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Recreation Value of Hara Biosphere Reserve using Willingness-to-pay method

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ABSTRACT: Hara Biosphere Reserve in southern Hormozgan province with 85686 hectares areas is located between Bandar Khamir and Queshm Island. This area can be considered as the most spectacular regions of Iran for a unique coastal Seascape. Mangrove forests and amazing biodiversity make this region as the most significant ecotourism areas throughout the country. This research attempts to determine recreation value of Mangrove forests and willingness of the tourists to pay for ecotourism areas using Contingent Valuation Method and dichotomous choice questionnaire. Socio-economic assessment of the study area was carried out through the analysis of the tourist-filled questionnaires in 2006 based on proper and logical time and place distribution. Logit model was used to determine the willingness of individuals, because the model's parameters are based on methods of Maximum likelihood. Results show that 81.2 % of the individuals are willing to pay for recreation value forms of Mangrove forests. The annual average Willingness-to-Pay for this region is us 5 per visit. Moreover, the annual economic value of Mangrove forests was estimated us 97.5/ acre which shows Existence values of these kinds of forests and also the necessity for planning to employ the recreation capabilities in the study area.

Key words: Economic valuation, Recreation value, Willingness to Pay (WTP), Contingent Valuation Method (CVM), Hara Biosphere Reserve

INTRODUCTION

Nowadays, the main environmental economy subject, which is almost publicly accepted, is the fact that the environment is inseparable from the economy and any changes in one may affect directly the other one. In other words, no economic decision is made without influencing the natural and artificial environment and no environmental change occurs without economic influence (Pearce and Turner, 1990; Costanza *et al.*, 1997; Hein *et al.*, 2006). Economic valuation can contribute positively to the formulation and evaluation of environmental policies. Environmental systems provide material and experiential benefits that contribute directly to human well being, and it is meaningful and important to quantify these benefits in understandable terms. Natural resource valuation is important for the following reasons: to give decision makers a succinct summary of environmental problems in their country, to provide a link between economic policies and environmental outcomes, and to adjust national accounts aggregates such as GDP (Costanza *et al.*, 1997; Vaze, 1998; Bishop, 1999). The total economic value of a natural resource like the forest is the sum of its direct, indirect, option, and existence values (Torras, 2000). The existence value originates from the utility that arises from the simple perception of the existence, even in the absence of an expected use (Walsh *et al.*, 1984; Brun, 2002).

Economic value is a measure to determine the maximum amount an individual is willing to

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forego in other goods and/or services in order to obtain some other goods and/or services (Arrow *et al.*, 2000). For goods and services that can be sold at the market, the relevant value is easily referred from its price in the competitive market (Heal, 2000). However, in term of environmental goods and services that are not traded in the market such as amenity, watershed services, etc. market prices are unavailable for measuring their economic value. Economic evaluation techniques are therefore employed to estimate the economic value of these non-marketed environmental goods and services (Pagiola *et al.*, 2004; Heal, 2000). In fact, natural systems are being converted to other land uses mostly on the basis of short term financial gain rather than their long term value to society. In natural resource use decision-making process, non-marketed values of nature's services assigned too little or zero value to the cost benefit analysis of the resource use decision due to absence of market data and their public good nature (Turner *et al.*, 1998).

Therefore, the main objective of economic evaluation of ecosystem services is to estimate individuals' willingness to pay or accept compensation for a defined change in the provision or loss of the ecosystem service. Usually, consumer surplus is used as an approximation to the compensating and equivalent variation measures since the latter two are not empirically observable (Bergstrom, 1990) in revealed preference valuation methods. Measure of economic value is subjective in nature that depends on the experience, taste, and wealth/income of individuals and on the availability of substitute goods to the item under evaluation, as well as on the amount supplied and demanded of the particular good or service (Heal, 2000). Therefore, "… the monetary evaluation of an ecological resource provides a little about its [ecological] capacity or potential" (Straton, 2006). The value of ecosystem is described by the concept of total economic value framework. The framework disaggregates the value of ecosystems into direct and indirect use values and non-use values (Torras, 2000).

