



Exploring connections among the multiple outputs and outcomes emerging from 25 years of sea turtle conservation in Northern Cyprus

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ABSTRACT

Monitoring and evaluation is an essential stage of conservation implementation, offering a wide variety of benefits including the ability to engage in informed adaptive management. Understanding the relationship among actions, outputs, and outcomes can inform on factors acting to facilitate or hinder conservation success. Assessing these relationships is particularly important for projects with both social and ecological objectives given that they likely operate through a more complex theory of change. Performance measurement studies that assess both ecological and social variables can offer an informative and cost-effective evaluation method for such projects, but simultaneous social-ecological evaluation is rarely implemented. Using the case study of the Marine Turtle Conservation Project in North Cyprus, we aimed to demonstrate how social-ecological performance measure protocols can aid sea turtle conservation efforts in adaptive management through informing on connections among project actions, outputs, and outcomes. Our study employed a mixed-methods performance measurement approach integrating three distinct data sources: 31 project publications, the project's long-term dataset on sea turtle ecology, and 26 semi-structured interviews with key informants including residents, fishermen, local business owners, and project staff. The results indicated that the project has generated a wide range of social, economic, and ecological outcomes. Two primary connections among social and ecological factors emerged: 1) bridging the research-implementation gap through directing research into policy action and 2) enhanced operational capacity and achievement of ecological outcomes through extensively engaging with the community and generating local economic benefits. Insufficient government enforcement and a lack of widespread behavioural change on turtle nesting beaches were primary barriers. This study highlights the benefits of multi-disciplinary conservation and demonstrates the insight that can be gained from rapid, social-ecological performance measurement approaches. Channelling such information back into conservation through adaptive management can serve to both increase the achievement of ecological goals and improve human wellbeing.

1. Introduction

Monitoring and evaluation is an essential component of conservation program design; it facilitates internal and public accountability, measures the extent to which goals have been achieved, and provides an avenue for adaptive management, including a more cost-effective resource distribution (Baylis et al., 2016; Bottrill, Hockings, & Possingham, 2011; Ferraro & Pattanayak, 2006). In recognition of this value, a large body of literature has emerged over the last two decades calling for the need to implement evaluation protocols and debating various methodological approaches (Pullin, Sutherland, Gardner,

Kapos, & Fa, 2013; Stern et al., 2012). Monitoring and evaluation can reveal a project's actions (i.e., the process that is carried out to influence what happens), outputs ("products, goods, and services" emerging from conservation action), and intended and unintended outcomes (change in target ecological, social or economic condition) (Mascia et al., 2014, pp. 260). However, evaluation can also deliver information on connections among actions, outputs, and outcomes, detail that could provide insight into the reasons underlying project success (or lack thereof). By identifying lessons from the evaluation of conservation initiatives and subsequently adapting our strategies within applied settings, we will also contribute to bridging the research-action gap

Abbreviations: PM, Performance Measurement; MTCP, Marine Turtle Conservation Project; TRNC, Turkish Republic of Northern Cyprus; SPOT, North Cyprus Society for the Protection of Turtles; CCF, Cambridge Conservation Forum

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(Cook, Mascia, Schwartz, Possingham, & Fuller, 2013).

Understanding connections among actions, outputs, and outcomes is particularly important for projects implementing both social and ecological components given that these projects often work through a complex theory of change, the assumed causal relationships between project outcomes (Margoluis et al., 2013). In other words, several desired social changes need to occur prior to the achievement of ecological outcomes. For example, a project could assume connections between environmental education, knowledge, attitudes, behaviours, and ultimately, ecological outcomes. Such conservation projects which act to influence both social and ecological factors are increasingly being implemented, resulting from widespread acknowledgement that conservation issues exist within complex social-ecological systems (Bennett et al., 2017). Evaluation at each stage of the theory of change can benefit these projects through facilitating the identification of factors acting to facilitate or hinder the transmission of results down the chain of expected outcomes (DeWan, Green, Li, & Hayden, 2013). One type of evaluation approach with particular potential to assist practitioners in testing their theory of change, and in identifying unexpected outcomes and connections, is performance measurement (PM) which has been implemented among conservation organizations since the 1990s (e.g., to inform habitat protection and protected area management) (Mascia et al., 2014; Stem, Margoluis, Salafsky, & Brown, 2005).

PM studies aim to assess the progress of a conservation project towards its desired outputs and outcomes through measuring indicators along the theory of change. It differs from other evaluation approaches in its focus on adaptive management, or, delivering information that can be fed back into the project to improve effectiveness (Stem et al., 2005). Due to the highly connected nature of social and ecological factors, PM that jointly assesses progress in both dimensions can facilitate an understanding of how and why outcomes have, or have not, been achieved. Despite the value of measuring multiple performance objectives simultaneously, however, such integrated social-ecological monitoring and evaluation remains relatively rare (Bennett, 2016; Yang et al., 2013). More frequent application of PM studies that include both social and ecological indicators could facilitate an improved understanding of contextual and operational factors effecting the achievement of ecological outcomes (Miller, Caplow, & Leslie, 2012).

Sea turtle conservation is one context in which consideration for human dimensions is often of critical importance to program success due to the high degree of overlap between turtle nesting grounds and beaches of value for tourism and development (Davenport & Davenport, 2006), as well as the traditional cultural and economic importance of turtle products (Campbell, 1998; Liles et al., 2015). Indeed, several of the main threats to sea turtles relate directly to human behaviour (e.g., direct and incidental take in fisheries, loss of nesting habitat from beach development, egg harvesting, and nest disturbance) (Rees et al., 2016). Therefore, actions targeting social and economic outcomes are now widely included in many sea turtle conservation efforts in order to both improve the achievement of ecological outcomes and provide benefits, or minimize any negative effects, to human wellbeing (Campbell, Haalboom, & Trow, 2007; Dutton & Squires, 2008; Senko, Schneller, Solis, Ollervides, & Nichols, 2011). An understanding of the connections between conservation actions and social and ecological outcomes can be of significant value to sea turtle conservation efforts. For example, a sustainable sea turtle tourism initiative in Indonesia was found to be hindered by a failure to adequately communicate the link between turtles and local livelihoods, ultimately resulting in conflict among stakeholders (McCabe, 2016). In another example, a sea turtle conservation project in Taiwan was hindered by local opposition when project activities were perceived to violate cultural beliefs and local customs (Liu, 2017). This type of information can facilitate informed change in intervention design. Such examples illustrate the benefits to be gained from monitoring both social and ecological variables and suggest that further social-ecological PM studies have the potential to greatly assist sea turtle conservation.

Using the Marine Turtle Conservation Project (MTCP) in Northern Cyprus as a case study, we employed a mixed-methods PM approach, combining a document analysis with secondary data and key-informant interviews. We aimed to identify project actions, outputs, and outcomes and to explore connections among these factors that were acting to facilitate or hinder conservation effectiveness. Based on the lessons emerging from this case study, we then provide general recommendations that can be widely applied across sea turtle conservation efforts. More broadly, our objective was to demonstrate the type of information that can be gleaned from social-ecological PM protocols and how measuring social and ecological factors simultaneously can aid sea turtle conservation efforts in the achievement of both human wellbeing and biodiversity conservation objectives. The MTCP has been operating in North Cyprus since 1992 but has never been subject to a formal evaluation. This longevity offers substantial opportunity to learn from project successes and failures and presents a sufficient time period for observable outcomes to have taken place.

