

A global estimate of benefits from ecosystem-based marine recreation: potential impacts and implications for management

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Abstract Participation in ecosystem-based marine recreational activities (MRAs) has increased around the world, adding a new dimension to human use of the marine ecosystem and another good reason to strengthen effective management measures. A first step in studying the effects of MRAs at a global scale is to estimate their socioeconomic benefits, which are captured here by three indicators: the amount of participation, employment and direct expenditure by users. A database of reported expenditure on MRAs was compiled for 144 coastal countries. A meta-analysis was then performed to calculate the yearly global benefits of MRAs in terms of expenditure, participation and employment. It is estimated that 121 million people a year participate in MRAs, generating 47 billion USD (2003) in expenditures and supporting one million jobs. The results of this study have several implications for resource managers and for the tourism industry. Aside from offering the first estimation of the global socioeconomic benefits of MRAs, this work provides insights on the drivers of participation and possible ecological impacts of these activities. Our results could also help direct efforts to promote adequate implementation of MRAs. Furthermore, we hope this work will provide a template for data collection on MRAs worldwide.

Keywords Marine recreation · Socioeconomic benefits · Meta-analysis · Benefit transfer

JEL Classification Q22 · Q28

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1 Introduction

Although traditionally an afterthought in the management of ocean resources (Walsh 1991), marine recreational activities (MRAs) such as kayaking, recreational fishing, whale watching, surfing and diving have recently come to the forefront of discussion and research regarding their impact and importance in ecological, economic and social terms (e.g. Hoyt 2001; Buckley 2002; Pitcher and Hollingworth 2002; Aas 2008).

We will focus here on three particular activities: whale watching, diving and recreational fishing. We classify these here as forms of ecosystem-based recreation; the magnitude and nature of their effects on ecosystems are arguable, but they undeniably rely on marine populations being in place and will probably benefit from healthier ones (not unlike marine fisheries). So, while their effects on marine organisms can be less pronounced than commercial exploitation, we make the distinction between these activities and other forms of 'ecotourism', which are defined in a number of ways in the literature, but normally involve seeking to avoid human impacts on nature (Holland et al. 1998). We chose these activities because they rely on active use of marine resource populations, for which benefit calculations have up to now been limited to those stemming from capture fisheries. In this way, we hope to provide elements for a more complete picture of the contribution of marine populations to human welfare.

While it is increasingly clear that recreational fishing landings can be significant (Coleman et al. 2004) and can further impact marine stocks already depleted by commercial fisheries, it has also been shown that recreational fishing¹ can by itself have the same effects attributed to commercial fishing, such as overfishing leading to the decline of fish populations, and selective fishing mortality effects on population and ecosystem structure (Post et al. 2002; Lewin et al. 2006). In this sense, the effects of angling should no longer be considered to be any different from those of commercial fishing. Although we might safely say that whale watching and recreational diving are less harmful than whaling, coral mining or blast fishing, we must also acknowledge the possible negative effects of these activities, such as modified whale behavior or degradation of coral reefs (Davis and Tisdell 1995; Orams 2000; Williams et al. 2002). Recognizing these effects allows for a more objective assessment of the potential benefits of MRAs, which can be considerable.

Some countries have recognized the significance of MRAs and have subsequently undertaken large-scale data collection efforts in order to estimate their contributions to society. In the US, expenditures on marine angling, whale watching and diving are estimated to be ~30 billion USD (2003) per year (The Leisure Trends Group 2000; Hoyt 2001; U.S. Department of the Interior & U.S. Department of Commerce, Bureau of the Census 2006; Gentner and Steinback 2008). Canada, Australia, and most European countries have also begun to collect data on MRAs (e.g., Henry and Lyle 2003; DFO 2005; Pawson et al. 2006). Besides providing a gauge of the magnitude and benefits of these activities, these types of studies can allow managers to integrate them into economic and ecosystem management plans.

¹ We will use 'recreational fishing' and 'angling' indiscriminately throughout the text to refer to any form of fishing (e.g., line, spear) where the *main* motivation is not consumption, trade or sale of the catch.

Along with other fields, marine science has gradually shifted some of its focus from small scale studies towards global-scale analyses of the dynamics and effects of capture fisheries on marine populations and ecosystems (e.g., Myers and Worm 2003; Pauly et al. 2003; World Bank 2008). Although some precision may be lost in this shift, the results of a broader scope can allow for useful generalizations and for the emergence of patterns which often cannot be readily distinguished at smaller scales but which nonetheless affect them (Costanza et al. 1997; Rosenthal and DiMatteo 2001; Ghermandi et al. 2008). Therefore, the main purpose of this study is to serve as a first attempt at estimating the socioeconomic benefits of ecosystem-based marine recreational activities at a global scale, while recognizing their potential costs to provide a basis for undertaking a full cost–benefit analysis in future research.

2 Methods

2.1 Defining the activities

Although there are many forms of marine recreation, such as swimming, fishing, diving, surfing and sailing, to name only a few, the first step in this work is to identify and define the activities to be included in our study, as well as the indicators to be examined for each one. Here, the main indicators for each activity will be the number of users, total expenditure and employment in each sector. The MRAs considered are those which fit our definition of ecosystem-based tourism, i.e. those that directly rely on marine populations. These are:

- Recreational fishing: Defined here as fishing where the *main* motivation is not consumption, trade or sale of the catch.
- Whale watching: Including watching whales as well as other marine organisms (such as sea lions and dolphins) from above water.
- Diving: Including snorkeling and SCUBA; although some diving takes place around underwater wrecks, we make the assumption that observing marine life is one of the main attractions for most divers. Although this may overlap with our definition of whale watching in some occasions, we did our best to separate between the two to avoid double-counting.

2.2 Data collection

We collected data on recreational fishing, whale watching and diving for the 144 maritime countries of the world. Information was obtained through a review of secondary sources, including peer reviewed publications, government and NGO reports and all other available documents. The first step in this was to determine whether MRAs take place in a given country or not; if the answer was yes, this was followed by a search for (preferably country-level) participation, expenditure and employment data. We assumed that finding no data for a particular country means that MRAs do not take place there or are insignificant. One inherent drawback in meta-analyses is the varying quality of the data used (Rosenberger and Stanley 2006); we fully acknowledge this

here and provide a full list of our references, taking care to note the source and quality of the information (Appendix I). This approach to data collection has been used in previous attempts to estimate global values of fish prices and subsidies (Khan et al. 2006; Sumaila et al. 2007). When no data for a country could be found, an effort was made to contact the appropriate government agency to request any available data. In order to make comparisons and evaluations of data across countries, 2003 was set as our base year, and efforts were made to obtain data from as close to this year as possible. Expenditure data found for different years were transformed into 2003 USD prices using country-specific consumer price index (CPI) and 2003 currency exchange rates (World Bank 2009).