Direct use values are derived from ecosystem's services that are used directly by humans. They include the value of consumptive uses, such as harvesting of food products, timber for fuel or construction, medicinal products and hunting of animals for consumption; and value of non-consumptive uses, such as the enjoyment of recreational and cultural amenities like wildlife and bird watching, water sports and spiritual and social utilities that do not require harvesting of products (Torras, 2000). Indirect use values are also derived from ecosystem' services that provide benefits outside the ecosystem. Examples include the natural water filtration function of wetlands, which often benefits people far downstream; the storm protection function of coastal mangrove forests, which benefits coastal properties and infrastructure; and carbon sequestration, which benefits the entire global community by abatement of climate change.

Option values are derived from preserving the option to use services in the future, which may not be used at present, either by oneself in which case it is named option value or by others or heirs named by bequest value (Torras, 2000). Non-use values refer to the value people may have for knowing that a resource exists even if they never use that resource directly. This kind of value is usually known as existence value or sometimes passive use value (Torras, 2000 & Brun, 2002).

In other words, the Existence Value of a natural resource is identified with the member of society's willingness-to-pay for the preservation or use of the recreation value of forests and natural ecosystems; and members of society valuate a forest for its Existence Value, not regarding the use or the exploitation of it (Walsh *et al.*, 1984). The Recreational Value, which is a part of the Use Value of a natural system, involves using a forest or a natural resource for the purpose of recreation, leisure time, hiking, climbing, fishing, and aesthetic considerations. The economic valuation of resorts in Iran is still in its elementary and developing level; and it seems there still is a long way from its taking shape and development. In valuating recreation areas, only the recreational aspect of these areas is discussed and less attention is paid to the economic valuation despite the various activities in researches. The significance of the resorts such as Mangrove forests becomes clear when the economic value for the local society, environmental value, and the impact on watershed are taken into account (Torras, 2000 & Brun, 2002).

Techniques for valuing ecosystem services are still relatively new and untested, and the results of such calculations must be interpreted with care. Putting a monetary value on an ecosystem, however, can help to demonstrate why its survival is important (IUCN/TNC/World Bank, 2004; Turner *et al.*, 2003). Economic values can be calculated from the cost of the products (e.g. fish) and services (e.g. tourism) derived from an ecosystem, or from the cost of replacing a service (e.g. building) seawall where natural storm protection has been lost (MEA, 2005).

To price the ecosystem services, a variety of methods associated with voided cost, contingent valuation, hedonic pricing, market pricing, production approach, replacement cost and travel cost have been implemented (Costanza *et al.*, 1997, De Groot *et al.*, 2002, Turner *et al.*, 2003, Farber *et al.*, 2006 and Tong *et al.*, 2007). Tourism is the world's largest industry, with 694 million international tourist arrivals generating revenues of over US$500 billion in 2003. The tourism industry is a major employer and source of foreign exchange and is growing rapidly; it is expected to reach 1.6 billion arrivals by 2020. Beach-based leisure tourism constitutes a large, and possibly the fastest growing, sector (Jobbins, 2004).