2. Material and Methods

2.1. Study system

The island of Cyprus lies off the coasts of Syria and Turkey in the eastern Mediterranean. Cyprus has been politically divided since 1974 and the declaration of the Turkish Republic of Northern Cyprus (TRNC) in 1983 (Warner, 1999). To date, the TRNC remains diplomatically separated from the Republic of Cyprus, who control Cyprus's southern two-thirds (Fig. 1). However, the Republic of Turkey is the only government to legally recognize the TRNC, placing strains on their economic growth (Akis & Warner, 1994; Katircioglu, 2006). As a result of these limitations, much of the North Cyprus's landscape has remained relatively unspoilt (Gunsoy & Hannam, 2012). This pristine state, combined with the island's biodiverse flora and fauna, has made North Cyprus a region of significant conservation value to the Mediterranean (Phillips & Bracewell, 2001). Of the many species found within the region, green (*Chelonia mydas*) and loggerhead (*Caretta caretta*) sea turtles are of particular importance.

The MTCP is a non-profit collaboration between the University of Exeter's Marine Turtle Research Group and the North Cyprus Society for the Protection of Turtles (SPOT) that has been undertaking annual turtle monitoring in North Cyprus since 1992 (see Appendix A for a more detailed history of sea turtle conservation in Cyprus and the MTCP). Having grown substantially since its conception, the project has a well-established and geographically extensive presence in North Cyprus. The majority of the MTCP's activities operate out of two field locations: a primary base at Alagadi on the north coast, and a secondary base in the village of Akdeniz in the west, with additional staff being based in the Karpaz Peninsula in some years (Fig. 1). The project undertakes a wide variety of conservation activities (e.g., sea turtle monitoring, environmental awareness efforts, screening nests against predation, restoring turtle nesting habitat, advocacy), was in its 25th season of operation at the time of the study, has an extensive amount of information available from reports and scientific publications, and a large number of people and different stakeholder groups have been involved; however, despite its lengthy history, the MTCP has never previously been subject to a formal evaluation. As such, there are many benefits to be gained from examining the extent of its conservation progress (including factors inhibiting or facilitating this progress) and the MTCP presents an ideal candidate for the application of a social-ecological PM study.

2.2. Overview of study design

To identify the range of outputs and outcomes of the MTCP, we used a mixed methods approach, integrating results from three distinct data sources: published MTCP documents (e.g., newsletters, annual reports),

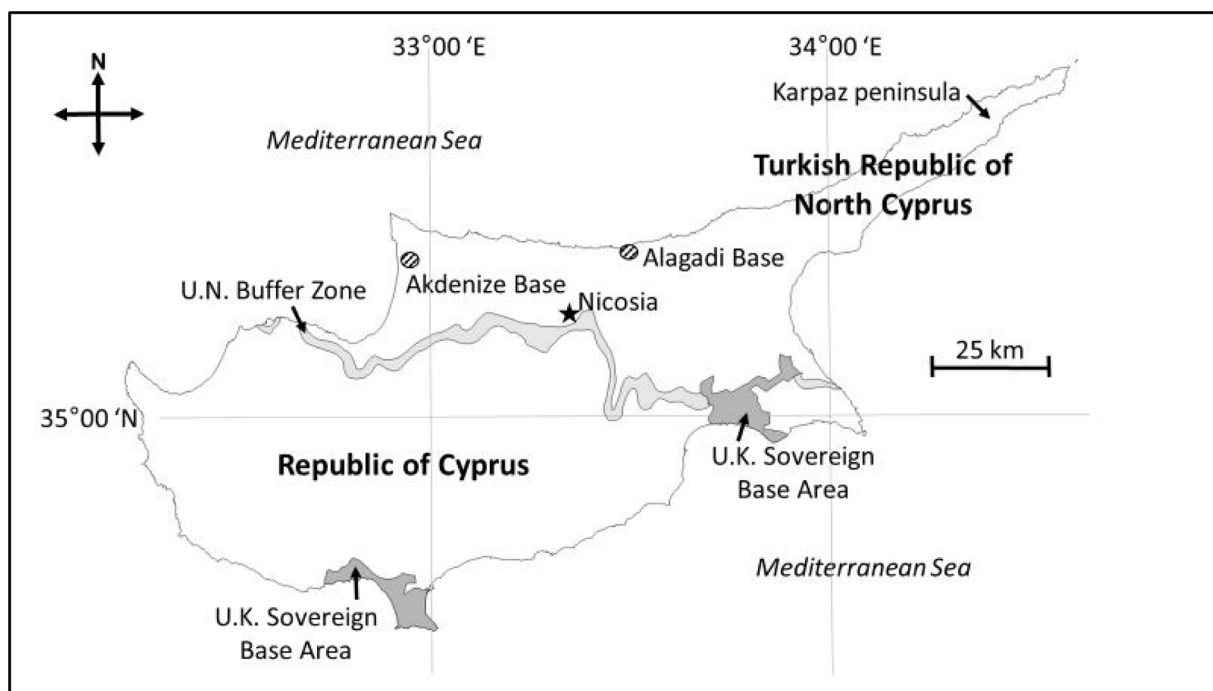


Fig. 1. A map of Cyprus showing the Marine Turtle Conservation Project's bases at Alagadi and Akdeniz. Base map obtained from <http://www.dogakoruma.eu/>.

secondary data collected by the MTCP, and key informant interviews. The Cambridge Conservation Forum (CCF) has developed an evaluation framework for conservation that can be used as an effective guiding tool for PM (Kapos et al., 2008). This framework separates project activities into seven broad activity types, each with an associated conceptual theory of change: Research, Policy and Legislation, Education and Awareness, Capacity Building, Livelihood Enhancement, Species Management, and Site Management. The MTCP undertakes a variety of activities in each of these categories and, therefore, the framework presented a useful guiding tool for our analysis. Research was approved by the University of Exeter's Ethics Committee (Ref. 2016/1423).

2.3. Stage I: Document analysis

The initial phase of data collection involved an extensive review of all available MTCP annual reports and newsletters, as well as key peer-reviewed publications (see Appendix B for the full list of examined documents). While a few of these documents were accessed from the MTCP's website, the majority were obtained through contacting one of the project's primary coordinators. These publications were reviewed in full. All documented project activities were first recorded to gain a comprehensive understanding of the project's history, guide our interview questionnaire design, and inform on potential outputs and outcomes. In addition, all outputs (e.g., growth in the number of Cypriot project volunteers, educational presentations given) were recorded and placed into their corresponding CCF category. Finally, we used this review to compile a preliminary list of key informants and potentially impacted stakeholder groups.

