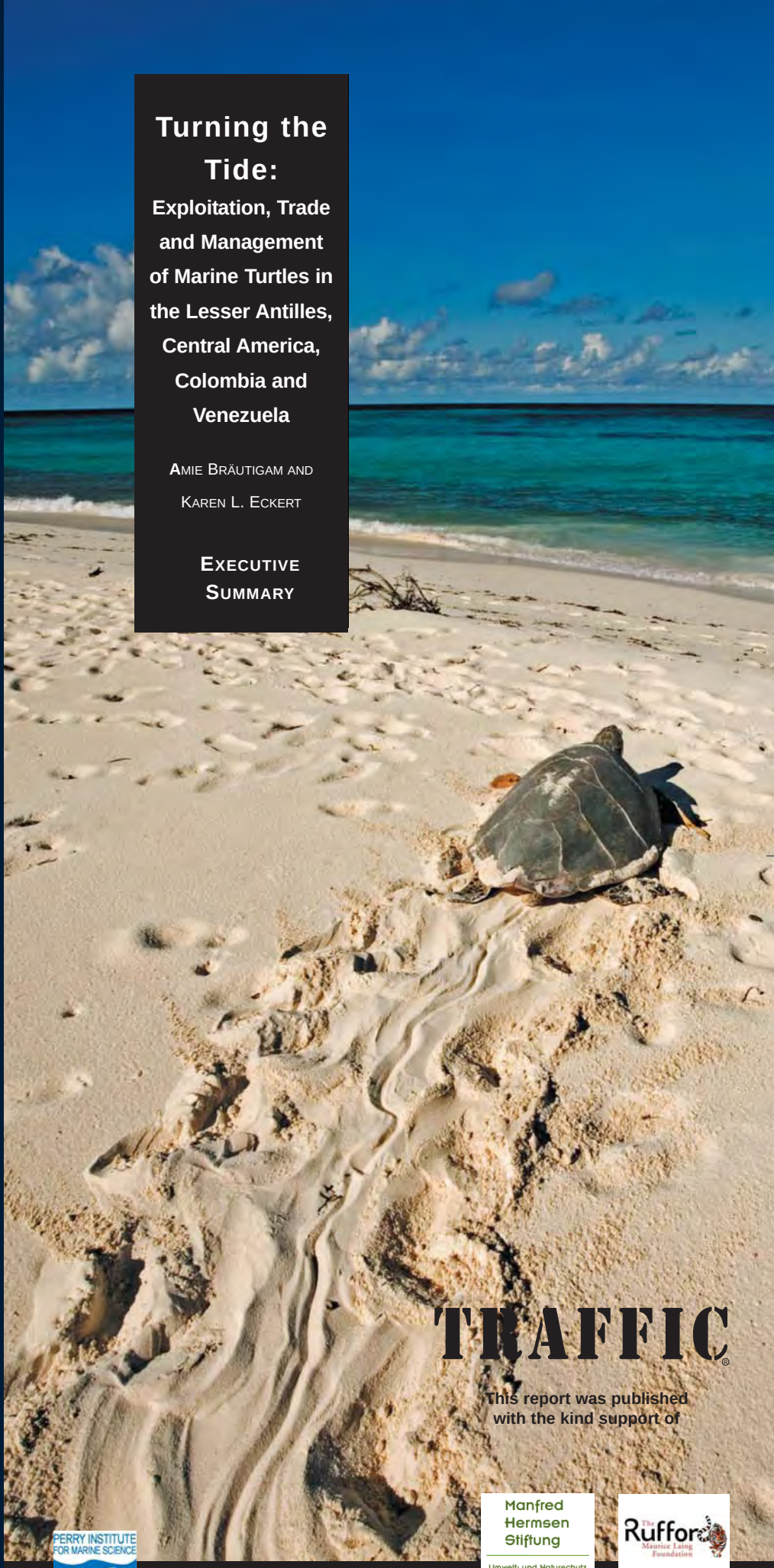

Turning the Tide:

Exploitation, Trade and Management of Marine Turtles in the Lesser Antilles, Central America, Colombia and Venezuela

Amie Bräutigam and
Karen L. Eckert

Executive Summary

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Front cover photograph: A female Hawksbill Turtle *Eretmochelys imbricata* heads back to the sea after laying eggs.
Photograph credit: WWF-Canon/Martin Harvey.

