

# Research and Management Techniques for the Conservation of Sea Turtles

Prepared by IUCN/SSC Marine Turtle Specialist Group

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## Preface

In 1995 the IUCN/SSC Marine Turtle Specialist Group (MTSG) published *A Global Strategy for the Conservation of Marine Turtles* to provide a blueprint for efforts to conserve and recover declining and depleted sea turtle populations around the world. As unique components of complex ecosystems, sea turtles serve important roles in coastal and marine habitats by contributing to the health and maintenance of coral reefs, seagrass meadows, estuaries, and sandy beaches. The *Strategy* supports integrated and focused programs to prevent the extinction of these species and promotes the restoration and survival of healthy sea turtle populations that fulfill their ecological roles.

Sea turtles and humans have been linked for as long as people have settled the coasts and plied the oceans. Coastal communities have depended upon sea turtles and their eggs for protein and other products for countless generations and, in many areas, continue to do so today. However, increased commercialization of sea turtle products over the course of the 20<sup>th</sup> century has decimated many populations. Because sea turtles have complex life cycles during which individuals move among many habitats and travel across ocean basins, conservation requires a cooperative, international approach to management planning that recognizes inter-connections among habitats, sea turtle populations, and human populations, while applying the best available scientific knowledge.

To date our success in achieving both of these tasks has been minimal. Sea turtle species are recognized as “Critically Endangered,” “Endangered” or “Vulnerable” by the World Conservation Union (IUCN). Most populations are depleted as a result of unsustainable harvest for meat, shell, oil, skins, and eggs. Tens of thousands of turtles die every year after

being accidentally captured in active or abandoned fishing gear. Oil spills, chemical waste, persistent plastic and other debris, high density coastal development, and an increase in ocean-based tourism have damaged or eliminated important nesting beaches and feeding areas.

To ensure the survival of sea turtles, it is important that standard and appropriate guidelines and criteria be employed by field workers in all range states. Standardized conservation and management techniques encourage the collection of comparable data and enable the sharing of results among nations and regions. This manual seeks to address the need for standard guidelines and criteria, while at the same time acknowledging a growing constituency of field workers and policy-makers seeking guidance with regard to when and why to invoke one management option over another, how to effectively implement the chosen option, and how to evaluate success.

The IUCN Marine Turtle Specialist Group believes that proper management cannot occur in the absence of supporting and high quality research, and that scientific research should focus, whenever possible, on critical conservation issues. We intend for this manual to serve a global audience involved in the protection and management of sea turtle resources. Recognizing that the most successful sea turtle protection and management programs combine traditional census techniques with computerized databases, genetic analyses and satellite-based telemetry techniques that practitioners a generation ago could only dream about, we dedicate this manual to the resource managers of the 21<sup>st</sup> century who will be facing increasingly complex resource management challenges, and for whom we hope this manual will provide both training and counsel.

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## Grassroots Stakeholders and National Legislation

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Prior to the 1960s, there was little concern on the part of national governments for the welfare of marine turtle populations. Although at that time most countries already had national conservation legislation, specific regulations for the protection and management of marine turtles were incidental, perfunctory, or non-existent. With the growing realization during the past few decades that virtually all marine turtle species were threatened with extinction, and that a renewable natural resource with economic, cultural, and ecological value may be lost, international agreements and national legislative measures gradually emerged in order to mitigate, or even call a halt to, human exploitation of marine turtles. While the aim of such legislation has been to rebuild depleted populations, and thus save these species from extinction, the results have been mixed.

In most countries, new regulations to protect marine turtles were integrated into an already existing framework of general conservation laws. This was not always an ideal codification for the intended protection. For example, in many countries sea turtles were (and still are) considered to be both fisheries (while at sea) and wildlife (while nesting on land) resources, and as such are often placed under the separate jurisdictions of both Fisheries and Wildlife departments. This has caused confusion and controversy, and in some cases clearly contradictory legislation. Moreover, rather than enjoy the attention and resources of two regulatory agencies, marine turtles have often been neglected, with each agency considering them to be the other's obligation. It must, therefore, be strongly recommended that clear lines of jurisdiction be established in conservation legislation for marine turtles, and that overlapping departmental responsibilities (and other excuses for neglect) be avoided.