2.4. Stage II: Secondary data analysis

Secondly, we analysed formally collected monitoring data from MTCP annual reports (e.g., number of nests, predation rate) to identify ecological outcomes relating to sea turtle ecology (e.g., changes in hatchling survival, population trends) (Appendix B). Additional information was obtained from the project's peer reviewed journal publications. These outcomes were subsequently categorized into their corresponding CCF category.

2.5. Stage III: Key informant interviews & analysis

The final stage of data collection involved conducting semi-structured interviews with key informants. Five distinct stakeholder groups were identified: residents, fishermen, local business owners, tourists, and project staff. Key informants in our initial set of interviews consisted of project staff identified in project documents. We then used snowball sampling, requesting those directly contacted to recommend additional participants that may have relevant knowledge and experience, to ensure that the perspective of each stakeholder group was captured (Bottrill & Pressey, 2012). We ceased sampling when a point of data saturation was reached (i.e., when additional interviews provided no new substantive information with regards to project activities, outputs, or outcomes) (Guest, Bunce, & Johnson, 2006). Interviews took place from April 11 to May 13, 2016 in the U.K., and from May 27 to June 21, 2016 in North Cyprus. On average, interviews lasted 45 minutes with project staff and 15 minutes with external individuals. All interviews were carried out in person and in English, with the exception of one participant who was interviewed over Skype and four participants who were interviewed with the aid of a Turkish translator. All interviews were carried out one-on-one, apart from one external individual interview which was carried out with a pair of interviewees (this interview was counted as one participant).

Prior to beginning each interview, participants were informed, either verbally or in writing, of the anonymity of their responses. Additionally, we requested the participant's consent to use a voice recorder. Participants were first asked to describe their history of involvement with the MTCP. This question allowed for an understanding of which CCF framework activity categories participants were involved. Secondly, we posed questions to determine what participants perceived to be the major outputs and outcomes of the project. To simplify the process for participants, we did not differentiate outputs from outcomes, but completed this step in our analysis phase. Alternatively, we asked participants to identify any ecological (e.g., habitat, population), economic (e.g., livelihoods), and social (e.g., behaviour, awareness, policy) impacts they had observed since they began their involvement with the project (see Appendix C Appendix C1 and Appendix CC2 for template interview questions). A specific domain was excluded if it was

Table 1

A summary of the primary outputs and outcomes of the Marine Turtle Conservation Project (MTCP) in each of the seven Cambridge Conservation Forum (CCF) framework categories. The source(s) of evidence from which each output/outcome was identified is also included: secondary data, reports, and/or interviews (N = 26). Note that frequencies are relative given that not all participants were able to comment on all outputs and outcomes.

	Source(s) of Evidence
Research	
Outputs	
Extensive long-term data sets produced on turtle nesting numbers	Secondary data; Interviews (N = 4)
Estimated the relative importance of North Cyprus nesting turtle populations to the Mediterranean as a whole	Secondary data
Identified the most important turtle nesting beaches in Northern Cyprus	Reports; Interviews (N = 1)
Significantly contributed to the existing body of literature on sea turtles	Reports; Interviews (N = 2)
Policy and Legislation	
Outputs	
Main nesting beaches at Alagadi legally closed to the public at night in 1994	Reports
Main nesting beaches at Alagadi designated a Special Protected Area in 1997	Reports; Interviews (N = 4)
Six potential NATURA 2000 sites containing important turtle nesting grounds identified under the EU Habitats Directive and designated Special Environmental Protection Areas	Reports
Stipulation to maintain daylight only hours placed on Alagadi bay restaurant	Reports; Interviews (N = 2)
Outcomes	
Important nesting beaches remained undeveloped due to legal protection	Interviews (N = 6)
Education and Awareness	
Outputs	
A significant amount of educational material was distributed, and many educational presentations and workshops were given	Reports; Interviews (N = 9)
Outcomes	
Local support attained at Akdeniz and Alagadi	Interviews (N = 4)
Improvement in both local awareness levels and local attitudes towards turtles	Interviews (N = 17)
Turtle egg consumption at Akdeniz largely ceased	Interviews (N = 2)
Reduction in turtle bycatch by fishermen due to behavioural changes	Interviews (N = 4)
Capacity Building	
Outputs	
Over 600 volunteers trained by the project as of 2014	Reports
Growing number of Cypriot volunteers trained by the project in recent years	Reports; Interviews (N = 5)
Several British ex-patriots trained by the MTCP initiated extensions of the project	Reports; Interviews (N = 3)
Livelihood Enhancement	
Outcomes	
Local restaurants benefitted economically from influx of tourists visiting MTCP	Interviews (N = 13)
Species Management	
Outputs	
One hundred percent of located nests screened since 1999	Reports
Outcomes	
Reduction in nest predation following adoption of nest screening protocol in 1999	Secondary data; Interviews (N = 4)
Distinct upward trend in the number of green turtle nests on the project's core beaches	Secondary data; Interviews (N = 7)

clear that the participant did not have the knowledge to comment in that area. We recognize that *impact* has a very specific meaning within the scientific literature, but for the purposes of our interviews, this word facilitated responses from participants relating to both outputs and outcomes.

During the interviews, we probed for information on connections among project activities, outputs, and outcomes in different CCF categories (e.g., Education and Awareness activities leading to Species Management outcomes). In particular, to draw out information on possible connections, we asked participants to expand on their response when they indicated an output or outcome to identify factors that facilitated its achievement. Project staff members were asked an additional range of questions relating to the history and goals of the overall project, as well as past and current barriers. Identifying barriers allowed us to explore areas in which the project had been less impactful than desired or did not achieve project goals. All recorded interviews were subsequently transcribed by hand.

Transcripts were first examined for mention of any project outputs or outcomes. Once an output or outcome was identified, it was placed into its corresponding CCF category. For each CCF category, we then calculated the frequency of response for outputs and outcomes (i.e., number of participants who indicated an output or outcome within that category) for both project staff and external individuals. For interviews with project staff we also extracted information related to project goals and barriers.

The final step of our analysis was to examine the broader discussion surrounding the activities, outputs, and outcomes using inductive content analysis to identify connections among these factors in different CCF categories. Content analysis has been defined as “a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns” (Hsieh & Shannon, 2005, pp. 1278). We employed an inductive approach as themes were emergent rather than pre-defined (Elo & Kyngäs, 2008). Particular attention was afforded to the informants’ discussion of factors underlying the achievement of outcomes (i.e., information related to *how* and *why* outcomes were or were not achieved) to identify the relationship among activities, outputs, and outcomes in different categories and to explore barriers hindering project success. Once identified, statements relating to relationships among activities, outputs, and outcomes were grouped thematically to identify primary connections among CCF categories.

3. Results

Our document analysis included 23 annual project reports, 2 project peer-reviewed publications, 5 project newsletters, and 1 external report (Appendix B). Data from the annual reports was used for our secondary data analysis.

