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Assesment about the Trade of the Sea Turtles and their products in the Central America isthmus

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Didiher Chacón

PREFACIO

Las tortugas marinas en Centroamérica se cuentan entre los recursos naturales compartidos más valorados ecológica y económicamente. A causa de sus hábitos migratorios y su amplia distribución, el consumo de las tortugas marinas y sus productos en un país tiene implicaciones para el manejo y la conservación de esas especies en países vecinos. Verdaderamente, las características extraordinarias del ciclo de vida de las tortugas marinas requieren una responsabilidad para el manejo y la conservación efectivos de las poblaciones migratorias, que se extiende aún más allá de los Gobiernos de América Central para incluir los Estados de distribución a través de los océanos adyacentes.

Para lograr el manejo sustentable, sea para propósitos de consumo o no consumo, un marco regulatorio armonizado y un régimen de manejo compatible de la administración deben ser aplicados entre los Estados de distribución. Con este fin, varios tratados internacionales alentan la acción colaborativa hacia objetivos compartidos. En el caso de la Convención para el Comercio Internacional de Especies Fauna y la Flora Silvestre en Peligro de Extinción (CITES), el objetivo es aminorar las amenazas asociadas con el comercio de especies en peligro de extinción. Otros tratados, incluyendo el Protocolo con respecto de Áreas y Fauna Especialmente Protegidas (Protocolo SPAW) de la Convención de Cartagena (UNEP) y a la recientemente puesta en vigencia, Convención Interamericana para la Protección y la Conservación de Tortugas Marina, que fomentan explícitamente la planificación y el manejo nacional y regional.

Individualmente las naciones en América Central protegen las tortugas marinas en mayor o menor grado y la mayoría de estos Estados son parte en múltiples tratados. Sin embargo, hay mucho por hacer con respecto de la armonización del marco regulatorio, el mejoramiento de la capacidad de la aplicación y facilitación en el monitoreo de conformidad con la legislación nacional e internacional y a las obligaciones del tratado. El primer paso para hacer recomendaciones a este respecto debe ser valorar la magnitud por la cual las tortugas marinas continúan siendo usadas y comerciadas dentro y entre los Estados de América Central.

Esta evaluación regional, la primera en su clase, fue emprendida entre el 2001-2002 por la Red Regional para la Conservación de Tortugas Marinas en la América Central (RCA) en asociación con la Red Caribeña para la Conservación de las Tortugas Marinas en el Gran Caribe (WIDECAST). Es claro por los resultados de esta evaluación que, sin embargo, las normas de CITES, la recuperación del estado crítico de peligro de extinción (cf. IUCN 1996) de la tortugas carey (***Eretmochelys imbricata***) continúa comprometida por altos niveles de comercio ilegal de productos sin documentar y no mitigados, especialmente de artículos de caparazón. A la vez, cuando la economía de varias naciones, especialmente en comunidades costeras, depende del incremento de las rentas del turismo por ecoturismo con tortugas marinas, las implicaciones graves del comercio ilegal progresivo en productos de tortuga marina no se puede ignorar.

El proyecto incluyó la capacitación de los actores claves, un inventario de los productos y las violaciones del comercio, además del desarrollo de acciones mitigantes, así como recomendaciones para incrementar el conocimiento y la participación de la sociedad civil y las acciones prioritarias por tomar por los administradores públicos. El estudio informa sobre comercio de caparazón, huevos, carne, aceite, grasa, pene y otros productos, documentando tanto el origen como el mercado final. Los resultados proveen una importante herramienta para ayudar a las autoridades CITES de Centroamérica a tener un mejor entendimiento del nivel del comercio en la región, incluyendo el funcionamiento del

control y los mecanismos de aplicación, las relaciones entre el tráfico nacional y el internacional, además de recomendaciones proveídas por expertos.

El estudio concluyó que el comercio ilegal y el tráfico internacional de las tortugas marinas y sus productos son dispersos y la amenaza establecida por este comercio ilegal es seria. Muchas de las poblaciones explotadas son remanentes de su tamaño anterior y la captura de tortugas, incluyendo hembras con huevos de vientre, continúa, a pesar de la falta casi total de información, con respecto del tamaño de población o niveles sostenibles de cosecha. Con la esperanza, de proveer a los administradores y el público en general de una herramienta para revertir esta situación, la RCA y WIDECAST diseñaron, basados en los resultados de esta evaluación, un plan de la acción para eliminar el comercio de carey en Costa Rica (que se espera será replicado en otros países de América Central), se desarrolló un taller nacional de capacitación (en Costa Rica) en el tema del comercio ilegal, de desarrollaron y distribuyeron materiales para la información pública, así como la creación de un plan de certificación para vendedores y comerciantes dispuestos a abstenerse del tráfico ilegal.

El control efectivo del uso y comercio del producto es un componente importante de cualquier régimen de manejo sostenible y el control efectivo sólo puede ocurrir con la presencia de información segura en la extensión por la cual el comercio ocurre. Es la esperanza que este estudio contribuirá significativamente tanto a responder tanto a la efectividad regional como a la creación nacional de normas como una respuesta al reto del uso ilegal y no regulado así como el comercio de productos de las tortugas marinas en la región centroamericana. El progreso hecho por las naciones de América Central inspiraría a otras naciones del ámbito de distribución para evaluar su papel en el tráfico ilegal de productos de tortuga marina y para unir las naciones de América Central para aplicar soluciones creativas y cooperativas para esta penetrante amenaza internacional a la sobrevivencia de la tortuga marina.

Karen L. Eckert, Ph.D.
Directora Ejecutiva
WIDECAST

Junio, 2002

PREFACE

Sea turtles are among the most economically and ecologically valuable shared natural resources in Central America. Because of their migratory habits and wide dispersal, the consumption of sea turtles and their products in one country has direct implications for management and conservation of these species in neighboring countries. Indeed, the unique characteristics of the sea turtle lifecycle requires that responsibility for the effective management and conservation of their migratory populations extends even beyond the Governments of Central America to range states throughout the adjacent oceans.

To achieve sustainable management, whether for consumptive or non-consumptive purposes, a harmonized regulatory framework and a compatible management regime must be implemented among range states. To this end, several international treaties encourage collaborative action toward shared objectives. In the case of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the objective is to minimize trade-associated threats to endangered species. Other treaties, including the Protocol concerning Specially Protected Areas and Wildlife (SPAW Protocol) to the UNEP Cartagena Convention, and the more recently enforced Inter-American Convention for the Protection and Conservation of Sea Turtles, explicitly encourage national and regional management planning.

Individual nations within Central America protect sea turtles to a greater or lesser degree, and most are Party to multiple relevant treaties. Notwithstanding, there is much to be done with regard to harmonizing the regulatory framework, improving enforcement capacity, and facilitating the monitoring of compliance with regard to To achieve sustainable management, whether for consumptive or non-consumptive purposes, a harmonized regulatory framework and a compatible management regime must be implemented among range states. To this end, several international treaties encourage collaborative action toward shared objectives. In the case of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the objective is to minimize trade-associated threats to endangered species. Other treaties, including the Protocol concerning Specially Protected Areas and Wildlife (SPAW Protocol) to the UNEP Cartagena Convention, and the more recently enforced Inter-American Convention for the Protection and Conservation of Sea Turtles, explicitly encourage national and regional management planning. national and international legislative and treaty obligations. The first step to making recommendations in this regard must be to assess the extent to which sea turtles continue to be used and traded within and between Central American states.

This regional assessment, the first of its kind, was undertaken in 2001-2002 by the Regional Network for the Conservation of Sea Turtles in Central America (RCA) in partnership with the Wider Caribbean Sea Turtle Conservation Network (WIDECAST). It is clear from the results of this assessment that, CITES provisions notwithstanding, the recovery of *Critically Endangered* (cf. IUCN 1996) hawksbill sea turtles (*Eretmochelys imbricata*) continues to be compromised by high levels of undocumented and unmitigated illegal product trade, especially of shell items. At a time when the economies of various nations, especially in coastal communities, increasing depend on revenues from sea turtle eco-tourism, the serious implications of the ongoing illegal trade in sea turtle products cannot be ignored.

The project included stakeholder training, an inventory of products and commerce violations, and the development of mitigative actions, as well as recommendations for increased public awareness of the issues and priority actions to be taken by policy-makers. The study reports on trade in shell, eggs, meat, oil, fat, penis and other products, documenting both the origin and the intended market. The results provide an important tool for assisting Central American CITES authorities in better under-

standing the level of trade in the region, including the functioning of control and enforcement mechanisms, the relationship between national and international trafficking, and the recommendations of experts.

The study concludes that illegal trade and international trafficking in sea turtles and their products is widespread, and that the threat posed by this illegal trade is serious. Many of the exploited populations are remnants of their former size, and the take of turtles, including egg-bearing females, continues despite a nearly complete lack of information regarding population size or sustainable harvest levels. In hopes of providing policy-makers and the general public with the tools they need to reverse this situation, RCA and WIDECAST have, based on the results of this assessment, designed a plan of action to eliminate the hawksbill trade in Costa Rica (which we hope will be replicated in other Central American countries), conducted a national training workshop (in Costa Rica) on the topic of illegal trade, developed and distributed public awareness materials, and created a certification program for sellers and traders willing to abstain from illegal trafficking.

Effective control of product use and trade is an important component of any sustainable management regime, and effective control can only occur in the presence of reliable information on the extent to which such trade occurs. It is our hope that this study will contribute meaningfully both to national policy-making and to an effective regional response to the challenge of unregulated and illegal use and trade of sea turtle products in the Central American region. And that progress made in Central America will inspire other range states to evaluate their role in illegal trafficking of sea turtle products, and to join the nations of Central America in implementing creative and cooperative solutions to this pervasive international threat to sea turtle survival.

Karen L. Eckert, Ph.D.
Executive Director
WIDECAST

June, 2002

DIAGNÓSTICO SOBRE EL COMERCIO DE LAS TORTUGAS MARINAS Y SUS DERIVADOS EN EL ISTMO CENTROAMERICANO

DIDIHER CHACÓN*

ASSESSMENT ABOUT THE TRADE OF THE SEA TURTLES AND THEIR PRODUCTS IN THE CENTRAL AMERICA ISTHMUS

2002

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I. INTRODUCTION

The Central American isthmus combines biogeographical influences from the north and south, creating a magnificent diversity of life both in continental and coastal marine areas. This concurrence is reflected in the cultural heritage of the region. Archaeological remains bear witness to the ways in which Central American tribal groups have benefited from sea turtles, among other biodiversity resources. Additional evidence survives in fabrics, pottery pieces, stone sculptures and jewellery, indicating that the use of sea turtles by tribal groups was historically an important part of their culture.

In short, the first inhabitants of this tropical region in America demonstrated great interest in and gave special importance to these reptiles. At present, much of the cultural heritage involving sea turtles is based on oral story-telling; that is, fables and legends passed down from one generation to the next. The most notable themes emphasize aphrodisiac qualities, protection against evil, and culinary merit. Parsons (1972) and Groombridge & Luxmoore (1989) report that on a global level, the use of products from sea turtles such as the hawksbill, may date to the time of the Egyptians. There is also extensive information regarding sea turtle product use in Asia and Europe throughout many centuries.

Until the arrival of the European explorers to America at the end of the 1400s, the only reported use of the sea turtle was in the customs of the Indigenous peoples. The annotations taken at that time tell us that in some places this harvest was intense, while in others it was only at a subsistence level. Meylan (1999) notes that, by 1492, the chronicles of the explorers describe the Indigenous people hunting for hawksbill and green turtles in the waters of what is today Cuba. The same source documented use of the hawksbill turtle by Indigenous people of the Yucatan Peninsula (Mexico), Gulf of Honduras, and the Mosquito Coast of Nicaragua), with observations recorded in the years 1517, 1666 and 1722, respectively.

Some scientists calculate that when Christopher Columbus reached America there were between 16,104,000 and 585,948,000 green turtles in the Caribbean Sea (Bjorndal *et al.* 1999). According to Jackson (1997), the number may have been as high as 660,000,000 green turtles, as well as large populations of hawksbills (see Meylan & Donnelly 1999). This situation changed with the advances of transportation and storage and at the end of the 16th century, trade in turtle meat began. In fact, some coastal communities evolved as a direct result of the migration of humans seeking sea turtle nesting and foraging areas. For example, there are many stories of the Miskitos moving from one place to another along the isthmus in search of sea turtles (e.g., Palmer 1986).

Historically sea turtle eggs and meat were not only important in nutritional terms, but they also played a special role in the coastal communities. Turtle trapping or “tortugear” [“turtling”] was (and in some areas still is) a lifestyle, a way of life and a culture far greater than just the consumption of protein.

By the 17th century, the Indigenous groups entered into the sea turtle trade with English explorers and traders who kept the turtles alive during their long voyages to Europe. Sea turtles sustained crew members, settlers, prisoners and the consumers of the Old World. With the arrival of the Europeans to the region, the Indigenous people’s use of sea turtles evolved from traditional usage to a more intensive and commercial system.

As stated by the anthropologist Paula Palmer, "At the beginning of the second half of the 17th century, the Miskito and Afro-Caribbean turtle hunters visited many places in Central America, navigating both by paddle and sail from Bocas del Toro (Panama) up to the Nicaraguan Coasts. They would land in March and stay until September, catching turtles with a harpoon. They processed all of the turtle, collecting the shells to sell them later in Bocas del Toro and from there they were exported to Germany to become combs and buttons." (1986)

More recent societies have demanded additional natural resources, including large quantities of sea turtles. During this process of change, harvesting techniques were combined from the English, French, African, Mestizo and Indigenous peoples. Thus, there was a great influence on the conduct of the Indigenous people and also on the individuals themselves who were exposed to foreign influences.

Some 18th century economies were built on a foundation of sea turtle trade. As much as indigenous groups used and consumed sea turtles in substantial quantities, their exploitation was still mainly for food; it was not profit-oriented. The new economies placed greater value on the sea turtles, and this promoted more intensive exploitation. As a result, the sea turtle populations began to decline. They were no longer just something to be eaten, they were now a resource with a market value.

According to Meylan & Donnelly (1999), the export of hawksbill products from Central American coasts early 18th century averaged between 6000 and 10,000 lbs, or approximately 2035 and 3392 individual turtles per year. Today there is not one single nesting colony in Central America that has that number of individuals per year, and it is likely that even if all of the nests in Central America were added together, the tally would not reach even the lower range of those numbers.

According to Groombridge & Luxmoore (1989), during the 19th and 20th centuries North America was one of the main markets for green and hawksbill sea turtle products. Also, in 1878, 15,000 green turtles were exported to England. During the 20th century, commercial exploitation led to the establishment of sea turtle meat-packing plants in Nicaragua and Costa Rica. The number of animals harvested in the region increased along with the [human] population increase, coastal development, and the shrinking of local economies. Some markets demanded more and better turtle products, including foreign markets that considered the products to be luxury items with high prices for haute cuisine or as raw material for commercial ventures.

Cruz & Espinal (1987) also report intensive trading of turtle shell in the Bay Islands [Honduras] during the 20th century. Over the last two centuries, hunting along with egg poaching were regular activities that resulted in significant decreases in the sea turtle populations of this area.

The growth of markets for trading sea turtle products has also contributed to population decline. It is, however, necessary to mention that the great quantities of money made from these products are reserved for middlemen and merchants at the end of the selling process. The hunters, gatherers and artisans earn the least.

Low income people in the region carry out the culling activities that are justified by their poverty. Yet the demand for sea turtle products is rooted more in the culinary traditions, and beliefs about aphrodisiac properties and/or good luck. Populations of two species (hawksbill, ***Eretmochelys imbricata*** and leatherback, ***Dermochelys coriacea***) subject to indiscriminate and uncontrolled exploitation have

been reduced to critical levels and have been declared "Critically Endangered" by the World Conservation Union (IUCN).

The controversy surrounding the economic value of sea turtles and some of their products should not be confused with justification for their use for social or cultural purposes. We must accept this use per se as one of the conservation issues, and when monetary considerations promote these activities, positions and even legal conflicts, we must provide other values that go beyond the commercial themes. These problems are accentuated when, in light of this framework, their commercial uses are justified and disguised as cultural, ancestral and even humanitarian issues.

It is clear that a culture and its folklore will not be lost by reducing or even stopping completely the use of sea turtles and their products. The extinction of a species is not justification for the preservation of a "way of life". In the end, when this species is extinguished, humans will have to search for an alternative.

At the present time the most developed market for sea turtle products is at the national level; occasionally there is underground [illegal] trading between countries in the region and, on a lesser scale, outside of the region. Nevertheless, the greatest attraction is the international market that pays the higher prices for raw material. The Japanese market has been one of the most important consumers of sea turtle products, such as hawksbill shell.

I. A. OBJECTIVES

This document seeks to describe the legal framework related to sea turtles in the region of Central America; the status of sea turtle populations based on the best possible and most recent information; and the trade and international trafficking of sea turtle products in the region. The purpose is to enable national authorities to recognize and deal with important problems.

This document proves without a doubt that the sea turtle situation is not ideal. Because turtles are a migratory biodiversity resource, with a relatively slow recuperation rate and, in many cases, populations are moving both in and out of the Central American region, any decision concerning use or exploitation of sea turtles must be taken with the consideration of how that decision will affect the nations with whom the resource is shared.

II. METHODS:

This study was based on a survey designed to determine the trade of sea turtle products and obtain information including:

* Location of trade
* Quantity of material/items
* Type of article and cost
* Origin of raw material
* Type and origin of buyer

This survey was designed by Patrick Opay, a former TRAFFIC consultant, and Didiher Chacón, Coordinator of the Central America Sea Turtle Conservation Network (RCA). The survey was revised by members of the National Network for Sea Turtle Conservation in Costa Rica. The purpose of this project is to share the results of the survey, to provide current information on trends in the trade of sea turtle products in the countries of Central America, and to make relevant recommendations.

We would like to note the strengths and weaknesses of this type of sampling. One of the main strengths of the process is that the national surveys were carried out by citizens of each country. This increased the amount of reliable information and the number of trade location sites_information not usually offered to foreigners. National Sea Turtle Conservation Network members comprising the Central America Sea Turtle Conservation Network were responsible for each survey.

We recognize that the project struggled with many weaknesses and faced many threats. For example, the survey only provides an estimation of the size of the trade at one moment in time. It does not measure gradual market changes or the number of items recorded in relation to periods of high demand, or of increased turtle presence along the coastline. Consequently, the reader must clearly understand that the information presented is only a sample, the "tip of the iceberg" regarding trade within the region. Not all of the sites were visited at the height of the nesting season or when there was an abundance of turtles.

The types of recorded answers (wrong answers, lack of answer, random or impartial answers, correct answers) may also weaken the process. To minimize errors, all of the information presented in this study was corroborated by a complete analysis of the surveys from each site, such as artisans' markets or specific sources that could clarify the quality (reliability) of the information. And, again, the survey was under the responsibility of citizens in each country.

Another weakness of the study, is that does not directly indicate the number of dead turtles in relation to the number of recorded hawksbill products, or the number of turtles sacrificed to sell other products (such as oil). From visual analysis and from the photographic evidence of the hawksbill items in Nicaragua, Honduras, Costa Rica and Panama, it is evident that the colour shading of the articles shows that plates from different specimens were used. At the same time, in the case of oils, fats and cosmetics, it is impossible to conclude whether any more than at least one specimen was killed, although this cannot be shown numerically by the survey.

Finally, the survey was developed with an emphasis on permanent places or establishments, since it is difficult to document the presence of sea turtle products found at fairs (festivals) or temporary markets, although some of these places were surveyed.

In August 2000, all of the people responsible for the surveys were trained to recognize hawksbill items and to distinguish them from plastic and other imitation pieces. Genuine sea turtle pieces can be recognized because of their finished quality and their reaction to flame (hawksbill shell emits an odour of burnt hair when exposed to flame). This training ensured accurate and consistent documentation and recording of results.

The established procedure included the following:

1. Typical sites selling sea turtle products were located.

2. Observers were sent to confirm the presence of those products.

3. A survey of each site was organized, while new sources of information led the surveyors to new sites.

4. Each market stand was visited by at least two people. When articles were located, the surveyor, acting as a buyer, asked to see the items. After examining them and confirming their legitimacy, the vendor was asked about the price and authenticity. The surveyors went on to develop a dialogue with the vendor and assured them that it was not a police action and that any information provided would only be collected for data purposes. After explaining the objectives, they proceeded slowly to ask the survey questions and to complete the survey in the presence of the vendor. As they went through the questions, the surveyor made references to the other items on sale, or to situations in the area or to personal topics, so that the person being surveyed would feel comfortable and not pressured.

5. Having answered the questions, the survey was closed by asking the vendor for permission to take a photograph of the site alone, without including their picture. This also helped to build trust with them as it showed that we were only interested in the items.

6. Later the surveyors left the area, but National Sea Turtle Conservation Network members kept a close watch on some sites that, at times, led them to make another survey, especially when new supplies of articles arrived.

7. The information collected in the survey led surveyors to new sales locations that were surveyed until all of the new sales links had been visited. The surveys took place between 2000 to 2002.

TABLE 1:
Dates of visits to sales locations of sea turtle products.

Country	Date
Belize	March-June 2002
Guatemala	July, September and October 2001 June 2002
Honduras	October-December 2001
El Salvador	September 2001-November 2001
Nicaragua	August 2001-December 2001
Costa Rica	November 2000-November 2001
Panama	August 2001-March 2002

When all sites had been satisfactorily surveyed, a statistical analysis was made by separating all of the surveys into four types of sea turtle products: “hawksbill articles”, “eggs”, “meat”, and “medicine and cosmetics”. Product type significantly determineds differences in trade and type(s) of market.

Finally, the comparative legal frameworks were obtained from published sources. Population statistics and related information was also obtained from referenced sources (see Chacón & Araúz 2001).

III. NATIONAL AND REGIONAL LEGAL FRAMEWORKS

The information in this section is based on Álvarez (1997), Ambio (1998), Cabrera (2000), Chacón & Araúz (2001), Ellis (1997), Espinoza (1997), Espinoza & Piskulich (1997), Galindo (1997), Girón (2000), Hernández (1997), Herrera (1997), Melini, García & Noak (1997), Paz (2001), Ricord (2000), Ricord (2001), and Ruiz & Jarquín (1997).

Ever since the countries of Central America established their societal order with a standardized legal framework, natural resource management and conservation has been implicit, especially for those resources that represented a clear property or service relationship with people. Each nation has established laws, rules and decrees to conserve and make use of marine and other resources. Concern for sea turtle issues is not new, as shown by the fact that all of the countries in the region have established standard laws, decrees or regulations which in a directly or indirectly regulate sea turtle use and commerce.

The isthmus countries have also expressed their agreement and international solidarity by signing and ratifying international conventions relevant to the survival of wildlife. For example, all of the nations in the region are Parties to CITES [Convention on International Trade in Endangered Species of Wild Fauna and Flora], as well as to the Convention for the Protection of Natural and Cultural Heritage, the Convention for the Conservation of Biodiversity and the Protection of Priority Wilderness Areas in Central America. Panama is also Party to the Bonn Convention (Convention on the Conservation of Migratory Species), while Nicaragua, Honduras, Costa Rica and Belize are signatories of the Interamerican Convention for the Protection and Conservation of Sea Turtles which came into effect in 2001.

All countries in the region have also signed the Convention on Biological Diversity (CBD) and the Constitutional Convention of the Interparliamentary Commission for the Environment and Development (CCAD). These agreements provide an important referential framework to define initiatives common to sea turtle management, although we will concentrate on analyzing CITES in this report.

As this document will demonstrate, the issue of sea turtle product trade has two dimensions: the local dimension where, in some countries, the use of turtle products is permitted, and the international dimension, where all nations are regulated by CITES and other mutual agreements. The analysis developed here goes from the local level to the international level, while at the same time always abiding by the CITES requirements when issuing standards.

Regulations regarding sea turtles in Belize started in 1977; in Guatemala, 1932; in Honduras, 1959; in El Salvador, 1981; in Costa Rica, 1948; in Nicaragua, 1958; and in Panama, 1918. The regulations indicate that these countries value the fact that their coasts are used bya turtles for nesting or provide other critical habitat, and for this reason they have established relevant legislation. It is important to state that, initially, these laws did not establish a significant framework; rather, the text mainly declared prohibitions, bans and standards for sea turtle use.

In the majority of the countries, legal analysis~~,~~ (as well as the ratified international agreements (that envision the right to a healthy environment), is based on their respective political constitutions. Such is the case in Nicaragua, Costa Rica, El Salvador and Guatemala. In the legislation of El Salvador, Guatemala, Honduras, Costa Rica, Nicaragua and Panama, another converging element is found in the organic or general laws regarding the environment. All of these laws offer protection in a generic way to wildlife, which includes sea turtles.

Moreover, the majority of the countries – including El Salvador, Belize, Costa Rica, Guatemala, and Panama - have fishing and fisheries legislation that concisely mentions sea turtles and regulates the area of fishing resources.

Protected areas and their regulations related to sea turtles have interesting features. In Nicaragua, for example, there are four protected wildlife areas with the main objective of protecting sea turtles: Cayo Miskitos Biological Reserve (1991), Rio Escalante-Chacocente Wildlife Reserve (1983), La Flor Wildlife Reserve (1996), and Juan Venado Natural Reserve (1983), (Jarquín *et al*. 1998).

In Guatemala, the existing Protected Areas Law (Decree 4-89, Congress of the Republic, which was reformed in 1996 by Decree 110-96 of the Congress of the Republic) establishes penalties for criminal activities involving wildlife both in and out of protected areas. Unfortunately, the law does not have any regulations for the application of the law, and the law has not been updated since the reforms in 1996.

In Honduras, there are many protected areas that include important sea turtle nesting sites, such as Cayos Cochinos Biological Reserve and Rio Platano Biosphere Reserve. In Costa Rica, 15 protected areas establish, in the essential legal reasons for their creation, the need for sea turtle protection. And, finally, in Panama, at least five wildlife protection areas are recorded as having been established in connection with the protection of sea turtles.

III. A. NATIONAL REGULATIONS

Some countries have “specific regulations” on sea turtles, as follows:

In Belize, there are specific sea turtle provisions in the 1977 Fishing Regulations that establish~~ed~~ closed seasons and regulations on the use of fishing tools. Belize is also one of the very few countries that has a maximum size limit and don´t have a ban on the take of hawksbill sea turtles.

In Guatemala, the specific regulations on this topic date from 1981, when a governmental agreement legislating in favour of the sea turtles prohibited the traffic, capture or sale of all species of sea turtles. Nevertheless, the overarching regulation is the previously mentioned Protected Areas Law.

In El Salvador, sea turtles have been protected since 1990 by a resolution of the Centre for Fisheries Development (Centro de Desarrollo Pesquero) that bans the hunting of sea turtles, as well as of lobsters and dolphins. Since 1997, the collection of three species of sea turtle eggs has been regulated and the use of hawksbill turtle products, meat and oils has been prohibited.

In Honduras, the 1959 Fishing Law established provisions on sea turtles that have been updated yearly with provisions made by the Secretary of Agriculture and Ranching (Secretaría de Agricultura y Ganaderia). These provisions prohibit the collection, sale, use and possession of all sea turtle eggs**.**

In Nicaragua, a 1958 decree regulates the collection of sea turtle eggs and prohibits the slaughter of sea turtles. The Fishing Law of 1964 considered turtles to be a great commercial resource, yet, with the signing of CITES, exportation was restricted. The existing (1958) law is implemented by MARENA (Ministry of Natural Resources and Environment). In 1980 and 1982, administrative agreements made by the national environmental authority established rules regarding closed seasons. A 1966 agreement between MARENA and Nicaragua's "Autonomous Government of the North Atlantic Region" (Miskito indigenous political organization) also addresses the green turtle on the Caribbean coast (Ochoa *et al.* 1997). Finally, the Rio Escalante-Chacocente Wildlife Refuge, Isla Venado Natural Reserve, and Punta San José all prohibit the harvesting of sea turtle eggs.

Costa Rica has general legislation on fishing, wildlife and the specifications for protected areas, including a decree authorizing the Ostional Integral Development Association (Asociación de Desarollo Integral de Ostional) to gather olive ridley (***Lepidochelys olivacea***) turtle eggs. Also, include a several decrees to protect the Sea Turtles in different areas of the country.

Panama has had legal provisions concerning sea turtles since 1919 in the form of decrees. In 1967, these were broadened by Decree 23, which, along with other specifications, bans completely the capture of the green turtle (***Chelonia mydas***). Other species of turtles were included in this ban by Decree 104 of 1974 and in 1980, Resolution 002-80 (24 January 1980) included the remaining sea turtles in the ban. Decree 23 was abolished in 1995 when the new Wildlife Law, which further strengthens the conservation of this group of reptiles, was published.

III.B. GOVERNMENT INSTITUTIONS WITH JURISDICTIONAL AUTHORITY, POWERS OR FUNCTIONS RELATED TO SEA TURTLES

All of the countries surveyed for this report have state institutions with jurisdictional authority over sea turtles. In general, the office in charge of marine resources and fishing is also responsible for sea turtles, and has authority over the administrating body for protected areas as well. Nevertheless, there are no regional outlines for the assignment of jurisdictional authority or of closed seasons.

In Belize, the Department of Fisheries, under the Ministry of Fisheries and Agriculture, is in charge of drafting and enforce regulations on sea turtles. There are also Fishing Authorities to oversee that standards are maintained, but there are few personnel for surveillance and enforcement.

For its part, Guatemala gives jurisdictional authority over the use of the sea turtles to the National Council of Protected Areas [Consejo Nacional de Áreas Protegidas, CONAP], to the Environmental Law and Sustainable Development Institute [IDEADS] 1998), and to the Ministry of Agriculture, Ranching and Food [Ministerio de Agricultura, Ganaderia y Alimentación]; and also to a Special Unit of Fishing and Aquaculture [UNIPESCA]. Surveillance and enforcement (e.g., control of hunting or gathering seasons, reporting of irregularities) are the responsibility of the National Council of

Protected Areas [Consejo National de Áreas Protegidas], the Pacific Naval Base and Atlantic Naval Base, and the National Civil Police, as well as the police of municipal jurisdictions.

In Guatemala, the Ministry of Environment and Natural Resources (MARN) and CONAP are responsible for preparing monitoring and enforcing environmental policies regarding sea turtles.

Honduras has only one institution with authority over sea turtles, and that is the Fishing and Aquaculture Directorate [Dirección General de Pesca y Acuacultura, DIGIPESCA] through the Research Department of the Office of the Secretary of Agriculture and Ranching. The Honduran survey report indicates that "there have never been any permits, concessions, or licenses for the use of the sea turtle.", but this contradicts a report by Lagueux (1991) analyzing the turtle egg trade in the Gulf of Fonseca. The Biodiversity Directorate, set up in 1997, has responsibility for the Convention on Biological Diversity and other related international agreements affecting sea turtles and natural resources in general (SERNA 2001).

In El Salvador, two institutions have legislative power directly relating to sea turtles. First, the Ministry of Environment and Natural Resources applies the Wildlife Conservation Law which regulates egg collection, hatchery management, and the possession of hatchlings. In addition, it establishes bans on the use of hawksbill and leatherback products. This Ministry also implements the General Environmental Law [Ley General de Medio Ambiente] regarding the biological diversity of the country.

Secondly, the Ministry of Agriculture and Ranching applies the Fisheries Law and its Regulations [Ley de Actividades Pesqueras y sus Reglamentos] which regulates the use of TEDs [Turtle Excluder Devices], bans the takeof sea turtles, and establishes rules, product use bans and other regulations that can affect sea turtles. The verification, control and actual application of legislation are addressed within the Ministry of Agriculture and Ranching, and by the Directorate of Plant and Animal Health which is the CITES administrative authority. It also applies the Wildlife Conservation Law and regulates internal trade. Finally, the Attorney General of El Salvador administers the criminal code, which punishes those who cause harm or death to endangered species, and follows-up with the application process for Special Laws when warranted.

