

A pilot study on the awareness and enthusiasm in gaining knowledge on mangroves among the modern educated community

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Abstract: In Kerala state the mangroves exist in seven districts such as Trivandrum, Kollam, Ernakulam, Thirur, Kozhikode, Cannanore and Kasargod and the mangroves provide various services to mankind. Earlier the mangroves are considered as waste forest lands but now people and the Government realised the importance of the mangroves. The Kerala State has achieved 100 % literacy and all the news papers in the state are claiming enormous circulation among the public. The usage of social media and the modern electronic facilities etc by the youngsters and the others in Kerala are increasing day by day. The first author has taken an attempt to study the extend of mangrove awareness among the various groups of public and to what extend the dailies' knowledge is promoting information on the mangroves, the availability of research publication on the mangroves. This study also projects whether training programme and awareness programmes on the mangroves has to be initiated and encouraged in the state for future development of mangrove resources.

Key Words: Mangrove, sociology, survey, social media, news paper, publications, awareness

Introduction

In India 80 % of the mangroves are found in West Bengal (Sunderbans) and Andaman & Nicobar Islands and the rest of the 20 % of the mangroves are found in the coastal states as scattered patches of mangrove growth. As such the mangroves exists in the maritime states such as Kerala, Karnataka, Tamilnadu, Andhrapradesh, Orissa, West Bengal, Gujarat, Maharashtra, Goa and Andaman & Nicobar Islands. As stated above in Kerala state, the mangroves exist in seven districts such as Trivandrum, Kollam, Ernakulam, Thirur, Kozhikode, Cannanore and Kasargod. Unlike other vegetation; the mangroves are special type of vegetation or forests with unique features like salt tolerance, negatively geotropic roots, viviparous germination etc and they occur in the intertidal regions with diverse group of flora and fauna. It is also important that the mangrove forests protects the coastal land from soil erosion by binding the sand beds with strong prop root and the complicated root network system. It also protects the land from tsunami waves, tidal action and decreases the wind velocity etc. Mangroves are with wide range of biodiversity of flora and fauna. Even though the mangrove provide wide range of services to mankind, earlier mangroves are considered as waste lands, the area is utilized for dumping wastes and thereby forms the dwelling place of mosquitoes, rats, snakes etc which cause diseases to human beings and people are not much aware of the importance of mangroves.

Kerala state is having hundred percentage literacy and the majority of the people are educated. However only people realised the importance of the mangroves and started protecting them. The Government is also encouraging mangrove protection and promotes afforestation of mangrove in some of the pockets. In the present paper an attempt is made to study and provide an awareness and knowledge of mangroves among the public sothat it will also help to spread mangrove forest along the coastal area so that it will help to prevent soil erosion, development of new mangrove forests and also promote tourism in the state.

Literature review

The literature review reveals that the studies related to mangroves focus on biodiversity, ecology, environmental studies, chemical studies, genetics, tissue culture and mangrove - propagation studies, Microbial interaction, pollution, fisheries associated with mangroves, taxonomic studies, socioeconomic and management studies, water and sediment studies and fauna like insects, reptiles and benthic organism etc. But only a very little studies are conducted on the mangrove awareness among the public and hence this paper is presented.

Some of the earlier studies on Indian mangroves are by Blasco (1975), Chapman (1976), Tomlinson (1986), Ramachandran and Mohanan (1991), Kathiresan (1998) and Jayasurya (2005, 2009, 2010, 2013).

Nfotabong-Atheull et al (2011) conducted a survey on the local people's knowledge on mangroves, utilization of mangrove resources etc at Central Africa. The household survey conducted by Biswas et al (2010) in India shows the relationship between gender, education status etc with the livelihoods. In a study through door-to-door household survey among the coastal communities in the mangrove fringes in the Indian Sunderbans states Das and Mandal concludes that the forest dependent groups depends on the mangrove resources for their livelihood. In Kerala, the investigations on the awareness of the various aspects of the mangroves among the diverse group are not much compared with other regions.

Material and method

Questionnaire was prepared and survey was conducted from 2012 onwards on a random sampling basis covering a total number of 400 individuals. The data are collected from school and college students, school and college teachers as well as professors, Teacher educational centers, research scholars and various professionals etc. Apart from that, personal interviews are conducted among the professionals, scholars and others wherever possible.