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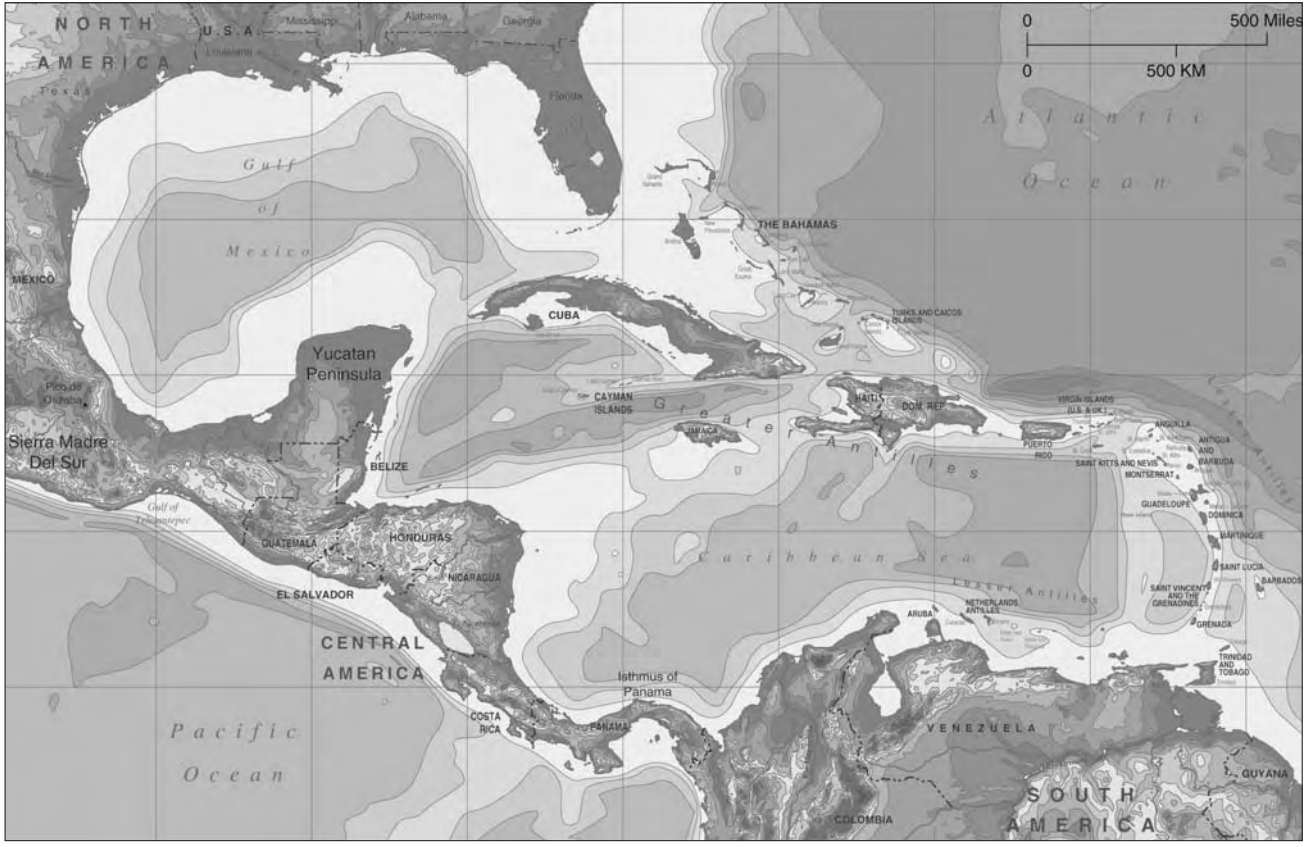

The Wider Caribbean Region, including the Lesser Antilles, Central America, Colombia and Venezuela — the geographical focus of this report.