2.3 Filling the gaps

Data was not available for all countries considered in the study, so data gaps had to be filled with estimates. We describe how this was done for each of the three MRA sectors below.

2.3.1 Recreational fishing

A benefit transfer approach (direct value transfer) was used to fill gaps in countries with partial data. For example, when only total angling expenditure was found for a country and the ratio of total to marine anglers was available, marine expenditure was obtained using this proportion, assuming that expenditure per capita was equal for marine and freshwater anglers. When these types of proportions were needed but not known for a country, those of similar (neighboring) countries, sub-regions or regions (in that order), as classified by the FAO (UN 2008), were used. Using independently defined geo-political subunits helps address the problems in generalization error that may occur when transferring values from one location to another under the assumption that these share similar traits (Brouwer 2000; Rosenberger and Stanley 2006). Such an approach is indeed imperfect, and ideally one would like to develop an econometric model allowing for statistical inferences. It is, however, a vital tool for large scale analyses which would otherwise prove impossible to perform (Rosenthal and DiMatteo 2001). We believe that despite the limitations of this approach, this effort is potentially a valuable contribution to the literature on marine recreation.

Once these partial data gaps were filled, expenditure and participation data were converted into participation rate (as a percentage of the country population) and expenditure per capita (2003 USD per angler per year). After classifying countries according to their FAO sub-region (UN 2008), data gaps were filled through direct value transfer. This involved assigning values of participation rate and expenditure per capita to data-less countries using the estimates for countries in the corresponding country group (Sumaila et al. 2007, 2008), using the continent average when no sub-regional estimate was available (Table 1).

Under the assumption that participation rates and expenditure per capita have remained constant over the recent past, total expenditure and participation was calculated using the 2003 population of each country (CIA 2003) where data suggests that

Table 1 Initial data used for the benefit transfer

Region	Participation rate	Expenditure per capita	Data/region
Africa	0.2826	239	4/23
North Africa	0.0042	239	1/3
South Africa	0.3755	324	2/2
Middle Africa			0/3
West Africa			0/8
Eastern Africa	0.3755	68	1/7
Asia	0.1822	394	7/27
Western Asia	0.1181	325	3/11
Eastern Asia	0.3067	514	3/5
Southern Asia	0.0006	239	1/5
South-Eastern Asia			0/6
Europe	3.7322	413	17/25
Northern Europe	6.2065	278	8/10
Southern Europe	1.4324	557	4/6
Western Europe	1.8808	613	4/4
Eastern Europe	0.5434	110	1/5
Americas	1.8265	907	8/31
North America	4.7172	1,016	2/2
Caribbean	0.2279	540	1/11
Central America	1.1259	1,527	3/8
South America	0.7861	50	2/10
Oceania	17.6893	522	2/12
Australia and New Zealand	17.6893	522	2/2
Melanesia			0/5
Micronesia			0/4
Polynesia			0/1

'Participation rate' refers to the number of anglers in a country as a percentage of that country's population. 'Expenditure per capita' is in 2003 USD. 'Data/region' refers to the number of countries with country-level data on participation and expenditure and the number of countries (where recreational fishing takes place) in each FAO region or sub-region

recreational fishing takes place. Countries with known participation rate and expenditure per capita were assigned their specific values. According to case studies in Mexico and the US, between 23 and 45 thousand USD (2003), respectively, of direct expenditure on recreational fishing generates one full time job (Steinback et al. 2004; Gentner and Steinback 2008; Southwick Associates, Inc. et al. 2008), so employment was calculated using the US estimate for developed countries and the Mexico estimate for developing countries. Countries were classified under these two groups using their Human Development Index (HDI) as reported by the UNDP (2007).² This is

² The Human Development Index calculated by the United Nations Development Programme provides an index of average well-being in each country. The index is a weighted average of GDP per capita, health (measured by average longevity) and average level of education.

clearly not an ideal estimation, but it is useful here because of the limited availability of complete data (reported employment and expenditure) in the same year for a given country.

2.3.2 *Whale watching*

In the case of whale watching, data gaps were minimal thanks in large part to very complete and comprehensive studies carried out by Hoyt (2001) and Hoyt and Iñiguez (2008), and the country estimates from these studies were included in the current analysis. Detailed information on expenditure and participation in the whale watching industry was extracted from these reports for 1998 and 2006. For each country, expenditures were first converted to 2003 USD using the consumer price index (CPI). Expenditure per capita was then calculated for every country. Employment in the whale watching industry is not well documented, but Hoyt (2001) and Hoyt and Iñiguez (2008) reported the number of communities in each country which were engaged in the whale watching industry. We used other community-level case studies on whale watching-generated employment to estimate the average number of operators per community (~ 4) and the number of direct jobs per whale watching operator (~ 7) (Parsons et al. 2003; Hoyt 2001; Rossing 2006; Hoyt and Iñiguez 2008). This method was used to fill the gaps in employment data; employment was then calculated as a function of expenditure in each country.

In 2001, Hoyt reported that participation in whale watching around the world increased at an average of 12.1% during the 1990s. The latest findings at a large scale, a study for Latin America (Hoyt and Iñiguez 2008), show a continued increase in whale watching participation at an average of 11.3% per year from 1998 to 2006. So, we assumed an average worldwide rate of 10% increase per year to calculate participation in 2003. Expenditure was calculated assuming expenditure per capita remained the same as in 1998 or 2006, depending on the year of original country data. Using these estimations, we then calculated the number of jobs that would likely be generated as a result of total expenditure for whale watching in each country.

2.3.3 *Diving*

For diving, the extremely limited amount of country-level information restricted the analysis to gross estimations of the global value and participation in the industry based on data from the US (PADI 2009) and Caribbean markets, together with world participation rates for diving and snorkeling.³ Employment was calculated using the average yearly expenditure per one full time job in the US (The Leisure Trends Group 2000), under the assumption that expenditure per capita on diving and snorkeling equipment is comparable around the world. While seemingly unrealistic, this assumption is reasonable given the relatively standard equipment, training and certification systems that are used for these activities worldwide.

³ The number of snorkelers was calculated using the US ratio of divers to snorkelers, 4:1 (NPD Group, Inc. 2000). Based on retail equipment prices, we assumed that snorkeling requires only 15% of the per capita expenditure of SCUBA diving.