Twenty-six semi-structured interviews were conducted, 8 with project staff members and 18 with external individuals. All project staff

members interviewed had previously held, or were currently holding, a role as project leader, project coordinator, or both. Project staff interviewed had been involved with the MTCP for an average of 12 years, with the length of involvement ranging from 2 to 25 years. Of the non-staff participants, 3 were integral to the project's founding in 1992, 2 provided significant logistical support to the project, 2 had extensive involvement with the North Cyprus tourism industry, 6 owned businesses in the local area of the project and had regular interactions with the project, 2 were fishermen who had participated in the project's fisheries research, 2 were involved with another local turtle conservation project under the responsibility of SPOT, and 1 was involved with environmental aspects of the North Cyprus government. Many of these individuals were central figures within their communities and had lived in the same village for decades. Such individuals could thus offer a long historical perspective.

3.1. Project goals

Although several project staff members stated an overall goal of turtle conservation (N = 6), most listed more specific goals in terms of how this conservation would be achieved. Several staff members indicated that a primary goal of the project was using research to direct conservation (N = 4). In particular, acquiring the knowledge necessary to direct local governments to prioritize nesting beaches was stressed by several staff members, articulated well by a participant who said *"The primary goal is conservation, but through research. Not just making decisions based on what others are doing. The research is to feed into the conservation"*. A second more specific goal that was highlighted was influencing public awareness and behaviour (N = 6).

3.2. Primary outputs, outcomes, and connections

The number of identified outputs and outcomes varied substantially among CCF categories, with only Site Management found to be lacking any prominent outputs or outcomes (Table 1). Primary outputs and/or outcomes in all categories apart from Site Management and Livelihood Enhancement were identified from project documents, while primary outputs and/or outcomes in the Species Management and Research categories were identified through secondary data. In terms of key informant interviews, nearly every participant indicated an output and/or outcome in the realm of Education and Awareness (N = 23), while only a single participant described an output and/or outcome in the Site Management category (Fig. 2).

From all three data sources, several Research outputs were identified, primary among which was the production of extensive long-term data sets on various aspects of turtle ecology (e.g., nesting abundance) (Tables 1 and 2). In addition, 25 years was suggested in a project publication to be long enough time period for the data to accurately represent long-term trends (Stokes et al., 2014). Finally, through the publication of its research, the project made a notable contribution to the available scientific literature on sea turtle biology and ecology, publishing a total of 55 peer-reviewed papers as of 2016.

Using its long-term dataset, the project was able to estimate the relative importance of North Cyprus nesting turtle populations to the Mediterranean as a whole. The numbers of loggerheads and greens nesting on North Cyprus were calculated to represent 10% and 30% respectively of the Mediterranean's adult females, values high enough to add weight to the project's call for protection (Broderick, Glen, Godley, & Hays, 2002). Finally, due to their annual monitoring, the project identified the most important nesting beaches in Northern Cyprus. In accordance with its goal of bridging the research-action gap, these data were subsequently used as evidence in the project's advocacy efforts, both to demonstrate the overall importance of the turtle populations of North Cyprus, as well as to direct protection to the most important nesting grounds (Table 3).

As a result of the project's advocacy efforts, and through connecting

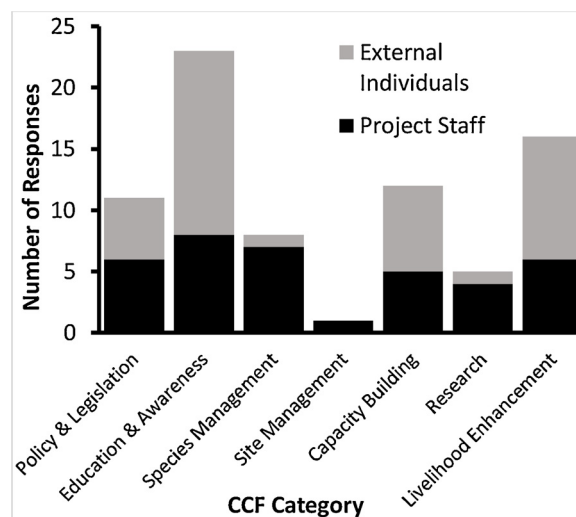


Fig. 2. The number of project staff and external individuals who stated a specific output and/or outcome in each Cambridge Conservation Forum (CCF) framework category (N = 26).

research with policy actions, reports and interviews indicated that several Policy and Legislation outputs had emerged including the main nesting beaches at Alagadi being designated a Special Protected Area (Tables 1 and 2). Participants asserted that these policy changes were impactful ecologically (i.e., translated into ecological outcomes) in that, had it not been for the legislative protection, severe degradation of turtle nesting habitat would have occurred. The importance of this protection was stressed by several participants given the intensive development pressure to North Cyprus beaches. For example, a project staff member with long-term involvement stated that *"Without the project, Alagadi would have been gone. Definitely, one-hundred-percent gone. There would have been a 5-star hotel there"*.

Key informant interviews suggested that several social outcomes had occurred in the Education and Awareness category (Tables 1 and 2). Firstly, as a result of their extensive community involvement and educational activities, interviews suggested that the project had attained a high level of local visibility and support (i.e., local community members providing direct assistance to the project and project staff), particularly in the specific areas where the project operated (i.e., Alagadi and Akdeniz) (Tables 1 and 2). Second, participants suggested that positive changes had occurred in the local community with regards to awareness of and attitudes towards sea turtles. This perceived change in awareness and attitudes was linked by several participants to the educational efforts of the project since it was one of the first sea turtle conservation project to have emerged in North Cyprus.

Participants also indicated that two distinct behavioural changes had occurred in the Education and Awareness category as a result of educational activities in Akdeniz (e.g., presentations, public hatchling releases) and with the fishing community (e.g., educational workshops with over 100 fishermen, educational materials and kits to reduce by-catch distributed). Firstly, both a long-term research staff member and a central community member of Akdeniz indicated that the consumption of turtle eggs had ceased in Akdeniz since the MTCP started operating in the village (Tables 1 and 2). This long-time community member highlighted the shift when he said *"I remember before, old times, before this project. All the turtles come out and the people kill and eat them. The [Akdeniz] villagers at that time, they don't know anything about the turtles and they take the eggs at that time and fry and eat them"*. Secondly, research staff and fishermen indicated that there had been a reduction in the intentional killing of turtles caught as bycatch among fishermen. Speaking to this shift, a fisherman stated: *"Now that [we] are aware of and see the energy that [the project] puts into trying to protect [turtles], [we]*

Table 2

Example quotes from key informant interviews (N = 26) on the outputs and outcomes of the Marine Turtle Conservation Project in each of the seven Cambridge Conservation Forum framework categories.