The National Civil Police (Environmental Division) ensures compliance with all regulations and is authorized to carry out inspections.

In the case of Nicaragua, the Ministry of Environment and Natural Resources (MARENA) is responsible for the supervision of all activities that take place in protected areas. Also, the National Army is required to contribute to the conservation and renewal of natural resources, to improve the environment and ecological balance, and to conduct surveillance of natural resources principally on protected areas, including nesting areas. The Ministry of Economy and Development regulates fishing activities in the country, which allows it to control the capture of sea turtles from Nicaragua's territorial waters. Further, the Regional Autonomous Governments, and even Municipal Mayors, have powers to protect the environment and natural resources, and to promote the rational use and enjoyment of public waterways, forests, communal lands, and the ecosystem in general. National Police are required to assist MARENA, as well as local and regional governments, with surveillance and protection.

By a binding resolution of the Costa Rican Attorney General's Office, INCOPESCA [Costa Rican Fishery Institute] is the overall guardian and protector of sea turtles in Costa Rica. This includes any nesting activity on the open beaches. However, turtles found in specially protected areas are managed by the respective Regional Office of the National System of Conservation Areas (SINAC), which is under the Ministry of the Environment and Energy (MINAE). These bodies, along with the Ministry of Public Security, all participate in surveillance and enforce the Wildlife Conservation Law.

In Panama, sea turtle exploitation and protection is -managed by the National Environmental Authority (Autoridad Nacional del Ambiente, ANAM), created by the General Environmental Law in June 1998, and the Maritime Authority of Panama (Autoridad Maritima de Panamá, AMP), created by Decree Law 7 on 10 February 1999. Although the legislation gives broad responsibility to the AMP for marine resources, there is still no official definition of ANAM's exclusive responsibility within the borders of protected areas. Cooperation between these institutions with regard to protected areas with marine-coastal components is necessary.

III.C. THE EFFECTIVENESS OF REGULATION IMPLEMENTATION

Reviewing the national legal frameworks gives insight into the effectiveness of legal regulations for sea turtles in the countries of Central America. Based on this review, we conclude that there are serious inconsistencies between the legal framework and the actual situation or the reality at the local level.

In the case of Belize, for example, the laws are satisfactory in the sense that they provide the necessary mechanisms to protect sea turtles. However, the legislation is poorly applied and, consequently, sea turtles suffer from a number of problems, including theft of eggs, nest destruction, entanglement in fishing nets, illegal exportation of live and dissected turtles, illegal exportation of turtle shell, habitat destruction, and the over-exploitation of turtles.

There are insufficient numbers of fishing authorities (officers) to apply the law, and they hesitate to levy fines or penalties. Moreover, fines are too low (US$250.00) to act as a sufficient deterrent to poachers. Thus, with this easy evasion of inspection by the fishing authority, one finds the commonplace selling of turtle meat from house to house.

Finally, the main focus of the fisheries law would seem to be the protection of lobster and fish, instead of turtles.

In Guatemala the legislation created to favour the turtle conservation process is also ineffective, insofar as the laws are "totally unknown by the population that uses the products (eggs) from this species. In fact, the governmental authorities (CONAP) and even the environmental groups which carry out a supervisory role regarding the usage and conservation of the species are obliged to accept entrenched (customary) standards that permit the turtle egg trade. For every nest that is taken, the egg-collectors are obliged to donate a dozen eggs to a turtle sanctuary. They are given a slip that certifies the donation."

In spite of the fact that since 1981 there has been a ban on the capture, traffic and trade of all species of sea turtle, in fact such trade openly goes on. Sea turtles are used by communities for subsistence,

and, “For this, the very same groups in charge of administering the resource have found themselves obliged to negotiate the way in which the fishermen manage the eggs for reproduction in the local turtle [hatcheries] that are administered by non-governmental organizations.” (Espinoza 1997)

In the case of Honduras, the scene changes in many ways. “The regulation effectiveness is real and is fulfilled” (Espinoza 1997). This is due to the fact that general awareness has been raised by programs implemented by DIGEPESCA and NGO’s like MOPAWI and CODDEFAGOLF. “Protection, surveillance and egg gathering activities are done in exchange for food or for products bought by DIGIPESCA. For cultural reasons then, some citizens make their living by the collection of turtle eggs and their trade. After the closed season, trade is open.” (Espinoza 1997)

Espinoza (1997) indicated that the awareness-raising process has caused the sea turtle to be valued as a legally protected resource more so along the coast than in the interior of the country. In spite of this, hawksbill products are found in artisan shops in cities of the interior such as Tegucigalpa, Valle de Ángeles, La Ceiba, Trujillo, and Copán, among others, giving international tourists access to these products and thus encouraging small-scale international trafficking.

In El Salvador, regulations regarding turtle protection are shaped not only to prohibit destructive acts by individuals, but also to promote the suitable management of this natural asset, thus helping the species as well as generating income. The effectiveness of implementation, however, is quite limited. Unfortunately, lack of education, combined with economic factors and institutional weaknesses all contribute to the ineffective implementation of the regulations. Hopefully, the situation can be improved by the planned transferring of functions and powers from the National Park and Wildlife Service, in the Office of the Ministry of Agriculture and Ranching, to the Natural Heritage Directorate in the Ministry of the Environment and Natural Resources.

In Nicaragua, surveyors found that the laws protecting sea turtles were “dispersed, casual and incoherent”. Legislation based only on official communications indicates a weak legal foundation. Yet, a positive sign is the agreement between MARENA and the National Army that guarantees a military presence in the protected areas of Chacocente and La Flor for the effective protection of the nests and the physical safety of the civil personnel who manage these areas and the research that is ongoing within their borders. “This military presence is justified because of the aggressive behaviour of the turtle egg poachers, who have already taken the life of one park ranger” (Espinoza 1997). Finally, the Nicaraguan fishing authority, MEDEPESCA has very few personnel to enforce TED (Turtle Excluder Device) use on shrimp vessels.

In Costa Rica, the Human Rights Ombudsman (Defensoria de los Habitantes) and the Attorney General are on record in statements, as well as regulations, as appreciating the importance of the country’s sea turtle nesting grounds in light of the danger of extinction that these species face. Yet, the overall situation is far from ideal. Unclear legislation, combined with insufficient state resources and weak local authorities, are no match for the pressures on the species exerted by traditional usage and cultural and economic practices fuelled by a foreign demand for sea turtle products. Illegal slaughterhouses are known to exist on the Caribbean coast, eggs are taken from nesting females andare sold clandestinely, and there is often open trade both in hawksbill turtle (shell) products and cosmetics made from turtle fats and oils.

In Panama, "almost all species of sea turtles that make their way to the country have gradually been included in the various regulations governing legal protection" (Espinoza 1997). The Res. 002-80 and Law 24 provides penalties, with up to six months in prison, for destroying, disturbing or damaging sea turtle nests. However, only those areas that are adequately regulated by law have special programs for the management and handling of sea turtles. In the remaining nesting zones, no such programs exist, nor are there means to educate local communities about the importance of conserving this endangered resource.

III. D. JURISPRUDENCE

Resolutions made by judicial and administrative authorities serve to interpret or complement the legal regulations. Such resolutions are of great importance, and they are summarized here. However, with the exception of Costa Rica and Panama, no judicial or administrative lawsuits were found in the remaining countries. This is cause for concern, as a society's level of interest in this issue is measured by the number and calibre of petitions, lawsuits and other claims filed with administrative authorities and courts of law.

In Belize, the study found no instances of legal actions regarding sea turtles. Similarly, in Guatemala, no example of case law regarding sea turtles is registered, and while a certain number of claims have been heard in the courts, they have not been successful.

In El Salvador, the lack of administrative proceedings in the area of TEDs is worth noting; otherwise one case was brought against four individuals discovered in illegal possession of approximately 500 sea turtle eggs. The eggs were confiscated and a fine imposed. In 1997, two other individuals were prosecuted also for eggs trafficking.

In Honduras, regarding turtles, "there is neither legal nor administrative jurisprudence, only claims presented to the Ministry of the Environment," and, that "for around seven years there have been no fines, only confiscations," such as those carried out in La Ceiba in 1999 (Espinoza 1997).

Similarly, Nicaragua does not report any judicial or administrative proceedings in this matter, though in early 2002 MARENA established a moratorium on the sale of hawksbill products in local stores. It is yet to be seen how strongly this moratorium will be enforced.

In Costa Rica, a formal Complaint of Violation of Constitutional Rights was brought before the Constitutional Court by a coalition of NGOs, targeting the Institute of Fishing and Aquaculture of Costa Rica. The first complaint was dismissed, and a second one was filed, also in Court IV, against the decree allowing the green sea turtle to be hunted despite the absence of scientific investigation into the number of turtles that can be exploited without altering the ecological balance that sustains them. The Constitutional Court of the Supreme Court of Justice found in favour of the Complainant (Resolution No. 001250-99, 19/2/99) and, as a result, hunting or commercial trade of sea turtles is now completely prohibited.

Furthermore, the Attorney General's Office of Costa Rica has legally validated this measure, and the guardianship and protection of sea turtles during their nesting season is the responsibility of the

Institute of Fishing and Aquaculture of Costa Rica (INCOPESCA), except when the turtles are found within a protected area. In that case, this becomes the jurisdiction of the Regional Office of the National System of Conservation Areas (SINAC), which is part of the Ministry of the Environment and Energy (MINAE).

Finally, the Office of the Ombudsman has generated an administrative file on this matter with the following recommendations:

a. The Ministry of the Environment and Energy should increase vigilance to protect green sea turtles in land and marine areas under its control.
b. The Ministry of Public Security should lend support for these measures so as to curtail the hunting of this species in both protected and unprotected areas.
c. The Board of Directors of INCOPESCA should adopt a resolution prohibiting the hunting of the green sea turtle as long as this species remains on the CITES list, and implement increasing vigilance of ocean areas under its guardianship to ensure compliance with the hunting ban.
d. All criminal actions brought before the courts of this jurisdiction must be registered.

Wo Ching & Castro (1999) list a number of court cases involving infractions that harmed sea turtles in Costa Rica. Also, the Ministry of the Environment-SINAC Archives contain records of reports and confiscations of hawksbill turtle products, demonstrating that the personnel of several Conservation Areas are attentive to the issue.

Our national survey in Panama provided information on similar lawsuits in that country. The Ordinary Courts have handed down certain important decisions regarding offences against wildlife. In one such case, the Santos Circuit Court of Appeals and Claims penalized an individual for trafficking 6,000 sea turtle eggs, by imposing a sentence of 5 months in prison as well as an 80-day fine set at US$3.60 per day. Also, in the Los Santos zone, there have been five court cases in the last two years for the illegal collection and marketing of sea turtle eggs no data about successfully prosecuted (L. Cordoba, pers. comm. 2002).

III. E. LEGISLATION ON THE TURTLE EXCLUDER DEVICE (TED)

It is important to make a connection between the trade of sea turtle products and the use of the Turtle Excluder Device (TED). In a number of the surveys carried out during this regional study, responses indicated that the shell, oil or eggs that were extracted for sale came from turtles that had drowned in nets offshore. It would appear that accidental death in fishing nets is seen as a ready excuse to exploit sea turtle products.

In 1991, the Congress of the United States of America approved a law protecting sea turtles which, in general terms, demanded that countries of the Atlantic region exporting shrimp to the United States ensure that fleets using trawl nets install approved TEDs or face an embargo on their shrimp products. In December 1995, the U. S. Senate, pressured by shrimpers demanding equal treatment, approved the same law for the Pacific region, meaning that . The same sanctions apply to Pacific shrimping fleets that had not taken steps to install TEDs by 11 May 1995.

TEDs have been implemented in the majority of Central American countries, though both Costa Rica and Honduras on occasion have been sanctioned with short embargoes because of non-compliance. In all countries, TED regulations have not been the result of domestic motivation to protect sea turtles; rather, these regulations are driven by the sanctions established by the United States to prevent the purchase of shrimp from countries that do not comply. It is noteworthy that the criteria to determine the sanctions imposed for not installing the device or for installing it incorrectly, or similar acts, are not standardized throughout the region (Chacón & Araúz 2001).

III. F. REGIONAL SUMMARY AND CONCLUSIONS

From the standpoint of the legal framework,the challenges facing the effective conservation of sea turtles in Central America can be summarized as follows:

a. Inadequate laws and insignificant penalties make it easy to violate the law and simply pay a fine as an additional expense of the process. Also, legislation is not always adapted to current scientific knowledge or requirements, or to the behaviour of the market.

b. There is often a conflict of authority. Ambiguities concerning jurisdiction on the part of entities charged with implementing sea turtle legislation often result in a lack of action.

c. There are problems in the implementation of legislation, often as a result of economic pressures in communities, and the rights and traditional practices of these communities. Moreover,often there are too few agents, or equipment and budgets are insufficient to effectively carry out and enforce conservation measures.

d. The lack of regional coordination throughout the total geographic area of many species or populations means that the conservation efforts of one country are neutralized or undermined by the activities of another country. One recent coordination effort to correct this is the CITES Working Group organized within SICA/CCAD [Central American System of Integration and Central American Commission for the Environment and Development]. In spite of this, there is a further need for regional legal harmonization.

e. Jurisprudence (legal and administrative resolutions) regarding sea turtles is scarce in the region. Consequently, it is important to provide local legal authorities (e.g., mayors, treasurers, judges, magistrates) with useful scientific and legal guidance so as to improve the administration of justice in this matter. In the field of nature conservation, important legal advances are only possible if they are preceded by scientific advances. Therefore, it is essential that decision-makers, legislators and those who implement policies regarding sea turtles receive sound scientific input to adequately support measures taken and decisions made.

f. There is inadequate information and education of local communities, and a general lack of public awareness of the importance of conserving and sustainably managing sea turtles.

g. There is a lack of institutional presence in coastal nesting areas, resulting in unregulated exploitation of resources. Also, conservation measures have predominately been at the

national level, which is insufficient when the regional nature of this problem is considered.

h. There is a lack of involvement on the part of coastal communities in the conservation, research, and management of sea turtles as an integral element of development, and a lack of economic incentives for the conservation of sea turtles as an alternative to consumptive exploitation.

IV. THE FRAMEWORK OF THE CONSTITUTION AND INTERNATIONAL LAW

Powerful legal tools exist at the international and regional levels, and they are beginning to be asserted in the form of accords, treaties, and international and regional agreements. In the matter of international trade in the products and derivatives of sea turtles, the prevailing accord is CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora).

Sea turtle issues have been important since CITES came into force, and during eleven Conferences of the Parties (COP) there have been several decisions relevant to sea turtles, including:

1975: CITES enters into force.

* Atlantic populations of the hawksbill (***Eretmochelys imbricata***) and Kemp's ridley (***Lepidochelys kempii***) sea turtles are listed in Appendix I; all other sea turtle species are listed in Appendix II.

1976: COP I in Bern, Switzerland.

* All sea turtle species except for Australia's flatback (***Natator depressus***) and green ***(Chelonia mydas***) sea turtle populations are transferred from Appendix II to Appendix I.

1979: COP II in San José, Costa Rica.

* Resolution 2.12 regarding the raising of specimens in captivity is adopted.

1980: COP III in New Delhi, India.

* Australia's flatback and green sea turtle populations are moved from Appendix II to Appendix I. Resolution 3.15 on sea turtle ranching is adopted.

1983 COP IV in Gaborone, Botswana.

* The Parties reject proposals submitted by France and Suriname to farm green sea turtles, in accordance with Resolution 3.15.

* The Parties reject a proposal submitted by the United Kingdom to create a special exception for products obtained from farmed turtles and stockpiled prior to the convention, under Conf. 2.12.

* Conf. 4.15 concerning captive breeding operations for species listed in Appendix I is adopted.

1984: COP V in Buenos Aires, Argentina.

* The Parties reject a proposal submitted by the United Kingdom regarding products from the Sea Turtle Farm in Grand Cayman, based on Conf. 3.15, as well as a special resolution to exempt products from this Farm as preceding the Convention.

* The Parties reject a proposal submitted by the Republic of the Seychelles Islands for an annual exportation quota of 100 male hawksbill sea turtles.

* The Parties reject two proposals submitted by Indonesia to de-list local populations of green and hawksbill sea turtles from the Appendices.

* Conf. 5.16 on trade of farmed specimens, and Conf. 5.21 on special criteria for the transferring of taxon from Appendix I to Appendix II, are adopted.

1987: COP VI in Ottawa, Canada.

* The Parties reject France's proposal for the ranching of green sea turtles, according to Conf. 3.15, in Committee I; France withdraws the proposal.

* Prior to the voting, Indonesia withdraws its two proposals to remove local populations of green and hawksbill sea turtles from the Appendices.

* Conf. 6.21 concerning procedures for the control of commercial captive breeding operations is adopted, as well as two others: Conf. 6.22 "Procedures for the Monitoring and Registration of Ranching Operations" and Conf. 6.23 "Guidelines for the Evaluation of Proposals for Sea Turtle Ranching".

1988: COP VII in Lausanne, Switzerland.

* IUCN (International Union for the Conservation of Nature, now the World Conservation Union) reports that members participating in a special workshop were unable to reach consensus on guidelines for sea turtle ranching. Prior to the COP, Indonesia withdraws its proposal to export 3,000 green and 3,000 hawksbill sea turtles under annual quotas.

1992: COP VIII in Kyoto, Japan.

* Conf. 8.15 concerning guidelines for the registration and monitoring of commercial breeding operations for animal species included in Appendix I is adopted. (Note: the Resolution repeals Res. Conf. 4.15, 6.21, and 7.10).

* The Fauna Committee is consulted on draft Guidelines for Sea Turtle Ranching.

1993: COP IX in Fort Lauderdale, United States of America.

* The Parties consider and adopt Guidelines for Sea Turtle Ranching.

1997: COP X in Harare, Zimbabwe.

* Cuba submits Prop. 10.60 to transfer Caribbean hawksbills encountered in Cuban waters from Appendix I to Appendix II, proposing in addition the export of a national stockpile, captive breeding, and an annual export quota. The proposal, rejected in the first round of voting, is amended and presented in Plenary where it is not supported by the required 2/3 majority of delegations participating in the vote.

2000: COP XI in Girigiri, Kenya.

* Cuba and the Commonwealth of Dominica submit Prop. 11.40 to down-list Caribbean hawksbills encountered in Cuban waters from CITES Appendix I to Appendix II in accordance with Resolution 9.24, with the intention of exporting a registered stockpile of shell scutes to Japan where the material would not be re-exported. The proposal further sought to permit an annual quota of 500 specimens to be exported under the same conditions to Japan. Cuba submits Prop. 11.41 with essentially the same intent as Prop. 11.40, but solely for export (to Japan) of a registered stockpile of nearly 6,900 kg of hawksbill shell scutes. Prop. 11.41 is withdrawn previous to its discussion in Committee I. The Parties reject Prop. 11.40, but Cuba insists on presenting it in Plenary where it is amended, voted on and again rejected (i.e., it failed to secure the necessary 2/3 majority support). A regional hawksbill management dialogue process is agreed upon, and in May 2001 the first regional hawksbill dialogue meeting is held in Mexico City; the meeting produced a number of useful outputs and further regional discussion planned.

2002: XII in Santiago, Chile

* A second regional hawksbill dialogue meeting convened in the Cayman Islands in May 2002, where Cuba presented a modified version of its previous proposals. The intent, once again, was to export a registered national stockpile of hawksbill shell scutes (now 7,900 kg). To facilitate the export, the proposal petitioned to down-list Caribbean hawksbills encountered in Cuban waters from Appendix I to Appendix II. On 19 August 2002, Cuba withdraws the proposal from consideration at COP XII.

The following sections discuss the status of CITES in Central America, with the primary reference document being Cabrera (2000).

IV. A. BELIZE

The Political Constitution of Belize (Chapter 4, Rev. Laws of Belize) does not expressly provide in its articles the right to a healthy environment or other environmental rights. However, this has not been an impediment to the development of ample environmental legislation regarding wildlife because the Preamble of the Constitution does mention that it is necessary for the State to consider the protection of the environment in its policies. The Constitution of Belize contains dispositions on the rights of property and the freedom of trade in Articles 15 and 17, respectively.

The legal system in Belize differs from those in other countries in the region by requiring separate internal legislation to implement duly ratified international agreements. Consequently, while Belize is bound to the international community by the terms of the accords and agreements, it is difficult for these to be implemented by the National Courts (Ellis 1997) unless these agreements have the weight of the law by virtue of their incorporation into the internal legal system. Notwithstanding, normally the Belize authorities have implemented directly the precepts of CITES since its ratification by that country on 21 September 1981. Owing to the previous considerations, it seems that the incorporation of the Conference of Parties Resolutions would only occur as a result of administrative discretion when dealing with specific cases or permits. There are no official publications of the lists or of the amendments to the lists or of the specific procedures for this purpose, although the authorities do appear to be implementing the amended appendices.

IV. A.1. ADMINISTRATIVE AND SCIENTIFIC AUTHORITIES

The CITES administrative authority is exercised by the Head of the Forestry Department in Belize (attached to the Ministry of Natural Resources), which is responsible for issues related to the management of wildlife, forests and protected areas. There is no express designation in the respective laws, but it is considered that the work of CITES administrative authorities is congruent with that of the Forestry Department relative to the export and/or import of flora and fauna species. The paperwork is normally carried out by the Department of Conservation, which complies with the typical intent of the CITES authority, although no specific powers have been delegated. In addition to the Head of the Forestry Department, the officials of the Department of Conservation are authorized to sign CITES permits.

As of this writing, the CITES scientific authorities have not yet been designated. However, it is expected that an official of the previously mentioned Office will shortly be designated as a scientific authority, and that the Department of Fisheries (Ministry of Agriculture) will be named as administrative authority to act in matters involving fishing and sea turtles. It is noted that, with such an appointment of someone from

these Departments, it would not be possible to speak of an independent scientific authority. Moreover, until any appointment is made, the duties of the scientific authority will not be clear.

In accordance with the legal system in Belize, the authorities of the Department of Conservation may carry out confiscations or impose other sanctions, but fines or prison sentences are properly matters for the Courts.

IV. A.2 CONCLUSIONS AND RECOMMENDATIONS

1. As in other countries of the region, great effort and the appropriate human, technical and financial resources are needed in order to train administrators, provide standardised printed materials, and generally to implement CITES Border control (in this case with Mexico and Guatemala) is another common challenge in the region and is particularly difficult because the geography makes for easy unauthorized border crossings. As border controls are so very limited, there should be systematic control operations at least in high-risk zones.

2. The designation of an appropriate scientific authority is important. Assigning only one person to carry out all related functions is not the best answer. On the contrary, an institutional infrastructure with adequate capabilities in diverse areas is required. Further, to understand the impact of authorized trade on the wildlife and plant populations involved, it is important to do the research to develop a scientific basis for the authorization of exports, be they aquatic/marine or terrestrial species.

3. To date, coordination between fishing and forestry authorities has been effective, but it is necessary not only to maintain these institutional relationships but also to reinforce them; and in particular to emphasize their balanced relationship in their participation in CITES Conferences of Parties.

IV. B. GUATEMALA

The Political Constitution of Guatemala contains diverse regulations that ensure the right to a healthy environment and to the protection of wild flora and fauna. For example, Article 64 sets out that conservation; protection and renewal are in the interest of both the natural resources and the nation; “The state shall promote the creation of inalienable national parks, reserves and natural refuges and the law shall guarantee their protection and that of the fauna and flora found within them.” This provision clearly and precisely limits the protection of flora and fauna to that which exists within the cited categories of protected areas.

However, in a reading of other articles of the Constitution, it can be deduced that this obligation extends to all wild flora and fauna. Thus, Article 97 establishes that the State, the municipalities and the inhabitants of public lands are obliged to engage in social, economic and technological development in a way that prevents pollution and maintains the ecological balance. All necessary regulations are to be put in place to guarantee the rational use of fauna, land and water, and to limit their depredation. Additionally, Article 19c establishes the State's obligation to adopt whatever measures are necessary for the conservation, development and proper use of natural resources in an efficient manner. Other sections dealing with the right to health (Articles 93, 94, 95) and reforestation (Article 126) form part of this constitutional framework. As well, the constitutional code envisions and guarantees the right to private property (Articles 39 and 41) and the freedom of trade (Article 42).

The Guatemalan Congress of the Republic ratified CITES by means of Decree 63-79, which was then published in Official Journal No. 32 of 14 March 1980. In accordance with this country's legal system, international treaties possess the same legal weight as domestic laws, at least with respect to environmental issues. Thus, treaties enjoy automatic jurisdiction and require only the issuing of certain instrumental regulations to enforce their stipulations. The dispositions of CITES then are immediately applicable. However, there are no other formal mechanisms in place to incorporate the resolutions of the CITES Conferences of Parties or changes to the appendices beyond a ministerial directive.

Also, as in other countries, the incorporation of Conference resolutions shall be worked out in the implementation and interpretation given them by the CITES authorities or others who formulate policies and legislation. For example, Article 25 of the Law of Protected Areas (Decree 4-89) establishes that CITES Appendices I and II are subject to approval by the contracting parties as well as by the express reserve of the appropriate administrative authority. Also, additions, modifications, eliminations, reservations or changes are supposed to be published in the Official Journal, but in practise, this does not happen, and it is unlikely that it will each time the lists are modified (normally every two years). Yet In spite of this, on an international level the country is bound by the current CITES appendices and in practice they are respected.

IV. B.1. ADMINISTRATIVE AND SCIENTIFIC AUTHORITIES

Article 73 of the law of protected areas establishes that the Executive Secretary of the National Council of Protected Areas (CONAP) represents the CITES administrative authority and is authorized to designate the scientific authorities that are considered pertinent and the mechanisms that will improve the functioning of the agreement. Further functions are not specified, but the outcome of the mandate granted is extensive enough to cover all areas.

The scientific authorities are designated by CONAP Resolution No. 61-96, which created the National CITES Commission of Guatemala. In the same way, one CONAP official is named as the scientific authority responsible for fauna. As well, fauna authorities are also named from the Centre for Conservation Studies (University of San Carlos), the entomology laboratory of the (University del Valle), and the Interamerican Foundation of Tropical Investigation. Flora authorities are nominated from the Department of Botanical Studies (University of San Carlos), the flora section of the Centre of Conservation Studies (University of San Carlos), and two people from the Guatemalan Association for the Study of Orchids.

In general, the scientific authorities have more powers than the administrative authorities. Considering their duties, the production of resolutions is lacking. The administrative authorities have assumed the general legal powers of receiving notices and sending reports. The scientific authorities, with the exception of one, are independent of the administrative authorities and some belong to the non-governmental sector. It should be emphasized that this is a group of specialists, not just one person or institution, which broadens the nation's technical capacity for assessment.

Only the administrative authorities sign CITES permits. The scientific authorities are not required to sign, although they do participate, at least in the case of the CONAP scientists, in the granting process and they are consulted in all cases. This authority has the power to sanction in accordance with the Protected Areas Law and its regulations, Art. 81,ff. Also, the regulations in Art. 98 require all crimes and offences to be judged by the appropriate authorities for the respective sanction.

IV.B.2. CONCLUSIONS AND RECOMMENDATIONS

1. Greater efforts coordinating with fisheries-related entities are required, especially in light of the possibility of including more fish species of interest, such as sharks, in the CITES appendices.
2. In some respects, such as in criminal sentencing, legislation is still lacking. Moreover, it is unclear what the real effects of the "2000 IUCN Red List of Threatened Species" are.

3. Training of authorities who apply the law, such as customs officers, health officials, and security forces is important. Adequate resources should be provided on a permanent basis, and enforcement officials should be supplied with relevant support materials.

4. Throughout the region the problems of illegal trafficking arise mainly from a lack of training or those officials working at border crossings, and, due to the length of borders (e.g., between Mexico and Belize), the transit of people and goods is nearly impossible to control, especially in remote jungle regions.

5. As well as political will, it is important that appropriate and sufficient legal, technical and economic resources be brought to bear on the investigation of existing cases.

IV.C. HONDURAS

In accordance with the Political Constitution of Honduras, decree #131, 11 January 1982, all international treaties must be passed by the National Congress before being ratified by the Executive Branch (Art. 16). Once treaties signed with other States come into effect, they quickly become part of the internal law. Therefore, this system then provides immediate implementation of international environmental law. In the event of a conflict between a treaty and the national

law, the treaty prevails (Art. 18). In this way, CITES, when directly implemented, prevails over the internal laws of Honduras by virtue of the Political Constitution.

The normal process for a treaty like CITES to come into effect is set out in Articles 213 and subsequent of the Constitution. Once the law is enacted and published in the Official Journal, La Gaceta, it becomes compulsory after twenty days. However, this time period may be varied and, in special cases, another form of enactment may be ordered (Art. 221). The CITES convention was ratified by Decree #771, on 8 June 1979, and the accession was notified on 15 March 1985.

The constitution implicitly recognizes environmental laws. For example, Article 145 establishes the right to the protection of health and the duty of the State to adequately preserve the environment so as to protect the health of the people. Article 340 declares, for public use and necessity, the technical and rational exploitation of the nation's natural resources. The State will regulate the use of resources in accordance with the interests of society and will determine the conditions for permitting such use by individuals. These and other, more general, dispositions of the Constitution lay the foundation for the appropriate secondary legislation, including wildlife conservation and the regulation of its international trade.

The Constitution also incorporates individual private property rights in the broadest sense as a social function, providing no more limitations than those set out for reasons of necessity by the law (Art.103 and 61) and other collateral guarantees, such as regarding the prohibition of confiscation (Art. 105) and compensation in the event of expropriation (Art. 106).

Also, the right to free economic initiative is recognized, so far as it does not contradict the larger interests of society nor harm public morals, health or security (Art 331). In any case, Article 62 clearly establishes that for the safety of all, for the just demands of general well-being, and for the nurturing of democracy, the rights of each individual are limited by the rights of others.

There are no specific procedures in place to enforce the resolutions passed by the Conferences of Parties or other bodies set up by the CITES Agreement. In the majority of cases they are carried out through the discretion of administrators, or through executive decrees, or ministerial agreements. CITES listings are not updated, although the officials in charge of their application do make use of the revised appendices.

IV.C.1. ADMINISTRATIVE AND SCIENTIFIC AUTHORITIES

There are two administrative authorities in charge of the application of CITES in Honduras: the Department of Protected Areas and Wildlife (DAPVS) of the Honduran Corporation of Forest Development (COHDEFOR), which handles the terrestrial species of flora and fauna, and the Ministerial Office of the Secretary of Agriculture and Ranching. In the latter case, directives are carried out through the General Office of Fishing and Aquaculture (DIGEPESCA), specifically through their research department. Consequently, in practice, marine resources, including sea turtles, are managed by the Secretary of Agriculture (DIGEPESCA), while terrestrial resources, including crocodiles, are overseen by COHDEFOR. There is no ministerial agreement that makes designations, nor any other guiding statute regarding this issue, apart from official communications sent to the CITES Secretariat making designations each individual case.

In general, the aforementioned authorities have these powers by virtue of their general regulations and from a distribution of labour which evolved in the environmental sector of the country. For example, through Decree 74-91 of 18 June 1991, published in ***La Gaceta*** #-26 493, functions of the Department of Wildlife in the General Office of Natural Resources were changed to the AFE-COHDEFOR, giving them the right to regulate the hunting, capture, trade, management, reproduction and exportation of wild animals. Additionally, the Office of Protected Areas and Wildlife was created as an office of AFE-COHDEFOR, which is responsible for regulating wildlife management and for complying with any international wildlife agreements signed by Honduras.

Equally, the Fisheries Law #154, published in ***La Gaceta*** on 17 June 1959, grants DIGEPESCA the authority to regulate the management of the flora and fauna around the rivers, lakes, and oceans of Honduras (Art 1). But, all in all, there are no instruments, apart from the CITES text, that establish specific roles and powers, or that legally limit the scope of the procedures. In this respect there really is only the text of the treaty itself and the interpretations that authorities make concerning their powers.