TURNING THE TIDE:

EXPLOITATION, TRADE AND MANAGEMENT OF MARINE TURTLES IN THE LESSER ANTILLES, CENTRAL AMERICA, COLOMBIA AND VENEZUELA

by Amie Bräutigam[1] and Karen L. Eckert[2]

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A TRAFFIC REPORT
SEPTEMBER 2006

EXECUTIVE SUMMARY

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.

P. Richardson/MCS

Fishers bringing in a beach seine net at Crocus Bay, one of the most important foraging areas for Green and Hawksbill Turtles around Anguilla.

Although all fall within the WCR, the 26 jurisdictions that have been reviewed for this analysis—the overseas territories and Small Island States of the Lesser Antilles, six Central American countries, Colombia and Venezuela—are widely diverse geographically, ecologically, culturally and economically. They also vary considerably as regards the status of marine turtles and the context for their conservation and management: the legal frameworks, management regimes, and type and degree of constraints on effective marine turtle management. The differences between jurisdictions and regions with respect to key elements of this study are discussed in the **Regional Overview** and presented in the tables in that section. The major findings are set forth below and followed by a short-list of priorities for immediate action at the national level.

1. The legal framework for marine turtle management is inadequate in large and small ways in the majority of the jurisdictions covered in this study. Not only is there often confusion as to the rules that apply and, in some instances, direct conflict between laws, but exploitation in those countries where it is permitted by law is, with few exceptions, not controlled in accordance with the principles of sustainability. In some instances, competing or overlapping management authorities create confusion—and consequent lapses—in the exercise of these authorities. In addition to shortcomings in the laws governing exploitation, there are shortcomings with respect to the laws governing marine turtle trade, internal and international.

In most of the eight Latin American countries reviewed and in at least two of the insular States, there is a need to rationalize the body of legislation pertaining to marine turtles and to revise it as necessary so that there are clear rules and authorities in relation to marine turtle exploitation and trade and the broader range of marine turtle management and conservation needs. Similarly, in most of the Latin American countries examined, there is a particular need for effective controls on exploitation that is currently exempt from these laws, specifically exploitation of turtles and eggs that continues under the aegis of "subsistence" or "indigenous" use but in the absence of any legal or operational definition of these terms.

2. There are many encouraging signs that governments are seeking to strengthen the legal framework for marine turtle management. In Belize, the framework has evolved, taking full note of biological principles, through maximum size limits, to a legally permitted take for traditional use

Scott A. Eckert/WIDECAST

Comparative dorsal view of Leatherback, Green Turtle and Hawksbill Turtle hatchlings (L to R).

only of species other than the Hawksbill Turtle *Eretmochelys imbricata*. In several other jurisdictions—including Montserrat, Nevis (Federation of Saint Kitts and Nevis), Antigua and Barbuda, Dominica, Trinidad and Tobago, Colombia and Guatemala—marine turtle management measures and broader conservation needs have been or are being reviewed; in several, regulations are pending that would establish maximum *versus* the prevailing minimum size limits and/or lengthen closures to embrace peak nesting periods. The governments of two jurisdictions, Anguilla and Saint Lucia, implemented moratoria in the mid-1990s so as to review management measures prior to prospective reinstatement of a turtle fishery (the moratorium in Saint Lucia lapsed before revised measures could be established; the moratorium in Anguilla was renewed in 2005).

3. Marine turtles are completely protected by law from exploitation in fewer than half of the 26 jurisdictions reviewed. In the remaining jurisdictions, marine turtles benefit from varying degrees of legal protection. With few exceptions (namely, Costa Rica [in relation to a programme at Ostional on the Pacific coast] and Belize, which clearly define, regulate and control the exemptions for exploitation of marine turtles within an otherwise protective legal regime), and regardless of these differences, the legal norms in place do not limit exploitation in such a way as to contribute to the sustainability of marine turtle populations. In effect, they do not serve management that would be consistent with the standards and practice of sustainable use. Thus, for many jurisdictions, a suite of both national and international commitments to ensure the survival of these threatened species remains largely unfulfilled.

