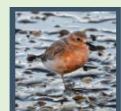




Human Interactions with Turtles & Tortoises

An Annotated Bibliography

Colleen Black
Michael Lück



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Tourists observing basking Hawaiian Green Sea Turtles
(*Chelonia mydas*) at Ho'okipa, Maui

1. INTRODUCTION

This is the second of a series of annotated bibliographies, published by Dotterel Publishing. The aim of this series is to provide a comprehensive overview of the literature pertaining to specific touristic and leisure activities, in particular (but not limited to) wildlife viewing activities. These annotated bibliographies will aid researchers, other interested persons and organisations in locating relevant literature.

Interactions with turtles and tortoises have increased significantly over the past two decades, and so has the academic attention to these (mostly related to sea turtles). As with many human interactions with wildlife there is a growing concern about the consequences of these activities, which is reflected by a large number of the works on conservation in this bibliography.

The main part of this document is divided into two sections: The first section is a *reference bibliography*. The second section is an *annotated bibliography*, adding short abstracts/summaries to most of the works listed in the first section. Both sections are organised in alphabetical order.

We have included references from a variety of sources, mostly from academic journals, books, theses and dissertations, conference proceedings and technical reports. While the majority of sources relate directly to turtles and tourism, we have also included some works on general tourism and recreational activities and the effects these may have on turtles/tortoises. A selection of references about turtle conservation and management were also included, because these are indirectly linked to recreational interactions with turtles/tortoises. Lastly, we have added a number of pieces published in the *Marine Turtle Newsletter*. We acknowledge that there are also numerous non-academic books and websites on turtles and tortoises and tourism activities; however, these would be virtually impossible to include in a systematic manner due to the sheer volume.

While this is an extensive bibliography, we do not claim it to be complete. In fact, we aim to regularly update this bibliography, and gratefully accept any suggestions for inclusion. Please email suggestions with publication details to dotterelpublishing@gmail.com



Radiated tortoise (*Astrochelys radiata*)
Kélonia (the turtle sanctuary), Réunion

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Ecotourists releasing sea turtles into the sea
Gerakan Selamatkan Penyu (Save the Turtle Movement)
Taman Pesisir (Coastal Park), Kab. Bantul, Java, Indonesia

3. ANNOTATED BIBLIOGRAPHY

A

Authors: Al Busaidi, M., Bose, S., Claereboudt, M, and Tiwari, M.

Year: 2017

Title: Sea turtles tourism in Oman: Current status and future prospects.

Conference Name: The 9th International Congress on Coastal & Marine Tourism: Global challenges – local solutions

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Abstract: This paper provides an overview of the current status and future potentials of nature-based tourism in the Sultanate of Oman with particular focus on sea turtles at two key sites; Ras Al Hadd and Masirah Island. The paper uses objective yardsticks such as inbound tourism data; numbers, nationality and spending patterns, seasonality, employment, and GDP share derived from secondary data from national and international sources. A strengths, weaknesses, opportunities and threats (SWOT) analysis is used to summarise relevant socio-economic, political, environmental, and regulatory issues. While there is concrete evidence of government commitment to develop nature-based tourism in the country, a number of key issues related to tourist facilities, human impacts, environmental situation, economic research, and capacity development are highlighted for further attention. Most importantly, the results show that there is a potential to increase the contribution of sustainable sea turtle tourism to Oman GDP. To do this, the sector needs to: 1) consider the seasonal variation of tourists, 2) develop its accommodation capabilities especially at the sites with ecological uniqueness, 3) improve training and ‘Omanisation’, 4) develop marketing tools to attract the dominant inbound ecotourism groups to the country, and 5) enhance sustainable planning implementation in the Omani tourism sector. It is hoped that policymakers can use these findings to set a direction on sustainable sea turtle tourism in Oman.

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Journal: Tourism and Hospitality Research

Volume: 19

Issue: 3

Pages: 321-336

Abstract: This paper provides an overview of the current status and future potentials of nature-based tourism in the Sultanate of Oman with particular focus on sea turtles at Ras Al Hadd. The paper uses objective yardsticks such as inbound tourist arrivals, nationality and spending patterns, seasonality, employment, as well as gross domestic product contribution derived from secondary data from national and international sources to appraise the current situation. Additionally, based on the review of relevant literature, a strengths, weaknesses, opportunities, and threats analysis is used to summarise relevant socioeconomic, political, environmental, and regulatory issues. While there is strong evidence of government commitment to develop nature-based tourism in the country, a number of key issues related to tourist facilities, human activities, environmental conditions, economic research, and capacity development are highlighted for further attention. Most importantly, the analysis suggests a potential to increase the contribution of sustainable sea turtle tourism to Oman’s gross domestic product. To realise this potential the sector needs to (1) consider the seasonal variation of tourists, (2) develop its accommodation capabilities especially

at sites with ecological uniqueness while ensuring minimum negative impacts on biodiversity, (3) increase the number of Omani nationals employed in the tourism industry and improve their skills through training, (4) develop marketing tools to attract the dominant inbound ecotourism groups to the country, (5) enhance sustainable planning implementation in the Omani tourism sector, and (6) most importantly ensure an effective implementation of legislation protecting sea turtles and their habitats. It is hoped that policymakers can use these findings to set a direction on sustainable sea turtle tourism in Oman, while promoting the effective conservation of these species.

Authors: AlKindi, A.Y.A., Mahmoud, I.Y., Al-Habsi AA, Al-Bahry, S.N., Al-Gheilani, H.M., and Bakheit, C.S.

Year: 2006

Title: The effect of physical and human factors on beach selection by green turtles (*Chelonia mydas*) at Ras Al Hadd Reserve, Oman

Journal: Chelonian Conservation and Biology

Volume: 5

Issue: 2

Pages: 289-294

Abstract: Beaches at Ras Al-Hadd Reserve, Oman, share common physical features ideal for nesting green turtles (*Chelonia mydas*). However, human activities related to commercial fishing and coastal development impact nesting. Beaches with hills as a backdrop and with minimal human activities were the primary nesting sites at the reserve. During peak nesting season (monsoon/wet period), the mean number of excavation attempts was equal between oviposited and nonoviposited turtles. During nonpeak season (dry period), the mean number of excavation attempts was significantly higher in nonoviposited turtles than in oviposited turtles, and insufficient sand moisture frequently resulted in one or several nest collapses and oviposition failure.

Authors: Álvarez-Varas, R., Petitpas, R., Stowhas, P., and Fuentes-Hurtado, M.

Year: 2015

Title: Conservation research needs of Easter Island (*Rapa Nui*) marine turtles

Journal: Chelonian Conservation and Biology

Volume: 14

Issue: 2

Pages: 184-192

Abstract: Easter Island has experienced a marked increase in tourism during the past few decades; this has intensified the use of natural resources, which has in turn posed new threats to marine wildlife. To gather information on marine turtle species inhabiting Easter Island and research needs for their conservation, the authors conducted interviews with local communities and combined them with coastal and underwater surveys. Interviews indicated the presence of five marine turtle species and highlighted an important historical connection with the Rapa Nui culture; Álvarez-Varas and colleagues identified several potential threats associated with growing tourism that should be taken as a research priority and integrated with environmental education programmes in order to ensure the long-term conservation of marine turtles on this remote island in the Southeast Pacific.

B

Author: Balazs, G. H.

Year: 1976

Title: Green turtle migrations in the Hawaiian archipelago

Journal: Biological Conservation

Volume: 9

Issue: 2

Pages: 125-140

Abstract: In order to understand better the natural history and conservation status of the unique land-basking Hawaiian green turtle population (*Chelonia* sp.), intensive tagging studies were conducted at French Frigate Shoals (24°N 160 °W), a wildlife sanctuary comprising the only aggregate breeding site remaining in the 2600 km long Archipelago. Additionally, newly captured *Chelonia*, as well as individuals held for extended periods in display aquaria, were tagged and released around the large islands in the southeast. Tag recoveries of adults identified during the 1973 and 1974 nesting seasons documented migrations from French Frigate Shoals to the islands of Kauai, Oahu and Maui, distances of 713,936 and 1069 km to the southeast, respectively, and to French Frigate Shoals from Lisianski Island and Pearl and Hermes Reef, distances of 834 and 1075 km to the northwest, respectively. A captive-held female released off Niihau travelled 658 km to French Frigate Shoals where nesting was recorded. Other animals released from captivity showed movement between the large islands, while those released shortly after capture remained in the same coastal area for up to 11 months. Combined results from the present study and previous intermittent taggings made since 1961 by Federal and State wildlife management personnel indicated that breeding colony members are derived from widely separated feeding areas within the archipelago and appear to be reproductively isolated from other Pacific *Chelonia*. Northwestern areas of the archipelago are thought to serve as important migratory stations for early life stage development.

Authors: Ballantyne, R., Packer, J., and Falk, J.

Year: 2011

Title: Visitors' learning for environmental sustainability: Testing short- and long-term impacts of wildlife tourism experiences using structural equation modelling

Journal: Tourism Management

Volume: 32

Issue: -

Pages: 1243-1252

Abstract: Wildlife tourism experiences have the potential to positively impact tourists' awareness, appreciation and actions in relation to the specific wildlife they encounter and the environment in general. This paper investigates the extent of such impact across multiple sites, and uses Structural Equation Modelling to identify factors that best predict positive long-term learning and environmental behaviour change outcomes. Three sets of variables were measured e visitors' entering attributes (including pre-visit environmental orientation and motivation for the visit), salient aspects of the experience, and short- and long-term learning and environmental behaviour change outcomes. Although attributes such as pre-visit commitment and motivation to learn were among the best predictors of the long-term impact of the experience, there was evidence that aspects of the experience were also important. In particular, reflective engagement which involved cognitive and affective processing of the experience was found to be associated with short- and long-term environmental learning outcomes. The implications for wildlife tourism managers are discussed.

Authors: Ballantyne, R., Packer, J., and Falk, J.

Year: 2017

Title: The impact of wildlife tourism experiences on visitors' learning for sustainability

Conference Name: The 6th International Congress on Coastal & Marine Tourism: The spirit of Ubuntu: Connecting continents, places and people

Conference Location: Port Elizabeth, South Africa

Page: 269

Abstract: While it is generally accepted that wildlife tourism experiences influence visitors' knowledge about animals, beliefs in relation to sustainability, and behaviour at the site (Ham and Weiler, 2002), little research is available regarding the extent of their impact on visitors' adoption of environmentally sustainable practices after leaving the site. This paper investigates the impact of wildlife tourism, in a variety of contexts, on visitors' understanding, attitudes and practices in relation to environmental sustainability. It explores the relationships between three sets of variables: (a) key visitor attributes; (b) salient aspects of the experience; and (c) learning outcomes immediately following and four months after the visit.

Pre- and post-visit questionnaires (n = 1289 and 898 respectively) and a follow-up web survey (n = 240) were administered at four sites offering marine wildlife tourism experiences (an aquarium; a marine theme park; a turtle experience; and a whale watching experience). These sites offered a range of wildlife encounters, including animal shows, signed exhibits, guided tours, and interaction with captive and non-captive animals.

Visitors indicated that the experience of seeing and interacting with the animals had a greater impact on their commitment to conservation than the information provided through signs, guides or commentaries. However, the findings suggest that while an emotionally engaging experience is important for attitude change and visitor satisfaction, a more contemplative or reflective response needs to be elicited in order to impact on behaviour. Those people who already have an interest in environmental issues are more likely to respond in this way.

Authors: Ballantyne, R., Packer, J., and Hughes, K.

Year: 2009

Title: Tourists' support for conservation messages and sustainable management practices in wildlife tourism experiences

Journal: Tourism Management

Volume: 30

Issue: -

Pages: 658-664

Abstract: A common justification for developing wildlife tourism attractions is that they help to secure long-term conservation of wildlife and wildlife habitats. Managers and guides often highlight their role in protecting wildlife and its habitat, yet little is known about the interests, needs and preferences of the tourists who participate in such activities – how aware are they of conservation issues; how concerned are they about the environmental impacts their visit may cause; do they expect and accept the conservation messages they receive? This research explores the perceptions, preferences and conservation awareness of tourists visiting the Mon Repos Conservation Park in Queensland, Australia. Comparison data from four other sites are also presented in order to provide a wider context for interpreting the data. The findings suggest that wildlife tourism management practices that enlist tourists as conservation partners, communicate the reasons behind any constraints imposed, and present a consistent message regarding interactions with wildlife, are likely to be most successful in meeting the needs of both tourists and wildlife.

Authors: Ballantyne, R., Packer, J., and Sutherland, L. A.

Year: 2011

Title: Visitors' memories of wildlife tourism: Implications for the design of powerful interpretive experiences

Journal: Tourism Management

Volume: 30

Issue: -

Pages: 770-779

Abstract: One of the aims of wildlife tourism is to educate visitors about the threats facing wildlife in general, and the actions needed to protect the environment and maintain biodiversity. To identify effective strategies to achieve this aim, this paper examines participants' memories of their wildlife tourism experiences and explores processes through which such experiences can lead to long-term changes in conservation behaviour. Findings are based on 240 visitors' extended open-ended responses to a follow-up web survey administered approximately four months after a visit to one of four marine-based wildlife tourism venues in Southeast Queensland. Qualitative analysis revealed four levels of visitor response to the experience, implying a process involving what visitors actually saw and heard (sensory impressions), what they felt (emotional affinity), thought (reflective response), and finally what they did about it (behavioural response). Recommendations are provided for ways tourism managers and wildlife interpreters can maintain and strengthen these dimensions of memorable experiences in order to enhance visitor satisfaction and encourage visitors' long-term adoption of environmentally sustainable practices.

Author: Barkai, A.

Year: 2017

Title: Olrac Observer: An interactive citizen science, data collection platform with applications for ecotourism

Conference Name: The 9th International Congress on Coastal & Marine Tourism: Global challenges – local solutions

Conference Location: Gothenburg, Sweden

Pages: 25

Abstract: Every day, countless vessels, from cruise ships, sightseeing tours to recreational fishing vessels roam the oceans. Collectively, these vessels are exposed to a myriad of environmental conditions, pollution events and observe enormous amounts of marine life. The collective data-gathering potential of these vessels is tremendous. Our vision is that each one of these vessels could become a data collection platform, relying predominantly on localised observation data collected at a ground-roots level and with a strong focus on spatial and temporal distributions. The author and his team of programmers have developed such a data collection platform that can transform this vision into reality, the Olrac Dynamic Marine Observer (OlracDMO). OlracDMO is made of two components, a vessel unit for real time recording of observations while at sea and a web-server for the management of observations from numerous vessels. These units have the capacity to gather, store and manage a variety of observational data types, in many forms and formats, on one integrated platform. OlracDMO is a highly interactive tool (see figure 1), which assists casual observers (no technical skills is needed) in describing and identifying a variety of observations such as marine species, sea birds, pollution, debris, other vessels and more.

OlracDMO allows users to capture images of the observations they made during their tour, store them on their own computer, send them to the central website for public viewing as well as giving them the ability to create a trip diary in the form of a printed or digital multimedia booklet. This software encourages tourists to learn and explore the environment they have come to experience while contributing to the public's general knowledge of the ocean and marine conservation efforts. OlracDMO is currently designed to allow users to record and identify sightings of 89 mammal

species, 359 birds, 35 sharks and rays, seven turtles, four pollution types, 51 other vessels, eight ghost fishing devices and more.

OlracDMO has been designed to enhance the experience of eco-tourists and contribute with vital observations toward marine conservation. However, it also has the potential to assist tour operators who can use OlracDMO collection of observations (website, trip booklets) to create awareness of their operations and to use them as part of marketing campaigns to attract marine eco-tourists. This information can also be used by tour operators to optimize their trips by identifying marine sighting hotspots that maximize experiences of marine life at sea.

Authors: Barnard, M. L.

Year: 2012

Title: Volunteer and sea turtle tourism: A case study of a social-ecological conservation project in Matapalo Beach, Costa Rica

Conference Name: The 7th International Coastal & Marine Tourism Congress: Planning, designing, and managing the destination

Conference Location: Breda and the Dutch Delta, The Netherlands

Pages: 201-222

Abstract: Volunteer conservation tourism is a rapidly growing sector of tourism that stems from human interest in wildlife interactions. In many instances, this tourism provides needed funding and labour for conservation projects, and personal fulfilment for the tourists. Charismatic mega-fauna have widespread appeal, and people are substantially inclined to volunteer towards conservation efforts of such species. This paper examines the impact that volunteer sea turtle conservation tourism has on conservation efforts and the impacts that the volunteer experience has on the volunteer tourists. Given that all species of sea turtles are on the IUCN list as critically endangered, endangered, or vulnerable; there is an obligation to focus on conservation, but an equally important need to maintain a work force of volunteers. An exploratory case study was conducted in Mata Palo Beach, Costa Rica to survey the motivations, satisfactions, and behavioural responses of the volunteers involved in the sea turtle conservation efforts. By examining the human dimensions of sea turtle conservation, a framework was devised and can be broadly applied to optimise human environment-interactions. The study found that, in general, women from Europe are the major demographic that participate in such conservation projects. Additionally, a social-ecological conservation project that places emphasis on the volunteers' environmental education and wildlife interactions will positively influence volunteers' self-efficacy in terms of conservation. Therefore, these social-ecological projects can better generate behavioural changes that will aid in conservation efforts.

Author: Barnard, M. L.

Year: 2012

Title: Volunteer and sea turtle tourism: A case study of a social-ecological conservation project in Matapalo Beach, Costa Rica.

Academic Department: School of Marine and Environmental Affairs

University: University of Washington

Type of Thesis: Master of Marine Affairs

Abstract: All species of sea turtles are on the IUCN list as critically endangered, endangered, or vulnerable. Sea turtle conservation efforts are facilitated by volunteer-based social ecological conservation projects. This thesis describes sea turtle conservation projects in Costa Rica and focusses on a case study in Matapalo Beach. The Matapalo Beach project is a success both in terms of conversation and social objectives. Regarding conservation, the hatching success has been consistently high. Regarding social objectives, Barnard found that, in general, college-educated women from Europe are the major demographic group that participates in this project. Selected

findings show that regarding motivations, a) few respondents had a history of wildlife conservation volunteering, b) roughly half indicated that volunteering was the main purpose of their trip, and c) most said that sea turtles were important to them. Regarding satisfaction, a) most learned about sea turtle biology, b) most viewed their work as important to conservation, and c) most enjoyed seeing sea turtles, watching hatchlings, handling turtle eggs, and learning about sea turtles. Regarding self-efficacy, the volunteers' environmental education and wildlife interactions were most important. Barnard recommends that social-ecological conservation projects emphasise a positive, personal experience for the volunteers. This will better generate behavioural changes in volunteers to aid in successful conservation efforts.

Authors: Bell, C. D., Blumenthal, J. M., Austin, T. J., Ebanks-Petrie, G., Broderick, A. C., and Godley, B. J.

Year: 2009

Title: Harnessing recreational divers for the collection of sea turtle data around the Cayman Islands

Journal: Tourism in Marine Environments

Volume: 5

Issue: 4

Pages: 245-257

Abstract: Bell and colleagues present data from a 26-month programme “Caribbean Turtle Watch,” initiated as part of the “Turtles in the Caribbean Overseas Territories” (TCOT) programme and designed to harness recreational divers to assess in-water populations of marine turtles in the Cayman Islands. The authors recorded 521 dives in Grand Cayman and Little Cayman between September 1, 2002 and November 29, 2003. Data, presented as the mean number of turtles sighted per dive, provide insight into spatio-temporal patterns of sightings as a proxy of abundance. Widespread sightings were recorded of two marine turtle species, green turtles (*Chelonia mydas*) and hawksbill turtles (*Eretmochelys imbricata*), around both islands. There was no obvious relationship between the existence of Marine Protected Areas (MPAs) and the abundance of turtle sightings. Diving is allowed in Marine Park Zones and dive pressure may impact overall habitat quality in these areas. The vast majority of sightings of both species (94% in each case) were considered to be juvenile or subadults. While turtle sighting potential was not a major influence on dive site choice, actual turtle sighting greatly enhanced dive enjoyment. Spatiotemporal and morphological analyses of data collected by volunteers compared favourably with those based on data collected by scientists. This technique is transferable to other countries and may hold particular value in areas where resources assigned to marine turtle research are low.

Authors: Benitez-Capistros, F., Hugé, F., Dahdouh-Guebas, F., and Koedam, N.

Year: 2015

Title: Exploring conservation discourses in the Galapagos Islands: A case study of the Galapagos giant tortoises

Journal: 45

Issue: 6

Pages: 706-724

Abstract: Conservation discourses change rapidly both at global and local scales. To be able to capture these shifts and the relationships between humans and nature, the authors focused on a local and iconic conservation case: the Galapagos giant tortoises (*Chelonoidis* spp.). They used the Q methodology to contextualize conservation for science and decision making and to explore the multidimensionality of the conservation concept in Galapagos. The results indicate four prevailing discourses: (1) Multi-actor governance; (2) giant tortoise and ecosystems conservation; (3) community governance; and (4) market and tourism centred. These findings allow them to identify

foreseeable points of disagreement, as well as areas of consensus, and to discuss the implication of the findings to address socio-ecological conservation and sustainability challenges. This can help the different involved stakeholders (managers, scientists and local communities) to the design and apply contextualized conservation actions and policies to contribute to a better sustainable management of the archipelago.

Author: Bernstein, J. M.

Year: 2015

Title: Understanding marine wildlife harassment by visitors to Hawai'i

Conference Name: The 8th International Congress on Coastal & Marine Tourism: Learning from the past, looking to the future

Conference Location: Kona Coast, Hawai'i

Page: 8

Abstract: Tourists are moving away from viewing wildlife in captivity in favour of “authentically” experiencing wildlife in its natural habitat. Given the high volume of visitors to Hawai'i, resource managers are concerned about the negative long-term impacts of wildlife viewing on threatened and endangered marine wildlife (e.g., bottlenose dolphins, green sea turtles, monk seals) caused by inappropriate wildlife viewing practices (i.e. touching, feeding, etc.). While agencies in Hawai'i recognise the need to change visitor behaviours, a more comprehensive understanding of the motivation underlying these behaviours is necessary to do so. The goal of this research project was to better understand the attitudes and behaviours of visitors who engage in inappropriate viewing practices. A survey (n = 241) was conducted online using the web-based marketplace Amazon's Mechanical Turk. Visitors were asked about a number of issues, including their likelihood of viewing/harassing wildlife, the importance of encountering wildlife versus engaging in other activities, and their understanding of what types of behaviour was appropriate when viewing wildlife. The results confirmed previous research that suggests that visitors prefer to view wildlife on self-guided tours in natural habitats, as compared to guided tours and/or captive viewing. While respondents were interested in viewing wildlife while on vacation, they were interested other activities as well (cultural, dining, etc.). Results showed that a majority of visitors are unfamiliar with Hawaii's eco-certification programmes and marine conservation laws, and nearly half were not aware that harassing wildlife (i.e. touching or feeding) would affect them negatively. Factor analysis identified an “eco-scientific” factor (learning about wildlife within its broader ecological context) and a “harassment” factor (a desire to interact physically with wildlife), which were positively correlated. The “harassment” factor correlated strongly wanting to include wildlife in one's vacation, and “harassers” were highly interested in guided dolphin tours. The results provide useful information that can assist wildlife managers in reducing wildlife harassment by visitors. First, visitors lack information as to what constitutes harassment, suggesting that public information campaigns are helpful in informing visitors about proper behaviours. Second, visitors care about wildlife, but they are more concerned with other issues typical of visitors (where to eat, where to stay, etc.). This suggests that, should wildlife managers want to encourage pro-environmental behaviour, they first must first recognise the other concerns of tourists, thus “freeing up” the capacity to be concerned about wildlife. Third, the demand for wildlife tours is being largely driven by those likely to engage in harassment behaviours. This puts pressure on the industry to offer tours that include wildlife harassment. There is a market segment that is interested in wildlife and concerned about its protection, and it could be more fully capitalised on. Finally, wildlife harassers are often the same respondents who are interested in wildlife and care about it deeply. Therefore, wildlife managers should attempt to connect the protectionist attitudes of visitors with their desire to interact with wildlife, explaining to visitors how their interest in the species' survival is threatened by their disturbing behaviours.

Author: Black, C. A.

Year: 2018

Title: The impact of the terrestrial basking event of Hawaiian green sea turtles on visitors at Ho'okipa, Maui.

Academic Department: Department of Tourism Management

University: Thompson Rivers University

Thesis Type: Bachelor of Tourism Management

Abstract: In Maui, marine tourism includes Hawaiian green sea turtles that emerge from the ocean to bask on the sand, at Ho'okipa Beach Park. In no other location in Hawai'i, do the green sea turtles bask so consistently and in the highest numbers, as they do at Ho'okipa Beach. With the event drawing approximately 500 visitors to the beach daily, a local non-profit, Hawai'i Wildlife Fund, aims to protect the turtles by providing interpretation to visitors. This research examined the impact of the terrestrial basking event of the Hawaiian green sea turtles on visitors at Ho'okipa, Maui. The objectives were: 1) to identify if visitors transitioned into more responsible marine tourists by adapting the outcome indicators of visitor satisfaction, learning, attitudes and behaviours, from Orams' marine-tourist model, 2) measure the interpretation efforts of Hawai'i Wildlife Fund, and 3) help aid in the protection of the basking green sea turtles. Results demonstrated that visitor transition did not occur and could not be confirmed on visitors who expressed good intentions, without the pursuit of longitudinal studies. This outcome notwithstanding, the measured Orams outcome indicators show there is great visitor satisfaction in the event itself and viewing the basking sea turtles in their natural environment. Visitors connected emotionally to the turtles, which facilitated their learning through the interpretation programmes of the Hawai'i Wildlife Fund. The programmes impacted the viewing experience and demonstrated that emotion can transition visitors. Visitor attitudes reflected the knowledge of what constituted a responsible tourist, yet many disregarded the signage, boundaries, and suggestions of Hawai'i Wildlife Fund volunteers. This reflected a mixed and somewhat conflicted viewing experience for many visitors. The most deficient area of Orams outcome indicators was visitor behaviour. Survey fatigue occurred in this area and while there were visitors who exhibited good intentions, information on how to get involved with Hawai'i Wildlife Fund and help the turtles on holiday and when visitors returned home, was not realised. The findings enable the author to provide the Hawai'i Tourism Authority and Maui County with insight on how this basking event impacts visitors. Results also offer managerial strategies from Orams' model as recommendations to aid in the visitor and site management that supports Maui County, Hawai'i Wildlife Fund, and the protection of the basking Hawaiian green sea turtles, providing a memorable viewing experience for visitors.

Authors: Black, C. A., Lück, M., and Engeset, M.

Year: 2018

Title: Visitors advocate for responsibility, accountability and protection of the terrestrial basking Hawaiian Green Sea Turtles at Ho'okipa, Maui

Conference Name: 12th Annual Conference of the International Competence Network of Tourism Research and Education (ICNT): Addressing tourists' needs and trends in the next ten years

Conference Location: Potchefstroom, South Africa

Pages: 19-26

Abstract: On Maui, Hawaiian green sea turtles emerge from the ocean to bask on the sand at Ho'okipa Beach Park. In no other location in Hawai'i do the green sea turtles bask so consistently and in the highest numbers. With the basking event drawing approximately 500 visitors to the beach daily, a local non-profit organisation, Hawai'i Wildlife Fund (HWF), aims to protect the turtles by providing interpretation to visitors. This research examined the impact of the terrestrial basking event of the Hawaiian green sea turtles on visitors at Ho'okipa, Maui. The objectives

were: 1) to identify if visitors transitioned into more responsible marine tourists by adapting the outcome indicators of visitor satisfaction, learning, attitudes and behaviours, from Orams' marine-tourist model, 2) measure the interpretation efforts of Hawai'i Wildlife Fund, and 3) help aid in the protection of the basking green sea turtles. This paper showcases results from a factor analysis on visitor attitudes, completed by 543 surveyed respondents. The data demonstrate a demand for greater responsibility and accountability from both visitors and for site management and include a call for additional protection of the basking Hawaiian green sea turtles at Ho'okipa Beach Park.