Research
<i>“Because we’ve done such a really good job of marking these individuals and being there every year for more than twenty years, it now becomes a great testing ground for sea turtle biology around the world. Actually, there are very few places where there’s such a level of detail of study.”</i>
<i>“The vast wealth of research that we’ve contributed to the global understanding of sea turtle biology.”</i>
Policy and Legislation
<i>“More of Cyprus is subject to protection because [the project] got in and started showing where the important bits were, where development couldn’t happen.”</i>
<i>“A lot of [development] you can’t necessarily stop but [the project has] quite a good position on the island in that [they] are listened to. And that’s due to during 25 years of conservation effort.”</i>
<i>“The restaurant on Alagadi beach has always been shut down after dark. That was part of the [project’s] original recommendations ... in 1992.”</i>
Education and Awareness
<i>“in [Akdeniz], and around here in the other villages, everybody knows [about turtles] and when the season opens. When the students come here, the people of the villages know why the students are here. And if the students need something everybody ... tries to help.”</i>
<i>“People started to know about the turtle project and turtles being there in Cyprus, and Cyprus being important for turtles.”</i>
<i>“I think everybody knows about the turtles now. I think that’s quite a big shift.”</i>
<i>“With [the] project, now the fishers know more about the turtles and they know how to work on the sea with also protecting the turtle’s life. Also, before his project, fishermen don’t care about the turtles. Now it’s nearly 90% of fishermen, they respect [the] project.”</i>
Capacity Building
<i>“I think there’s more community recognition because we’re actually getting more Cypriots coming to visit and coming to work on the project.”</i>
<i>“Previously we had no Cypriot volunteers, maybe one a year. In the last couple of years, the number of Cypriot volunteers is going up dramatically which is massive.”</i>
<i>“We had met so many different students at Alagadi so we were learning from them, we were spending nights on the beach, we were helping with excavations at times.”</i>
Livelihood Enhancement
<i>“In Alagadi, just in terms of the number of restaurants that are there, kind of gives you an indication of how many tourists they have coming through. For, I think, 6 restaurants to be open in such a tiny village and running well most of them, it’s quite impressive.”</i>
<i>“...in Akdeniz it’s had a huge effect because tourist would never come otherwise. Nobody knows where Akdeniz is if it weren’t for the fact that there’s quite a large turtle project presence here.”</i>
Species Management
<i>“We’ve had significant increases in nesting numbers at Alagadi, which is directly from [the project’s] conservation efforts. From about 2008 we started to see a significant increase and the last three years have all been record years...”</i>
<i>“The number of nests has increased a lot that I’ve seen. Of course, we don’t know 100% whether it’s because of [the project’s] protection or because of the destruction elsewhere.”</i>
<i>“Whether we’ve seen that benefit [of caging] yet, whether 24 or 25 years is enough time for those particular hatchlings to mature, is hard to say. But I think given the number of nests that were predated beforehand that has to have a dramatic effect.”</i>
<i>“If not for the nest protection scheme we’d be in a much worse state. We’d have far fewer turtles, you can be quite confident of that.”</i>

have a bigger respect for the turtles and are less inclined to treat them negatively”. These outcomes suggest that, due to the active presence and educational work of the MTCP within Akdeniz and the fishing community, Education and Awareness activities can be connected to ecological outcomes (Table 3).

The outcomes achieved in the Education and Awareness category were also connected to outputs and outcomes related to the project’s operational capacity. Specifically, educational efforts and the visibility of the project within the community facilitated its expansion through attracting local and international support and participation (Table 3). Primary among the project outputs in the Capacity Building category was the growing involvement of local Cypriots in project activities (Tables 1 and 2). Through training provided by the project, several British ex-patriots also increased the project’s capacity through initiating extensions of the MTCP, or turtle conservation projects of their own. Overall, the growth of the MTCP in terms of the number of

Table 3

A summary of the primary connections among the activities, outputs, and outcomes of the Marine Turtle Conservation Project in the seven Cambridge Conservation Forum (CCF) framework categories. The specific CCF categories involved in each connection are also shown, along with the direction of connection.

Connections Among CCF Categories	CCF Categories Involved
Research results used to direct and provide evidence for protection efforts	Research ↓ Policy & Legislation Education & Awareness ↓ Species Management
Education/engagement activities and outputs contributed to behavioural changes in the Akdeniz and fishing communities, resulting in declines in turtle deaths from poaching and bycatch respectively	Species Management
Education/engagement activities and outputs led to increased Cypriot and ex-patriot involvement, increasing the project’s research and species management operational capacity	Education & Awareness ↓ Capacity Building ↓ Research; Species Management
Ecotourism activities produced local economic benefits, contributing to the formation of direct links between the project and local businesses at Alagadi and Akdeniz, increasing project’s research and species management operational capacity	Education & Awareness ↓ Livelihood Enhancement ↓ Capacity Building ↓ Research; Species Management

personnel had risen exponentially through the years, with over 600 individuals having been trained by the project as of 2014. This growth contributed to the achievement of Research outputs and Species Management outcomes through facilitating an increased overall data collection and nest protection capacity (Table 3).

Further contributing to the project’s capacity were the economic outcomes that interviews suggested the project had brought about in the community (Tables 1 and 2). By far the most common outcome identified was the benefits to local restaurants in Alagadi and Akdeniz resulting from the large number of tourists attracted by the project’s ecotourism activities (e.g., night watches of nesting turtles, public hatchling releases). It was suggested that these locations would not otherwise have received much revenue from tourism. These local economic benefits were observed to have aided the project’s capacity, with several residents associated with local businesses playing active roles within the project itself (Table 3).

Finally, from secondary data and interviews, two primary project outcomes emerged in the Species Management category: reduced predation rates and an upward trend in the number of annual green turtle nests (Tables 1 and 2). The rising number of nests was suggested in a publication of the project to indicate that green turtles in North Cyprus were in recovery (Stokes et al., 2014). Although there are many factors likely to be contributing to this increase in nesting numbers, the trend was attributed, in part, to the project’s intensive nest caging regime. Given that it takes over 20 years for loggerhead and green turtles to reach sexual maturity, however, the outcomes of the project’s nesting regime are likely yet to be fully observed. The aforementioned behavioural changes in fishermen and the Akdeniz community may also be contributing to this success. While some participants suggested that these Species Management outcomes could be attributed to the work of the MTCP, others stated that the extent of the project’s relative contribution to increasing turtle populations cannot yet be accurately estimated.

3.3. Project barriers

Although the MTCP had seen success in many areas, several themes emerged from interviews with project staff as barriers inhibiting project success (see Appendix D for representative quotes from interviews with

project staff). One primary barrier that consistently emerged was a deficiency in monetary resources ($N = 4$). Secondly, several participants indicated that a lack of government support in terms of enforcing legislation, as well as government instability, were primary barriers limiting the effectiveness of Policy and Site Management activities ($N = 6$). These individuals expressed a sense of frustration that reporting to the government was often ineffective. Many project staff indicated that a lack of enforcement had limited the project's success with regards to desired behavioural changes (e.g., reducing littering, quad biking) on beaches aside from Alagadi, where project staff themselves were the primary enforcers. A final prominent barrier to emerge was a lack of public awareness relating to the impact of these behaviours on nesting beaches ($N = 4$).