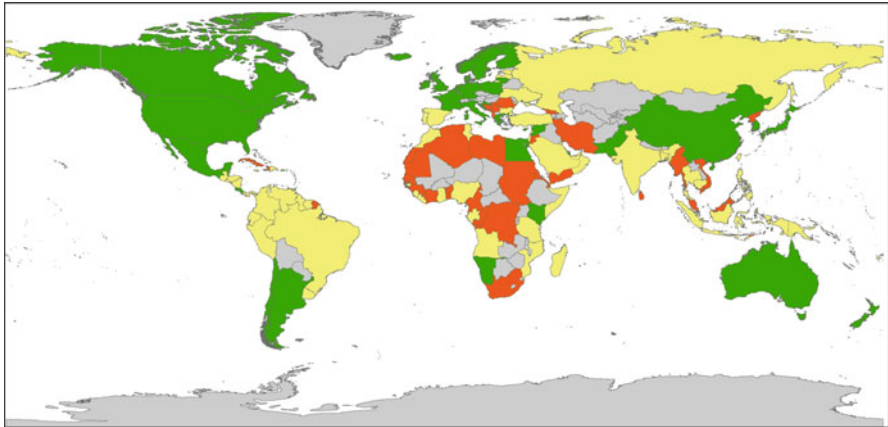


Fig. 1 Results of initial data review of country participation in marine recreational fishing. *Green* = yes (data available); *yellow* = yes (no data available); *red* = no; *grey* = not a maritime country

3 Results and discussion

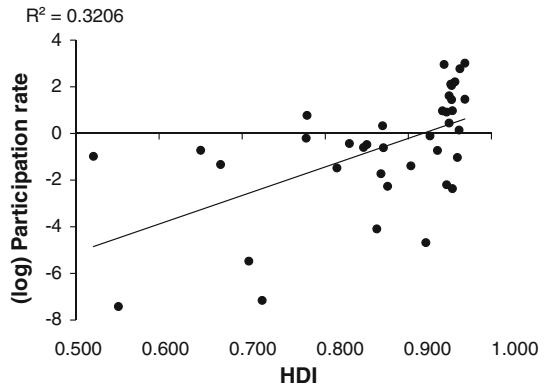
3.1 Recreational fishing

We found that recreational fishing takes place in 118 maritime countries around the world; country-level data on expenditure, participation and employment was found for 38 of them (32%) (Fig. 1).

We assumed that finding no data on a country implies that recreational fishing either does not take place at all or is insignificant; this assumption likely makes our estimates conservative. In general, such countries have substantial social and political problems, or are in regions of the world with little marine commercial fishing, which could indicate that there is little opportunity for this activity to take place. It is important to reiterate that our definition of recreational fishing excludes all forms of fishing whose *main* motivation is not pure recreation. Thus, countries with long traditions of fishing but where a large portion of the catch is either sold or relied upon for consumption would be classified as not taking part in recreational fishing.

Benefit transfer methods have been used widely to provide global level estimates in light of limited data (Rosenberger and Loomis 2001; Sumaila et al. 2007). We split the world according to FAO sub-regions to more accurately account for socio-economic and ecological similarities between countries, which was supported by the data within regions and sub-regions (UNDP 2007). Perhaps unsurprisingly, Oceania has the highest participation rate in marine recreational fishing, an estimated 17% of the population. No data was found for Melanesia, Micronesia and Polynesia, which are somewhat more similar to Caribbean island-states and perhaps should have been assigned those values. Nonetheless, the values from Australia and New Zealand were used for these countries to maintain methodological consistency. The next highest participation rate was found in Europe at 3.7%. Although a vast number of Europeans fish for recreation (over 40% in some northern European countries; Toivonen et al. 2004), the high availability of freshwater bodies results in a much lower proportion of

Fig. 2 HDI (UNDP 2007) and participation rate of countries in which data on marine recreational fishing was found



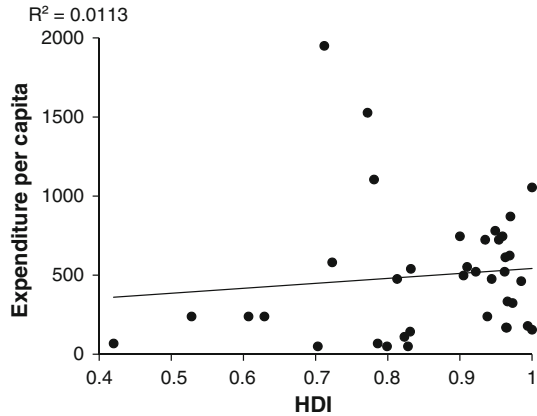
marine recreational fishing. A similar result occurs in the North America sub-region (Canada and the US under the FAO classification), where around 80% of recreational fishing takes place in freshwater; in all of the Americas, the average marine recreational fishing participation rate is almost 2%. At 0.3 and 0.2 %, respectively, Africa and Asia have the lowest participation rate among FAO regions.

Recreational fishing participation rate depends on many socio-demographic and cultural factors and to some degree on the amount of leisure time available to people, which is related to income level. Using socio-economic, geographic and demographic indicators, [Arlinghaus \(2006\)](#) was able to explain 40% of total variance on the likelihood of angling in a given year in Germany. While exploring these types of indicators was not one of the main objectives of this study, the observed trend of the relation between sub-regional participation rate and average HDI lends support to the idea that well-being and income are positively correlated to fishing as a leisure activity (Fig. 2).

Generally, country-level expenditure data is obtained through surveys, which ask respondents to provide an estimate of all recreational fishing-related expenditures (including bait, tackle, boats, license fees, accessories and trip-related costs) during a given year. As such, we would expect some correlation between expenditure per capita on recreational fishing and the angler's income level, so it is perhaps not surprising that yearly expenditure per capita was highest in the Americas (\$907), Oceania (\$522) and Europe (\$413), and lowest in Asia (\$394) and Africa (\$239). However, plotting GDP per capita by itself against yearly expenditure per capita of individual countries does not reveal any clear trends (Fig. 3).

As with participation rate, expenditure on recreational fishing depends to a great extent on the socio-economic characteristics of each country. Nevertheless, recreational fishing in many countries does not rely solely on the local population, but (sometimes to a great extent) on foreign visitors. This is perhaps most evident in the Central America sub-region which, despite a relatively low average HDI (0.762), has by far the highest expenditure per capita in the world, over 1,500 USD per year (Table 1). The great majority of expenditures in these countries stem from foreign anglers, generally from the US and Canada ([IBERINSA 2007](#); [Fedler 2008](#); [Southwick Associates, Inc. et al. 2008](#)). When surveyed, at least some part of their transport and accommodation costs would be included under reported expenditure, driving

Fig. 3 Index of country GDP per capita (UNDP 2007) and yearly expenditure per capita in 2003 USD. Mean = 497 USD



the average expenditure higher than in their own region of origin. Although this may make it difficult to understand local anglers' expenditure level, much of the expenditure occurs in the country of destination, and thus can be used by these countries in their own economic analyses.