Nearly universal principles (*e.g.*, sustainability, stewardship, accountability) are evident in conservation law at the national level. Nevertheless, there is an inevitable variation in detail because, aside from an obvious emphasis on the protection of natural resources, a nation's laws are also based on economic priorities and domestic culture. The cultural aspect is uniquely important. If stakeholders feel the law is unjust and contrary to what they deem to be their traditional right(s), it will be violated, defeating the original intent of the legislation. Therefore, an important consideration in the development of new conservation legislation, or in making adjustments to existing legislation, is an attempt at consensus, most of all among local and indigenous people because these are the people that are often affected the most but consulted the least.

Involving stakeholders, especially those who may be geographically or politically isolated, is never easy (see Frazier, this volume). To promote dialogue and encourage consensus, public hearings should be conducted before any political decision is made. These hearings should be in the form of "town hall" meetings or debates at the grassroots level. It would be a mistake to discuss the proposed legislation solely with local politicians or community leaders. Experience has shown that, while these leaders may endorse or agree with certain regulations, they do not always have the mandate of the entire village or region. Ensuing increased poaching by disappointed malcontents then often becomes an outlet of their disagreement with the law. Development of conservation legislation would therefore not be the exclusive realm of politicians, nor should a single special interest group be allowed to unduly influence the legislative process. Decision makers should also have the wisdom to con-

sult specialists on the ramifications of the proposed legislation. The primary purpose must be to look at all facets of the issues at hand, and this can best be accomplished by a multidisciplinary approach.

While keeping the above points in mind, the conservation advocate must also ensure the integrity of the legislative process. For example, if grassroots dialogue has clearly established a firm recalcitrance on the part of hunters to curb the level of exploitation, or the “compromise” put forward is to protect eggs and hatchlings but not nesting females, then the next step is not to codify the compromise in legislation (for this will only ensure extinction), but to delve more deeply into the issues involved. What is the basis of the harvest? Is it protein? Income? Trade? Status? The root must be found and agreed upon, and then the dialogue renewed with an aim to meet the need by means other than killing sea turtles. Solutions might include making investments in alternative sources of income (*e.g.*, under-exploited fisheries, cottage industries, resource protection/conservation, eco-tourism) and/or protein (*e.g.*, goats, chickens, pigs, iguana, small-scale mariculture). Creative financing will almost certainly be needed.

Not only must the ultimate solution take into account the survival of both the hunter and the hunted, it must go beyond legislation or social programming designed to enhance the survival of indigenous people and/or depleted marine turtles. Since threats to marine turtles go far beyond the direct effects of human exploitation, protective legislation alone will not suffice to mitigate the problems or promote population recovery. Nesting beaches are being destroyed at unprecedented rates to accommodate the fastest growing industry in the world: tourism (see Witherington, this volume, for a discussion of threats to nesting habitat). Increasing rates of harvest of shrimp and fish cause death to numerous non-target species, including tens (if not hundreds) of thousands of marine turtles every year (see Oravetz, this volume). Supporting or complementary regulations and rules for other sectors within the legislative framework are often needed to encompass the entire spectrum of threats facing marine turtles in a particular country.

As in any advocacy process, the first step is to assemble the facts. If marine turtles are depleted, there must be a reason. The reason is likely to be some combination of local harvest, harvest elsewhere in the population’s range, incidental catch in national or extraterritorial waters, and/or habitat degradation. The mechanisms to provide optimum protection to ma-

rine turtles will differ among nations and no unified set of laws will be appropriate. But there are general guidelines that can help conservationists to recommend legislation both to stakeholders and to lawmakers that will conform closely to international standards. With an aim to promote sustainable populations, the following points should be kept in mind: (1) all locally occurring populations should be afforded the protection necessary to promote healthy population levels; (2) restrictions should be placed, as necessary, on both direct and incidental take; (3) penalties and fines should be commensurate with product value and there should be provision for the confiscation of equipment (including boats and vehicles); (4) conflicting or contradictory legislation should be identified and repealed; (5) legislation should also be enacted or strengthened to protect critical habitat; and (6) relevant international agreements should be supported by national law.