In all cases, permits and certificates are signed by the Minister or by the Deputy Minister of Agriculture. The previously-mentioned authorities only send resolutions advising their opinions — the definitive signature and approval always comes from another official. This could conceivably interfere with proper technical procedures, thus affecting the compliance with CITES. It is possible that an administrative authority will soon be appointed to the recently created Secretary of Natural Resources and Environment.

The CITES scientific authorities consist in the Department of Biology at the National Autonomous University of Honduras, the Department of Natural Resources of the Pan-American Agricultural School, the research department of the National School of Forest Sciences (ESNACIFOR), the Secretary of Natural Resources and Environment, DIGEPESCA, and DAPVS. With the exception of the last two, which in practice function as administrative authorities, the rest are academic or research centres, an arrangement which guarantees the independence of the authorities and at the same time assures adequate technical capabilities in assessing permits and certificates. However, when granting permits and certificates it is not always necessary to consult with these authorities. Typically they participate in the cases that are under the jurisdiction of COHDEFOR, but the extent of their duty is not clearly established. Normally they meet once a month, but COHDEFOR is responsible for making the official announcement and for paying other expenses.

In practice, the CITES administrative authorities do not have training to directly implement sanctions (except for DIGEPESCA, but then only when applying fisheries laws), and o this must be done through superior petitions and always within the same institutions. Nevertheless, these CITES authorities directly carry out sanctions, such as confiscations.

IV.C.2. CONCLUSIONS AND RECOMMENDATIONS

Based on interviews and other information gathered by our investigators, the following recommendations seem pertinent:

1. There is a potentially serious problem in the lack of solid legal framework providing awareness of the rights and obligations of everyone involved in the trade of species. While this lack provides officials with great administrative discretion, at the same time, it makes the effective enforcement of rules dependent solely on the person holding the position of authority. This is not the most appropriate situation, which is why proper legal standards should be issued.

2. In their duties, the participation and independence of the scientific authorities should also be guaranteed, so that among other things they themselves determine their own meeting agendas and pay their own expenses.

3. The training of officials in charge of ports and customs needs to be improved. Although the central authorities know the regulations regarding trade, and apply them appropriately, all things considered, a significant part of the real control falls on customs agents and plant and animal quarantine agents. These, along with border control authorities such as the police, should be specially trained and given relevant educational materials.

4. Close coordination with fisheries authorities must be established and, in short, the divisions between marine resources, especially those in CITES (concerning sea turtles), must be reconsidered.

5. Because authorization for the trade of sea species is based on population studies (as required by the legal code of Honduras), greater direct participation of the authorities and more research in this area is called for. Also, there should be efforts to control contraband which may be allowed to be traded in other countries. Finally, criminal penalties presently in effect are inadequate to cover acts which violate CITES provisions.

IV.D. EL SALVADOR

CITES was ratified by El Salvador by legislative Decree -#355 of 16 May 1986, published in the Official Journal No. 93, Volume 291 on 23 May of that same year. In accordance with this country's Political Constitution (Decree #38 of 15 December 1983 and its reforms) Articles 144 (ff), international treaties signed by El Salvador with other countries –or with international organizations act as laws of the Republic once the treaty has taken effect. National law cannot modify or annul that which has been agreed upon in an existing treaty and, in case of conflict between a treaty and a national law, the treaty prevails (Art 144). In all cases the treaty dispositions, upon which the reservations are made, are not the law of the Republic (Art. 145). By virtue of this constitutional rule, in the event of any conflict between the two, CITES prevails over the common legislation.

The validity of any treaty will depend on its respective enactment and publication date, for it requires at least eight days from the date of its publication to take effect (this period may be extended but not

reduced). This means that there is no need to proceed to issue internal legislation in order for the CITES Treaty dispositions to apply, except when it is required to put some of its mandates into practice, such as criminal penalties. In this sense there is an automatic system incorporating the duly ratified international regulations into the country's legal code; thus, CITES is immediately applicable, requiring only some essentially instrumental dispositions.

The ratification and enforcement of CITES should be understood within the context of the nation's constitutional law. Article #117 provides the principle basis, but not the only one, for the issuance of appropriate regulations on the trade of wild flora and fauna species, especially those threatened or in danger of extinction. Other articles deal supportively with these issues.

For example, Article 101 establishes that the state will promote economic and social development by increasing production, productivity and the rational use of resources. Article 113 establishes that economic associations that tend to increase the national wealth through the better use of natural and human resources will be promoted and protected along with a just distribution of the benefits coming from these activities. Article 65 establishes that the health of the inhabitants constitutes a kind of public property and it is the duty of the state and of the people to care for its conservation and renewal. Article 69 orders that the state protect the quality of food products and environments conditions that in turn can affect the health and welfare of the people. Lastly, Article 60 states that education about natural resource conservation will be compulsory in public, private, civil, and military schools.

Together with the foregoing, the Constitution in Article 103 guarantees and recognizes the right to private property in a social framework, as well as economic freedom where the latter does not contradict the interests of society. Article 102 directs the state to protect and promote private initiative where it meets the necessary conditions of increasing national wealth, and a sharing of these benefits with the inhabitants of the country.

In spite of these compatible constitutional provisions, there is yet some uncertainty regarding the legal and obligatory nature not only of CITES but also of Resolutions passed by the Conferences of Parties. In what way do the CITES resolutions become incorporated into the legal order of this country? It would seem they have the force of international customs, rather than international laws. Apart from that, in principle, CITES Resolutions are assimilated through the discretion of administrators as they interpret and carry out their duties, by means of decrees or ministerial agreements, and, in some cases, directly by internal laws. Specific mechanisms designed for such effect do not, however, exist, nor is it common practice to publish modified Appendices or Resolutions of Parties.

IV.D.1. ADMINISTRATIVE AND SCIENTIFIC AUTHORITIES

Executive Agreement No. 1 (4 January 1996) of the Executive Body of the Agriculture and Ranching Branch terminated the prior Executive Agreements N 599 (2 July 1997) and No. 395 (7 September 1995) and went on to designate new administrative and scientific authorities for CITES. Prior to this the Administrative Authority for CITES in El Salvador was the National Park and Wildlife Services of the Ministry of Agriculture and Ranching. And from the ratification of CITES in 1986 to the appointed date, the practical application of this agreement was effected through various, now annulled, dispositions of that ministry, including Executive Agreement #628 of 26 August, 1986 (Official Journal, Volume 295, 17 September 1986).

The new agreement, in Article 2, designates as administrative authorities the General Director of Plant and Animal Health (DGSVA) of the Ministry of Agriculture and Ranching, and, the Director of the Division of Agriculture and Livestock Quarantine of the same ministry. Either of these administrative authorities may sign certificates, permits and other documents under their responsibility (Art 5). They also perform the technical aspects of processing permits and certificates, thereby hindering any political intervention in the matter. These authorities are also responsible for granting permits and export certificates for wildlife species. However, the decree is lacking with regard to all other usual powers of CITES authorities which would relate to importing, re-exporting, and traffic of species, as well as the tasks of preparing reports, receiving notices, etc. In practice all of this has been merely assumed, as the disposition regulation is, without a doubt, quite limiting. Nor do the authorities have any powers to implement sanctions in the event of a violation of CITIES regulations.

The appointed scientific authorities for wild flora and fauna consist of the General Director of Natural Renewable Resources, and one independent professional. The appointed scientific authorities for hydro biological species, both marine and continental, are the General Director of Fisheries Development and one independent professional.

The independent professionals work as volunteers. They are nominated by an Executive Order on behalf of the Ministry of the Environment and Natural Resources, and they must meet the requirements of suitability and high scientific skill so that their expert participation will enhance the decisions for the conservation of species in relation to international trade. Normally a great part of the experience and knowledge of populations, species, etc., is maintained by universities, research centres, or by individual persons, and for this reason it is essential that such experts be appointed. This assures not only their independence, but also the quality of the reports and presented criteria. It is suggested that the selection of these individual authorities should be made by the universities or botanical gardens themselves.

With the reform of the Wildlife Conservation Law, according to Legislative Decree No. 441, commercial activities relating specifically to wildlife are the responsibility of the Ministry of Agriculture and Ranching, while the rest are regulated by the Ministry of the Environment and Natural Resources. The latter ministry also issues dispositions in scientific matters, which relate to international trade of threatened species of flora and fauna (Art 42). However, the executive order that names the latter ministry as a scientific authority has yet to be made effective.

According to the interviews conducted, it would seem that the scientific authorities are not regularly consulted when issuing permits and certificates. Article 4 only barely outlines the powers of the scientific authorities. It sets out that they will only have the power to assess or to advise the administrative authority based on criteria and scientific knowledge as demonstrated in opinions, recommendations, studies, research and other means of scientific expression. Also, Article 42 of the modified Wildlife Conservation Law states that the Ministry of Agriculture and Ranching will ensure the application of agreements related to the international trade of endangered species. Their evaluations must be signed by at least two of the scientific authorities for each subject area. Although this requirement seems to give greater reliability to their reports, it is sometimes difficult to fulfill and in some ways it is unnecessary. In practice it seems that the signatures of these two authorities are rarely obtained when processing a CITES permit or certificate. Finally, some have suggested that the designation of Administrative Authorities from the Office of Plant and Animal Health would give the advantage of

having these authorities involved at all points of transit for wild species. Their actual usefulness, though, depends on the training they receive.

IV.D.2. CONCLUSIONS AND RECOMMENDATIONS

1. The appointment of administrative authorities for CITES should consider the expertise of both the Parks and Wildlife staff, as well as Plant and Animal Health authorities. A tight coordination and collaboration between both authorities should exist, due to the similarity of their functions.

2. A major weakness of the Wildlife Conservation Law is the absence of regulations on many of its dispositions. Many activities, including scientific research, lack controls. The existing proposal to regulate wildlife law through the application of CITES should be approved. And coordinating mechanisms must be in place in order to better regulate the wildlife trade, since this is the jurisdiction of the Ministry of Agriculture and Ranching, which has to work with the dispositions put forward by the Ministry of Environment and Natural Resources.

3. As in other countries, border control could improve by, for example, establishing an environmental police force within the National Civil Police. Also, training must be provided for all officials in charge of the application of CITES provisions, and especially for border authorities that have in their hands the most immediate means to effectively apply theise provisions. A training program, accompanied by supporting materials, is needed for the Plant and Animal Health authorities working at border posts, as well as for customs and police officers. This will improve awareness about the content of the law and the regulations regarding wildlife trade.

4 In all cases it is preferable to deal with an institution that has a team of people trained in diverse areas, rather than merely naming an individual as a scientific authority. A further priority is a formal decree making the Minister of Environment responsible as a scientific authority. Finally, the principal goals of CITES should be supported and enforced by the clear definition of strong criminal sanctions.

IV.E. NICARAGUA

The CITES Convention was ratified by Nicaragua through Resolution #47 (11 June, 1977) and Presidential decree No. 7 (22 June, 1977), when both were published in ***La Gaceta*** #183 on 15 August 1977. The Nicaraguan Constitution requires this dual approval by Congress and the Executive Branch for international treaties to take effect. Once this takes place, an agreement such as CITES is automatically in force without the necessity of additional legal instruments, requiring only a few appropriate regulations. International treaties prevail over the national laws, but clearly could not oppose the Constitution or alter its dispositions (Article 182 of the Political Constitution).

Further, by Decree # 8-98 (29 January 1998), published on 10 February 1998 in ***La Gaceta***, all definitions, interpretations and concepts arising from the resolutions of the CITES Conferences of Parties are considered incorporated into these dispositions. The modifications in the Appendices are considered binding for the CITES authorities, even though there are no official publications of the procedures of the CITES lists, such as through a decree by the Minister of Natural Resources.

It should be noted that the Constitution itself directly refers to environmental rights. Article 60 states that the Nicaraguans have the right to live in a healthy environment, and the preservation, conservation and recovery of the environment and the natural resources are obligations of the State. Also, Article 102 refers to all natural resources as a national heritage.

Further, Article 44 guarantees property rights, but only in the context of their deemed larger social function. These and other dispositions offer a general constitutional framework for the development of secondary legislation that aids wildlife conservation.

The Constitution also guarantees and recognizes property rights in Article 44, but is limited in its practise by virtue of the social function it fulfills.

IV.E.1. ADMINISTRATIVE AND SCIENTIFIC AUTHORITIES

Article 7, clause(a) of the aforementioned regulation (named Rules And Procedures For The Exportation And Importation Of The Wild Flora And Fauna Of Nicaragua), assigns MARENA the duty of designating the CITES administrative and scientific authorities. Furthermore, the Article also gives the Ministry jurisdiction to represent or delegate the representative of Nicaragua at the Conferences of Parties (clause b), the power to formulate, propose or adopt CITES amendments and reservations (clause c),and to authorize research regarding biotechnology with the National Genetic Patrimony as well as scientific exchange (clause d).

The duties of the administrative authority are detailed in Article 8, and include:

1. To control international trade and manage the registration of the merchants. The registration is stipulated in Article 6.

2. To monitor the activities of international and national trade.

3. To promote studies and inventories of plant and animal populations for CITES, or other studies that may be of economic interest to the nation relating to harmful acts and activities affecting these species.

4. To follow-up on activities dealing with reproduction in captivity, on farms, or issues of artificial reproduction.

5. To authorize and issue export certificates and permits, as well as oversee any traffic at the country's borders of plant or animal species or parts thereof in accordance with the present dispositions of the special laws and international treaties.

6. To designate rescue centres in coordination with the Ministry of Agriculture and Ranching and, with the Customs Office and the Port Authority, designate land, sea and air Ports of Entry where specimens must be presented for clearance.

7. To supervise and coordinate with the authorities, the stockpiles of plants and animals destined to international trade, as well as execute control measures to counteract illegal traffic of these species.

8. To supervise in coordination with Customs, the packing of species for exportation in accordance with the regulations specified by IATA for the transportation of live animals.

9. To periodically and visibly publish the CITES species list. Also, to maintain the trade registries for specimens in Appendices I, II and III of CITES, in order to control export permits (Art. 9). Inform the CITES Secretariat about the application of the Convention, and the species that should be included in Appendix III (Art.19). Maintain cooperative relations with other countries, especially neighbours, and with the Secretaries of other Conventions (Art. 20).

The CITES office established in MARENA, under the General Directorate of Biodiversity and Natural Resources of the aforementioned Ministry, is the CITES administrative authority responsible for the application of CITES and the permits and certificates. In spite of new legislation, a definite uncertainty persists regarding the duties of the Office of Fauna. Nevertheless, in practice, this office is in charge of everything relevant to CITES, including receiving communications and notices, presenting reports and ensuring the information. The permits and certificates are signed by the Biodiversity Directorate administrators, and in their absence, by the Minister or vice minister of MARENA.

The scientific authority is one member of the CITES Office that assesses CITES matters. There are no designated authorities for flora or hydrobiological resources, and for these cases, an authority considered skilled in the subject area is consulted. The scientific authorities are not independent authorities in the practical sense of the word. Their duties are specified in the Article 16 and are basically the following:

Clause a: Advise the administrative authority on the allowable numbers per species for international trade in accordance with Conferences of Parties Resolutions;

Clause b: Issue recommendations for the international trade of species;

Clause c: Produce population studies of CITES-listed plants and animals or other studies of economic interest for the nation;

Clause d: Establish the registration and inventory of species, in agreement with Article 69 of the General Law of the Environment and Natural Resources.

The regulations establish the criteria for designating either ordinary or judicial persons as scientific authorities, for the flora and the fauna sections (Art.17). This will guarantee adequate assessment by the administrative authority when performing their duties. It is expected that, in this way, there will be many independent scientific authorities with skills in different fields.

The administrative authority is authorized to sanction, in agreement with the General Law of the Environment and its regulations (Art. 22), considerations that will be set in the future.

IV.E.2. CONCLUSIONS AND RECOMMENDATIONS

1. Comprehensive wildlife legislation that examines all aspects of international and national trafficking is urgently required. Internal trafficking of species must be appropriately controlled, as it has become more serious than foreign trafficking. In general, the legislation on this theme is dispersed, confusing and contradictory, and much of it dates back several decades.

2. For effectiveness, CITIES dispositions requiring subsequent action should be developed.

3. Criminal sanctions do not exist and the regulation application levels should be increased, bearing in mind that the policy of repression is only one aspect of the sustainability policies.

4. Coordination between MARENA authorities and the Fisheries Office must be substantially improved in order to specify their respective working boundaries and to prevent contradicting actions on areas requiring collaboration and cooperation from different entities.

5. A permanent training program should be established for the workers in charge of applying CITES at the borders, such as customs officers, quarantine staff, police and the national guard.

6. Due to the fact that quotas of wildlife species are permitted, it is of utmost importance to update any scientific studies and to monitor and revise them periodically. It is also important to continue with the population studies and research in order to set the quotas.

7. Illegal trafficking of wildlife species with bordering countries is relevant and could possibly increase due to the growth of biological tourism in Costa Rica, among other reasons. Tight coordination with border control authorities of these countries is required to further investigate illegal trade cases and to reinforce the operations.

IV.F. COSTA RICA

Article 50 of Costa Rica's Political Constitution guarantees the right to a healthy and ecologically balanced environment. Other dispositions of the Magna Carta, such as Articles 6, 46, 69, 89 and 121, subsection 14, are also related to the same right. Article 21, moreover, states that life is sacred and health is the foundation of this right. This constitutional framework is sufficient for the development of secondary legislation on the environment, and wild flora and fauna.

The right to private property is guaranteed by Article 45, but is subject to the general interests of society and can be specifically limited by a two-thirds majority vote of the legislative assembly, for a total of 38 votes. Article 46 pro-

vides for a freedom of economic initiative again within a broader context of consumer rights and society's right to a healthy environment.

As set out by Article 7 of the Political Constitution, from the moment of their publication, international treaties and agreements ratified by the Legislative Assembly take precedence over ordinary law, thus placing them just below the Political Constitution itself in importance. Such treaties are active once they have been published, unless the treaty specifies otherwise, and do not require secondary domestic legislation other than administrative directives to make them enforceable in the country. On 22 October 1974, Costa Rica ratified CITES through law 5605.

As yet, no specific procedure is in place for the reception or application of rResolutions from the Conferences of the Parties. As in other countries, this will happen in due course as the law is applied and elaborated in various regulations. With respect to the lists of species, in agreement with Article 58 of the Regulations of the Wildlife Conservation Law (properly cited further on), species of fauna from Appendix II of CITES living in national territory shall be considered "threatened". No specific procedure exists for the incorporation of the lists, nor is it common for them to be published or distributed.

IV.F.1. ADMINISTRATIVE AND SCIENTIFIC AUTHORITIES:

No specific decree or law establishes the administrative authorities. However, in Costa Rica, the National System of Conservation Areas already holds authority over wildlife, forest resources, and protected areas, and in effect, this authority corresponds to the functions of the CITES administrative authorities. This is reaffirmed by the regulations of the Wildlife Conservation Law, where in Article 71 the Executive Branch will name one or several administrative authorities whose main function shall be to grant, when necessary, permits for exportation and importation, as well as certificates of origin. The law neglects to mention other functions corresponding to the administrative authority, nor does it expressly mention re-exportation, which is probably included within exportation. The responsibility for preparing reports is the duty of the administrative authority, who must do so in the first trimester of each year, sending a copy to the CITES Secretary (Art.73). There is also one official responsible for flora and another for fauna, as well as two other individuals authorized to sign the permits and certificates. One of these officials belongs to an Area of Conservation that has within its jurisdiction the Juan Santamaría International Airport, which is in the Central Volcanic Range Conservation Area.

The regulations of the Wildlife Conservation Law expressly specify that one of the functions of the Technical Support Unit of the General Wildlife Directorate is to authorize import and export permits for wild flora and fauna and for the species included in the different appendices of CITES (Article 14(f)). The General Director also has the authority to ensure the correct application of the laws and of the different international conventions on wildlife (Article 13(c)).

The law establishes that the Executive Branch may also name one or several scientific authorities whose function is to provide the scientific information necessary for the granting of permits or certificates for the importation or exportation of wild flora or fauna (Art. 74); this has in fact been done through Executive Decree #24957, MIRENEM, 18 September 1985. These scientific authorities are independent, and have been drawn from several academic and scientific institutions, namely: the National Museum, the University of Costa Rica (School of Biology), the National University (School

of Veterinary Medicine, Biological Sciences, and Environmental Sciences), the Institute of Biologists, the National Zoo and the Technological Institute. Their internal responsibilities have been indicated, and some of their functions defined, and they are expected to meet regularly with the administrative authorities.

With the exception of confiscations, administrative sanctions are imposed by the Environmental Administrative Court (Art. 103 and subsequent of the Organic Environmental Law, #7554), which is the most decentralised division of the Ministry of the Environment and Energy (MINAE).

IV.F.2. CONCLUSIONS AND RECOMMENDATIONS:

In general, Costa Rica's the legal framework and enforcement policies regarding trade in wildlife are satisfactory. Nevertheless, some improvement is possible.

Given the fact that the authorities responsible for controlling illegal traffic are Customs officials, plant and animal health officials, and security forces, adequate staff training is essential. It is important to provide continuing instruction, as well as concise and standardised materials that assist in identifying protected species. Also, while one of the administrative authorities has headquarters near the airport, MINAE has no personnel stationed along the borders specifically to carry out these controls. These are recurring problems throughout Central America.

As in other countries, it is crucial that the regulations for the traffic and trade in wildlife be public knowledge. The large tourist industry in Costa Rica should be a target group for education about the regulations regarding wildlife protection, because foreign visitors often are a ready source of demand for exotic trade goods including protected species and their products. Similarly, effective sanctions should be enforced and widely published. It is considered that the tourism in this country may convert into a growing source of (illegal) demand in others, a topic which should be taken into consideration by both the environmental and tourism authorities.

Similarly, the framework for sanctions (in this case quite adequate) is still lacking in true effectiveness.

Regrettably, there is confusion and poor communication between fishery and terrestrial institutions, such as INCOPESCA and MINAE. INCOPESCA is fundamentally oriented towards promoting fisheries and less interested in the conservation of resources without commercial value. A clarification of their respective spheres of action and a commitment to cooperation could benefit the sea turtle situation and avoid certain conflicts.

Increased vigilance and control at well-known smuggling points, and subsequent investigations and criminal sanctions of discovered cases, such as the massive sales of hawksbill articles, would also serve to discourage this traffic. Border control authorities and police recognize the importance of these specific efforts.

IV.G. PANAMA

The Political Constitution of Panama recognizes the existence of an ecological system in Article 114 and subsequent articles. Article 114, in fact, requires the State is to guarantee that the population lives in a healthy environment free of pollution, in which the air, water and food satisfy the requirements for the adequate development of human life. Article 115 establishes the duty of the State and people to engage in social and economic development in a way that prevents the contamination of the environment, maintains the ecological balance and avoids the destruction of ecosystems. Specifically, the State will regulate, supervise and apply all necessary measures in order to guarantee that the rational utilization and exploitation of terrestrial, river and marine fauna, as well as fauna from the forests, lands and waters, in a manner thereby avoiding depredation and assuring their preservation, and renewal (Art. 116). Also, under Article 216, the State must regulate hunting, fishing and the exploitation of forests (Art. 216). It can be inferred from these ordinances that there is an appropriate constitutional framework for the regulation of international trade of wild flora and fauna, so as to ensure their preservation.

The Constitution also recognizes the existence of the right to private property (Art.), while indicating that this should fulfill a social function (Art. 45). Finally, the guarantee of free economic initiative in Article 40 is clearly circumscribed by Article 46, by the demands of public utility or the collective interests of society.

With respect to international treaties, the Legislative Assembly has the authority to approve such treaties (Art. 153), which are subject to the same process of validation as the ordinary laws, including their publication and announcement (Art. 158 and subsequent. The Constitution does not grant these treaties superior standing to domestic law; but they are seen as on par with it. In this sense, CITES is duly effective by means of Law Number 14 of 28 October, 1977, published 27 January, 1978 in the Official Gazette. Since the Panamanian legal system does not require a separate law to incorporate the ordinances of the treaties into internal law, they can be considered immediately applicable.

The resolutions of the Conference of the Parties and the modifications of the appendices do not have a specific procedure for their incorporation into the internal law. This, however, is carried out through administrative interpretation and the application of various ordinances specific to the Convention. The appendices of CITES are not published in an up-to-date form.

IV.G.1. ADMINISTRATIVE AND SCIENTIFIC AUTHORITIES

The Law of Wildlife Conservation (#24, 7 June 1995) stipulates in Article 2 the following objectives: to regulate the collection, extraction, commercialization, exploitation, trafficking and in general, all types of exploitation of wildlife, their products and sub products (subsection 7); to regulate hunting

and fishing in the entire national territory (subsection 8); to aid in the execution of the obligations contracted by the State in international treaties related to wildlife conservation, developing their precepts for correct application.

Accordingly, in his letter of 6 December 1979 to the CITES Secretariat, the Minister of Foreign Affairs appointed what was then the National Management of Natural Renewable Resources (RENARE) of the Ministry of Agricultural Development, as administrative authority for the treaty in Panama. This appointment has since been revised and specific functions are the responsibility of the Protected Areas and Wildlife Office of the National Authority of the Environment (ANAM). According to ANAM's founding Law Number 41 of 1 July 1998, establishes it as the competent entity, to standardize, regulate and control the access and use of biogenetic resources in general (Art. 71).

Article 4 provides ANAM the authority, through the Protected Areas and Wildlife Office, to issue hunting and fishing permits, as well as permits for the collection and removal of national wildlife, provided that the pertinent technical studies have been properly costed and carried out.

Article 83 indicates that ANAM, through the Protected Areas and Wildlife Office, is responsible for the application of the international wildlife conventions ratified by Panama. This Office also carries out the typical functions of the CITES administrative authority through the Supervision and Protection official, who undertakes all of the ordinary duties of the administrative authorities, such as receiving notifications, preparing reports, and maintaining documentation from the Conferences, as well as other documentation of importance. The authorities that sign the permits and certifications are the Director and Sub-director of ANAM, and the Director of Protected Areas.

With respect to activities in the marine environment, the Maritime Authority of Panama co-ordinates the guidelines for the conservation, investigation, trade and management of wildlife with ANAM. In addition, it grants permits for the exportation, importation, re-exportation, re-importation or transit of wildlife species, in accordance with the national laws and international conventions, provided that the respective technical studies have been completed. It also determines periods of closed seasons, the quantity of specimens to be taken outside of these periods, and it produces and periodically revises the list of species that are threatened, endangered or becoming extinct (subsection 8).

The present scientific authority is the Director of the School of Biology. There are no legal regulations that establish this authority, beyond an exchange of correspondence between the Director of Protected Areas and the Rector of the University of Panama, establishing in 1995 the School of Biology as the scientific authority. The authority is the same for all species and represents more of a personal appointment than an institutional one. Nevertheless, the present Director has in mind the establishment of an Advisory Committee drawn from diverse fields. Again, the powers and functions are not fixed by law.

Although the administrative authorities do not usually apply sanctions directly, it has happened that ANAM, their General Director or the regional headquarters (in this case with appeal before the former) have sanctioned those who violate the wildlife trade laws.

IV.G.2. CONCLUSIONS AND RECOMMENDATIONS

In general terms, the application of CITES has generally been a success in Panama. Yet, as in other countries, improvements can be made in the training of inspections personnel, customs and quarantine officials, and police authorities. Most helpful would be the provision of adequate educational materials regarding the goals of CITES and the provision of clear lists of species to be protected.

Although there is good co-ordination with the health authorities of the Ministry of Agricultural Development, cooperation among various authorities with clearly delimited jurisdictions will help improve the effectiveness of controls and sanctions.

Decrees that presently prohibit the hunting and trade of certain species of wild fauna, must be revised to adapt them to the present reality of this country.

The scientific authorities must strengthen and clarify their role in the permit and certification issuing process, and their functions in general. They should also consider the creation of a collegial body, rather than just one specific person.

Finally, criminal sanctions should be reviewed to include conduct to be regulated. Overall, there has been little application of the present regulations, and their effectiveness must be considered.

The approval of the wildlife law regulations would improve the legal framework of CITES, and it is important that these come into effect as soon as possible.

V. POPULAR USES OF THE SEA TURTLES

In order to clearly understand how Central Americans currently make use of sea turtles and their derivatives, and to understand regional trafficking in these products, it is crucial to have anecdotal information that could explain aspects of their "social value" to culture, folklore and beliefs.

TABLE 2:
Sea turtle parts and products presently in use in Central America.

	Eretmochelys imbricata						***Chelonia mydas***					
Country	Carapace	Plates	Eggs	Meat	Oil	Others	Carapace	Plates	Eggs	Meat	Oil	Others
Belize	■	■	■	■	■	■	■		■	■	■	■
Guatemala	■	■	■	■	■	■	■		■	■	■	■
Honduras		■	■	■	■	■			■	■	■	■
El Salvador		■	■	■	■	■						
Nicaragua	■	■	■	■	■	■			■	■	■	■
Costa Rica	■	■	■	■	■	■	■		■	■	■	■
Panamá	■	■	■	■	■	■	■		■	■	■	■
	C. m. agazzisi						***Dermochelys coriacea***					
Country	Carapace	Plates	Eggs	Meat	Oil	Others	Carapace	Plates	Eggs	Meat	Oil	Others
Belize												■
Guatemala			■		?				■			■
Honduras			?						■			
El Salvador			■						■			
Nicaragua			■						■	?	■	
Costa Rica	■		■						■	?	■	
Panamá			■						■			
	Lepidochelys olivacea						***Caretta caretta***					
Country	Carapace	Plates	Eggs	Meat	Oil	Others	Carapace	Plates	Eggs	Meat	Oil	Others
Belize							■		■	■	■	
Guatemala			■	■	■		■					
Honduras			■						■	■	■	
El Salvador			■	■	■							
Nicaragua			■	■	■				■	■	■	
Costa Rica	■		■	■	■				■	■	■	
Panamá			■	■	■				■	■	■	

?: The product is probably found in the country

"Sea turtles" have a variety of meanings to people in this region, which allows them to be classified under the following headings: deity, trade item, food, medicine, aphrodisiac, managed animal, tourist attraction, and artistic or scientific object. These meanings are not exclusive, and they vary depending on the dynamics of each society (Vargas 1999).

When those surveyed were asked, “Why do people buy accessories made from hawksbill shell?” the common answer was that they believe it possesses special powers that safeguard against curses and evil wishes. The popular view is that, “When a person wearing the jewellery, especially a ring, bracelet or necklace, is exposed to a curse, the hawksbill shell jewellery will absorb the curse and, as a result, it will break”.

These beliefs regarding types of [R.G.1]”luck” and bodily protection take precedence over marketing elements such as the beauty, quality, and price.

Earrings, brooches and money clips are also made from hawksbill turtle shell. People want to wear these items on themselves solely because of the beauty that the material reflects.

Other items made from hawksbill shell, such as guitar picks and spurs for fighting cocks, are associated more with the material’s flexibility, lightness and durability. These qualities are also important in combs and hair ornaments, as well as in folklore costumes, a tradition that comes from the Iberian roots that persist in Central America. An example of this is the back comb of the skirt or typical Panamanian dress. This brings hawksbill sea turtles into the regional folklore.

In El Salvador, communities in the Department of La Union celebrate patron saints’ days with a variety of foods and recreational activities, as well as with the sale of personal items made of hawksbill shell.

Ornamental articles such as ashtrays, jewellery boxes, bookends, picture frames, fans etc., are rare in the area, yet they are associated more with the beauty of the hawksbill’s marbled patterns and its ability to decorate spaces.

There is no doubt that the use of hawksbill products by Central American societies dates back many centuries; it has even been shown that settlers brought hawksbill use to the area. Settlers later exploited the shells of the native hawksbill turtles, however, and the region became an important exporter of raw material.