Authors: Blanco, G., and Santidrián, P.

Year: 2011

Title: The green sea turtle of Guanacaste is threatened to extinction by human practices / La tortuga marina negra de Guanacaste amenazada de extinción por prácticas humanas

Journal: Environmental Science

Volume: 41

Issue: 1

Pages: 19-26

Abstract: The objective of this study was to analyse the human impacts threatening with extinction the east Pacific green turtle or black turtle (*Chelonia mydas*). Blanco and Santidrián surveyed the beaches of the northern coast of Guanacaste to observe the presence of nests of this species and to register human threats. At the same time they collected information on beaches where research projects were carried out. The main nesting beaches for east Pacific green turtles were Nombre de Jesús, Zapotillal, Blanca, Matapalo, Prieta y Cabuyal. The main threats were: illegal egg poaching, beach development and uncontrolled tourism. Costa Rica hosts the second larger rookery of east Pacific green turtles and the most important nesting beaches lack of protection. Increase control on these beaches and in its neighbouring waters is essential to save this population from extinction.

Authors: Bräutigam, A. and Eckert, K. L.

Year: 2006

Title: Turning the tide: exploitation, trade and management of marine turtles in the Lesser Antilles, Central America, Colombia and Venezuela

City/State: Cambridge, UK

Institution: TRAFFIC International

Date: 2006

Abstract: This comprehensive review of exploitation, trade and management of marine turtles in the Wider Caribbean Region (WCR) highlights findings related to the legal framework for marine turtle management, patterns of domestic exploitation and use and international trade, and a variety of core management issues, including population monitoring, fishery controls and law enforcement. While there have been many advancements over the past half-century in our understanding of marine turtle biology and of the management needs of these species, the review concludes that actual management of marine turtles, and of marine turtle exploitation in particular, has in many ways not kept pace with this understanding nor with the contemporary scope of threats to their survival. The report documents the implications of management shortcomings in one country for the management and conservation efforts being made in others and, finally, calls attention to a range of activities that are being undertaken at the national level to address these problems and which could be expanded or adapted across the region.

Author: Budiantoro, A.

Year: 2016

Title: The development of ecotourism based sea turtle conservation in Bantul Regency, Yogyakarta

Conference Name: The 2nd International Academic Conference on Tourism (INTACT) “Archipelago Tourism: Marine Tourism in Archipelagic Hemisphere”

Conference Location: Yogyakarta, Indonesia

Page: 25

Abstract: The development of ecotourism-based sea turtle conservation in Indonesia has been established in various areas including Meru Betiri, Derawan islands, Benoa, Serangan (Bali), and Sukabumi. Ecotourism functions to support funding of sea turtle conservation programmes while the presence of tourists also serve as a means of dissemination about the importance of sea turtle conservation to the public. The programme is designed for tourists who simply come to see turtle landings or release hatchlings, so they understand the concept of sea turtle conservation. The ecotourism-based sea turtle conservation programme in Bantul started in 2012. The number of visitors to the programme has increased every year since; they come from various ages and education levels. The author used a questionnaire to solicit feedback from the visitors to develop a satisfactory education programme. There is a conservation education programme for students, which is conducted at schools, which has run since 2013. The education on sea turtle conservation programme is also conducted before visitors release the hatchlings. There remain a lot of potential programmes that can be developed for sea turtle ecotourism in Bantul, such as sea turtle laying eggs observation, campground-based sea turtle conservation, and also outdoor conservation education near the beach. These programmes need to be meticulously designed in order to attract visitors. The environmental capacity of the site is also calculated in order that tourists who come to the site do not damage the environment.

C

Author: Campbell, L. M.

Year: 2007

Title: Local conservation practice and global discourse: a political ecology of sea turtle conservation

Journal: Annals of the Association of American Geographers

Volume: 97

Issue: 2

Pages: 313-334

Abstract: This article employs political ecology and common property theory to examine sea turtle conservation, how it is articulated and executed at different socio-political and geographic scales, and the consequences for local rights of access to resources. It draws on 10 years of research at various field sites in Costa Rica, and on sea turtle conservation policy in general, to show that although most sea turtle conservation policy is legitimised in the language of ecology, beliefs about rights to sea turtles as a resource underlie ecological arguments. This becomes clear through analysis of the local, national, and international scales, where ecological arguments are employed differently in order to discount or promote certain types of property rights and to promote particular types of conservation interventions; thus, promoting conservation action at a particular scale is not simply a matter of ecological necessity. The article's main purpose is to outline a political ecology of sea turtle conservation; it also contributes to political ecology and common property theory, and illustrates the productive combination of these for analysing conservation. Furthermore, it addresses questions about the appropriate scale at which conservation should take place and the

rights of local people to use and manage resources, both of which are topics of considerable debate in the wider conservation community.

Authors: Campbell, L. M., and Smith, C.

Year: 2006

Title: What makes them pay? Values of volunteer tourists working for sea turtle conservation

Journal: Environmental Management

Volume: 38

Issue: 1

Pages: 84-98

Abstract: As charismatic mega-fauna, sea turtles attract many volunteers to conservation programmes. This article examines the ways in which volunteers value sea turtles, in the specific context of volunteers working with the Caribbean Conservation Corporation, at Tortuguero, Costa Rica. The complexity of volunteer values is explored using a qualitative approach. In-depth interviews with 31 volunteers were conducted in July of 1999 and 2000. Interviews probed, among other things, interest in sea turtles and their conservation, motives for participating, and the most gratifying parts of their volunteer experience. Results show that volunteers hold multiple and complex values for sea turtles, but particular values dominate. Results have implications for understanding human–environment relations and the emerging study of volunteer tourism. There are also management implications for volunteer programmes hoping to attract participants.

Authors: Cazabon-Mannette, M., Schuhmann, P. W., Hailey, A., and Horrocks, J.

Year: 2017

Title: Estimates of the non-market value of sea turtles in Tobago using stated preference techniques

Journal: Journal of Environmental Management

Volume: 192

Issue: -

Pages: 281-291

Abstract: Economic benefits are derived from sea turtle tourism all over the world. Sea turtles also add value to underwater recreation and convey non-use values. This study examines the non-market value of sea turtles in Tobago. The authors use a choice experiment to estimate the value of sea turtle encounters to recreational SCUBA divers and the contingent valuation method to estimate the value of sea turtles to international tourists. Results indicate that turtle encounters were the most important dive attribute among those examined. Divers are willing to pay over US\$62 per two tank dive for the first turtle encounter. The mean WTP for turtle conservation among international visitors to Tobago was US\$31.13 which reflects a significant non-use value associated with actions targeted at keeping sea turtles from going extinct. These results illustrate significant non-use and non-consumptive use value of sea turtles, and highlight the importance of sea turtle conservation efforts in Tobago and throughout the Caribbean region.

Author: Chan, E-H.

Year: 2006

Title: Marine turtles in Malaysia: On the verge of extinction?

Journal: Aquatic Ecosystems Health & Management

Volume: 9

Issue: 2

Pages: 175-184

Abstract: Four species of marine turtles (leatherback, green turtle, hawksbill and olive ridley) are found in Malaysia. Current statistics indicate that the leatherback and olive ridley turtles are on the

verge of extinction in Malaysia; while other species, excluding the green turtles of the Sabah Turtle Islands, are in steady decline. Consumptive utilisation in the form of egg exploitation until recently, took place mainly in Terengganu. Turtles are also being used to promote tourism in Terengganu and Sabah. Population decline is attributed to a long history of egg exploitation, commercial hunting and harvesting of marine turtles in neighbouring countries, fishing mortality, loss of nesting habitats, marine pollution, negative impacts of tourism and the lack of a national strategy on marine turtle conservation. Marine turtle conservation efforts in Malaysia are not lacking, but need to be upgraded and coordinated. Legislation among the various states of Malaysia should be harmonised to ensure greater protection for these endangered animals. Existing egg incubation programmes should be expanded to secure a higher level of egg protection. More sanctuaries should be established in key nesting sites and Malaysia should join her neighbours in ratifying current regional instruments aimed at marine turtle conservation.

Authors: Chao, Y. L., and Chao, S. Y.

Year: 2017

Title: Resident and visitor perceptions of island tourism: green sea turtle ecotourism in Penghu archipelago, Taiwan

Journal: Island Studies Journal

Volume: 12

Issue: 2

Pages: 213-228

Abstract: This study compares residents and visitors on the island of Wang-An in Penghu archipelago (Taiwan) in terms of four variables (ecotourism perception, environmental attitude, ecotourism behaviour, local environmental knowledge). Results show that island visitors are positioned closer to the deep end of a shallow-deep spectrum on a few ecotourism characteristics such as stronger environmental commitment, smaller groups, and more personal experience. With a fuzzy cluster analysis reducing the four variables to two dimensions (ecotourism literacy, environmental familiarity and concern), the two clusters of island residents and visitors are found to overlap greatly with a noticeable divergence in the dimension of environmental familiarity and concern as a result of residents' better local environmental knowledge. Residents express greater approval of economic development on some items of the environmental attitude subscale. It is recommended that visitors have longer tours that increase interaction with residents to learn more about the local environment while serving as educators of ecotourism.

Authors: Coghlan, A., Fox, K. R., Prideaux, B., and Lück, M.

Year: 2017

Title: Successful interpretation in Great Barrier Reef tourism: Dive in or keep out of it?

Conference Name: The 6th International Congress on Coastal & Marine Tourism: The spirit of Ubuntu: Connecting continents, places and people

Conference Location: Port Elizabeth, South Africa

Pages: 47-60

Abstract: Marine wildlife tourism has become one of the fastest growing tourism sectors. In the context of the Great Barrier Reef, it focusses on five types of activities: (i) "swim-with" programmes, (ii) surface watching activities (whales and dolphins); (iii) diving (corals, sharks, etc), (iv) reef snorkelling trips and (v) glass bottom boat tours. It is proposed that management, product design and experience, and outcome will be different for each of these and not all findings within marine wildlife tourism are transferable between tourism types.

This paper looks at patterns of activities on the Great Barrier Reef (GBR), using visitor surveys (N=3407) collected in a four-year study of GBR tourism. Results suggest that the most popular activity is snorkelling (75.5%), followed by swimming (46.2%) and glass bottom boat tours

(43.6%). Divers made up a total of 25% of the sample. There were significant differences in the travel experiences and reef tour satisfaction ratings between respondents participating in different types of activities. Non-divers were less likely to have been to other reefs before, less motivated to visit the region to see the GBR, staff had a greater influence on their satisfaction, and they were more likely to say that interpretation during their experience changed their appreciation of the reef and their behaviour. Interpretation had the greatest influence on the behaviour and attitudes of respondents who had participated in a combination of activities, and these respondents also rated their satisfaction with the tour higher than other groups. The implications of the findings are discussed.

D

Authors: Denkinger, J., Parra, M., Muños, J. P., Carrasco, C., Murillo, J. C., Espinosa, E., Rubianes, F., and Koch, V.

Year: 2013

Title: Are boat strikes a threat to sea turtles in the Galapagos Marine Reserve?

Journal: Ocean & Coastal Management

Volume: 80

Issue: -

Pages: 29-35

Abstract: Impacts on sea turtle populations from fisheries bycatch, climate change, habitat destruction and poaching have been widely discussed, but little is known about boat strikes as a potential threat to sea turtles. Denkinger and colleagues present data on Pacific green turtles (*Chelonia mydas*) that suffered boat strikes in the Galapagos Marine Reserve at nesting beaches at Isabela Island and from foraging sites at San Cristobal Island from 2008 to 2011. Tourism in Galapagos has increased to more than 180,000 visitors a year and the boat traffic within the Marine Reserve poses a significant risk to sea turtles. Boat strikes were most frequent at foraging sites close to Puerto Baquerizo Moreno, a commercial and tourism port, where incidence varied between 16 and 20%. Incidence at nesting beaches was much lower with 3.7% of 4198 turtles showing injuries resulting from boat strikes. However, at the nesting beaches most of the impacts (59%) had occurred during the same nesting season while only 5% of the sea turtles observed at the foraging sites suffered their injuries during the study period. No data on survival rates from boat strike exist, however it is clear that many turtles die from the trauma caused by the impact. This paper focusses on only the survivors; therefore, the results represent a minimum estimate. This study clearly shows that the overall threat from boat strikes has an important effect on the Galapagos green turtle population. Conservation management including speed limits in key turtle habitats are needed to improve their survival in the Galapagos Marine Reserve.

E

Authors: Eagle, L., Hamann, M., and Low, D. R.

Year: 2016

Title: The role of social marketing, marine turtles and sustainable tourism in reducing plastic solution

Journal: Marine Pollution Bulletin

Volume: 107

Issue: -

Pages: 324-332

Abstract: Environmental plastic pollution constitutes a significant hazard to marine turtles, human health and well-being. Eagle and colleagues describe a transdisciplinary approach to draw together findings from diverse disciplines in order to highlight key environmental pollution problems and their consequences, together with social marketing-based strategies to address the problems. The example of plastic pollution and impacts to marine turtles illustrates the severity of the problem. Wildlife tourism and sustainable tourism activity have not focussed on specific behaviours to change and have had minimal impact on subsequent human behaviour regarding environmental issues, indicating the need for new strategies. Social marketing principles offer promise, but there is a need to investigate the utility of various theoretical foundations to aid the design and implementation of interventions. The authors offer insight towards using sophisticated multi-method research to develop insights into behaviours and segmentation-based strategies, that can aid the identification of barriers to, and enablers of, sustained behaviour change.

Authors: Eckert, K. L., and Hemphill, A. H.

Year: 2005

Title: Sea turtles as flagships for protection of the Wider Caribbean Region

Journal: Marine Studies (MAST)

Volume: 3(2) and 4(1)

Issue: 3(2) and 4(1)

Pages: 119-143

Abstract: Sea turtles are emerging as one of the most popular icons of the marine environment. Capitalising on their charismatic image, a remarkable variety of stakeholders, including scientists, conservationists, community-based organisations, corporations, and governments, have sought to utilise sea turtles as flagships. This paper focusses on the Wider Caribbean Region, emphasising small island developing states, and explores the ways, and appropriateness, of using sea turtles as flagships to motivate people to consider complex contemporary management and policy issues, including those associated with protected areas, fisheries, multilateral conservation of shared species and seascapes, and tourism.

Authors: Esperanza, A. O., Martinez, A. A., Tuz, M. T., and Perez-Collazos, E.

Year: 2016

Title: Are anthropogenic factors affecting nesting habitat of sea turtles? The case of Kanzul beach, Riviera Maya-Tulum (Mexico)

Journal: Coastal Conservation

Volume: 21

Issue: 1

Pages: 85-93

Abstract: Marine coast modification and human pressure affects many species, including sea turtles. In order to study nine anthropogenic impacts that might affect nesting selection of females, incubation and hatching survival of loggerhead (*Caretta caretta*) and green turtle (*Chelonia mydas*), building structures were identified along a 5.2 km beach in Kanzul (Mexico). A high number of hotels and houses (88; 818 rooms), with an average density of 16.6 buildings per kilometer were found. These buildings form a barrier which prevents reaching the beach from inland, resulting in habitat fragmentation. Main pressures were detected during nesting selection (14.19% of turtle nesting attempts interrupted), and low impact were found during incubation (0.77%) and hatching (4.7%). There were three impacts defined as high: beach furniture that blocks out the movement of hatchlings or females, direct pressure by tourists, and artificial beachfront lighting that can potentially mislead hatchlings or females. High impacted areas showed lowest values in nesting selection and hatching success. The results suggest management strategies need

to be implemented to reduce human pressure and to avoid nesting habitat loss of loggerhead and green turtle in Kanzul, Mexico.

F

Authors: Farr, M., Stoeckl, N., and Beg, R. A.

Year: 2014

Title: The non-consumptive (tourism) ‘value’ of marine species in the Northern section of the Great Barrier Reef

Journal: Marine Policy

Volume: 43

Issue: -

Pages: 89-103

Abstract: This paper uses the Kristrom (logit) spike model to analyse contingent valuation (payment card) data from a study of 2180 domestic and international visitors taking reef trips to the Northern section of the Great Barrier Reef. It investigates: (a) their willingness to pay for a “100% guaranteed sighting” of several different marine species; and (b) the sensitivity of final estimates to various methodological issues. It finds that final estimates are particularly sensitive to questionnaire design, but that the ranking of species (from most to least ‘valued’) is robust across a range of methodological specifications. The most valued groups of species were (in order): whales and dolphins; sharks and rays; ‘variety’; marine turtles; and finally, large fish. Evidently, whale watching is not the only potentially lucrative source of tourism revenue; other marine species may be similarly appealing. These potential revenues need to be considered when making decisions about whether or not to conserve marine species.

Author: Fish, M. R.

Year: 2006

Title: Coastal development and sea-level rise: impacts on sandy beaches and sea turtles

Academic Department: -

University: University of East Anglia

Thesis type: Doctoral thesis

Abstract: Sandy beach habitat is threatened globally by climate change and extensive human modification of coastal areas. Loss of sandy beaches is of concern for the many species dependent on this habitat: in this thesis Fish focusses on sea turtles, which rely on beaches for nesting. To provide a context for the subsequent chapters, he begins by reviewing the ways in which sandy beaches are altered by humans, and how these alterations have affected sea turtles. Resilience of beaches to environmental change depends on local physical and anthropogenic influences. Analysis of the relative vulnerability of coastlines in the Caribbean region to alteration reveals extensive spatial variability. One of the major sources of beach alteration in the Caribbean is the tourism industry and many beaches used by sea turtles are now also used by tourists. Fish assesses the overlap between turtle and tourist beach-state requirements and suggest that integrated management is facilitated where the requirements of turtles and tourists are complementary. One of the impacts of human alteration of coastal areas is extensive beach erosion. The latter part of the thesis focusses on erosion management options. As tourists benefit from maintenance of beaches, Fish examines the potential for them to financially contribute towards beach management. He highlights the management options that would result in beach states preferred by tourists, whilst also maintaining the ecological integrity of beaches. One such option is the use of setback regulations, which aids long-term beach maintenance by moving buildings away from the beach. Models of beach loss under a range of setback-regulation distances and sea-level rise

scenarios predict that implementation of setback regulations at a sufficient distance may mitigate beach loss caused by sea-level rise.

Author: Fleischer, D. I. R.

Year: 2009

Title: Ecotourism, sea turtles, and livelihoods: adaptation and resistance to development and conservation in Mexico and Brazil

Academic Department: Department of Anthropology

University: State University of New York at Albany

Thesis type: Doctoral thesis

Abstract: This dissertation's objective is to understand how two communities, Praia do Forte, in Brazil, and Mazunte, in Mexico engage in development and conservation practices through work, protest and discourses. Development is represented here by ecotourism and conservation by sea turtle projects and environmental regulations. Sea turtle conservation projects in both locations represent the strong external intervention of the federal government and of the scientific community on traditional livelihoods. This dissertation analyses both conservation project and ecotourism development using a comparative perspective via onsite ethnography.

Using a comparative method, the dissertation discusses the transversal topic of ecotourism development and wildlife conservation. The research focussed on communities that had exploitive economies that were forcibly converted into conservation-based economies by ecotourism and sea turtle environmental project.

Some propositions are advanced in order to frame and direct the research. The first examines the changes environmental and tourism policies implicated in local livelihoods. The second focusses on the new social and political structures that emerged with this new economic context of ecotourism or nature tourism development. The third concerns the economic, social and political strategies developed by the community to contend with these changes in their livelihoods. The fourth suggests that difficulties and conflicts that exist between environmental conservation projects, ecotourism and local communities have to be interpreted by looking at issues of power and discourse. Conservationists, developers and communities have different understandings of ecotourism and wildlife conservation.

Ecotourism in the northern coast of Bahia, Brazil, where the community of Praia do Forte is located has been stimulated by different vectors: international investments through medium size and large size hotels, government incentives through specific tourism funding programmes; and the conservation sea turtles project TAMAR. The development of ecotourism in the Costa Chica of Oaxaca, where Mazunte is located, started after the ban on sea turtle hunting in 1990. The federal government invested in basic infrastructure for tourism and for the establishment of the sea turtle conservation project CMT. This project, sea turtles and alternative development patterns have been the major vectors stimulating ecotourism in this area.

Authors: Flores-Monter, Y., Aceves-Quesada, F., Garcia-Romero, A., and Peters-Recagno, E. M.

Year: 2015

Title: Marine turtles: Análisis multicriterio del impacto potencial del turismo en la anidación de las tortugas marinas en Chalacatepec, Jalisco / Multi-criteria analysis of the potential impact of tourism on nesting sea turtles in Chalacatepec, Jalisco

Journal: Nova Scientia

Volume: 7

Issue: 14

Pages: 644-673

Abstract: The Mexican coast offers a suitable habitat for the breeding and sheltering of turtles. However, its attributes on the Chalacatepec coast, in Jalisco, this ability may be threatened by the

construction and operation of the Development Vistas Project (PDV), a mixed resort: hotel, residential, commercial and recreational. The objective of this research is to evaluate the potential of tourism on nesting turtles impact in two stages: a) Preparation and construction b) Operation and maintenance, as a support tool for decision making in the conservation of the *Lepidochelys olivácea* (olive ridley), *Chelonia agassizii* (black turtle) and *Dermochelys coriácea* (leatherback turtles). Nesting density (nests per kilometer) was calculated and the evaluation multicriteria method (EMC) discrete Analytic Hierarchy Process (AHP) was used to estimate the impact of tourism. Eight threats were identified: cleaning, excavation, filling, noise pollution, solid waste, presence of site personnel and temporary buildings, artificial beachfront lighting and concentration of visitors. A comparison matrix was constructed, assigning a weight to each threat, and a tourism potential impact map was generated using GIS. The threats more weight or weight (total eigenvector) were filled (0.36482) and the concentration of visitors (0.38194). The construction and tourism operation can affect 59.8% of the nests and impact mainly on the south coast the 1 km (1142 records of nests) and, on the north coast the 1 km (329 nests), km 3 (311 nests), km 4 (268 nests) and 5 km (151 nests). Chalacatepec is a nesting beach of great importance for the conservation of sea turtles. EMC was an appropriate tool to estimate the consequences of tourism and could help to the appropriate authorities to decide whether the PDV should be built.

Author: Frazier, J.

Year: 2005

Title: Marine turtles: The role of flagship species in interactions between people and the sea

Journal: Maritime Studies (MAST)

Volume: 3(2) and 4(1)

Issue: 3(2) and 4(1)

Pages: 5-38

Abstract: Quite apart from their utilitarian role as sources of food and materials, marine turtles have served as symbols, utilised for millennia by diverse societies and cultures. In recent years these reptiles have been given important roles by various social groups around the world. With the growth of conservation biology and the institutionalisation of environmental concerns, marine turtles have been employed, both explicitly and implicitly, as flagship species for conservation. In addition, these reptiles have also served as symbols - flagships - in other social contexts: a fact that has routinely been neglected, or denied, by conservationists. There is considerable confusion in the general concept of flagship species, and in addition to the general need to clarify this notion, there is a more specific need to understand the diverse social contexts in which marine turtles have played roles as icons for different social groups. Few natural or social scientists have studied either the social responses and/or the relations of different societies to these animals; and most information about marine turtles as flagship species is descriptive, or founded on untested assumptions and speculation. The papers in this special issue of mast present diverse information that establishes a broad-based empirical foundation from which a rich array of working hypotheses can be generated. These presentations also provoke and foster much-needed interdisciplinary approaches. Meaningful resolution of environmental issues, particularly the conservation of biological diversity, can only be attained with the full and effective integration of the 'natural' and 'social' sciences, and flagship species can play a unique role in this effort.

Author: Frazier, J.

Year of Conference: 2009

Title: The turtles' tale: Flagships and instruments for marine research, education, and conservation

Conference name: Smithsonian Marine Science Symposium

Location: Washington, D.C., USA

Pages: 241-246

Abstract: Marine turtles are classic flagship species. Their remarkable natural history - large body size, dependence on both terrestrial and oceanic environments, delayed maturity requiring decades to reach adulthood, regular migrations that crisscross ocean basins, massive reproductive output, mammal-like physiology, and other features - make them attractive to researchers and the general public alike. This attraction is further enhanced by the fact that these reptiles are widely recognised as endangered species. They are “biomagnets” for people around the world, from various sectors of society; incredible amounts of time, energy, and resources go into diverse types of investigation, public education, conservation, and international policy directed specifically at these “lowly reptiles”. Oceanographers, ecologists, geneticists, marine biologists, and specialists from other related disciplines frequently begin basic research projects on marine turtles. These activities quickly evolve into large multifaceted programmes including conservation activities, community-based approaches, and public education together with other forms of development and social projects, and even policy initiatives for promoting regional and global cooperation in the conservation of these shared resources and the habitats on which they depend. Besides enhancing better understanding of the biology and ecology of these animals and nurturing more active and diverse conservation and education initiatives, work on marine turtles also promotes much-needed initiatives in interdisciplinary and international cooperation, which are fundamental challenges to marine work in general. This paper provides a summary of the flagship species concept and gives examples of how work focused on marine turtles has promoted diverse initiatives in marine research, education, and conservation at multiple scholarly, social, and political levels; it argues that this approach serves as a critical integrating force to nurture a wider comprehension and appreciation of the scientific endeavour and its role in society.

G

Authors: Gray, N. J. and Campbell, L. M.

Year: 2017

Title: A decommodified experience? Exploring aesthetic, economic, and ethical values for volunteer ecotourism in Costa Rica

Journal: Journal of Sustainable Tourism

Volume: 15

Issue: 5

Pages: 463-482

Abstract: Volunteer ecotourism has been described as an ‘ideal’ form of decommodified ecotourism that overcomes problems associated with tourism in general, and ecotourism specifically. Using a case study of volunteer ecotourism and sea turtle conservation in Costa Rica, this paper interrogates this ideal. Perceptions of volunteer ecotourism were explored through in-depth interviews with 36 stakeholders, including hosts, NGO staff, government employees, local ‘cabineros’ (families who provide accommodation) and guests (volunteers). Results show that while all stakeholder groups share similarly positive views of volunteer ecotourism, subtle but important differences exist. Gray and Campbell analyse these differences in terms of aesthetic, economic, and ethical values, and situate the results in existing theories about the moralisation and decommodification of ecotourism.

Authors: Griffin, L. P., Brownscombe, J. W., Gagné, T. O., Wilson, A. D. M., Cooke, S. J., and Danylchuk, A. J.

Year: 2017

Title: Individual-level behavioral responses of immature green turtles to snorkeler disturbance

Journal: Oecologia

Volume: 183

Issue: -

Pages: 909-917

Abstract: Despite many positive benefits of ecotourism, increased human encounters with wildlife may have detrimental effects on wild animals. As charismatic megafauna, nesting and foraging sea turtles are increasingly the focus of ecotourism activities. The purpose of this study was to quantify the behavioural responses of immature green turtles (*Chelonia mydas*) to disturbance by snorkelers, and to investigate whether turtles have individual-level responses to snorkeler disturbance. Using a standardised disturbance stimulus in the field, Griffin and colleagues recorded turtle behaviours pre- and post-disturbance by snorkelers. Ninety percent of turtles disturbed by snorkeler (n=192) initiated their flights at distances of ≤ 3 m. Using principal component analysis, the authors identified two distinct turtle personality types, 'bold' and 'timid', based upon 145 encounters of 19 individually identified turtles and five disturbance response variables. There was significant intra-individual repeatability in behavioural responses to disturbance, but bolder turtles had more behavioural plasticity and less consistent responses than more timid individuals. Bolder individuals with reduced evasion responses might be at a higher risk of shark predation, while more timid turtles might have greater energetic consequences due to non-lethal predator effects and repeated snorkeler disturbance. Over the longer term, a turtle population with a mix of bold and timid individuals may promote more resilient populations. The authors recommend that snorkelers maintain >3 m distance from immature green turtles when snorkelling, and that ecotourism activities be temporally and spatially stratified. Further, turtle watching guidelines need to be communicated to both tour operators and independent snorkelers to reduce the disturbance of turtles

Author: Gutiérrez, M. A.

