	Olive Ridley, Leatherback	Yes
Ratnagiri	Ade, Anjarla, Harne, Burondi, Dabhol, Guhagar, velneshwar, Hedavi, Sakhareagar, Nandivade, Sandkhol, Nevare, Varavade, Ganapatipule, Ratnagiri, Gavkhadi, Poorngad, Vetye, Ambolgad, Vijaydurg, Devgad	Olive Ridley, Green Turtle	Yes
Sindhudurg	Kunakeshwar, Achara, Vayangani, Tondavali, Talashil, Kolamb, Malwan, Tarkarli, Neevati, Khavane, Kelus, Mochemad, Shiroda-Aravali, Shiroda-Kerwada, Redi	Olive Ridley, Green Turtle, Leatherback	Yes
Goa			
North Goa	Morjim, Kerim, Panaji, Calangute, harmal, Ashvem, Kegdeveler, Anjunem, Siridao, Arambol, Agonda.	Olive Ridley, Leatherback	Yes
South Goa	Galgibag, Malim, Polem, Bogmalo, Utorda, Arrorim, Betul, Talpona	Olive Ridley	Yes

Source: Giri and Chaturvedi, “Status of Marine Turtles in Maharashtra, India.”

Figure 2: Map of Goa Beaches



The present paper aims to fill this gap in the literature by documenting the socio-economic status, and awareness about turtle nesting and conservation in Goa and Maharashtra.

According to Coastal Regulation Zone (CRZ) 2011, in Goa, the four beaches namely Mandrem, Morjim, Galgibag and Agonda has been designated as turtle nesting sites and protected under the Wildlife Protection Act, 1972. In Maharashtra, Sahyadri Nisarga Mitra (SNM) an Non-Governmental Organization (NGO) based in Chiplun, Maharashtra.

This paper presents the findings based on the survey conducted in Goa and Velas, Maharashtra to document the turtle conservation techniques and local community

⁷ Campbell, “Local Conservation Practice and Global Discourse.”

involvement. The turtle nesting period is from October to March every year which coincides with the tourist season in Goa and Maharashtra.

3 Study Area

3.1 About Goa

Goa is situated on the west coast of India. Goa has a coastline of 105 kms long and the Arabian Sea is situated on the west. The state is divided into two districts North Goa and South Goa and further divided into twelve talukas for administrative purposes. Our study was located in two talukas namely Pernem in North Goa and Canacona in South Goa. Goa is a world famous beach tourism destination with 29 listed beaches (See Figure 2).

Tourism industry in Goa is designing policies and plans to promote eco-tourism where community's involvement is lacking. Goa hosts domestic as well as international tourists from the world over. Initially, Tourists in Goa preferred to stay in the local houses but the trend has changed in past few years. Along the coastal belt, there have been a lot of activities of infrastructure development taking place without paying attention to the environmental concerns. Though Goa's tourism activities focus on beach tourism, not much attention is paid to explore unexplored areas where eco-tourism activities could be taken up by involving local community.

Sea turtle conservation efforts were initiated in Goa at Morjim in 1997. A retired army officer Captain Gerald Fernandes initiated the sea turtle conservation movement with the help of the local villagers in Morjim. The turtle conservation movement at Galgibag was initiated by local priest Father Mariano Gomes by involving local people and students in 1999.

3.2 About Velas, Maharashtra

The coastline of Maharashtra covers about 720 kms, the second largest coastline on the western side of India with five coastal districts –Sindhudurg, Ratnagiri, Raigad, Thane and the urban area of Mumbai. Velas, is a tiny village on the northernmost boundary of Ratnagiri district, Mandangad taluka in Maharashtra. SNM founder Bhau Katdare along with locals started turtle conservation at Velas since 2002. SNM started a Turtle Festival in Velas in 2006. In order to host the tourists during Turtle Festival, SNM encouraged villagers to start a Velas Home stay network. SNM has been monitoring turtle nesting since 2002 in 39 locations across 4 districts of Maharashtra with the exception of Mumbai.

Velas is 224 km from Mumbai and 200 km from Pune. Velas is well-connected with the road with public transport service. This village has a population of approximately 1145, living in 428 houses as per the local Village Panchayat. Velas is new emerging tourist destination on the coast of Maharashtra, known for hosting turtle festival.

