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 20th 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 21st 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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Table of Contents

4. Data Collection and Methods

5. Reducing Threats

6. Husbandry, Veterinary Care, and Necropsy

7. Legislation and Enforcement

Interviews and Market Surveys

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Interviews

Interviewing is the process of compiling information and viewpoints by verbal questions, discussions or meetings. Interviews provide opportunity for: (1) obtaining information in an inexpensive and time-saving manner; (2) summarizing the experience of knowledgeable people; (3) compiling information that has been maintained only in an oral tradition or when written information is scarce; (4) supplementing data collected by direct observation; (5) sharing of information; and (6) collaboration.

There are different types of interviews, recording methods, approaches to conducting interviews *(e.g.,* question structure), and interpreting the information compiled. The recommended method could be one of those described below, or a combination thereof. Effort should be made to tailor methods to the situation with careful understanding of the politics surrounding the information to be compiled, the people to be interviewed (= interviewees), and the interviewer's own position. Preliminary visits to a location and discussions with residents provide insight into the best approach. Critical information can be lost if the interviewer does not understand the vocabulary, interpretations, and politics of the persons being interviewed, and likewise, if the person being interviewed does not understand the interviewer in a similar way.

Interviewing requires a few basic requirements of the interviewer: be prepared, listen carefully, be clear and concise, be courteous and appreciative, be respectful, be patient, and be perceptive. Know the language, or work closely with an interpreter accepted politically and culturally by the interviewee and whose personal opinion does not affect the translation.

Designing Questions for an Interview

A good interview depends on carefully designed questions (see Appendix I for guidance) which incorporate local terms, names, and phrases to facilitate interaction and familiarize the subject matter. Critical information is lost when the interviewee does not understand the vocabulary used in the questions.

To identify misunderstandings and/or discrepancies in the information compiled, a number of different questions aimed at obtaining the same information should be posed. If the answers to these related questions are similar, the quality and accuracy of the information are acceptable. Answers to similar questions can be used to assess how the interviewee is reacting to the interviewer's presence or questions *(e.g.,* openness vs. caution), and how honest and knowledgeable the interviewee is about the topic.

Questions should be phrased so as not to indicate the interviewer's own interpretation of a situation, or give the interviewee insight into what the interviewer would like to hear. If the questions are slanted to a certain position, the interviewee can often identify this bias, and may, sometimes out of courtesy, provide answers to the questions in support of the interviewer's viewpoint.

Depending on the question, the interviewer may need to understand how the person being interviewed arrived at a conclusion. The interviewer should not hesitate to inquire how such information was determined. However, such an inquiry should not be done in a manner that questions the knowledge, experience, or authority of the interviewee.

Types of Interviews

a) Questionnaire: A questionnaire is a printed list of questions with space to record answers. Questionnaires help to standardize information, which can be helpful when compiling or comparing information across multiple sources. However, questionnaires limit opportunities for expanding discussion of a topic based on new knowledge generated during an oral interview. Such limitations can be overcome to some extent by designing questions that are broad, and based on preliminary tests of the questionnaire.

When time is limited, quantitative information is sought, and a large sample size is required, questionnaires can provide the most productive results. Questionnaires also allow easier recording of information and simplified comparative and statistical analyses. Questionnaires can be completed by the interviewer, by the interviewee in the presence of the interviewer, or completed and sent (by mail or other means) to collection centers, such as a conservation agency or organization.

b) Using Lead Questions: Essentially a question and answer format, this method uses lead questions to solicit specific information (as opposed to promoting an open-ended discussion) about an issue and compile the larger knowledge and insight of the interviewee without limiting the number or the scope of the questions. This method is better than the questionnaire method when the interviewer has little knowledge about a situation. This method can also be used effectively to compile basic terms, names, phrases, and gain an understanding about the politics of a situation that could later be used to develop an excellent questionnaire. Due to the less structured nature of this method in comparison to questionnaires, a good balanced interview can emerge, yielding both qualitative and quantitative information.

c) Open (Open-Ended) Discussions: This is the least structured format and requires a greater degree of language skill and socio-political sensitivity on the part of the interviewer in order to accomplish a successful interview. In this method the interviewer may provide the lead questions or statements, and the interviewee may carry the discussion in a variety of directions and depths. Sometimes the only cue that the person being interviewed may need is the topic of interest. This method is excellent for understanding larger, more complex issues, such as attitudes and conflicts. It often brings out information, connections, and interactions that were previously unknown to the interviewer.