Year: 2005

Title: Turtles and tourism, a study case: Acandí-Colombia / Tortugas y turismo, un estudio de caso: Acandí-Colombia

Journal: Anuario Turismo y Sociedad

Volume: 4

Issue: -

Pages: 203-210

Abstract: Acandí is a community on the Caribbean Coast of Colombia. Until a few years ago its inhabitants depended only on an auto-sufficient rural economy, based on fishing and agriculture. Year after year they were visited by a species in danger of extinction: The biggest sea turtle (*Dermochelys Coriacea*), also known popularly as the Canaá turtle. They cohabited with these animals, without giving them much importance. Except for their eggs, which served the people as alimentary source. Eight years ago, the community, with the accompaniment of the NGO "Fundación Darién" (among others), became conscious of the need to conserve the species. In addition, the local people became interested in combining or replacing their economic activities with the tourism activity, taking advantage of the arrival to this region of tourists with an interest in the turtles. This paper describes the role various organisations play in the development of tourism, as well governmental as nongovernmental organisations. Furthermore, it describes the expectations and the participation of the local population in this process, and the impacts it brought along in the conservation of the turtle, which was taking place.

Authors: Hart, K. A., Gray, T., & Stead, S. M.

Year: 2013

Title: Consumptive versus non-consumptive use of sea turtles? Stakeholder perceptions about sustainable use in three communities near Cahuita National Park, Costa Rica

Journal: Marine Policy

Volume: 42

Issue: -

Pages: 236-244

Abstract: The decline in populations of sea turtles has heightened controversy between two contrasting strategies for their sustainable management: consumptive use versus non-consumptive use. This study investigates perceptions held by individuals in three communities bordering a marine protected area in Costa Rica about consumptive and non-consumptive use of sea turtles on nesting beaches to determine how best to achieve sustainable management of the species. Face-to-face interviews ($n=48$ community members and $n=8$ key informants) were conducted in three communities (Cahuita Town, Hone Creek, and Playa Negra) during April and May 2009. The research found that in each community, residents' perceptions about consumptive and non-consumptive use were divided into four categories: norm-activated pro- and anti-environmentalism; and rationally self-interested pro- and anti-environmentalism. Given this perceptual diversity, it seems clear that no single management strategy would work successfully across all three communities, but that customised management measures were required to manage sea turtle populations in each area. The wider implication of this study is that there is no simple panacea for dealing with declining populations of sea turtles: each situation is *sui generis*, requiring measures tailored exclusively to its particular circumstances.

Author: Hasan, M. M.

Year: 2009

Title: Tourism and conservation of biodiversity: A case study of St. Martins Island, Bangladesh

Journal: Law, Social Justice & Global Development (LGD)

Volume: -

Issue: 1

Pages: 1-12

Abstract: Global biodiversity is the burning issue nowadays. It is seen in every country that their biodiversity is at stake and for the protection of the biodiversity they are taking various initiatives. In the recent years international organisations and countries have taken policies to conserve the global biodiversity and special measures have taken for small islands states. St. Martin's Island is the only coral island of Bangladesh which is totally separated from the mainland and its biodiversity is very rich in respect of the flora and fauna. Huge number of species like multi-coloured fishes, coral associated fishes, crab, mammals, birds, corals and sea turtles etc. are found around the island and they are threatened due to tourism, fishing and other man-made factors. Tourism has been increased deliberately in the island over the last few years and for this reason tourism related activities have also been increased which is posing a threat to this special type of island and its biodiversity. The ecosystem on the island is not well equipped to manage itself. Tourists have been found in illegal activities such as stealing live corals and other lives for souvenirs, fishing within the marine protected areas. Moreover, natural and other anthropogenic activities also put the island at stake in respect of biodiversity. Concerned bodies must observe the impact of tourism on the island's biodiversity and have to take necessary steps for the conservation of biodiversity. It will not be wise to stop the tourism in the very beautiful island since it is growing concern for the tourists and tour operators at home and abroad. Initiatives should be taken

immediately to integrate tourism management into biodiversity conservation in the island. This article focusses on brief description of St. Martin's Island of Bangladesh, present status of flora and fauna on the island, impact of tourism on the island, assimilation of the tourism into biodiversity, the stands of the government, laws and policies to be adopted by the government in respect of biodiversity conservation and position of Bangladesh government in the Convention of Biological Diversity (CBD).

Authors: Hau, T. C., and Omar, K.

Year: 2014

Title: The impact of service quality on tourist satisfaction: The case study of Rantau Abang beach as a turtle sanctuary destination

Journal: Mediterranean of Social Sciences

Volume: 5

Issue: 23

Pages: 203-210

Abstract: The study was conducted to investigate the causal relationship among the components of service quality (destination image, destination support services and security, destination cleanliness and destination facilities) and tourist satisfaction. A series of multiple regressions were applied to determine the relationship between service quality and tourist satisfaction. The results of the analysis confirmed that destination image, support services and security, cleanliness and facilities directly influenced tourist satisfaction. The results also indicated that service quality has a significant and positive impact on tourist satisfactions. Thus, to ensure tourists' satisfaction, aggressive and sustained efforts should be undertaken to improve service quality.

Authors: Hayes, C. T., Baumbach, D. S., Juma, D., and Dunbar, S. G.

Year: 2017

Title: Impacts of recreational diving on hawksbill sea turtle (*Eretmochelys imbricata*) behaviour in marine protected area

Journal: Journal of Sustainable Tourism

Volume: 25

Issue: 1

Pages: 79-95

Abstract: The hawksbill sea turtle (*Eretmochelys imbricata*) is a critically endangered species encountered by recreational divers in marine protected areas (MPAs) circumtropically. Few studies, however, have examined the impacts of recreational diving on hawksbill behaviours. In 2014, the authors collected turtle sightings surveys and dive logs from 14 dive operations, and conducted in-water observations of 61 juvenile hawksbill turtles in Roatán, Honduras, to determine if differences in dive site use and diver behaviours affected sea turtle behaviours in the Roatán Marine Park. Sightings distributions did not vary with diving pressure during an 82-day study period. They found the amount of time turtles spent eating, investigating and breathing decreased when approached by divers. The results suggest diver interactions may negatively impact sea turtle behaviours; however it is unknown if recreational diving has a cumulative effect on turtles over time. Hayes and colleagues recommend that MPA managers should implement monitoring programmes that assess the impacts of tourism on natural resources. The authors have established monitoring of hawksbills as representatives of the marine habitat in an MPA, which has the potential to be heavily impacted by dive tourism, and provide recommendations for continued monitoring of the resource.

Authors: Hernandez, R., Buitrago, J., Guada, H., Hernandez-Hamon, H., and Llano, M.

Year: 2007

Title: Nesting distribution and hatching success of the leatherback, *Dermochelys coriacea*, in relation to human pressures at Playa Parguito, Margarita Island, Venezuela

Journal: Chelonian Conservation and Biology

Volume: 6

Issue: 1

Pages: 79-86

Abstract: Spatial use of nesting habitat by *Dermochelys coriacea* is analysed on a beach with intense tourism use on Margarita Island. There are no previously published data in Venezuela about the use of nesting habitat by leatherback sea turtles and the effects of human activities on nest location and hatching success. Data were collected during nightly intensive beach patrols on Playa Parguito beach (1.6-km long) from March through August 2001. Thirty-one females nested on the beach, and 74 nests were documented. The average distance between pairs of nests from the same female was 498 m, although modal distance was between 200 and 300 m. The average distance between randomly selected pairs of nests from any female was 451 m. No special preference for a certain part of the beach for each female was found. Spatial analysis indicated nesting aggregates toward the most suitable portions of the beach: those with fewer risk factors (light pollution, concentration of beach furniture and umbrellas). The results show nesting behaviour change, causing decreased nesting in areas where the best hatching rates occurs. Hatching success was significantly higher in the southern part of the beach, but the larger number of clutches were laid in the northern area, where hatching success was the lowest. Hatching rate for in situ clutches was 47.18%, which was significantly higher than that obtained for nests moved into a hatchery (33.1%) or for nests relocated to a safer part of the beach (27.8%).

Author: Hughes, K.

Year: 2017

Title: Using wildlife tourism to enhance conservation learning: A case study of Mon Repos turtle rookery

Conference Name: The 6th International Congress on Coastal & Marine Tourism: The spirit of Ubuntu: Connecting continents, places and people

Conference Location: Port Elizabeth, South Africa

Page: 270

Abstract: Research shows that wildlife tourism experiences enhance visitors' knowledge of conservation issues and foster positive attitudes towards the environment and conservation. It is becoming increasingly apparent, however, that positive attitudes and intentions do not necessarily translate into conservation practices once visitors leave the site. Phase one of this research used Community Based Social Marketing techniques (McKenzie-Mohr and Smith, 1999) to identify common beliefs and barriers associated with six household waste reduction practices – recycling, purchasing products with minimal packaging, re-using containers, picking up litter, composting and reducing use of plastic bags. This information was used to develop a family conservation kit targeting these practices.

In phase two, 200 families visiting Mon Repos turtle rookery in Queensland, Australia were surveyed about their conservation knowledge, attitudes and behaviour prior to and immediately after their visit. Half of the sample was assigned to a 'treatment' condition and given a conservation kit and post-visit support in the form of emails and access to a project website. The remaining families were assigned to a control group and received no post-visit support. Three months after their visit, families were again surveyed about their conservation knowledge, attitudes and behaviour.

Analysis focused on exploring the impacts of turtle-viewing experiences and conservation kits on families' long-term conservation learning. Specific aspects of the visit that prompted changes in knowledge, attitudes and behaviour were identified. The importance of sending regular reminders and site-specific up-dates to visitors in the post-visit stage is also discussed.

Author: Hughes, K.

Year: 2013

Title: Measuring the impact of viewing wildlife: do positive intentions equate to long-term changes in conservation behaviour?

Journal: Journal of Sustainable Tourism

Volume: 21

Issue: 1

Pages: 42-59

Abstract: Studies exploring the impact of environmental interpretation on visitors' conservation knowledge, attitudes and behaviour often measure impacts as visitors exit tourism sites. For ease of measurement, their intentions are often used as indicators of behaviour change. Recent longitudinal studies suggest that intentions may be poor indicators of long-term behaviour change. This study examines both the behavioural intentions and the long-term conservation behaviour of 100 Australian families participating in a wildlife viewing experience. Respondents who reported being negatively or positively emotionally involved in the experience were more likely to indicate an intention to change their behaviour. New ideas about animals and their habitats were also significantly correlated with the development of positive behavioural intentions. Three months later, for 10 of the 13 conservation behaviours explored, the majority of respondents who intended to increase their participation did not. Implications for using intentions as an indicator of programme effectiveness are discussed. The importance of providing post-visit support that incorporates specific strategies, localised examples, petitions and activities to help visitors convert their intentions into behaviour prior to their enthusiasm waning is highlighted. Suggestions are made for more longitudinal studies in this area.

Authors: Hughes, K., Packer, J., and Ballantyne, R.

Year: 2011

Title: Using post-visit action resources to support family conservation learning following a wildlife tourism experience

Journal: Environmental Education Research

Volume: 17

Issue: 3

Pages: 307-328

Abstract: Wildlife tourism experiences are often promoted for their ability to enhance visitors' conservation knowledge, attitudes and behaviour; yet, studies exploring the long-term influence of such experiences are rare. This research explores the impact of a wildlife tourism experience and post-visit support on families' adoption of conservation practices following their visit. In Stage 1, barriers and benefits associated with six conservation practices were identified and incorporated into the design of post-visit action resources. Two hundred Australian families visiting Mon Repos turtle rookery in Queensland, Australia, were assigned to either a treatment group (given post-visit support) or a control group (no support). Three months after their visit, families in the treatment group were significantly more likely to report changes in their conservation knowledge; their attitudes towards protecting wildlife and the natural environment; and the frequency with which they picked up litter. Treatment families also adopted significantly more conservation practices than the control group. Implications for wildlife interpretive practice and visitor management at wildlife tourism sites are discussed.

Authors: Hunt, C., and Vargas, E.

Year: 2018

Title: Turtles, ticos, and tourists: Protected areas and marine turtle conservation in Costa Rica

Journal: Journal of Park and Recreation Administration

Volume: 36

Issue: -

Pages: 104-114

Abstract: It has been 40 years since Costa Rican ecologist Gerardo Budowski first proposed a potential symbiotic relationship between tourism and environmental conservation. Given the attention that marine turtles enjoy from both conservationists and tourists, as well as the pressures that endanger and threaten them, their predicament brings sharp-relief examples to Budowski's proposal of conflict, co-existence, or symbiosis between tourism and conservation. Although marine ecosystems are among the most productive on the planet, they are also some of the most threatened. While limited-take regimes have become the most common management strategy for marine protected areas, conservation success depends on the history of local resource use, the presence and nature resource management institutions, and an understanding of competing resource use. As in terrestrial contexts, this means providing sustained benefits for communities dependent on marine ecosystems. Carefully managed marine turtle tourism can be a means of providing such benefits. This paper shares insights obtained during the stakeholder consultation process leading to the articulation of three marine protected area management plans in Costa Rica where marine turtle nesting and associated tourism activities occur. Hunt and Vargas seek to provide pragmatic answers to questions about the most effective way for park management to coordinate with local communities to ensure that tourism contributes to extending the extinction horizon for endangered sea turtle species within each protected area. The descriptive case studies presented here make clear the ongoing lack of systematic data about visitor numbers, activities, and impacts in Costa Rican MPAs and nearby communities. Yet the inclusion of stakeholder consultation in the parks' strategic planning processes demonstrates movement in the needed direction. Coupled with the new forms of social organisation around sea turtle conservation and the associated tourism activities, two of the three cases presented here provide compelling evidence of marine turtle tourism extending the extinction horizon of endangered marine turtle species, confirming that Budowski's hope for symbiosis between tourism and conservation is alive and well.

I

Author: Ioannides, D.

Year: 1995

Title: A flawed implementation of sustainable tourism: The experience of Akamas, Cyprus

Journal: Tourism Management

Volume: 16

Issue: 8

Pages: 583-592

Abstract: Alternative tourism is increasingly regarded as a key to sustainable development. The rationale is that contrary to mass tourism with its commonplace negative effects on receiving areas, alternative tourism promotes a balanced growth form more in tune with local environmental and sociocultural concerns. Yet, academics are becoming increasingly sceptical as to whether alternative tourism can be truly sustainable. This paper examines a case study of the Cypriot government's recent efforts to introduce alternative tourism as a rural development strategy in the Akamas peninsula. Evidence reveals that failure to involve the local rural communities in the

decision-making process plus the inability of policy makers to form an integrated vision for the entire region form major obstacles towards realizing the goal of sustainable development.

Authors: Ismane, M. A., Kusmana, C., Gunawan, A., Affandi, R., and Suwardi, S.

Year: 2018

Title: Keberlanjutan pengelolaan kawasan konservasi penyu di Pantai Pangumbahan, Sukabumi, Jawa Barat / Sustainability of the management of the turtle conservation area on Pangumbahan Beach, Sukabumi, West Java

Journal: Journal of Natural Resources and Environmental Management / Jurnal Pengelolaan Sumberdaya Alam Dan Lingkungan

Volume: 8

Issue: 1

Pages: 36-43

Abstract: Pangumbahan Beach is known for turtle tours among domestic and international tourists. It is in accordance with high exploitation of turtles in several sectors and will threaten the turtle sustainability in the future. The aim of this study is to analyse the situational condition of environmental biophysics, socio-economic of the population, and the potential of tourism object in Pangumbahan Beach turtle conservation area and to determine the sustainability status of conservation area management for ecotourism development. Descriptive, vegetation, situational, tourist attraction, and sustainability status analyses are used for this research. Result of the situational analysis shows community attitudes toward turtle conservation management are mostly uncertain (44%) about the turtle conservation. Generally, the condition of the green turtle nesting habitat at Pangumbahan Beach were categorised as appropriate to very appropriate based on a habitat sustainability matrix of green turtle nesting. The turtle conservation sustainability index in Pangumbahan Beach of all dimensions is sustainable.

Authors: Ivar do Sul, J. A., Santos, I. R., Friedrich, A. C., Mathiensen, A., and Fillman, G.

Year: 2011

Title: Plastic pollution at a sea turtle conservation area in NE Brazil: Contrasting developed and undeveloped beaches

Journal: Estuaries and Coasts

Volume: 34

Issue: -

Pages: 814-823

Abstract: Sea turtles are highly susceptible to plastic ingestion and entanglement. Beach debris were surveyed along the most important sea turtle nesting beaches in Brazil (Costa dos Coqueiros, Bahia State). No significant differences among developed and undeveloped beaches were observed in terms of total number of items. Local sources (tourism activities) represented 70% of debris on developed beaches, where cigarette butts, straws, paper fragments, soft plastic fragments, and food packaging were the most abundant items. Non-local sources (domestic and fishing activities) accounted for about 70% of debris on undeveloped beaches, where the most abundant items were rigid plastic fragments, ropes, soft plastic fragments, caps, and polystyrene. The projected surface area of beach debris did not vary among developed and undeveloped beaches. Overseas containers accounted for about 25% of regional plastic pollution, implying that international pollution prevention agreements are not being respected off the Brazilian coast.

Authors: Jacobson, S. K., and Robles, R.

Year: 1992

Title: Ecotourism, sustainable development and conservation education: Development of a tour guide training program in Tortuguero, Costa Rica

Journal: Environmental Management

Volume: 16

Issue: 2

Pages: 701-713

Abstract: A tour guide training programme was developed for rural communities near Costa Rica's Tortuguero National Park to respond to the impacts of the 24-fold increase in park visitation in the past decade, to involve local communities in resource management, and to provide regional environmental education. The development of the training course involved a survey of scientists and park managers, to determine resource management and information needs, and economic feasibility. A pilot training course and guide programme involving 12 Tortuguero residents demonstrated that a tour guide programme: (1) helped mitigate negative tourism impacts on Tortuguero National Park's natural resources, particularly by regulating tourists on the park's 35-km beach used for nesting by endangered sea turtles; (2) provided environmental education to an important segment of the local community not traditionally reached through school or government development projects; (3) provided environmental information to tourists, thus enhancing their visit; and (4) provided local economic benefits through lucrative part-time employment, thereby allowing local people to participate more fully in the tourism system.

Authors: Jacobson, S. K., and Figueroa-Lopez, A.

Year: 1994

Title: Biological impacts of ecotourism: tourists and nesting turtles in Tortuguero National Park, Costa Rica

Journal: Wildlife Society Bulletin

Volume: 22

Issue: 3

Pages: 414-419

Abstract: Many conservationists and wildlife managers have embraced ecotourism as an economic incentive for protecting species and ecosystems in developing countries. Ecotourism destinations often involve extremely fragile ecosystems or endangered or threatened wildlife. Yet ecotourists may be potentially more damaging to wildlife than other tourists since they actively seek and approach wildlife. Information is needed to identify, monitor and mitigate the negative effects, both individual and cumulative, on the fauna and flora. This article reports on a study which was designed to help develop a programme to minimise the potential tourist impacts on nesting turtles in Tortuguero National Park in Costa Rica. Over the past decade, the park has seen a 24-fold increase in visitor numbers. Data for the study were derived during 1990 from resource managers and scientists, hotel owners, community members and tourists to determine human activity patterns on the nesting beach and to quantify the effects of high and low levels of human activity on the behaviour of nesting turtles. Results indicated that the presence and behaviour of tourists on the beach during the green turtle nesting season caused disturbance of nesting turtles. Tourist visits were concentrated at weekends, correlating with the times that a third fewer turtles came to the beach. However, specific nesting behaviours did not differ on segments of the beach exposed to different levels of human disturbance. A tour guide programme was developed to control tourist activity on the beach.

Authors: Jin, J., Indab, A., Nabangchang, O., Thuy, T. D., Harder, D., and Subade, R. F.

Year: 2010

Title: Valuing marine turtle conservation: A cross-country study in Asian cities

Journal: Ecological Economics

Volume: 69

Issue: -

Pages: 2020-2026

Abstract: The prime objective of this paper is to estimate from a cross-country perspective the willingness to pay for marine turtle conservation using the contingent valuation method. A secondary objective is to investigate two methodological issues about contingent valuation study: scope effect and payment vehicle effect. Using a uniform survey instrument and protocol, a sample of 3680 respondents from Beijing (China), Davao City (Philippines), Bangkok (Thailand) and Ho Chi Minh/Hanoi (Vietnam) were interviewed. Results indicate that the respondents in all cities have a positive willingness to pay for marine turtle conservation. The type of scope effect and payment vehicle effect considered did not seem to be significant in Beijing, Davao City and Bangkok. But some evidence shows that there are scope effect and payment vehicle effect in Ho Chi Minh/ Hanoi sample. The study offers practical insights into Asian household preferences for marine turtle conservation.

Authors: Johnson, S. A., Bjorndal, K. A., and Bolten, A. B.

Year: 1996

Title: A survey of organized turtle watch participants on sea turtle nesting beaches in Florida

Journal: Chelonian Conservation and Biology

Volume: 2

Issue: 1

Pages: 60-65

Abstract: Loggerhead turtles are an important natural resource in Florida. Numerous organisations, operating under guidelines and permits issued by the Florida Department of Environmental Protection (FDEP), conduct organised turtle watches to provide the public with the opportunity to observe a nesting loggerhead turtle. To develop recommendations designed to enhance ecotourism activities on sea turtle nesting beaches, Johnson and colleagues distributed questionnaires to 1319 participants of organised turtle watches in Florida during the 1994 sea turtle nesting season; and received 488 completed responses. The programme is viewed very positively and almost all respondents would recommend it. Demand for participation has always exceeded availability, and this lack of tourist accessibility is currently the programme's greatest drawback. The authors' primary recommendation is that the current programme should be expanded. Approximately one third of respondents indicated that they had previously been unable to participate because of limited availability. Johnson and colleagues recommend that turtle eggs not be handled by participants and that participants view a video depicting the nesting process prior to actually observing a turtle on the beach. These recommendations and current FDEP guidelines, although designed specifically for Florida beaches, may be applicable to sea turtle watch programmes elsewhere. When conducted under proper conditions, ecotourism on sea turtle nesting beaches will benefit both visitors and sea turtle conservation efforts. However, the activities of visitors must be regulated so that the turtle population is not jeopardised.

Authors: Johnson, S. A., Bjorndal, K. A., and Bolten, A. B.

Year: 1996

Title: Effects of organized turtle watches on loggerhead (*Caretta caretta*) nesting behavior and hatchling production in Florida

Journal: Conservation Biology

Volume: 10

Issue: 2

Pages: 570-577

Abstract: To evaluate the effects of organised turtle watches on female sea turtles and their eggs, Johnson and colleagues quantified nesting behaviour and hatchling production of loggerhead turtles (*Caretta caretta*) in south Brevard County, Florida, U.S.A. They compared the duration of five phases of nesting behaviour, the directness of the turtle's return path, rate of travel during return crawl, hatching success, and hatchling emergence success between experimental and control turtles. Experimental turtles nested while observed by an organised turtle watch group consisting of at least 15 people; control turtles were not observed by a turtle watch group. Experimental turtles spent significantly less time camouflaging nest sites than did control turtles. The duration of the other four phases of nesting behaviour were not significantly different between the two groups. Experimental turtles also travelled less-direct paths during return crawls, although their rates of travel were not significantly different from those of control turtles. Hatching success and hatchling emergence success were not significantly different between experimental and control turtle nests in either year. Although turtle watch groups influenced nesting behaviour, they were not found to be detrimental to hatchling production. Florida's turtle watch programme is a means for garnering public support for sea turtle conservation through education, and it should continue.

Authors: Jones, N., Panagiotidou, K., Spilanis, I., Evangelinos, K. I., and Dimitrakopoulos, P. G.

Year: 2011

Title: Visitor's perceptions on the management of an important nesting site for loggerhead sea turtle (*Caretta caretta* L.): The case of Rethymno coastal area in Greece

Journal: Ocean & Coastal Management

Volume: 54

Issue: -

Pages: 577-584

Abstract: Tourism has important impacts, both positive and negative, on the management of coastal areas with high biodiversity value. It is therefore important to investigate visitors' perceptions concerning environmental policy alternatives for these areas along with the factors influencing these perceptions. This paper aims to investigate visitors' perceptions of an important nesting ground for loggerhead sea turtles located in a highly touristic area of Greece (Rethymno, Crete) registered in the Natura 2000 network. The paper focusses on the level of environmental awareness of visitors and their perceptions of two proposed policy instruments which will secure funding for the improvement of the environmental management of the area: an entrance fee to the beach and a tax to be levied on local accommodation costs. The influence of social and institutional trust on these perceptions is also explored. According to the results of the study, awareness of the existence of the Natura 2000 site was low. Furthermore, the accommodation tax was regarded as a more effective policy when compared to the entrance fee. Average Willingness to Pay (WTP) was also explored for the two policies, estimated at V1.13 for the daily accommodation tax and V1.59 for the entrance fee. The influence of social and institutional trust had a significant influence both on the perceived level of effectiveness of the proposed policies and the stated Willingness to Pay. The study concludes that the accommodation tax would be a more appropriate policy for the management of Rethymno beach taking into consideration visitors' perceptions and the current level of trust.

K

Authors: Kaska, Y., Başkale, E., Urhan, R., Katlımıŝ, Y., Gidiŝ M., Sari, F., Sözbilen, D., Canbolat, A. F., Yılmaz, F., Barlas. M., Özdemir, N., and Özkul, M.

Year: 2010

Title: Natural and anthropogenic factors affecting the nest-site selection of Loggerhead Turtles, *Caretta caretta*, on Dalaman-Sarigerme beach in South-west Turkey

Journal: Zoology in the Middle East

Volume: 50

Issue: 1

Pages: 47-58

Abstract: The nesting activities of Loggerhead Turtles (*Caretta caretta*, Stejneger, 1902) and anthropogenic factors affecting them were monitored over seven years (2002–2008) on Dalaman-Sarigerme beach, one of the main nesting grounds in Turkey. Out of the 2,620 nesting emergences recorded during the entire study period, only 645 (24.6%) resulted in successful nesting, giving an annual mean number of nests of 92. The collective number of eggs in these nests numbered 50,239, with 40,079 (79.8%) of them producing hatchlings. Out of the total number of eggs laid, 8,128 (16.2%) resulted in dead embryos and 2,032 (4.0%) in unfertilised eggs. The mean incubation period averaged 49 days (range 40–67 days) and the mean clutch size was 79.0 (range 18–150 eggs). Turtle nests were more concentrated on the undeveloped parts of the beach than on developed parts. In the other sections, few emergences occurred and either no or few nests were recorded. In Section I, which contained hotels and water sports facilities, only a few non-nesting emergences were observed. Of the number of nests that were observed, 32% were laid in Section II, which contained recently built hotels, 60% were in Section III and 8% were in Section IV, the undeveloped portion containing beach rocks. There is very clear evidence that the loggerhead turtles are shifting their nesting sites to the undisturbed sites along the beach. The negative factors that seem to be affecting them include water sports, hotel lights and beach rocks. In order to protect sea turtles, there needs to be a better understanding of how effective beach protection can be established.

Authors: Katselidis, K. K., Schofield, G., Stamou, G., Dimopoulos, A., and Pantis, J. D.