Results

The study reveals that 45% of the respondents are male and 55% are of female population Fig. 1. In the study also shows that 50% of the respondents are between the age group of 10 to 20 years; 31% are between 21-30 years, 8% are between 31 to 40 years, 6% are between 41 to 50 years and 4% of the respondents are between 51 to 60 years, but 1% of this respondent did not disclosed their age. As far as individuals having their own email ID, Fig. 2 shows that 48% of individuals did not responded to the query on email ID; but 38% of the individuals is having e-mail ID and 14% are without any email ID.

Table 1. reveals the personal identity of the different categories of the respondents such as, 46% belongs to college students, 37% belongs to school students (upto Standard X), 6% belongs to higher secondary teacher, 4% belong to school teachers (upto Standard X), 3% belongs to other groups and 1% is represented by B.Ed. centre Teacher, M.Ed. centre teacher, College teacher (life science) and unemployed. As far as the educational qualification is concerned, table 2. shows that 34% of the respondents educational qualification is below S.S.L.C., 12% is having Post graduation (M.Sc./ MA) and B.Ed., 10% of the respondents is having science degree, 8% of the respondents have plus two science qualification, 7% of the respondents is having science post graduate degree / Bachelor of Science degree with B.Ed. The respondents having plus two humanities degree / Post graduate (M.Sc./MA/M. Com) with M.Ed is represented by 5%. The 4% of the respondents acquired humanities degree. Humanities Post Graduate degree is acquired by 3% of the respondents. 2% of the respondents are having MCA degree and the Ph.D. degree is acquired by 2% respondents. 1% of the respondents is having M.Phil. (Science) educational qualification.

Since the field of specialization of the individual also is important, this aspect also is taken into consideration. The study reveals that the field of specialization of the respondents are Mathematics, Social Science, Physics, Chemistry, Botany, Zoology, History, Commerce, Economics, Finance and languages like English, Tamil, Malayalam, Hindi and literature, Education, Educational Psychology, Educational Technology and Science Education, Entomology, Genetics and Plant breeding, Microbiology, Natural Science, teaching, Achievement motivation, Computer Science etc. However the study also reveals that except a few individuals; inspite of the wide knowledge of the various respondents no papers on mangroves are published by majority of respondents in any journals / Seminars or symposia. But the study shows that 4% of the individuals published papers in national seminar / symposia, 2% of the individuals published papers in international seminar / Symposia / popular articles. 1% of the individuals published papers in international journals / national journals. 90% of the individuals are not having any published papers in their subject.

Regarding the participation in any training programme on mangrove studies; Fig. 3. shows that 85% of the individuals have not undergone any general training programme and only 13% of the individuals undergone general training programme. 2% of the individuals were not responded to the query. While considering the number of general training programmes attended by the individuals, Fig. 4. shows that 11% of the individuals had attended 1 to 10 numbers of training programmes, but both 21 to 30 numbers and 31 to 40 numbers of training programmes attended are responded by 1% of individuals respectively..

The details of the various training programme attended by the respondents includes orientation training programme, Education and teaching training programme, x-seed training programme, management training program quality improvement programme, in-service training programme, personality development, training, teachers empowerment programme, computer training, teachers empowerment programme, computer training environment education – curriculum construction, curriculum in school etc. It is also seen that majority (87%) of the individuals have not attended any training programs. The study also shows that no individuals have attended any specific mangrove training programmes other than the general environment based studies.

The influence of the media is also studied. Fig. 5 shows that 57% of the respondents are using social media and 33% are not using any social media. But 10% of the respondents were not responded to the query. Fig. 6 reveals that 46% of the respondents were using Whatsapp, 38% were using facebook, 12% were using you tube, 3% were using other social media such as blogs, skype, IMO, Woot, etc and 1% were using twitter. No respondents were represented to friendster and snap chat. The study also shows that 10% of the individuals have noticed article / photos related to mangrove in social media but 79% were not noticed any article or photos related to mangrove in any social media. 11% of the individuals were not responded to the query.

Further details show that 18% of the individuals have gone through articles / Photos related to mangrove in leading news papers such as The Hindu, Malayala Manorama, Mathrubhoomi, Deshabimani, Madhyamam and Kerala Kaumudi. 39% of the individuals have not noticed any articles or photo related to mangrove in any leading news paper but 43% of the individuals were not responded to the query. In this study shows that 53% of the individuals heard of mangrove from various sources and 39% were not. 8% of the individuals were not responded to the query. As far as the various sources from where information on mangroves are collected shows that out of 53% of individuals 30% studied through books, 19% through magazine, 17% through television news; 10% through daily, 9% through Discovery channel and film, 4% through other sources such as photograph, study tour and mangrove visit. 2% of the individuals had knowledge about mangrove through pamphlets.