4. In some countries, turtle fisheries operate on an occasional and opportunistic basis, while in others they continue to be the focus of dedicated effort and generate significant income through the marketing of the animals and their products. Official statistics on levels of exploitation of marine turtles at the national level do not exist for any jurisdiction in which such exploitation is permitted, as monitoring is either non-existent, sporadic, or fragmentary, being based on voluntary reporting or only conducted at some of the sites where marine turtles are landed. Consequently, levels of exploitation of marine turtles are largely unknown at the national level and it is, therefore, impossible to derive any credible estimate of the numbers of marine turtles taken at the regional level.

Leatherback hatchlings

WWF-Canon/Roger LeGuen

In some instances, information on exploitation is available from non-government sources. The most comprehensive dataset comprises the results of monitoring efforts by researchers working with the Wildlife Conservation Society (WCS); these have documented the region's largest legal marine turtle fishery, as part of which ca. 300 to 500 fishers have landed ca. 11 000 Green Turtles *Chelonia mydas* per year over the past decade. In the insular Caribbean, research conducted by a graduate student at the University of the West Indies has documented aspects of exploitation in several Eastern Caribbean countries and, for example, estimated an annual take of 782 turtles in Grenada and almost 600 turtles in Saint Vincent and the Grenadines.

Fewer data exist on levels of exploitation of marine turtle eggs, which are more extensively protected by law in the WCR than are marine turtles. The marketing of eggs is open and widespread in several of the Central American countries and, while in Costa Rica most of the eggs in trade are considered to derive from a specific sustainable-use programme at Ostional on the Pacific Coast, in Guatemala there is concern that virtually every egg laid in the country is collected for human consumption.

Finally, the numbers of marine turtles taken incidentally in industrial and artisanal fisheries are largely unknown and, thus, impossible to factor into any overall estimates of marine turtle mortality. Losses to incidental take have been documented to be high in some reviewed jurisdictions (e.g. Trinidad and Tobago, Guadeloupe) and are believed to be high in others and, thus, warrant further investigation and, as necessary, mitigation.

5. Information relating to international trade in marine turtles is mixed. There is little evidence, based on official statistics, of large commercial trade; most of the trade reported to the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in recent years consists of seizures of personal items or scientific specimens, with only a small number of (illegal) commercial shipments. Notwithstanding, an extensive and clandestine regional trade persists, mainly in Central America. Most international trade from the insular jurisdictions consists of personal items and curios purchased by tourists; there are few statistics on tourist-mediated trade and often no official knowledge that such export has occurred. There is little concrete evidence of significant stockpiling of marine turtle products (Nicaragua and Costa Rica are the only two countries in which stockpiles were reported).

Scott A. Eckert/WIDECAST

Hawksbill Turtle
Eretmochelys imbricata

Existing levels of international trade are described as a "problem for management" only for the mainland countries of the Americas.

6. Enforcement of marine turtle legislation is generally considered to be inadequate. In some instances, this arises from a lack of clarity in the legal provisions that apply and the authorities charged with enforcement. In addition, logistical and other constraints, including socio-cultural dynamics, complicate enforcement. Concerns are noted as to the low level of attention often afforded infractions of this type of legislation by law enforcement officials and the judiciary. Some participants in this study cited the low priority given to these issues as evidence of political apathy towards natural resource law in general and noted, as well, the social complexities of enforcing natural resource law in rural coastal communities where much (in some instances most) illegal activity occurs. The data suggest an increase in arrests and prosecutions in very recent years and also underscore the positive contribution of community-based beach patrols—sometimes under specific co-management agreements with government agencies—in reducing or eliminating illegal activity, especially on nesting beaches.