The CVM is an attempt to quantify the net economic value of non-market goods and services to individuals by measuring the consumer surplus (Walsh, 1986; Venkatachalam, 2004). The willingness to pay (WTP) is an indicator of demand and applied by this technique. The contingent valuation method (CVM) is the most widely used tool for attaching monetary values to enhancing, preserving, or restoring resource amenities (Loomis *et al.*, 1990). A CVM existence benefits estimate is based on answers to queries about the maximum amount respondents would be willing-to-pay (WTP) to restore or preserve an amenity (Loomis *et al.*, 1990). The term 'existence benefit' refers to the fact that the typical respondent has never visited the site or used the amenity in question. Respondents to a 'user survey' have visited the site in question and provide WTP data used to estimate 'user benefits'. Some of these academicians cast TCM estimates as a major corrective cure for massively inflated CVM existence benefits estimates (Diamond and Hausman, 1993).During this period well-known CVM existence benefits studies indicated that USA riverine water resources should be shifted from conventional market uses such as the provision of irrigation water to more environmentally friendly tourist linked recreation uses (Loomis *et al.*, 1990; Walsh *et al.*, 1984). The TCM is less controversial than the CVM because it is based on recreation trip survey based expenditure data, whereas the CVM is based on hypothetical responses to proposed changes. However, contingent use (CU) data are hypothetical responses to proposed site changes that can be conjoined to TCM data. The CU data indicate the trip increments that respondents would make as a consequence of proposed site enhancements. Moreover, CU responses are much easier to cross validate (by on-site counts) than CVM willingness-to-pay (WTP) data (Duffield *et al.*, 1992).

Regarding determining the preservation value of the resort and forest ecosystems, several studies have been conducted. CV method was first proposed by Ciriacy-Wantrup in 1947 and Davis (1963) was the first to use this method experimentally (Vankatachalam, 2004). Hodgson and Dixon (1988), demonstrated for the Philippines, that tourism benefits (coupled with fishery production benefits) far outweighed the short term benefits which might accrue from increased logging in Palawan. With continued logging, tourism is estimated to decline by 10% per year due to declining tourism amenities - largely as a result of increased sedimentation. The NPV for all dive-based tourism is estimated to fall from US$2.5 million in 1987-91 to US$6.3 million in 1992-1996. The value of dive-based tourism is based on information on average length of stay, advertised daily rates plus any additional lump-sum fees (Hodgson and Dixon, 1988).

Costanza *et al* (1989) used two methods to calculate the value of coastal wetlands recreation in the United States. Using the TCM, they estimated the value at $70.67 per visitor. Using the CVM, they estimated a value of $47.11 per visitor(Costanza *et al.*,1989). Using the TCM, Tobias and Mendelsohn (1991) estimated a $35 per visitor value for recreation at a 10, 000 hectare Costa Rican tropical forest reserve. They included only Costa Rican visitors in their study

(Tobias and Mendelsohn, 1991). In the study conducted by Echeverria *et al* to estimate the Existence Value of the Monteverde Cloud forests in Costa Rica, CV Method was used and estimated to be $238/ha annually (Echeverria *et al.*, 1995). Studying the total value of the environmental and ecological services of 17 different world ecosystems, Costanza *et al (*1997) estimated the Recreational Value of the temperate and tropical forests to be $36 and $112/ha, respectively (Costanza *et al.*, 1997). As for the Malaysian forests, this value is estimated to be $740/ha through CV Method (Garrod & Willis, 1997). Bann (1999) estimated indirect values from tourism and shoreline protection at $3/ha/yr.and $845/ha/yr. respectively in Malaysia (Bann, 1999).

1100 Swedish households were asked about their Willingness-to-Pay for preserving 11 old forests in Sweden and the WTP was reported to be from $10 to $20 for each household annually (Kriström, 2001). Through CV method and WTP measurement, Lovett and White estimated the Preservation Value of North York National Park of England and the average WTP of each individual was £ 3.10 annually (White and Lovett, 1999). The average of the Recreational Value of Mangrove forests in Nabq area was estimated to vary from $180 to $4800 annually and the travel cost was estimated to be between $7.5 and $20 for each visitor. In addition, based on the average WTP, the tourist potential of Mangrove forests in Egypt in Sinai area and the Red Sea were estimated to vary from $1 to $20 per individual and according to the total visitors the value of these regions was estimated to be between $240 and $38400/ha annually (Hegazy , 2002).