4. Discussion

Combined, our three data sources indicated that the activities of the MTCP had generated important outputs and/or outcomes in the majority of CCF categories, many of which were in direct alignment with project goals. These outputs and outcomes were not mutually exclusive, but rather cumulative and interlinked, with activities, outputs, and outcomes in one CCF category indirectly facilitating outputs and outcomes in others. Particularly noteworthy were the indirect ecological outcomes of the project's 1) research and 2) visibility in local communities. The project compounded its achievement of ecological outcomes through directing research into policy lobbying efforts and increasing its capacity as a result of local engagement (e.g., direct contribution of ex-patriots and Cypriots). In other words, through bridging the research-implementation gap and community engagement, the MTCP was able to achieve greater ecological success (e.g., beaches received protection, increased nest protection capacity) than if they had limited their efforts to research and ecological activities alone. Such connections add support to the benefits of adopting a multi-disciplinary approach to conservation.

4.1. Bridging the research-implementation gap

Closing the research-implementation gap has been the focus of much discussion in the literature (Toomey, Knight, & Barlow, 2017). Given the limited resources available for conservation, ensuring that projects are informed by rigorous science is of great importance. At the same time, for scientific data to be useful in practice, the information produced must be salient, credible, and legitimate (Cash et al., 2003). Adopting the dual roles of researchers and conservation practitioners assisted the MTCP in meeting these requirements. Since they are both producing the information and using it to inform action, the project can ensure that the data is relevant, it will be viewed as reliable, and they can ensure that it is appropriate in the specific context of North Cyprus due to their understanding of existing community and political dynamics. Boundary organizations, or those that "operate in both scientific and practical spheres but retain distinct lines of accountability to both groups", have been promoted as a type of institutional framework that can bridge the knowledge-action gap (Cook et al., 2013, pp. 673). As a joint venture between a research institution and a local conservation society, the MTCP acts as such an organization.

4.2. Community involvement to enhance conservation

The MTCP did not operate in isolation, but was highly integrated within the community, not only through targeted education, but also in their day-to-day activities. This high level of interaction facilitated the creation of a positive feedback loop between local awareness and project capacity, particularly in the specific communities where the project operated. Enhancing local support to an even greater degree was the revenue brought to the community through the project's ecotourism activities. A positive relationship between long-term conservation

effectiveness and local participation has been well documented in the literature (Andrade & Rhodes, 2012). In addition, greater community engagement has been found to enhance conservation learning outcomes (Evely, Pinard, Reed, & Fazey, 2011). The results of this study provide further evidence for the benefits that can be gained from considering and collaborating with the local community in project design and implementation. One avenue of particular interest through which engagement has been found to enhance conservation is through instilling a sense of pride in participants, encouraging pro-environmental behaviour (Grodzińska-Jurczak & Cent, 2011). Interviews suggested that the MTCP's awareness raising activities had introduced a greater sense of pride and respect for the two sea turtle species within the communities with whom the project was closely involved (e.g., Alagadi, Akdeniz, fishing community). Although further research is needed to explore this connection, these results indicate that promoting a sense of pride and ownership in the natural environment can be an effective tool to encourage behavioural changes.

4.3. Looking ahead: Overcoming barriers

Data indicated that the success achieved at Alagadi was due to the project's extensive and immediate presence, facilitating a combination of concentrated enforcement and education. The prevalence of undesired behaviours on other beaches was still thought to present a major issue, compounded by a lack of government enforcement. Even on Akdeniz beaches, although turtle egg consumption had largely stopped, certain destructive behaviours remained (e.g., quad biking). Although informants indicated that there had been an increase in public awareness of the existence of turtles, the data suggest that more education, and other actions such as social marketing, is needed to connect individual actions with turtle nesting success. Significantly expanding awareness raising efforts, however, is likely to pose an issue given that monetary constraints were already listed as a primary barrier. Given the success achieved at Alagadi and Akdeniz, resources are perhaps best placed in more concentrated efforts at a limited number of beaches, rather than spreading project efforts across numerous sites. Working more closely and increasing knowledge sharing with other turtle conservation projects could also assist in expanding the MTCP's educational and outreach capacity.

4.4. Social-ecological performance measurement: A useful tool for evidence-based conservation

The connections among outputs and outcomes produced by the MTCP are a common occurrence in conservation given the complicated and extensive linkages between biological and social dimensions. This is particularly true in the case of projects like the MTCP that undertake a highly diverse range of activities. The interconnected nature of CCF categories denotes that feedback in one category can inform on the mechanisms underlying the level of success, or lack thereof, in another. In this way, social-ecological PM studies can provide a holistic picture of a conservation project, including underlying factors facilitating or hindering project success. The range of information that can be generated from such an evaluation was highlighted by this study, the next step being to apply such knowledge in the future management of the project through adaptive management. Feedback from such studies can, among other things, aid in fostering greater levels of community support, improve internal functioning, and minimize bottlenecks in the results chain inhibiting the translation of outcomes through to the final conservation target. In addition, as with other types of evaluation, social-ecological PM studies inject a measure of accountability into a project and aid in funding acquisition (Mascia et al., 2014).

4.5. Strengthening evidence for conservation evaluation

Although two of the authors, including the lead author, were

external to the project, one of the authors played a key role within the MTCP (please see the Declaration of Interest). In addition, some results relied on a limited number of perceptions from individuals who were involved with the project. We acknowledge that these limitations have the potential to inject bias into our results (e.g., positive outcomes could be overstated). Therefore, steps were taken to maximize objectivity and emphasize results with the strongest supporting evidence. Firstly, for outcomes relying heavily on perceptions, we focused our emphasizing results internal to the project itself (e.g., increased capacity resulting from community engagement) rather than on more widespread changes that are more difficult to assess (e.g., awareness levels, attitudes). We did, however, highlight two specific behaviour changes (i.e., reduction in poaching and bycatch) that were identified exclusively via perceptions. For these outcomes, we recommend that a more rigorous evaluation be undertaken going forward to collect quantifiable evidence of change. However, many conservation projects lack the funding or time to collect preliminary baseline data or to undertake a rigorous experimental evaluation approach (Curzon & Kontoleon, 2016; Roe, McConney, & Mansfield, 2014). Perceptions present a cost-effective alternative with many unique benefits (e.g., provide an avenue for local participation) and their value should not be underestimated, particularly in the case of local experts with traditional ecological knowledge (Bennett, 2016). Finally, we directly asked project staff to explore barriers that have hindered project success to prompt a more critical examination of outcomes (or lack thereof).

Rather than aiming to demonstrate the extent of outcome achievement or conclusively prove causality, we focused on identifying underlying factors that have facilitated or hindered success. As such, PM, which places the emphasis on adaptive management and often relies on expert perceptions, was an appropriate evaluation approach (Mascia et al., 2014). Given these benefits and limitations, we recommend this approach for internal evaluations which are aimed at self-improvement and providing general lessons to the broader conservation community. Encouragingly, an abundance of academic and grey literature exists for designing effective rapid evaluations, including guidance for reducing bias (e.g., Bennett, 2016; Dickson et al., 2017; Johnson & Wouters, 2008; Kleiman et al., 2000).