From the time turtle conservation was initiated in this village, it has been known as a tourist destination. A lot of tourists started visiting this village to witness turtle hatchlings. SNM started 'Home Stay' to host metro tourists at Velas in 2006 as a part of 'Turtle Festival'. As a part of the conservation program, a "Turtle Festival" is organized annually by this village thereby attracting tourists to witness the turtle hatchlings. To ensure sustainability of the project, SNM helped locals to form

‘*Kaasav Mitra Mandal*’ (Turtle Friends) to manage the turtle conservation program as well as for providing ‘Home Stay’. One of the unique things about Velas village is that there are no hotels here. The only accommodation available here is in the form of Home stay (Home stay means where a tourist is provided lodging and boarding facility with home cooked food in the homely environment. The accommodation consists of a simple, homely dormitory style, *sataranjis* (Carpets) are provided in the event of the shortage of mattresses).

In this paper we are presenting the findings of state ‘Goa’ which is looked upon for tourism i.e. which is promoted for providing 365 days tourist destination and on the other hand we have a small village from Maharashtra which is undisturbed natural remote area which is recently known widely for the turtle conservation activities and visited by environmentalist, nature lovers and tourist who wants to be away from city life in search of peace of mind and fun.

4 Objective

The three main objectives of this paper are: firstly, to study the turtle conservation program followed in two states i.e. Goa and Maharashtra. Secondly, to study the community led turtle conservation program and Home stay model and thirdly, to study the impact of the Home stay model on local community while promoting turtle conservation.

5 Methodology:

The study is based on the primary data collection and field observations. The field interviews were carried out with tourists, selected households, NGO's working in turtle conservation in Goa and Maharashtra except for Home stay provider survey which was conducted only in Velas, Maharashtra. All the Homestay providers in Velas who were involved in providing Homestay facilities were selected by using purposive sampling method. The list of Homestay providers was obtained from Velas village panchayat and local NGO, Kaasav Mitra Mandal(KMM).

In total there were 21 Homestay providers involved in providing homestay facilities during the study period from January 2015 to May 2015. The questionnaire was designed to collect data on various aspects of home stay conditions. The survey of Homestay providers was conducted in order to get an insight into their role in tourism promotion, turtle conservation, to assess the gains from providing Home stay as perceived by the homestay providers. Interviews were carried out by field researchers from velas village who were trained to administer the study questionnaire. All 21 Home stay providers were interviewed using face-to-face interview method in Velas. Consent was obtained from the local NGO, KMM which is managing the Home Stay Providers network, as well as individual providers consent, was obtained before the interview. Interviews lasted from 20 to 30 minutes and administered in local language Marathi.

6 Field Observations:

6.1 Goa: The Wildlife Division of the Forest Department has been instrumental in Turtle conservation in Goa since 1997. It maintains an enclosure in the nesting sites in Goa and has established base offices on nesting sites except at Mandrem. The turtle guards and volunteers monitor the nesting on these beaches through the base office on each beach except at Mandrem where we did not notice a base office. In Goa, as part of the turtle nest management strategy, few nests were conserved at the place where the eggs were originally laid by the turtle whereas in many other instances the eggs were transferred to a location near the Forest Department base office. A special pit was created and eggs were kept in the same order as they were laid. An enclosure was created by surrounding the pit with a strong net to protect the pits from stray animals or visitors. Each individual nest was identified with date and the number of the nest as per the day on which that particular nesting had taken place. The hatching would normally take place late at night. There was not much awareness and promotion of turtle nesting sites or hatchling taking place in Goa among tourists. The conflict between the tourism industry and the environmentalist arises in Goa as turtle conservation is seen as negative factor and hindrance to tourism (See Figure 3). The Shack Policy of Goa takes cognizance of the Coastal Regulation Zone (CRZ) notification and it states:

“As far as turtle nesting beaches identified as such, by the Forest Department/Wildlife unit/ Competent Authority are concerned, the following conditions shall apply:

The precise location of the shacks on Morjim and Mandrem beaches shall be fixed in consultation with Forest Department who may identify the turtle nesting sites.

The allottee shall not allow the following after sunset and sunrise (i.e. after 6.00 p.m. till the sunrise on the next day).

- a) The operation of beach shack & related activities like placing of deck beds.
- b) Artificial lighting.
- c) Playing of loud music.
- d) Display of fireworks as these can have an adverse effect on the turtle nesting.