Through CVM, Murty and Menkhuas (1998) estimated the Recreational Value of Keoladeo Park to be 20944 Rupee/ha, 519 Rs for each Indian visitor and 495 Rs for each foreigner visitor (Murty and Menkhuas, 1998). While, Chopra (1998) studies using TCM showed that the Recreational Value of the same park is 16197 Rs/ha which is 427.04 Rs for each Indian visitor and 432.04 Rs for each foreigner visitor. Through CVM, Hadker estimated the Recreational Value of Boriueeli National Park to be 23300 Rs per hectare and about 90 Rs for each household. Manoharan and Dutt (1999) estimated the ecotourism value of Kalakadu Protected Area to be 2.95 million Rs and 34.68 Rs per visit (Manoharan, 2000). Whitehead and Chambers, through Contingent Method, estimated the average annual WTP for the Ely resort to be $4.77 per visitor and $21.49 for the St. Cloud resort per visitor (Chambers and Whitehead, 2003).

Studying and estimating the economic value of parks in Iran does not have a long record thus, the studies conducted so far are limited. Ali Yakhkeshi (1972) studied and discussed the subject of resorts seriously in Iran. The Department of Environment's Office of Parks in 1975 carried similar studies through interviewing and questionnaire. The average of the monthly Willingness-to-Pay of individuals for the Existence Value of the forests in northern Iran is 15153 Rials (182,000 Rials annually; 2006). The annual Existence Value of the forests in the north is also estimated to be 1.2 million Rials/ha (Amir-Nejad and Khalilian, 2006). In the study carried out by Amir-Nejad *et al.*, (2006), the average of the Willingness-to-Pay of the visitors for the Recreational Value of the See-Sangan Park was estimated to be 2477 Rials per visit. The annual Recreational Value of this park is 2.5 million Rials/ha (Amir-Nejad *et al.*, 2006). Please note that in the year 2010 every 10000Rials is equal to US$ 1.

MATERIALS & METHODS

Among the most widespread economic evaluation methods of the forests and coastal areas is Contingent Method of evaluation which can be considered as one of the Existence Value methods. For this purpose, Contingent Valuation Method, Contingent Choice Method and referendum are widely used (De Groot *et al.*, 2002) among which the Contingent Method is the most appropriate and important one (Walsh et al., 1984 and Vankatachalam, 2004). Generally, this method is used as one of the standard and flexible tools for Non-Use Value and No market Use Value of environmental resources (Hanemann, 1994).

In this method, facing the offered price in an assumed market condition, the respondents select only one choice among some predetermined choices: "yes" or "no." The determined respondents are asked about their maximum willingness-to-pay and this will be of greater help in the sub-

sequent analyses to classify the remained effect. The presented reasons in the term of respondent's willingness-to-pay for the preservation or recreation use involve several applied values and environmental and ecological issues. It can be also included as an obligation or a matter of satisfaction using a better management for the forests, the interest of the next generations, cultural, historical, educational significance, etc. To provide a model for measuring the willingness-to-pay, it is assumed that an individual accepts the proposed price for the Existence Value and the preservation of the forests according to the maximum acceptability under the following condition or reject it in another way (Hanemann, 1984).

$$U(1,Y-A;S)+\varepsilon \geq U(0.Y;S)+\varepsilon_0 \qquad (1)$$

Where,
U is an indirect acceptability of an individual, Y and A are the individual's income and the proposed price, respectively and S is the socio-economic features affected by individual's taste. $\varepsilon_1, \varepsilon_0$ are random variables with the mean of zero distributed equally and independently. The acceptability difference_("U) can be described as follows:

$$\Delta U = U(1,Y-A;S)+U(0.Y;S) + (\varepsilon_1+\varepsilon_2) \qquad (2)$$

The dichotomous choice questionnaire format in studying CV has one dependent variable with binary choices which needs a selective qualitative model. Normally, Logit and Probit Models are often used for selective qualitative methods. The Logit Model is used more because it is simpler. According to Logit Model, the probability (Pi) that one accepts an individual of the choices (A) is as follows (Hanemann, 1984):

$$P_1 = F_N(\Delta U) = \frac{1}{1+\exp(-\Delta u)} = \frac{1}{1+\exp\{-(\alpha+\beta A+\gamma Y+\theta S)\}} \qquad (3)$$