Despite the limitations of key-informant perceptions as evidence, as previously mentioned, those directly associated with a project also offer benefits that are often lacking from outsiders. For example, those closest to a project could provide in-depth detail on the complexities of a community or social-ecological system, knowledge that could only be gained through long-term involvement. Furthermore, project staff who have an established foundation of trust with local communities are often the best-placed to gather information on wider project impacts. Regular internal evaluations conducted by project staff combined with less frequent external evaluations could provide a way to make use of the advantages of both methods (Kleiman et al., 2000).

5. Conclusion

The results of this study highlight the benefits that can be gained from adopting a multi-disciplinary approach to conservation. In particular, operating at the science-policy interface, or collaborating with action-oriented local organizations, can aid research institutions in bridging the research-implementation gap. Secondly, working in an integrative manner with the local community can significantly aid conservation efforts, not only through facilitating desired changes in social processes (e.g., behaviours), but also through engendering local support and increasing project capacity. Ultimately, multi-disciplinarily can compound the ecological effectiveness of an intervention. This study offers an example of the benefits that can be gained from integrating social and ecological factors within PM. We encourage the more frequent use of this approach as a cost-effective method of assessing project outcomes and factors facilitating or hindering success. Ultimately, monitoring and evaluation is necessary for conservation

projects to engage in informed adaptive management that will enhance the extent of positive outcomes for people and nature.

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Declaration of Competing Interest

One of the co-authors, Brendan Godley (BG), is also one of the founders of the Marine Turtle Conservation Project that is the focus of the paper. However, BG was not involved with collecting or analysing the data. Therefore, he did not contribute to identifying project outcomes, or lack thereof, limiting the potential for bias to occur. To add further transparency, we also clarify the roles that each author played in the creation of this paper: all three authors conceptualized the project; BG connected the lead author, Rachael Edwards (RE), to individuals and resources in Cyprus; Ana Nuno (AN) and RE designed the data collection and analysis methodology; RE collected and analysed the data; RE and AN wrote the manuscript; and all three authors were involved in the final editing process.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.jnc.2020.125816>.

References

- Akis, S., & Warner, J. (1994). A descriptive analysis of North Cyprus tourism. *Tourism Management*, 15(5), 379–388. [https://doi.org/10.1016/0261-5177\(94\)90092-2](https://doi.org/10.1016/0261-5177(94)90092-2).
- Andrade, G. S. M., & Rhodes, J. R. (2012). Protected areas and local communities: An inevitable partnership toward successful conservation strategies? *Ecology and Society*, 17(4), 14. <https://doi.org/10.5751/ES-05216-170414>.
- Baylis, K., Honey-Rosés, J., Börner, J., Corbera, E., Ezzine-de-Blas, D., Ferraro, P. J., ... Wunder, S. (2016). Mainstreaming impact evaluation in nature conservation. *Conservation Letters*, 9(1), 58–64. <https://doi.org/10.1111/conl.12180>.
- Bennett, N. J. (2016). Using perceptions as evidence to improve conservation and environmental management. *Conservation Biology*, 30(3), 582–592. <https://doi.org/10.1111/cobi.12681>.
- Bennett, N. J., Roth, R., Klain, S. C., Chan, K., Christie, P., Clark, D. A., ... Wyborn, C. (2017). Conservation social science: Understanding and integrating human dimensions to improve conservation. *Biological Conservation*, 205, 93–108. <https://doi.org/10.1016/j.biocon.2016.10.006>.
- Bottrill, M. C., Hockings, M., & Possingham, H. P. (2011). In pursuit of knowledge: Addressing barriers to effective conservation evaluation. *Ecology and Society*, 16(2) <http://www.ecologyandsociety.org/vol16/iss2/art14/>.
- Bottrill, M. C., & Pressey, R. L. (2012). The effectiveness and evaluation of conservation planning. *Conservation Letters*, 5(6), 407–420. <https://doi.org/10.1111/j.1755-263X.2012.00268.x>.
- Broderick, A. C., Glen, F., Godley, B. J., & Hays, G. C. (2002). Estimating the number of green and loggerhead turtles nesting annually in the Mediterranean. *Oryx*, 36(3), 227–235. <https://doi.org/10.1017/S0030605302000431>.
- Campbell, L. M. (1998). Use them or lose them? Conservation and the consumptive use of marine turtles at Ostional, Costa Rica. *Environmental Conservation*, 25(4), 305–319.
- Campbell, L. M., Haalboom, B. J., & Trow, J. (2007). Sustainability of community-based conservation: Sea turtle egg harvesting in Ostional (Costa Rica) ten years later. *Environmental Conservation*, 34(2), 122–131. <https://doi.org/10.1017/S0376892907003840>.
- Cash, D. W., Clark, W. C., Alcock, F., Dickson, N. M., Eckley, N., Guston, D. H., ... Mitchell, R. B. (2003). Knowledge systems for sustainable development. *Proceedings of the National Academy of Sciences*, 100(14), 8086–8091. <https://doi.org/10.1073/pnas>.