According to Palmer (1986), turtle hunters along the Caribbean coast of Central America started arriving under sail from the coasts of Bocas del Toro (Panama) and Nicaragua during the second half of the 18th Century. They came in March and stayed until September, spending their time hunting sea turtles with harpoons. “All work was with the turtles; they transported the shells in order to sell them in Bocas del Toro. The shells were then exported to Germany for the production of combs and buttons”. Even today, people would rather buy a hawksbill accessory than an accessory made of plastic or resin.

As for the use of oils and fats, the most popular, recognizable quality is that they have medicinal benefits for use in massage treatments, as well as for bronchial-pulmonary or respiratory problems. The oils produced from cooking the turtle’s body fats can usually be found in popular markets where herbs and potions are sold. There they are advertised as medicine that is even more effective than the oils obtained from shark liver, snakes, or skunks.

These oils and fats are also known for their ability to “remove” skin wrinkles (signs of aging). People say that it surpasses the best facial creams available on the market. Creams and lotions are more com-

mon than pure oils. According to Groombridge & Luxmoore (1989), sea turtle oils that are used in medicines and cosmetics mainly come from the green sea turtle.

Oils obtained from eggs are believed to be an incomparable source of nourishment, especially for children and people who suffer from depression and anaemia. As a result, eggs are also associated with revitalizing qualities.

TABLE 3:
Chemical composition of the eggs of the olive ridley turtle (*Lepidochelys olivacea*), % per turtle egg.
Source: Asociación de Desarrollo Integral de Ostional (The Ostional Association of Comprehensive Development), Costa Rica 2002.

Components	Albumen (Egg white)	Vitelline (Yolk)
Proteíns	1.27	9.80
Total lipids		9.60
Saturated Fatty Acids		32.9
Mono-saturated Fatty Acids		44.9
Poly-saturated Fatty Acids		13.8
Glycides	0.24	1.95
Cholesterol		
Vitelline Lipids		3.33
Vitelline		0.32
Eatible parts		0.31

In this area (Central America) the eggs are mainly used as food items with strong aphrodisiac properties; to the general public, they represent the possibility of better sexual performance or increased energy. This is the quality that causes a high demand for sea turtle eggs in Central American societies. An example of this demand is that during the month of August 2001, the community of Ostional, Costa Rica, sold 3,365 bags, with 200 eggs in each, representing a total of 673,000 eggs laid by olive ridley turtles (***Lepidochelys olivacea***) (Table 3) (R. Morera, pers. comm. 2001). This harvest covers but a small part of the national legal market.

There is no doubt that in this region, after chicken eggs, sea turtles are the second most important source of eggs. The species of turtle that contributes the most eggs for general use is the olive ridley. The intensive use of eggs in the Pacific coast of Central America is a well-known, but under-examined fact (Thorbjarnarson *et al.* 2000).

TABLE 4:
The prices of eggs sold on the beach to the primary middleman, according to Govan (1999)*.

Country	Scope of the price at first sale (100 huevos)
Belize	**$25,00-$50,00**
Guatemala	**$11,90-$41,67**
Honduras	**$5,71-$35,71**
El Salvador	**$29,00-$67,00**
Nicaragua	**$3,62-$17,39**
Costa Rica	**$7,27-$18,18**
Panamá	**$4,00-$25,00**

* Up-dated with data communicated by Dueñas, C.; Córdoba, L.

Sea turtles are also a source of meat for human consumption. At some sites the hunting of sea turtles is, or was, permitted by the hundreds. An example of this is the fishing industry that developed along the Caribbean coast of Nicaragua (Lagueux 1998a). Turtle meat remains a very popular dish with cultural groups such as the Afro-Caribbean, Garifunas, Miskitos, Kunas, Gnöbes, and others. All of these groups, along with the rest of society that eats turtle meat, agree that it has special gastronomical properties. However, there are no scientific studies to confirm this, or that compare turtle meat to more commonly used meats such as chicken or beef. Another quality that favours the consumption of turtle meat is that in coastal areas its price is usually lower than the price of other meats (MIKUPIA/ MARENA 1997, Vargas 1999).

There is no information available on the social use of stuffed specimens or of the carapace, although there is a common belief that having articles from the ocean in the house brings bad luck. This conflicts with hawksbill use and the presence of hawksbill decorations in bars and restaurants; its use as a decorative item concurs with the turtle's significance as an object of artistic value.

VI. SEA TURTLE SPECIES IN THE REGION AND THEIR USES

VI.A. HAWKSBILL TURTLE (*Eretmochelys imbricata*), PACIFIC

Regionally this species is rapidly approaching extinction due to a series of factors. The biggest impact has come from a virtually unregulated harvest and trade of meat, eggs and shells, as well as from the sale of stuffed juveniles. The lack of regular statistical assessments of the distribution and general state of populations along the Pacific coast of Central America has contributed to a lack of action (NMFS 1998b).

Reports on this Pacific species are rare; most tend to emphasize the juveniles (shell length: 30-40 cm) that are seen near the surface of the ocean. There are also reports on products, such as meat or bony plates, and, on a few occasions, strandings have been reported (e.g., Langosta Beach, Costa Rica; 2000-2001 season; E. Vélez, pers. comm. 2001).

It should be noted that hawksbills captured by fishing vessels, as well as individuals that are found dead on the beach, have been recorded in both Costa Rica and El Salvador. This confirms that, although they do not often nest along the coasts of these two countries, they are found in the surrounding ocean. However, due to a lack of data, the home range and migration routes of hawksbill turtles in the eastern Pacific cannot be clearly established (NMFS, 1998b).

It is not clear when the majority of the hawksbill nesting occurs. Small populations make it even more difficult to determine this trait. Cornelius & Robinson (1986) found no proof of hawksbill nesting, yet Drake (1996), as well as Aráuz & Montero (1997), confirm both nesting and the management in hatcheries of these nests. The quantities found are relatively small, fewer than 10 nests annually.

In El Salvador there are no confirmed nestings, and only a few in Nicaragua and Panama. When records do exist, they are often isolated individuals nesting during the nesting season of the olive ridley turtle. There are sporadic recordings of one or two hawksbills per year in Punta Banco, on the Pacific Coast of Costa Rica (Aráuz *et al.* 2000). Nesting is thought to occur throughout the year in the western Pacific. The number of eggs laid varies between 130 and 215 (NMFS 1998b).

The hawksbill turtle can also be found in coastal ecosystems, including mangrove swamps (Hasbún, Vásquez & León 1998). Higginson & Orantes (1987) have shown that this species inhabits the Chiquimulilla Channel, and nests sporadically in places such as La Candelaria, Taxico and Santa Rosa in Guatemala.

VI.B. HAWKSBILL TURTLE (*Eretmochelys imbricata*), CARIBBEAN

There is inadequate information regarding hawksbill turtles along the Caribbean coasts of Central America. The species is captured in areas used for feeding, mating and nesting, especially along beaches and reefs. They are usually caught by lobster (***Panilurus sp.***) and conch (***Strombus gigas***) divers. In general, the whole turtle is used; the shell, meat, fat, eggs and part of the neckband. In the case of male hawksbill turtles, the penis is usually placed in a bottle of sugarcane liquor in order to produce an aphrodisiac potion. Juvenile specimens are stuffed and sold as decoration. Reports of accidental captures of hawksbill turtles by dragnets are rare, probably because hawksbills usually inhabit reef zones.

For several decades the region was a very important source of hawksbill scutes for international trade, and this use is widely implicated in the current scarcity of the hawksbill turtle in the region.

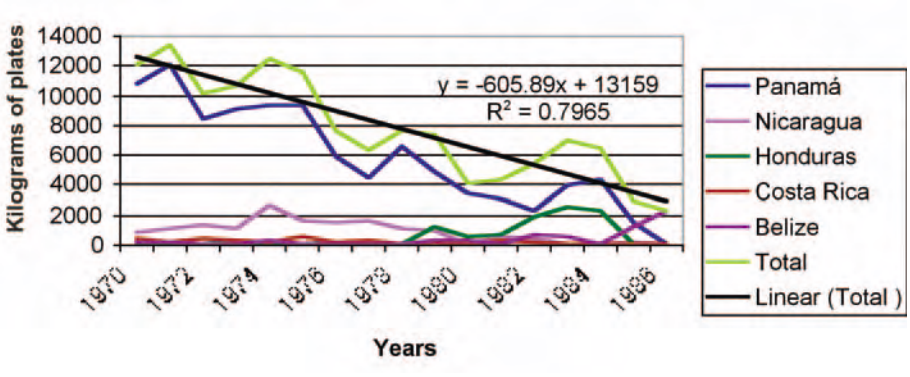


Figure 1: The export of hawksbill bony plates to Japan from countries in Central America (1970-1986). Source: Milliken & Tukunaga (1987).

From 1970 to 1986 in Central America, 131,000 kg of hawksbill bony plates were exported from the area, representing the slaughter of approximately 138,900 hawksbill turtles (approx. 1 kg of bony plate /turtle) (Milliken & Tukunaga 1987).

Regarding the status of the species in individual countries, there is no evidence of large groups of hawksbills in Belize, although the most significant beach, Manatee Bar, currently supports 200-250 nests/ year. This probably represents a population of approximately 40-50 females, nesting from May until October (Smith, Eckert & Gibson 1992).

Rosales (1987a) reported between 380-760 nests were laid in Punta Manabique, Guatemala, signifying an esetimated 70-150 females. The turtles' nesting season is from May to November with a peak between June and August. Today the numbers are much lower: fewer than 50 nests per year.

This species is often seen in the waters around the Utila, Roatán, and Guanaja islands, the Cochinos Keys and the keys across from the Misquita coast of Honduras. According to Cruz, Galeano & Espinal (1989), nesting on these islands occurs from July to September while, along the continental coast, nesting occurs from August to September in the areas between Brus Lagoon and Punta Patuca. Aronne (2000) notes 34 nests in the Cochinos Keys, mainly in Big Key, Little Key and a few adjacent coral keys. By contrast, Utila Island had just over a dozen nests last season (2001),(G. Pedersen, pers. comm. 2001).

Lagueux (1998b) estimates that at least 80 hawksbill turtles are slaughtered annually along the Miskita coast of Nicaragua. The recent nesting situation in Perlas Keys, Nicaragua is as follows: 110 nests (1999), 152 nests (2000) and 158 nests (2001). The peak nesting period occurs between the months of June and August (C. Lagueux, pers. comm. 2002). According to González (2001), 75 hawksbill nests have been documented in Cocal, which is located in the southern part of Nicaragua's Caribbean Coast. Gonzalez reports that, thanks to the actions of the Wildlife Conservation Society and University of Florida, 73 Hawksbill turtles have been tagged in RAAS [Atlantic South Autonomous Region (Nicaragua)].

In contrast, Nietschman (1981) reports that, during the 1970s, there were 1,000 hawksbills in Nicaragua annually.

Groombridge & Luxmoore (1989) reported that most nesting occurred in northern Costa Rica, between Tortuguero and Matina, as well as in the area between Cahuita and the Sixaola River. Nesting is rather limited, however, with 246 nesting females recorded along the eight km of Tortuguero beach between 1955 and 1983; only 30 were recorded at Gandoca Beach between 1995-2000 (Chacón *et al.* 2001).

Despite the fact that hawksbill turtles nest in Tortuguero and enjoy the same measures of protection offered to green turtles, they do not demonstrate the same positive trends. The available information clearly shows a 3.9% reduction in the number of nesting females between 1956-1959 and 1997-2000 (Carr & Stancyk 1975; Bjorndal *et al.* 1993, Troëng 2001). Excessive catches motivated by the exploitation of hawksbill shell are considered the main cause of this reduction. Although CITES prohibits the international trade of hawksbill products, poaching continues on a large scale within the area, mainly to supply a craft market directed at tourists.

In Panama, Bocas del Toro provides the hawksbill turtle with territory for both nesting and foraging. It also affords access to migratory routes. When the mating season is at its peak, males and females are found close to the coast. One of the most important areas for this species is Bluff Beach, which had 24 nests in 1997 (Lee 1997), as well as in 1998 (Alvendas 1998). Chiriquí Beach and Zapatillas are also important for hawksbill turtles.

The hawksbill turtle is the most common in the Kuna Yala region. Throughout the year, both adults and juveniles inhabit local waters. Adults of both sexes are seen most often from March to September, as this period corresponds to their mating season. The "chivalry" or mating can be observed in March, April and May, although in June, adult males continue to get trapped in nets. A female can have from one to three males following her, and two to three males during copulation.

The females usually begin to nest during the last two weeks of May. In May and June, adults of unknown sex can be observed floating or coming up to the surface to breathe. They are seen near the coast or around the islands where the nesting beaches are located. The juveniles are seen most often in the shallows and along the coral reef barriers parallel to the coast, islands and keys. Every year, beginning in September and continuing through to March of the following year, small turtles appear amongst the marine obacua (***Sargassum sp.***), temarop (***Syringodium sp.***), or other objects (such as garbage) adrift at sea.

Along the Costa Arriba (Panama), hawksbills are most plentiful from Nombre de Dios to Santa Isabel. From March to June, they are found in rocky areas and, from July to August, they stay close to the coast. In May and June, many male hawksbill turtles are caught in fishing nets (Ruiz & Díaz 1999). In the coastal communities of the Costa Abajo, as in the rest of the Caribbean coast, every year it is more difficult to observe hawksbills on the beaches because the number of turtles that arrive to nest has declined considerably (Ruiz & Díaz 1999).

Ruiz & Díaz (1999) conclude that, in Panama, the greatest reproductive intensity lasts from May to September. However, fishermen indicate that this period extends until December.

In the case of Costa Rica, based on the return of metal flipper tags, Bjorndal *et al.* (1993) state that the 11 nesting turtles in Tortuguero, Costa Rica came from: Colón, Panama (9%), Miskito Keys,

Nicaragua (73%) and Honduras (18%). Genetic markers have shown that the hawksbill turtles from Tortuguero migrate to the waters around Cuba, Mexico and Puerto Rico, where they make up 4.6%, 5.5% and 6.3%, respectively, of the population that feeds there (Troëng 2001).

During the 2000 nesting season, the Caribbean Conservation Corporation (CCC) installed two satellite transmitters on hawksbill turtles that had nested on Tortuguero Beach, Costa Rica. These females moved 290 km and 470 km respectively from one point to another, but both migrated towards Nicaraguan waters, verifying the trend documented by Bjorndal *et al.* (1993) with metal tags.

According to Lagueux *et al.* (2001), the analysis of mitochondrial DNA reveals multiple contributions by individuals from different nesting areas that use Nicaragua as feeding grounds. Preliminary analysis in the feeding grounds shows that 50.3% of the turtles are from Nicaragua while 11.34% are from Costa Rica. This last figure confirms both the returns of external turtle tags and the patterns of migration that were obtained by the satellite transmitters attached to turtles (Troëng 2002).

Meylan (1983, in Chacón *et al.* 2001) establishes the nesting season in Costa Rica to extend from May to November, with a peak between May and June. Chacón *et al.* (2001) reported that the nesting season extends from March to November. Troëng (2001) finds that the species may be developing a nesting pattern with two peaks in reproduction the first peak occurs from May until the end of July, and the second peak occurs around October.

According to Chacón (2002), the average number of nest eggs is 153 (n=148, SD=36.33), with a range of 95-229 eggs along the Caribbean Coast of southern Costa Rica. Bjorndal *et al.* (1985) determined that the average number of eggs per nest was 158 (n=93, SD=29), with a range of 86-206, while Bravo (1983) calculated the average as 161 eggs per nest, with a range of 56-206. The range in nest size for the Wider Caribbean Region is 101-161 eggs per nest (see Meylan 1983).

Studies by Lagueux (1998b) show that the sex ratio for this species is 1 male : 2 females. She also reports that 71.1% of all of the hawksbills measured in Nicaragua were larger than the smallest female found in Tortuguero, Costa Rica, thereby demonstrating that they are mature adults.

TABLE 5:
Shell length and nest size of hawksbill turtles in Tortuguero (source: Troëng 2002)

Sample	n	Average SCLmax (cm)	Range SCLmax (cm)	N	Average Size of nest (eggs)	Range Size of nest (eggs)
Females 1956-2001	215	82.2	72.4 - 94.0	104	156	22 - 206

VI.C. BLACK TURTLE (*Chelonia mydas agassizii*), PACIFIC

This species in the isthmus is occasionally captured in gill nets and in shrimp trawls. Once the turtles have drowned, they are usually butchered to remove their eggs and meat. Sometimes the crews on the fishing boats make use of this meat.

Just like other turtle species found nesting in the Pacific region of Central America, the black turtle suffers due to the illegal practice of collecting eggs for commercial purposes. Black turtles are rarely killed for commercial purposes, except for the production of oils. There are no legal precedents[R.G.7] governing the use of eggs or adult specimens of this species in the area.

There is some uncertainty in the scientific literature regarding the taxonomy of this species. As a result, the black turtle is often referred to as a subspecies (***Chelonia mydas agassizii***) of the Atlantic green turtle (***Chelonia mydas***) (Bowen & Karl 2000).

During the past 30 years, the black turtle has shown a rapid decline mainly due to two factors: massive harvesting, between 1950 and 1970, of adults in Mexico's Sea of Cortez, which is their main feeding ground; and massive collection of eggs, between 1960 and 1980, from the primary nesting beaches, also located in Mexico. Today the illegal harvesting of eggs and meat in Mexico continues to be one of the main threats to the black turtle (NMFS 1998a). In addition, along the Pacific Coast of Central America, the death of black turtles as a result of accidental capture by fishing expeditions trawling for shrimp is thought to have contributed significantly to population declines (Cornelius 1986).

There are no confirmed records of black turtles nesting in Guatemala, although sub-adult and adult populations have been detected along Guatemala's coastal lagoon ecosystems, Poza del Nance (Pers. comm., G. Dieseldorff, 2001). Hasbún & Vásquez (1999) report on nesting by this species on San Sebastián Island, El Salvador. They also note basking in the zone of Barra de Santiago, as well as a few nestings during the 2000 and 2001 seasons (C. Dueñas, pers. comm. 2002)

After 10 years of monitoring sea turtle populations that nest in Punta Raton, Honduras, the "extremely rare" nesting of a black turtle was documented for the first time in 1986 (Cruz *et al.* 1987).

In Costa Rica the species is also considered rare, but there are instances of high-density nesting south of Santa Rosa National Park, at Naranjo Beach and at Cabuyal Beach (Chaves & Lara 1991). Cornelius (1986) is convinced that the black turtle population in Costa Rica was much larger before the 1970s, but some incidents, such as accidental capture by shrimp boats, have reduced their numbers. Most of the black turtles that inhabit north-western Costa Rica are juveniles.

Chavez & Lara (1991) found a nesting colony of black turtles in Cabuyal Beach; they recorded 25 sightings of returning black turtles, with 2-6 sightings for the same turtle. The authors calculated the standard curved carapace length as 88.6 cm, and the standard curved carapace width as 83.6 cm. The

average number of eggs per nest was 67.8. Most nesting activities occurred during the month of November, and another increase was observed during the first few days of February.

According to the same authors, despite the relatively small number of nesting black turtles at Cabuyal Beach, it has been classified as one of the six most important beaches on the Pacific Coast of Costa Rica. Between September 1993 and October of 1994, Drake (1996) found 78 black turtle nests on the beaches at Piro, Carate, Río Oro and Pejeperro. Govan (1998) claims to have counted 46 black turtle nests in Río Oro during the 1994 nesting season. Other important nesting beaches for this species include Minas Beach and Nombre de Jesús on the north Pacific Coast.

In Panama, no data have been recorded for black turtles, although they definitely exist in small quantities (L. Córdoba, pers. comm. 2001).

Although black turtle nesting is scarce, dead individuals are found along the coasts of the Isthmus. It has also been reported that black turtles are captured by fishing expeditions that are trawling for shrimp.

According to information from tag recoveries (Alvarado & Figueroa 1990, in NMFS, 1998a), black turtles migrate between Mexico and Colombia, marking the northern and southern limits of their distribution area. Turtles tagged in Michoacán, Mexico have been reported in Guatemala, El Salvador, Nicaragua, Costa Rica and Colombia; of 37 captures, 32 were reported as accidental captures by shrimp trawls). The web page of the Caribbean Conservation Corporation states that two turtles who were tagged with satellite transmitters in Colola (Michoacán), México between February and March 2001, had migrated separately towards Guatemala and Nicaragua. This confirms previous observations, as well as the importance of the Central American marine corridor for the black turtle.

Black turtles tagged while nesting in the Galápagos Islands were captured in Costa Rica, Panama, Ecuador, Colombia and Peru (NMFS, 1998a). This demonstrates their ability to travel long distances across the ocean between their nesting and feeding grounds.

While outside the geographic scope of this report, it is noteworthy that in Michoacán, Mexico, the black turtle nests between August and January with an activity peak in October and November (Alvarado *et al.* 1985 in NMFS 1998a). In the Galápagos Islands, they nest between December and May (Green & Ortiz-Crespo 1982 in NMFS 1998a). Cornelius (1986) suggests that black turtles nest year round at Naranjo Beach in Costa Rica, with an activity peak between October and March. The average number of eggs laid ranges between 65 and 87 (NMFS 1998a).

VI.D. GREEN TURTLE (*Chelonia mydas*), CARIBBEAN

Evidence exists indicating the extensive use of green turtle meat by indigenous pre-Columbian cultures of the Caribbean. The exploitation of the green turtle affected some populations, creating ecological impacts that continue to this day (Jackson & Bjorndal 2001). When Columbus arrived in America, green turtles were abundant in the Caribbean and at least five important nesting populations

existed. The Europeans quickly embraced the green turtle as a source of protein, and by the 1800s several populations had been completely devastated.

The green turtle currently is the main source for the markets selling turtle meat, eggs, and fat. Though artisans rarely fashion articles from the scutes [shell] of the green turtle, stuffed turtle bodies and carapaces are common in stores. Some people call them "the cows of the ocean" because they are herbivores.

In Belize, 19 nesting females were recorded between 1979-1982 in Half Moon Keys, Long Key and Ambergris Key (Smith, Eckert & Gibson 1992). This species is relatively scarce in Guatemalan waters, however, and in Honduras, green turtles are also found only in low numbers.

According to Lagueux (1998b), green turtles have been harvested on the beaches and coastal areas of Nicaragua for at least the past 400 years. Today, the minimum harvest is between 10,000 and 11,000 green turtles, mostly juveniles. MIKUPIA and MARENA (1997) report that recent declines in the number of captured turtles indicate the over-exploitation of the resource.

The nesting green turtle population in Tortuguero, Costa Rica, is now the largest in the Atlantic (Bjorndal *et al.* 1999). Fortunately, the population demonstrates a positive trend, with an increase from 18,000 females in 1970 to 45,000 females in 1996, but these results must be interpreted with caution. The illegal harvesting of green turtles continues with little control throughout the Caribbean (Bjorndal *et al.* 1999), and it cannot be known how this will affect the Tortuguero population. For example, in Nicaragua's Miskito Keys, at least 11,000 turtles are harvested per year (Lagueux 1998a).

It is generally accepted that green turtles nest in Costa Rica, from Barra del Colorado in the north to Gandoca in the south. Every year from June to November, these turtles gather at Tortuguero Beach. The green turtles that nest in large numbers on Tortuguero Beach migrate from two areas: Nicaragua's Miskito Bank to the north, and the lower coasts of Venezuela and the Minor Antilles to the south. Carr, Carr & Meylan (1990) note that 70.5% of the turtles from Nicaragua arrive in July, as do 63.9% of those returning from the southern Caribbean. During their migration to Tortuguero, some females stop and nest on other beaches such as Gandoca, Barra del Colorado and Matina.

For the green turtle, the period of greatest reproductive activity occurs in July, August and September. The average number of eggs per nest is 112.2; this average can vary from 106 to 119 eggs. The actual range is 3-219 eggs (Bjorndal & Carr 1989). For the 1997 season, Troëng *et al.* (1997) report the following: the average number of eggs per nest is 114.3 (n=100); the straight-carapace length is 100.2 cm (n= 2,107); the straight-carapace width is 76.6 cm (n=2,108); and the average curved-carapace length is 104.6 cm (n= 100). The green turtle lays 2.8 clutches of eggs per season, with a maximum of eight clutches. The average time span between clutches is 12.1 days, and re-nesting typically occurs at three year intervals (Chacón & Araúz 2001).

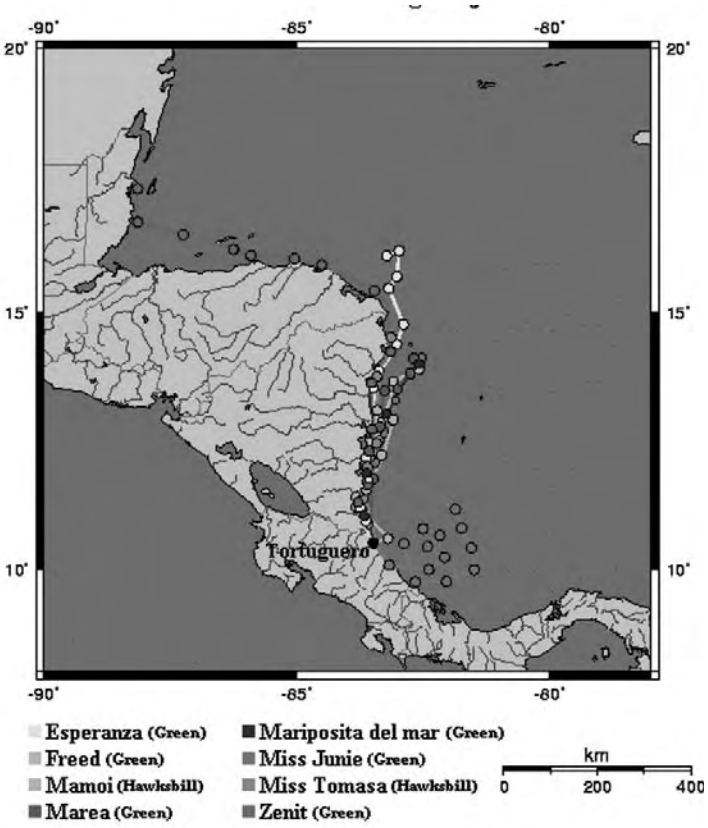


Figure 2: Migratory routes followed by green turtles after their nesting period in Tortuguero.

(source: CCC and Sea Turtle Survival League).

Tortuguero's green turtles spread out across the Caribbean Sea, feeding on seagrass in shallow waters. A significant portion of the green turtle population leaves Tortuguero and returns to feeding grounds in the Miskito Keys, Nicaragua (CCC 1994). From the sea turtle tagging programs, we know that green turtles caught off the coast of Nicaragua (Lagueux 1998b) were tagged in the Bahamas, Bermuda, Brazil, Cuba, Florida (USA), Grand Cayman, Yucatan (Mexico), Panama and Venezuela. The Caribbean Conservation Corporation has tagged six green turtles with satellite transmitters since 2000.

Important data from Tortuguero Beach can be found in reports by: Chaves (1989); Figueroa (1990); Figueroa (1991); Engstrom (1994); Troëng (1997); and Valverde (1997).

The presence of green turtles in coastal waters is inherently related to their nesting season. It is only during this season that green turtles can be observed foraging in the reef zones of Costa Rica, for example Manzanillo, Cahuita and around Uvita Island (Chaves 1989).

In Panama, an environment dedicated to the growth and development of juvenile and sub-adult green turtles is located in Bocas del Toro, near Secretaria on Chiriquí Lagoon. Turtles tagged in Chiriquí Lagoon have been recaptured nearby, close to Cusapin on Punta Valiente, and as far off as Cartagena in Colombia (Ruiz & Díaz 1999). Lee (1997) reports the nesting of this species on Colón Island and near Bastimentos.

In May 1991, two green turtles tagged in Zapatillas Keys were recaptured in Tortuguero, Costa Rica. This confirms that migrating turtles, passing through Bocas del Toro, belong to the colony from Tortuguero, Costa Rica (Meylan & Meylan 1991).

In Costa Arriba, according to the fishermen, turtles are more common around Isla Grande and San Blas in the channels and areas containing marine vegetation. For example, in Cuango, even though they rarely emerge onto the beaches, they are found trapped in nets along the ocean shore (Ruiz & Díaz 1999).

In the Kuna Yala region, both juveniles and adults are found throughout the year in local waters, in coral reefs, and in seagrass beds (***Thallasia sp.***). Starting in June, adult male and female green turtles are captured in nets set to catch hawksbill turtles. Green turtles can also be observed mating, and the hatchlings appear during the same season as the hawksbills. In previous years (1970) there were certain areas where large numbers of adult green turtles were seen, especially where seagrass beds are located (***Thallasia sp.***), but this is no longer the case.

VI.E. LEATHERBACK TURTLE (*Dermochelys coriacea*), PACIFIC

In the Pacific region of Central America the exploitation of Leatherback turtle eggs for commercial purposes is very common, particularly in Nicaragua where people also cut off the caudal peduncle (tail) of the carapace in order to boil it and extract the oil that is said to have special properties in curing respiratory diseases. There is neither scientific data nor anecdotal information on other kinds of uses of leatherbacks for subsistence or for commercial purposes in this region.

The leatherback's principle nesting beaches in Central America are found in Costa Rica at Baulas National Marine Park (Playa Grande, Ventanas and Langosta) and along the Osa Peninsula (Mayor 1998). In Nicaragua, nesting occurs principally at Castañones, Tecolapa, Masapa-Tepaco, Tecomapa, Popoyo, Juan Venado and Mogote (Escalante-Chacocente River) (Nicambiental 2000). Small populations of leatherbacks have been recorded in Guatemala, El Salvador (Puntilla beach), and Honduras. Although there is little documentation, this species is considered rare in the northern Pacific part of Panamá (Barqueta, Lajas, Cambutal, Horcones and lower Guánico beach). Although outside the geographic scope of this study, it is noteworthy that Mexican populations were, until recently, considered the largest in the world. Today they are critically depleted, mostly due to fishing pressure in southern hemisphere foraging grounds.

In 1987, Higginson and Orantes reported approximately 250 nests in Guatemala between the border with El Salvador and the Department of Retalhuleu, and also found nests close to the villages of Hawaii, La Candelaria, Taxico and Santa Rosa. Just 10 years later, Sartí *et al.* (1999) found that the numbers had declined significantly. During the 98-99 season, they calculated roughly 81 leatherback nests in Nicaragua, eight in Guatemala, six in El Salvador and Panamá. Unfortunately, the situation of the eastern Pacific leatherback turtle is critical, and is classified as "Critically Endangered" by IUCN.

Populations at the main nesting beaches have been reduced by up to 90% during the last decade. Some populations have completely disappeared. It is estimated that if measures are not taken to revert this situation within the next five years (Spotila *et al.* 2000), the Eastern Pacific leatherbacks could completely disappear by 2015 (Spotila *et al.* 1996).

In Playa Grande, only 11% to 19% of the females that nested during the 93-95 season returned to nest in the following five years, while other areas in the Wider Caribbean, such as at Sandy Point National Wildlife Refuge (U.S. Virgin Islands), had a return rate of up to 49%. Furthermore, the mortality rate of females at Playa Grande is estimated at 34.6%, which shows the critical condition of this species (Spotila *et al.* 2000). According to these authors, without protection, this colony will have less than 50 nesting females by the 2003-2004 season and the protection measures on the beach, combined with the installation of a new hatchery, will only slow down the decline by five years. The 2001-2002 season only had 69 nesting females (F. Paladino, pers. comm. 2002).

There may be various causes for the decline in population of leatherback sea turtles, but it appears that it is a combination of years of collecting eggs from throughout the eastern Pacific range, and the excessive adult death rate caused mainly, in the 1980s, by fisheries using mesh nets (Eckert & Sarti 1997). The recent development of longline fisheries (monofilament lines 40-80 miles long, with 4000-8000 hooks), presents another great threat (Arauz 1999).