Year: 2013

Title: Evidenced-based management to regulate the impact of tourism at a key marine turtle rookery at Zakynthos Island, Greece

Journal: Oryx

Volume: 47

Issue: 4

Pages: 584-594

Abstract: This study evaluates how key beach features influence suitability for nesting by endangered loggerhead marine turtles *Caretta caretta* at an internationally important rookery on Zakynthos Island, Greece. During 2007–2009 the authors assimilated information on beach structure (elevation above sea level and width), the distribution of all nesting (turtle tracks that resulted in nests) and nonnesting (turtle tracks that did not result in nests) turtle emergences from the sea along 6 km of beach, nest placement parameters (distance from sea and elevation above sea level), and beach use by visitors. They found that turtles preferentially emerged on steeper sections of beach, with higher nesting densities occurring on the most environmentally stable beaches. Elevation was a more reliable indicator of nest placement (1 m above sea level) than distance to shore. However, because nests on steeper slopes are located closer to shore, the risk of damage by tourism is increased in such areas. They calculated a potential 36% overlap of natural nest locations with use of the beach by tourists; however, the recorded overlap was 7% because of

existing management protocols. This overlap could be further reduced by focusing conservation effort (i.e. further restricting use by people) on beach sections with the steepest inclines. For example, slopes of 22° comprise 1 km of total beach area annually, the closure of which (above the immediate shoreline to allow passage) would completely protect 50% of nests. This study shows the value of evidence-based management as a practical scientific tool to conserve threatened species in dynamic protected areas that are of both environmental and economic importance.

Author: Kemf, E.

Year: 1993

Chapter Title: The law of the mother: protecting indigenous peoples in protected areas

Book: Tourism versus turtles

Pages: 186-193

Abstract: This chapter discusses the problems that nature can have when faced with competition from tourism development. It uses the case study of the Greek island of Zakynthos where 50% of the Mediterranean's loggerhead turtles swim ashore to lay their eggs. The chapter discusses the actions taken by the Sea Turtle Protection Society of Greece (STPS), which has been working on the island since 1982 in an attempt to monitor and protect the turtles. Such action includes presenting slide shows to tourists on the need for conservation, protecting nesting beaches during the night, handing out leaflets, and running a special beach hatchery to which eggs are sometimes removed. Growing interest among community members, tour operators, and hoteliers has resulted in increased support for a national park in Zakynthos. The chapter discusses some other areas that have either set up marine reserves, or are attempting to establish them in areas around Greece.

Author: Kokkali, A., Vassilopoulou, V., and Haralabous, J.

Year: 2013

Title: Loggerhead sea turtles (*Caretta caretta*) nesting preferences and tourism interventions: The case of Zakynthos

Journal: Fresenius Environmental Bulletin

Volume: 22

Issue: 7b

Pages: 2203-2209

Abstract: The National Marine Park of Zakynthos (NMPZ) outlines its contribution to the conservation of the nesting activity of the loggerhead sea turtles (*Caretta caretta*) in the Mediterranean. These species lay their eggs on the six beaches of Laganas Bay in a proportion that reaches 26% of the total documented effort in Mediterranean. At the same time, the development of tourism industry in Laganas Bay may undermine the preservation of the natural environment, resulting in the emergence of many conflicts that are of particular importance. This paper used the Categorical Principal Component Analysis (CATPCA) to investigate the statistical relationships between the spatial and anthropogenic descriptors of the area. The main outcomes of the study indicate that there is a great variance between area's descriptors separating spatial from anthropogenic, and also the grouping of the nine selected areas of the study confirm the zoning system as it is presented in the management plan of the park. The latter also suggests there is a high compliance of the tourism development to the existing measures for the protection of this conservation priority site.

L

Author: Lamb, G.

Year: 2019

Title: The nexus of discourse and practice in sea turtle tourism and conservation at Laniākea Beach, Hawai'i

Academic Department: Graduate Division

University: University of Hawai'i at Mānoa

Thesis Type: PhD in Second Language Studies

Abstract: This dissertation investigates the discursive practices emerging in the overlapping contexts of sea turtle tourism and conservation at Laniākea Beach, Hawai'i which serve to produce the local activities, linguistic practices, and intercultural relations between international tourists and conservation volunteers around sea turtles at this beach. By examining tourist-volunteer interaction, volunteers' training to use an educational discourse of sea turtle outreach, and interviews with volunteers, tourists and other stakeholders in the community, Lamb asks how the wider discourses of sea turtle tourism and conservation converge at this beach to produce the actions and identities people construct around endangered wildlife like sea turtles. Using nexus analysis as an ethnographic sociolinguistic approach to discourse analysis, he investigates what exactly happens in situ in volunteer-tourist interaction as a key site to understand how intercultural identities of inclusion and exclusion and community membership in relation to sea turtles are produced. Lamb takes up this investigation primarily from the perspective of honu guardians, or sea turtle conservation volunteers, as they work to carry out their sea turtle educational and protection efforts at Laniākea Beach. But he also examines how tourists move through, interact with and talk about sea turtles as well in this beach space, as the volunteer efforts to protect sea turtles at this beach only emerged in parallel with a growing sea turtle tourism industry promoting Laniākea Beach as a popular tourist destination. Here, Lamb traces how honu guardians and turtle tourists circulate conservation and tourism discourses through their embodied, interactional and digital practices at this beach to explore the hybrid and creative discursive practices emerging at this sea turtle tourism-conservation nexus. Ultimately, the aim of this dissertation is to address the emerging 'post humanist' question of how people are becoming caught up with animals and nature through their semiotic practices, and what new discourses and intercultural relations are emerging as a result, particularly in an era when there is a heightened awareness of cultural differences and sameness in regard to human relations with the natural world. Overall, then, this research adds to a growing body of work in ecolinguistics on the discursive representations of animals and nature, and in sociolinguistics on the discursive practices of intercultural communication in the contexts of wildlife conservation and international ecotourism.

Author: Lamb, G.

Year: 2019

Title: Spectacular sea turtles: Circuits of a wildlife ecotourism discourse in Hawai'i

Journal: Applied Linguistics Review

Volume: ahead of print

Issue: -

Pages: -

Abstract: This paper examines the discursive practices of sea turtle ecotourism that transform a beach in Hawai'i into a popular sea turtle tourism destination. Lamb analyses the circulation of an ecotourism discourse of spectacular nature that cycles through several distinct circuits of discursive remediation to produce Laniākea Beach as a sea turtle tourism destination. This ecotourism discourse entangles sea turtles and people into a discursive-material infrastructure of spectacular nature which the sea turtle tourism industry in Hawai'i enlists to commodify human

encounters with this charismatic species. Bringing complementary approaches in ecotourism studies and mediated discourse analysis that take human-nonhuman embodied (inter)actions as a starting point for discourse analysis, Lamb traces how this ecotourism discourse itinerates across three distinct circuits of sea turtle tourism: (1) commercial tourism representations (on websites, guidebooks and street advertising), (2) in tourists' embodied encounters with sea turtles (touching, pointing at, swimming with and talking about actual sea turtles), and (3) through online remediation of these embodied encounters (on social media platforms like Instagram and Facebook). The study suggests implications for how embodied and material approaches to discourse analysis in applied linguistics can bring empirical focus to the (un)ethical dimensions of wildlife ecotourism practices

Authors: Landry, M. S., and Taggart, C. T.

Year: 2010

Title: "Turtle watching" conservation guidelines: Green turtle (*Chelonia mydas*) tourism in nearshore coastal environments

Journal: Biodiversity and Conservation

Volume: 19

Issue: 1

Pages: 305-312

Abstract: In this paper, Landry and Taggart propose a conservational opportunity for humans to 'use' the green turtle (*Chelonia mydas*) in a non-consumptive manner. Although the concept of a social safe minimum standard analysis, as applied to the sustainability of tourism-dependent turtle watching, has focussed on beach-nesting habitats, other tourist activities like diving and snorkelling also occur in shallow coastal habitats frequented by juvenile and adult turtles. When integrated over time, at a specific location, such tourism activities may compromise turtle physiology in a manner that limits conservation goals for the species and hence the tourism. The authors identify research insights that can be used to achieve a creatively managed tourism—one that allows tourists to observe turtles in their natural coastal habitat in a manner that is commensurate with functional turtle conservation. They propose management options loosely based on whale-watching: i.e. voluntary and/or mandatory regulations based on home-range studies that identify localised temporal and spatial patterns of habitat use exhibited by turtles. Landry and Taggart recommend temporally- and spatially-dynamic stratified random-design tours that exclude critical local (small-scale) habitat and include less critical habitat on a randomised rotational basis. Practical guidelines for tour operators that are founded on turtle habitat-occupancy patterns may ensure expanded life-history conservation measures and sustainable turtle-watching tourism.

Authors: Lasuin, C. A., Pengiran Bagul, A. H. B., Datu Eranza, D. R., and Andi Kele, A. T.

Year: 2011

Title: Sustainable tourism business development for marine resources

Conference Name: The 9th Asian Academy of Management International Conference

Conference Location: Penang, Malaysia

Issue: 1

Pages: 292-296

Abstract: Sustainability already is and will continue to be a significant path in the next century. The tourism industry is more aware of the decisions that they made will have an impact to the natural resources and the stakeholders that tied with it. Marine resources have become a major draw for the tourism industry and represent a considerable economic resource for Malaysia. The economic incentive to better protect and conserve these resources is strong and stakeholders are keen to develop tourism to help support conservation. This paper explores the approach of

developing a tourism business that is sustainable with the anticipation of its issues and challenges based on qualitative approach as it uses exploratory study as methodology. The marine resources selected for this paper are in Turtle Island Park, which is 40km north of Sandakan, Sabah. The park consists of Pulau Selingan, Pulau Bakkungan Kechil and Pulau Gulisaan islands and they are renowned for their green and hawksbill turtles. The endangered status of these turtles and the marine park status of the area require a different and unique approach to plan and develop tourism that ensures sustainability. The paper proposes that the approach should be holistic and making commercial sense while ensuring the integrity of the conservation of the marine resources.

Authors: Lee D. N. B., and Snepenger D. J.

Year: 1992

Title: An ecotourism assessment of Tortuguero, Costa Rica

Journal: Annals of Tourism Research

Volume: 19

Issue: 2

Pages: 367-370

Abstract: As the demand for nature-oriented tourism increases and the supply of natural resource amenities decreases, the need for understanding how to manage ecologically valuable areas grows. This study offers an assessment procedure for existing tourism areas that provides information for managing culturally and ecologically valuable areas. The assessment procedure compares existing guest and host characteristics with an ideal ecotourism system. The ideal ecotourism system cultivates infrastructure and superstructure sensitive to environmental and cultural needs. It maintains a long-term planning strategy that involves local people early in the planning stages, and fosters an economy in which residents benefit from tourism. To demonstrate the utility of the ecotourism assessment methodology, tourism development in Tortuguero, Costa Rica, was examined. The Tortuguero area, located on the Caribbean coast, consists of a village of 211 residents and Tortuguero National Park. The study explored tourists' reasons for visiting the area, their on-site recreational activities and expenditures. They were also asked if they would be willing to contribute to conservation and sustainable development in and around Tortuguero. Information was also gained from observations and a survey of all households and businesses in the village. This covered demographics, employment, business ownership patterns, community development, and attitudes toward tourism.

Author: Lima, P.

Year: 2008

Title: Tourism impact on nesting habitat of loggerhead sea turtle in Crete, Greece

University: International Institute for Geo-Information Science and Earth Observation

Thesis Type: Master of Science in Geo-information Science and Earth Observation

Abstract: Two of the seven species of sea turtles breed in the Mediterranean, the loggerhead turtle (*Caretta caretta*) and the green turtle (*Chelonia mydas*). Both had been abundant in the past, but now as a consequence of different human activities such as urban and tourism development as well as fisheries, the population size and location have been seriously affected. As a result, the Red List of the World Conservation Union (IUCN) classified these species as “endangered” in 2000.

The base of turtle conservation is the protection and management of nesting beaches, because in particular female turtles do not breed on any beach. They return faithfully to their natal beaches which previous generations had chosen as suitable. Nowadays tourism development is considered as the main threat for nesting areas, because unfortunately the same beaches seen as desirable by turtles for breeding are also popular for beach holiday destinations. In order to contribute to the understanding of human and wildlife interactions, this research focusses on the analysis of the

potential impacts of tourism development on the Loggerhead turtle nesting habitat along the beach of Rethymno in Crete.

This research was divided in three parts. The first was the identification of the relationship between loggerhead nesting density and tourism development at two different scales. Initially, it evaluated how the tourism industry had been developing in Crete over the years and determined if there was any association with the decrease in nesting populations. Secondly, the relationship between tourism and nesting density at beach scale was done through the spatial and statistical analysis of tourism infrastructure (e.g. hotels, bars, restaurants, shops) and the location of the nests. This analysis helped to determine the contribution of these tourism variables on the degradation of the nesting beaches.

Once the relationship between tourism development and nesting density was recognised, the second step was the identification of suitable areas for loggerhead nesting taking into consideration the tourism infrastructure variables. In order to achieve this objective an SMCE technique was used. Finally, in order to illustrate and quantify the diminishing of the nesting areas in Rethymno over the past decades three more suitability maps were elaborated using satellite imagery from past years (1945, 1997, and 2004).

As a result it was shown that nesting female turtles avoid the areas with high concentration of tourism infrastructure. Additionally, according to the SMCE the areas considered as 'highly suitable' for sea turtle nesting in Rethymno have been decreased by 50% in area during the last 60 years. These results show that there is a clear degradation of the nesting beaches caused by the success of tourism industry.

Once an appropriate relationship is well established between wildlife preferred habitats and anthropogenic disturbance factors, the SMCE could become a powerful tool in the generation of new scenarios and the exploration of new management options for the protection of nesting beaches against the urban and tourism development along the beaches.

Author: Liu, T-M.

Year: 2019

Title: Applying Ostrom's common resource management principles to analyze institutional factors for the failure of the volunteer tourism program for green sea turtles conservation in Lanyu (Orchid Island), Taiwan

Journal: Journal of Tourism and Cultural Change

Volume: -

Issue: -

Pages: -

Abstract: *Chelonia mydas* (green sea turtles, GST) in Lanyu (Orchid Island), Taiwan, affect the behavioural evolution of land-based organisms in Lanyu, and they are also important for the study of evolutionary biology. However, threats to their survival are increasing. To protect GST, conservation organisations have recruited volunteer tourists to assist in the implementation of a GST conservation programme. However, the volunteer tourism programme for GST conservation did not achieve the expected results, and it even caused serious social conflicts and threatened the survival of GST. In this study, the volunteers and the local Tao people were interviewed to understand the views of both parties, and the interview data were analysed using Ostrom's common resources management principles. The results showed that two mechanisms led to the neglect: the appropriate authorities in the Taiwan government did not provide sufficient funds, and the government was unable to integrate and coordinate the conservation activities. The research results suggest that government authorities should provide sufficient funds and communication resources to assist conservation organisations in making use of local ecological conservation mechanisms and that conservation organisations should report the results of volunteer tourism programmes to the Tao people and assist in cleaning the beach.

Author: Liu, T-M., and Leung, K-K.

Year: 2019

Title: Volunteer tourism, endangered species conservation, and aboriginal culture shock

Journal: Biodiversity and Conservation

Volume: 28

Issue: -

Pages: 115-129

Abstract: Liu and Leung investigated the impact of ecological conservation volunteer tourism on aboriginal culture and ecological conservation. They present herein a case of green sea turtle conservation volunteer tourism at Orchid Island, Taiwan. The authors used field observations and in-depth interviews with semi-structured and open-ended questionnaires to collect data. Data and method triangulation approaches were adopted to ensure the reliability of the results. Liu and Leung presented that cultural changes resulting from volunteer tourism threaten the survival of endangered species. In addition, the failure of the market incentive mechanism and dysfunctional internal communication within the conservation organisation, two issues that have not been reported in previous studies, can guide future studies on volunteer tourism and ecological conservation. The authors also provided practical recommendations for Orchid Island green sea turtle conservation, i.e., the combination of traditional and modern ecological methods, and the consideration of local norms and taboos during organisational planning. The planning and implementing of conservation activity that respects local customs fosters the support of the local people. Finally, implementing the locals' initial ecological conservation mechanisms can prevent the conservation activity from causing an undesirable threat to the conserved species.

Authors: Lopez, G. G., Saliés, E. d. C., Lara, P. H., Tognin, F., Marcovaldi, M. A., and Serafini, T. Z.

Year: 2015

Title: Coastal development at sea turtles nesting ground: Efforts to establish a tool for supporting conservation and coastal management in northeastern Brazil

Journal: Ocean & Coastal Management

Volume: 116

Issue: -

Pages: 270-276

Abstract: While tropical and subtropical coastal areas are considered prime areas for a wide range of tourism projects, they also host important sea turtle nesting grounds. Preserving these nesting areas is critical to ensure reproductive success and maintain viable sea turtle populations. The northern coast of the State of Bahia, in north-eastern Brazil, is an important sea turtle nesting ground. Sea turtle conservation activities in Brazil began in 1980, focusing initially on reducing harvesting of nesting females and egg collection. Recently, new threats resulting from unplanned coastal development have emerged. In this paper, a geospatial tool, as an initiative of the Brazilian National Sea Turtle Conservation Program (TAMAR) to identify key areas for sea turtle nesting along the coast northern coast of Bahia, is presented. A Sensitivity Map was created, using a detailed GIS map graded by colours representing relevance levels of the coast for sea turtle nesting. From this map, recommendations of management practices that correspond to each sensitivity category can be made. This methodology allows for the identification of critical sea turtle habitats and the subsequent implementation of mitigation measures at nesting beaches, as well support coastal management policies.

Author: Lusby, C.

Year: 2015

Title: Impacts of lodging facilities on the Leatherback turtles that nest in Aruba

Journal: Consortium Journal of Hospitality & Tourism

Volume: 20

Issue: 1

Pages: 19-30

Abstract: As Aruba's main industry, tourism sustains its economy and to date much is known about the positive and negative sociocultural, economic and environmental impacts tourism has on host destinations. However, not much is known about the impact lodging specifically has on the sea turtles in Aruba. The purpose of this study was to shed light on the effect of lodging facilities on Leatherback turtles that nest in the Eagle Beach and Palm Beach areas. This mixed-method study used observation, as well as secondary historical data to attempt a correlation between lodging and sea turtle nesting on these beaches. Results show no direct relationship between the amount of square meters built on the beach for lodging and sea turtle nests. Data did show however, that indirect features such as proximity of facilities, lighting and beach obstruction do impact nesting behaviour and the amount of nests. Implications for tourism planners are discussed.

M

Authors: Macip, R. F., and Valencia, C. Z.

Year: 2012

Title: “If we work in conservation, money will flow our way”: Hegemony and duplicity on the Coast of Oaxaca, Mexico

Journal: Dialectical Anthropology

Volume: 36

Issue: -

Pages: 71-87

Abstract: Conservation is the “common discursive framework” through which any meaningful action takes place within a strip of land on the Coast of Oaxaca. What is meant by it is a contested process of class struggle given the strength of regional transformations since 1990. Spearheaded by the tourist industry, conservation is a hegemonic game of duplicity. This article discusses how this is a successful case of “neoliberal conservation” and provides an ideological analysis of such a consensus.

Authors: Madrigal-Ballester, R. and Jurado, D.

Year: 2017

Title: Economic incentives, perceptions and compliance with marine turtle egg harvesting regulation in Nicaragua

Journal: Conservation and Society

Volume: 15

Issue: 1

Pages: 74-86

Abstract: La Flor Wildlife Refuge and nearby beaches on the Pacific coast of Nicaragua are important nesting sites for various species of endangered marine turtles. However, illegal harvesting of turtle eggs threatens the survival of marine turtles. In this study, Madrigal-Ballester and Jurado analysed the different motivations of local villagers for complying with a ban on harvesting marine turtle eggs in a context, in which government authorities do not have the means to fully enforce existing regulations. They also analysed the effectiveness and the participation of

locals in an incipient performance-based nest conservation payment programme to protect turtle eggs. The analysis of survey-based data from 180 households living in Ostional, the largest village near La Flor Wildlife Refuge, indicates remarkable socio-economic differences between harvesters and non-harvesters. The findings suggest that harvesters are associated mainly with a lack of income from other activities and the absence of productive assets, such as land for cattle and/or agriculture. In addition, the lack of legitimacy of prevailing institutions (i.e., actual regulations) also seems to perpetuate illegal harvesting. The performance-based payments programme is an effective option for protecting nests on isolated beaches, however, it is not clear if it changes harvesting behaviour overall. Normative motivations to protect the turtles are important determinants of participation in this programme, although the financial reward is also an important incentive, particularly since most participants who are egg harvesters depend on this activity as their main source of income.

Authors: Marcovaldi, M. A., and Laurent, A.

Year: 1996

Title: A six season study of marine turtle nesting at Praia do Forte, Bahia, Brazil, with implications for conservation and management

Journal: Chelonian Conservation and Biology

Volume: 2

Issue: 1

Pages: 55-59

Abstract: Four species of marine turtles nest at Praia do Forte, Bahia, Brazil. This paper provides a summary of information obtained by Projeto TAMAR over six nesting seasons (1987-93) concerning relative abundance and size of nesting females, seasonal and spatial distribution of nesting, hatching success, emergence period, and clutch size. The Praia do Forte field station protects a total of 43km of coastline, divided into an intensive study area of 14km and two conservation areas of 10 and 19km. Eggs from nests in the conservation areas were transferred to an open-air hatchery emulating natural conditions, and nests in the intensive study area were monitored in situ. *Caretta caretta* (1932 nests) and *Eretmochelys imbricata* (265 nests) were the most abundant species, together constituting more than 90% of total nesting. Other species found nesting were *Lepidochelys olivacea* and *Chelonia mydas*. The overall nesting season for all species extended from August to April, but peak nesting for *C. caretta* was October to December and for *E. imbricata* January to February. Nesting occurred more frequently at sites along the beach where fringing reefs were not present and where the beach was wider. The emergence period for in situ and transferred nests was about the same, but hatch success was usually higher in situ. Hatch success was also significantly higher when eggs were transferred less than six hours after oviposition. Comparison of hatchery and in situ nests shows an open-air hatchery emulating natural conditions to be an adequate conservation tool in areas where threats to natural nest survivorship are high.

Authors: Marcovaldi, M. A., and Marcovaldi, G. G. d.

Year: 1999

Title: Marine turtles of Brazil: The history and structure of Projeto TAMAR-IBAMA

Journal: Biological Conservation

Volume: 91

Issue: 1

Pages: 35-41

Abstract: Projeto TAMAR-IBAMA, jointly administered by the Government of Brazil and the non-governmental organisation Fundação Pró-TAMAR, has established 18 conservation stations which cover 1,100km of the Brazilian mainland coast (in the states of São Paulo, Rio de Janeiro,

Espírito Santo, Bahia, Sergipe, and Ceará). In the oceanic islands of Fernando de Noronha, Atol das Rocas, and Trindade, only the first has a permanently staffed station. The programme was initiated in 1980 to investigate and implement a programme for the conservation of sea turtles. As a direct result of TAMAR's efforts, the harvest of gravid females and of eggs has ceased in all major nesting areas. The success of the programme is based on local participation of the fishing villages, including the employment of former egg poachers to patrol the beaches and protect the nests, education programmes, and ecotourism. The majority of stations are staffed year round and not only promote the conservation of endangered sea turtles, but also organise community festivals, support local schools and health care facilities, and assist in developing alternative sources of income for residents who once relied on the exploitation of sea turtles. A similar effort to protect coastal feeding areas where incidental capture is high was initiated in 1991.

Author: Marin, A. B.

Year: 2007

Title: Sun, sand and sea turtles: Inspiring Caribbean youth through nonformal education - Technical Report 8

City/State: Beaufort, NC

Institution: Wider Caribbean Sea Turtle Conservation Network (WIDECAST)

Date: 2007

Abstract: During a three-month internship on the Caribbean island of Nevis this past summer (2006), Marin developed a summer camp for local children, "Sun, Sand and Sea Turtles" sponsored and supervised by the Department of Fisheries, a local non-profit organisation (Nevis Turtle Group, NTG), and the Wider Caribbean Sea Turtle Conservation Network (WIDECAST). The camp was initiated as a collaboration between the Four Seasons Resort in Nevis and NTG. The success of the summer camp programme became the inspiration for the author's master's project. The specific objective of her master's project was to produce a detailed (and ultimately multilingual, English, Spanish, French) curriculum guide for the "Sun, Sand and Sea Turtles" programme, including all necessary resources to successfully implement a week-long summer camp focused on the basic biology, contemporary threats (both man-made and natural), and conservation issues that relate to sea turtles in the Caribbean Sea. "Sun, Sand and Sea Turtles" has been designed as a 15-hour camp organized over five consecutive days and the intended age range is 9-15 years. At the end of the five days, the students receive Course Completion Certificates stating that they have successfully completed the camp and are now Junior Members of a local natural resource agency or conservation group, with whom a partnership had been established by the Instructor beforehand. Upon completion, the guide will be repatriated to Nevis, where it was conceived, and also distributed throughout the Caribbean region through the efforts of WIDECAST. As a result of educating Nevisian youth, the NTG saw an elevated island-wide interest in sea turtle conservation, including increased participation of local adults in night-time beach monitoring. With this in mind, Marin anticipates that "Sun, Sand and Sea Turtles" will enhance sea turtle conservation programmes in Nevis, as well as inspire similar efforts throughout the Caribbean region and beyond.

Author: Mascovich, K. A.

Year: 2018

Title: The nesting ecology of sea turtles: Managing people, infrastructure, and habitat

Academic Department: Odum School of Ecology

University: University of Georgia

Thesis Type: Master of Science

Abstract: An effective beach management plan (BMP) must focus on the beach habitat, infrastructure, and users (people). Mascovich studied how a BMP for loggerhead sea turtles

(*Caretta caretta*) can be shaped. She looked at the factors influencing sea turtle nest success, finding that erosional habitats and maximum nest temperatures influence hatch success. Mascovich additionally investigated how to work with the beachfront infrastructure to minimise the threat that lights pose to nesting and hatching sea turtles. She found that an educational rack card designed to promote sea turtle-friendly lighting choices for hotel guests was not effective. Finally, the author looked at two different types of education programmes to determine their effectiveness at changing participants' behaviours to be more environmentally friendly. With no difference in the short-term outcomes, Mascovich recommends that organisations consider the cost and feasibility of these two programme delivery methods when choosing between programme types.

Authors: Mascovich, K. A., Larson, L. R., and Andrews, K. M.

Year: 2018

Title: Lights on, or lights off? Hotel guests' response to nonpersonal educational outreach to protect nesting sea turtles

Journal: Chelonian Conservation and Biology

Volume: 17

Issue: 2

Pages: 206-215

Abstract: Light pollution from beachfront hotels has the potential to impact nesting and hatching sea turtles. Education strategies could be used to alter visitor behaviour and mitigate this threat. Mascovich and colleagues tested the efficacy of a sea turtle-friendly education card that encouraged visitors to “protect the night, hide the light.” Cards were placed in beachfront hotel rooms at a prominent sea turtle nesting site: Jekyll Island, Georgia. The authors assessed visitor responses by conducting nightly observations to determine the proportion of occupied guest rooms with beach-visible lights under two different scenarios (cards present or cards absent). They found that less than half of all hotel guests closed room blinds to minimise artificial light on the nesting beach, and compliance rates seemed to be lower during peak visitation times. The nonpersonal educational treatment (card) had little effect on visitors' sea turtle-friendly lighting choices and behaviours, highlighting the need for other approaches to encourage responsible tourist behaviour at ecologically sensitive beach destinations.

Author: Mayes, G.

Year: 2015

Title: Gili Matra – going ... going ... gone!