We estimate that in 2003, 58 million recreational anglers around the world generated a total of 39.7 billion USD in expenditures, supporting over 954 thousand jobs (Table 2). Although further data collection is needed to better quantify the magnitude of recreational fishing worldwide and resolve potential issues of double-counting, countries with data in the current analysis accounted for almost 95% of estimated total expenditures and 87% of participation, so this estimate likely provides a close approximation to actual recreational fishing effort and expenditure levels.

One of the main reasons why many countries have embraced MRAs is their high economic benefits, particularly their per-biomass value as compared to commercial extraction (Hoyt and Hvenegaard 2002; Brander et al. 2007). The main reason for this is that MRAs, if undertaken in a manner which reduces their potential negative environmental impacts, can continually provide value from the same ecosystems or individual organisms through time. In the case of recreational fishing, the exceptionally high expenditure for catching fish has an implied but highly relevant implication for fish conservation. While it has been suggested that the economics of commercial fishing serves as a barrier to severe overfishing or extinction of marine fish stocks (Gordon 1954), recreational fishers do not fish for economic profit and therefore do not have this constraint. Besides the biological and ecological impacts inherent to any kind of fishing, this point must also be taken into account when considering the potential effects of recreational fisheries. In a study of the impacts of recreational fishing on US marine stocks, Coleman et al. (2004) found that once small pelagic fisheries are removed, recreational catches are equal to 10% of total US commercial catch. Assuming a similar trend in catch per angler, world landings in 2003 (See Around Us Project 2009; www.seaaroundus.org), and the estimate of total marine anglers in this study, recreational fisheries landings would total about 1 million metric tonnes per year, or 1.7% of world commercial catch minus small pelagics (sardines, herring and

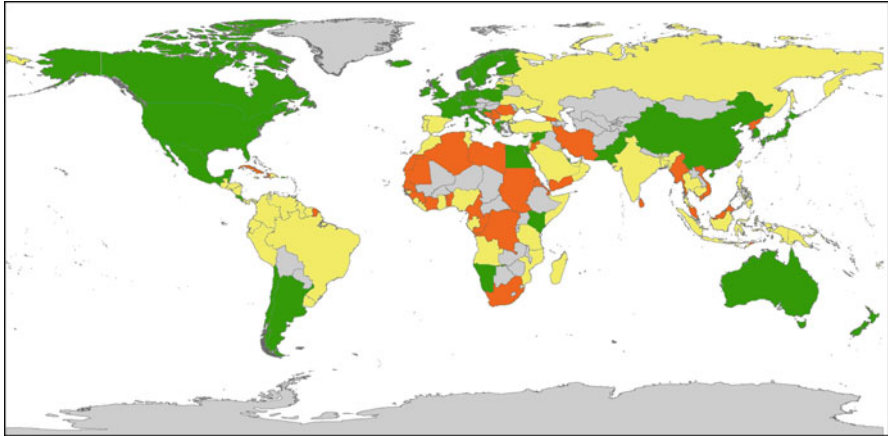


Fig. 4 Results of initial data review for participation in whale watching by country. *Green* = yes (data available); *yellow* = yes (minimal); *red* = no; *grey* = not considered

anchovies); if catch-release mortality is taken into account, impacts from recreational fishing could be significantly greater.

3.2 Whale watching and diving

Much less discussion material was found for whale watching and diving compared to recreational fishing. This is likely a product of the relative size and recent development and growth of these two industries compared to recreational fishing.

Data on whale watching was found in a total of 70 countries (Fig. 4), mostly from 1994 to 2006 (Hoyt 2001; Hoyt and Iñiguez 2008). One of the most interesting aspects of this activity is that it has been growing steadily and substantially for the past decade. In Latin America, the whale watching industry growth rate (in terms of participation) is three times higher than tourism as a whole (Hoyt and Iñiguez 2008).

After adjusting the data to 2003, it is estimated that over 13 million people worldwide participated in whale watching in that year. Their expenditure (including ticket price, accommodation and travel expenses wholly attributable to whale watching) per year is estimated to be over 1.6 billion USD (2003) worldwide. Based on available data, it is estimated that 18 thousand jobs worldwide are supported by this industry each year (Table 2). Given that marine mammals can occur in practically all of the world's oceans (Kaschner et al. 2006), any maritime country could theoretically engage in whale watching as an industry. The fact that this is currently not the case implies that other conditions, which may be cultural or social in nature (e.g., tourism infrastructure), must be addressed in order to effectively utilize whales in this manner.

There is very little country-level data on recreational diving outside of the US, Australia and, to some extent, Canada and the Caribbean region. In the US, the Diving Equipment and Marketing Association (www.dema.org) has undertaken market research studies which provide total expenditure and participation in recreational diving. There are also studies of Canadian recreational diving from which we estimated that an average of 48 thousand USD of direct expenditure on recreational diving cre-

ates one full-time job (Ivanova 2004). Using these surveys and available data on total active divers (Cesar et al. 2003), it is estimated that every year, 10 million active recreational divers and 40 million snorkelers around the world generate over 5.5 billion USD (2003) in direct expenditures, supporting 113 thousand jobs (Table 2). Based on the yearly per capita expenditure calculated from surveys (341 USD), this is most likely an underestimation.

Whale watching and recreational diving are similar in that they theoretically should have minimal to no negative impacts on the marine ecosystem. In fact, if they are well managed and made to follow proper guidelines, they can have positive impacts through education or even financing of marine parks and protected areas (Wilson and Tisdell 2003). However, these activities are often not conducted under these guidelines and merely use the ‘ecotourism’ label to attract customers (Carrier and Macleod 2005; Hoyt 2005). As has been observed in many diving locations, natural sites have a carrying capacity above which users perceive the site as overcrowded. This will in turn affect their travel to and expenditure in those sites (Brander et al. 2007).

Table 2 Summary of ecosystem-based marine recreation valuation results

	Recreational fishing	Whale watching	Diving and snorkeling	Total
Expenditure in 2003 USD (billions)	39.7	1.6	5.5	46.8
Participation (millions)	58	13	50	121
Employment (thousands)	954	18	113	1,085

All estimates are for 2003

3.3 Summary

From our current analysis, we estimate that in 2003, 121 million people around the world, almost 2% of the world population, engaged in ecosystem-based MRAs. Their total direct expenditure alone, 47 billion USD (0.1% of global GDP in 2003), supported over one million jobs around the world. In contrast, marine capture fisheries employ between 21 and 50 million people worldwide (Berkes et al. 2001; Garcia and de Leiva-Moreno 2003), with a global ex-vessel catch value of 80–85 billion USD a year (Sumaila et al. 2007; World Bank 2008). Marine resource populations clearly have a very high market value; uses other than marine capture fisheries are an increasingly important source of this value, and will continue to gain strength if managed appropriately. We must stress here that all of these activities are not mutually exclusive and that commercial fisheries can also improve through better management.