If population recovery is the primary goal, some measures must, of necessity, be non-negotiable. Adult turtles, and especially females on the nesting beach, should be protected at all times and under all circumstances. Eggs should not be harvested unless it can be convincingly demonstrated that the collection quota consists of eggs which are otherwise doomed. It is an unfortunate reality that there are very few places in the world where this case can reasonably be made. At the present time, there are closely supervised and generally successful national egg collection initiatives in Costa Rica and Suriname. In the former case, successive *arribadas* of huge numbers of olive ridleys predictably exhume large numbers of incubating eggs laid early in the season. In the latter case, more than a million eggs are destroyed each season by cyclical erosion or other natural causes; a fraction of these doomed eggs are harvested and sold to the public. Only at isolated sites in Costa Rica, Mexico, and India do sizable olive ridley *arribadas* still occur, and few nations of the world have a coastline as dynamic as Suriname’s.

The plight of marine turtles is so dire in most parts of the world that an indefinite moratorium on the harvest of turtles and eggs would be the only defensible option if biological considerations were all that had to be taken into account. In reality, time may be needed to involve stakeholders in the conservation agenda, and thus legislative advocates might consider codifying a future date certain, after which the harvest will cease to be legal. During this time, hunters, vendors, and consumers should be prepared for a moratorium—

nets should be purchased, alternatives offered, public education undertaken, and enforcement capacity strengthened. Once established, a moratorium on the capture and sale of sea turtles, their eggs, and products should not be lifted until such time as there is sufficient information to show that a regulated harvest will not compromise the full recovery of depleted populations.

If the obstacles to a full moratorium are insurmountable, advocates should emphasize to legislators the urgent need for national legislation which imposes a closed season that fully encompasses the nesting period for all species. If size limits are imposed to protect breeding age adults, such limits ought to be based on criteria that can be met at the point of capture; *e.g.*, shell length, as opposed to weight. If criteria cannot be assured at the point of capture, turtles should be landed alive (potentially lethal capture methods, such as spearing, should be banned). Logic should be used at every step. For instance, in addition to establishing a closed season on capture, the possession and sale of turtle products should also be prohibited during the annual closed season. In this way, possession is not easily excused by protesting that the turtle had been landed during the open season. If hawksbill turtles (*Eretmochelys imbricata*) are protected, the domestic sale, import, and export of tortoiseshell should be explicitly banned and export legislation should be modified to reinforce conservation statuses.

Throughout the advocacy process, conservationists should make every attempt to ensure the accuracy of their data. For example, trends might be emphasized as opposed to precise population estimates if trend data are available and precise population estimates are not available (see Gerrodette and Taylor, this volume, for a discussion of estimating popula-

tion size). Many politicians are well-informed and for proponents to promote passage of conservation legislation they must present well-formulated and well-documented arguments. To base petitions on superficial data or to advocate decisions based on emotional rhetoric would be foolhardy, especially in view of compelling arguments for the *status quo* likely to be presented by special interest lobbies. Proponents should also seek to express the value of the marine turtle resource in economic terms (*e.g.*, sustainable income from tourism) or functional value. Ethical or aesthetic considerations should never be compromised, of course, but most politicians are swayed primarily by economic arguments.

Finally, in establishing national conservation legislation for sea turtles, one should strive to make it compatible with, and complementary to, international agreements (see Hykle, this volume). It is one thing to ratify the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) or other international treaties, but quite another to ensure that national laws do not negate the goals of these various treaties.

In summary, national legislation should be clear in its intent, equitable in its objectives, uncompromising with regard to the basic biology of sea turtles (*e.g.*, recognizing slow growth, delayed maturity, and the unique importance of gravid females), adequate in the areas of enforcement and penalty, holistic (*e.g.*, include habitat protection), and harmonized with relevant international obligations. The involvement of stakeholders in the design and enforcement of conservation law should always be honestly and openly sought. Marginalizing the participation of grassroots stakeholders nearly always ensures the failure of national conservation law.