Spotila *et al.* (2000) estimates that the Central American leatherback population is composed of 687 adult females and 518 subadults. These authors estimate that the present populations can only handle a 1% mortality rate caused by man.

The leatherback turtle must lay her eggs on tropical beaches, but actually lives and feeds in cold waters, searching for its principle diet of jellyfish. After nesting, the Pacific leatherback of Central America migrates to the south to its feeding grounds along the coasts of South America. Leatherback turtles tagged in Mexico with satellite transmitters headed first towards Clipperton Island and, from there, towards the Galapagos Islands and later to the coast of Chile (Eckert & Sarti 1997). A few individuals do not follow this pattern, however, and carry out transpacific trips towards Asia (Eckert, pers. comm. 1999).

Turtles tagged in Costa Rica with satellite transmitters swam directly towards Cocos Island, and from there towards the Galapagos Islands (Morreale *et al.* 1996).

Experts suggest that the leatherback population nesting in Central America gathers together at the same time in the Galápagos Islands during their migration south. This concentration makes them extremely vulnerable to fishing activities, especially now, as longline fisheries have recently set up in the waters west of these islands, precisely in the migratory corridor of the leatherback turtle (Morreale *et al.* 1996, Arauz 1999). On the other hand, this situation could also be advantageous in terms of protecting the leatherbacks. By concentrating conservation efforts on these corridors, the reproductive population of leatherbacks can be protected during their long migrations.

Despite their large size, the leatherback turtle may be the species that reaches sexual maturity the fastest, perhaps between 8 and 12 years (Zug & Parham 1996). Leatherbacks lay an average of 73 normal eggs and 41 infertile eggs per nest (Guadamuz 1990) in the Eastern Pacific, and nest, on average, at 9-day intervals. During the nesting season, they lay an average of five5 nests, but there are records of leatherbacks that have laid as many as 13 times (R. Reina, pers. comm. 2000). Their nesting period along the Pacific coast is between October and March, with a peak in activity between December and January.

VI.F. LEATHERBACK TURTLE (*Dermochelys coriacea*), CARIBBEAN

In the Caribbean region of Central America, the eggs of this species are usually an important source for the black market, and occasionally the caudal peduncle projection ("tail" of the carapace) is cut off and used. Some believe that the fat on this part of the shell has special medicinal properties. In the northern part of the Caribbean coast of Panama, leatherback turtles are captured to sell their meat. There are no data available regarding their capture for the exclusive production of oils, as seen in other regions of the Caribbean.

Leatherbacks nest along the Caribbean coast of Guatemala, Honduras, Costa Rica and Panama. However, it was not until the 1990s that monitoring programs were initiated on some beaches. According to Smith, Eckert & Gibson (1992), this species is rare in the waters of Belize, although they are occasionally seen 20-25 miles from the mainland during their migration towards the Golf of Mexico. In Guatemala, according to Rosales (1987), 25 to 50 nests are found annually along the beaches of the state of Izabal.

In the case of Honduras, systematic data only exists for the nesting that occurs on the beaches of Mosquitia, principally between Iriona and Plaplaya, where perhaps 10 females arrive from March until June, laying no more than 40 nests annually. Similarly, according to González (2001), along the southern Caribbean coast of Nicaragua, specifically on the beach El Cocal, 73 leatherback nests were found.

It is estimated that the nesting population on the Caribbean coast of Costa Rica is also the fourth largest in the world, where 505-987 females lay between 2658-5191 nests. Nevertheless, the population has shown a decline of -0.2% annually since monitoring began (1995-2001). This decline is attributed to the slaughter of females in the north of Panama, massive poaching of nests outside protected areas, and the loss of habitat due to erosion and the accumulation of organic debris, such as logs (Troëng, Chacón & Dick 2001).

In Panama, leatherbacks nest from February to July each year along the coasts of the provinces of Bocas del Toro, Veragüas, Colón and the Kuna Yala region. This species follows a very defined migratory route and, up to this point, there is no record of the presence of any juveniles or feeding grounds in these areas. In the province of Bocas del Toro, the principle nesting beaches are Playa San-San, Playa Changuinola and Soropta; Playa Flores and Playa Bluff (299 nests in 1997, Lee 1997; 160 nests in the 1998 season, Alvendas 1998) on Colón Island, Playa Larga on Bastimentos Island and Playa Chiriquí. They are also abundant in the open ocean from February until June. The females have a tendency to nest on many turbulent beaches and also on a few keys.

According to the walking patrols made by Lee (1997), 85 nests were found in the Soropta sector during the 1997 season. However, cadavers of this species were also found showing what the locals are using this species for. And according to the local fishermen of Costa Arriba, from March to April the turtles are captured on the beaches and the eggs are harvested from their nests. They say their meat tastes more like seafood than the other turtles and is more fatty.

Finally, in the Kuna Yala region, adult males and females are observed during their mating and nesting season, from March until June. Females prefer to nest on open mainland beaches and rarely use

the islands or keys of the archipelago. The nesting beaches are located at Playa Colorada, Aidirgandi, Bahía Aglatomate, Anachukuna, Armila or Pito (Ruiz & Díaz 1999).

This species makes small inter-nesting migrations between Honduras, Costa Rica and Panamá. Some leatherbacks with Costa Rican tags have been found in Florida, North Carolina (San José Island) and Galicia in Spain. It is presumed that, after nesting, they migrate towards the Gulf of Mexico, traveling with the Labrador Current through the east coast of the United States and Canada, then cross the north Atlantic towards Europe.

Caribbean leatherback populations nest from March until July, with a very defined peak between April and May, when 70% of the total nesting occurs (Chacón 2000). On average, they lay 82 normal eggs and 31 infertile eggs (without yolk), and nest an average of 5 times. Tag studies have demonstrated that the females can change their nesting place from season to season (from Honduras to Colombia) and even within the same season (Costa Rica and Panamá).

VI.G. OLIVE RIDLEY TURTLE (*Lepidochelys olivacea*) PACIFIC

The olive ridley turtle is, without a doubt, the species that suffers the most from commercial use and egg trafficking in the Isthmus. Important nesting sites of this species are located in Central America and supply national and international markets (MTN 1996a,b). This study compiled anecdotal data regarding the cross-border trafficking of eggs in the Gulf of Fonseca, and along the borders of Guatemala and Mexico and Guatemala and El Salvador. Moreover, this species is frequently netted by fisheries operations. The eggs are removed from the belly of the turtle, and the meat is utilized for consumption, as bait, or for the production of oil. Occasionally their carapaces are used for decorative purposes.

This species nests along the Central American coast from the south of Mexico to Panama, on practically any beach that meets certain conditions (sandy and easy access to the open sea). There are usually from several hundred to a few thousand females nesting on these beaches per season. Although there are dozens of these beaches in each country, some of the more well known are: Puerto San José (BANAPAC), Garitón, Candelaria, Monterrico, Hawaii, Las Lisas and Tilapa in Guatemala. According to CONAP (2001), these and other beaches received some 4400 nests in the 1999 season and 7000 nests in the 2000 season.

In El Salvador the important areas for this species are Bola de Monte, El Zapote, La Barra de Santiago, San Diego beach, Majahual, Amatal, San Sebastián Island, San Juan del Gozo, El Icacal, El Cuco and Toluca. In Honduras they are Punta Ratón, Cedeño, Carretal, Río Viejo, Punta Condega, Las Doradas and the islands of Amapala. In Nicaragua, they are Punta Cosigüina, Popoyo, Mogote, Chacocente, La Flor and Juan Venado Island (Salinas Grandes and Las Peñitas); and Barqueta, Cambutal, lowere Guánico and Las Lajas in Panama (Muccio 1998, Gutiérrez 1998, Córdoba & Moreno 1999, Romero 2000).

The species also nests on beaches in Costa Rica, such as: Nosara, Cabuyal, Naranjo, Coloradas, Savegre, Matapalo, Madrigal, Carate, Piro, Río Oro, Estrechura and Punta Banco (Richard & Hughes 1972; Hughes & Richard 1974; Govan 1996; Araúz & Montero 1997). Drake (1996) established that

3,144 nests were laid between September of 1993 and October of 1994 on the beaches of Carate, Piro, Pejeperro and Río Oro.

In Panamá, according to Córdoba (2000), nesting occurs at: Cañas Island, Ostional, Guánico Abajo, la Marinera, Morro de Puerco, Cuchilla, Cambutal, Horcones, Pedregal, Punta Blanca, Cobachón, Puerto Armuelles, Barqueta, Sevilla Island, Boca Brava, Lajas, Boca Vieja, Portobelo, Piro, Sierra, Ventana, Colorado, Coloradito, Restingue, Morrillo, Oria, Lagarto, Bajadero, Purio, Concepción, Guayaberos, Honda, Jaqué, Garanchiné and Puerto Piña, all in the four provinces of: Chiriquí, Veraguas, Los Santos and Darién. The same author makes reference to the fact that, in 1999, 460,970 eggs were protected on four beaches (Cañas Island, Cambutal, Guánico Abajo and Barqueta) and resulted in the release of 452,208 neonates [hatchlings] with a hatch success rate of 91.32%. In 2000, 140,840 eggs were protected at four sites on the Pacific coast of Panama (Morro de Puercos, Punta Blanca, Horcones and La Cuchilla) and 123,080 hatchlings were released for a success rate of 87,39% (source: Comité ProDefensa de las Tortugas Marinas en Cambutal-Tonosí).

Few beaches along the Isthmus have been monitored with the necessary consistency or for an adequate period of time to determine population changes over the last few years. Nevertheless, in interviews, coastal residents from Guatemala to Panama stated that “before”, more turtles used to arrive to the beaches of their communities. Although the exact numbers of nesting turtles on these beaches in the past are unknown, the certainty is that solitary (as opposed to “arribada”, see below) nesting continues to occur generally along the Pacific coast of Central America.

The olive ridley also has the peculiar behaviour of nesting in a synchronized manner and en masse. This is known as an “arribada”, and during such an event between 100,000 and 300,000 females come together to lay their eggs. There are various beaches along the Pacific coast of Central America where this phenomenon occurs, including Nancite and Ostional in Costa Rica. There are also two beaches in Nicaragua (La Flor and Chacocente) and two in Panamá (Cañas Islands and Marinera) where smaller arribadas occur, with between 2,000 and 20,000 females per event.

The arribada beaches of Nicaragua (La Flor and Chacocente) seem to have maintained a certain stability over the years (MARENA 1999, Hope 2000, Von Mutius 2000), similar to Ostional beach of Costa Rica (Ballestero, Arauz & Rojas 1998). González (2001) reported that, in Nicaragua, there are between 57,000 and 100,500 nests of this species per season, with the exception of the 1998-1999 season which had a total of only 21,431 nests.

The only exception to this apparent stability occurred with the population that nests at Nancite beach, Costa Rica, which suffered a significant decrease between 1980 and 1993. In this particular case, it is suggested that the cause of the loss was due to an extremely low hatching rate (Valverde *et al.* 1998) associated with high nest density and the proliferation of fungus and bacteria produced by the natural breakdown of nest contents. These are conditions common to all beaches where arribadas occur.

It has been suggested that arribadas go through natural self-regulating cycles, by alternating periods of “many” and “few” turtles (Valverde *et al.* 1998). Beaches such as La Flor and Chacocente in Nicaragua could be “growing”, others such as Ostional perhaps have reached their “peak” and, finally, Nancite might be in a natural decline.

Higginson & Orantes (1987) reported that close to 21,000 females nested on the coasts of Guatemala between 1981 and 1982, which may represent 63,000 nests (an average of 3 nests/season). According to Muccio (1998), this species is most abundant on the Pacific coast of Guatemala, with an estimation of 51,300 nests/year, the over the course of the last 16 years there has been a decrease of 34%. In 1981, the average number of nests was 1.81 nests/km, while in 1997 it had declined to 1.24 nests/km.

Apparently the olive ridley turtle does not have a defined migratory route. After nesting, the turtles disperse into the Eastern Pacific. Projects using metal flipper tags as markers have shown that olive ridleys tagged in Costa Rica head north to México, south to Peru, and hundreds of thousands of miles from the Central American coast towards the west (Cornelius & Robinson 1986).

Using satellite telemetry, five olive ridley turtles were "tagged" in Playa Nancite, Costa Rica, and demonstrated that after nesting there is no social cohesion, nor any defined migratory route. After nesting, all tagged turtles headed in different directions, spreading out independently from one another. The majority were located in shallow coastal waters of the feeding grounds, either in the north or the south, although one headed towards the open ocean, hundreds of thousands of miles from the coast. The olive ridley is likely to be nomadic, and use multiple feeding grounds (Plotkin *et al.* 1995).

Large numbers of olive ridley turtles have been observed feeding in Ecuadorian waters and their tags have proven that they came from Costa Rica, Nicaragua and México. However, it is believed that an important portion of the olive ridley population nesting in Central America never strays far from the nesting beaches (Cornelius & Robinson 1986).

The olive ridley turtle reaches sexual maturity between 10 and 15 years, probably living up to 50 or 60 years. In Gahirmatha, India, tagging has demonstrated reproductive activity for at least 21 years (Pandav & Kar 2000). An average of 105 eggs are laid per nest, 2-3 times per season, every two years, between June and December (but individuals are also recorded nesting during other months). The peak activity occurs in September and October, although, on Guatemalan coast, the season extends from June to October, with August and September as peak months (Muccio 1998). Lagueux (1991) established that this species nests in Punta Ratón, Honduras, from May until December, with a sharp peak between August and October.

VI.H. OLIVE RIDLEY TURTLE (*Lepidochelys olivacea*), CARIBBEAN

There are no records of this species on the Caribbean coasts of the Isthmus.

VI.I. LOGGERHEAD TURTLE (*Caretta caretta*), PACIFIC

There are no confirmed records of the loggerhead turtle on the Pacific coast of Central America, either nesting or at sea. Nevertheless, a population does inhabit the coastal waters of Baja California, México, making it possible that this species also frequents the waters of Central America.

By satellite-tracking, it has been determined that the population of loggerhead turtles inhabiting México only feeds there. Later, they carry out transpacific migrations towards their nesting beaches at Yaku Shima, in the south of Japan (National Geographic World 1999). Their crossing (10,000 km) lasts approximately one year.

VI.J. LOGGERHEAD TURTLE (*Caretta caretta*), CARIBBEAN

Anecdotal data was complied regarding the harvest at nesting grounds in Honduras, and use of the meat and eggs for human consumption and trade. There is no more information on this species in other Central American zones, except the use of the specie permit by the law in Belize, including the capture season and legal sizes.

Loggerhead turtles prefer subtropical beaches for nesting. The main nesting beaches in our hemisphere are located on the east coast of the United States (Florida, Georgia and South Carolina). The species also nests in Belize between May and August, although it has been observed mating between March and May near the reefs surrounding Ambergris, Glover´s and Lighthouse (Smith, Eckert & Gibson 1992).

In Guatemala, Rosales (1987b) established that the area around the state of Izabal (in the region of San Francisco del Mar) has had from 45-90 nests/year, with a presence on the beach from May to October. In Honduras, Miskito divers say that the loggerhead is the most abundant turtle in the area after the hawksbill, inhabiting the Miskito keys and the areas around the Bay Islands. Nesting occurs in beaches such as Ibans, Patuca and Plaplaya (Cruz, Galeano & Espinal 1989).

González (2001) noted in his report that 15 loggerhead turtles have been tagged in the RAAS [South Atlantic Autonomous Region] of Nicaragua.

Loggerheads are scarce along the Caribbean coast of Costa Rica and are considered rare; however, nesting and captures of loggerheads have been recorded in Tortuguero (Hirth & Ogren 1987; Chaves 1989; Figueroa 1990) and nesting is known on beaches within Cahuita National Park and the Gandoca/Manzanillo Wildlife Refuge. The fishermen of Barra del Colorado, north of Gandoca, Manzanillo and other areas to the south of Puerto Limón say they have sporadically seen loggerheads along the beaches, or nesting. Other zones must be investigated, principally the beaches to the south, since there have not been any studies carried out in these areas.

The loggerhead turtle is present in the coastal waters of Panama during the entire year (Ruiz & Díaz 1999), generally observed in their adult stage by fishermen. Meylan & Meylan (1987), by placing nets for turtles, succeeded in capturing and tagging juvenile loggerheads in the area northeast of the Chiriquí Lagoon, province of Bocas del Toro. There are records of nesting on Larga beach, Bastimentos Island, province of Bocas del Toro (Ruiz & Díaz 1999), but not for the rest of the coast. No other nesting beaches are known.

Fishermen often observe this turtle, especially when they are working on the reef banks far from the coast. The fishermen are not accustomed to capture this species. On occasion, when trapped in the nets, they set them free. The fishermen stress the fact that these animals are aggressive when captured.

Loggerheads carry out trans-Atlantic journeys. Genetic studies demonstrate that some loggerheads in the Mediterranean Sea originated from the eastern coast of the United States. There is no pertinent information on the migratory movements of loggerheads that nest or inhabit Central American waters.

VII. TRADE IN SEA TURTLE PRODUCTS

VII.A. BELIZE

In Belize the following areas were surveyed:

1. Punta Gorda
2. Placencia
3. Dangriga
4. Belize City
5. Caulker Key
6. San Pedro Key
7. Corozal

These sites are located in areas of high levels of tourist traffic, with as many national as foreigner tourists.

VII.A.1. HAWKSBILL SHELL PRODUCTS

The two most important craft shops in the area (shops with the highest tourist traffic and greatest assortment of items) and a few street vendors were visited in Punta Gorda. The most prominent shop in the area did not have hawksbill products at the time it was visited. When consulted about this type of product, the merchant mentioned that one week ago a group of North American tourists had bought all of the hawksbill items. The merchant said these items are brought from Belize City; she then buys and re-sells them. She confirmed that this type of craft sells very quickly.

During the visit to Placencia, four craft shops were surveyed but none were found with hawksbill products. However, the owner of one shop, who is English, mentioned that a few days ago a small hawksbill carapace was brought to her and she sent it to the artisans to make [hawksbill] items. The merchant said that this event was not very common.

An American owner of another craft shop mentioned that sometimes she was offered hawksbill crafts to sell, but has never purchased them. She also said that these offers were rare and she prefers to see them [hawksbills] in the ocean. A local fisherman said that in Belize it is legal to hunt turtles in season, but not hawksbills [for which currently there is a hunting ban] because there are very few left. A restaurant owner said that a place with growing tourism should conserve and protect the turtles, not kill them, so that the tourists can enjoy them on their field tours.

In Dangriga the two most important craft shops were visited, but only one stuffed juvenile hawksbill was found. The owner commented that it was not for sale because it was “too difficult to find one of these turtles”. He also mentioned that it was illegal to hunt hawksbills. In the other craft shop at the Pelican Beach Resort, no hawksbill crafts were found. In Caulker Key, seven craft shops and two street vendors were visited; none of them had hawksbill crafts. In one of these shops the owner mentioned

that the government had confiscated her hawksbill products and that she had only a few left that she kept for personal use. One local person, when asked, said that a few days ago she had seen a person with various hawksbill products, but has not seen them again. She also mentioned that it is very difficult to find these types of crafts because very few are made and they are sold carefully, as it is illegal. The owner said that when she had sold hawksbill products, they sold very quickly and at a very good price (ring-US$17.50, bracelet-US$25).

In San Pedro Key, 21 craft shops were visited and none were found with hawksbill products. In the all shops where the merchant was asked if hawksbill products were sold, the merchant mentioned that this type of product was illegal and if they sell it, they could get into trouble. However, one street vendor said that he had a few items and, if they were purchased, he would take the interviewer to his house where he kept them. He noted that they were exclusive pieces made of pure hawksbill, with fine craftsmanship, and they would be expensive.

In Belize City the following establishments were visited:

1. The Central Market
2. Six craft shops close to the dock leaving for the Keys (an area of high tourist traffic)
3. 23 craft shops in Tourism Village, the most important craft center of the zone visited by tourists arriving on cruise ships, and 4 street vendors were visited the same day a cruise ship arrived.

In Belize City a total of 33 shops were visited and in only one were hawksbill products found. This shop was located close to the dock leaving for the Keys. The item found was a bracelet, priced at US$ 5. The merchant said that the item was made from a shell from the ocean.

In one of the shops within the central market, the merchant mentioned that two weeks ago she had bought a stuffed juvenile hawksbill from a fisherman for US$ 32.50 which she kept over the counter and was thinking about selling it for $62.50, but a friend told her she could get into trouble because it was prohibited to sell turtle products.

One of the street vendors, close to Tourism Village, said he had some hawksbill items hidden in one of his shops and that he could show them as long as a good purchase was made, as it was risky for him. He also mentioned that, similar to the street vendor in Caulker Key, these crafts are sold exclusively and therefore they are expensive.

In Corozal, the following were visited:

1. Two craft shops
2. Four jewellers

The owner of one craft shop used to sell hawksbill crafts until the government confiscated them this year. She said that the sales of this product were considerable; the demand was high and it sold at a very good price. One of the jewellery stores displayed a hawksbill bracelet, but according to merchants it had been there for a long time and it was really more for decoration than for sale.

The authorities in Belize stated that various hawksbill items had been confiscated in Belize City and Corozal during the previous weeks. These items included hairclips (2) and a comb (1), in addition to 15 sails for small ships that were made of wood. Those interviewed in these areas noted that the hawksbill items come from Chetumal, Mexico.

According to Moll (1985), juvenile hawksbill turtles are captured and their carapaces sold as wall decorations, especially in the region around Ambergris Key. During our surveys of San Pedro (Ambergris Key), eight shops had turtle carapaces (from hawksbill, greens and loggerheads) displayed as decorations and some establishments had had them for more than five years. In the San Pedro Fisheries Department office, there were many confiscated carapaces of hawksbill turtles and one juvenile leatherback turtle carapace. Also, in San Pedro, two green turtle skulls were used as decorations in a restaurant.

VII.A.2. PRODUCTS DERIVED FROM OILS AND FATS

In Dangriga, a vendor was selling sea turtle cream made in Guatemala. He said that he sells very few items (US$ 2.50 each) and that it is good for the skin.

VII.A.3. EGG TRAFFICKING

According to Moll (1985), although the use of sea turtle eggs is prohibited, the law is completely ignored and the eggs are both consumed and sold. Similarly, Smith, Eckert & Gibson (1992) reported that in Belize the eggs are used locally in Rocky Point (Ambergris Key) and Manatee Bar.

VII.A.4. THE TRADE OF MEAT

Groombridge & Luxmoore (1989) report that the green turtle, as well as the loggerhead and hawksbill, are captured in Belize for private consumption and trade. This coincides with the research of Smith, Eckert & Gibson (1992). According to the same authors, between 1980 and 1982, 1000 turtles of these three species were caught, while Gillet (1987) noted that in 1986, 979 turtles were caught. Smith, Eckert & Gibson (1992) found a 60% decrease between 1982 and 1986 in the turtle meat catch.

During surveys conducted for this report, 15 kg of loggerhead turtle meat was found in Belize City and Dangriga. Loggerheads can be used legally if captured during the open season, and when the animal meets the required size. Trade occurs during the open season and the meat is offered in markets, as well as from house to house. Sometimes live juvenile animals are sold in the markets (L. Searle, pers. comm., 2000).

However, during open season, turtle meat is easy to find. The principle consumers of the product are the Garifunas, who consider turtle meat a staple dish.

With the assistance of local fishermen, the surveyors were able to interview the most well-known turtle hunter in the area. He offered very valuable information for the study. *"Lino"*, the turtle hunter,

commented that he was one of the only remaining "old" turtle hunters because the rest of them had already died. He said that turtle season begins in November and ends in April and the only turtle for which it is prohibited to hunt is the hawksbill. Lino said that he sells the meat locally and the people like it because the meat is a part of their culture and they have eaten turtle meat longer than any of us have been alive.

Lino uses a special net that he made himself to capture the turtles. During peak season he can capture three turtles a day, and has captured green, loggerhead and hawksbill turtles. He claimed that all turtles taste the same and the flavour depends on how it is cooked. He also said that he had seven metal tags that were found on a few turtles. There were three different types of tags, and some of the tags had the words "Tampa" and "Florida" written on them. He recounted taking some hawksbill scutes (to be made into handicrafts) to Belize City a few months ago, and was paid US$ 25.00 per pound.

Our surveyors reported, "The fisherman mentioned that turtles are hunted in shallow waters where they are grazing, for example in reefs, rocky bottoms and seagrass beds. He said they are captured the moment they pass from deeper zones to shallower zones. The net is placed along with the current and this is how they are captured. Heavy rocks are used to sustain the net because if not, it would be swept away with the current".

VII.B. GUATEMALA

Survey sampling was carried out in various cities in the Central, Pacific and Caribbean of Guatemala.

1. Guatemala City
2. Antigua Guatemala
3. Port of San José
4. Port Barrios
5. Livingston

It must be emphasised that in trying to carry out the study in this country, the surveyors faced the strongest refusal to cooperate on the part of the merchants and fishermen. This is probably because they are familiar with the implications of the law and the continuous control that the authorities are maintaining regarding the subject. However, the local collaborators also commented that this is an idiosyncrasy of these inhabitants.

List of formal places (not including street vendors) where the sale of Sea Turtle products were documented):

* Port of San José Market
* Shops selling shark and turtle oil, Port of San José.
* McTropic, Livingston, Izabal.
* Boutique, Livingston, Izabal.
* Craft shops on central avenue, Livingston, Izabal.

* Jades S.A, jeweler, Antigua.
* Tienda Tikal, airport, Guatemala City.
* Artesanías Quiche, airport, Guatemala City.
* Shop 2LC35, airport, Guatemala City.
* Jeweller 176, Central Market, Guatemala City.
* Tienda Tikalito, Guatemala City.
* Palacio de París, Guatemala City.
* Almacén Azul, Guatemala City.
* Almacén El Duende, Guatemala City.

VII.B.1. HAWKSBILL SHELL PRODUCTS

Intensive samplings were taken in search of the sale of hawksbill products. The search was concentrated in those areas that were most likely to have hawksbill products, such as craft markets in Guatemala City and Antigua. In Guatemala City, surveys were made at 65 handicraft stands, eight jewellers, four jewellery shops located in the principle shopping centres, and three natural medicine shops. In 21 of the 65 craft shops visited, the merchants, most of them young, were not familiar with hawksbill products. In the rest of the shops the merchants were familiar with hawksbill products and knew them to be very fine and expensive products and, therefore, only found at jewellers in Guatemala City. In contrast to other Central American countries, hawksbill shell is not a traditional item in Guatemala's markets. Instead, jade, silver and leather products are more typical.

Real hawksbill shell was found in a jewellery shop in the central market of Guatemala City. The owner mentioned that she herself had made the product after buying some hawksbill scutes from a Nicaraguan. She mentioned that tourists mainly buy the products, as very few people from Guatemala City are aware of handcrafted hawksbill shell. Also, the fact that it is such an exclusive product means that it is very expensive. Although she doesn't sell hawksbill products often, when it does sell, the price is always very good. The artisans had inlaid the hawksbill shell with silver, which increased the value of the item. This vendor also mentioned that there are environmentalists who do not like these types of products because they come from sea turtles.

At the other seven jewellery stores, one false hawksbill piece (plastic imitation_ was being sold as real hawksbill. Three thin bracelets and one hair clip (genuine) were also found.

In spite of the large amount of time taken to survey all of the shops in Antigua, Guatemala, only one jeweller, specialising in emeralds and silver, had a bracelet inlaid with hawksbill shell on sale for US$18.00 (Appendix 4). It was displayed openly as a hawksbill product, and the merchant agreed that the principle consumers of this type of product are the foreigners that visit this well-known city.

Two more establishments selling hawksbill jewellery were located at the airport. The first shop displayed four bracelets in the main window with hawksbill links and gold settings. They were priced at US$3.85 each (Appendix 3) and were reportedly from Nicaragua. In the same airport, on the ground level, another shop had "hoop" style bracelets. According to the salesman, they often have the bracelets on sale but they sell slowly. These came from Izabal and were priced at US$ 5.78. Within the same airport, in the zone restricted for passengers only (store 2LC35), two more hawksbill items

(a ring and bracelet set) were found priced at US $75.00. At first the merchant would only allude to the fact that they were imported, but would not say from where. He also stated that the buyers were exclusively foreign tourists willing to pay a good price. Later on, he said that these items had been bought in Chile during a visit.

Hair clips, combs, rings, frames for glasses and other items, said to be made from "French" hawksbill, were on sale at the four jewellery stores in the Cemaco and Tikal Futura shopping centres. "French hawksbill" was a very good plastic imitation of hawksbill and was sold as real hawksbill at a higher price. Some shop-owners commented that these stores sell them as "French" hawksbill products, but they are in fact real hawksbill. They said that this seems to attract more attention from the consumers.

Greater concentrations of hawksbill shell items were located in the Livingston area. According to information gathered during interviews with Garifuna residents of this city, the scutes come from Belize via Punta Gorda and then they are fashioned by local artisans. On the central avenue, three locals were found selling hawksbill rings, bracelets and earrings priced at US$2.59, US$3.89 and US$5.20 respectively. At Quehueche beach, a Spanish-owned store was offered hawksbill bracelets and rings made by Garifuna artisans. Those interviewed informed the surveyors that they sell up to 30-40 of these items per week. In the shop called Artesanias Colibri in Livingston, a total of 101 hawksbill shell items were found. Ninety-five of them (94.04%) were rings, 2 (1.98%) were hair clips, and 2 (1.98%) were pairs of earrings with silver inlays in the centre. Also, two juvenile hawksbill shells were found in the shop as decorations. The saleswoman mentioned that these items sold frequently and were purchased mainly by foreigners. She openly admitted that they were made of real hawksbill that was brought to her by fishermen. She said that she only sold them because they brought her considerable sales, although she also sold other types of products. Other sites of the same area in Livingston had hawksbill scute (1), hairpins (10), jewellery boxes (6) and combs (2).

Rosales (1987) and Groombridge & Luxmoore (1989) also noted the use of hawksbill carapaces in the Livingston area. Although commercial advertisements offered these types of articles in Izabal, the surveyors did not find any of them.

VII.B.2. PRODUCTS DERIVED FROM OILS AND FATS

In the Port of San José, three places sold shark oil and olive ridley turtle oil (known as parlama by the Guatemalans). These three shops recommended the use of olive ridley turtle oil for respiratory ailments and colds. Although the vendors did not indicate that they knew the product was illegal, the turtle oil products were sold in a concealed way and were only offered when asked for by the buyer (Appendix 2a, 2b). The vendors mentioned that both nationals and foreigners purchased the oil; however, locals purchase more. They prefer the turtle oil to shark oil because it is not as strong in smell and taste, and it also has a different colour and viscosity. In interviews, the salesmen acknowledged that the oil is obtained from the fat of the turtle. These oils are homemade and sold in recycled bottles without commercial labels. The largest amount observed was 10 250ml bottles (Appendix 2a, 2b). Some people produce it and sell to others, while others buy the turtle and make the oil themselves.

TABLE 6:
Sea turtle products in the Port of San José and the volume and price of oils derived from olive ridleys.

Type of product	Volume	Price in US$
Oil from ***L. olivacea***	250 ml	9.64
Oil from ***L. olivacea***	250 ml	9.64
Oil from ***L. olivacea***	450 ml	19.3

At the Central Market, turtle soap and turtle cream were sold as remedies for skin problems. The soap was priced from $1.20/unit and was made in Guatemala. The cream, however, came from Mexico. There were no indications of oil imported from Grand Cayman, as cited by Groombridge & Luxmoore (1989).

VII.B.3. EGG TRAFFICKING

Little information was collected regarding the turtle egg trade in Guatemala, due a general unwillingness on the behalf of the locals to cooperate with surveyors. However, the surveys in the Port of San José did find some individuals with CONAP trade permits (Appendix 7d) and others without.