Although it is unlikely that the current increasing trends in ecosystem-based tourism can be maintained forever (e.g., Milon 2000), there is much value to be added by undertaking MRAs in a manner that avoids disturbing the marine ecosystem and seeks to educate the public on the importance of its protection. Healthy ecosystems with abundant life are not only good in ecological terms, but are directly related to human activities that create economic benefits—a win-win situation.

4 Concluding remarks

It is clear that ecosystem-based MRAs are a major industry that directly benefits from the marine ecosystem. These activities provide considerable socio-economic benefits to people around the world. Meanwhile, although their ecological effects are very likely much less than those of fishing or other commercial extraction, the magnitude at which these activities take place can only augment their impacts. As such, it is vital that their further development be undertaken with precaution and in full recognition of the potential costs associated with their considerable economic benefits.

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Appendix

Appendix I Data sources. Source types are (1) peer-reviewed publication; (2) government agency report; (3) government agency website; (4) FAO/UN report; (5) NGO report; (6) newspaper source; (7) commercial or public website

Country	Source	Source type
Albania	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Albania. http://www.fao.org/fishery/countrysector/FI-CP_AL/en [Last accessed May 3, 2009]	4
Algeria	No data found	
Angola	http://www.anglingclassics.co.uk/Angola.html [Last accessed May 11, 2009]	7
Antigua and Barbuda	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2007. Fishery and Aquaculture Country Profile, Antigua and Barbuda. ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FI_CP_AG.pdf [Last accessed May 11, 2009]	4
Argentina	Fundación Proteger. 2007. La pesca deportiva es un bloom: la practican mas de 3 millones de Argentinos. http://www.proteger.org.ar/doc654.html [Last accessed May 3, 2009]	5
Australia	Henry, G.W. & J.M. Lyle. 2003. The National Recreational and Indigenous Fishing Survey. Australian Government Department of Agriculture, Fisheries and Forestry, Australia. pp. 188	2
Bahamas	http://fishinthebahamas.com/index.php?gclid=CL3z2sTttJoCFRk_awodziKXcg [Last accessed May 11, 2009]	7

Appendix I continued

Country	Source	Source type
Bahrain	http://www.bahrainguide.org/BG3/sportsandleisure.html [Last accessed May 3, 2009]	3
Bangladesh	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2007. Fishery and Aquaculture Country Profile, People's Republic of Bangladesh. ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FL_CP_BD.pdf [Last accessed May 11, 2009]	4
Barbados	http://www.barbados.org/fishing.htm [Last accessed May 11, 2009]	7
Belgium	Pawson, M.G., D. Tingley, G. Padda & H. Glenn. 2006. Final Report, EU Contract FISH/2004/011 on "Sport Fisheries" (or Marine Recreational Fisheries) in the EU. European Commission Directorate-General for Fisheries, pp. 213	2
Belize	Fedler, A.J. 2008. Economic impact of recreational fishing for bonefish, permit and tarpon in Belize for 2007. Friends of Turneffe Atoll, pp. 26	5
	Ibérica de Estudios e Ingeniería S.A. 2007. Proyecto regional: Manejo sostenible de la pesca marina, con énfasis en las especies objetivo de la pesca deportiva. Segundo Informe Intermedio Parte I. Versión final del Diagnóstico.	2
Benin	No data found	
Brazil	http://www.sportfishing-brazil.com/ [Last accessed May 11, 2009]	7
Brunei Darussalam	http://www.bruneifishing.com/ [Last accessed May 11, 2009]	7
Bulgaria	http://www.informationbulgaria.com/fishing_in_bulgaria.html [Last accessed May 11, 2009]	3
Cambodia	http://home.earthlink.net/~lasweet1/ [Last accessed May 11, 2009]	7
Cameroon	No data found	
Canada	Department of Fisheries and Oceans Canada. 2007. Survey of Recreational Fishing in Canada 2005. Economic Analysis and Statistics Policy Sector. http://www.dfo-mpo.gc.ca/communic/statistics/recreational/canada/2005/REC2005_EN_20070727.pdf [Last accessed May 3, 2009]	2
Cape Verde	http://www.capeverdeinfo.org.uk/sport_game_fishing.htm [Last accessed May 11, 2009]	7
Chile	Servicio Nacional de Turismo. 2006. Pesca Recreativa Chile. http://www.sernatur.cl/institucional/PDF/estadisticas/tur-interes-especial/pesca-recreativa.pdf [Last accessed May 3, 2009]	2
China Main	Shen, J. 2008. Current status and challenges facing recreational fishing in the People's Republic of China. In: Aas, O. (Ed.) Global Challenges in Recreational Fisheries. Blackwell Publishing, Singapore, pp. 18–21	1
Colombia	http://www.colombia.travel/es/ [Last accessed May 11, 2009]	3
Comoros	http://businessafrica.net/africabiz/countries/comoros.php [Last accessed May 11, 2009]	7
Congo	No data found	
Congo Dem. Rep	http://www.fao.org/fi/oldsite/FCP/en/COD/BODY.HTM [Last accessed May 11, 2009]	4

Appendix I continued

Country	Source	Source type
Costa Rica	Ibérica de Estudios e Ingeniería S.A. 2007. Proyecto regional: Manejo sostenible de la pesca marina, con énfasis en las especies objetivo de la pesca deportiva. Segundo Informe Intermedio Parte I. Versión final del Diagnóstico.	2
Cote d'Ivoire	No data found	
Croatia	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2007. Fishery and Aquaculture Country Profile, Croatia. ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FI_CP_HR.pdf [Last accessed May 11, 2009]	4
Cuba	Baños-González, R., Pacheco-Roberto, J. and Casas-Corrales, W. 2003. Caracterización integral de los sitios de buceo en Cayo Levisa para la mejora y sostenibilidad de su producto. Simposio Internacional de Calidad. La Habana, October 2003	1
Cyprus	Hadjistephanou, N & L. Vassiliades. 2004. The present status of fishery and information system in Cyprus. GCP/INT/918/EC - TCP/INT/2904/TD-4.2. MedFisis Technical Document No. 4.2: 55 pp	2
Denmark	Pawson, M.G., D. Tingley, G. Padda & H. Glenn. 2006. Final Report, EU Contract FISH/2004/011 on "Sport Fisheries" (or Marine Recreational Fisheries) in the EU. European Commission Directorate-General for Fisheries, pp. 213	2
Djibouti	No data found	
Dominican Republic	http://www.godominicanrepublic.com/ [Last accessed May 11, 2009]	3
Dominica	http://www.dominica-weekly.com/information/island-style-fishing-at-its-best/ [Last accessed May 11, 2009]	7
Ecuador	http://www.ecuadorboutiquetravel.com/fishingtours [Last accessed May 11, 2009]	7
Egypt	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2003. Fishery and Aquaculture Country Profile, Egypt. http://www.fao.org/fishery/countrysector/FI-CP_EG [Last accessed May 11, 2009]	4
El Salvador	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2003. Fishery and Aquaculture Country Profile, El Salvador. http://www.fao.org/fishery/countrysector/FI-CP_SV/es [Last accessed May 11, 2009]	4
Equatorial Guinea	No data found	
Eritrea	No data found	
Estonia	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2003. Fishery and Aquaculture Country Profile, Estonia http://www.fao.org/fishery/countrysector/FI-CP_EE/en [Last accessed May 11, 2009]	4
Fiji	http://www.sportfishingfiji.com/ [Last accessed May 11, 2009]	7
Finland	Toivonen, A. 2008. Recreational fishing in Finland. In: Global challenges in recreational fisheries. Aas, O. (Ed.) Blackwell Publishing, Singapore, pp. 21–25	1