This method offers the best situation for dialogue and sharing between interviewer and interviewee. It is also an effective method when interviewing a group, where people will prompt each other into discussing the issue at hand while asking questions of each other and of the interviewer. It is most effective when time is not a limiting factor. This method has been found to be most compatible with the cultures of most rural communities in developing countries, where a questionnaire may be viewed as an interrogation. However, open-ended interviews can be more difficult and time-consuming to record, and the more qualitative nature of the process makes statistical analyses difficult.

Methods for Recording Information

The method used to record an interview is as important as the interview itself. The recording method depends primarily on what is comfortable for the person being interviewed. People are often uncomfortable with having their thoughts recorded. The situation can be improved through prior collaboration, understanding, or agreement. Recording methods are:

a) Handwriting: Using this method, blanks are filled on a printed questionnaire or abbreviated notes (or detailed answers) are recorded in a notebook.

b) Tape Recording: Although using a tape recorder documents an interview most accurately, it can be intimidating to the interviewee. Seek permission before beginning an interview; if the interviewee is hesitant, agree on a less intimidating method. Use of a hidden recorder is unethical and can have negative, sometimes unsafe, repercussions, which can cause distrust and hinder continued work in the area.

c) Photographic Memory: In this method, the interviewer memorizes a series of topics for which information is sought, remembers the interviewee's answers, and later records the answers. This method relies heavily on the interviewer's memory to recall the conversation accurately, and therefore runs the risk of being misrecorded, especially with long interviews. From the viewpoint of the interviewee, this method resembles a conversation and is the least intimidating.

d) Photography and Videography: Audio-visual records can be used to document and/ or supplement information provided by the interviewee. Visual imagery allows the interview to be revisited or reinterpreted at a later time, or to identify locations, distances

and associations. It can also be used to assist in identification and illustration during interviews.

e) Map Supplements: Maps can be used to compile information on locations and distributions referred to by the interviewee, and/or to present historical associations and trends.

Interview Process

The interviewer must establish him/herself and his/her methodology carefully, as the interviewer and the methodology can influence the interview process and the information compiled. If the interviewer is not careful in setting the "stage" for the interview, people interviewed will interact with or answer the interviewer in a "safe" manner (so as to protect themselves). The following process, although not exhaustive and not always applicable, may assist in conducting a productive interview:

First, make preliminary visits to become familiar with the location and the people. Seek collaboration with an organization or people from the area. Compile locally used terms, names, and phrases *(e.g., sea turtle species, nesting/foraging sites, turtle products/uses).* Determine locally conducive conditions for an effective interview *(e.g.,* times which do not obstruct livelihoods or lifestyles; appropriate locations). Determine the best interview method (or combination) from those described above. Develop questions and test them informally. Identify persons to be interviewed.

Introductions are very important. The interviewer should ensure appropriate and unbiased introductions, as interviews can be greatly enhanced or hurt by the political affiliation of the introducer and of the supportive organization(s). Explain the purpose of the interview and of the information that will be compiled. Encourage the interviewee to ask questions of the interviewer, so as to prevent the feeling of an interrogation. Agree on place and time of interview, method of interviewing and recording, amount of time available, how information will be used and conditions for such use *(e.g.,* compensation, credit, sharing of information summaries). Record the identity of the interviewee (if the person is willing to offer that information), and pertinent background information, such as livelihood and experience.

Finally, conduct the interview(s). Record and cross-check information through subsequent visits to the same locality and follow-up meetings with interviewees and others. Provide compensation (monetary or material) if that was part of the interview agreement. Share with the person being interviewed local and worldwide information on turtles and other issues discussed, including materials which can be retained by the interviewee. Analyze data and prepare summaries and reports. Circulate reports that include interview information among organizations, collaborators and, where appropriate, those who participated in the interviews, and update the information obtained through periodic communication.

Interpreting Interview Information

The quality of the information compiled and the strength of its interpretation depend on many issues: methodology, understanding local vocabulary and interpretations, biases, expectations, and the political nature of the issue. The types and limitations of the information must be known before any form of interpretation or analysis is conducted.

a) Quantitative Information: Statistical analysis is appropriate when quantitative information has been compiled in a standardized manner across an adequate sample size. Subjective answers such as "many turtles" cannot be statistically analyzed, although "about 100-150 turtles" can provide a workable range. Obtain numerical values (or ranges) or yes/no answers whenever appropriate.

b) Qualitative and Anecdotal Information: Such information can include opinions, ideas, reactions, and general observations, even information that is considered unimportant in the daily activities of those interviewed. Analysis here is more difficult, as there are more variables involved. Distilled information can reveal the magnitude of a problem, diversity of opinion, and degrees of complexity surrounding solutions. To attempt to quantify all aspects of conservation, especially when conservation is such a political issue, would mean losing valuable information about the diversity of people interacting with sea turtles and their conservation.