Generally, in Guatemala, raw turtle eggs are mixed with orange juice and consumed as a revitalising drink in the morning. Normally this drink is sold for US$2-$3 per glass at street vendors along the sidewalks. The widespread availability of this drink and its deep roots in the customs of the people complicates the situation for the State when managing trade in sea turtle eggs.

Using the CONAP values (2001) and considering that for each olive ridley nest collected, the egg-collectors voluntarily donate 12 eggs to turtle conservation hatcheries; and taking into account that this species lays an average of 100 eggs, one can roughly calculate the total number of eggs on the market. Sensibly speaking however, this is only an approximation using the most conclusive information available. According to CONAP (2001), during the 99-00 season 52,879 eggs were brought into the hatcheries, in donations of 12 eggs at a time, and during the 2000-2001 season 83,910 eggs were donated to the hatcheries.

Due to regulations requiring egg-collectors to donate one dozen eggs per nest, these numbers represent 12% of the nests found by the collectors. It must be clarified to the reader that these calculations are minimum values, as not all of the collectors make the proper number of donations. Also, during the 1999-2000 season, seven hatcheries were not operating. Sometimes, especially in areas without hatcheries, not all of the collected eggs are registered. Therefore it can be estimated that in the 1999-2000 season, a total of 440,658 eggs were collected; and during the 2000-2001 season, 699,250 eggs were collected. The majority of the eggs were of the olive ridley and 1500 of them were leatherback eggs, making a total of 11,399 nests based on an average of 100 eggs per nest.

The total number of eggs sold during these years was 1,003,119, representing 10,031 nests. On average, the eggs sold for US$ 2.57/dozen (US$1 = Q7.78) and ranged from US$1.28-$3.21 in the differ-

ent surveyed areas. The total economic value of the sea turtle eggs sold during the 1999-2001 period was, therefore, US$ 214,835 (US$ 106,999 - $268,334). Sánchez *et al.* (2002) reported the average price per dozen eggs was $2.89, which is still within the range established by this study.

The survey found turtle eggs for sale in three establishments in the Port of San Jose. At least 16 dozen eggs were found in the central market (seafood restaurants) and for sale at street vendors priced from US$1.28-$3.21 per dozen. All eggs were fresh — raw and covered in sand. Only, the fourth establishment had papers certifying the donations made and, therefore, authorising her to sell the eggs.

Eggs harvested on the Caribbean coast of Guatemala are normally sold in Port Barrios and occasionally in Guatemala City (Groombridge & Luxmoore 1989). At the present time this practice continues (W. Katz, pers. comm. 2002). Rosales (1987) reports that 100% of the eggs laid are harvested, except for those laid in protected areas.

VII.B.4. THE TRADE OF MEAT

While in Livingston, the surveyors observed people fishing for turtles using nets with logs as floaters. When interviewed, the fishermen stated that they catch three species of turtles; the green turtle, the hawksbill and the loggerhead. They fish between Point Manabique and Point Cocolí in the bay, bordered by a bathymetric line 6.0 metres deep.

The quantity of turtle meat depends on the season, but, according to interviews with fishermen, sea turtles can be captured year-round, depending on weather conditions. This leads us to believe that the fishing areas are probably feeding grounds for the turtles and therefore captured turtles would include both juveniles and adults.

While in Livingston, the surveyors also visited the fishing dock. There, one of the most well-known fishermen of the area displayed the carapace of an adult green turtle caught in March 2002. He said that sometimes the turtles get entangled in the mesh and are then slaughtered by the fishermen. In Livingston, one kilogram of turtle meat sells for US$1.32. Various fishermen mentioned their preference for turtle meat, yet, it was clear in the interviews that the fishermen were aware of the illegality of capturing and selling sea turtles. Still they clearly described all of the trade and its implications. This same fisherman showed four juvenile hawksbill carapaces that he had had for some time. He also mentioned that he had sold a pair of adult hawksbill carapaces to make crafts. He did not remember the price for which they were sold. He also noted that the fishermen sporadically catch turtles; however, there is a peak catching season between December and April. In his living room, this fisherman also had two leatherback turtle heads on display for decoration. He said that he had had them for many years and said that they were from the *"Galapagos"* turtle, emphasising their great size when they were caught in the ocean.

Another fisherman mentioned that a friend had brought him a hawksbill carapace from Belize where he noted that the majority of hawksbills are caught. He displayed a turtle carapace that had been captured a few days before and was selling the scutes at US$40/Kg. The carapace was between 30 and 40 cm long. Another fisherman said that when the turtles are caught accidentally, which is most common, the meat is taken from the turtle and the carapace is thrown back into the ocean to avoid problems, as it is illegal.

The Garifuna fishermen mentioned that a few of the old fishermen still catch turtles during the open season (December to April) and that sea turtle meat is part of their traditional diet.

Thanks to the information from the National Network for the Conservation of Sea Turtles in Guatemala and its members on the Caribbean coast, photographs were found of the rescue of a loggerhead turtle recovered alive in the community of Sarstún, bordering Belize.

VII.C. HONDURAS

Surveys were carried out at shops in the following towns:

1. Tela, Department of Atlántida.
2. San Pedro Sula, Department of Cortes.
3. Tegucigalpa, M.DC. Department of Francisco Morazán.
4. La Ceiba, Department of Atlántida
5. Valle de Ángeles, Department of Francisco Morazán.

Thirty-one establishments in these five towns sold sea turtle products; 29 of them were dedicated exclusively to the trade of hawksbill articles and the other two sold commercial turtle cream and pure turtle oil. Two of the stores had sold hawksbill products in the past, and so they were added to the survey.

VII.C.1. HAWKSBILL SHELL PRODUCTS

The stores were grouped according to their similar characteristics.

* Jewellers (2 shops)
* Craft shops in airports (3 shops)
* Craft shops of the National Association of Honduran Handcrafters (ANAH)(4 shops)
* Shops or crafts in other areas (19 shops)
* Shop in craft fair (1 shop)

In these shops, a total of 590 hawksbill items were found; of which 250 (42.3%) were rings, 191 (32.3%) were bracelets, 51 (8.6%) were linked bracelets, 42 (7.1%) were hairpins, 21 were necklaces (3.5%), the same quantity, 21 (3.5%) were earrings, 11 (1.8%) were charms, 2 (.3%) were ships, and, finally, one (0.1%) was a sculpture (Appendix 4). The merchants of two shops refused to allow the surveyors to count the total number of hawksbill products for sale.

TABLE 7:
Quantity and average price of products derived from hawksbill (*Eretmochelys imbricata*) shell.

Artícle	Quantity Observed	Minimum price per unit (US$)*	Maximum price per unit (US$)*
Rings	250	$.9	$5
Bracelets	164	$1.8	$5
Wide bracelets	6	$3.1	$3.1
Narrow bracelets	10	$2.2	$2.2
Thin bracelets	11	$1.2	$1.2
Necklace with hawksbill and black coral	1	$18.6	$18.6
Necklace	4	Nd	Nd
Necklace with anchor charm	3	$3.7	$3.7
Necklace with hawksbill charm	13	$2.1	$2.1
Earrings (hanging)	21	$1.2	$3.7
Linked bracelets	15	$2.9	$5.2
Wide linked bracelets	12	$5	$5
Narrow linked bracelets	14	$4.3	$4.3
Thin linked bracelets	10	$3.7	$3.7
Charms	11	$0.9	$3.7
Hairpins	42	$1.8	$3.1
Hawksbill boats	2	$10	$10
Sculptures	1	$6.2	$6.2

Nd: Not determined, * Money exchange rate at the time of writing: 16.1 lempiras/US$1 dollar.

In general, hawksbill items in the Honduran market have very low prices compared to the rest of the Central American market. The most expensive article was a necklace made of hawksbill and black coral, priced at US$ 18.60. Also, high priced rings and bracelets sold frequently at the shops in the airports. They also found one unique hawksbill sculpture in a craft shop in the Hotel Sula, in San Pedro Sula. Although this might seem to be a very expensive item, it was priced at only US$ 6.20. At the Hotel Sula, two small boats made of hawksbill shell were found.

TABLE 8:
Description of type of establishment, products and quantities found.

Articles	Handcraft shops	Handcraft of Honduran Association of Handcrafters	Handcraft shops in Airports	Shop in Handcraft Fair	Jewelers
Rings	163	43	12	16	16
Bracelets	95	75	10	8	3
Earrings (hanging)	20				1
Necklaces	20				1
Charms	8				3
Hawksbill boats	2				
Sculpture	1				
Linked bracelets	39	6			6
Hairpins	28	13			1

The results of the surveys indicated that 27.5% of shopkeepers consider the sale of hawksbill turtle items to be “very important” for their business. Thirty-one percent (31%) said that hawksbill has “average importance” for their business, while 24.1% expressed that sales were very low and could not be defined. Five shopkeepers (17.2%) did not give responses.

In interviews, sixty-two percent (62%) expressed that both nationals and foreigners buy the products; 17.2% expressed that foreigners bought these types of articles; 10.3% said that the best buyers were nationals; 10.3% did not respond.

For the purpose of analysis, the surveyors also asked the shopkeepers about the origin of the hawksbill items and the answers were varied. Nine store owners claimed that the turtle products had come from Tela, in the Department of Atlántida, five indicated that La Ceiba was the source, and three mentioned Nicaragua. Two shopkeepers name Puerto Cortés, and only one vendor mentioned the Bay Islands. Omoa Cortés, and Roatán and Miskitia, Honduras, were named by two vendors, respectively, as the origin of the hawksbill crafts. Five shopkeepers did not provide an answer to this question in the survey.

The surveyors also asked the shopkeepers about who had actually produced the hawksbill articles. They received a variety of responses five shopkeepers stated that the artisans in La Ceiba made the articles, three mentioned the artisans of Tela, one indicated that they were made in Triunfo de la Cruz, and one bought the items from an artisan from Palenque. Three shopkeepers made their own articles and four of them did not know the origin of the artisans. Of all the shopkeepers interviewed, 12 did not respond to the survey questions.

In summary, of the 29 establishments selling articles derived from hawksbill turtles, 93.1% sold it openly. The remaining 6.9% corresponds to two shops, one of which no longer sells hawksbill. This shop is located in the Golosón airport, and has not sold hawksbill since the Environmental Prosecutor of La Ceiba, Atlántida, confiscated the product from them in 1998, causing them to lose US$ 800.00. The second shop would not provide any information, although they did have hawksbill rings. They also had had the product confiscated from them in the past.

General comments observed during the survey:

A shop in San Pedro of Sula, had the most hawksbill products of all the surveyed shops, with a total of 87 pieces. According to the vendor, they buy the surplus from a factory that exports hawksbill articles to the Cayman Islands. This coincides with data obtained by Barborak *et al.* (1983), describing the illegal fishing of hawksbills and the sale of their carapaces from the Bay Islands to Grand Cayman. Considering that the large quantity of hawksbill products in this store is actually "surplus", it seems a reasonable conclusion that this factory exports a large quantity of hawksbill.

One vendor who did not agree with the selling of hawksbill turtle products allowed a friend of hers to sell them in her shop. One shop located in the Hotel Villas, Telamar, in Tela (Department of Atlántida) indicated that sales increase at the end of the year because Hondurans from the United States visiting for the Christmas holidays like to take back hawksbill products as souvenirs. One vendor did mention that some tourists refuse to buy hawksbill articles because they respect animal rights.

The vendors that sell hawksbill products and belong to the National Association of Honduran Handcrafters (ANAH) are authorized by this association to sell this type of product.

VII.C.2. PRODUCTS DERIVED FROM OIL AND FATS

Only one shop selling natural medicine was selling turtle oil products in the municipal market at Tela, Atlántida (Appendices 7 and 8). The vendor noted that sales are low and that the buyers are mostly nationals. The product is bought from fishermen and sold openly as sea turtle oil. He said that he buys the oil in large bottles and then rebottles it into 10 ml jars.

TABLE 9:
Description, quantity and commercial value of the types of creams made with a base of sea turtle oils.

Type of product	Quantity	Size	Price (US $)
Moisturizing Cream	5	Undeterm	$1.5

Undeterm: Undetermined

According to the vendor, this cream is a popular product with the locals and it sells quickly. He (the vendor) travels to villages on the weekends to sell it. The product comes from San Pedro Sula, where it is bottled and labelled. It is sold openly as turtle cream and although the label does not state the origin, the vendor claims that it comes from Guatemala.

TABLE 10:
The sale of sea turtle oil

Product	Quantity	Price en US$
Pure oil	7 jars of 10 ml	$1.2 each

VII.C.3. EGG TRAFFICKING

On both the Caribbean and the Pacific coasts, the plundering of turtle eggs for human consumption is intense. Mestizo, Garífuna and Misquito communities of the Caribbean coast use the turtle eggs as a basic food item. In the Gulf of Fonseca, egg-bearing olive ridley females descend in great numbers upon the beaches at Point Ratón, Cedeño, Amapala and Point Condegato to nest. The eggs are collected throughout the year and distributed nation-wide by a well-organized network of seafood merchants. In fact, the Honduran Fishing Authorities have been alerted (C. Molinero, pers. comm. 2002) regarding the larger international traffic in sea turtle eggs, which are harvested in the Gulf of Fonseca and then traded into Nicaragua, and sometimes by small indigenous boats (cayucos) to markets in El Salvador (Lagueux 1991). One hopes the CITES authority will become involved to stop this trade.

The survey and visits found that these eggs are usually sold in bars (***cantinas***), seafood restaurants, markets and soccer stadiums where one can get eggs prepared in a mix of chili, salsa, onion and other condiments providing an exotic flavour. In Honduras, eggs were sold in San Lorenzo, Jícaro Galán, Tegucigalpa and San Pedro Sula, La Ceiba, Comayagua, Port Cortés, Siguatepeque, and the Bay Islands. They were always found in businesses selling seafood. In Tegucigalpa, sea turtle eggs were sold at the stadium during the National League soccer games. There was no class preference here, as they dealt with patrons sitting in regular seats as well as bleachers.

This profile of egg use in Honduras completely coincides with the reports of Groombridge & Luxmoore (1989). Thus, efforts to dissuade the regular consumers of this endangered species have had little effect. Lagueux (1991) indicates that in the Gulf of Fonseca area, during the 1987 season, more than 80% of the nests were harvested for trade and consumption. Prices during that year fluctuated between US$0.08-US$0.31/egg, a range that persisted to 1999 (Govan, 1999). As in other Central American countries, turtle eggs are consumed in Honduras mainly because they are considered to have aphrodisiac properties, and not because they are nourishing supplements to the human diet.

VII.C.4. THE TRADE OF MEAT

Groombridge & Luxmoore (1989) found that the communities of Trujillo and Point Castilla along the Caribbean coast harvest green turtle meat intensely as a source of protein in their diet. On occasion, sea turtle meat is used as bait in fishery operations along both coasts. The entrails and other body

parts are used as bait in lobster baskets. Lobster fisherman and shrimpers of the Caribbean zone reported sea turtle as captured during their fishing trips.

The systematic use of the green turtle is gaining importance, especially in the foraging areas in the northeast of Honduras where some fishermen specialize only in taking green turtles.

During this survey, four coastal communities were visited within a 40 km stretch of the coast. These communities were Cocalito, Sangrelaya, Ciriboya and Punta de Piedra, all in the Municipality of Iriona, Department of Colon. The men who harvest green turtles are members of Garifuna communities, range in age from 30 to 45 years, and, while they are considered quite experienced fishermen, about 80% of them also work as seaman on shrimping vessels from the Bay Islands that use drag nets. The others are farmers or vendors of basic products (Cocalito). According to the fishermen, the best communities for catching green turtles are San José de la Punta and Ciriboya. Both have channels out to the ocean that allow them to catch the turtles as they pass through. They catch turtles from March until September, with a slump in the month of July when the fishermen leave to work on the drag net shrimpers.

To catch the turtles, large handmade nets of 12-18 inch mesh are set in foraging areas at depths of 8-14 fathoms. The fishermen work from cayucos or boats with oars, not motor boats. The turtles they are seeking are young stages with an average carapace length of 80 cm though in the community of Cocalito they take smaller individuals of 50-55 cm straight curved carapace length. The nets are set in areas where turtles are foraging, and are fixed by heavy rock anchors. The nets are checked every day by the fishermen. Generally the turtles are netted at night and are brought in to the beach in small cayucos. The turtle is then tied up to await butchering, or transferred to the community for butchering on demand.

According to interviews with the fishermen and other locals, the turtles are used primarily for their meat; however, some communities take advantage of the whole turtle. The meat is sold throughout the communities from the moment that the turtle is butchered (Molinero, Arriola & Casildo 2000). One turtle can yield 30 to 55 kg of usable products, with a price of 6.6 lempiras per pound (US$0.41/Kg). Each kilo of product is made up of meat, viscera and, in some cases, the lower plastron (calampe or calopee), which is salted and smoked over the hearth to be consumed in soup approximately two or three months later; i.e., during the months when there are no fish. In some communities, the meat incrusted in the carapace (dorsal bone) is sought for its gelatinous texture and, for this reason, many broken carapaces were found. Similar to the lower plastron, it is salted and dried before consumption.

In interviews, Garifuna women declared that green turtle meat is eaten by everyone except those with anaemia. A popular belief is that they are unable to consume turtle meat because it has no blood and if an anaemic person consumes it, they will experience vomiting, dizziness and other physical responses (Molinero, Arriola & Casildo 2000). This popular lore is contradicted by practices noted elsewhere in Central America, where the meat is considered great nourishment, especially for people with health problems, including anaemia.

With respect to tags on sea turtles, one fisherman found a tag (#10758) and sent it to Gainesville, Florida. As for the number and sex of turtles taken, only the Ciriboya interview gave a result: 10 males and 2 females taken in the year 2000.

VII.D. EL SALVADOR

The majority of the surveys took place in the principle markets and craft shops of El Salvador. The survey also included two important shopping centres that attract both local and foreigner consumers, as well as other stores in the capital city.

1. Municipal Market of Santa Ana, Department of Santa Ana
2. Santa Tecla Market, Department of la Libertad
3. Central Market of the Capital City, Department of San Salvador
4. National Market of Artesanías in the Capital City
5. Artesanías Market of Excuartel, Center of the Capital City
6. Usulután Market, Department of Usulután.
7. Santa Rosa Market of Lima, Department of la Unión
8. San Miguel Market, Department of San Miguel
9. Sonsonate Market, Department of Sonsonate
10. Municipal Market of Santa Ana, Department of Santa Ana
11. Central Market of Santa Ana, Department of Santa Ana
12. Commercial Centre Metrosur in the Capital City
13. Commercial Centre Metrocentro in the Capital City
14. Optics shop in the centre of the Capital
15. Musical instruments shop in the Capital City, Department of San Salvador

VII.D.1. HAWKSBILL SHELL PRODUCTS

Based on the experiences in other Central American countries, of all the previously mentioned sites, the following were highlighted as having high potential to sell hawksbill shell products:

* Metrosur Shopping Centre in the Capital City
* Metrocentro Shopping Centre in the Capital
* Artesanías Market of Excuartel, Capital City
* National Market of Artesanías, Capital City
* Santa Rosa Market of Lima, Department of la Unión, street vendor
* Optics shop in the Capital City

Among all of the places visited, only four shops openly offered hawksbill products for sale. But only one of the shops, located in the National Market of Artesanías in the Capital City, was actually selling true hawksbill articles. A total of 133 pieces were found, of which 81 (60.9%) were rings, 28 (21%) were bracelets, 18 (13.5%) earrings and 6 (4.5%) were combs and back combs (Table 11, Appendix 6c).

TABLE 11:
Quantity and average price of the products derived from the shell of the hawksbill turtle (*Eretmochelys imbricata*) found in El Salvador.

Type of Product (US$)	Quantity Observed	Mean price per unit
Rings	81	$5,93
Bracelets	28	$7,5
Earrings	9 pair	$8 each pair
Combs	3	$9
Back combs	3	$9.7

Average exchange rate US$1=8.75 colones

All of the products shown in Table 11 are from the one shop where true hawksbill products were detected by the surveys. This vendor manufactures the articles after buying hawksbill shell that comes from the Gulf of Fonseca, but principally from Nicaragua. She mentioned that both nationals and foreigners buy hawksbill products from her. The products were sold in an open manner. "Old wives tales" from the area claim that back combs made of hawksbill shell can eliminate a woman's headache, because the combs absorb the pain. The artisan from this one particular shop confirmed that she bought the pieces and personally fashioned them. She had learned the art of hawksbill carving from her father, and he from his father. She claimed that it is not necessary to kill the turtle in order to remove the shell plates because the turtle sheds these plates [scutes], which are then buried in the sand, and the fishermen, with their nets, collect them and bring them to the hawksbill artisans. Although she sold other types of crafts, as well as hawksbill shell items, the sale of hawksbill products was significant to her business simply because of the greater quantity of products and the fact that she makes them herself and earns a good salary. The vendor expressed that there are no laws that protect this species, and that she has never had any problems; even so, she did not permit photos because she feared that an organization protecting animals could later affect her. She also had one piece of shell (scale), approximately 15 by 20 cm, that was not carved which she showed to the interviewer.

During the survey, other craft shops were located. One in the Metrosur Shopping Centre, another shop in the craft market of Excuartel, and three more craft shops in the Metrocentro Shopping Centre. According to the surveys, the vendors say that the sale of hawksbill in El Salvador has been minimal during the last few years and at present it is almost nonexistent for the following reasons:

1. The national tourist does not buy many crafts and the foreign tourists buy other types of crafts, due to the fact that El Salvador does not have the great historical record of producing hawksbill articles as in other countries.
2. The vendors share the opinion that the products are very expensive and there is no one to buy them and also no one to supply the market.
3. The vendor of these types of products does it in a private manner.

The surveys in El Salvador also found shops where hawksbill products were offered openly; however, in reality, they were not made of real hawksbill shell. Fake hawksbill products are made from a synthetic material made with a resin and acetate base giving a finish very similar to hawksbill. This occurred in the remaining three shops, an optical shop in the Metrocentro shopping centre, another optical shop in the capital city and a musical instrument shop in the capital that also offered "hawksbill" guitar picks.

TABLE 12:
Shops that offered imitation hawksbill as true hawksbill.

Shop	Article	Quantity	Price US$	Origin
Optical shop in Metrocentro	Frame for lenses	10	$120 each	Italy
Optical in the Capital	Frame for lenses	Undeterminad, sold only when order placed	$100 each	Undetermined
Musical instrument shop	Guitar picks	26	$0.40 each	USA

The owner of the downtown optical shop assured us that the frames were in fact imitation hawksbill shell, although the promotional sign advertised hawksbill frames. And they were even sold only by catalogue because of their high price and so that the buyer may believe that it is real hawksbill. The survey reported that, in El Salvador, since approximately 5 or 10 years ago, hawksbill frames are no longer sold because it is illegal to sell these types of products.

In the other optical shop located in the Metrocentro Shopping Centre, the frames were not made of hawksbill, according to the investigator that carried out the survey, although the vendor assured him that they were real hawksbill.

At the musical instrument store, the guitar picks were offered as real hawksbill picks, but after questioning the vendor more about the product, he admitted that they were really not made of hawksbill, but plastic. His response may have changed out of fear that the buyer might have recognized that it was not hawksbill shell or because it is illegal in El Salvador to sell these types of products. The picks were confirmed to be made of plastic. The survey determined that 133 pieces counted were real hawksbill, while only 36 were imitation hawksbill.

In 1989, Groombridge & Luxmoore reported that the use of the turtle was low in El Salvador. This situation has certainly changed. Although there is no fishery for the consumption of meat, national production of hawksbill articles is concentrated in the Port of la Union. The origin of the scutes from which the products are made is not clear.

VII.D.2. PRODUCTS DERIVED FROM OIL AND FATS

The following sections were surveyed in the principle markets of El Salvador.

* Santa Tecla Market (Department La Libertad)
* Central Market of the Capital City (Department of San Salvador)
* Usulután Market (Department of Usulután)
* Santa Rosa Market of Lima (Department of la Unión)
* San Miguel Market (Department of San Miguel)
* Sonsonate Market (Department of Sonsonate)
* Municipal Market of Santa Ana (Department of Santa Ana)

TABLE 13:
Description, quantity and commercial value of different types of creams made with a sea turtle oil base.

Type of product	Quantity	Size	Price (US $)
Sea turtle oil cream	210 containers	Small	US$0.57
Sea turtle oil cream	9 containers	Large	US$0.91
Turtle cream Natural extracts	2 containers	Undeterm.	US$1.14
Turtle Cream Natural extracts	2 containers	Undeterm.	US$1.14
Turtle cream With vitamin E	2 containers	Undeterm.	US$1.14

Undeterm: Undetermined

The figures shown in table 13 show the results of the surveys taken at 18 cosmetic shops and 6 herbal shops (Appendix 8).

All of the cosmetic shops sold sea turtle oil cream and turtle cream, but the herbal shops did not sell any of these products. Also, two samplings were taken from all of the cosmetic shops in the markets of Santa Rosa of Lima and San Miguel. It was impossible to carry out the survey in all of the cosmetic shops in the markets due to the large number of shops. However, the surveyor estimated that other shops, approximately 125 of them, would also sell sea turtle oil cream and that each shop would have from 2 to 12 containers of the product. Therefore, quantities of this product for sale in the markets could range from 250 to 1500 containers.

Sea turtle oil cream is very popular, and is sold openly. The vendors stated that it sells mainly to persons of limited economic resources. Furthermore, none of the creams carry any registration information, although vendors expressed that it was an El Salvadorian product. They all admitted that the sale of sea turtle oil cream was not significant for them, as they focus on selling other products. Also, despite high demand for the products, they are sold very cheaply.

Pure sea turtle oil and turtle soap was found in only one shop the San Miguel market, Department of San Miguel, selling medicinal herbs and soaps.

TABLE 14:
The sale of oil and soap derived from sea turtles.

Product	Quantity	Price in US$
Pure oil	1 container 100 ml	US$7.43
Pure oil	4 bottles	US$11.43 each
Artisan soap	1 unit	US$4

A spoonful of turtle oil varied from US$1.14 in one establishment to US$5.71 in another. It is a very expensive product and very few people buy it. According to the vendors, the product comes from Honduras and Nicaragua and is no longer sold openly because it is prohibited. They keep it concealed and, for this reason, the quantity shown in Table 6 could be a significant underestimate of the availability of the product. The product is attributed with medicinal properties that cure respiratory diseases.

VII.D.3. EGG TRAFFICKING

In order to survey the trafficking of sea turtle eggs in the market of El Salvador, data was collected from the following places:

* Municipal Market of Santa Tecla, Department of la Libertad
* Central Market of the Capital City, Department of San Salvador
* Usulután Market, Department of Usulután
* Sonsonate Market, Department of Sonsonate
* Municipal Market de Santa Ana, Department of Santa Ana
* Central Market de Santa Ana, Department of Santa Ana

Only 6 street vendors, or 30% of the 20 establishments selling turtle eggs, depended exclusively on the sale of this product. The remaining 14 establishments (70%) sold other types of seafood and did not depend on the sale of turtle eggs. Turtle eggs were sold openly in all shops and vendors stated that the majority of the buyers were middle-class.

The eggs sold at the central market of San Salvador come from Mizata beach, Department of Sonsonate, and the beaches of the Department of La Libertad and the Department of Usulután, Puerto Parada. The wholesale distributors bring up to 100 dozen turtle eggs to sell at this market and charge between US$2.06-$2.51 per dozen to the retail buyer, who then sells the eggs at up to US$2.86 each (as previously established in Table 15) during the high nesting season. The same prices apply to the Municipal Market of Santa Tecla for retail, as well as wholesale.

TABLE 15:
The sale of sea turtle eggs in El Salvador.

Quantity (dozen)	Minimum price/dozen US$	Maximum price/dozen US$	Place of sale
95	US$2.29	US$2.86	Central Market San Salvador
50	US$2.29	US$2.86	Municipal Market of Santa Tecla
30	US$4	US$4	Central market of Santa Ana
11	US$2.74	US$2.86	Sonsonate Market
5	US$4	US$4	Municipal Market of Santa Ana
4	US$2.86	US$2.86	Usulután Market

Prices for sea turtle eggs in the Department of San Salvador varied depending on the month. For example, the prices previously shown indicate the cost per dozen during high season. However, during the months of November and December, Easter week, and during the capital city employers vacation in August, the demand increases and pushes the price up to US$6.86-$11.43 per dozen. The vendors expressed that sea turtle eggs coming from Nicaragua are much cheaper, and their retail cost is US$1.71 and US$2.29 per dozen. The price is much lower because they come in considerable quantities and do not have to pay import taxes to El Salvador or export taxes from Nicaragua.

Data from the survey suggests that the purchasing of eggs has decreased compared to other years because there are no longer as many buyers. In 2001, red tide was detected off the Pacific Coast and the buyers generally abstained from purchasing marine products. Also, restaurants no longer buy the product in the same quantities as they did in the past.

In the Municipal Market of Santa Tecla, sea turtle eggs are usually sold on Saturdays and Sundays. Eggs bought by the wholesalers from the fishing cooperative of Sonsonate, directly from Santiago, La Libertad and La Herradura, come from the beaches of Acajutla and Garita Palmera among others. Like the central market, in Santa Tecla the prices rise in the dry season (November, December, Easter Week, etc) due to the scarcity of the product during this time. The most abundant eggs in El Salvador come from the olive ridley, the species that has its peak nesting on the Pacific side of Central America from August to September and not during the summer months.

Some vendors are familiar with the sea turtle conservation project and assure us that they donate a portion of their harvested eggs to special hatcheries where the eggs are incubated and the hatchlings released back to the sea. In El Salvador, the State promotes this kind of conservation practice.

Two shops selling alcoholic beverages were found selling turtle egg cocktails. One was located in the central market of the capital city and the other in the Municipal Market of Santa Tecla. In the first shop a cocktail of three eggs cost US$ 1.14 and in the second shop the price was US$ 4.57 per dozen or US$ 0.57 per egg. In the Central Market of San Salvador there may be another 11 shops of this type.

NTM (1996b) published that on May 3, 1995, two arriving El Salvadorians were caught at the Los Angeles International Airport with 3,780 olive ridley (***L. olivacea***) eggs. These were worth on the black market US$1-US$3 per egg. They sell in restaurants from US$5 to US$7.

VII.D.4. THE TRADE OF MEAT

A seafood shop outside of the Sonsonate market (Department of Sonsonate) was found selling turtle meat. The vendor was not sure where the meat originated from, but it was possible that it came from the beaches between Acajutla and Barra Salada (Department of Sonsonate). Since the sale of turtle meat here is prohibited, it was not being sold openly. The vendor said it was not a big seller and he carried it only occasionally, and then only by order. He declined to say who bought it.

According to one vendor in the central market of the capital city, Department of San Salvador, most people in the city would not normally want to eat this type of meat, however the fishermen working on shrimp boats often ate the turtle meat of adult and juvenile turtles that became trapped in their nets. The numbers so trapped could be significant enough to make shrimp nets a "major predator" of these turtles.

TABLE 16:
The sale of meat when ordered in Sonsonate.

Product	Quantity	Price US $
Turtle meat	One pound	$1.71

Finally, a craft vendor offering hawksbill products in the National Craft Market reported that in the Department of la Union, turtle meat is marinated and even made into turtle crackling that tastes like chicken or beef depending on the condiments with which it was cooked.

VII.E. NICARAGUA

VII.E.1. HAWKSBILL SHELL PRODUCTS

Our first survey disclosed that products derived from sea turtles are available throughout the principle markets of Nicaragua, e.g.

* Central Market or Roberto Huembes of Managua city. Artisan Sector.
* Masaya Market of the city of Masaya, Artisan sector.
* Old Market of Masaya, also of the city of Masaya exclusive for crafts.
* Microfer in: Huembes, Managua, Bluefields and León
* Jinotepe - Carazo.