Appendix I continued

Country	Source	Source type
	Toivonen, A., E. Roth, S. Navrud, G. Gudbergsson, H. Appelblad, B. Bengtsson & P. Tuunainen. 2004. The economic value of recreational fisheries in Nordic Countries. <i>Fisheries Management and Ecology</i> 11, 1–14	1
	Pawson, M.G., D. Tingley, G. Padda & H. Glenn. 2006. Final Report, EU Contract FISH/2004/011 on “Sport Fisheries” (or Marine Recreational Fisheries) in the EU. European Commission Directorate-General for Fisheries, pp. 213	2
France	Institut Français de Recherche pour l’Exploitation de la Mer. 2007 Enquete relative a la peche de loisir (recreative et sportive) en mer en Metropole et dans les DOM. http://agriculture.gouv.fr/sections/magazine/dossiers/littoral-peche-loisir [Last accessed May 3, 2009]	2
Gabon	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2007. Fishery and Aquaculture Country Profile, Gabon. ftp://ftp.fao.org/FI/DOCUMENT/fcp/fr/FI_CP_GA.pdf [Last accessed May 11, 2009]	4
Gambia	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2007. Fishery and Aquaculture Country Profile, Gambia. ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FI_CP_GM.pdf [Last accessed May 11, 2009]	4
Georgia	No data found	
Germany	Arlinghaus, R. 2008. The social and economic significance of recreational fishing in Germany. In: Aas, O. (Ed.) <i>Global Challenges in Recreational Fisheries</i> . Blackwell Publishing, Singapore, pp. 25–30	1
Ghana	http://www.ghanablues.com/faq.html [Last accessed May 11, 2009]	7
Greece	Anagnopoulos, N., Papaconstantinou, K., Oikonomou, A., Fragoudes, K., Papaharisis, L., Papachristou, E., Pappa, D., Lousi, M., Cingolani, N., Belardinelli, A., Santojanni, A., Colella, S., Donato, F., Kavathas, S., Penna, R. & C. Sdogati. 1996. Sport fisheries in Eastern Mediterranean. Project 96/018. European Union.	2
Grenada	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2007. Fishery and Aquaculture Country Profile, Grenada. ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FI_CP_GD.pdf [Last accessed May 11, 2009]	4
Guatemala	Ibérica de Estudios e Ingeniería S.A. 2007. Proyecto regional: Manejo sostenible de la pesca marina, con énfasis en las especies objetivo de la pesca deportiva. Segundo Informe Intermedio Parte I. Versión final del Diagnóstico	2
Guinea	No data found	
Guinea-Bissau	http://www.worldsportfishing.com/guinea_bissau_flylure.htm [Last accessed May 11, 2009]	7
Guyana	http://www.kaieteurnews.com/2008/10/15/sport-fishing-industry-to-be-developed-in-guyana/ [Last accessed May 11, 2009]	6
Haiti	No data found	
Honduras	Ibérica de Estudios e Ingeniería S.A. 2007. Proyecto regional: Manejo sostenible de la pesca marina, con énfasis en las especies objetivo de la pesca deportiva. Segundo Informe Intermedio Parte I. Versión final del Diagnóstico	2

Appendix I continued

Country	Source	Source type
Hong Kong	http://www.tackletour.com/reviewHK.html [Last accessed May 11, 2009]	7
Iceland	Agnarsson, S., Radford, A. & G. Riddington. 2008. Economic impact of angling in Scotland and Iceland. In: Aas, O. (Ed.) <i>Global Challenges in Recreational Fisheries</i> . Blackwell Publishing, Singapore, pp. 188–201	1
	Toivonen, A., E. Roth, S. Navrud, G. Gudbergsson, H. Appleblad, B. Bengtsson & P. Tuunainen. 2004. The economic value of recreational fisheries in Nordic Countries. <i>Fisheries Management and Ecology</i> 11, 1–14	1
India	http://www.gamefishingindia.com/ [Last accessed May 11, 2009]	7
Indonesia	http://www.taka-adventure.com/ [Last accessed May 11, 2009]	7
Iran	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2007. Fishery and Aquaculture Country Profile, Iran (Islamic Republic of). http://www.fao.org/fishery/countrysector/FI-CP_IR/en [Last accessed May 11, 2009]	4
Ireland	Marine Institute. 2003. A national survey of water-based leisure activities in Ireland, 2003. Marine Institute, Galway Technology Park, Ireland. http://www.marine.ie/NR/rdonlyres/2A571A28-486D-4CA5-B697-7D796AD31AAA/0/SurveyofWaterBasedLeisure.pdf [Last accessed May 7, 2009]	2
Israel	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2007. Fishery and Aquaculture Country Profile, Israel. ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FI_CP_IL.pdf [Last accessed May 11, 2009]	4
Italy	Pawson, M.G., D. Tingley, G. Padua & H. Glenn. 2006. Final Report, EU Contract FISH/2004/011 on “Sport Fisheries” (or Marine Recreational Fisheries) in the EU. European Commission Directorate-General for Fisheries, pp. 213	2
	Anagnopoulos, N., Papaconstantinou, K., Oikonomou, A., Fragoudes, K., Papaharisis, L., Papachristou, E., Pappa, D., Lousi, M., Cingolani, N., Belardinelli, A., Santojanni, A., Colella, S., Donato, F., Kavathas, S., Penna, R. & C. Sdogati. 1996. Sport fisheries in Eastern Mediterranean. Project 96/018. European Union.	2
Jamaica	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Jamaica. http://www.fao.org/fishery/countrysector/FI-CP_JM/en [Last accessed May 11, 2009]	4
Japan	Statistics department. Ministry of Agriculture, Forestry and Fisheries. 2007. The 81th [sic] Statistical Yearbook of Ministry of Agriculture, Forestry and Fisheries. Japan. Tokyo, 828 p	2
Jordan	No data found	
Kenya	Abuodha, P. 1999. Status and trends in Kenyan Recreational Marine Fisheries. In: Pitcher, T. (Ed.) <i>Evaluating the Benefits of Recreational Fisheries</i> . Fisheries Center Research Reports. 7 (2): 46–50	1
Kiribati	http://www.visit-kiribati.com/kiribati/export/sites/KTO/attractions/sport_and_recreation.html [Last accessed May 11, 2009]	3