Where, FN (Δ U) is the cumulative distribution function with one standard logistic difference and includes some of the socio-economic factors. θ, γ, β are estimated coefficients which are expected to be $\theta \succ 0, \gamma \succ 0, \beta \leq 0$ .The parameters of Logit model are estimated through the maximum likelihood method which is the most widespread technique to estimate the Logit Model (Lehtonen *et al.*, 2003). Then, the expected amount of willingness-to-pay is estimated through the numerical integration from zero to the maximum offer as follows:

$$E(WTP) = \int_0^{MaxA} F(\Delta U)\,dA = \int_0^{MaxA} \left(\frac{1}{1+\exp\{-\alpha^*+\beta A)\}}\right. \qquad (4)$$

Where,

E (WTP) is the expected amount of willingness-to-pay. α^* is the interception added to the main interception(α) sentence through the socio-economic sentence $[\alpha^* = (\alpha+\gamma Y+\theta S)]$. The Logit Model may be linear or logarithmic. For the statistic analysis of the variables, mathematical calculations of estimating the parameters of Logit Model, Maple and SPSS software can be used.

Contingent Valuation Method (CVM) which was firstly used by Davis in 1963 seeks to place a figure on the benefits people derive from consuming a public good by directly questioning a sample of consumers in order to obtain their maximum willingness to pay (WTP) to have the good, or minimum compensation sum to go without it; their willingness to accept (WTA). WTP and WTA may also be estimated for any welfare decreasing action (Hanley, 1989). The CVM requires that individuals express their preferences for some environmental resources, or change in resource status, by answering questions about hypothetical choices (Bateman and Turner, 1993). According to Hanley (1989) in order to investigate the determinants of, for example, WTP, a bid curve may be estimated, where for individual i:

$WTP_i = F(Q_i, Y_i, T_i, S_i)$ (2)

where;

Q_i: the quantity or quality of environmental good

Y_i:income

T_i: preferences
S_i: other socio-economic variables thought relevant

Hara Biosphere Reserve is located in the south of Iran in the Straits of Khuran between Queshm Island and the Persian Gulf. The study area lies at 26°45' to 26°58'N; 55°30' to 55°50'E Situated in the Mehran River delta, it hosts the largest Avicennia mangrove along the Persian Gulf shoreline and, therefore, represents a center of biodiversity in Iran. The Strait of Khuran is also a Ramsar site, providing habitat to two globally threatened species: a wintering habitat for the pelican Pelecanus crispus, and a regular feeding place for the green turtle Chelonia mydas. In 2006, about 42,500 people lived in the area, mainly engaged in trading. Additionally, there are some palm tree plantations, animal husbandry and fishing activities and ship construction industries. Lacking freshwater supply and salty water intrusions constrain agriculture mainly close to the shoreline. Government owned, and administered by the Department of the Environment. The designated site includes 82,360 ha in Hara National Park, which was enlarged and upgraded from the 65,750ha Hara Protected Region established in 1972, and 85,360ha in the fully protected Hara Biosphere Reserve approved in June 1976. The unprotected areas in the east are threatened with degradation through illegal logging of the mangroves. Ramsar convention in 1975 has introduced 100,000 hectares of this region as on 23 June 1975 an international wetland and named it Khouran Straits (Harrington, 1976).Mangrove forests are 8000 hectare. For ecological reasons such as wetland environment, Mangrove forests and bio-diversity, this region has attracted many visitors. More than 650 questionnaires were randomly distributed among the visitors according to a reasonable and appropriate time and place distribution regardless of their age, sex, means and the reason of their visit, etc. in different seasons in 2006. The items in the questionnaire include economic, social, and other questions.