Conclusion

The study reveals that all the respondents are familiar with the modern electronic gadgets and they are using them for gathering information in which more than 50% of the respondents are using the social media but notime is utilized for mangrove information. Even though majority of the respondents read different newspapers, the space allotted in all the newspapers for the mangroves is negligible. In a maritime state like Kerala which is having mangroves in almost all the bar mouth areas, the in-depth research on mangroves is negligible.

To promote awareness on mangroves we must encourage studies through seminars, conferences etc on mangroves, their importance, and the contributions by the mangrove ecosystem to our community etc and also through the modern electronic media. Frequent awareness classes on the mangroves must be conducted by the mangrove experts for the students, planners as well as te general public for developing this new resource.

Wong (2006) reports that, for the local participation in protecting the natural resources the first step is to provide awareness to the local community. Rahman and Asmawi (2016) in their study states that public awareness on mangrove forest is very meagre and they are not aware that mangrove areas are decreasing due to human interventions. This study also agrees with the findings of Wong (2006) and Rahman and Asmawi (2016). The Government of India and the State Government should evolve new approaches to promote the development of mangrove forests wherever possible and must provide sufficient funds and facilities to the mangrove experts and planners. This will help to increase the mangrove forest resources, new employment generation, prevent of soil erosion as well as to promote tourism and wildlife studies.

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References

- [1] Blasco F. 1975 The mangroves of India. Institute Francais De Pondicherry Travaux de la Section Scientifique Technique. 14:1 pp.175.
- [2] Chapman V. J. 1976 Mangrove Vegetation. J. Cramer, Vaduz.
- [3] Tomlinson, P.B., 1986 The Botany of Mangroves, Cambridge University Press, Cambridge, UK.
- [4] Ramachandran.K.K. and Mohanan C.N. (1991) The mangrove Ecosystems of Kerala-its mapping, inventory and some environmental aspects Trivandrum: Centre for Earth Science Studies pp 58.
- [6] Kathiresan K 1998 Distribution and status of mangroves in India Seshaiyana 6 : 2 pp. 8-9.
- [7] Jayasurya P.K. 2005. Kerala mangroves: Its conservation and future scope on coastal protection, resource generation and ecotourism. In *Mangroves and Coastal Ecosystems*, 15th Swadeshi Science Congress, 5-7 November 2005, Swadeshi Science Movement, Kerala and Govt. Brennen College, Thalassery (Best Scientific Paper Award Winning paper in 2005).
- [8] Jayasurya P.K. 2007. Global warming – the severe threat to mangrove ecosystems in future. *Science India* 10:8 & 9 pp 37 – 41.
- [9] Jayasurya P.K. 2009. Conservation of mangroves for environmental balancing – Unite to combat climate change. *India Forward* 1:10 August 2009 pp 15-17.
- [10] Jayasurya P.K. 2010. Conserve Mangroves: The reamedy to protect from Natural calamities and global warming . In international conference on Global Warming Climate change , sustainable developmentand secular spirituality, Santhigiri Research Foundation, UNESCO and Amerian Centre, 09 -11 September 2010, Santhigiri Ashram, Thiruvananthapuram.
- [11] Jayasurya P.K., George J.P and Anandarajan 2013. Comparison of heavy metal such as lead, cadmium, zinc and copper concentration in the sediment from the seaside, mangrove and river side at Chetuva region, Thrissur district, Kerala, India, *Indian Hydrobiology* 17 :2 156-162.
- [12] Nfotabong-Atheull, Din N., Koum L.G.E., Satyanarayana B., Koedam N and F. Dahdouh-Guebas 2011. Assessing forest products usage and local residents perception of environmental changes in peri-urban and rural Cameroon, Central Africa, *Journal of Ethnobiology and Ethnomedicine* 7:41.
- [13] Biswas M., Samal N.R., Roy P.K. and A Muzamdar 2010. Human Weland dependency and socioeconomic evaluation of wetland function through participatory approach in rural India. *Water Science and Engineering* 3 (4): 467-479.
- [14] Wong E. 2006. Public participation in environmental planning and the preparation process of local plans. Paper presented in the forth Sabah Sarawak Environmental Conservation.
- [15] Rahman M.A.A. and M.Z. Aswami 2016. Local residents awareness towards the issue of mangrove degradation in Kuala Selanger, Malaysia *Procedia-Social and Behavioral Sciences* 222: 659-667.