Some information may seem false or ridiculous to the interviewer. However, discarding this information without verification can bias the information compiled in favor of the interviewer's own expectations. Testing such "questionable" information through direct observation or further inquiry could indicate that the information is true, reveal an innovative explanation for an observation, or reveal attitudes or biases towards a certain issue.

c) Interpreting Sensitive Information: Since sea turtles are protected in most locations, and yet continue to be utilized by many coastal and island communities in these locations, compiling information

about turtles from these same people can be challenging. How interviewees respond to being questioned on controversial issues will influence the accuracy (and therefore should influence the interpretation) of the interview information.

Interview Ethics

Interviewing is often practiced as the collection of information. However, ethical research calls for an exchange or sharing of information in interviews, so that information does not serve only the objectives of the interviewer. With the greater recognition and enforcement of intellectual property rights, interviewers must be aware and acknowledge the value of knowledge imparted during interviews. Mutual gain and equitable exchange must be the expected outcomes of an interview.

Information compiled has often been used against the very people who provided that information, especially on controversial issues such as sea turtle utilization. In such situations the result is often greater distrust of interviewers and researchers who may follow, as well as opposition to programs implemented using such information. An interviewer is responsible for ensuring ethical outcomes from information compiled through an interview.

The identity of people who are interviewed based on an agreement of anonymity should not be revealed. Further, if the interviewer has received information confidentially such information should not be made public unless agreed upon by the source person, and the person's anonymity has been ensured. Depending on the sensitivity of the information, the promise of anonymity can be fulfilled by erasing a person's name, address, photograph and video recording, and the date and location of the interview.

Market Surveys

Market surveys use interviews and observation to compile and assess information on: (1) levels and types of sea turtle utilization and commercialization; (2) structure and organization of local, national or international markets; (3) increasing/decreasing product availability; (4) role and importance of turtles in the diet and income of the people in the area; (5) cultural connections to turtles; (6) attitudes to turtles as a commodity; (7) conservation programs; and (8) ecological information (such as seasonality, distribution, and numbers of individuals of different species and size classes in the area frequented by turtlers).

Items for sale at markets include whole turtles, meat, eggs, shell products *(e.g.,* jewelry, trinkets, souvenir shells), stuffed turtles, mounted parts, extracted products *(e.g.,* soaps, lotions, oils) and prepared foods *(e.g.,* turtle soup, grilled steak, drinks with raw eggs). Where the sale of sea turtle products is illegal, obtaining accurate information from market surveys is difficult. This limitation has to be considered carefully when planning, conducting, and analyzing a market survey. Because market surveys are largely based on interviews, methodology explained above will be useful.

Market Survey Process

a) Locate Markets: Determine where fish and meat markets are; explore and inquire for turtle products. Visit beaches and inquire from people collecting turtles and turtle products where their products are sold. Check garbage piles and other disposal sites associated with markets for turtle remnants, especially shells.

b) Locate Vendors: Visit and converse with vendors, or be introduced by a respected individual. Be aware of politics between vendors and your introducer or those accompanying you. A controversial accomplice could jeopardize the representation and accuracy of your survey.

c) Explain Survey Objectives and Use of Information: Solicit participation in the survey through collaboration and support from a vendors' organization or other form of respected leadership.

d) Extend Courtesy: Respect the wishes of individuals who do not want to participate in the survey, and understand their concerns. Their concerns may provide insight into other more appropriate survey techniques and the complicated and sensitive nature of turtle sales.

e) Solicit Information: Interview vendors, consumers, and middle-merchants (see Appendix II for questions).

f) Observe Market Activities: Spend a day at the market, with a vendor, or follow a group of captured turtles from the collection point to the final consumer.

g) Verify Information: Cross-check and ground-truth information compiled by observation and supplementary interviews of the same vendors or other persons in the area. If possible, visit the same market or location over a period of time to compare information compiled at different times of the day, on different days of the week, and between seasons.

h) Follow-up: Provide feedback to interviewees on survey results, discuss relevance of information, and

discuss potential problems and solutions. Share information on sea turtles in the area and worldwide; if appropriate, offer materials to the interviewee to keep.

A similar process is recommended when surveying for worked products; that is, the retail sale (often but not always to foreign tourists) of tortoiseshell items, painted whole shells, and restaurant fare.