RESULTS & DISCUSSION

In order to estimate the Recreational Value of the Hara Biosphere Reserve (HBA), some questionnaires were chosen in which the respondents had monthly independent income. Therefore, 415 of the total distributed questionnaires were selected and analyzed. In fact, the respondents were asked about the price they were willing to pay for the Recreational Value of the Hara Biosphere Reserve from their monthly income. 201 individuals (48.4%) didn't accept the first offer and they were not willing to pay $0.5 (US$1=10000 Rials) for each member of their family for entrance fee and using the Recreational Value of the HBR from their monthly income. 189 individuals (45.6%) accepted it and 25 individuals (6%) didn't respond. When the lower price (0.1) was offered, 19 individuals (4.6%) didn't accept the second offer and asked for a lower price. However, 182 individuals (43.7%) accepted it.

Those 189 individuals who had accepted the us 0.5 offer were placed in the higher offer group and were asked whether they would pay the entrance fee of $1 to visit the HBR. 87 respondents (21%) accepted the third offer and 102 individuals (24.6%) declined the offer. Among those 182 respondents who accepted the $0.1 offer, 83 individuals (20%) claimed their maximum WTP to be $0.2, 58 individuals (14%) claimed their maximum WTP to be $0.3 and 41 (10%) offered $0.4. From the 102 respondents who declined the $1 offer, 13 individuals (3.1%) claimed their maximum WTP to be $0.9, 17 individuals (4.1%) offered $0.8, 25 individuals (6%) offered the maximum WTP of $0.7 and 47 individuals (11.3%) offered the maximum WTP of $0.6. Moreover, among the 87 respondents who accepted the $1 offer, 12 individuals (3%) offered the maximum WTP of $2, 20 individuals (4.8%) offered the maximum WTP of $1.5. A number of economic and social features and effective variables in WTP are available in Table 1.

Table1. A number of economic and social features and effective variables in WTP

Variables	Mean	Standard Deviation
Household income (SD$)	289	205
Age	39.3	6.4
Size of the household and visitors	4.8	3.4
Education	14.2	4.5

Results of the Logit Model for the Recreational Value of HBR are available in Table1. According to the results, the variables of income, education, age and size of the household had an effect of less than 10% on the acceptance of the offered fee for the Recreational and Existence Value of the Mangrove forests.The estimated coefficient of the offer factor which is the most important distribution factor of the probable WTP for the Recreational Value has become statistically meaningful at 1% level with the expected minus sign. This shows that under the scenario of the assumed market, increase in the offered price will lead to decrease in the probability of "yes" in WTP. The estimated income coefficient in the Recreational Value has become statistically meaningful at the level of 1% and the sign was plus as expected which shows that the probability of "yes" in WTP increases with the rise in income. The coefficient of the education factor at the level of 5% has become meaningful with the expected plus sign. This plus sign shows that the higher the education, the more probable the "yes" answers in WTP. The coefficient of the age factor in estimating the Recreational Value has become meaningful statistically with a plus sign at the level of 5%. The plus sign of the age factor shows that the probability of the answer "yes" is more likely in adults than young people. The coefficient of the factors of the size of the household and group visitors has become meaningful with a minus sign at the level of 5%. The minus sign shows that the larger the size of the household and or the number of the group visitors, the more likely the answer "yes" in WTP (Table 2).

The statistics in the table above show the explanatory power of the model. The likelihood ratio test of 79.6% shows that the model used is significant at a level higher than 1%. The McFadden ratio of 0.41 shows that the explanatory factors of the model adequately explain the changes in the dependent variable of the model and the percent of right prediction (76.7%) indicates that according to the explanatory factors, the model predicts a high percentage of the dependent variable (Table 2).