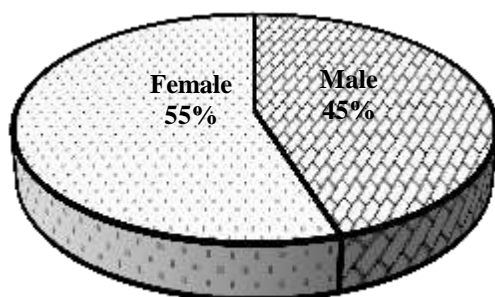


Figure 1 Sex ratio of respondents

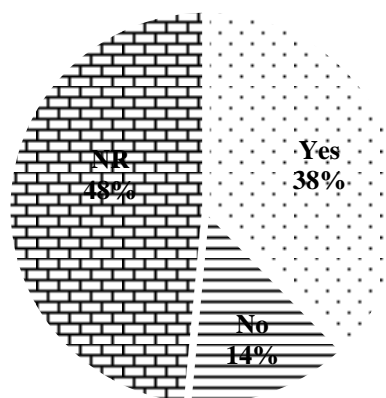


Figure 2 Individuals having e-mail ID

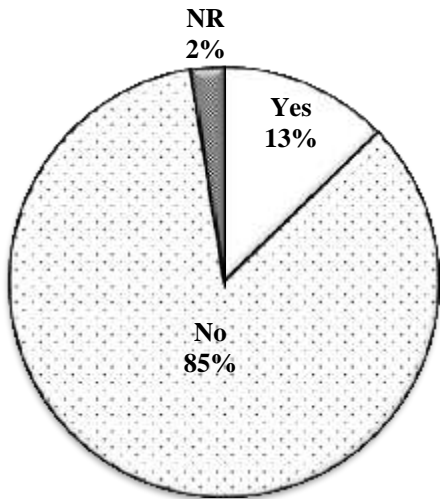


Figure 3 Percentage of respondents undergone general Training Programme

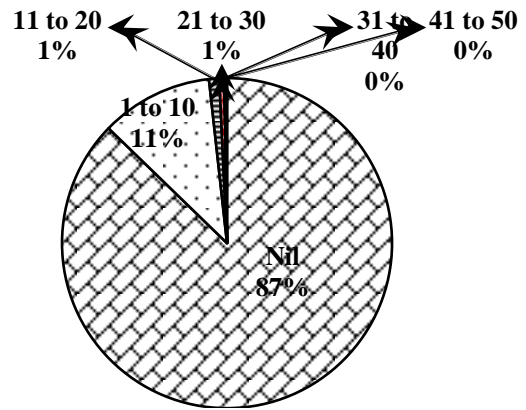


Figure 4 Percentage of individuals and number of general training programmes attended

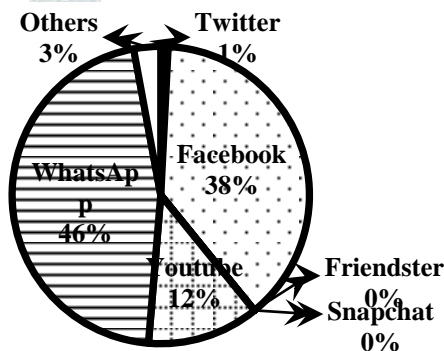
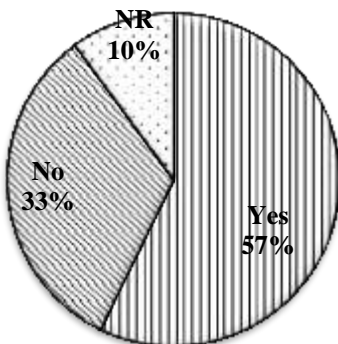


Figure 5 Individuals using Social media Figure 6 Percentage of different Social media used

Details of respondents	Percentage
Unemployed	1
School teacher (upto Std X)	4
Higher Secondary Teacher	6
B.Ed. Centre Teacher	1
M.Ed. Centre Teacher	1
College Teacher (Life Science)	1
College Teacher (Humanities)	0
School Student (upto Std X)	37
College Student	46
Others	3

Table 1. Different categories of respondents

Educational Qualification of respondents		Percentage
Below S S L C		34
S S L C (Secondary School Leaving Certificate)		0
Degree	Science	10
	Humanities	4
Post Graduation	Science	7
	Humanities	3
MPhil	Science	1
	Humanities	0
Degree + B.Ed.		7
Degree + M.Ed.		0
PG + B.Ed.		12
PG + M.Ed.		5
Ph.D.		2
Plus Two	Science	8
	Humanities	5
MCA		2

Table 2. Educational qualification of the respondents