Appendix I continued

Country	Source	Source type
Korea, Rep. of	Cheong, S. 2005. Korean fishing communities in transition: limitations of community-based resource management. <i>Environment and Planning A</i> . 37: 1277–1290	1
Kuwait	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Kuwait. http://www.fao.org/fishery/countrysector/FI-CP_KW/en [Last accessed May 11, 2009]	4
Latvia	http://www.celotajs.lv/cont/cntr/acti/fishing_en.html [Last accessed May 11, 2009]	7
Lebanon	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Lebanon. http://www.fao.org/fishery/countrysector/naso_lebanon/en [Last accessed May 11, 2009]	4
Liberia	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Liberia. http://www.fao.org/fishery/countrysector/FI-CP_LR/en [Last accessed May 11, 2009]	4
Libya	No data found	
Lithuania	Domarkas, A. & E. Radaityte. 2008. Recreational fisheries in Lithuania: putting Lithuania on the recreational fishing map in Europe. In: Aas, O. (Ed.) <i>Global Challenges in Recreational Fisheries</i> . Blackwell Publishing, Singapore, pp. 30–34	1
Madagascar	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2008. Fishery and Aquaculture Country Profile, Madagascar. ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FI_CP_MG.pdf [Last accessed May 11, 2009]	4
Malaysia	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Malaysia. http://www.fao.org/fishery/countrysector/FI-CP_MY/en [Last accessed May 11, 2009]	4
Maldives	http://maldanglers.tripod.com/ [Last accessed May 11, 2009]	7
Malta	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Malta. http://www.fao.org/fishery/countrysector/FI-CP_MT/en [Last accessed May 11, 2009]	4
Marshall Islands	http://www.visitmarshallislands.com/activities/sportfishing.htm [Last accessed May 11, 2009]	7
Mauritania	No data found	
Mauritius	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Malta. http://www.fao.org/fishery/countrysector/FI-CP_MU/en [Last accessed May 11, 2009]	4
Mexico	Secretaria de Turismo. 2000. Comportamiento y tendencias de la pesca deportivo recreativa en México. Resumen Ejecutivo. http://http://www.sectur.gob.mx/wb/sectur/sect_9287_comportamiento_y_ten	2
	Southwick Associates, Inc., Nelson Consulting, Inc. & Firmus Consulting. 2008. The economic contributions of anglers to the Los Cabos economy. The Billfish Foundation	5

Appendix I continued

Country	Source	Source type
Micronesia	http://micronesia.hawaii.com/fsm/chuuk/activities/index.php [Last accessed May 11, 2009]	3
Morocco	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Morocco. http://www.fao.org/fishery/countrysector/FI-CP_MA/fr [Last accessed May 11, 2009]	4
Mozambique	http://www.macuacuane.com/ [Last accessed May 11, 2009]	7
Myanmar	No data found	
Namibia	Barnes, J.I., F. Zeybrandt, C.H. Kirchner & A.L. Sakko. 2002. The economic value of Namibia's recreational shore fishery: A review. DEA Research Discussion Paper. Number 50, pp. 21	1
Nauru		
Netherlands	Smit, M., de Vos, B. & J.W. de Wilde. 2004. De economische betekenis van de sportvisserij in Nederland. Den Haag, LEI Rapport 2.04.05	2
New Zealand	Sport and Recreation New Zealand. 2008. Sport, recreation and physical activity participation among New Zealand adults: Key results of the 2007/2008 Active NZ Survey. Wellington: SPARC	2
	Wheeler, S. & R. Damania. 2001. Valuing New Zealand recreational fishing and an assessment of the validity of the contingent valuation estimates. <i>The Australian Journal of Agricultural and Resource Economics</i> , 45:4, pp. 599–621	1
Nicaragua	Ibérica de Estudios e Ingeniería S.A. 2007. Proyecto regional: Manejo sostenible de la pesca marina, con énfasis en las especies objetivo de la pesca deportiva. Segundo Informe Intermedio Parte I. Versión final del Diagnóstico	2
Nigeria	http://www.onlinenigeria.com/travel/index.asp [Last accessed May 11, 2009]	3
Norway	Toivonen, A., E. Roth, S. Navrud, G. Gudbergsson, H. Appleblad, B. Bengtsson & P. Tuunainen. 2004. The economic value of recreational fisheries in Nordic Countries. <i>Fisheries Management and Ecology</i> 11, 1–14	1
Oman	No data found	
Pakistan	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Pakistan. ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FI-CP_PK.pdf [Last accessed May 11, 2009]	4
Palau	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Palau. http://www.fao.org/fishery/countrysector/FI-CP_PW/en [Last accessed May 11, 2009]	4
Panama	Ibérica de Estudios e Ingeniería S.A. 2007. Proyecto regional: Manejo sostenible de la pesca marina, con énfasis en las especies objetivo de la pesca deportiva. Segundo Informe Intermedio Parte I. Versión final del Diagnóstico	2