* City of Puerto Cabezas, Autonomous Region of the North Atlantic including the airport RAAN (Región Autónoma del Atlántico Norte)

These establishments were located in busy tourist zones visited by both nationals and foreigners. Twenty-one craft shops and three roaming vendors selling hawksbill products were surveyed and a total of 597 items were found. As items they were roughly 28% earrings (170), 23% rings (138), 22% bracelets (135), 14% necklaces (87), and 11% hairclips (67). However, in 11 of these shops, it was impossible to count exactly how many items were there and it has been recommended by the surveyors that the above numbers be considered as minimums. (Appendix 4)

TABLE 17:
Quantity and average price of products derived from hawksbill shell (*E. imbricata*) found traded in Nicaragua.

Type of product	Quantity observed	Minimum price per unit (US$)*	Maximum price per unit (US$)*
Earrings	85 pairs	$0.75 pair	$3 pair
Rings	138	$0.75	$1.09
Bracelets	135	$0.75	$3,5
Hair clip	67	$0.75	$5
Bracelets with gold	Undeterm	$6	$13
Large Necklace.	35	$10	$12
Simple Necklace.	Undeterm	$2	$2.5
Necklace with mother-of-pearl	15	$3.5	$3.5
Necklaces with coral	37	$9	$12
Earrings with coral	Undeterm	$.75	$.75
Choker with silver	Undeterm	$23	$23
Locks	Undeterm	$.8	$1
Chain with gold	Undeterm	$7	$7

*Average exchange rate =13.7córdobas /US$1.00, Undeterm: Undetermined.

All of the minimum prices shown in the above table come from the Atlantic zone of Nicaragua.

According to comments from one of the roaming vendors, part of the Caribbean product is sent to the Capital for resale.

It was also mentioned that the lobster divers are the main suppliers of hawksbill. One of the places that used to regularly sell hawksbill was Awastara, but thanks to the help of the World Bank and the WWF, the artisanal fishermen are now more dedicated to just fishing.

In the city of Masaya they are using bullhorn as a substitute for hawksbill.

As a group, shops or street vendors had the largest quantity of hawksbill crafts with 262 pieces (43.8%). The three roaming vendors surveyed were found with 185 pieces or 30.9% of the total. There were also a

few jewellery exhibits presenting 150 pieces (25.1%). The jewellery and souvenir shops at the Puerto Cabezas Airport on the Caribbean coast showed a total of 245 pieces of hawksbill, indicating the importance of these products in a place of heavy international traffic.
Most of the merchants surveyed (21) regarded hawksbill products as their best selling items, thereby providing an important, if not the only, source of income for their households, often due to a lack of any other employment.

Most of the vendors (19) sold hawksbill products to both foreigners and nationals, while three sold mostly to foreigners and one mostly to nationals.

On the whole, the vendors said that most of the hawksbill comes from the Nicaraguan Caribbean coast, i.e., from Bluefields, Puerto Cabezas, Miskito keys, and Masaya. Two of the establishments surveyed were workshops, one in Huembes and the other in León. They apparently buy the scutes and work them themselves.

All of the merchants indicated that they sell the product openly; however, one of the shops located in the Puerto Cabezas airport indicated that there are restrictions, but they have no other economic alternatives.

The following table shows results from the second survey carried out in the principle markets of the pacific region of Nicaragua during the months of August and September 2001. The survey comprised the Central Market or Roberto Huembes of the city of Managua, the Masaya Market of the city of Masaya, Artisan sector, and the Old Market of Masaya, exclusive for crafts.

TABLE 18:
Quantity and types of products found for sale in the three markets.

Article	Quantity observed (US$)*	Mean Price	Mean demand of unid/week	Stocked value US$	Mean demand of units/year	Estimated demand of national market
Bracelet with coral	220	$3.11	10	$875.60	520	1560
Square bracelet	42	$3.98	18	$167.16	936	2808
Knot bracelet	14	$1.48	3	$20.70	156	468
Large plain bracelet	468	$3.82	11	$1787.76	572	1716
Small plain bracelet	1234	$1.42	9	$1752.28	468	1404
Bracelet with gold	77	$9.40	7	$723.8	364	1092
Snake bracelets	82	$2.96	8	$242.72	416	1248
Arrow bracelets	11	$2.59	8	$28.49	416	1248
Total bracelets:	2148					
Rings	1143	$0.82	9	$937.26	468	1404
Earring	571	$1.37	9	$782.27	468	1404
Hairclip	96	$1.66	8	$159.36	416	1248
Necklace.	10	$2.59	5	$259.00	260	780
Crucifix	50	$2	Nd	$100.00	Nd	Nd
Chokers	37	$5.92	3	$219.04	156	468
Key chains	30	$1.85	Nd	$55.50	Nd	Nd

Nd: not determined

In total our survey of these three markets turned up 4085 pieces of hawksbill items. The values and stock price are at an exchange rate of 13.5/córdobas per dollar.

The mean demand was obtained by directly consulting the merchants of the three markets that consented to give information.

The estimated demand of the national market was obtained by multiplying the weekly mean demand of units by 52.

The demand of the national market was obtained by multiplying the average annual demand by three (the factor three represents the number of markets visited), assuming a steady rate of trade. This was done as intent to estimate the flow of trade.

Of those consulted, 72.1% had been active in the commercial sale and trade of hawksbill articles for between one and 15 years. This suggests the emergence of a new generation of merchants. The remaining 27.9% of the proprietors and vendors had between 20 to 65 years of experience in this business.

About one third of the vendors surveyed said that hawksbill articles were the most common items they sold, especially bracelets and rings. About two-thirds of the vendors said that foreign tourists, mostly from high-season cruise ships from October to May, made up the bulk of consumers for these products. About 14% said that for them, national buyers, though few, are very good clients. The rest of the vendors sold equally to both foreigners and nationals.

Regarding the question of the origin of the hawksbill, the majority of the merchants (58.1%) declined to answer, reflecting a high degree of distrust. However, about one third of those consulted affirmed that the products come from the Autonomous Region of the South Atlantic, specifically the Port of Bluefields and the islands of Corn Island. The rest said the hawksbill wares came from the Autonomous Region of the North Atlantic, specifically from Puerto Cabezas, and the Sandy Bay zone where suppliers not only fish the turtle to obtain hawksbill scutes, but also consume the meat of the turtle.

The following are some random notes gathered from the surveys:

* Ten (10%) of those surveyed said that hawksbill products are rare.
* The Italians are keen clients for the purchase of hawksbill pieces.
* The principle clients of this market are of the following nationalities: North American, Canadian, Chinese, Spanish, Italian, Costa Rican and Panamanian.

According to Osberto Jerez, a merchant in the old market of Masaya and a native of Puerto Cabezas and a former fisherman of Hawksbill turtles, the plight of the hawksbill is insurmountable because their conservation contradicts the cultural tradition of the towns of the Caribbean, north of Nicaragua. For in this area, exploiting hawksbill meat and shells is a long- standing practice.

A new young generation of fishermen and artisans has emerged in North Sandy Bay. Also, hawksbill is brought to Managua because many artisans now reside in the capital city. The markets of Masaya

are supplied with hawksbill products from Puerto Cabezas. In spite of this, the last four years has seen a decline in the supply of hawksbill products.

This raises the question of just how many turtles are needed to supply the Nicaraguan market. Indeed, the situation as noted by Groombridge & Luxmoore (1989) has changed extraordinarily. The quantities of hawksbill products that are now coming from the Caribbean coast to the centre of the country (and from there, to at least Honduras, El Salvador and Costa Rica) indicates that these ready markets have enticed trade in, and thereby have adversely affected the condition of these turtles.

VII.E.2. PRODUCTS DERIVED FROM OILS AND FATS

One shop was found in Jinotepe - Carazo where turtle hand and body cream was offered at 15 córdobas per unit (approx. US$1.09). The most common buyers eagerly seeking this kind of product were national tourists.

TABLE 19:
Description and commercial value of different types of creams made with a base of sea turtle oils.

Type of product	Size	Price (Córdobas)	Price (US $)*	Country of fabrication
Turtle hand and body cream	unknown	15	$1.09	unknown

VII.E.3. EGG TRAFFICKING

As noted by Groombridge & Luxmoore (1989) the collection of turtle eggs is a common situation in Nicaragua. Along the west coast the eggs (mostly from ***L. olivacea***) are gathered for trafficking in formal networks. Along the Caribbean coast the eggs collected, from both green and hawksbill turtles are more likely to be for personal consumption (Pers Comm., C.Lagueux 2002).

VII.E.4. THE TRADE OF MEAT

The historical annotations of the use of sea turtles in this country can be found in Parsons (1972), Nietschmann (1976) and Grombridge & Luxmoore (1989). For many centuries the native communities of Caribbean Nicaragua comprising at least three ethnic groups have considered the use of sea turtles so important as to be their principle source of animal protein.

The survey showed that in the Municipal Market of Puerto Cabezas, a vendor was openly selling green turtle meat and oil, and even paying normal taxes to the County Government the same as all other merchants and vendors. It also reported that the product is consumed locally and is the only source of income. The meat comes from the Miskito Keys, from a place called WITIS-DIAMOND SPOT, Auhya lupia-Sukra. There the fishermen of Awastmara bring in the turtles.

According to the survey, the price of meat has recently increased from US$ 0.20 to US$ 0.35 per pound due to the work being carried out by the WWF and the World Bank with Amica.

TABLE 20:
Description of the sale of turtle meat and the price in the municipal market of Port Cabezas.

Meat	Weight or quantity	Price in Córdobas	Price in US$
Mixed meat	1 pound	7 córdobas	$0.51
Turtle steak	1 pound	10 córdobas	$0.73
Flipper	Per pair	30 córdobas	$2.20
Oil (when ordered)	By the gallon	60 córdobas	$4.42

VII.F. COSTA RICA

Fifty-four (54) shops were found selling sea turtle products and were mostly located in the provinces of Puntarenas, San José and Limón; areas frequently visited by both national and foreign tourists.

VII.F.1. HAWKSBILL SHELL PRODUCTS:

Of the 54 establishments identified as selling products derived from sea turtles, 38 (70%) offered articles of jewellery derived from the shell of the hawksbill turtle (***E. imbricata***). The material found was not very elaborate and

TABLE 21:
Quantity and average price of the products derived from the shell of the hawksbill (*E. imbricata*) observed in the Costa Rican market (Appendices 3 and 5). The quantities include confiscated articles.

Type of product	Quantity observed	Quantity confiscated	Average price per unit (C)	Minimum Price	Maximum Price	Average price per unit (US$)*
Rings	1775	2382	460	150	1000	1.4
Wide bracelet	67	110	3800	1500	6000	11.3
Skinny bracelet	145		1600	800	2500	5
Earrings	80	5	1150	350	2000	3.4
Small combs /hairclips	19	18	2500	1500	3500	7.5
Guitar picks	30		660	500	1000	2
Charms	25	1	825	650	1000	2.5
Totals	2141	2516				

*Average exchange rate = (335 colones/ US$1.00 dollar)

was composed, in general, of small pieces. In total 2,141 pieces were observed, most of which were rings (82.9%) and bracelets (9.9%) (Table 21 and Figure 2). Also, the prices at which the articles are sold are very accessible for both national and foreign consumers.

Ninety-five percent (95%) of these articles are sold in craft shops, costume jewellery shops and in particular, souvenir shops for foreigners. Nationals represent the principle consumers (Figure 3).

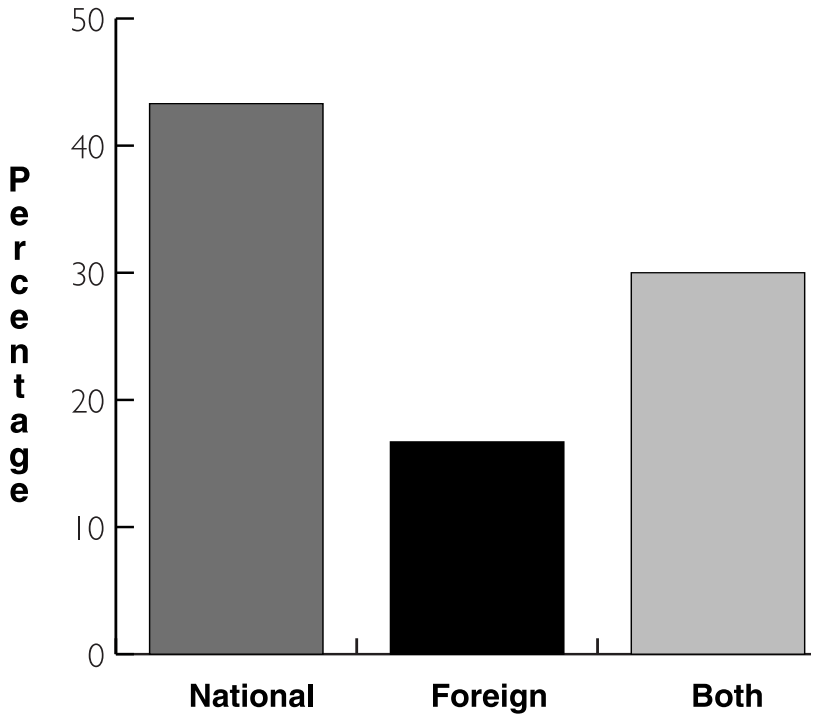


Figure 3: Percentage of the type of buyer of hawksbill articles in the 38 establishments in the national market.

Interviews with vendors and artisans indicate that 34.2% of the establishments sell products imported from Nicaragua, another 34.2% offer products made in Costa Rica, 10.5% have as many articles from Nicaragua as Costa Rica and the remaining 21% do not know the origin.

All establishments openly sell the articles as hawksbill. Of the proprietors, 27% are completely unaware of its prohibition while the remaining 73% are aware of the illegality of the product. Nevertheless, there is a general lack of knowledge regarding the total number and types of existing sanctions in Costa Rica; in fact, the Puntarenas Municipality has issued licenses to work with and sell hawksbill, even though it is not within its authority to do so.

VII.F.2. PRODUCTS DERIVED FROM OILS AND FATS

Products made from a base of sea turtle oil are divided into two separate categories. The first type of product is the cream fabricated in laboratories properly registered and with permits from the Ministry of Health. It is mainly found in pharmacies and health food shops. Their prices vary according to the size of the container (Table 22, Appendix 7). The second type of product is homemade cream and oil that can generally be found in markets where herbs and natural products are sold. In Costa Rica, this is common in the province of Limon.

TABLE 22:
Description and commercial value of different types of creams made using oil from the sea turtle as a base.

Type of product	Size	Price (Colones)	Price (US $)*	Country of fabrication
Turtle cream Yambal Company:	Large (125gr)	3000	9	
Inversiones 1394, S.A.	Small (50gr)	1200	3.6	Costa Rica
Turtle oil lotion, Company:				
Inversiones 1394 S.A. (Monchel)	Bottle (260ml)	845	2.5	Costa Rica
Turtle oil cream, Company:				
Natural Products DEGAZEL of South S.A.	Jar (gr)	1000	3	Costa Rica
Turtle oil cream, Company:	Jar (gr)	3163	9.4	
Laboratories INFARMA, S.A.	Tube (gr)	1785	5.3	Costa Rica
Turtle oil cream, Company: Volví S. A	Jar (100 gr)	850	2.5	Costa Rica
Turtle oil cream, Company: Pearl Collection	Jar (15 oz)	850	3	USA
Turtle cream (no registered brand)	Jar (250 ml)	1500	2.0	Nicaragua and Honduras
Home-made oil	Bottle (500 ml)	1000	3	Costa Rica

As seen in table 22, 75% of the creams are produced in Costa Rica. The companies Volví S.A. and Pearl Collection specify on their products that synthetic oils are used, while the others include the statement “made with legitimate turtle oil” on the product description.

In a study of the same topic, Abadía *et al.* (1998) found that the products are promoted as hydrating cream, rejuvenating, nutritive and cleansing cream, smoothing cream and cream for skin problems. Some have text in English, such as “softer, younger looking skin”.

All eight pharmacies in Limon offer products derived from turtle oil. The most common was Yambal, which was offered in 50% of the shops. The next most abundant were INFARMA and Pearl Collection (2 pharmacies). The least frequent brands were K-moon, Mouchel and ConShea Butter, and were found in one pharmacy only. The brand Azuderm Pearl Collection is produced in the USA, and according to the label, is made with synthetic oil. The rest are produced in Costa Rica. The INFARMA products are exported to Nicaragua, Panamá and Guatemala (Abadía *et al.* 1998).

It is very difficult to determine the legitimacy of the oils used in making these products. If authentic turtle oil were being used, the manufacturers would be selling products derived from an endangered species. On the other hand, if the oils were not authentic, the manufacturers would be deceiving the consumer, and furthermore promoting the use of unethical products in terms of conserving the environment.

A study solicited of the Ministry of Health revealed that only two products in the national market have the correct registration and that another two have registrations that belong to another class of cosmetics. The rest do not have any type of registration. The director of the Management of Registry and Controls stated in her report that, "based on the analysis of the revised legislation, it is perceived that legal impediments exist for the registration and sale of products containing in their composition derivatives of sea turtles; therefore, it is suggested that the registration of such products be eliminated, and that registration of new products not be granted."

VII.F.3. EGG TRAFFICKING

Egg trafficking in Costa Rica is one of the most open and difficult activities to control. The Ministry of the Environment (MINAE), together with the Costa Rican Institute of Fishing and Aquaculture (Instituto Costarricense de Pesca y Acuacultura: INCOPESCA), permits the removal of eggs in the Ostional National Wildlife Refuge (North Pacific) under a model of legalized egg collection. All of the eggs harvested are from the olive ridley turtle (***L. olivacea***) and the legal egg collection model is based on the fact that a huge number of eggs would be lost naturally during the massive nesting, or "arribadas", of the turtles. However, outside of this legal model, and even though it is not permitted to use the eggs of any other species, the reality is different. In the market, especially during the nesting season, roaming vendors can been seen offering small bags with fresh or cooked eggs. The prices of these bags, normally containing from 4 to 12 eggs, vary between US$ 1.45 and US$ 2.90.

In the cities close to the Pacific and the central part of the country, it is not unusual to observe the sale of olive ridley (***L. olivacea***) eggs and, in a more clandestine manner, the sale of leatherback (***D. coriacea***) eggs. In the Caribbean zone, the eggs of the two species that most frequently nest on that coast, the green turtle (***C. mydas***) and the leatherback (***D. coriacea***), are sold openly. Hawksbill turtle eggs are rarely sold in street markets, although they are consumed within the households. During the sampling, eggs were located in bars, agricultural fairs and markets, particularly in the sections where seafood was sold. Only one of the establishments showed their documents and bags demonstrating the legal origin of the eggs, while another had presumably false documentation.

Those surveyed are clearly aware of the illegality of the sale of eggs that do not come from the Ostional project. However, they accept that it is a product that sells well, especially because the price paid to the beach collector is around US$ 0.04 each, which allows for a good profit margin.

This study recommends that a survey be carried out focusing solely on this issue by examining and describing it in depth. The eggs are believed to have special nourishing properties, and are commonly considered to be an aphrodisiac. As previously mentioned, this is clearly one of the main reasons for their popularity.

Due to the seasonal and clandestine nature of the disperse market it was impossible to accurately estimate the volume of eggs; however, as a reference, more than 500 eggs were found in a single shop in the central market of San Jose.

TABLE 23:
Quantities of eggs harvested at Ostional Beach, 2001.

Month	Number of bags	Quantity of eggs	Income en US$
January	NA	0	0
February	NA	0	0
March	624	124800	5426
April	NA	0	0
May	1055	211000	9174
June	1802	360400	15669
July	3096	619200	26922
August	3365	673000	29261
September	2783	556600	24200
Octuber	3986	797200	34661
November	NA	0	0
December	3974	794800	34556
TOTAL	20685	4137000	179869

NA: There was no arribada, source: Asociación de Desarrollo Integral de Ostional, specie: ***L. olivacea***

VII.F.4. THE TRADE OF MEAT

It was confirmed that in addition to eggs, meat was also sold; however, the quantities of the latter could not be determined, as the freezers where the meat is kept were inaccessible. The data discovered is based on the publicity found outside the areas that normally sell meat (Appendix 8).

It is necessary to specify that the capture of turtles is concentrated in the city of Limón (Caribbean) and is mainly comprised of the green turtle (***C. mydas***). The meat is sold widely amongst roaming vendors and in the market from June until October. The clandestine market and the supply of meat also move toward the southern Caribbean.

It should be clarified that since 1999, the hunting of sea turtles is prohibited in Costa Rica, but this activity continues in a clandestine manner. Those interviewed noted that many of the hunters butcher the turtles in areas removed from public visibility (around Moín and Piuta) or in the high seas. Once they arrive at the port they only need to place the meat in the freezers or boxes ready for transport and delivery. Selling strategies are no longer public and are much more clandestine; however, despite the prohibition, meat continues to be sold. The survey does indicate however that both the authorities as well as some vendors agree that there is now less volume.

Abadía *et al.* (1998) carried out a survey in the Caribbean zone of Costa Rica and found that 75.5% of the 110 people interviewed eat sea turtle meat. By ethnicity, 38.2% were white, 32.7% black, 25.5%

mestizos (mixed race) and the rest were Chinese and indigenous. By sexes, 53.6% of the consumers were men and 46.4% of the consumers were women.

The price per kilogram of meat for sale in the market fluctuated between US$0.95 and US$1.40. These prices are for raw meat without any preparation. Groombridge & Luxmoore (1989) found that in 1985 the price of turtle meat was approximately US$1/kg, while Castro *et al.* (2000) found that this price increased to US$2.5/kg.

TABLE 24:
List of the corporal parts sold of the turtle and their market price.

Item	Weight Average/turtle (Kg)	Price for kg ($)	Commercial price ($)
Head	2.6	2.6	6.76
Tail	0.5	1.5	0.75
Meat and flipper	55.8	2.5	139.5
Neck	1.9	1.5	2.85
Kidneys	0.3	1.5	0.45
Liver	3.1	1.5	4.65
Heart	0.3	1.5	0.45
Calopee	7.4	1.5	11.1
Carapace		17.0	
Intestine	11.3	0.95	10.73
Flipper	2.5	2.6	6.5
Eggs (dozen)	10	1.5	15
Total Kg	102.7		198.7
Gross Income			198.7

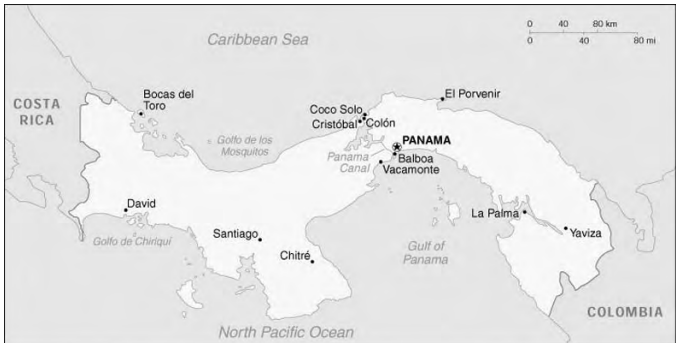
Source: Castro *et al.* (2000)

VII.F.5. OTHERS

The dissected carapaces of sea turtles are used principally for decorative purposes in establishments where marine products are sold.

During the sampling, four restaurants were found displaying sea turtle carapaces on their walls. Two of the restaurants were located in the Puntarenas province and two in Heredia. A total of 10 carapaces were observed (2 of green turtles, 4 of black turtles, 2 of olive ridleys and 3 of hawksbills). The carapaces of all species are equally used for this purpose. In general, these are purchased from fishermen or seafood distributors. The sale prices of these articles could not be determined. Also three preserved sea turtles (taxidermy) were found.

VII.G. PANAMÁ



In 1989, Groombridge & Luxmoore found the local trade of scutes or products derived from them occurred within Comarca Kuna Yala, Colón and Panama City. Now, the communities of Isla Colón, Carenero and Bastimento, and all communities in Bocas del Toro must be added to this list as areas of intense trade.

The survey confirmed the trafficking of hawksbill scutes and artefacts from the Kuna Yala zone towards Bocas del Toro for sale to the tourists that are more and more abundant in this area. Furthermore, it was documented that the hawksbill comes to and from Colón through bilateral trade. It should be noted that trade of these products exists in the communities of Puerto de Almirante and Changuinola. Shops were found with sea turtle products in the following places:

1. Colón Island, Bocas del Toro
2. Carenero Island, Bocas del Toro
3. Bastimentos Island, Bocas del Toro
4. Changuinola
5. Chitré

VII.G.1. HAWKSBILL SHELL PRODUCTS

Sixteen vendors were surveyed that offered crafts made with hawksbill scutes. In total 418 pieces were observed, of which 204 were bracelets (48.8%), 38 were rings (9%), 28 were earrings (6.7%), 27 were necklaces (6.5%), 18 were hair clips (4.3%), 15 were forks and spoons (3.6%), 13 were charms (3.1%), 12 were hair bands (2.8%), 3 were small jewellery boxes (0.7%), 2 were a miniature jewellery box and large jewellery box (0.4%) and finally, one was a cane (0.2%) (Appendices 4 and 6). In addition, the scales were counted as complete hawksbill pieces and a total of 57 pieces (13.6%) were found. This adds up to approximately four adult hawksbill turtles.

TABLE 25:
Quantity and average price of the products derived from the shell of the hawksbill turtle (*E. imbricata*) observed being sold in Panamá.

Product	Quantity observed	Minimum price per unit (US$)	Maximum price per unit (US$)
Thick bracelets	76	$8	$15
Medium bracelets		23	$6 $8
Thin bracelets	105	$2	$6
Rings	38	$3	$3.5
Earrings	14 pairs	$8 pair	$10 pair
Necklaces	27	$9	$25 mother of peal
Hairclips	18	$6.75	$12
Small spoons	5	Nd	Nd
Large forks and spoons	5 pairs	$40 pair	$40 pair
Charms	13	$10	$12
Hairbands	12	$10	$10
Large jewelry box		1	$75 $75
Small jewelry box		3	$35 $35
Miniature jewelry box	1	$22	$22
Cane	1	$12	$15
Scutes	57	$25/pound: 4 or 5 scutes of adult hawksbill	$25/pound: 4 or 5 scutes scutes of adult hawksbill

1B=US$1, Nd: Not determined

Of all of the vendors surveyed (16), 10 said that the selling the product was important, two said that the product was more or less important, while three said that selling hawksbill crafts was not important for their business because they offer other types of articles. One vendor did not respond.

The most important types of consumers, according to those surveyed, were described as the following:

Ten expressed that both nationals and Latinos were the most important buyers of the product, including one vendor who mentioned that the Colombians and Panamanians are good buyers. Four expressed that both national and foreign tourists are buyers of the product and two vendors did not give answers.

According to 13 of the vendors, the hawksbill turtles utilized to create the articles come directly from Panamá (Colón and Kuna Yala). Of these, 7 mentioned the waters of Bocas del Toro as the place where the turtles come from. One artisan expressed that the hawksbill came from the waters of Bocas, Costa Rica and Nicaragua. This describes the migration of these turtles throughout the entire Caribbean. Two merchants did not give any information on the origin, but one mentioned that the hawksbill had been bought in a Colombian craft shop.

Seven of the merchants produced their own turtle crafts and, also sold to the shops and the buyer of the scales. The same number of merchants expressed that the product is made locally in Bocas by skilled artisans. Of the remaining two, one was a Colombian merchant and the other did not give a response. All sixteen merchants sold the product openly and three of them depended completely on the sale of this product to survive, despite the fact that ANAM expressed the illegality of trade of this product. According to one vendor surveyed, when craft fairs are held on Colón Island the sale of hawksbill products increase.

From one turtle, approximately 45-55 cm in size, one can obtain between 10-12 pounds of hawksbill. This figure coincides with that mentioned by Nietschmann (1976), however it is contradictory to the information compiled by Milliken y Tukunaga (1987) which states that the average scute of a hawksbill carapace is around one kilogram or 2.2 pounds. A pound of hawksbill has a cost between US$12-US$50 depending on if the buyer is local or foreign and also from where the hawksbill originated. In San Blas one pound costs US$10.

During the survey, establishments selling Kuna Yala crafts were visited. Upon arrival, one of the artisans was found with a large curved comb in her hands that was not in her store at the moment of the survey. When she was asked about it, she expressed that it was a personal article for her niece that was difficult to obtain and its value could reach up to US$50. She also said that it is now difficult to find good hawksbill to make this type of article.

One of the vendors mentioned that if anyone from outside of the town of Bocas was looking to buy a pound of hawksbill scutes, the price would be from US$50. The vendor himself would be able to buy it for approximately US$20 or US$30 dollars. This same vendor expressed that the hawksbill is rare and mentioned that in San Blas one pound can cost up to US$10.

The only non-Kuna craft shop was found in the area of the park in front of Botel Las Brisas in Bocas del Toro. On the first day of the survey, this shop had only seven pieces of hawksbill. On the following day, when it was visited again, it had 34 more pieces as the owner had returned from a trip with more hawksbill to sell. The vendor expressed that in the last ten years it has not been easy to find hawksbill and in addition, it is now illegal and there is protection in the country.

While surveying the Kuna Yala shops, a necklace was found in one shop on a table and after the surveyors asked a few questions regarding the necklace, the vendor displayed more than 40 pieces that were kept, practically hidden, under the table. These pieces were not entered in table 25 because the vendor did not permit the surveyors to count them or take photos.

In another shop, the vendor did not permit photos to be taken of the pieces for sale. Also, when a piece was purchased, the vendor said that no receipts were made for the sale of this product. The vendor said that the indigenous along the coast have nothing to eat and they kill the turtles for their meat and since they do not use the carapace, they sell it to the artisans in order to make the product.

According to the vendor's comments the craft shop named Palmas on Carenero Island, which was found selling the hawksbill spoons, forks and jewelry boxes, is owned by a North American. The ven-

dor said that in a month and a half, approximately 35 small jewelry boxes were sold for an income of US$1225.00. The vendor commented that she did not know if the hawksbills are endangered, but believes that there are many turtles.

One of the owners of a shop in Bocas del Toro had a bracelet with gold inlays. He said it was made in David and the gold and handiwork alone cost him US$150. In addition, he said that the hawksbill protected him from bad luck.

Don Beto, a manufacturer interviewed, said he has more than 40 years working with hawksbill after his uncle taught him the art. He produces very elaborate articles. He expressed that in order to make a hair clip they use the scutes called the "tail". It can take up to three days to make a hair clip that is possibly equal to the one found with a value of US$50. This artisan also makes spurs for roosters that are sold for US$25 or US$30 a pair. They use the rear marginal scutes and supracaudals, which are called hoofs or snatters in English. The clients that buy spurs are principally from Panama City and Changuinola. The manufacturer says that 40 pounds will last between 2 and 3 months. The artisan expressed that for him it is legal to make this type of product because he did not kill the turtle, however those that kill the turtle could go to jail or pay a fine. He also takes the scutes to his house and sells them. The manufacturer said that in December some foreigners coming from Margarita Island, Venezuela bought five scutes from him, each one for US$15.00. He said the buyers commented that they would be able to sell finished bracelets for US$25 or US$30 in their country. He also said that on one occasion a Mexican had bought many pieces, approximately 20 scutes. He also mentioned that in the beginning of the year 2000, he had bought hawksbill in Bastimentos and Carenero for US$50 per pound. However, a few months later some Costa Ricans arrived at his house with 100 pounds of hawksbill scutes that they brought by boat to Bocas from Costa Rica. Since they sold the scutes for US$25 per pound, the vendors of Carenero and Bastimentos had to lower their price to compete with them. Since then, this price has been permanent.

It is remarkable to note that this trade was described identically by Barborak *et al.* (1983). This brings us to conclude that at least a small fraction of the hawksbill scutes exported by Panama towards the international market, come from Costa Rican populations. In an interview with Mr. Maxie Barthley in Manzanillo, Costa Rica; he corroborated this trade route and added that all of the hawksbill scutes from Barra del Colorado to the border of Panamá are bought and sold in Bocas del Toro, Panamá; and are exported from there. Mr. Barthley was an important buyer in the southern Caribbean of Costa Rica.