Conference Name: The 8th International Congress on Coastal & Marine Tourism: Learning from the past, looking to the future

Conference Location: Kona Coast, Hawai'i

Page: 57

Abstract: Three small islands and the surrounding waters of the Gili Matra Marine Park (GMMP) on the northwest coast of Lombok are the main tourism destination and economic drivers for the region. However, a combination of unsustainable factors and poor tourism management have resulted in damage and degradation of up to 90% of the GMMP islands, reefs, and marine ecosystem, and 87% reduction of fish species. The research question: Is this ‘the beginning of the end’ of Gili Matra as a tourism destination? is based on Butler's (1980) model, suggesting that tourist motivations, levels of satisfaction with aspects of the marine tourism experience and perceived attribute performance, will, in turn impact on intention to return and positive word-of-mouth. Results of 100 self-administered questionnaires consisting of six Likert scales and three open ended questions, showed that the main motivation for visiting GMMP were Snorkelling and/or SCUBA diving, Resting and relaxing on the beach and Experiencing the marine wildlife.

The three most important attributes in determining level of enjoyment for visitors were: Seeing live coral in the ocean, Seeing fish and Seeing turtles. Satisfaction scores for Maintenance of the Landscape, Cleanliness of Restrooms, Cleanliness of the Beaches, Cleanliness of the Ocean and Presence of Wildlife were low. The lowest tourist satisfaction scores occurred for Health of the Coral, Abundance of Coral, Abundance of Algae or

Plants and Abundance of Marine Animals. The greatest anthropogenic impacts on the islands were perceived as being Dynamite Fishing, Tourism Development, Human Settlement and Climate Change. The government and the operators need to be made aware of the impacts that the tourism industry is having on the GMMP, then work collaboratively to reduce impacts and enhance the quality of and satisfaction with the tourism experience. Key pro-environmental actions are: regeneration of coral and fish species; enforcing zoning to restrict and reduce tourism, fishing and commercial vessel impacts; introduction and enforcement of permits for harbours/vessels; and better practices with rubbish, water and waste management.

Authors: McIntosh, S., and Renard, Y.

Year: 2010

Title: Placing the commons at the heart of community development: three case studies of community enterprise in Caribbean Islands

Journal: International Journal of the Commons

Volume: 4

Issue: 1

Pages: 160-182

Abstract: This paper examines experiences in developing, supporting and sustaining community-based enterprises that are based on the use of forest, coastal and marine resources in the insular Caribbean, with a focus on the eastern Caribbean, and draws lessons from that experience. The three cases reviewed include community-based enterprises involved in forest conservation, turtle protection, tour guiding and fisheries. Other experiences are also used to inform the lessons and conclusions of the paper. The paper first identifies some of the cultural, social or economic factors that have favoured or hindered the development of these enterprises, highlighting the conditions that are specific to Caribbean societies, where the majority of the people have throughout history been denied access to valuable natural resources, where production is largely driven by external markets, and where there is not a long tradition of community natural resource management. It then examines the extent to which the economic success of individual business ventures contributes to or hinders the achievement of the broader community social, political, cultural and environmental goals. On the basis of these analyses, the paper proposes a number of enabling conditions that may be required, in the context of the insular Caribbean, for these initiatives to flourish.

Author: Meletis, Z. A.

Year: 2007

Title: Wasted visits? Ecotourism in theory vs. practice, at Tortuguero, Costa Rica

Academic Department: Department of Environment

University: Duke University

Thesis Type: Doctor of Philosophy

Abstract: In this dissertation, Meletis contemplates ecotourism in theory and in practice. She uses the case study of a solid waste crisis (2002-2004) in Tortuguero, Costa Rica, a turtle tourism destination, to explore: the consumptive nature of ecotourism, tourist perceptions of the environment, ecotourism aesthetics, local resistance to ecotourism development, local perceptions of ecotourism's environmental impacts, and the future of ecotourism. Meletis used mixed methods including participant observation, semi-structured interviews, and on-site surveys to collect data.

She conducted mainly qualitative analysis (thematic coding; adapted grounded theory) influenced by political ecology, environmental justice, resistance studies, tourism studies, and the geography of tourism. The author's use of environmental justice concepts to frame the solid waste crisis in Tortuguero, and the application of key concepts from Scott's (1981) *Weapons of the Weak* to local behaviour and narratives both represent fairly novel applications in an ecotourism context. Meletis attempted to move beyond a restricted case study by emphasising characteristics shared between Tortuguero and other sites, in the hopes of contributing towards efforts to inject new theoretical applications into tourism studies. This case study reveals the consumptive side of ecotourism, and the analysis of tourist survey responses highlights the central role of aesthetics in ecotourism. This project challenges simplistic portrayals of ecotourism as 'benevolent and benign' (e.g. by highlighting its consumptive impacts and related injustices), and of ecotourists as more aware and altruistic than mass tourists (e.g. by presenting a heterogeneous group of respondents who none the less, stress aesthetics). Meletis updates existing literature on Tortuguero by presenting data on tourist and local perceptions of Tortuguero, and by suggesting explanations for divergent perceptions of the park's role in ecotourism, for example. The evidence that she presents of local resistance and waste-related injustices suggest that despite its high profile reputation, multimillion dollar annual revenues, improved local standards of living, and green turtle conservation successes, critical details and key voices have largely been 'left out of the story of ecotourism in Tortuguero'. Meletis hopes that this study contributes to encouraging the culture of 'greater ecotourism realism' that is needed in order to move forward.

Authors: Meletis, Z. A., and Campbell, L. M.

Year: 2007

Title: Call it consumption! Re-conceptualizing ecotourism as consumption and consumptive

Journal: *Geography Compass*

Volume: 1

Issue: 4

Pages: 850-870

Abstract: Labelling ecotourism as 'non-consumptive' and contrasting it with direct uses of wildlife through activities such as hunting is common practice among organisations and academics primarily concerned with conservation. The authors interrogate this binary opposition by questioning the assumptions underlying it, namely that 'the direct consumption of wildlife' (i) does not occur in ecotourism; (ii) is incompatible with ecotourism; (iii) is the primary concern; and (iv) is inferior to ecotourism as both a conservation and development strategy. Based on a review of the relevant theoretical and case-study based literature, as well as their own research, Meletis and Campbell argue that categorising ecotourism as 'non-consumptive' is not only inaccurate, but also has consequences for both environments and people. The authors suggest ways in which ecotourism can be re-conceptualised in order to better achieve its goals of conserving both nature and culture, and of contributing to both conservation and development.

Authors: Meletis, Z. A., and Campbell, L. M.

Year: 2009

Title: Benevolent and benign? Using environmental justice to investigate waste-related impacts of ecotourism in destination communities

Journal: *Antipode*

Volume: 41

Issue: 4

Pages: 741-780

Abstract: This paper contributes to the diversification of environmental justice (EJ) by using it to frame ecotourism-related solid waste management problems. Ecotourism is a service industry

portrayed as benevolent (providing benefits), and benign (reducing negative impacts). Meletis and Campbell propose four characteristics shared by ecotourism-based communities in the Global South and communities struggling with more conventional EJ conflicts. They apply these characteristics to the solid waste crisis in Tortuguero, Costa Rica, a renowned ecotourism destination. First, the authors show that, despite their general absences from the EJ literature, service industries such as tourism and hospitality can create environmental injustices that disproportionately impact certain types of communities. Second, they highlight the roles of location and socio-economic marginality in siting ecotourism development, in complicating related environmental impact management, and in limiting local abilities to respond to environmental management shortcomings. Third, the authors provide an example of opportunities to introduce EJ concepts and theory into the study of tourism.

Authors: Meletis, Z. A., and Harrison, E. C.

Year: 2010

Title: Tourists and turtles: Searching for a balance in Tortuguero, Costa Rica

Journal: Conservation and Society

Volume: 8

Issue: 1

Pages: 26-43

Abstract: Tourism is seen as an important part of the turtle conservation ‘toolbox’ that can be used to (1) raise awareness about sea turtles, (2) provide funding for conservation and management, and (3) create ‘alternative livelihoods’ and revenues for communities who engage(d) in direct consumption or sale of sea turtle products. With some exceptions, however, few studies of sea turtle tourism dedicate adequate attention to the wants, needs, and perceptions of tourists. In this paper, Meletis and Harrison focus on tourist perceptions of turtle tours in Tortuguero, Costa Rica, home to Tortuguero National Park (TNP; est. 1975) and among the oldest turtle tour systems in the world. In 2004, the tour system was changed to mitigate potential negative impacts of tourist activity on nesting turtles. Whereas tourists and their guides once walked the beach ‘looking’ for nesting turtles, they now wait behind the beach and are radioed by TNP-affiliated ‘turtle spotters’ when turtles are ‘ready’ to be viewed. Impact mitigation was the primary motivation for this alteration to the tour system; resulting changes in the nature of the tour were not central considerations. Are the tourists enjoying the new tour format? Do they like/dislike the more passive waiting? Do the tourists know about, and understand the new tour system? In this paper, the authors address questions such as these, using a sample of 147 tourist surveys collected in 2008. They designed a survey to (1) add to the existing data on tourism in Tortuguero, (2) collect data on tourist perceptions of the (new) tour system, and (3) gauge tourist awareness of the Turtle Spotter Program (TSP) and the reasons for the new turtle tour system. The main purpose of this study was to collect data requested by interested stakeholders, and to consider the results with respect to implications for the future of turtle tour management in the area.

Authors: Mendes, S., Martins, J., and Mouga, T.

Year: 2019

Title: Ecotourism based on the observation of sea turtles - a sustainable solution for the touristic promotion of Sao Tomé and Principe

Journal: Cogent Social Sciences

Volume: 5

Issue: -

Article: 1696001

Abstract: Wildlife-based ecotourism has been stated as an efficient tool to promote the conservation of endangered species and habitats. These activities also aim to create economic

revenue for local communities. Likewise, ecotourism, intends to involve these communities in the management of the conservation programmes and develop educational activities, either for children, locals, or tourists, in order to increase awareness about target species and habitats. This study addressed the recent ecotourism activities in the observation of sea turtles which are being developed in São Tomé and Príncipe. These charismatic marine reptiles are vulnerable or endangered due to human activities, such as meat and egg consumption, illegal trade, habitat loss, climatic change, pollution and fisheries bycatch. Therefore, ecotourism using flagship species, like a sea turtle, establishes a sustainable alternative to destructive activities, promoting the country's environmental, economic and social development, the three pillars of sustainability. In this context, the objective of this study is to know the potential of São Tomé and Príncipe as a turtle watching-based ecotourism destination. An exploratory analysis was carried out through two questionnaires (one focused to the Morro Peixe's local community and another to the tourists that were engaged in turtle watching activities), in order to know the perception of the inhabitants and tourists regarding the programmes and initiatives for the conservation of sea turtles. Despite the awareness that already exists among inhabitants regarding the conservation of sea turtles, the results showed that they do not straightforwardly accept the prohibition for the capture of sea turtles, but most of the population of Morro de Peixe is receptive to changes in the community regarding their protection. In fact, the population is beginning to recognise that tourism, due to the protection given to these endangered species, may become (in the medium term) a sustainable source of income. Regarding tourists' profile, these are mostly Portuguese, with a high level of education and income. They are well informed about the need for sea turtle conservation and seek to carry out tourism activities that pursue this protection. In fact, this also demonstrates the potential the country has as a turtle watching-based ecotourism destination.

Authors: Meylan, A. B., Meylan, P. A., and Ordoñez Espinosa, C.

Year: 2013

Title: Sea turtles of Bocas del Toro Province and the Comarca Ngöbe-Buglé, Republic of Panama

Journal: Chelonian Conservation and Biology

Volume: 12

Issue: 1

Pages: 17-33

Abstract: The Bocas del Toro region of Panamá (Bocas del Toro Province and the Comarca Ngohe-Buglé) has been known as an important area for sea turtles since at least the 17th century. Four species occur in the region: the hawksbill (*Eretmochelys imbricata*), green turtle (*Chelonia mydas*), loggerhead (*Caretta caretta*), and leatherback (*Dermochelys coriácea*). Multiple life stages of these species are supported by the diverse marine habitats and beaches in the region. Meylan and colleagues summarise the evidence for stages present and their known distributions in the Bocas region. Annual nest numbers, location, and monitoring status are given for 17 nesting beaches. These beaches support regionally significant numbers of leatherback and hawksbill nests, small numbers of green turtle nests and, rarely, loggerhead nests. The authors review the history of sea turtle use in the Bocas region and describe "*velación*," a government-organised system that facilitated the extraction of hawksbills from nesting beaches throughout the Bocas region during the 20th century to supply the market for tortoiseshell. Current threats to sea turtles in the Bocas area include an illegal directed take of turtles at sea and of eggs and turtles on nesting beaches, bycatch in lobster and shark fisheries, and habitat degradation. Coastal development and increasing tourism have gradually become concerns for sea turtle conservation as the economic focus of the region has changed. The history of conservation efforts on behalf of sea turtles in Bocas is also summarised. This contribution was originally written to provide data on sea turtles for a coastal management plan for the region.

Authors: Mudiyansele, R., and Rathnayake, W.

Year: 2016

Title: 'Turtle watching': A strategy for endangered marine turtle conservation through community participation in Sri Lanka

Journal: Ocean and Coastal Management

Volume: 119

Issue: -

Pages: 199-207

Abstract: Turtles at the Rekawa sanctuary in Sri Lanka are under threat due to ongoing illegal activities. This study estimates the entrance fee that can be charged to visitors for 'turtle watching' to ascertain whether revenues from such fees can be used to compensate fishermen and reduce such illegal activities. The authors carried out a contingent valuation study to examine the foreign and local visitors' willingness to pay (WTP) for turtle conservation under two different management scenarios. The estimated mean WTP per visit for local visitors was LKR 93 (USD 0.73) and LKR 143 (USD 1.12) for Scenarios 1 and 2, respectively, while the mean WTP of foreign visitors was USD 15 and USD 19 for Scenarios 1 and 2, respectively. These results, which suggest potentially huge gains in revenue, can be used to re-design entry fees for the Rekawa sanctuary and secure the cooperation of low-income fishermen in turtle conservation.

Author: Murray, G.

Year: 2007

Title: Constructing paradise: The impacts of big tourism in the Mexican coastal zone

Journal: Coastal Management

Volume: 35

Issue: 2

Pages: 339-355

Abstract: Although coastal tourism is often looked to as a way of generating foreign revenue, it can also engender a range of social and environmental impacts. From an historical perspective, this article examines the growth of Cancún in the Mexican state of Quintana Roo since the late 1960s. The article documents a range of socioeconomic and environmental impacts associated with the rise of coastal tourism, and suggests that centralised planning and the provision of physical and financial infrastructure does not prevent those impacts. The principal causes of these impacts are also described, including changes in land-usage, population, tourism markets, foreign market penetration and control, an emphasis on short-term economic gain, weak regulatory enforcement, and an overall lack of integration of coastal zone management.

N

Author: Nichols, K. A.

Year: 2007

Title: Turtles and tourism: Where Endangered Species Act ends and community activism begins

Journal: UCLA Journal of Environmental Law and Policy

Volume: 25

Issue: 2

Pages: 411-440

Abstract: Visitors and residents of Hawai'i alike can take a walk along Laniakea Beach and enjoy a rare spectacle: green sea turtles sunbathing on the sand. Over the past six years, human-turtle encounters have grown more frequent and potentially problematic for the well-being of the threatened turtle species. This article addresses the ability of the Endangered Species Act, and Hawai'i state laws, to protect green sea turtles from "harm" or "harassment" arising from chronic,

close-proximity wildlife viewing. The article concludes that, although the ESA is not suited to prevent cumulative impacts to the turtles from human beach-going activity, there is ample room in state regulations to develop site-specific turtle protection programmes.

Author: Nulkar, G. V.

Year: 2019

Title: Turtles or tourists? Assessing the role of ecotourism in wildlife conservation – a case from India

Editors: Sharma, R., and Rao, P.

Book Title: Environmental impacts of tourism in developing nations

City: Hershey, PA, USA

Publisher: IGI Global

Pages: 140-157

Abstract: While ecotourism is a well-defined concept, operationalising it to make it financially viable is a challenge. Ecotourism has a potential to conserve natural resources and biodiversity of the region, as suggested by many case studies across the world. In the last few years, Indian tourism has experienced an overuse of the term ecotourism. However, there are no standards nor guidelines to inspire confidence in tourists, nor policies to ensure its honest use. This chapter discusses the findings of the author's comparative study of conventional tourism in Murud and ecotourism in Velas. Murud and Velas are coastal villages in Maharashtra, with similar characteristics. The Olive Ridley turtles arrive every year to Velas to lay their eggs. However, with growing human disturbances, their numbers dwindled. Velas residents chose to protect this unique phenomenon and chose to fund their conservation programme with an appropriate model of ecotourism. Today, ecotourism in Velas yields income for the residents, helps fund the turtle conservancy programme, and generates employment for youth.

Authors: Nyhof, P. E., and Trulio, L.

Year: 2015

Title: Basking Western Pond Turtle response to recreational trail use in urban California

Journal: Chelonian Conservation and Biology

Volume: 14

Issue: 2

Pages: 182-184

Abstract: The presence of human activity near freshwater turtle habitat can have a negative impact on a range of turtle behaviours. The authors assessed whether human use of a recreational trail had an effect on basking behaviour of western pond turtles (*Actinemys marmorata*) by observing individuals basking while they monitored recreational disturbances. Based on the results, the authors suggest limiting the number or times of operation of motor vehicle traffic adjacent to western pond turtle habitat to restrict impacts on basking behaviour.

O

Author: O'Mahoney, H.

Year: 2014

Title: Work, leisure, and flourishing: an ethnographic study of voluntary sea turtle conservation

Academic Department: Social Sciences

University: Cardiff University

Thesis Type: PhD

Pages: 1-310

Abstract: Volunteer tourism is a burgeoning industry, and is similarly expanding as a field of academic interest. However, much of the extant literature on this phenomenon is concerned with the motivations of volunteer tourists and their interactions with indigenous and local populations or, in the field of environmental conservatism, impacts upon local environments. There are few thick, qualitative studies of the environments created by the phenomenon within this literature, and even fewer which engage rigorously with sociological theory. Drawing on ethnographic immersion in a small community of volunteer sea-turtle conservationists in Greece, this thesis explores the types of work volunteers perform within these environments, and frames these experiences in relation to broader sociological perspectives on work, employment, and leisure. The concept of flourishing is mobilised to understand the specific types of satisfaction which the participants exhibit and report during their time volunteering. This investigation combines fieldwork and qualitative interviews to develop an empirical understanding of the everyday life of volunteering and how the participants' experiences and accounts contrast to but are also framed by dominant discourses such as personal growth, employability, and instrumentalism found in advanced neo-liberal capitalism. The 'thickness' of the data, providing detailed insights into the lived experiences of volunteers through the immersive ethnographic method, allows for the social complexity of the volunteer experience to be studied. It proposes that whilst volunteer tourists employ discourses of employability and self-improvement when asked why they volunteer, the actual experiences of volunteering provide less tangible rewards, such as sensual interactions with the natural environment and human relationships reinforced by the proximity of the volunteers' living quarters and values. This research both contributes to a growing literature on the phenomenon of volunteer tourism and adds empirical weight to an established debate concerning the relationship of Marxism to environmentalism. Using the concept of species-being in relation to the teleology of both Marxist and Aristotelian theory, it is argued that conservation work can allow individuals to flourish – in an environment in which work and leisure are more hybridised than oppositional – and for a protected species, the sea turtle, to achieve its telos.

Authors: Oliver de Esperanza, A., Arenas MartInez, A., Tzeek Tuz, M., and Perez-Collazos, E.

Year: 2017

Title: Are anthropogenic factors affecting nesting habitat of sea turtles? The case of Kanzul beach, Riviera Maya-Tulum (Mexico)

Journal: Journal of Coastal Conservation

Volume: 21

Issue: 1

Pages: 85-93

Abstract: Marine coast modification and human pressure affects many species, including sea turtles. In order to study nine anthropogenic impacts that might affect nesting selection of females, incubation and hatching survival of loggerhead (*Caretta caretta*) and green turtle (*Chelonia mydas*), building structures were identified along a 5.2 km beach in Kanzul (Mexico). A high number of hotels and houses (88; 818 rooms), with an average density of 16.6 buildings per kilometer were found. These buildings form a barrier which prevents reaching the beach from inland, resulting in habitat fragmentation. Main pressures were detected during nesting selection (14.19% of turtle nesting attempts interrupted), and low impact were found during incubation (0.77%) and hatching (4.7%). There were three impacts defined as high: beach furniture that blocks out the movement of hatchlings or females, direct pressure by tourists, and artificial beachfront lighting that can potentially mislead hatchlings or females. High impacted areas showed lowest values in nesting selection and hatching success. Based on their results, Oliver de Esperanza and colleagues suggest management strategies need to be implemented to reduce human pressure and to avoid nesting habitat loss of loggerhead and green turtle in Kanzul, Mexico.

Authors: Olya, H. G. T. and Akhshik, A.

Year: 2019

Title: Tackling the complexity of the pro-environmental behavior intentions of visitors to turtle sites

Journal: Journal of Travel Research

Volume: 58

Issue: 2

Pages: 313-332

Abstract: This empirical study improved our understanding of how to simulate visitors' pro-environmental behaviour intentions (PEBIs) during interpretive marine turtle tours in Cyprus. Complexity theory was applied as a sufficient theoretical basis of the proposed configurational model that was tested using fuzzy set Qualitative Comparative Analysis (fsQCA) as an innovative set theoretic approach. Four configurations—demographics, values, beliefs, and norms and attitudes—were used to explore causal recipes leading to both high and low PEBI scores. The findings highlighted the heterogeneity issue in predicting PEBIs, addressed by determining the positive or negative role of PEBI indicators along with attributes of other indicators in causal recipes. The fsQCA results of four configurations suggested 12 recipes for attaining high PEBI scores. Further insight was obtained via configurational modelling of visitors' PEBIs during endangered species tours, which contributed to the current knowledge of tourism management in protected areas. Implications for practice and further research are discussed.

P

Authors: Pegas, F., Coghlan, A., and Rocha, V.

Year: 2012

Title: An exploration of a mini-guide programme: Training local children in sea turtle conservation and ecotourism in Brazil

Journal: Journal of Ecotourism

Volume: 11

Issue: 1

Pages: 48-55

Abstract: This study explores the mini-guide programme delivered by the Brazilian Sea Turtle Conservation Program (Tartarugas Marinhas or TAMAR) in the fishing community of Praia do Forte, Bahia, Brazil. Established in 1995, this programme lasts one year, training local children, aged 10–14 years, in guiding skills and learning about sea turtles and marine ecosystems. The children also receive a monthly stipend. In-depth semi-structured interviews with 77 local community members were conducted during nine months of ethnographic research to assess perceptions about the programme. The interviews also included seven former students who provided an evaluation of the programme from their perspective. The results indicate community-wide support for the programme, with locals focussing not only on greater environmental awareness of the children (or Tamarzinhos, as they are called), but also on the personal development as a result of participation. Former Tamarzinhos themselves agree with this assessment and demonstrate knowledge gain and positive behaviour about conservation of marine species, new aspirations towards higher education, greater training and skill acquisition. As such, long-term environmental programmes such as the mini-guide programme at TAMAR can promote socio-economic and environmental changes that last throughout the youth and adult lives of the children.

Authors: Pegas, F., Coghlan, A., Stronza, A., and Rocha, V.

Year: 2013

Title: For love or for money? Investigating the impact of an ecotourism programme on local residents' assigned values towards sea turtles

Journal: Journal of Ecotourism

Volume: 12

Issue: 2

Pages: 90-016

Abstract: This study adopts an 'assigned values' conceptual model to explain the formation of values and behaviours related to sea turtles at an ecotourism project in Brazil. For over 25 years, the Brazilian Sea Turtle Conservation Programme (TAMAR) has used ecotourism to protect sea turtles in the fishing village of Praia do Forte. The village beaches are prime nesting sites for endangered marine turtles, traditionally harvested on a regular basis, despite federal bans. Seventy-seven residents, including 25 TAMAR workers, were interviewed. Results indicate an overall support for TAMAR, turtle conservation, and implementation of ecotourism initiatives. Both TAMAR workers and non-workers were equally likely to support turtle conservation for the economic role that turtles play in the local economy, with variations in perceptions about their intrinsic or ecological values. Changes in use and values are positive indicators that education and economic benefits from ecotourism can generate support for conservation. However, such outcomes are not necessarily a result of greater stewardship but rather of changes in the social, cultural, and economic dynamics of the village. A better understanding of the factors that drive people to support conservation initiatives, both in terms of values and behaviours, are essential if conservation efforts are to succeed.

Authors: Pegas, F. d. V, & Stronza. A.

Year: 2010

Title: Ecotourism and sea turtle harvesting in a fishing village Bahia, Brazil

Journal: Conservation & Society

Volume: 8

Issue: 1

Pages: 15-25

Abstract: Many environmentalists believe ecotourism has the potential to generate net benefits for people and nature. For more than two decades, the Brazilian Sea Turtle Conservation Program (TAMAR) has provided jobs and income through ecotourism in Praia do Forte, Brazil, in exchange for reduced harvesting of sea turtles. In this article the authors evaluate the relationships between ecotourism at TAMAR and local support for sea turtle conservation. Nine months of ethnographic research (2006–2008) suggest that ecotourism-related employment and income have been somewhat stable and reliable. The average income of respondents who worked with TAMAR was lower than that reported by people not working with TAMAR. Workers noted other non-economic benefits. Though the majority supported sea turtle conservation, it is unclear how feelings will waver with new mass tourism developments in the region. As the cost of living increases, residents may increasingly be inclined to look for work outside TAMAR. Development also attracts new immigrants, making it difficult for locals to control sea turtle harvesting. These trends challenge the notion that economic incentives for locals alone will ensure conservation. Further research is needed to understand the conditions under which ecotourism may foster long-term conservation in the face of larger developments surrounding community ecotourism projects.

Author: Pocock, C.

Year: 2006

Title: Tourists riding turtles

Journal: Australian Zoologist

Volume: 33

Issue: 4

Pages: 425-435

Abstract: Both scientists and holidaymakers once enjoyed riding on the backs of turtles while at the Great Barrier Reef. In spite of the widespread popularity of turtle riding, the practice disappeared into obscurity in the second part of the twentieth century. This paper unveils the historical, social and geographical factors that gave rise to a practice that was peculiar to the holiday makers of this time and place.

Authors: Poland, R. H. C., and Hall, G. B.

Year: 2010

Title: Turtles and tourists: a hands-on experience of conservation for sixth formers from King's College, Taunton, on the Ionian Island of Zakynthos

Journal: Biological Education

Volume: 30

Issue: 2

Pages: 120-128

Abstract: This article describes how sixth-form biology students from King's College, Taunton, made a practical contribution to the conservation of the Mediterranean Loggerhead turtle (*Caretta caretta*) on the Greek Ionian Island of Zakynthos. The purpose of the work was to provide information needed by the local conservation bodies on tourists' awareness of the turtle and its problems, and their willingness to modify their holiday activities to increase its chances of survival. The survey used an oral, interactive style of questionnaire and the results were analysed using an Acorn A4 portable computer and the Logotron Questionnaire programme, Pinpoint. A low-level knowledge of the turtle was found amongst tourists, but concern for its future was apparent; concern was also expressed for the lack of enforcement of the Greek government's current protective legislation.

Authors: Poland, R. H. C., Hall, G. B., and Venizelos, L.

Year: 1995

Title: Sea turtles and tourists: The loggerhead turtles of Zakynthos (Greece)

Editors: Healy, M. G., and Doody, J. P.

Book Title: Directions in European coastal management

City: Cardigan, UK

Publisher: Samara Publishing

Pages: 119-128

Abstract: It is believed that about 80% of the Mediterranean population of *Caretta caretta* nest on 3.55km of sandy beaches at Laganas Bay on the southern coast of Zakynthos (Greek Ionian Islands). Increased pressure from the tourism industry has had a deleterious effect on populations. A survey of visitors to this area reveals that little of the ecology of this animal is made known to tourists. The fate of the loggerhead turtle remains in the hands of the Greek government and those who control tourist access.