7. Management of marine turtles in the region covered in this study varies greatly but in most cases must be considered inadequate not only for the recovery of populations but for the prevention of further population declines. The following points should be especially noted:

- no stock assessment in the usual sense has been conducted at the national level for any jurisdiction in this study; the countries that come closest to meeting this standard are Barbados, which, uniquely, supports continual monitoring of both nesting and foraging stocks, and Nicaragua, where the Green Turtle fishery has recently been the focus of an intensive evaluation through the efforts of scientists working with WCS;
- legal exploitation has not been based on any scientific evaluation of the resource;
- legal exploitation continues with no consideration of effects on population levels, i.e. without taking into account the status or trend of local populations or shared stocks throughout their biological range;
- controls on exploitation are not consistent with current understanding of marine turtle biology and marine turtle

Scott A. Eckert/WIDECAST

A Green Turtle *Chelonia mydas* returns to the sea after nesting.

management best practice; in the insular Caribbean, for example, closures rarely encompass the reproductive season, and minimum-size limits target the age classes that should most be protected;

- there is very little monitoring of legal exploitation and only sporadic or fragmentary monitoring where it is conducted, with the result that overall levels of exploitation and trends in those are unknown virtually throughout the region;
- there is very little sustained population monitoring, such that data-based marine turtle population trends are largely unknown;
- some degree of illegal take occurs in every jurisdiction but is largely unquantified (although suspected levels of illegal take were characterized as not a problem for management in several of these);
- the take of eggs, particularly in Central America, is intensive and pervasive;
- levels of incidental take in fisheries are, with a few exceptions, unknown and largely unaddressed in existing management regimes, despite compelling evidence that they constitute the single largest source of mortality in some jurisdictions; and
- habitats, both terrestrial and marine, critical to marine turtle survival have not been identified in most jurisdictions and, where known, often fall outside the boundaries of parks, reserves or other actively managed areas, thus suggesting that the safeguarding of critical habitat for marine turtles has generally not been well integrated into coastal zone planning processes.

8. A growing body of data from flipper-tagging, satellite-tracking and genetic analyses is documenting transboundary movements of marine turtles and delineating individual marine turtle stocks. These data unequivocally point to the need for co-ordinated effort in managing marine turtles that, for example, nest or forage in Bonaire, Barbados, or Costa Rica, where they are protected by law, and travel to, for example, Dominica, Honduras, Nicaragua, Saint Vincent and the Grenadines, or another country where they are legally exploited. In some instances, these contradictory management regimes impinge on non-extractive marine turtle projects, such as at Tortuguero and Gandoca in Costa Rica or at Matura and Grande Riviere in Trinidad, that are generating significant economic benefits to local communities.

Robert van Dam/STCB

Fishermen play a vital role in teaching the next generation about the value of marine biodiversity.

9. The complexity of marine turtle management is clearly a challenge for many governments in the region, who face many constraints in improving their effectiveness. The limited capacity of many of the governments of Small Island Developing States of the insular Caribbean to discharge increasing environmental mandates is one such constraint. The extreme poverty of coastal communities in Central America, who have few economic alternatives to the marine turtle resource, is as serious a challenge as any government can face and has not only regional but hemispheric implications. As inadequate marine turtle management is the result of many economic, cultural and political factors, improvements must be devised that, if not fully address, at least take into account, these many factors. While, in many jurisdictions, marine turtle management is by law already cross-sectoral, it is not adequately integrated at the operational level. Although migratory marine turtles offer the best example of the need for an integrated approach to ensure effective management, this need also applies to other marine resources (e.g. Queen Conch *Strombus gigas*, Spiny Lobster *Panulirus argus* and reef fishes) that are depleted or at risk of depletion.

10. The complexity of marine turtle management across the WCR suggests not only a need for a more concerted, co-ordinated, cross-sectoral approach at the operational level, within governments and among other actors, but also at the diagnostic level. Social scientists, rural development specialists and development assistance donor agencies should engage in assessing the dynamics that dictate marine turtle exploitation and in developing solutions to the factors that underlie over-exploitation. The same attention should be paid to identifying more sustainable patterns of coastal development, as habitat loss—both terrestrial and marine—is identified as a major threat to marine turtle recovery in many jurisdictions.

11. A major finding of this study is that non-governmental organizations (NGOs), including community-based organizations (CBOs), are making large contributions to marine turtle conservation and basic research in the region; in some countries, they are also making large contributions to marine turtle management, including strategic planning, monitoring of legal fisheries and of nesting and other populations, record-keeping, poaching deterrence, training and capacity-building, and public outreach. While this non-governmental investment is generally viewed as positive, there is a need to recognize the essential, fundamental role of government in marine turtle conservation and management and, thus, the need for

Relocating Hawksbill Turtle eggs, in Nicaragua, in an attempt to assure their safety.