Appendix I

General Questions for Compiling Information on the Ecology and Conservation of Sea Turtles in a Locality

Biology, Status, and Distribution

1) How many turtles are seen in this area (abundance; number seen per day per distance or area unit, how many nests per distance or area unit)?

> What types or species? How do you identify species (descriptions or diagnostic characteristics)? What names are used locally? Which turtles are the most common? Can you rank them in abundance?

[Note: Later, use color photographs to obtain further identification and verification.]

2) Where are turtles found (habitats)? What are they doing there?

> What times of the year (seasonality) are the turtles encountered? When is the peak period? Are turtles seen moving through the area? Where do you think they come from and where do you think they are going?
>
> What sizes and sexes are seen? How do you tell the difference? Where is each group found? During what times of the year?

3) How many turtles were found in the area (specify nesting, foraging or captured) 10 / 20 / 50 years ago? Why has a change occurred?

> What are some of the ways turtles die or are killed or are lost in the area *(e.g.,* human utilization, habitat destruction, incidental catch)? How many? Where? When?

Utilization and Commercialization

4) Does turtling occur in the area? Are turtles and turtle products sold locally, nationally or internationally?

> How many turtles are caught (species, sizes, sexes)? How, where, when, and how often are they caught?

5) What are they used for (products: meat, eggs, etc. and purpose: daily food/subsistence, for commercial sale, ceremony/cultural use, etc.)?

> How many people are involved with catching and distributing turtles/products? Has this number changed in recent years/decades?
>
> How much of food and/or income is obtained from turtles in relation to daily diet and sources of income?
>
> What percentage of people in community regularly utilize turtles?

6) What are the selling prices of turtles and their parts?

> Since when have sea turtles been utilized as a source of food/income?

[Note: See Appendix II for more questions relating to Market Surveys.]

Laws and Conservation Programs, and Attitudes towards Them

7) Are there local agreements or laws that control the collecting of sea turtles? Are they working? Why? Who enforces them? How are people's lives and livelihoods touched by them? How have they responded? Are they necessary/unnecessary? Are they fair/unfair?

> Are there any conservation programs in the area? Do they include sea turtles? What turtle conservation activities are undertaken? Who is in charge of these programs? Are people from the area involved with these programs? What do the people in the area think about these programs? Where do the funds come from for these programs?

8) Are there any government agencies or other organizations managing sea turtle projects in the area? Who are they? What do they do? What do the people in the area think of them and what they do?

> Has any information been shared with the people in the area about the turtles? By whom? What kind? When? How was it received?

9) Have flipper (or other) tags been seen on any turtles? Are these tags collected? What is done with collected tags? What do you think these tags are (purpose, origin)?

Information on the Locality

What is the spoken language?

10) How many people live here? How many communities? What are the names of the communities?

How long have the people been in the area? How do they identify themselves, by what name?

11) What are their common livelihoods? How long have they been in these livelihoods?

What facilities are available in the area (school, hospital, hotel, industry, port, etc)?

12) What is the total area of coastline/ reefs/ seagrass in the area? What are the names of the locations (waters, beaches)?

Information Source (Interviewee)

13) Name

Address

14) Occupation / numbers of years in occupation

Sex / age

15) Date and location of interview

Appendix II

General Questions for Compiling Information on Market Aspects

Market Survey Information

16) Name and location of market, retail outlet, or restaurant.

Date, day of week, and time visited.

17) Numbers of vendors offering sea turtles, turtle parts, and turtle products.

Numbers of turtles, species, sizes, and sexes.

18) List of items, frequency/seasonality of availability, and popularity/demand of selected items.

Prices of items for sale by item, size, or weight for whole turtles, parts, and products, including cost to vendor to acquire items offered for sale. Prices may vary by demand and supply of turtles, as well as time of day *(e.g.* vendors in localities without cold storage may try to dispose of remaining meats and eggs towards the end of the day at relatively low prices).

19) Sources of turtles, turtle parts, and products, including locations of collection from the ocean/ beach, seasonality, locations and livelihoods of collectors, presence of middle-buyers/sellers.

Intended consumers: purpose of and reason for purchase *(e.g.* food, decoration, ceremony/ festivity, belief, resale, home use, restaurant/bar).

20) Organization of market and vendors. This information may provide insight into price determination and price fluctuations, competition, control of the number of vendors selling turtle items, and the presence/absence of a participatory body in turtle conservation activities.

21) Record the number of vendors surveyed (also record this as a percentage of the total number of vendors at that location) to determine sample size and statistical reliability.