Authors: Prihadi, D. J., Shofiyullah, A., and Dhahiyat, Y.

Year: 2017

Title: Marine tourism and the locations of protected turtles on Sukamade Beach, Meru Betiri National Park, East Java

Journal: IOP Conference Series: Earth and Environmental Science

Volume: 137

Issue: 1

Pages: -

Abstract: This research was conducted in Sukamade Beach, Meru Betiri National Park, East Java. The purpose of this research was to identify marine tourism activity and to determine the differences in the characteristics of turtle-nesting beaches towards the number and species of turtles that came to the beach. Data collection conducted in August-September 2014. The method used in this research was a survey method at seven research stations to collect primary data (biophysical characteristics) and secondary data. The Primary data were collected by monitoring turtles, width and slope of the beach, temperature, pH, moisture, sand texture, and beach vegetation conditions at each station. The results of the research show that marine tourisms always involve tourists who attend to see turtle nesting, when turtles arrive at the beach, and turtles return to the sea, how large the turtles are and how they lay eggs on the beach, and the release of little turtles (tukik). The number of turtles that landed from station 1 to station 7 is as many as 311 individuals of three species. The most dominant species of turtles that arrived at the beach is green turtle (*Chelonia mydas*), followed by olive ridley turtles (*Lepidochelys olivaceae*) and leatherbacks turtles (*Dermochelys coriacea*).

Authors: Prunier, E. K, Sweeney, A. E., and Geen, A. G.

Year: 1993

Title: Tourism and the environment: the case of Zakynthos

Journal: Tourism Management

Volume: 14

Issue: 2

Pages: 137-141

Abstract: The growth of tourism on the Greek island of Zakynthos in recent years has posed a considerable threat to the existence of the Loggerhead turtles which have nesting areas on certain of the resort's beaches. Responses received from tourists and residents during interviews held on the island in the summer of 1991 would suggest that legislation established for the protection of wildlife is not always effective and that many members of the community resent the imposition by the Greek government of any restrictions on tourist development. Various strategies are discussed with a view to reconciling the aspirations of local people for the continuation of tourist operations and the desire of conservationists to safeguard the habitat of an endangered species. These policies are grouped into three broad categories: power-coercive; empirical-rational; and normative-educative.

R

Author: Ranade, P.

Year: 2007

Title: Tourism in marine national park of Gujarat

Conference Name: 5th International Coastal & Marine Tourism Congress: Balancing marine tourism, development and sustainability

Conference Location: Auckland, New Zealand

Pages: 219-233

Abstract: The Gulf of Kutch Marine National Park (Gujarat) is located on the west coast of India. This park and marine sanctuary are spread over 42 islands in the Gulf. The International Union for Conservation of Nature and Natural Resources (IUCN) have included this park as category II area in the list of National Parks of the world published by them. It is a unique habitat of bio diversity and abounds in a variety of marine wealth, corals and mangroves. The diverse ecosystem in the national park provides reproduction ground for a variety of marine life forms including green sea turtles. The park also attracts 30 species of migratory birds. Eight varieties of shark are identified around MNP. They migrate to Gujarat coast for breeding. Through save the whale shark campaign, a potential for whale tourism has been created along the Gujarat coast. This paper examines the development of tourism in Gulf of Kutch Marine National Park. This national park has a rich potential to develop as a leading spot for eco- tourism. The area plays a significant role in scientific research study and nature education programme. Lack of infrastructure facilities is the main reason why this park is not able to attract visitors. The constraints in its development are identified and measures to develop this area for sustainable tourism are suggested. If tourism in the Gulf of Kutch MNP is combined with whale watching, turtle tours, beach tourism, bird watching and wildlife tourism (lion safari) in nearby sanctuaries, the coastal region of Gujarat will be immensely benefited economically.

Author: Reuter, A., and Allan, C.

Year: 2006

Title: Tourists, turtles and trinkets: a look at the trade in marine turtle products in the Dominican Republic and Colombia

City/State: Washington, DC, USA

Institution: TRAFFIC

Date: July 2006

Abstract: The Dominican Republic and the Caribbean coastline of Colombia have a long history of use of marine turtles for both local consumption (turtle eggs, meat and oil) and for crafting into ornamental products such as jewellery, mainly for the tourist market. In March 2006 TRAFFIC investigated the trade in these marine turtle products, with a focus on Hawksbill Turtle shell items, in the Dominican Republic and Colombia, which have become popular tourist destinations. Research results show that trade and availability of marine turtle items in these Caribbean countries is an issue of concern, and might indicate ongoing illegal take and trade in marine turtles. Hawksbill Turtle shell products for sale were found in both countries, with very large quantities sold openly in the Dominican Republic, and significantly less for sale in Colombia.

In the Dominican Republic, seven locations were visited, with large quantities of Hawksbill Turtle shell items sold in street stalls, souvenir shops, markets and jewellery shops. A total of 414 curio and souvenir shops and stalls were investigated, with 249 of these trading in Hawksbill Turtle products. Santo Domingo was found to be the main trading spot and distribution centre for these items in the country. Over 95% of the businesses surveyed here traded in marine turtle products, ranging from decorative boxes to elaborate pieces of Hawksbill Turtle shell jewellery, inlaid with gold, amber and gems.

In Colombia, three locations with seven distinct trade areas were visited, with Hawksbill Turtle shell items traded in craft markets, souvenir shops, and by street vendors. A total of 223 shops and vendors were investigated, with 60 of these offering Hawksbill Turtle products for sale. Products were generally available in established shops and stalls, by vendors (walking in the city or along the beaches), and through informal "sidewalk artisans" selling crafts and jewellery items. The old city in Cartagena and El Rodadero in Santa Marta are the places where most of the Hawksbill Turtle shell items were traded. Roadside vendors outside of Cartagena were also seen selling marine turtle eggs.

The evidence from the investigation showed that other marine turtle products, such as turtle oil were also for sale in both countries, including the main tourist markets. The consumption and trade in marine turtle meat was less obvious and for local rather than tourist use.

In 2001 TRAFFIC published a report, “*Swimming Against the Tide*”, documenting exploitation of marine turtles in the Northern Caribbean.

Authors: Rinkus, M. A., da Cal Seixas, S. R., and Dobson, T.

Year: 2013

Title: ““Ninguém me chama” - “Nobody asked me”: Gendered patterns of participation in sea turtle conservation in Northeast Brazil

Journal: Human Ecology

Volume: 45

Issue: 4

Pages: 487-498

Abstract: This paper contributes to the literature regarding gendered patterns of participation in conservation by examining participation in sea turtle conservation and community life in coastal Northeast Brazil. Rinkus and colleagues used a mixed methods approach, comprised of questionnaires and focus groups, and their findings indicate that conservation participation can be partially explained by gendered characteristics related to issues of structural access, cultural attitudes and values, and agency. Results show greater gender differences in access and agency than attitudes toward sea turtle conservation, demonstrating how patterns of participation are influenced by close knit and gendered social networks that decrease an individual’s chance of being invited to participate. While gender issues are not universal, a framework examining issues of structure, culture, and agency allows differences related to age, class, race, etc. to be considered as well, presenting useful information in understanding the barriers and motivations involved in conservation participation.

Authors: Rodger, K., Smith, A., Davis, C., Newsome, D. and Patterson, P.

Year: 2010

Title: A framework to guide the sustainability of wildlife tourism operators: Examples of marine wildlife tourism in Western Australia

City/State: Gold Coast, QLD, Australia

Institution: CRC for Sustainable Tourism

Date: 2010

Abstract: Growth in the wildlife tourism industry has been significant in recent years with an increasing focus on tourism centred on free-ranging wildlife. In Australia tourism based in the marine environment, including observing and interacting with coastal and marine wildlife, is increasing in popularity. The future potential for increased growth in marine tourism is dependent upon the abundance and diversity of Australia’s marine wildlife. Negative impacts of tourism on marine wildlife are difficult to assess as in many cases little is known about the animals or their environment. With the rapid growth in marine tourism the potential for both biophysical and social impacts needs to be recognised. Given the potential impacts and the variable nature of wildlife tourism operations the need arises for a formal auditing and monitoring framework that can identify potential or actual problems and the need for management. This report examines the opportunities and the barriers in producing a simple, yet reliable framework to assess knowledge available on visitor satisfaction and expectations, identify key areas of product/service improvement, gauge the quality of interpretation programmes, evaluate the effectiveness of impact mitigation strategies and also evaluate the application of key performance indicators for monitoring systems for marine wildlife tourism.

Authors: Roe, J. H., Clune, P. R., and Paladino, F. V.

Year: 2013

Title: Characteristics of a leatherback nesting beach and implications for coastal development

Journal: Chelonian Conservation and Biology

Volume: 2

Issue: 1

Pages: 34-43

Abstract: Coastal development can alter the natural dynamics of beach environments, with strong implications for associated biota. Sea turtles nest on oceanic beaches and often depend upon a specific range of conditions for successful nesting. In the case of the critically endangered leatherback turtle (*Dermochelys coriacea*), there is little knowledge regarding what features the leatherbacks select for nest sites, including how they respond to anthropogenic development. Roe and colleagues examined relationships between leatherback nest frequency, beach environments, and tourism development at Playa Grande, Costa Rica, the location of the largest current nesting population in the eastern Pacific Ocean. Developed beach sections had shallower slopes, lower pH, and less air-filled pore space, but higher water content and salinity than undeveloped areas. Developed areas were also comprised of more sand in the smaller grain size classes relative to undeveloped sections. Leatherback nesting was positively correlated with deepness of the offshore approach, beach slope and elevation, pH, and sand in intermediate size classes (0.025-mm diameter), but negatively correlated with sand in the smallest silt size class (< 0.0625-mm diameter). Leatherback nesting frequency was 3.4 times higher in undeveloped sections of the beach relative to developed areas, while nonnesting emergences were 2.6 times more likely in developed relative to undeveloped areas. It is apparent that coastal development has impacted beach environments with consequences for leatherback nest site distribution. It is likely that additional development of the beach under mixed-management plans to support a growing tourist industry will further degrade the attractiveness and quality of the beach for leatherback nesting.

S

Authors: Sardeshpande, M., and MacMillan, D.

Year: 2018

Title: Sea turtles support sustainable livelihoods at Ostional, Costa Rica

Journal: Oryx

Volume: 53

Issue: 1

Pages: 81-91

Abstract: Ostional in Costa Rica is the second largest nesting site of the olive ridley sea turtle *Lepidochelys olivacea*, which is categorised as vulnerable on the IUCN Red List. In Ostional the local community helps maintain the nesting site and collects olive ridley eggs for consumption and trade within Costa Rica. Since its inception in 1987 the egg harvesting project has integrated sea turtle conservation with community development. Sardeshpande and MacMillan assessed the current status of this project in terms of community awareness, dependency, involvement and perceptions, using a household survey and semi-structured interviews with key informants. They also compared some of their findings with those of previous studies at the site, finding that the project has fewer dependents, primary livelihood activities have shifted towards tourism and hospitality, and respondents are more aware about environmental conservation and stewardship. The authors map outcomes of the project with the Sustainable Livelihoods Framework, and suggest that further capacity building for research and tourism could contribute towards sustaining the turtle population, local livelihoods, and the community-based conservation institution.

Authors: Sayan, S., Williams, A. T., Johnson, D. E., and Ünal, Ö.

Year: 2017

Title: A pilot study for sustainable tourism in the coastal zone of Antalya, Turkey: tourists, turtles, or both?

Journal: Journal of Coastal Research

Volume: -

Issue: Special Issue 64: Proceedings of the 11th International Coastal Symposium ICS2011

Pages: 1806-1810

Abstract: Sustainable tourism incorporates a strong commitment to nature and sense of social responsibility. However, this comes at a cost to the consumer, if it is to involve true environmental accounting. In order to achieve an appropriate financial contribution, visitor payback schemes are perceived as a potential alternative to more explicit forms of tourism taxation. The aim of this pilot study is to assess the economic value that British tourists placed on Turkish beaches based on initial surveys. No monetary costs are associated with Turkish public beaches, but, in general, there is a tendency to overuse beach environments, with the possible end result of degradation. This, in turn, necessitates regulatory action implying an economic cost. Successful beach management requires understanding of public opinion and concerns, which have to be taken into consideration by coastal zone managers. For a small indicative pilot sample in Turkey, carried out in two of the popular beaches of Turkish Mediterranean (Ölü Deniz and Belek), an average cost for willingness to pay of £0.89 was found per adult. Payment per visit was found as the preferred method of payment and beach litter was the main dislike of both sets of visitors questioned. Within the second stage of this study the potential of effective spending, as an instrument to support amenity provision and nature conservation, and potential management implications were considered for the resort of Belek. This turtle nesting site (260 nests out of some 800 for the Mediterranean) is used as a case study, to illustrate a location where visitors' actual response to this concept could be implemented to good effect. Respondents favoured "paying for the conservation measures" and "helping visitors become more aware of the potential conflict between tourists and turtles" as the ways that funds should be distributed. Funding for the training for local politicians and volunteers was the least popular option. Ultimately, this represents a pragmatic way forward incorporating the ecosystem approach and promoting stakeholder participation.

Authors: Schofield, G., Scott, R., Katselidis, K. A., Mazaris, A. D., and Hays, G. C.

Year: 2015

Title: Quantifying wildlife-watching ecotourism intensity on an endangered marine vertebrate

Journal: Animal Conservation

Volume: 18

Issue: 6

Pages: 517-528

Abstract: Schofield and colleagues show how seasonal changes in animal density drive strategic shifts in the activities of wildlife-watching operators. These shifts result in high viewing intensity when animal densities are low, highlighting the need for modifications to existing wildlife-watching guidelines. The authors used the endangered loggerhead sea turtle *Caretta caretta* as a model species that exhibits staggered departure from an important breeding area (Zakynthos, Greece, Mediterranean) over a 2-month period (July to August) when tourism is at a peak, to investigate changes in wildlife-watching strategies, zoning effectiveness and voluntary guideline compliance over time. The researchers used a combination of direct land-based observations, global positioning system tracking (of wildlife-watching vessels and turtles) and models. The modelled number of turtles present in the breeding area decreased from >200 in July to <50 in August, while the intensity of turtle-viewing increased from a mean 1.5 to 6.1 wildlife-watching vessels per turtle-viewing event (i.e. concurrent and consecutive vessels observing a single turtle)

over the same period, respectively. During this period, the wildlife-watching strategy changed and compliance to guidelines reduced (exacerbated by recreational vessels). However, wildlife-watching activity was limited to a highly restricted 0.95 km² nearshore area, overlapping with just 9.5% of the core habitat area used by turtles. The results have broad implications (whale watching etc.) by showing the importance of taking the number of animals available for viewing into consideration when assessing wildlife-watching activity and when designing viewing guidelines, particularly for populations where numbers noticeably fluctuate.

Authors: Schofield, G., Scott, R., Dimadi, A., Fossette, S., Katselidis, K. A., Koutsoubas, D., Lilley, M. K. S., Pantis, J. D., Karagouni, A. D., and Hays, G. C.

Year: 2013

Title: Evidence-based marine protected area planning for a highly mobile endangered marine vertebrate

Journal: Biological Conservation

Volume: 161

Issue: -

Pages: 101-109

Abstract: Marine Protected Areas (MPAs) now form an important part of marine conservation and fisheries management; hence, there is broad interest in developing procedures that optimise their design. Schofield and colleagues used data collected over a 10-year period (2003–2012) from direct surveys and >100 adult male and female loggerhead sea turtles (*Caretta caretta*) tracked with devices, including GPS loggers and Fastloc GPS-Argos, to consider the optimum design for a MPA at a globally important breeding area, where there is already an existing national marine park aiming to protect the population (Zakynthos, Greece). Turtles primarily used areas very close to shore (approx. 7 km in length by 1 km in width, within the <10 m isobath) for breeding and foraging activity at different times of the year. The authors calculated that this small nearshore coastal zone encompassed 72% of all turtle GPS locations recorded in the MPA, and is therefore important for conservation management. They developed an index to evaluate the suitability of the existing and proposed conservation zones based on (1) home range area use by turtles in these zones versus (2) zone size, so that the benefit to turtles could be maximised while minimising the negative impacts to other stakeholders (e.g., boat operators). With this evidence-based approach, Schofield and colleagues propose a modification to the existing MPA that might both enhance local economic tourism activities and better safeguard this key sea turtle breeding population. The approaches used here will have general application for the design of MPAs used by mobile species that can be tracked.

Authors: Schuhmann, P. W., Casey, J. F., Horrocks, J. A., and Oxenford, H. A.

Year: 2013

Title: Recreational SCUBA divers' willingness to pay for marine biodiversity in Barbados

Journal: Environmental Management

Volume: 121

Issue: -

Pages: 29-36

Abstract: The use of natural resources and the services they provide often do not have an explicit price and are therefore undervalued in decision-making, leading to environmental degradation. To 'monetise' the benefits from these services requires the use of non-market valuation techniques. Using a stated preference survey of recreational divers in Barbados conducted between 2007 and 2009, the economic value of marine biodiversity to recreational SCUBA divers in Barbados was estimated. In addition to a variety of demographic variables, divers were asked about their level of experience, expenditures related to travel and diving, and encounters with fish and sea turtles.

Divers then completed a choice experiment, selecting between alternative dives with varying characteristics including price, crowding, fish diversity, encounters with sea turtles, and coral cover. Results indicate that divers in Barbados have a clear appreciation of reef quality variables. Willingness to pay for good coral cover, fish diversity and presence of sea turtles is significantly higher than prices paid for dives. In general, divers valued reef attributes similarly, although their appreciation of low density of divers at a site and high coral cover varied with prior diving experience. The results of this study demonstrate the economic value generated in Barbados by the recreational SCUBA diving industry and highlight the potential for substantial additional economic contributions with improvements to the quality of a variety of reef attributes. These results could inform management decisions regarding reef use and sea turtle conservation, and could aid in the development of informed ‘win-win’ policies aimed at maximising returns from diving while reducing negative impacts often associated with tourism activities.

Authors: Ségniabéto, G. H., Okangny, D., Dendi, D., Frety, J., and Luiselli, L.

Year: 2017

Title: Body size and stability in the spatio-temporal distribution pattern of sea turtles along the coasts of Togo: Implications for conservation and ecotourism

Journal: Herpetozoa

Volume: 29

Issue: 3/4

Pages: 163-173

Abstract: Body size of sea turtles and their species-specific fidelity towards certain nesting beaches along the coast of Togo, West Africa, were studied. Furthermore, these turtles’ need for conservation was assessed, including considerations for a sustainable management of the local populations. The field study was carried out with the help of eco-guards, and was concentrated at five beach sections. The total sample consisted of 2,025 individuals across two years (October 2012 until August 2014). Five turtle species were observed. Two were dominant in both years, *Lepidochelys olivacea* (Eschscholtz, 1829) and *Chelonia mydas* (Linnaeus, 1758), one, *Dermochelys coriacea* (Vandelli, 1761), being less common but regularly seen in both years and two being just sporadically observed, *Caretta caretta* (Linnaeus, 1758) and *Eretmochelys imbricata* (Linnaeus, 1766). Data on body size obtained during this study are consistent with available information from the literature, except for *D. coriacea*. The Togolese reproductive females of this species appear smaller than conspecifics from elsewhere. Within species, the observed numerical stability in the use of certain nesting beaches was high; i.e., in two consecutive years there was an apparent preference of the same beach sections, even inside urban Lomé. This pattern suggests that it may be very feasible to develop and implement a sea turtle-based ecotourism programme for the Togolese coast, also because tourism is currently a main income source for Togo and there is already a tourist location outside Lomé for sea turtle enthusiasts.

Authors: Senko, J., Schneller, A. J., Solis, J., Ollervides, F., and Nichols, W. J.

Year: 2011

Title: People helping turtles, turtles helping people: Understanding resident attitudes towards sea turtle conservation and opportunities for enhanced community participation in Bahia Magdalena, Mexico

Journal: Ocean & Coastal Management

Volume: 54

Issue: -

Pages: 148-157

Abstract: In Pacific Mexico, all five sea turtle species have declined over the past century due to intense overexploitation of meat and eggs, fisheries bycatch, and degradation of marine and nesting

habitats. One of the most heavily impacted areas has been the Baja California peninsula, where sea turtle populations remain historically low despite existing conservation measures that include a complete moratorium on the use of sea turtles, over three decades of widespread protection of nesting beaches, and in-water monitoring of sea turtles at coastal foraging areas. Senko and colleagues recognize the need for alternative sea turtle conservation strategies that rely on increased participation of civil society and Mexican citizens. The purpose of this paper is to identify resident attitudes towards sea turtle conservation and opportunities for enhanced community participation in Bahia Magdalena, a region in Baja California Sur, Mexico experiencing high levels of sea turtle poaching and bycatch in fisheries. Through semi-structured interviews the authors found that while residents were overwhelmingly interested in participating in sea turtle conservation, peer pressure and conflict within the community presented major challenges. The majority of residents indicated that sea turtle voluntourism would have a positive impact on their community. Economic incentives and increased protection for sea turtles were mentioned as benefits of sea turtle voluntourism, whereas peer pressure, difficulty obtaining permits and producing effective marketing materials, and doubt about direct economic benefits were cited as constraints. The authors discuss their results in terms of opportunities, challenges, and recommendations for improving community-focused sea turtle conservation throughout the region.

Authors: Smith, L., Newsome, D., & Lee, D.

Year: 2014

Title: The development of an interpretive experience to foster positive tourist encounters and manage turtle tourism in Northwest Western Australia: Implications for further research

Journal: Tourism in Marine Environments

Volume: 10

Issue: 1-2

Pages: 31-48

Abstract: In understanding the importance of interpretation in guiding sustainable turtle tourism, this article reports on the effect of an interpretation programme, the Jurabi Turtle Experience (JTE), on the behaviour of turtle-watching tourists at the Jurabi Coastal Park, on the Northwest Cape of Western Australia. Ninety-seven turtle-watching tourists in the Jurabi Coastal Park, including people who attended the JTE and others who did not, were sampled during the peak turtle nesting season (December–January) using participant observation and a questionnaire. People participating in the JTE showed increased compliance with a behavioural code of conduct for turtle watching and higher satisfaction with the experience compared with people who did not participate. These increases strengthen the case for continuing the JTE and possibly requiring all Jurabi Coastal Park visitors to participate in a JTE-like experience.

Authors: Smith, R. J., Witherington, B., Heimlich, J. E., Lindborg, R. J., Neidhardt, E., and Savage, A.

Year: 2019

Title: Public sea turtle watches serve as effective environmental education

Journal: Environmental Education Research

Volume: 25

Issue: 2

Pages: 292-308

Abstract: To understand both immediate and longer-term effects of a short duration, interpretive wildlife tourism programme, Smith and colleagues studied responses from participants in a sea turtle watch programme. This programme comprised an interpretive presentation followed by an opportunity to view a nesting loggerhead sea turtle (*Caretta caretta*). The authors conducted 37

programmes in 2013 and 2014, for 843 participants, of whom 70.5% were able to see a nesting turtle. They measured participant attitudes, knowledge, intention to act, and long-term behaviour change. Initial participant responses indicated prior interest in nature and environmental topics, and a knowledge base focused on biological sea turtle information. After the interpretive presentation, participants chose to provide conservation related information as opposed to natural history-related information. Intention to engage in conservation behaviours was high following the turtle watch experience, regardless of whether a turtle was seen. The conservation value of the turtle watch programme is expressed through conservation-focused knowledge acquisition by participants and their high post-programme intention to engage in behaviours benefiting sea turtles, both of which precede long-term behaviour change in an interdisciplinary model of behaviour change.

Authors: Stewart, K., Norton, T., Mohammed, H., Browne, D., Clements, K., Thomas, K., Yaw, T., and Horrocks, J.

Year: 2016

Title: Effects of “swim with the turtles” tourist attractions on green sea turtle (*Chelonia mydas*) health in Barbados, West Indies

Journal: Journal of Wildlife Diseases

Volume: 52

Issue: 2

Pages: 104-117

Abstract: Along the West Coast of Barbados a unique relationship has developed between endangered green sea turtles (*Chelonia mydas*) and humans. Fishermen began inadvertently provisioning these foraging turtles with fish offal discarded from their boats. Although initially an indirect supplementation, this activity became a popular attraction for visitors. Subsequently, demand for this activity increased, and direct supplementation or provisioning with food began. Food items offered included raw whole fish (typically a mixture of false herring [*Harengula clupeola*] and pilchard [*Harengula humeralis*]), filleted fish, and lesser amounts of processed food such as hot dogs, chicken, bread, or various other leftovers. Alterations in behaviour and growth rates as a result of the provisioning have been documented in this population. The purpose of this study is to determine how tourism-based human interactions are affecting the overall health of this foraging population and to determine what potential health risks these interactions may create for sea turtles. Juvenile green sea turtles (n529) were captured from four sites off the coast of Barbados, West Indies, and categorised into a group that received supplemental feeding as part of a tour (n511) or an unsupplemented group (n518) that consisted of individuals that were captured at sites that did not provide supplemental feeding. Following capture, a general health assessment of each animal was conducted. This included weight and morphometric measurements, a systematic physical examination, determination of body condition score and body condition index, epibiota assessment and quantification, and clinical pathology including hematologic and biochemical testing and nutritional assessments. The supplemented group was found to have changes to body condition, vitamin, mineral, hematologic, and biochemical values. Based on these results, recommendations were made to decrease negative behaviours and health impacts for turtles as a result of this provisioning.

Authors: Stewart, K. M., Norton, T. M., Tackes, D. S., and Mitchell, M. A.

Year: 2016

Title: Leatherback ecotourism development, implementation, and outcome assessment in St. Kitts, West Indies

Journal: Chelonian Conservation and Biology

Volume: 15

Issue: 2

Pages: 197-205

Abstract: The St. Kitts Sea Turtle Monitoring Network (SKSTMN) is a community-based sea turtle conservation organisation operating in St. Kitts, West Indies. Four species of either nesting and/or foraging sea turtles have been recorded in the area around St. Kitts, including leatherback (*Dermochelys coriacea*), green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), and loggerhead (*Caretta caretta*). An open fishing season for sea turtles is active in St. Kitts and Nevis from 1 October through 28 February annually. In 2006, sea turtle fishers in St. Kitts were assessed by the SKSTMN through a survey process to determine the status of sea turtle stocks in the St. Kitts area and to determine the feasibility of developing a local community-based ecotourism project focusing on sea turtles. Based on the results of this survey, the SKSTMN made the decision to develop alternative livelihoods for the fishers to serve as a replacement for the harvest. These included a Sea Turtle Technician Program and a St. Kitts Leatherback Ecotour Package. Prior to the development and implementation of the St. Kitts Leatherback Ecotour Package, a representative survey was prepared and distributed to three target groups: local citizens, tourists, and residents. A complete tour package was developed according to the survey results, and the package was offered during leatherback nesting seasons from 2009 to 2014. In 2014, an outcome assessment of the ecotourism initiative was conducted that consisted of electronic survey delivery to a subset of former ecotour participants. These initiatives have resulted in a decrease in the number of sea turtles harvested in St. Kitts annually and have also produced a number of sustainable technician positions for Kittitian citizens on the project.

Author: Stronza, A., and Pêgas, F.

Year: 2008

Title: Ecotourism and conservation: two cases from Brazil and Peru

Journal: Human Dimensions of Wildlife

Volume: 13

Issue: 4

Pages: 263-279

Abstract: This article evaluates two theories to explain the relationship between ecotourism and conservation. One posits that economic benefits must accrue to local communities for ecotourism to result in conservation; the other holds that social benefits, including participation in management, must also be present. Although these ideas about causal mechanisms are not mutually exclusive, scholarly studies tend to reflect one more than the other. Two ecotourism projects from Brazil and Peru are compared. The Brazil study illustrates sea turtle ecotourism that generates economic benefits for coastal communities. The case in Peru also generates economic benefits for a local community, but has the added goal of building local management capacity. Both cases provide empirical evidence for causal mechanisms linking ecotourism with conservation. In the Brazil case, economic benefits alone seem to account for conservation outcomes. In Peru, local participation in ecotourism management has also sparked collective action for conservation.