C.L. Campbell

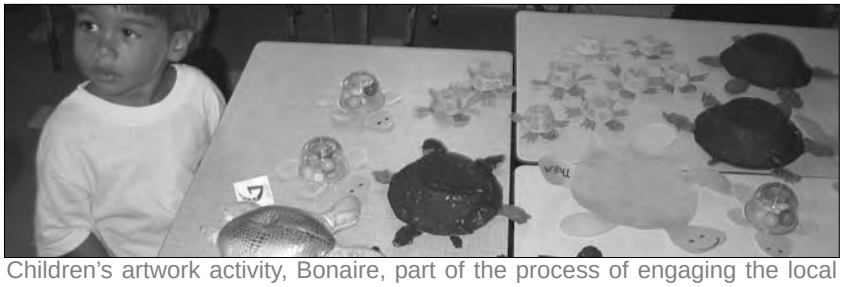
governments to engage—politically, logistically and financially—in this work. The need for sustainability in management, which is complicated by the fact that NGOs and CBOs generally rely for their operations on funds raised from external sources, should be given serious consideration by governments and the donor community.

12. Existing and growing partnerships between government, NGOs, CBOs and local communities, built on shared priorities, pooled resources and equal credit/benefit, offer particular promise in addressing the management challenges facing marine turtles. As one of many examples, in Nicaragua, WCS is working with local communities and relevant government agencies to monitor the fishery for Green Turtles along the Caribbean coast and develop a management and conservation plan for marine turtles in that region. Many locally-based NGOs, such as Nature Seekers in Trinidad, have also been pioneers in this field.

A particularly positive development in recent years has been the increase in "co-management" arrangements between governments and local communities, whereby sustainable-use projects are implemented on the basis of mutually agreed conditions and procedures. In cases where governments have come to terms with the fact that they cannot fulfill their management or enforcement mandates without reliable help from those much closer to the resource, they may grant the community (which generally seeks enhanced economic opportunity) exclusive extraction, eco-tourism or other rights. In return for needed assistance in fulfilling its public mandate to manage the resource, the government provides opportunities for local communities to benefit from the resource. This is the case in Saint Lucia (in a partnership with the Desbarras community), Trinidad (in a partnership with the Matura community and others), Costa Rica (with the [Pacific] programme in Ostional) and elsewhere in the region. These agreements, when thoughtfully constructed, produce real benefits for conservation and sustainable management because stakeholders have a true stake in the health of the affected resource.

13. There are numerous examples documented in this study of innovative approaches to addressing over-exploitation of marine turtles and enhancing their management and conservation. Many of them focus on information-sharing and direct, sustained engagement of local communities and other stakeholder groups and, in doing so, have generated significant interest in and support for marine turtle conservation.

Sea Turtle Conservation Bonaire



Children's artwork activity, Bonaire, part of the process of engaging the local community in appreciation of marine turtle conservation.

Supporting and supplementing these are several dozen field projects sponsored by governments and NGOs in the Wider Caribbean Sea Turtle Conservation Network (WIDECAST), a scientific network affiliated with the Caribbean Environment Programme of the United Nations Environment Programme (UNEP) and providing an operational mechanism for training, communication, collaborative research and the replication of successful programmes across more than 40 participating WCR States and territories.

In Costa Rica, such efforts include an NGO-run certification programme for retail establishments that undertake not to sell marine turtle products and a turtle tourism scheme at Gandoca, whereby, through an arrangement between an NGO (*Asociación ANAI*) and the local community, lodging is provided to turtle researchers, thus generating alternative income for the community and leading to a reduction in egg poaching; in Nicaragua, community meetings and radio spots aimed at informing local communities about marine turtle conservation issues and the results of conservation projects under way have lowered the incidence of Hawksbill Turtle poaching; in Bonaire, a local newspaper has dedicated space for regular updates of the international movements of marine turtles locally fitted with satellite-transmitters; in Antigua, a home-owners association sponsors the hemisphere's most comprehensive Hawksbill Turtle demographic study; in Dominica, the hiring of former marine turtle poachers as beach patrollers has dramatically reduced the killing of nesting turtles in Rosalie Bay; in Trinidad, co-management agreements between the government and coastal communities have eliminated marine turtle poaching while creating new capacity in rural areas for entrepreneurial activity ranging from reforestation programmes to literacy campaigns and youth employment; in Barbados, the University of the West Indies hosts a regional tagging centre, providing training, field equipment and record-keeping software to small-scale marine turtle field projects throughout the region. These examples are drawn from countries examined for this review and, with numerous other initiatives in the WCR, offer an insight into what might be achieved; they also hold promise that developing partnerships between governments, private and corporate interests, NGOs and other sectors may meet with enduring success.