The Shack allottee shall inform any incidents of nesting, and shall actively co-operate with the protection staff, in the protection of turtle, turtle nesting site, turtle eggs hatching etc.”

Source: GoG, “Tourism Policy for Erection of Temporary Seasonal Structures, Beach Shacks, Huts and Others 2013-16”.

Figure 3 Beach Beds on the Morjim Beach



6.2 Velas, Maharashtra

In Velas, the local community through collective action took up the task of turtle conservation with the help of an NGO in 2002. As a part of turtle conservation hatchery is built and all the nests are protected ex-situ with the date of nesting and the details are documented. Since 2006, every year, in Velas, they announce

turtle festival estimating the time of hatching so that tourists can see the turtle hatchlings being released (See Figure 4). The turtle festival dates are announced on the following NGO website: - www.snmcpn.org/marine-turtles/turtle-festival. This website is created and maintained by SNM and is also linked to KMM website. The website provides information on turtle festival as well as details of Home stay providers in the Velas village with contact numbers. Since 2011, SNM has handed over the responsibility of turtle conservation to the local panchayat and KMM local NGO based in Velas.

Apart from visiting the hatchery the tourist also visited Baankot Fort, Durga Devi temple, etc in the village. Tourists also do bird watching and see the other conservation activities which are carried out by the NGO’s in this area. A film show on the turtle conservation and other conservation activities is organized for the tourists in the evening.

7 Results:

The findings of the Home stay survey carried out in Velas, Maharashtra is given below.

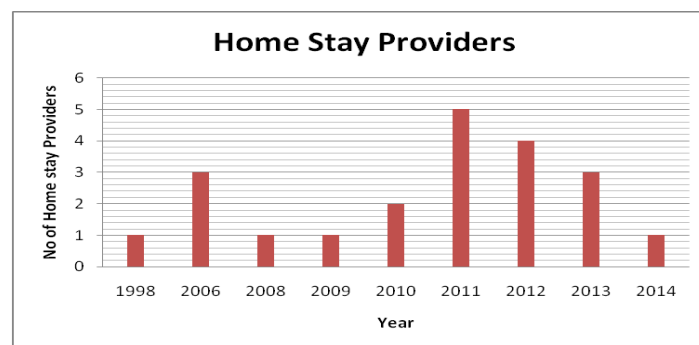
7.1 Socio-demographic profile of Homestay providers

57% of the Homestay providers were between the age-group of 21 to 40 years, 38% were between 41 to 60 years of age, and only 5% of the Home stay providers were above 60 years who were involved in providing home stay facilities. 52% of the respondents were males and 48% were females. 67% of the respondents said that the house in which home stay is provided was

Figure 4: Tourist watching single Hatchling being released



Figure 5: Number of Home Stay providers



Source: Authors calculation based on primary data

self-owned by them and 23% of the home stay providers reported that house was family owned. 33% of the Home stay providers have completed education up to middle school, 38% of the respondents have completed secondary school, 19% have

attained education up to graduation who are involved in providing home stay facilities to tourist.

67% of the home stay providers owned at least one vehicle i.e either two wheelers or four wheeler. Only 5% of the vehicle owners said that they rent out their vehicle either to their fellow villagers or tourists. More than half (57%) of the home stay providers said that their main occupation is agriculture and 10% of them said their main occupation is providing Home stay facilities. Almost 95% of the respondents said their secondary occupation is providing home stay and 5% said providing only food for tourist who visits the village. 76% of the home stay providers are involved in Agriculture and 75% of them own an agriculture land from half an acre to 5 acres of land. 7% of them own about 10 acres of 15 acres of agricultural land.

7.2 History of Home stay providers

Home stay service was provided by a single individual from the village in 1998 as there were no hotels. But in 2006, as turtle festival was hosted that specific year there were 3 more villagers joined the list for providing Home stay facilities but gradually over the years, other fellow villagers joined in for providing home stay facility. In the year 2011, many villagers decided to start home stay facilities in their homes (see Figure 5). In total, during the study period, there were 21 Home stay providers involved in providing home stay facilities in Velas village.

7.3 Monetary Gains from Home stay

Income earned through the provision of Home stay services has contributed to their annual income. 81% of the home stay providers said that 25% of their annual income is earned by providing home stay facilities. 19% said that almost 26% to 50% of their annual income is earned by providing home stay. We can notice that local community who are involved in home stay services are benefiting economically and income generated is helping them in meeting their household expenditure.