T

Author: Takeda, S.

Year: 2018

Title: Regional governance in sea turtle tourism in Costa Rica

Journal: Japan International Tourism Association Proceedings

Volume: 25

Issue: -

Pages: 7-14

Abstract: Tours of sea-turtle nests are in demand in Costa Rica. However, egg collection is legally prohibited, the custom of eating sea turtle eggs persists in several coastal regions. A recent investigation has found that a black market for eggs has developed and that the public security of the nesting beach has deteriorated. To resolve this problem, this paper discusses ways in which tourism can contribute to regional peace through the examination of the case of tours of sea-turtle nests. The site of the investigation is a small village in northern Costa Rica that maintaining peace by using sea turtles as an ecotourism resource. Through the analysis of the history of conservation and tourism in the village, the manner in which local peace has been achieved is shown.

Author: Teh, L., and Cabanban, A. S.

Year: 2007

Title: Planning for sustainable tourism in southern Pulau Banggi: An assessment of biophysical conditions and their implications for future tourism development

Journal: Journal of Environmental Management

Volume: 85

Issue: 4

Pages: 999-1008

Abstract: *A priori* assessments of a site's biophysical and socio-economic capacity for accommodating tourism are less common than tourism impact studies. *A priori* evaluations can provide a contextual understanding of ecological, economic and socio-cultural forces, which shape the prospects for sustainable tourism development at the host destination, and can avert adverse impacts of tourism. Teh and Cabanban conduct an *a priori* assessment of the biophysical environment of Pulau Banggi, in the Malaysian state of Sabah for sustainable tourism development. They characterise baseline conditions of the island's marine biodiversity, seasonality, and infrastructure. The authors then evaluate how existing biophysical conditions will influence options for sustainable tourism development. In particular, they suggest conditions, if there are any, which constitute a limit to future tourism development in terms of compatibility for recreation and resilience to visitor impacts. Teh and Cabanban find that the biggest constraint is the lack of adequate water and sanitation infrastructure. Blast fishing, although occurring less than once per hour, can potentially destroy the major attraction for tourists. The authors conclude that while Pulau Banggi possesses natural qualities that are attractive for ecotourism, financial and institutional support must be made available to provide facilities and services that will enable local participation in environmental protection and enhance prospects for future sustainable tourism.

Author: Teh, L. S. L., Teh, L. C. L., and Jolis, G.

Year: 2018

Title: An economic approach to marine megafauna conservation in the coral triangle: Marine turtles in Sabah, Malaysia

Journal: Marine Policy

Volume: 89

Issue: -

Pages: 1-10

Abstract: This study quantifies the Total Economic Value (TEV) marine turtles contribute to the Semporna Priority Conservation Area in Sabah, Malaysia, based on field surveys conducted in May 2014 with marine stakeholders, including 60 fishing households, 9 resorts, and 7 government and academic institutions. The estimated TEV of marine turtles was USD 23 million per year, ranging from USD 21–25 million. The estimated non-consumptive value of marine turtles far exceeded the consumptive use value. Moreover, the protection of marine turtles could potentially generate 1146 tourism jobs, equivalent to USD 469,000 in employment income per year. Conservation could be partially funded from tourism, as tourists were willing to contribute USD 1.5 million for marine turtle protection and conservation annually. Scenario analysis showed that the discounted TEV of marine turtles could reach up to USD 716 million over 30 years if full protection of turtles was implemented now. This is more than double the discounted TEV of marine turtles under status quo conditions (USD 262 million). By showing the substantial economic value derived from marine turtles, this study not only provides an important incentive for protecting marine turtles in Semporna, but also for investing in conserving marine resources in the wider Coral Triangle and Asia Pacific region.

Author: Tisdell, C.A.

Year: 1986

Title: Conflicts about living marine-resources in Southeast Asia and Australian waters: Turtles and dugongs as cases

Journal: Marine Resource Economics

Volume: 3

Issue: -

Pages: 89-109

Abstract: This paper considers conflicts that arise and socioeconomic problems involved in managing fugitive resources, especially transborder or transfrontier ones when economic development occurs. To do this it concentrates on the situation of turtles and dugongs in Southeast Asian and Australian waters. Particular attention is given to turtle farming and to zoning as conservation strategies and the use of marine parks for resource management. Questions are raised about the responsibilities of developed countries such as Australia for conserving species that migrate to less developed countries.

Authors: Tisdell, C., and Wilson, C.

Year: 2001

Title: Wildlife-based tourism and increased support for nature conservation financially and otherwise: Evidence from sea turtle ecotourism at Mon Repos

Journal: Tourism Economics

Volume: 7

Issue: 3

Pages: 233-249

Abstract: The arguments of most conservationists supporting ecotourism have been based on the view that it is environmentally friendly as a resource-use and that receipts from it can counter

demands to use the natural resources involved for more extractive economic purposes. But wildlife-based ecotourism can also have positive impacts in itself on the willingness of tourists to pay for wildlife conservation, strengthen the pro-conservation attitudes of tourists, and foster personal actions by them that contribute to wildlife conservation. These aspects are explored in this article on the basis of a survey of tourists visiting Mon Repos Beach near Bundaberg, Queensland, for the purpose of watching marine turtles. The results enable several of the conservation impacts of this experience on tourists to be quantified, and highlight important relationships between specific socio-economic variables and the willingness of tourists to pay for the protection of sea turtles. Furthermore, it is shown that the on-site experiences of ecotourists have positive impacts on the willingness of tourists to pay for the conservation of wildlife, and that willingness to pay is sensitive to whether or not wildlife is seen. It is suggested that *in situ* ecotourism is likely to be a more powerful force for fostering pro-conservation attitudes and actions among visitors than *ex situ* wildlife-based tourism in aquaria and zoos.

Authors: Tisdell, C., and Wilson, C.

Year: 2002

Title: Ecotourism for the survival of sea turtles and other wildlife

Journal: Biodiversity & Conservation

Volume: 11

Issue: 9

Pages: 1521-1538

Abstract: This paper discusses generally why humans should bother to conserve sea turtles. In doing so, it considers both economic and non-economic reasons and outlines threats to the existence of sea turtles and ways in which tourism may either contribute to the conservation or decline of their populations. Turtle-based ecotourism at Mon Repos in southern Queensland is described. As a result of a survey conducted by the authors, it is shown that turtle-based ecotourism at Mon Repos has positive social (indirect) consequences for the conservation of sea turtles. Furthermore, it is argued that ecotourism operations at Mon Repos have positive direct impacts on the sustainability of populations of sea turtles. However, using a simple model, it is emphasised that this impact is limited because turtles are migratory. A model is also developed to capture the possible relationship between turtle populations and the sustainability of ecotourism dependent on turtle populations, and is extended to other wildlife species. Significant interdependence exists between the sustainability of these two variables. The theory is related to Ciriacy-Wantrup's social safe minimum conservation standard for species' survival.

Authors: Tisdell, C., and Wilson, C.

Year: 2003

Title: Does ecotourism contribute to sea turtle conservation? Is the flagship status of turtles advantageous?

City/State: Brisbane, QLD, Australia

Institution: The University of Queensland, School of Economics

Date: December 2003

Abstract: There is little doubt that marine turtles are a flagship species for wildlife tourism. In some cases, this has turned out to be liability for sea turtle conservation, but in other cases, where for example turtle-based ecotourism has been developed, it has made a positive contribution to turtle conservation. Examples of both cases are given. Particular attention is given to the development of turtle-based ecotourism at Mon Repos Beach near Bundaberg, Australia. This development is set in its historical context and its contribution to conservation is discussed. Headstart projects for sea turtles in Sri Lanka are a tourist attraction. While they are promoted as having positive conservation consequences and a survey indicates that visitors are on the whole

convinced of this, their effects on turtle conservation is uncertain. The farming of sea turtles provides a basis for tourism and can contribute to turtle conservation in ways outlined. It is argued that insufficient attention has been given to legends, culture and history associated with sea turtles in the promotion of turtle-based tourism. This is supported by Australian evidence. Insufficient use has been made of the connections of indigenous Australians with sea turtles in turtle-based tourism. Beneficial scope exist for developing connections between man and turtles further than at present in promoting turtle-based tourism. This could add further to the role of turtle-based tourism in promoting turtle conservation.

Authors: Tisdell, C., and Wilson, C.

Year: 2005

Title: Do open-cycle hatcheries relying on tourism conserve sea turtles? Sri Lankan developments and economic-ecological considerations

Journal: Environmental Management

Volume: 35

Issue: 4

Pages: 441-452

Abstract: By combining economic analysis of markets with ecological parameters, this article considers the role that tourism-based sea turtle hatcheries (of an open-cycle type) can play in conserving populations of sea turtles. Background is provided on the nature and development of such hatcheries in Sri Lanka. The modelling facilitates the assessment of the impacts of turtle hatcheries on the conservation of sea turtles and enables the economic and ecological consequences of tourism, based on such hatcheries, to be better appreciated. The results demonstrate that sea turtle hatcheries serving tourists can make a positive contribution to sea turtle conservation, but that their conservation effectiveness depends on the way they are managed. Possible negative effects are also identified. Economic market models are combined with turtle population survival relationships to predict the conservation impact of turtle hatcheries and their consequence for the total economic value obtained from sea turtle populations.

Authors: Tisdell, C., and Wilson, C.

Year: 2005

Title: Perceived impacts on ecotourism on environmental learning and conservation: Turtle watching as a case study

Journal: Environment, Development and Sustainability

Volume: 7

Issue: 3

Pages: 291-302

Abstract: Using a case study, involving turtle-based ecotourism, Tisdell and Wilson explore the role of ecotourism in promoting environmental learning and in sustaining conservation of nature. Mon Repos Conservation Park (an important marine turtle rookery involved in ecotourism) in Queensland, Australia, was selected for this study and visitors were surveyed using a structured questionnaire. The reported on-site experiences of respondents are analysed to identify important factors that alter their stated conservation attitudes and behaviours. The impact of these factors (such as the amount of environmental education that respondents claimed they obtained, sighting of sea turtles, nationality) is quantified using regression analyses. There has been little previous quantification of such influences. The study reveals that a considerable amount of environmental knowledge is gained by visitors to Mon Repos. The ecotourism experience, involving environmental education and seeing of turtles, was found to have positive and statistically significant impacts on the visitors' stated desire and intended behaviour to protect sea turtles. The study reveals the importance of learning and the interaction of tourists with wildlife as a contributor

to their pro-conservation sentiments and actions. It shows how ecotourism can support nature conservation.

Authors: Tisdell, C., and Wilson, C.

Year: 2006

Title: Conservation and economic benefits of wildlife-based marine tourism: Sea turtles and whales as case studies

Journal: Human Dimensions of Wildlife

Volume: 8

Issue: 1

Pages: 49-58

Abstract: Tourism development can have positive and/or negative impacts on wildlife. However, if wildlife tourism is developed in accordance with appropriate guidelines, such activity can be sustainable and can aid the conservation of species. Based on two case studies in Queensland, Australia, this article outlines the various economic and conservation benefits that can arise from wildlife-based tourism. Some of the benefits are direct, such as tangible economic benefits; others are less tangible, such as increased visitors' willingness to pay in principle for the conservation of species. Wildlife-based tourism, as these two studies demonstrate, could foster political support for the conservation of species utilized for such tourism by various mechanisms. These two case studies show that nonconsumptive uses of wildlife of sea turtles and whales at Mon Repos and Hervey Bay, respectively, are not only conditionally sustainable, but provide an economic alternative to consumptive use of these species.

Authors: Troëng, S., and Drews, C.

Year: 2004

Title: Money talks: Economic aspects of marine turtle use and conservation

City: Gland, Switzerland

Publisher: WWF-International

Abstract: For thousands of years, marine turtles have provided sustenance to coastal communities around the world. Unfortunately, their populations have declined drastically due to human overexploitation, fisheries by-catch and habitat destruction. Six of seven species are classified by the World Conservation Union (IUCN) as endangered or critically endangered. Marine turtles occur predominantly in developing countries. These countries stand to lose most from continued decline and have most to gain from reversing negative population trends. Economic factors are often behind marine turtle declines. Therefore, the authors set out to analyse economic aspects of marine turtle use and conservation. Decision-makers defining policies for sustainable economic development and poverty alleviation may incorporate the results of this study as additional criteria to reconcile their agendas with marine turtle conservation goals.

Troëng and Drews estimate gross revenue from consumptive use of marine turtle meat, eggs, shell, leather and bone at nine case study sites in developing countries. Gross revenue from consumptive use range from US\$158 to US\$1,701,328 yr⁻¹ per case study with an average of US\$581,815 yr⁻¹. Direct beneficiaries from consumptive use vary from a handful to several hundred. Gross revenue for nine case studies where non-consumptive use of marine turtles, such as tourism, is a major revenue generator range from US\$41,147 to US\$6,714,483 yr⁻¹ per site with an average of US\$1,659,250 yr⁻¹. Gross revenue at four sites where marine turtles are one of many attractions varies between US\$3,387-US\$105,997 yr⁻¹ with an average of US\$40,791 yr⁻¹. Direct beneficiaries from non-consumptive use range from ten tourism operators to 1,280 persons per case study. Non-consumptive use generates more revenue, has greater economic multiplying effects, greater potential for economic growth, creates more support for management, and generates proportionally more jobs, social development and employment opportunities for women than consumptive use.

Both consumptive and non-consumptive uses result in leakage of revenue from local to national and international levels. Rivalry between uses means that population decline caused by consumptive use can have negative economic impacts on uses at other locations. Consumptive and non-consumptive uses may in many cases be incompatible at the same location. In addition to gross revenue and number of beneficiaries, other variables to consider when evaluating use options are contribution to poverty alleviation, cost of production, distribution of revenues and potential for economic diversification. Environmental and social impacts should also be examined when evaluating use options for a particular site. Thus, promotion of non-consumptive use needs to go along with careful planning, and it may not be a feasible option at some sites. The case studies suggest that promotion of consumptive uses of endangered marine turtles is not precautionary, either from an ecological or an economic perspective.

Marine turtles have a wide range of passive use values including option, intrinsic, ethical, existence and bequest values. The authors chose to quantify a lower boundary for the passive use value as the expenditure of a sample of 162 conservation organisations and conventions in marine turtle conservation. Current global marine turtle conservation expenditure is estimated at a minimum of US\$20 million per year.

In order to maintain the intrinsic values of marine turtles, their roles in ecosystem functioning and in providing benefits to people, their populations need to be restored worldwide to healthy levels. Failure to reverse marine turtle decline would imply a replacement cost for nesting females through captive breeding estimated at US\$245.9-US\$263.3 million for green and US\$2.5 billion for leatherback turtles. The cost of rearing turtles in captivity suggests that conservation of marine turtles in the wild is less expensive.

Overexploitation of marine turtles and other negative impacts on their populations continue unabated in many places because of local economic incentives. Governments, international agencies and non-governmental organisations can prevent over-exploitation by creating local economic incentives in favour of adequate management through employment and/or retraining of people overexploiting marine turtles, promoting use regulations, enforcing restrictive legislation, establishing fines comprehensive of marine turtle values, facilitating funding, subsidies and/or microcredits for non-consumptive use where pertinent, eliminating perverse subsidies, and establishing concessions and use fees. Such economic incentives, once in place, will add value to the marine turtles and thereby encourage measures to mitigate additional threats, such as habitat destruction and fisheries by-catch.

V

Authors: Van Houtan, K. S., Halley, J. M., and Marks, W.

Year: 2015

Title: Terrestrial basking sea turtles are responding to spatio-temporal sea surface temperature patterns

Journal: Biology Letters

Volume: 11

Issue: 1

Pages: -

Abstract: Naturalists as early as Darwin observed terrestrial basking in green turtles (*Chelonia mydas*), but the distribution and environmental influences of this behaviour are poorly understood. Here, the authors examined six years of daily basking surveys in Hawaii and compared them with the phenology of local sea surface temperatures (SST). Data and models indicated basking peaks when SST is coolest, and they found this timeline consistent with bone stress markings. Next, Van Houtan and colleagues assessed the decadal SST profiles for the 11 global green turtle populations. Basking generally occurs when winter SST falls below 23°C. From 1990 to 2014, the SST for

these populations warmed an average $0.04^{\circ}\text{C yr}^{-1}$ (range $0.01\text{--}0.09^{\circ}\text{C yr}^{-1}$); roughly three times the observed global average over this period. Owing to projected future warming at basking sites, the authors estimated terrestrial basking in green turtles may cease globally by 2100. To predict and manage for future climate change, they encourage a more detailed understanding for how climate influences organismal biology.

Author: Venizelos, L. E.

Year: 1991

Title: Pressure on the endangered Mediterranean marine turtles is increasing. The role of MEDASSET

Journal: Marine Pollution Bulletin

Volume: 23

Issue: -

Pages: 613-616

Abstract: The last remaining important nesting beaches of endangered marine turtles in the Mediterranean are threatened with development, tourism, disturbance and pollution. Added to these pressures are accidental or deliberate captures at sea, the flouting of their protection laws and the indifference of Governments in not enforcing them. MEDASSET, a non-governmental organisation, was launched in October 1988. Their aims are to maximise efficiency in Mediterranean marine turtle conservation by updating, pursuing and publicising the conservation priorities including all sound projects on applied research.

Authors: Videira, E. J. S., Pereira, M. A. M, and Louro, C. M. M.

Year: 2011

Title: Monitoring, tagging and conservation of marine turtles in Mozambique: Annual report 2010/11

City/State: Maputo, Mozambique

Institution: Associação para Investigação Costeira e Marinha (AICM) & Grupo de Trabalho Tartarugas Marinhas de Moçambique (GTT)

Date: July 2011

Abstract: This report is the fourth in the series of annual reports on “Monitoring, tagging and conservation of marine turtles in Mozambique”. It refers to the 2010/11 nesting season, whereas for the southern part of the country it includes the period from October 2010 to March 2011, and the whole 2010 year for northern Mozambique.

A total of 980 marine turtle nests were recorded in the 2010/11 nesting season. About 72% of these were laid in the area between Ponta do Ouro and Inhaca Island (nests laid by *Caretta caretta* and *Dermochelys coriacea*) and about 18% in Vamizi and Rongui islands (nests laid by *Chelonia mydas* only). These two stretches of coastline, continue to demonstrate a relatively high importance as nesting sites for marine turtles in Mozambique.

As usual, *Caretta caretta* (loggerhead) was the dominant in terms of nests laid (701 nests) and was followed by *Chelonia mydas* (green turtle, 185) and *Dermochelys coriacea* (leatherback, 56). The area between Ponta do Ouro and Inhaca Island, which was entirely covered this year, proved again to be very important for *C. caretta* and *D. coriacea* (665 and 41 nests, respectively), while Vamizi and Rongui islands did the same for green turtles (178 nests).

Once more, the monitoring of eggs and hatchlings is facing difficulties in its implementation and is not functioning properly. Therefore, it was not included in the present report; however, it will be included as soon as improvements are achieved.

In the past season, 180 marine turtles were tagged, about 82% of which in Matutuíne (between Ponta do Ouro and Santa Maria). *C. caretta* was the most tagged species (75%), followed by *C. mydas* (18%). In this season, tagging was initiated in the area between Ponta Mucombo and Santa

Maria. The tagging programmes with higher consistency continue to be those in Ponta do Ouro – Ponta Malongane, Ponta Malongane – Dobela, and Vamizi and Rongui islands.

The killings of marine turtles and egg collection continues, still, to be frequently reported. In the past season, 59 turtles were killed by fishermen or on the beach whilst nesting and seven nests were raided. These figures provided an idea of the extension of these illegalities along the coast, despite the fact that these numbers are, obviously, inferior to the real figures. It occurs throughout the coast, however and from the records, some areas are a matter of concern such as the beaches around Inhambane, Primeiras and Segundas Archipelago and Macaneta beach, located so close to Maputo. These areas are, notwithstanding their ecological importance for marine turtles, very important for the tourism industry. It should be highlighted that not a single case of turtle killing was recorded at the recently proclaimed Ponta do Ouro Partial Marine Reserve, which could be the result of the excellent protection and patrolling effort in this area. A high number of nests were destroyed by natural causes (especially inundation by the sea), this occurring particularly on islands, attaining worrying figures in the northern part of the country (Primeiras and Segundas and Vamizi/Rongui).

One of the most important aspects of this programme is the involvement of local communities living in the areas where such programmes are running, from which the monitors are hired (in the majority of the areas). These monitors perform the tasks of monitoring and protection of females and nests throughout the season. However, this constitutes an enormous challenge due to the low literacy levels of the majority of monitors as well as their drop-out rate (especially between seasons). These are later translated into the quality of the data collected. Nevertheless, encouraging cases of highly motivated and interested monitors exist, which have accumulated relevant experience with their involvement with the programme over the last three years.

Lastly, the authors emphasise the need to secure financial support which is deemed fundamental for the running of this monitoring and conservation programme in Mozambique. It is believed that further support should be provided by the national private sector, pioneered by good examples of companies (mainly in the tourism industry) that are already successfully supporting the monitoring programme in a few areas.

Authors: Vieitas, C. F., Lopez, G. G., and Marcovaldi, M. A.

Year: 1999

Title: Local community involvement in conservation-the use of mini-guides in a programme for sea turtles in Brazil

Journal: Oryx

Volume: 33

Issue: 2

Pages: 127-131

Abstract: The Brazilian Sea Turtle Conservation Programme (TAMAR) was established in 1980 to protect sea turtles in Brazil and to re-establish their natural life cycle, which had been disrupted by humans. The programme is based on grassroots involvement by the coastal communities, and provides jobs and generates alternative sources of income. Within this framework, the mini-guides programme was created. It consists of a summer training course in which local children between 8 and 13 years old learn basic information about marine ecosystems and sea turtles, strategies to promote their conservation, and skills to interact effectively with tourists. After the course, children are given on-site experience by working as interns at the TAMAR visitor centre at Praia do Forte, on schedules designed to avoid conflicts with their studies at school. The children work closely with tourists, informing them about sea turtles and TAMAR's work; they also help the biologists in field activities. In this way, they enhance their own awareness, and by extension their families' and the community's concern about environmental conservation. Their involvement provides them not only with valuable skills, but also an extra source of income, thereby providing

economic benefits to their families. The success of this programme is indicated by the excellent approval ratings given by the tourists visiting the area.

W

Author: Waayers, D.

Year: 2010

Title: A holistic approach to planning for wildlife tourism: A case study of marine turtle tourism and conservation in the Ningaloo region, Western Australia

Academic Department: School of Environmental Science

University: Murdoch University

Thesis Type: PhD

Abstract: This thesis explored the practical issues of sustainable wildlife tourism by examining three fundamental aspects: stakeholder collaboration; the importance of collecting baseline data to inform decisions; and detecting tourism-related impacts on wildlife. These aspects were explored in detail through a case study of turtle tourism in the Ningaloo region in Western Australia and the development of the Ningaloo Turtle Program. Four interrelated studies were undertaken in the Ningaloo region to quantify the nature and extent of collaborative relationships amongst stakeholders, visitor-use and characteristics of turtle watchers, distribution and abundance of nesting female marine turtles and impacts on turtles from human-turtle interactions. The first study explored the collaboration of stakeholders through action research and by examining workshop dialogue and interactions between interest groups. The key findings from this study were that the selection and number of participating stakeholders within a stakeholder group were vital in collaboration. This study suggests there is often a trade-off between having too many representatives from each interest group and generating positive collaborative outcomes. This study showed that one representative from twelve interest groups was sufficient for generating a collaborative approach. The participants represented several key interest groups including four government representatives (Department of Environment and Conservation (DEC), Australian Defence Force, Fisheries WA and the Shire of Exmouth), two tourism industry representatives (Tourism WA and private tour operators), five non-government organisation representatives (World Wildlife Fund for Nature (WWF), Cape Conservation Group (CCG), Murdoch University, Pastoral Land Group, the Biayungu Aboriginal Cooperation (BAC)), and one stakeholder representing local residents/volunteers. The study also found that the preparation of an engagement strategy, that outlines stakeholder responsibilities and commitments and the employment of a convenor to facilitate workshops are important factors in initiating the collaborative process. The continuation of this process is dependent on long-term coordination by a professional consultant, who has the capacity to drive the planning processes and apply for funding, stakeholder's commitment to the process and their capacity to transform collaboration into an ongoing learning process.

The second study investigated marine turtle female nesting populations in the Ningaloo region. The study showed that the peak nesting season for all species in the Ningaloo Marine Park is between November and March. Based on a series on turtle population modelling calculations, the total female turtle population in the Ningaloo Marine Park (including Muiron Islands) was estimated to be up to 58,000 individuals. The predominant species of turtle nesting in the region are green turtles (< 35,000 female turtles), loggerhead turtles (< 20,000 female turtles) and hawksbill turtles (< 3,000 female turtles). These estimates for green turtles suggest that the Ningaloo nesting population makes up about a third of the North West Shelf Management Unit and the loggerhead turtle population was estimated to be one of the largest rookeries in Western Australia. However, hawksbill turtles nest occasionally on the Northwest Cape. This study also showed that green turtles predominantly nest in the northern parts of the Ningaloo coast, including

the Jurabi Coastal Park where turtle watching occurs, whereas loggerhead turtles are more likely to be found in the southern areas. There are often large fluctuations in the annual nesting activity of turtles, particularly green turtles, primarily due to the inherent variation in their life cycle. This variation in nesting activity can have implications for the development and operations of turtle tourism.

The third study identified key management areas for turtle tourism by comparing the spatial distribution of tourists and turtle tracks in the Ningaloo Marine Park. Management areas were then examined closely at a local-level. On-site studies included a visitor questionnaire to understand tourist characteristics, an on-ground track count survey to monitor turtle nesting activity and a tourist-turtle interaction behaviour study to quantify disturbances associated with tourist-turtle interactions. The visitor questionnaire showed that the majority of independent turtle watchers were novice international tourists with little experience or knowledge of interacting with turtles. The fourth study, which investigated the interactions between visitors and turtles, showed that a third of encounters resulted in a disturbance. These results are considerably higher than disturbances recorded at other locations where turtle tourism occurs. The interaction study showed that almost all disturbances stemmed from non-compliant behaviour of turtle watchers, particularly torch-use and closeness to turtles. These results indicate that despite visitors' knowledge of the code of conduct, two thirds of groups continue to breach the code, emphasising the need for developing guided tours and better interpretation for turtle tourism. The development of the Jurabi Turtle Centre, which was built after the data in this thesis was collected, has provided, not only a focal point for turtle tourism in the Ningaloo region, but a facility for guiding and educating turtle watchers.

The knowledge gained from these studies was used to develop a planning model (the Wildlife Tourism Optimisation Management Model (WTOMM)), which was specifically designed for non-consumptive wildlife orientated recreation. This model was based on the structure of the Tourism Optimisation Management Model (TOMM) and concepts of Adaptive Management. WTOMM provides a framework for avoiding the inherent problems associated with developing and implementing sustainable turtle tourism. This model could also provide the foundation for managing other wildlife tourism situations.

Authors: Waayers, D., Lee, D., and Newsome, D.