Estimating the parameters of the Logit Model, the average of expected WTP which is equal to the Recreational Value of the Hara Biosphere Reserve was estimated through maximum likelihood method and using numerical integration from zero to the maximum range offer (20,000 Rials). According to the aforementioned formula, the average WTP for the Recreational Value is estimated to be $5 for each visitor annually. If the amount of WTP for each family or visitor was clear, the Recreational Value of each hectare of the HBR can be estimated through the number of the total household or the annual visitors and the area (Costanza *et al*., 1997). The total number of the visitors of the HBR in 2006 is 154,943 people (the research findings) and according to the average amount of the WTP in the above formula, the total number of the visitors and the area, the Recreational Value of each hectare of Mangrove forests can be estimated through the following formula:

(The total number of the visitors * the average of the WTP)/area = the Recreational Value of each hectare of the Hara Biosphere Reserve

Table 2. The results of the Logit Model for the Recreational Value of the Hara Biosphere Reserve

Factors	Coefficients	Statistical value of T	Statistical significance
Ratio	-0.2304	0.29	0.4487
Offer	-0.00023	-5.11	-0.000
Income 4.06	0.9021	4.06	0.0012
Age	0.2457	2.14	0.0245
Size of the household and the group visitors	0.2651	1.45	0.0401
Education	0.3925	2.20	0.0354
Likelihood Ratio Test: 79.6% Percent of right prediction: 76.7% McFadden R^2= 0.41			

Therefore, the Recreational Value of each hectare of Hara Biosphere Reserve is $97 ha/yr and a total of $ 779797 annually.

CONCLUSION

Although Iran is among the developing countries with an income level lower than the average line, the results show that people are willing to pay a sum of money to use the tourist potentialities of Mangrove forests. The basic assumption is that people are willing to transform the environmental criteria to monetary criteria which shows how valuable are the natural resources and ecosystems to them. The results show that the offer factor and the income factor are the most important factors in WTP for the recreational use of HBR in a way that has become significant at the level of 1%. Moreover, the average of WTP for the Recreational Value of HBR was estimated to be $ 5 for each visitor per year.

The average of individuals' Willingness-to-Pay for the Recreational Value of the See-Sangan Park is estimated to be 2477 Rials for each visit and the annual Recreational Value of this park is 2.5 million Rials/ha (Amir-Nejad *et al.*, 2006) which is more than the value estimated for the Mangrove forestsin the study area. Estimating the Existence Value of the forests in northern Iran through Contingent Method of valuation, Amir-Nejad and Khalilain showed that the average of individuals' Willingness-to-Pay for the Existence Value of these forests is 182,000 Rials annually and the Existence Value of each hectare of the forests in the north is 1.2 million Rials annually (Amir-Nejad and Khalilian, 2006) estimated to be less than the Existence Value of Mangrove forests.

USDA studies showed that the Recreational Value of the Mangrove forests varies from $91 to $4287/ha (USDA, 1998). Through CVM, Murty and Menkhuas (1998) estimated the Recreational Value of Keoladeo Park to be 20944 Rupee/ha, 519 Rs for each Indian visitor, and 495 Rs for each foreigner visitor (Murty and Menkhuas, 1998). Whitehead and Chambers, through Contingent Method, estimated the average annual WTP for the Ely resort to be $4.77 per visitor and $21.49 for the St. Cloud resort per visitor (Chambers and Whitehead, 2003). The average of the Recreational Value of Mangrove forests in Nabq area was estimated to vary from $180 to $4800 annually and the travel cost was estimated to be between $7.5 and $20 for each visitor. In addition, based on average WTP, the tourist potential of Mangrove forests in Egypt in Sinai area and the Red Sea was estimated to vary from $1 to $20 per individual and according to the total visitors, the value of these regions was estimated to be between $240 and $38400/ha annually (Hegazy, 2002). The Recreational Value Wondo Genet in 2006-2007 was estimated to be about 2.2 million dollars (Mohammed Ali, 2007). And the annual Recreational Value of each hectare of HBR was estimated to be $97/ha. Therefore, one can conclude that visitors do not travel to the area only for recreational purposes and this makes TCM estimation be valuated as higher than that of WTP. It also shows that this area enjoys commercial and trading potential to attract as many visitors as possible. Recreation Valuation of HBR points towards the economic importance of the area. Since this Area has been neglected on the part of managers and decision makers, it is felt necessary that more facilities would be supplied for the visitors. Moreover, the low income of the local communities confirms this finding.

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