Particularly worthy of note is a multi-institutional, multi-stakeholder effort in Colombia to develop a sustainable-use regime to alleviate heavy, largely illegal commercial exploitation of over 1000 marine turtles per year in

Green Turtle
Chelonia mydas

Caroline Rogers/
US National Park Service

Guajira Department. Bringing together indigenous Wayúu fishers, economists, biologists, and management agencies, a programme has been developed that includes a system of transferable capture quotas for certain size classes of turtles; these would decline in number over time and apply only to local use of meat, thus excluding other marine turtle products and marketing and sale beyond these points. Although this programme has not yet been implemented, the process of its development and analyses undertaken thus far offer numerous suggestions for similar efforts to contain illegal and/or unsustainable marine turtle exploitation in the region.

14. Further improvements in marine turtle management at the national level will clearly involve operationalizing management at the regional level in the WCR. The differing legal protection afforded marine turtles at the national level results in an incoherent regional scenario whereby the same turtles are fully protected in some jurisdictions and legally hunted in others, and investments in management and conservation in one jurisdiction are undermined by inadequate management measures in others. Designing and implementing an integrated, unified, collaborative management strategy for marine turtle stocks using the entire Caribbean basin, under the aegis of regional bodies with relevant mandates, such as the Protocol Concerning Specially Protected Areas and Wildlife (SPAW Protocol) and/or the Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC), is essential. Priority first steps at the national level that can serve as a basis for such a strategy are set out below.

Priorities for immediate action

The **Recommendations** section of this report contains comprehensive guidance for improving the management and conservation of marine turtles in the WCR. Recognizing, however, that addressing the full management needs of marine turtles necessitates a long-term commitment, the setting of priorities for implementation, and consultation with other governments sharing turtle stocks, **immediate**, **first-step priorities for action by governments and their collaborators**, based on the elements specifically evaluated in this review, are to:

1. Establish scientifically based limits on the exploitation of marine turtles. If marine turtle populations are not to be further depleted owing to inappropriate and inadequate restrictions on legal exploitation

C.J. Lagueux/WCS

Jewellery made from Hawksbill Turtle shell being sold openly at the Puerto Cabezas (Bilwi) airport in Nicaragua.

(including in cases where legal exemptions to marine turtle protections exist, such as for subsistence and indigenous uses), measures must urgently be taken to protect the large juvenile and adult turtles that are the most important marine turtle age classes to conserve. Particularly important measures are:

- legal protection for all turtles on land, in order to protect nesting females;
- maximum size limits in order to protect large juveniles and breeding-age animals (the life stages known to have the highest reproductive value); and
- limits on access and codification of use rights, such as specific licences and exploitation quotas for marine turtle fishers and egg collectors.

2. Organize and conduct a comprehensive frame survey (marine turtle catch and use assessment) to quantify and characterize marine turtle exploitation at the national level, including the landing of turtles at sea or hunting on nesting beaches, the exchange and marketing of turtles and turtle products, numbers and types of fishers (and gears) involved, processing and marketing patterns, and the importance to livelihoods of the income derived from marine turtle exploitation. This survey should also aim to assess the role of incidental take of marine turtles in other fishing operations, including the extent to which this constitutes the primary means of capturing marine turtles, the parameters that dictate whether a turtle is landed or killed, and how significant this take might be for marine turtle management.