7.4 Administrative Requirements to start Home stay

In order to start providing home stay facilities, all the Home stay providers said they required to obtain the permission. 90% of the home stay providers obtained permission from local village panchayat, 5% said they obtained permission from tourism department and 5% said they obtained permission from local NGO. So among all the home stay providers, 14% said that besides obtaining permission from specified agencies/ local bodies, they had to also obtain permission from Maharashtra Tourism Department Corporation (MTDC) and Licence from Food and drugs department. This was specific in the case of households who were also involved in selling home made consumable products. 14% of the respondents felt that obtaining permission from these departments was the difficult task as it involved a lot of documentation.

To assess the accommodation facilities provided with available infrastructure by the home stay providers questions were asked on a number of rooms in their house and how many were utilized for home stay services. In all the cases almost all the Home stay providers said that full house was accessed and utilized by the tourists, tourists could use any part of the house. The tourist were allowed to use also the accessories in these houses like the washing machine, television, refrigerator etc. creating a homely environment. 14% of the Home stay providers also provided additional

services like wifi facility considering the needs of the young generation, 38% would cater to the needs of tourists by serving preferred food. 19% of home stays also provide 24x7 hot water facility, inverter and emergency lighting facility, double bedding system as per requirement of the tourists. Some Home stay providers have made infrastructure changes like fixing solar panel for providing 24x 7 hot water availability for the bathing facility for tourists.

43% of the home stay providers have the facility of providing separate rooms for rent, besides they provide common room/dormitory style accommodation to the tourists. The tourist who prefer separate room facility, it is provided by very few Home stay providers on availability and the extra charges are charged for the separate room.

7.5 Changes made to existing houses to provide Home stay facilities

38% of the home stay providers have made the changes to their existing houses to meet the tourist needs. 95% of them had to make extra bedding arrangements in order to provide accommodation facilities in their homes. These arrangements are made by hiring extra mattresses etc. 19% of them have made changes by building additional toilet facility, 10% have made the provisions for drinking water facility, special tables for food serving, purchase of utensils for serving food, etc.

7.6 Livelihood/ source of income for fellow villagers

As there are no hotels or restaurants there is growing demand for catering services for providing food to the tourists who visit velas. Home stay providers along with accommodation also provide food to the tourists ie. breakfast, lunch, and dinner. If there are specific special demands from tourists additional amount is charged to the tourists. Since household has to host as well as provide food to the tourists there is demand for domestic help. Home stay providers hire local people to cook food and help in other household chores like cleaning the utensils, cleaning the surrounding, etc. 90% of the home stay providers said that they hire people mainly to cook food for the tourists. This implies that the home stay facilities have generated the source of local livelihood/ income for other villagers who cannot provide home stay facilities in their homes.

7.7 Management of booking and rates

The list of all the home stay providers is advertised on the NGO website with contact details through NGO and displayed in the village by putting details on posters/boards in front of the house and on the key locations in the village like on the bus stop. 90% of the home stay providers said that tourists contact through the phone for the booking which is provided on the website, and through NGO. Tourists who visit the site book the accommodation through the website or contact the SNM. The room charges are decided collectively by the village in a meeting as per the advice provided by NGO.

7.8 Length of stay of Tourists in Velas

The average number of days a single visitor stayed during the preceding year of the survey (April 2014 to March 2015) was 4 days and maximum 10 days in Velas.

7.9 Role of Home stay provider

Besides hosting the tourist in their houses, home stay providers sometimes accompany tourist to the beach during nesting period in order to show the way to the beach.

7.10 Other places of interest in Velas

The other attractions to the tourists who visit Velas for watching the turtle hatchlings include bird watching, visit to Baankot fort, durgadevi temple, village tour is organized and film show is organized in the evening on conservation films.

7.11 Involvement in Turtle conservation

Almost 95% of the home stay providers have visited the turtle nesting grounds and Velas was rated as the most popular nesting grounds among others in Maharashtra.

7.12 Beach Management

95% of the home stay providers felt that beach should be reserved only for turtle conservation. All the home stay providers were of the opinion that only traditional fishing should be allowed on the beach, the beach should be kept clean so that there are no threats of stray dogs to turtles, there should be no lighting on the beach in the night. All the Home stay providers felt that there should be turtle guards appointed to guard the beach.