Appendix I continued

Country	Source	Source type
Papua New Guinea	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Papua New Guinea. http://www.fao.org/fishery/countrysector/FI-CP_PG/en [Last accessed May 11, 2009]	4
Peru	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Peru. http://www.fao.org/fishery/countrysector/FI-CP_PE/en [Last accessed May 11, 2009]	4
Philippines	http://pgff.org/ [Last accessed May 11, 2009]	7
Poland	Wolos, A., Mioduszewska, H., & H.L. Shramm Jr. 2008. Socio-economic analysis of competitive fishing in Poland. In: Aas, O. (Ed.) Global Challenges in Recreational Fisheries. Blackwell Publishing, Singapore, pp. 249–254	1
Portugal	http://www.reefcatfishing.com/ [Last accessed May 11, 2009]	7
Qatar	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2007. Fishery and Aquaculture Country Profile, Qatar. http://www.fao.org/fishery/countrysector/FI-CP_QA/en [Last accessed May 11, 2009]	4
Romania	No data found	
Russian Feds	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2007. Fishery and Aquaculture Country Profile, Russian Federation. ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FI_CP_RU.pdf [Last accessed May 11, 2009]	4
Saint Kitts and Nevis	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Saint Kitts and Nevis. http://www.fao.org/fishery/countrysector/FI-CP_KN/en [Last accessed May 11, 2009]	4
Saint Lucia	Mohammed, E. & W. Joseph. 2003. St. Lucia, Eastern Caribbean: Reconstructed fisheries catches and fisheries effort, 1942–2001. Fisheries Center Research Reports. Vol. 11 (6), 21–43	1
Saint Vincent and the Grenadines	http://www.svgtourism.com/articles/detail/detail1.asp?id=135&archive=1 [Last accessed May 11, 2009]	3
Samoa (Western)	No data found	
Sao Tome and Principe	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Sao Tome and Principe. http://www.fao.org/fishery/countrysector/FI-CP_KN/en ftp://ftp.fao.org/FI/DOCUMENT/fcp/es/FI_CP_ST.pdf [Last accessed May 11, 2009]	4

Appendix I continued

Country	Source	Source type
Saudi Arabia	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Saudi Arabia. http://www.fao.org/fishery/countrysector/FI-CP_SA/en [Last accessed May 11, 2009]	4
Senegal	http://www.senegal.co.uk/Docs/Senegal-Holidays/Fishing/Default.aspx [Last accessed May 11, 2009]	7
Seychelles	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2009. Fishery and Aquaculture Country Profile, Seychelles. http://www.fao.org/fishery/countrysector/FI-CP_SC/en [Last accessed May 11, 2009]	4
Sierra Leone	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2008. Fishery and Aquaculture Country Profile, Sierra Leone. ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FI_CP_SL.pdf [Last accessed May 11, 2009]	4
Singapore	No data found	
Solomon Islands	http://www.visitsolomons.com.sb/index.php?option=com_content&view=category&layout=blog&id=65&Itemid=137 [Last accessed May 11, 2009]	3
Somalia	No data found	
South Africa	Pradervand, P. & R. van der Elst. 2008. Assesment of the charter-boat fishery in KwaZulu-Natal, South Africa. <i>African Journal of Marine Science</i> , 30 (1): 101–112	1
Spain	Ministerio de Agricultura, Pesca y Alimentacion. Secretaria General de Pesca Maritima. 2003. Estudio socioeconomico de la pesca recreativa del Mediterraneo Español. http://www.pescaresponsable.es/docs/socio_economicos_1.pdf [Last accessed May 3, 2009]	2
Sri Lanka	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2008. Fishery and Aquaculture Country Profile, Sri Lanka. http://www.fao.org/fishery/countrysector/FI-CP_LK/en [Last accessed May 3, 2009]	4
Sudan	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2008. Fishery and Aquaculture Country Profile, Republic of the Sudan. ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FI_CP_SD.pdf [Last accessed May 11, 2009]	4
Suriname	Food and Agriculture Organisation of the United Nations. Fisheries and Aquaculture Department. 2008. Fishery and Aquaculture Country Profile, Suriname. ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FI_CP_SR.pdf [Last accessed May 11, 2009]	4
Sweden	Toivonen, A., E. Roth, S. Navrud, G. Gudbergsson, H. Appleblad, B. Bengtsson & P. Tuunainen. 2004. The economic value of recreational fisheries in Nordic Countries. <i>Fisheries Management and Ecology</i> 11, 1–14	1

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Country	Source	Source type
Syria	Food and Agriculture Organization of the United Nations. 2007. Fishery Country Profile. The Syrian Arab Republic. ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FI_CP_SY.pdf [Last accessed May 2,2009]	4
Taiwan	http://www.tackletour.com/reviewfishingtw.html [Last accessed May 11,2009]	7
Tanzania	http://lathamisland.com/record/recordaug05.html [Last accessed May 11,2009]	7
Thailand	http://www.tourismthailand.org/festival-event/content-5902.html [Last accessed May 2,2009]	3
Togo	No data found	
Tonga	Food and Agriculture Organization of the United Nations. 2009. Fishery Country Profile, Tonga. http://www.fao.org/fishery/countrysector/FI-CP_TO/en [Last accessed May 11,2009]	4
Trinidad and Tobago	Mike, A. & I.G. Cowx. 1996. A preliminary appraisal of the contribution of recreational fishing to the fisheries sector in north-west Trinidad. <i>Fisheries Management and Ecology</i> 3: 219–228	1
Tunisia		
Turkey	Food and Agriculture Organization of the United Nations. 2007. Fishery Country Profile, Republic of Turkey. ftp://ftp.fao.org/FI/DOCUMENT/fcp/en/FI_CP_TR.pdf [Last accessed May 11,2009]	4
United Arab Emirates	No data found	
United Kingdom	Agnarsson, S., Radford, A. & G. Riddington. 2008. Economic impact of angling in Scotland and Iceland. In: Aas, O. (Ed.) <i>Global Challenges in Recreational Fisheries</i> . Blackwell Publishing, Singapore, pp. 188–201	1
	Crabtree, B., Willis, K. Powe, N., Carman, P., Rowe, D., MacDonald, D. & Usher-Benwell, Y. 2004. <i>Research into the economic contribution of sea angling</i> . Final report to UK Department for Environment Food and Rural Affairs, March 2004, 71 pp. plus 7 annexes	2
Ukraine	Food and Agriculture Organization of the United Nations. 2009. Fishery Country Profile, Ukraine. http://www.fao.org/fishery/countrysector/FI-CP_UA/en [Last accessed May 11,2009]	4
United States	Gentner, B. & S. Steinback. 2008. The economic contribution of marine angler expenditures in the United States, 2006. U.S. Department of Commerce, NOAA Tech. Memo, NMFS-FSPO-94, 301 p.	2
	U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, Bureau of the Census. 2006. National Survey of Fishing, Hunting and Wildlife-Associated Recreation	
Uruguay	http://uruguay.pordescubrir.com/2009/01/19-la-pesca-deportiva-en-uruguay.html [Last accessed May 11,2009]	7
Vanuatu	http://www.govanuatu.com/fishing.html [Last accessed May 11,2009]	7
Venezuela	Food and Agriculture Organization of the United Nations. 2009. Fishery Country Profile, Venezuela. http://www.fao.org/fishery/countrysector/FI-CP_VE/es [Last accessed May 11,2009]	4

Appendix I continued

Country	Source	Source type
Viet Nam	Food and Agriculture Organization of the United Nations. 2009. Fishery Country Profile, Viet Nam. http://www.fao.org/fishery/countrysector/FI-CP_VN/en [Last accessed May 11,2009]	4
Yemen	No data found	

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