- 1231332100.
- Cook, C. N., Mascia, M. B., Schwartz, M. W., Possingham, H. P., & Fuller, R. A. (2013). Achieving conservation science that bridges the knowledge-action boundary. *Conservation Biology*, 27(4), 669–678. <https://doi.org/10.1111/cobi.12050>.
- Curzon, H. F., & Kontoleon, A. (2016). From ignorance to evidence? The use of programme evaluation in conservation: Evidence from a Delphi survey of conservation experts. *Journal of Environmental Management*, 180, 466–475. <https://doi.org/10.1016/j.jenvman.2016.05.062>.
- Davenport, J., & Davenport, J. L. (2006). The impact of tourism and personal leisure transport on coastal environments: A review. *Estuarine, Coastal and Shelf Science*, 67(1–2), 280–292. <https://doi.org/10.1016/j.ecss.2005.11.026>.
- DeWan, A., Green, K., Li, X., & Hayden, D. (2013). Using social marketing tools to increase fuel-efficient stove adoption for conservation of the golden snub-nosed monkey, Gansu Province, China. *Conservation Evidence*, 10(1), 32–36.
- Dickson, I. M., Butchart, S. H. M., Dauncey, V., Hughes, J., Jefferson, R., Merriman, J. C., ... Trevelyan, R. (2017). *PRISM – Toolkit for evaluating the outcomes and impacts of small/medium-sized conservation projects. Version 1*. Available from www.conservationevaluation.org.
- Dutton, P. H., & Squires, D. (2008). Reconciling biodiversity with fishing: A holistic strategy for Pacific sea turtle recovery. *Ocean Development and International Law*, 39(2), 200–222. <https://doi.org/10.1080/00908320802013685>.
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62(1), 107–115. <https://doi.org/10.1111/j.1365-2648.2007.04569.x>.
- Evely, A. C., Pinard, M., Reed, M. S., & Fazey, I. (2011). High levels of participation in conservation projects enhance learning. *Conservation Letters*, 4(2), 116–126. <https://doi.org/10.1111/j.1755-263X.2010.00152.x>.
- Ferraro, P. J., & Pattanayak, S. K. (2006). Money for nothing? A call for empirical evaluation of biodiversity conservation investments. *PLoS Biology*, 4(4), e105. <https://doi.org/10.1371/journal.pbio.0040105>.
- Grodzińska-Jurczak, M., & Cent, J. (2011). Can public participation increase nature conservation effectiveness? *Innovation: The European Journal of Social Science Research*, 24(3), 371–378. <https://doi.org/10.1080/13511610.2011.592069>.
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, 18(1), 59–82. <https://doi.org/10.1177/1525822X05279903>.
- Gunsoy, E., & Hannam, K. (2012). Conflicting perspectives of residents in the Karpaz region of Northern Cyprus towards tourism development. *Tourism Planning & Development*, 9(3), 309–320. <https://doi.org/10.1080/21568316.2012.688067>.
- Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), 1277–1288. <https://doi.org/10.1177/1049732305276687>.
- Johnson, A. L., & Wouters, M. (2008). *From see to success: A guide to evaluating conservation with communities projects*. Available from New Zealand Department of Conservation <https://www.doc.govt.nz/about-us/science-publications/series/doc-technical-series/>.
- Kapos, V., Balmford, A., Aveling, R., Bubb, P., Carey, P., Entwistle, A., ... Manica, A. (2008). Calibrating conservation: New tools for measuring success. *Conservation Letters*, 1(4), 155–164. <https://doi.org/10.1111/j.1755-263X.2008.00025.x>.
- Katircioglu, S. T. (2006). Causality between agriculture and economic growth in a small nation under political isolation: A case from North Cyprus. *International Journal of Social Economics*, 33(4), 331–343.
- Kleiman, D. G., Reading, R. P., Miller, B. J., Clark, T. W., Scott, J. M., Robinson, J., ... Felleman, F. (2000). Improving the evaluation of conservation programs. *Conservation Biology*, 14(2), 356–365. <https://doi.org/10.1046/j.1523-1739.2000.98553.x>.
- Liles, M. J., Peterson, M. J., Lincoln, Y. S., Seminoff, J. A., Gaos, A. R., & Peterson, T. R. (2015). Connecting international priorities with human wellbeing in low-income regions: Lessons from hawksbill turtle conservation in El Salvador. *Local Environment*, 20(11), 1383–1404. <https://doi.org/10.1080/13549839.2014.905516>.
- Liu, T. M. (2017). Unexpected threat from conservation to endangered species: Reflections from the front-line staff on sea turtle conservation. *Journal of Environmental Planning and Management*, 60(12), 2255–2271. <https://doi.org/10.1080/09640568.2016.1273824>.
- Margoluis, R., Stem, C., Swaminathan, V., Brown, M., Johnson, A., Placci, G., ... Tilders, I. (2013). Results chains: A tool for conservation action design, management, and evaluation. *Ecology and Society*, 18(3), 22. <https://doi.org/10.5751/ES-05610-180322>.
- Mascia, M. B., Pailler, S., Thieme, M. L., Rowe, A., Bottrill, M. C., Danielsen, F., ... Burgess, N. D. (2014). Commonalities and complementarities among approaches to conservation monitoring and evaluation. *Biological Conservation*, 169, 258–267. <https://doi.org/10.1016/j.biocon.2013.11.017>.
- Mccabe, A. A. (2016). *An examination of an opportunity for collaboration among stakeholders to promote conservation in sea turtle tourism in Gilli Trawangan, Indonesia. Tourism Travel and Research Association: Advancing Tourism Research Globally, Vol. 5*.
- Miller, B. W., Caplow, S. C., & Leslie, P. W. (2012). Feedbacks between conservation and social-ecological systems. *Conservation Biology*, 26(2), 218–227. <https://doi.org/10.1111/j.1523-1739.2012.01823.x>.
- Phillips, A., & Bracewell, F. (2001). *Protected areas a challenge for North Cyprus*. Retrieved from <http://docplayer.net/18743836-Protected-areas-a-challenge-for-north-cyprus.html>.
- Pullin, A., Sutherland, W. J., Gardner, T. A., Kapos, V., & Fa, J. E. (2013). Conservation priorities: Identifying need, taking action and evaluating success. In D. W. Macdonald, & K. Willis (Eds.). *Key Topics in Conservation Biology 2* (First Edition). <https://doi.org/10.1002/9781118520178.ch1>.
- Rees, A. F., Alfaro-Shigueto, J., Barata, P. C. R., Bjørndal, K. A., Bolten, A. B., Bourjea, J., ... Godley, B. J. (2016). Are we working towards global research priorities for management and conservation of sea turtles? *Endangered Species Research*, 31(1), 337–382. <https://doi.org/10.3354/esr00801>.
- Roe, K., McConney, A., & Mansfield, C. (2014). Using evaluation to prove or to improve? An international, mixed-method investigation into zoos' formal education evaluation practices. *Journal of Zoo and Aquarium Research*, 2(4), 108–116. <https://doi.org/10.19227/jzar.v2i4.67>.
- Senko, J., Schneller, A. J., Solis, J., Ollervides, F., & Nichols, W. J. (2011). People helping turtles, turtles helping people: Understanding resident attitudes towards sea turtle conservation and opportunities for enhanced community participation in Bahía Magdalena, Mexico. *Ocean & Coastal Management*, 54(2), 148–157. <https://doi.org/10.1016/j.ocecoaman.2010.10.030>.
- Stem, C., Margoluis, R., Salafsky, N., & Brown, M. (2005). Monitoring and evaluation in conservation: A review of trends and approaches. *Conservation Biology*, 19(2), 295–309. <https://doi.org/10.1111/j.1523-1739.2005.00594.x>.
- Stern, E., Stame, N., Mayne, J., Forss, K., Davies, R., & Befani, B. (2012). *Broadening the range of designs and methods for impact evaluations: report of a study commissioned by the Department for International Monitoring & Evaluation Framework Development Glasgow: Department for International Development. Department for International Development*.
- Stokes, K. L., Fuller, W. J., Glen, F., Godley, B. J., Hodgson, D. J., Rhodes, K. A., ... Broderick, A. C. (2014). Detecting green shoots of recovery: The importance of long-term individual-based monitoring of marine turtles. *Animal Conservation*, 17(6), 593–602. <https://doi.org/10.1111/acv.12128>.
- Toomey, A. H., Knight, A. T., & Barlow, J. (2017). Navigating the space between research and implementation in conservation. *Conservation Letters*, 10(5), 619–625. <https://doi.org/10.1111/conl.12315>.
- Warner, J. (1999). North Cyprus: Tourism and the challenge of non-recognition. *Journal of Sustainable Tourism*, 7(2), 128–145. <https://doi.org/10.1080/09669589908667331>.
- Yang, W., Liu, W., Viña, A., Luo, J., He, G., Ouyang, Z., ... Liu, J. (2013). Performance and prospects of payments for ecosystem services programs: Evidence from China. *Journal of Environmental Management*, 127, 86–95. <https://doi.org/10.1016/j.jenvman.2013.04.019>.