7.13 Benefits of Turtle conservation

All the home stay providers felt that they have benefitted from the turtle nesting ground and turtle conservation carried out in their village. The network of home stay providers felt that tourist inflow has increased which has resulted in improvement in the standard of living of the villagers. Turtle nesting ground has brought good luck to the villagers as well as helped in students education in Velas. Tourists have donated money for educational activities in the village like providing library books for school. Some of the home stay providers felt they have got sustainable livelihood as a result of turtle conservation. All the home stay providers said that turtle conservation practices have impacted their business positively and it has created a positive impact in their lives.

7.14 Involvement of community in Conservation

Home stay facilities at Velas was purely community initiative initially with no government backing. Community was actively involved in conservation activity, most of them are members of the community group and some of them have become members of an NGO. As a community, the home stay providers contributes 10% of their income earned by providing home stay for the purpose of turtle conservation so that the program continues.

7.15 Authorities responsible for turtle conservation

All the home stay providers said that NGO's can efficiently take the responsibility of turtle conservation program in their village while few of them also said that Forest and wildlife department and local panchayat can also carry out the task of conservation efficiently.

7.16 Reasons interested in turtle conservation

Most of the home stay providers were interested in conservation as they wanted to carry out nature conservation; some of them were interested as it has provided an

opportunity for earning income, and due to religious reasons. Some of them were concerned about future generations and growing business opportunities as a result of turtle conservation.

7.17 Responses to Willingness to Pay Entry fee

Below are the findings from the responses based on tourist survey in which we attempted to find out the willing to pay entry fee from tourists who visit the nesting beaches.

7.17.1 Goa: At the end of the interview the tourist were asked a question on willingness to pay (WTP) an entry fee to watch the turtle hatchling. “In order to watch the turtle hatchling at nesting site will you be willing to pay Rs.20 as an entry fee?” This was in the nature of a single bid auction. The bid amounts of Rs.20, Rs.40 and Rs.60 which were randomly assigned in the questionnaire. We present below the responses. In total 223 tourists were interviewed in Goa on four nesting sites. In the random assignment, 76 (35%) of the tourists who were asked about entry fee of Rs.20, 72 (32%) were asked about Rs. 40 and 75(33%) were asked about Rs.60 (see Table 2).

Table 2: WTP Responses from tourists in Goa

Response	Rs.20	Rs.40	Rs.60	Total
Yes	57 (26%)	45 (20%)	41 (18%)	143 (64%)
No	19 (9%)	27 (12%)	34 (15%)	80 (36%)
Total	76 (35%)	72 (32%)	75 (33%)	223 (100%)

Note: Figures in parenthesis are percentage of total

When all the three bid categories were combined we found that 64% of the tourists were willing to pay some amount of entry fee to watch the turtle hatchling. This has implications for turtle nesting sites to be promoted as a tourist destination and could

generate the source of revenue to finance turtle conservation program in Goa.

7.17.2 Velas: In total 49 tourists were asked the question on willingness to pay the entry fee. 17 (36%) were asked if they would be willing to pay an entry fee of Rs.20, 16(32%) were asked about Rs. 40 and 16(32%) were asked about Rs.60 (see Table 3).

Table 3: WTP responses from tourists in Velas

Responses	Rs.20	Rs.40	Rs.60	Total
Yes	17 (36%)	9(18%)	6 (12%)	32(66%)
No	0 (0%)	7 (14%)	10 (20%)	17 (34%)
Total	17 (36%)	16(32%)	16 (32%)	49 (100%)

Note: Figures in parenthesis are percentage of total

When all three bid categories were combined we found that 66% of the tourists were willing to pay some amount of entry fee. This has implications for local government and community institutions in velas to generate as a source of revenue to

finance turtle conservation in Velas.

8. Discussion

Initially, in Goa there was community involvement in turtle conservation which did not go long way and presently, forest department is the sole authority managing turtle conservation program. If Goa is provided with an opportunity to start turtle conservation program by involving local community near nesting sites it could be included as additional tourist spots of interest to the tourist as we have learned from the Velas experience.

SNM had created awareness among villagers as to why turtle conservation is important and involved the local community in the turtle conservation. Villagers volunteered to monitor the nesting and protect the nests initially for no monetary gain. To motivate the villagers 'Turtle Friend' award was announced and was given every year for volunteers for working towards the conservation. Velas village is known as a tourist destination as a result of turtle conservation program.