Year: 2011

Title: Exploring the nature of stakeholder collaboration: a case study of marine turtle tourism in the Ningaloo region, Western Australia

Journal: Current Issues in Tourism

Volume: 15

Issue: 7

Pages: 673-692

Abstract: This paper explores the nature of stakeholder collaboration as a practical issue in the case of turtle tourism in the Ningaloo region of Western Australia. While there is a wealth of literature that explores the theory and conceptual ideas of collaboration in tourism planning, there is a need to explore these theories in applied situations. In this case study, key stakeholders of the Ningaloo Turtle Advisory Group were identified using snowballing methods and the nature of collaboration between stakeholders was investigated through an examination of workshop dialogue and action research. A framework for exploring the nature of collaboration was developed based on Bramwell and Sharman's (1999) [Collaboration in local tourism policy making. *Annals of Tourism Research*, 26(2), 392–415] criteria for measuring collaborative approaches and Mandell's (1999) [The impact of collaborative efforts: Changing the face of public policy through networks and network structures. *Policy Studies Review*, 16, 4–17] continuum of collaboration. This research confirms that the success of collaboration relies on building partnerships and trust,

recognizing interdependence, generating a collective vision and objectives and commitment among stakeholders within a structured process. The appointment of an external convenor also played an important role in facilitating the process, while a programme coordinator was essential for implementing the objectives generated by stakeholders.

Authors: Waayers, D., Newsome, D., and Lee, D.

Year: 2011

Title: Observations of non-compliance by tourists to a voluntary code of conduct: A pilot study of turtle tourism in the Exmouth region, Western Australia

Journal: Journal of Ecotourism

Volume: 5

Issue: 3

Pages: 211-222

Abstract: This paper reports on the results of a pilot study of observations of non-compliance behaviour by tourists to a voluntary code of conduct based on marine turtles attempting to nest in the Ningaloo Marine Park, Western Australia. The study used focal-animal sampling to record the response of marine turtles to non-compliance behaviour of tourist groups. Results of observations indicated that 77% of tourist groups breached the code of conduct, with 51% of these breaches resulting in a disturbance to marine turtles attempting to nest. The key aspects of the code of conduct that were breached included: shining light on the turtle; being closer than three metres from a turtle; and not staying behind the turtle at all times. The greatest disturbance to marine turtles was from tourist groups shining their torches on the turtles. This work demonstrates the need for further research into disturbance of turtles by tourists and the effectiveness of voluntary codes of conduct

Authors: Walker, J. M. M., Godley, B. J., and Nuno, A.

Year: 2019

Title: Media framing of the Cayman turtle farm: Implications for conservation conflicts

Journal: Journal for Nature Conservation

Volume: 48

Issue: -

Pages: 61-70

Abstract: Conflicts over natural resource use and management often arise where groups have different goals or priorities. The media can play an important dual role in these conflicts; article content might offer insights about public opinion, whilst media may shape debates and how issues are perceived by the public and decision-makers. Wildlife farming is a contentious conservation tool attracting the attention of worldwide media, and associated conflicts among different interest groups may undermine its applicability. Walker and colleagues investigated the media's portrayal of the Cayman Turtle Farm (CTF), a facility in the Cayman Islands which breeds green sea turtles (*Chelonia mydas*) for human consumption, to investigate how the media presents information about wildlife farming (i.e. framing), consider its potential roles influencing conflicts and explore how it can be used for conservation conflict management. Content analysis was used to compare framing, article valence, and stakeholder representation in 634 newspaper articles from the international and local media. These media stories were framed in terms of: tourism, conflict, conservation, culture/community, management, and utilisation. International articles most often described CTF as a tourism facility. However, during a media campaign by an international animal welfare group, CTF was also often depicted as a source of controversy. Trade in turtle products was mostly debated in older articles. Local media mainly had a financial focus. Conflict framing was associated with a negative article valence, and conflict framed articles were significantly more likely to contain no conservation information. Mentions of environmental interest groups were

significantly associated with negative articles, whereas academics were significantly more likely to be mentioned in positive articles. Conservationists must consider stakeholder objectives from the outset of interventions and be aware of the multiple roles the media might play. Media analysis and effectively harnessing the potential of media outlets should be considered as tools for managing conservation conflicts.

Authors: Warwick, C., Arena, P. C., and Steedman, C.

Year: 2013

Title: Health implications associated with exposure to farmed and wild sea turtles

Volume: 4

Issue: 1

Pages: 1-7

Abstract: Exposure to sea turtles may be increasing with expanding tourism, although reports of problems arising from interaction with free-living animals appear of negligible human health and safety concern. Exposure both to wild-caught and captive-housed sea turtles, including consumption of turtle products, raises several health concerns for the public, including: microbiological (bacteria, viruses, parasites and fungi), macrobiological (macroparasites), and organic and inorganic toxic contaminants (biotoxins, organochlorines and heavy metals). Warwick and colleagues conducted a review of sea turtle associated human disease and its causative agents as well as a case study of the commercial sea turtle facility known as the Cayman Turtle Farm (which receives approximately 240,000 visitors annually) including the use of water sampling and laboratory microbial analysis which identified *Pseudomonas aeruginosa*, *Aeromonas* spp., *Vibrio* spp. and *Salmonella* spp. Their assessment is that pathogens and toxic contaminants may be loosely categorised to represent the following levels of potential risk: *viruses* and *fungi*= *very low*, *protozoan parasites* = *very low to low*, *metazoan parasites, bacteria* and *environmental toxic contaminants* = *low or moderate to high*; and *biotoxin contaminant*= *moderate to very high*. Farmed turtles and their consumable products may constitute a significant reservoir of potential human pathogen and toxin contamination. Greater awareness among health-care professionals regarding both potential pathogens and toxic contaminants from sea turtles, as well as key signs and symptoms of sea turtle-related human disease, is important for the prevention and control of salient disease.

Author: Waylen, K.

Year: 2005

Title: Turtles & tourism, perceptions & pawi: Perceptions of natural resources and the effect of ecotourism, in Grande Riviere, Trinidad

Academic Department: Faculty of Life Sciences

University: University of London

Type of Thesis: Master of Science

Abstract: It is important to know if ecotourism affects perceptions of natural resources and conservation, as this can be important determinant of conservation behaviour. This study used the social science tools of RRA and questionnaire-based interviews to investigate the effect of a turtle ecotourism programme in the village of Grande Riviere, Trinidad. Understanding perceptions was also relevant to the conservation of a critically endangered hunted bird, the Trinidad Piping Guan or 'Pawi' (*Pipile pipile*), as this village is one of the few sites where it can be found.

The results show that ecotourism does affect perceptions. Natural resources are used and appreciated by most households and the concept of conservation is widely supported, but there is more concern for turtle conservation than for other animals, such as Pawi. Also, the receipt of benefits from ecotourism (through employment in hotels) was linked with both increased concern and better knowledge of natural resources.

Education also has some effect on perceptions: there is a high awareness of Pawi in Grande Riviere, which is probably due to past public education campaigns, and a higher level of education was linked to a better knowledge of natural resources. Socioeconomic factors and household involvement with hunting also affect knowledge and attitudes to natural resources. This suggests that both ecotourism and education, if appropriately planned, can be useful tools for creating a positive attitude to conservation.

However, this study also indicates that the attitudes and behaviours may not be related as expected. Although hunting was commonly considered the main problem for wild animals (including the Pawi), hunting and the consumption of wild meat were popular and widespread activities. Further research is needed to investigate the link between attitudes and behaviours, and the problems caused by non-subsistence use of wild meat.

Ecotourism may be a useful tool in the conservation of the Pawi at Grande Riviere, although any development must be carefully controlled and planned. According to the author, further research is needed to assess uses and perceptions of natural resources elsewhere in the Pawi's range.

Author: Whaling, M. L.

Year: 2017

Title: How tos for turtle tourism: a review of sea turtle tourism, its impacts, and guidelines to inform stakeholders in Martinique

Academic Department: Nicholas School of the Environment

University: Duke University

Type of Thesis: Master of Environmental Management

Abstract: The Caribbean island of Martinique is a popular resort destination, attracting thousands of tourists to its beautiful beaches and diverse landscapes each year. Yet, challenges remain; tourism distribution in the region is unequal, and competition is fierce. Amid recent changes and declines in local tourism, some individuals and groups in Martinique have begun experimenting with new tourism offerings known as sea turtle tourism (STT), often as “add on” activities to other types of tours (e.g. kayaking, diving, and boating). STT can be defined as a niche market of nature-based tourism that involves viewing sea turtles in their natural habitat or in captive enclosures. In Martinique, little is known about the state of STT and its associated developments, or the potential costs and benefits for sea turtles and island residents. As a result, several stakeholders are interested in better understanding local STT and reviewing guidelines for its development. This report is designed to advise local actors and the larger research study, to facilitate informed discussions of future planning and management of STT and related offerings in Martinique. This report has been created for two main actors: 1. Direction de l'Environnement, de l'Aménagement, et du Logement de la Martinique, or “la DEAL” (Martinique’s Department of the Environment, Planning, and Housing), and 2. Réseau des Tortues Marines (the Sea Turtle Network, a local NGO) in Martinique. It is in collaboration with a larger research study being conducted by Dr. Zoë Meletis at the University of Northern British Columbia, which seeks to investigate various aspects of emerging STT in Martinique. Other agencies that may benefit from this document are:

1. Office de la Chasse et la Faune Sauvage, or “l’ONCFS”(France’s national office of hunting and fishing), and
2. Comité Martiniquais du Tourisme (Tourism Committee of Martinique).

The research required for this report consisted of an in-depth literature review and analysis of sources discussing internationally known STT sites, programmes, and practices, as well as related impacts and management tools. Three main topics were explored: (1) the scope of STT in and beyond the Caribbean; (2) the environmental impacts of STT, both positive and negative; and (3) how STT tends to be managed in practice. Finally, preliminary recommendations were crafted, to highlight management practices frequently used across STT sites.

How and where is STT happening? STT is occurring in 59 countries and territories worldwide, in every major ocean basin where sea turtles can be found. The scope of STT offerings is diverse,

and can include in-water snorkel or dive tours, boat excursions, guided walks on nesting beaches, and visits to turtle farms or hatcheries. Sea turtles may also be used as “add-on” tourism attractions for other types of tourism offerings, rather than serving as the central theme. STT overlaps with other various tourism sub-industries, including both alternative tourism (e.g. ecotourism and volunteer tourism) and mass tourism.

How does STT impact sea turtles? The literature suggests that STT can either harm or help sea turtles, based on how it is managed. Sea turtles face many STT-related threats, from tourist disturbance (e.g. riding or feeding turtles) to habitat loss (e.g. artificial lighting or pollution), and even serious injury (e.g. boat strikes). These factors can compromise reproductive and foraging success, among other things. Nonetheless, when properly controlled, STT can stimulate environmental awareness among visitors and residents, and provide alternative livelihoods and revenues for sea turtle monitoring, protection, and research.

What are some ways STT is managed in practice? Working to reduce negative impacts associated with STT by implementing suitable policies and management tactics is essential for sustainable STT in the long run. STT can be managed using several different strategies, such as tour guide training programmes, collaboration with hotels and NGOs, interpretation/educational programmes, and protected areas. Yet the success of these programmes depends on the unique context and resource availability of the concerned area.

Author: White, L.

Year: 2008

Title: Sea the value: Quantifying the value of marine life to divers

Academic Department: Nicholas School of the Environment

University: Duke University

Type of Thesis: Master of Environmental Management

Abstract: Contemporary wildlife conservation is often promoted through market-mechanisms. The logic behind this approach is that wildlife must ‘pay its way’ if it is to be conserved. While this approach can be critiqued from a variety of perspectives, considerable investment has been made in finding ways to create markets for wildlife conservation. From a methods perspective, assessments of willingness to pay, using contingent valuation surveys, have become widely used to determine whether or not various values for wildlife can be translated into market values, and thus into economic arguments for their conservation. This study assesses respondent views of the role of divers in marine conservation and examines willingness to pay among certified U.S. scuba divers for particular wildlife encounters while diving.

Author: Whitehead, J. C.

Year: 1992

Title: Ex ante willingness to pay with supply and demand uncertainty: implications for valuing a sea turtle protection programme

Journal: Applied Economics

Volume: 24

Issue: 9

Pages: 981-988

Abstract: It is argued that *ex ante* willingness to pay is appropriately measured as a function of subjective supply and demand probabilities. An exploratory case study of a loggerhead sea turtle protection programme is used to show how estimates of these probabilities can be obtained from a sample survey and how a change in probabilities determines contingent choice. Empirical results confirm that subjective probabilities are important when explaining *ex ante* willingness to pay. Attempts to estimate the determinants of *ex ante* willingness to pay without controlling for subjective probabilities will result in specification bias. It is important that subjective probability

information is gleaned from contingent valuation survey respondents and included in empirical models of contingent choice.

Authors: Wilson, C., and Tisdell, C.

Year: 2001

Title: Sea turtles as a non-consumptive tourism resource especially in Australia

Journal: Tourism Management

Volume: 22

Issue: -

Pages: 279-288

Abstract: There is substantial economic potential for exploiting wildlife resources for non-consumptive wildlife-oriented recreation (NCWOR) tourism and this type of tourism if well managed, can result in the long-term conservation of wildlife resources. This is especially important in cases where wildlife resources are declining due to habitat destruction, poaching and other human threats, as is so for sea turtles. In this paper, relevant ecotourism literature outlining the economic values of NCWOR activities is reviewed to show that a significant potential exists for developing sea turtle-based tourism. Duffus and Dearden's (1990. *Biological Conservation*, 53, 213-231) conceptual framework for the development of wildlife tourism and its extension and application by Higham (1998. *Tourism Management*, 19 (6), 521-531) is analysed to see if it might be applied to sea turtle-based ecotourism in Australia at Mon Repos Conservation Park. Threats to sea turtle populations are growing especially as a result of human activities and these underline the importance of finding an economic rationale to conserve the remaining species. Economic benefits from turtle-based tourism can provide such a rationale. However, such tourism must be managed appropriately if it is to be sustained. Queensland Parks and Wildlife Service has adopted management strategies at Mon Repos Conservation Park with this in mind and these strategies are outlined.

Authors: Wilson, C., and Tisdell, C.

Year: 2003

Title: Conservation and economic benefits of wildlife-based marine tourism: Sea turtles and whales as case studies

Journal: Human Dimensions of Wildlife

Volume: 8

Issue: 1

Pages: 49-58

Abstract: Tourism development can have positive and/or negative impacts on wildlife. However, if wildlife tourism is developed in accordance with appropriate guidelines, such activity can be sustainable and can aid the conservation of species. Based on two case studies in Queensland, Australia, this article outlines the various economic and conservation benefits that can arise from wildlife-based tourism. Some of the benefits are direct, such as tangible economic benefits; others are less tangible, such as increased visitors' willingness to pay in principle for the conservation of species. Wildlife-based tourism, as these two studies demonstrate, could foster political support for the conservation of species utilized for such tourism by various mechanisms. These two case studies show that non-consumptive uses of wildlife of sea turtles and whales at Mon Repos and Hervey Bay, respectively, are not only conditionally sustainable, but provide an economic alternative to consumptive use of these species.

Author: Witherington, B. E.

Year: 1992

Title: Behavioral responses of nesting sea turtles to artificial lighting

Journal: Herpetologica

Volume: 48

Issue: 1

Pages: 31-39

Abstract: Effects of artificial lighting on loggerhead (*Caretta caretta*) and green turtle (*Chelonia mydas*) nesting behaviour were determined experimentally at major nesting beaches: Melbourne Beach, Florida, USA (loggerheads) and Tortuguero, Costa Rica (green turtles). Witherington conducted experiments in which a portion of each nesting beach remained dark, or was illuminated with white, mercury vapor (MV) or yellow, low pressure sodium vapor (LPS) luminaires of equal luminance. Lighting beaches with MV luminaires significantly reduced the numbers of green turtles and loggerheads emerging and nesting within lighted study areas. Lighting beaches with LPS luminaires had no significant effect on nesting in either species. Some turtles were misdirected by lighted luminaires (primarily mercury vapor) on their return to the ocean following nesting attempts. Lighted luminaires did not significantly affect the stages at which nesting attempts were abandoned nor the positioning of nests relative to dune vegetation. Results suggest that MV luminaires and other broad-spectrum lighting types have the potential to disrupt the nesting of loggerheads and green turtles. LPS luminaires may be an acceptable alternative where lighting on nesting beaches cannot be completely extinguished.

Authors: Witherington, B. E., and Bjorndal, K. A.

Year: 1991

Title: Influences of artificial lighting on the seaward orientation of hatchling loggerhead turtles *Caretta caretta*

Journal: Biological Conservation

Volume: 55

Issue: 2

Pages: 139-149

Abstract: The seaward orientation behaviour of hatchling loggerhead turtles *Caretta caretta* when exposed to five different artificial light sources (high-pressure) and low-pressure sodium vapor, and yellow, red, and white incandescent lamps was examined. Each light source affected hatchling sea-finding performance either in direction of orientation or width of dispersion. Hatchlings were attracted to light sources emitting short-wavelength visible light and long-wavelength sources that excluded intermediate wavelengths. A negative response was observed toward sources emitting predominately yellow light. For this reason, low-pressure sodium vapor (LPS) luminaires, which emit only yellow light, are expected to affect loggerhead hatchling sea-finding minimally, if positioned behind the primary dune. LPS luminaires positioned between emerging hatchlings and the ocean, however, will disrupt hatchling orientation.

Authors: Wood, P. and Rumney, J.

Year: 2017

Title: Key stakeholder views of marine research tourism in Australia

Conference Name: The 6th International Congress on Coastal & Marine Tourism: The spirit of Ubuntu: Connecting continents, places and people

Conference Location: Port Elizabeth, South Africa

Pages: 97-119

Abstract: Marine research tourism (MRT) is defined as marine ecotourism where marine research is an important part of the tourism attraction. The aim of this study was to further understand the

supply side views of Australian MRT stakeholders towards the present and any potential development of MRT in Australia. An online survey of 49 key stakeholders' views and subsequent analysis was undertaken. Stakeholders were asked 19 questions about their views on; the benefits of, driving forces, issues, and opportunities for, and the role of private industry and government in MRT in Australia.

This study identified three likely benefits of MRT that can be considered to be a core competitive advantage for MRT when compared with many marine tourism or ecotourism ventures. The potential for increased opportunities and benefits of MRT to indigenous Australians is also identified. Survey respondents also identified a range of potential coordination and service provision roles for Australian indigenous groups, environmental conservation organisations and marine education societies in any coordinated development of MRT in Australia. Academic publications and the involvement of marine research agencies with MRT were identified as important or essential to MRT.

Overall, conservation organisations, marine education societies, marine research students, tour organisations, and MRT operators had positive views about MRT in Australia. However, many marine managers, researchers and tour operators appeared to have a reticence towards MRT. This reticence is partly due to MRT related concerns that have not previously been identified in the literature. They are; possible independent influence from other MRT stakeholders on established marine research agendas, possible competition by MRT for traditional research funding, and the possibility of popular MRT science competing with less popular but important marine research priorities. To address such concerns, this paper recommends a range of strategies for any coordinated strategic plan to develop MRT in Australia.

Y

Author: Yaipen-Llanos, C.

Year: 2017

Title: The challenge of ecotourism in northern Peru: Current situation and potential for marine conservation initiatives

Conference Name: The 9th International Congress on Coastal & Marine Tourism: Global challenges – local solutions

Conference Location: Gothenburg, Sweden

Pages: 98-99

Abstract: The north of Peru is habitat of marine mammals and sea turtles, home of an emerging ecotourism industry. However, human impact is a constant and it is noticed by tourists. The aim of this study is to analyse the current ecotourism initiatives in northern Peru and their potential as conservation strategies. Five fishermen towns with serious conservation issues and ecotourism potential were assessed: Cancas, Mancora, Los Organos, El Ñuro and Cabo Blanco. After 10 years, problems surrounding endangered marine life were identified using longitudinal surveys and retrospective quantification and classification of strandings: Illegal fishing trawlers, dynamite fishing, hunt of dolphins for consumption, poisoning to sea-lions, and entanglements. Ecotourism initiatives are developing: whale watching, eco-fishing, scuba diving, swimming with sea turtles, and educational surfing. Authorities are interested. Guidelines for whale watching are starting to be in place. Swimming with sea turtles is a positive experience but mortalities had risen lately by gastric infection due pollution. Tourism has become the second important income in recent years, and as tool for conservation it can change the way locals relate to the ocean, enhancing their involvement with education on how to protect the species they need, critical for their income. The potential is to reach five to 10 times more tourists per year in all five integrated locations and provide jobs for over 4000 thousand residents. The marine and coastal aspect of these areas has

not been embraced yet. Through key marine species that are attractions known worldwide, local tourism can be inserted in the global marine ecotourism circuit.

Z

Author: Zeppel, H.

Year: 2008

Title: Education and conservation benefits of marine wildlife tours: developing free-choice learning experiences

Journal: Journal of Environmental Education

Volume: 39

Issue: 3

Pages: 3-18

Abstract: Marine wildlife tours can provide a range of education and conservation benefits for visitors, including emotional (i.e., affective) responses and learning (i.e., cognition). Interpretive programmes cover the biology, ecology, and behaviour of marine species; best practice guidelines; and human threats to marine areas. The author reviews the education and conservation benefits of 18 marine wildlife experiences with dolphins, whales, and marine turtles by using (a) Orams' (1999) framework of indicators such as behaviour or lifestyle changes in visitors and (b) three environmental indicators of conservation. Results of this meta-analysis showed that visitor learning and emotional empathy during mediated encounters with marine wildlife contributed to on-site behaviour changes and some longer-term intentions to engage in marine conservation actions. The author presents an experience—learning—action model to guide research and develop free-choice visitor learning.

Authors: Zeppel, H., and Muloin, S.

Year: 2007

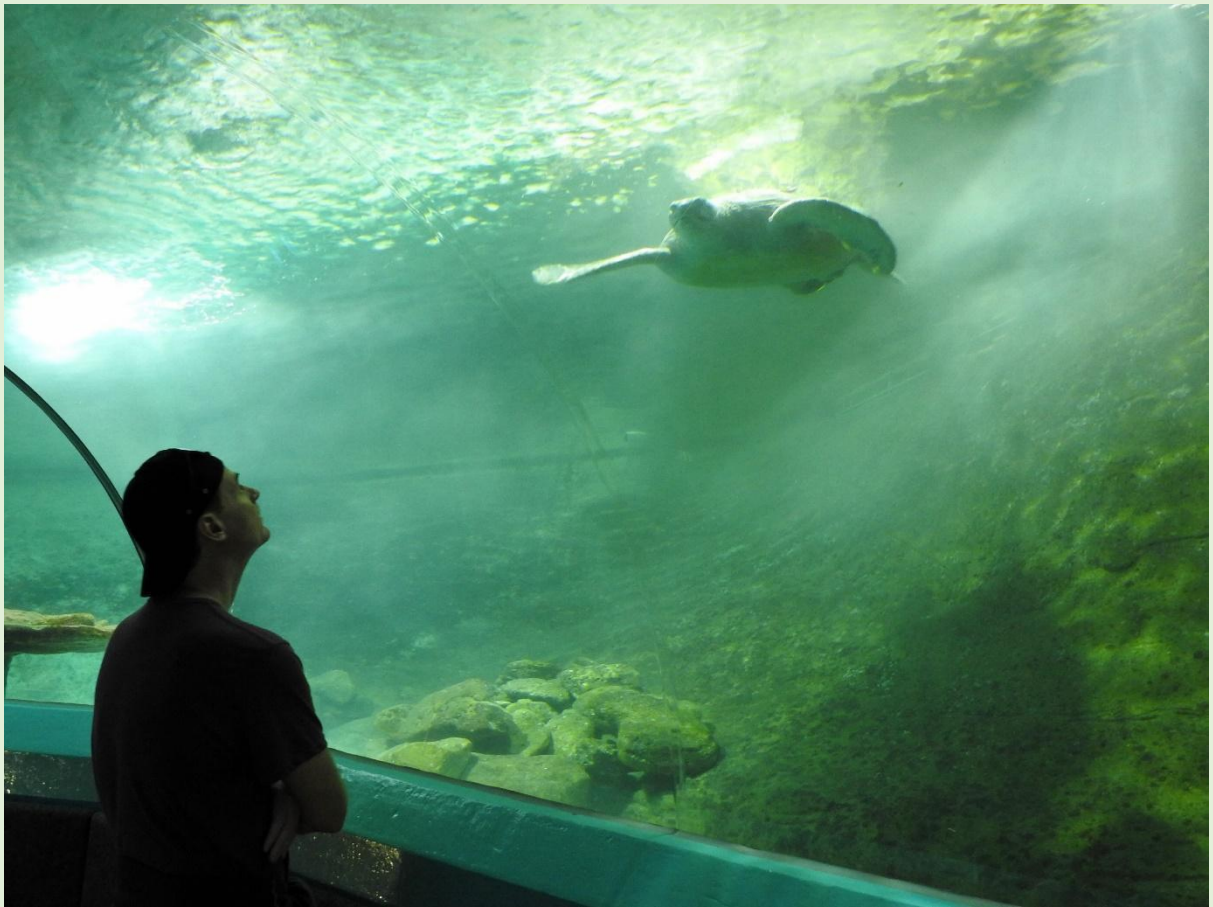
Title: Marine wildlife tourism: Education and conservation benefits

Conference Name: 5th International Coastal & Marine Tourism Congress: Balancing marine tourism, development and sustainability

Conference Location: Auckland, New Zealand

Pages: 430-446

Abstract: Marine wildlife tourism can provide a range of education and conservation benefits for visitors. These benefits derive from close personal encounters with marine wildlife and visitor learning about marine species and ocean environments. There has been limited assessment of marine wildlife tourism experiences and educational programmes to identify whether these increase tourist knowledge, promoting attitudinal shifts and also lifestyle changes that aid marine conservation and help to conserve marine wildlife. The on-site and longer-term conservation intentions, or behaviours, of visitors that benefit marine wildlife and environments have also been little evaluated. This paper reviews the education and conservation benefits of marine wildlife experiences in Australia using Orams' (1999) framework of indicators to manage marine tourism. The key indicator for tourists assessed in this paper is behaviour/lifestyle change that benefits marine species, along with three indicators of conservation outcomes for marine environments. Information is drawn from selected case studies of research on guided tourist encounters with whales, dolphins and marine turtles from 1996 to 2007, mainly in Australia. This analysis found tourist learning during mediated encounters with marine wildlife contributes to pro-environmental attitudes and improved on-site behaviour changes, with some longer-term intentions to engage in conservation actions that benefit marine species.



Turtle watching at the Sea Life Sanctuary – Manly, Australia

4. ABOUT THE EDITORS

Colleen Black

Colleen Black is a graduate of the Bachelor of Tourism Management and Events and Conventions Management programmes of Thompson Rivers University in Kamloops, Canada. Her research interests include marine tourism, wildlife tourism, wildlife ethics and human dimensions of wildlife. Colleen's other interests include the psycho-social benefits of baking and culinary creations within tourism and events. She is also an accomplished and creative baker, and her creations can be seen here:

<https://www.facebook.com/sweetas edibleart/>



Dr Michael Lück

Michael is a professor in the School of Hospitality and Tourism at Auckland University of Technology, New Zealand. He has worked in Germany, Belize, Canada, and Scotland, and is founding co-chair of the International Coastal & Marine Tourism Society (ICMTS). Michael has more than 10 years' work experience in the tourism industry and his research interests include (marine) wildlife tourism, the cruise industry, ecotourism, interpretation and education on wildlife tours, the impacts of tourism, and aviation. He has published in a number of international journals, is founding editor-in-chief of the academic journal *Tourism in Marine Environments*, Associate Editor of the *Journal of Ecotourism* and editorial board member of *Marine Policy*. Michael has edited or co-edited ten volumes on ecotourism, marine (wildlife) tourism, polar tourism, events, and low cost airlines, as well as the *Encyclopedia of Tourism and Recreation in Marine Environments* (CABI), and co-authored the introductory text *Tourism* (CABI).



Hawaiian green sea turtle (*Chelonia mydas*)
Ho'okipa Beach, Maui, Hawai'i



Human Interactions with Turtles & Tortoises

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