3. Establish a systematic monitoring programme, including national and regional networks of Index monitoring sites (to document population size and trend *in situ*) and recording requirements for all fishers landing marine turtles. The involvement of fishers should be considered integral to the development and implementation of effective monitoring programmes, which should be designed to offer reliable indications of the numbers of marine turtles captured, the species and sizes, as well as catch-per-unit effort (CPUE), and the importance of the marine turtle exploitation to subsistence and livelihoods. In addition, it should be designed to enable these data to be managed over time so as to serve as a basis for analysis of trends and what these might mean for marine turtle populations and their management needs.

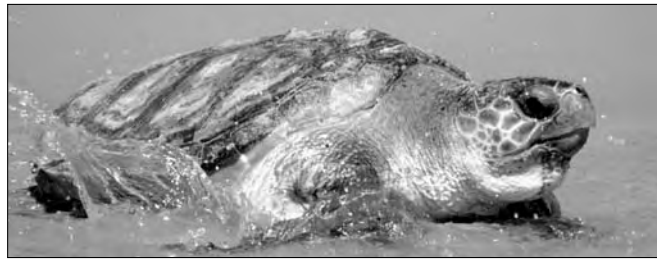
C.L. Campbell

Local onlookers observing the release of a post-nesting Hawksbill Turtle with a satellite tracking device attached to her carapace at Pearl Cays, Nicaragua.

4. Prepare and implement an outreach strategy to increase awareness of and appreciation for marine turtle conservation and management and their relation to the broader national agenda as regards land use and development patterns, biodiversity conservation, economic priorities and cultural norms. Such a strategy should seek to engage multiple sectors—fishers and coastal communities, the tourism industry, and residents and visitors, especially in high-tourism areas.

5. Develop and implement a compliance strategy, including stakeholder workshops; periodic patrols of landing sites and markets and other points of sale, as well as beaches and foraging areas at times of heightened marine turtle activity; and training for members of the law enforcement community and the judiciary. Such a strategy should recognize the deterrent effect of an enforcement presence, which could be made possible through the deputizing of members of the community (cf. Trinidad and Tobago's Honorary Game Warden programme) to support marine turtle enforcement. Proactive, non-punitive judgments—such as those mandating that offenders participate in conservation-related activities, including habitat clean-ups or supervised beach patrols—have been described as successful in some jurisdictions, as have been the operation of marine turtle "hotlines" for reporting and seeking a response to marine turtle infractions and other activities. Greater awareness of and support for the legal norms applying to marine turtles, including the prohibitions in place and penalties that apply, are needed throughout the WCR. Similarly helpful would be the development and dissemination of protocols to follow in cases of specific marine turtle interactions, such as when a turtle is taken incidentally in a net or reported to be injured.

6. Increase government participation in regional agreements that provide an operational basis for a unified, science-based and multilateral response to the management, recovery and sustainable use—whether extractive or non-extractive—of marine turtles in the WCR. The most prominent of these agreements are the SPAW Protocol to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, or Cartagena Convention, and IAC. Sub-regional agreements, such as the trilateral *Acuerdo de Cooperación para la Conservación de las Tortugas Marinas en la Costa Caribeña de Costa Rica, Nicaragua y Panamá* (*Acuerdo Tripartito*), provide additional possibilities for co-operation in management efforts for these species.



Loggerhead
Caretta caretta

WWF-Canon/Isaac Vega

In April 2001, TRAFFIC published the results of its investigation of marine turtle exploitation and trade in the northern Caribbean (the USA, Mexico, Bermuda, and Greater Antilles). Following on the findings and recommendations of this report, TRAFFIC undertook a complementary study focusing on the Lesser Antilles, Central America, Colombia and Venezuela. The findings now presented are the result of consultation, research, analysis and synthesis conducted by the authors over a period of nearly three years, drawing on their own decades of experience and expertise and those of many others in the region. This report aims to form the basis of an open, deliberate, constructive dialogue between governments and other stakeholders in the Wider Caribbean Region regarding shared needs and responsibilities for marine turtle management.

TRAFFIC, the wildlife trade monitoring network, works to ensure that trade in wild plants and animals is not a threat to the conservation of nature. It has offices covering most parts of the world and works in close co-operation with the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

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