Apart from attracting tourists to visit these beach nesting sites, the program has helped contribute to educational activities, provided business opportunities and livelihood to fellow villagers along the coast. As a part of the conservation program, a "Turtle Festival" is organized annually by this village thereby attracting tourists to witness the turtle hatchlings. SNM has instituted a *Kasav Mitra Puraskar* (Turtle Friend Award) for individuals and organizations that have done outstanding work in turtle conservation. This award constitutes cash prize, trophy, and certificate. This is met from the funds raised by the NGO.

Every year at the start of the season in October, the hatchery is built by the volunteers who were initially trained by SNM, are now been employed by the forest department in carrying out turtle conservation program in Velas. SNM and KMM have been able to get support from Forest Department in carrying out turtle conservation. Villagers providing home stay felt that they have benefitted from turtle nesting grounds, tourist inflow in the village has increased, turtle conservation has brought good luck to the village and has improved the standard of living of the villagers.

The collective action of providing Home stays and turtle conservation in Velas village has proved to be an effective model setting an example of sustainable management of economic resources by promoting eco-tourism. The Home stay network seems to be successful and it could serve as a model to other nesting villages to promote eco-tourism as well as generate livelihood for the local population. Goa has an advantage as it is already known as a tourist destination and visited by domestic as well as international tourist. If the Velas model of turtle conservation is followed after considering the local scenario, it would serve beneficial to the local community residing near nesting sites. Presently, locals feel that due to CRZ regulations and as turtle are protected species they are not benefitting from tourism activities. There are restrictions on tourism activities carried out on the nesting beaches. Goa can also host the turtle festival and set up information centers on all nesting sites. This initiative will attract additional tourist who are nature lovers and can generate local employment in the villages.

Our results are very similar to the findings of ⁸ in Sri Lanka. His Contingent Valuation study found that 63% of the tourists visiting the Rekawa sanctuary would be willing to pay an entrance fee to support turtle conservation and improved visitor facilities at the sanctuary. A cross-country study in ASEAN region found that citizens are willing to accept a small cess on electricity bills for marine turtle conservation which could be a major vehicle for financing conservation ⁹.

Both in Goa and Velas, if the entry fee is implemented in the beaches where turtle nesting takes place, the amount raised through entrance charges could be utilized towards turtle conservation and helping local communities as well as providing services to the tourists.

9. Implications for the public policy:

Based on the study findings following are the implications for public policy. A beach entry fee for tourists could be considered for the beaches which are declared as turtle nesting grounds and conservation sites. This would help earn revenue for conservation. As lights and sound are considered bad especially for turtle conservation activities, therefore, the movement of vehicles (lifeguard) on beaches near nesting sites (in Goa) should be restricted till an evaluation of its impact on the nests is undertaken. There should be specific studies to be conducted on nesting beaches to promote turtle conservation. Stray dogs which are attracted by unscientific garbage disposal by beachside eating places need to be managed properly so that attack on nests by dogs and cows is minimized.

The effectiveness of the turtle conservation strategy of moving eggs and conserving them ex-situ needs to be evaluated as this seems to be a dominant practice in Goa. The ex-situ conservation needs to be done following scientific methodology so that rate of hatching is maximized. Community involvement in conservation is an important tool for sustainability. The extent of tourism needs to be decided in consensus with the local community so that rules are self-enforcing and not seen as hindrances in carrying out tourism activities. The Velas experiment with Home stays in turtle nesting villages could be considered for other parts of India (including Goa). This may be a more sustainable model to resolve tourism and conservation issues.

10. Conclusion:

The turtle conservation program in Velas has shown evidence that tourism and conservation can go hand in hand and can serve as a pathway towards sustainable development. With the sole motto of promoting tourism activities, a lot of developmental activities are taken up along the coastal areas by posing threat to the marine species and exploiting natural resources which will create bottlenecks and hindrances for future growth in tourism. Though Goa is known for its beaches and known as tourist destination, there are a lot of learnings which could be learned from Velas turtle conservation program and ways of involving locals in the management of resources affecting their livelihoods.

⁸ Rathnayake, “Turtle Watching.”

⁹ Nabangchang-Srisawalak et al., “Mobilizing Resources for Marine Turtle Conservation in Asia.”

Eco-tourism will prove to be beneficial if the local community is involved and benefits socially and economically from the activities. The tourism department should also be part of the environmental conservation program and promote eco-tourism protecting the natural habitats and natural resources of the area.

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