From the beginning of the survey various artisans expressed that inmates from the Bocas jail have been making hawksbill crafts for a long time. This has decreased somewhat due to the fact that the instruments used by the criminals were dangerous when fights broke out, for example files and small knives. Stories of the past in the town tell of when the prisoners were taken to the beach where they captured hawksbill turtles and took their meat to eat. Also, they used their carapaces to make crafts. One of the sergeants said that the money the prisoners made by selling hawksbill articles is important. With this money the prisoners buy basic products such as; soap, toilet paper, cigarettes and could make telephone calls.

VII.G.2. PRODUCTS DERIVED FROM OILS AND FATS

Two places were found selling skin creams derived from turtles. One was a pharmacy in Changuinola and the other a commercial shop.

Green turtle oil is sold on Carenero Island, Bocas del Toro for US$1.50 per 500 ml bottle. The vendor said that the locals consume a lot of it. Another person gave us some hawksbill oil and said that it is better than the oil of green turtles to combat colds and asthma. This oil comes from the turtles killed by the fishermen during June, July and August. The oil is extracted by frying the turtle meat and later skimming the oil from the top of the pot. People were consulted in five more establishments and all noted that it was an excellent medicine for respiratory problems.

On the Pacific coast of Panama, in the city of Chitre, turtle oil (probably extracted from the olive ridley turtle, ***L. olivacea***) was also available and was used for medicinal purposes.

VII.G.3. EGG TRAFFICKING

As is the case in other Central American nations, collecting turtle eggs has two purposes: Subsistence consumption, and collection for trade that ultimately sees the eggs eaten in bars, restaurants, soccer games, and at very busy intersections. Also, as in other countries, eggs are consumed for special nourishment and because of their supposed aphrodisiac properties. In general it is difficult to estimate the quantities traded because the traffic is ubiquitous and often done quietly. Because the olive ridley nests solitarily on practically all sandy beaches of the Panamanian coast, the trade is seen in almost all coastal communities and reaches some important cities such as David, Chitre, Santiago and Panama City.

Along the Pacific coast of Panama the trade of olive ridley (***L. olivacea***) eggs is common and abundant. There is one legal collection program that is guaranteed by ANAM located on Canas Island. Here the eggs are collected by organized groups and are bought for US$0.50/dozen by the Cooperative Islenos Unidos of Canas Island. This organization then sells them to buyers for US$0.75/dozen, and these buyers in turn sell them for US$1.25/dozen to an intermediary who distributes them in Panama City. Finally these same eggs are sold for US$3.00/dozen retail on the street. Thus there is a 600% increase from Canas Island to the city. Programs under ANAM have also started in Guanico Abajo and Cambutal to make egg collecting official. In addition to these attempts at controlled collection there are several communities where neighbours are consciously trying to save some nests from human collection by setting up hatcheries for the eggs. The most important market at the transnational level was that located in the Gulf of Fonseca where the eggs from Nicaragua and Honduras were ‘exported’ to El Salvador. These observations coincide with those of Barborak *et al.* (1983).

In the Caribbean, egg collection focuses primarily on the green turtle (***C. mydas***) and the leatherback (***D. coriacea***). The eggs are collected, but unlike on the Pacific side, they are sold in a clandestine manner. As in the Pacific, they are accustomed to selling “cooked” eggs, or eggs boiled in a solution of spices and hot sauce. The consumers then buy the eggs in bags containing 4-6 eggs and they have to tear the shell and suck out the contents. The cost of each egg is around US$0.25, while the bags, depending on the quantity, can sell for between US$1-US$2. Trade of this type is documented in Changuinola, Puerto Almirante, Colón Island, Bastimento Island, Chiriquí Grande and Colón. The eggs of the hawksbill turtle (***E. imbricata***) are also collected but because of their scarcity it is rare to see them for sale in big cities. Their trade is more common in small coastal towns. This trade was documented in Colón Island, Bastimento Island and Colón.

VII.G.4. THE TRADE OF MEAT

In Bastimento Island one of the locals reported that last year (2001), a friend of his was caught by the police with two flippers of a green turtle in his house and he was fined the equivalent of US$100. It is illegal to kill turtles, even though in town the people consume it frequently, the same as with the eggs. One dozen eggs can cost US$0.70, the same as a pound of meat. Also hawksbill carapaces are sold to make crafts. Another man mentioned that since he was young, he remembers eating turtle eggs and meat and that it is part of the culture. He also added that in this area there is little work and the people need turtle meat and eggs for food.

VIII. COMMENTS

Sea turtles are a highly migratory species of slow growth, reaching sexual maturity after at least a decade. They experience high mortality in early life stages. Throughout its life cycle a sea turtle will use many oceanic and coastal ecosystems. These and other characteristics are factors that many natural resource managers ignore when developing their programs. Sea turtle populations are clearly in a declining state and something must be done.

During the nineteen-fifties, Archie Carr documented the use of sea turtles in various places of Central America. James Barborak returned to document this at the beginning of the nineteen-eighties, and today, two decades later, we are documenting it ourselves. The situation has not changed. We are sure that the conditions we are observing today are the aftermath of the extractive practices from many decades ago. Perhaps the numbers of turtles varies from place to place, but on the whole they continue to decline and will continue to do so if the patterns of their exploitation do not change.

The results of this survey are clear. Sea turtles are used intensively throughout the Central American region, and it is rare that individual states have quantified the number of species or individuals that are being harvested. There is no precise information regarding the absolute numbers and growth tendencies of the different populations. Consequently hard information is scarce and when it does exist, it is in the hands of institutions and not shared with the governments.

TABLE 26:
Summary of the quantity of hawksbill pieces found during the surveys in the region.

	BZ	GU	HN	ES	NI	CR	PA
Rings	1	20	250	81	1281	3873	38
Earrings		6	21	18	741	80	28
Bracelets	1	38	191	28	2283	315	204
Linked bracelets			51				
Hairclips	3	10	42		263	36	18
Necklaces			21		97		27
Charms			11			26	13
Combs		2		6			
Others	17	6	3		117	30	23

The continuing use of sea turtles here is firstly for personal subsistence on a daily basis as medicine or nourishment. When the quantities so taken surpass the individual needs of the hunter, the surplus is given away if it is unable to be preserved and stored. The second type of use involves very different conditions. Here the hunter's sole purpose is for trade and the turtle is seen as a resource whose original value is 'zero' since it is taken from nature, but when brought to market it has a ready monetary value. Aside from some oil and eggs, this market is basically a market for the production of crafts with much interregional trading of raw materials. There is also extra-regional trading to and from countries like Colombia (San Andres), Grand Cayman, Venezuela and Mexico. Local beliefs and customs have a severe influence on the trade of sea turtles and their products. Personal articles made of hawksbill are bought in the local markets because they are associated (without of course scientific proof) with luck or the bioenergetic balance of humans. Also, the actual parts of the turtle eaten are purchased often in the belief that they possess special nourishing or aphrodisiac properties. These beliefs also have not been proven, though chemical analysis of the eggs has been undertaken.

In some Central American local communities, the social/political issues affiliated with folk customs, rather than nourishment essential for life, are being used to justify the trade of sea turtles and their products. The argument is that if they stop consuming turtles or their eggs they will lose their culture. Yet one asks, what will happen to the culture when the turtles go extinct? Such an interpretation of the cultural values of turtle consumption brings disregard for the law and its punishments. It is a claim for special treatment and exemptions in the application of the law, even though all citizens are by agreement equal before the law. The official justification of some authorities who so turn their back on the law is that they should be allowed to sacrifice a quota of individual turtles for the sake of culture (of course there are no figures on how many), and in order to have these communities accept state authority and its operations without conflict. But this is merely a reflection of the basic disrespect of the people for the status of some of these species, and for the government's inability to find alternatives to affect better communication and public education. Other justifications used are the lack of resources and personnel: arguments that are common to many other situations.

Ultimately, the management of the traffic of sea turtles will take place on two levels. One is the national regulatory framework, and the other is the international framework bound to CITES. Obviously, the presence of products derived from a species that is recognized as in danger of extinction and that is yet protected by a national framework, reveals breaches in that framework. Even though national legal frameworks try to be in agreement with the rules established by the CITES Convention, the regional situation is totally inadequate. International trade here exists. It is concealed and kept low. Sometimes it is known as "ant trade" because of its low but continuous volume of sale. Yet, this study did not find any official international trade declared in customs documentation, at least for the 1990's.

Finally, the survey did disclose efforts by some governments to fight against the trade of sea-turtle products both through confiscation of products and through public education. Perhaps the latter is where this battle will be more successful. Since the trading of personal articles and jewellery in public shops only provides continuing incentive for the capture and sacrifice of sea turtles, it becomes more urgent that every one recognize that the presence of just one simple ring, or the sale of one bowl of turtle soup, means the sacrifice of yet one more individual turtle.

From this point of view one can theoretically say that CITES is effective for regulating whoever complies with the regulations. This conclusion is not completely satisfactory when discussing how hawks-

bill articles are imported from France, Italy and the United Kingdom to then be sold as genuine hawksbill. They enter the regional market in luggage, and are imported articles that go unrecognized by customs agents. However, their prices on the market can exceed US$100, which can be an indicator of their authenticity.

This highlights the need for improving the skills of the customs officers to ensure that they exercise consistent control on imports.

Another example of the gaps in the CITES convention is the fact that the national legislation is not appropriately dispersed beyond the sectors that make frequent use of it or study it. The survey revealed that communities show a complete lack of awareness regarding the regulatory actions and sanctions. Clearly this ignorance of the law does not exempt one from to breaking it. There is no formal excuse for this position. Yet, it is necessary to accept that there are very few communities that will inform themselves and train themselves to adapt their conduct to abide by the law. The majority of the people interviewed commented on the illegality of the use of sea turtles, yet they knew this information because someone had told them, and not because they had directly studied the law or managed the rules. Thus the Ministries and the other administrative authorities with jurisdiction on the subject develop very poor programs to educate the communities regarding the law, its sanctions and effects. Moreover, procedures for donating eggs that are "legalized" by the same government in run contrary to the law. This shows that the zone inhabited by the turtles is cut-off from the national legal framework and the international regulatory framework. In the end, the sea turtles are still traded even though it is illegal both nationally and internationally. This study even found advertisements for hawksbill items in important craft producing areas on various web pages on the Internet. One example was the web page for the United Nations Magazine in Nicaragua (Revista de las Naciones Unidas en Nicaragua) with a listing under the subject "conquering new markets".

It is useful to recognize that capture of sea turtles for private consumption invalidates the efforts of countries to control the situation. The established systems operate theoretically when the traffic is out in the open and when there is a possibility of fighting against the illegal trade of sea turtle products. On the other hand, it is very difficult to control when the people capture them for their own private consumption.

The laws that regulate trade have the correct spirit, but do not extend beyond being more than just an intention. Penalties for violating these laws are inadequate. The laws in the region do not recognize the replacement value that should be considered when sentencing an offender. Fines are normally paid as part of the expected costs of the illicit activity.

It is important to stress that prosecutors and other members of the judicial system should be advised correctly to make judgements based on knowledge of the law and to award penalties according to the environmental and economic damages that the sacrificing of one sea turtle entails.

The jurisprudence (judicial and administrative precedents) regarding sea turtles is very poor in the region. As previously mentioned the importance of these reptiles to the national economy is still not valued appropriately.

Castro *et al.* (2000) and Gutic (1994) demonstrated that the value, or economic contribution, from the indirect use of sea turtles was quantified in thousands of dollars. Conserving turtles permits not only

their survival and renewal, but also a better socialization of the income. These aspects should be taken into account by the judicial system when assigning penalties to offenders. Both authors make it clear that a live turtle generates more money than a dead turtle. (Table 27).

TABLE 27:
Values (in dollars) for specific types of hawksbill articles and other sea turtle products sold in the region and their comparison with other prices in different countries.

	Meat (Kg)	Oil (ml)	Earrings	Rings	Bracelets	Jewelry boxes
Belize						
Guatemala	1.32	0.04	5.20	2.59	3.89	
Honduras	0.41	0.10	1.2-3.7	0.9-5.00	1.80-5.00	
El Salvador	3.42	0.07	8.00	5.93	7.5	
Nicaragua	1.60		0.75-3.00	0.75-1.09	0.75-3.5	
Costa Rica	2.50	0.01	3.40	1.40	5.00	
Panamá	1.54	0.003	8.00-10.00	3.00-3.50	2.00-15.00	22.00-75.00
Bahamas*	8.8-11.00					
British VI*						22.50
G. Cayman	19.25-27.50					
Dominican Rep*		0.02	5.00	2.00	12.00-25.00	15.00-45.00
Jamaica*	1.10-5.50		5.00-15.00		8.00	
México*	1.00		5.40-13.00		1.95-10.80	54.00
Japan**			42.00-151.00			
Japan***			110-180			

*: Fleming (2001), **: JWCS (2000), ***:osawa bekko (www.osawabekko.co.jp).

It is normal that in some countries of the region sea turtles are only considered wildlife when they are within the limits of the protected areas, but when they are outside of this protected area, they are considered a fishing resource and fall under the administration of the fisheries office. This causes an interinstitutional tension and conflict in the policies, as well as in the work strategies of each state entity. When a fishing resource administrative body promotes the capture or use of sea turtles, it is effectively disregarding the global status of this group of reptiles as well as ignoring the wildlife legislation that protects them. Scenarios like this reveal just how the lack of communication and combined planning typify another division in the national situation. Also, there are administrative offices that issue permits for the production of cosmetics for human use that utilize turtle oil as a base. Since the sea turtle species is totally protected by other laws, this action is a clear contradiction and even a conflict of interest. This lack of coordination reduces the application of the laws and rules which in turn, weakens the national management of the resource and even various institutions could be in charge of the sea turtles, there were no powers or functional structures of coordination. Personal or sporadic solitary actions predominate. Definitely, better effort should be made in the coordination among the proper entities both on the national level as well as on a regional level.

The situation leads us to ask the following question: Even though people know that the trafficking of sea turtle products is illegal, why do they continue to do it? The truth is that the answer is complex and particular for each case, but the generic framework for this question is in the poverty of the third world countries or developing countries. We must remember that the economic alternatives in coastal areas of Central America are not abundant, nor is there significant investment to transfer complete segments of one occupation to another more environmentally sound occupation. Gathering from nature is the easiest means for communities to provide themselves with nourishment or to have items for trade to finance their basic needs. The Central American economies do not have the conditions to provide equal opportunities for all, and so a substantial number of people turn to nature to meet their needs.

There are few successful cases of incentives and economic alternatives for communities that generate the income needed to meet the basic needs. Some of these positive cases are Tortuguero, Ostional, Gandoca and Playa Grande, Costa Rica.

On all levels, the lack of awareness regarding technical information such as the status of the species and regulations for management and conservation is in the end, a situation that increases social "pressure" on the turtle resource. The situation is also complicated when technical information is ignored when creating laws or management plans in areas inhabited by turtles.

This analysis recognizes that even though technical information clearly describes that the Central American populations of sea turtles are a shared resource because of the nature of their lifecycle and because they are a highly migratory species, there are still no efforts to harmonize the national regulatory framework. A turtle that is protected in one country could be captured and slaughtered in another.

Efforts are being made to correct this problem at the level of the Secretary for Central American Integration (CCAD-SICA) with the creation of the CITES technical consultant group made up of Convention representatives from each of the isthmus countries. The role of this authority is to advise the Natural Resource Ministers from each country regarding jurisdiction issues of the Convention.

Finally, it is important to stress that the socioeconomic benefits that sea turtles could offer to the Central American economies should not be the justification for allowing actions that harm these species. Simply because they are a usable resource does not mean that they should considered sustainable without first going through a series of elements, beginning with what we have least in the region: knowledge of our own resources.

IX. RECOMMENDATIONS

* The study clearly indicates that a multi-thematic training process should be developed for all levels to address some of the information gaps that various authorities have demonstrated. Key stakeholders would include the following; customs personnel, quarantine offices, officials from the Ministries of the environment, health, tourism, justice, education, government and police as well as the spokesmen from the fisheries offices and the chambers of commerce and fishermen. The training authorities could attend conventional courses and even participate in important conventions and symposiums.

* The region should initiate a process of revision and renovation of regulatory frameworks in a manner that ensures that sanctions will concur with the actual environmental damage, and rules will be based on technical information to strengthen the laws, making them more effective and clear for the rights and duties of those involved in the trade of species.

* The CITES national scientific authorities should be autonomous in their role of advisor and should have the technical training to offer their opinion on the convention issues. Also, they should be functional in carrying out their mandate. The scientific authorities should have a complementary and advisory role, as well as overseeing the process, but never duplicating the duties of the administrative authority. The operation of scientific and administrative authorities within the same state system is prejudicial because it does not assure the neutrality of the arguments, especially in situations with conflicting interests.

* In Central America the varied significance of the sea turtles has meant that the public administration must divide the management and/or usage authorities among various institutions. It is a and expectation of society that state institutions coordinate, plan together, educate and regulate with a common standard, particularly the fishing and conservation institutions.

* Along this same line it should be standard that the countries and their equivalent institutions manage a shared resource based on communication, coordination and common management models that allow maximized conservation efforts in pursuit of regional management.

* The revision of the legislation showed that in various cases it was out of step with the biological reality of the species it was trying to protect. Also, the law was not exercising good administration of the many areas that it sought to control. Legislation based on solid technical studies, sanctions and penalties in agreement with the true value of the animal in the national economy should be developed in the region.

* It is imperative that the officials and the system have a clear understanding that the decisions within the framework of CITES and the national representation in the Conferences of the Parties (COP's), are institutional matters, not personal matters. This study found power struggles over decisions (good or bad) and it is clear that each decision should be made by consensus and chosen by the institution and its leaders. It is important that issues such as regulated international trade for sea turtle products, discussed with key players in an open, consultative and transparent framework.

* Controls and efficiency in detecting sea turtle product trafficking at the official borders should be improved.

* One of the complaints made in the interviews is that when cases reach the court, the penalties are very small. This issue should be reviewed and the justice system should give more value to the environmental resources by penalizing offenders more severely. This will make the legislation be more operative, more efficient and constantly validated.

* The study found a substantial gap in the dissemination of information about regulations, biology of sea turtles and the status of their population. The public and private institutions must improve

awareness campaigns for broader society. Public education programs would much improve the societal perceptions and conduct of Central Americans towards sea turtles.

* Sea turtle product trafficking starts at the marine coastal harvesting in each nation. This commodity can move thousands of kilometers from its point of origin. It is crucial to maintain a monitoring system that permits an understanding of the dynamics of the trade and can quantify it. For example, a system that can sense what happens from the time that the fisherman captures the turtle to when it is sold as a bracelet in a curiousity shop. Professional, neutral, constant and well planned monitoring would give these States a better idea of the real intensity of sea turtle use in their territories. A regional monitoring model would be ideal.

* CITES is clearly a convention that can "guide" the impact of international trade of endangered flora and fauna. For its "commercial" nature this Convention is too weak to nurture management models that can recover sea turtle populations affected by other threats such as accidental capture [in fishing nets]. For this there are other varieties of international conventions with better perspectives and chances of success such as the Interamerican Convention for the Protection of the Marine Turtle (IAC), the Protocol Regarding the Specially Protected Areas of Wild Flora and Fauna (SPAW) and the Convention of Migratory Species where the management focus is the species. The Central American States must consider the possibility of adhering to these agreements as a legal reinforcement to support the regional conservation of sea turtles.

* The role and participation of private authorities from civil society is very important not only for cooperation with the States, but also to create spaces for dialogue and to strengthen the transparency in the control and trade processes. The participation of organizations such as WIDECAST y RCA (Red Centroamericana) is crucial. With their broad knowledge of the subject area, they are able to advise the countries that lack experts.

X. SIGLAS EN EL ESTUDIO/ ACRONYMS USED IN THE STUDY:

AMP:	Autoridad Marítima de Panamá/ Maritime Authority of Panama
ANAI:	Asociación ANAI/Association ANAI
ANAM:	Autoridad Nacional del Ambiente/ National Authority of the Environment
CARIBARO:	Conservation Association CARIBARO, Panama
CCAD:	Comisión Centroamericana de Ambiente y Desarrollo/ Central American Commission of Environment and Development
CCC:	Caribbean Conservation Corporation
CITES:	Convención sobre el comercio de especies amenazadas de flora y fauna silvestre/ Convention on International Trade in Endangered Species of Wild Fauna and Flora
CODDEFAGOLF:	Comité para la Defensa y el Desarrollo de la Flora y Fauna del Golfo de Fonseca/ Committee for the Defense and Development of the Flora and Fauna of the Golf of Fonseca
COHDEFOR:	Corporación Hondureña de Desarrollo Forestal/ Honduran Corporation of Forest Development
CONAP:	Consejo Nacional de Áreas Protegidas/ National Counsel of Protected Areas
COP:	Conferencia de las Partes/ Member Party Confernces
DAPVS:	Departamento de Áreas Protegidas y Vida Silvestre/ Department of Protected Areas and Wildlife
DGSVA:	Dirección General de Sanidad Vegetal y Animal/ General Office of Plant and Animal Health
DIGEPESCA:	Dirección General de Pesca y Acuacultura/ General Office of Fishing and Aquaculture
IAC:	Convención Interamericana para la Protección de la Tortuga Marina/ Inter-American Convention for the Protection and Conservation of Sea Turtles
INCOPESCA:	Instituto Costarricense de Pesca y Acuacultura/ Costa Rican Fishing and Acuaculture Institute
MARENA:	Ministerio del Ambiente y de los Recursos Naturales/ Ministry of the Environment and Natural Resources
MARN:	Ministerio de Ambiente y Recursos Naturales/ Ministry of Environment and Natural Resources
MEDEPESCA:	Oficina de Pesca en Nicaragua/ Fisheries Office in Nicaragua
MINAE:	Ministerio del Ambiente y Energía/ Ministry of the Environment and Energy
MOPAWI:	NGO, Mosquitia Pawisa
PANAVIS:	Parques Nacionales y Vida Silvestre/ National Parks and Wildlife
RAAN:	Región Autónoma del Atlántico Norte/ Autonomous Region of the North Atlantic
RAAS:	Región Autónoma del Atlántico Sur/ Autonomous Region of the South Atlantic
SICA:	Secretaría de Integración Centroamericana/ Secretary of Central American Intergration
SINAC:	Sistema Nacional de Áreas Protegidas/ National System of Protected Areas
TED:	Turtle Excluder Devise
UFL:	University of Florida
WCS:	Wildlife Conservation Society
WIDECAST:	Red para la Conservación de las Tortugas Marinas en el Gran Caribe/ Wider Caribbean Sea Turtle Conservation Network

XI. GLOSARIO/ GLOSSARY:

Anillos-rings
Aretes-earrings
Baratijas-trinkets
Caparazón de carey-Hawksbill shell
Caparazón-carapace
Caparazón-shell
Carne-meat
Coleta-tail
Collar-necklaces
Cosméticos-cosmetics
Escamas supracaudales utilizadas para hacer espuelas de gallo-Snatters
Escamas vertebrales centrales-vertebral scales
Escamas-scales or scutes
Especímen disecado-stuffed specimens-
Espuelas de gallo-spurs to be worn by roosters
Grasa tortuga verde-calipee, Green turtle oil
Huevos-eggs
Joyeros-jewelry boxes
Marcos para fotos-picture frames
Peines-combs
Pene-penis
Prensapelo-hairbands or hairclips
Pulsera-bracelets
Tallado-carving
Tazón-bowl
Tenedor y cucharón para ensaladas-serving spoon and fork for salads

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XIII. APENDICES/APENDIX

MÉTODO DE ELABORACIÓN DE LAS ARTESANÍAS DEL CAREY:

En Centroamérica existe la tendencia del uso exclusivo de las escamas del caparazón (marginales, vertebrales y costales), algunas veces se usan los escudos del plastrón.

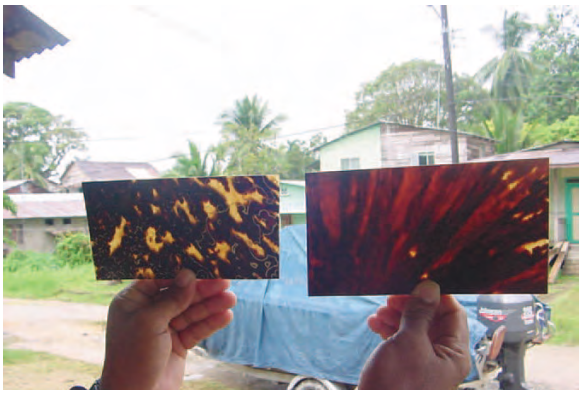
Las maneras documentadas de removerlas son dos:

a. El caparazón se coloca en un saco, malla o bolsa y se sumerge hasta que el hueso del caparazón se suaviza y las escamas se desprenden.
b. El caparazón se coloca sobre un fuego (sin llamas), de manera que las brasas estén en contacto con las costillas en el caparazón, por la acción del calor las escamas se desprenden.

Cuando se obtienen las escamas estas se categorizan según el tipo y color del diseño en el carey, además por el grosor de cada escama, esto con la finalidad de producir artículos específicos para cada tipo de escama. Así las escamas centrales del caparazón son usadas para la producción de peinetas y prensas, esto por la curvatura que presenta ese escudo. Las escamas laterales son muy usadas para la producción de pulseras y cualquier otro artículo que requiera un área plana y extensa en la escama. Las escamas marginales son muy usadas en la producción de anillos y aretes. Es destacable que las escamas supracaudales por su naturaleza sólida son usadas para la producción de las espuelas para los gallos de pelea y cualquier otro objeto sólido.

Las escamas obtenidas del plastrón prácticamente se usan para elaborar anillos o combinarlas con las escamas del caparazón.

Escamas vertebrales de al menos dos tortugas carey. Vertebral scutes from at least two hawksbill turtles (fotos/Photos: W. Quirós)



Cuadros de carey listos para ser divididos en subpiezas, muestran los patrones de coloración. Hawksbill squares ready to be divided into subpieces, showing the coloration patterns.

Escamas costales de tortugas carey y las herramientas de un artesano. Costal scutes from hawksbill turtles and the Artisan's tools.

La escama "cruda" se limpia con lijas de varios gradientes especialmente finos, se retiran todos los indicios de ectobiota (percebes, balanos, etc) y se corta conservando la mayor área utilizable. Los retazos se guardan para elaborar pequeños objetos o componentes menores de piezas más grandes.

Después de poseer el bloque estos se puede adjuntar por color y diseño cuando el tipo de producto necesite de una amplia área de escama. Después se corta usando dimensiones conocidas según el artículo y se le da un prepulido. Los conjuntos de bloques de pegan trabajando los bordes de cada bloque de manera que empaten y luego son sometidos a presión y exposición al calor, hasta que se unen y se forman bloques mayores que permiten la elaboración de artículos de mayor área.

Las plegaduras en los artículos se elaboran sumergiendo la pieza cortada y semipulida en un recipiente con agua caliente, el carey se "suaviza" al entrar en contacto con el agua hirviendo. Los pliegues curvos se realizan a mano o apoyando la pieza en un tubo.

Cuando la pieza ya está doblada y semipulida se comienza el trabajo de filigrana hasta que la pieza alcanza su término final. En este punto se le instalan los injertos de oro o las piezas metálicas que algunos artesanos les agregan.

Gracias a este método es relativamente fácil el reconocimiento del carey legítimo debido a que la labor manual siempre deja diferencias métricas y proporcionales que son fáciles de identificar y no se encuentran en los artículos plásticos o de resina que se producen por medio de moldes.

METHOD OF HAWKSBILL CRAFT PRODUCTION:

In Central America the tendency exists to primarily use the scutes of the carapace (marginal, vertebral and costal) however, sometimes scutes from the plastron are used.

There are two documented methods for scute removal:

a. The carapace is placed in a sack of mesh or plastic and is submerged until the bone of the carapace softens and the scales detach.
b. The carapace is placed over a fire, without flames, in a way that the embers are in contact with the ribs of carapace and through heating up the scales detach.

After the scutes are obtained, they are categorized according to the type and color of the design of the hawksbill in addition to the thickness of each scute. This is done with the idea of producing specific articles from each type of scute. Due to the specific curvature of the central scutes of the carapace, they are used for the production of combs and clips. The lateral scutes are used for the production of bracelets and other articles that require a flat and extensive area. The marginal scutes are used in the production of rings and earrings. The supracaudals are chosen for their solid nature and used for the production of rooster spurs and any other solid object.

The scutes obtained from the plastron are basically used to produce rings or they are combined with scutes from the carapace.

The "raw" scutes are cleaned with sandpaper of various grades, especially fine; all signs of ectobiota (goose barnacles, acorn barnacles, etc.) are removed and then cut conserving the major usable area. The remnants are saved to make

small objects and minor components of larger pieces.

After possessing these blocks, they can be joined by color and design when the type of product calls for a wider area of scute. Afterwards, they are cut using specific dimensions according to the article and pre-polished. The blocks are joined by working the borders of each block in a way that they line up and are latter subjected to pressure and exposed to heat until they unite to form larger blocks allowing the production of articles requiring greater area.

The folds in the articles are made by submerging the cut and semi polished piece into a container of hot water, which softens the hawksbill upon contact with the boiling water. The curves are then made by hand or by placing the piece in a tube.

When the piece is folded and semi polished, they begin delicately working it until the piece reaches the final term. At this point, the gold inserts or metal pieces that some artisans incorporate are installed.

Thanks to this method, it is relatively easy to recognize legitimate hawksbill due to the manual labor always leaving different measurements and proportions that are easy to identify which are not found in the plastic or resin articles that are produced using molds

Mesa de trabajo de un artesano de carey, anillos producidos con escamas del plastrón y caparazón. Worktable of a hawksbill artisan, rings are made from plastron and carapace scutes.

Artesano cortando las “fajas” de carey para hacer pulseras. Artisan cutting hawksbill strips to make bracelets.

Fajas o cintas de carey en sus distintos gruesos, listas para ser convertidas en brazaletes. Hawksbill strips in different widths, ready for bracelet preparation.

Escamas costales de tortugas carey y las herramientas de un artesano. Costal scutes of hawksbills and the tools used by an artisan.

Preparación de una “faja” de carey para hacer una pulsera. Preparation of a “belt” of hawksbill to make a bracelet.

Inmersión de la pieza de carey para darle el plegado pertinente y convertirla en una pulsera. /Immersing a piece of hawksbill to give it the pertinent folds for latter conversion into a bracelet.

Espuelas para gallos de pelea, elaboradas de las escamas supraanales. Rooster spurs made from supraanal scutes.

Herramientas de trabajo en la mesa del artesano. / Work tools on the table of an artisan.

Artículos de carey elaborados por los artesanos de Bocas del Toro, Panamá.

Pieza de carey con una incrustación en oro. Hawksbill piece with gold inlay.

Artículos de carey elaborados en la prisión de Bocas del Toro, Panamá. Hawksbill articles made in the Bocas del Toro Prison, Panama.

Pulseras de carey elaboradas con las escamas costales, los extremos redondos son producidos con las escamas supraanales. Hawksbill bracelets are made from the lateral scutes, the rounded parts of the bracelet are made using the supracaudal scutes (foto: Z. Baldonado)

Pulseras de carey elaboradas en Nicaragua pero decomisadas en Costa Rica. Hawksbill bracelets made in Nicaragua were confiscated in Costa Rica. (foto: D. Chacón)

Artículos de carey elaborados en Colombia pero comerciados en Panamá. Hawksbill handicraft made in Colombia being sold in Panama.(foto: W. Quirós)

Artículos de carey comunes en el mercado Centroamericano. Common hawksbill handicraft found in the Central American market (foto: D. Chacón)

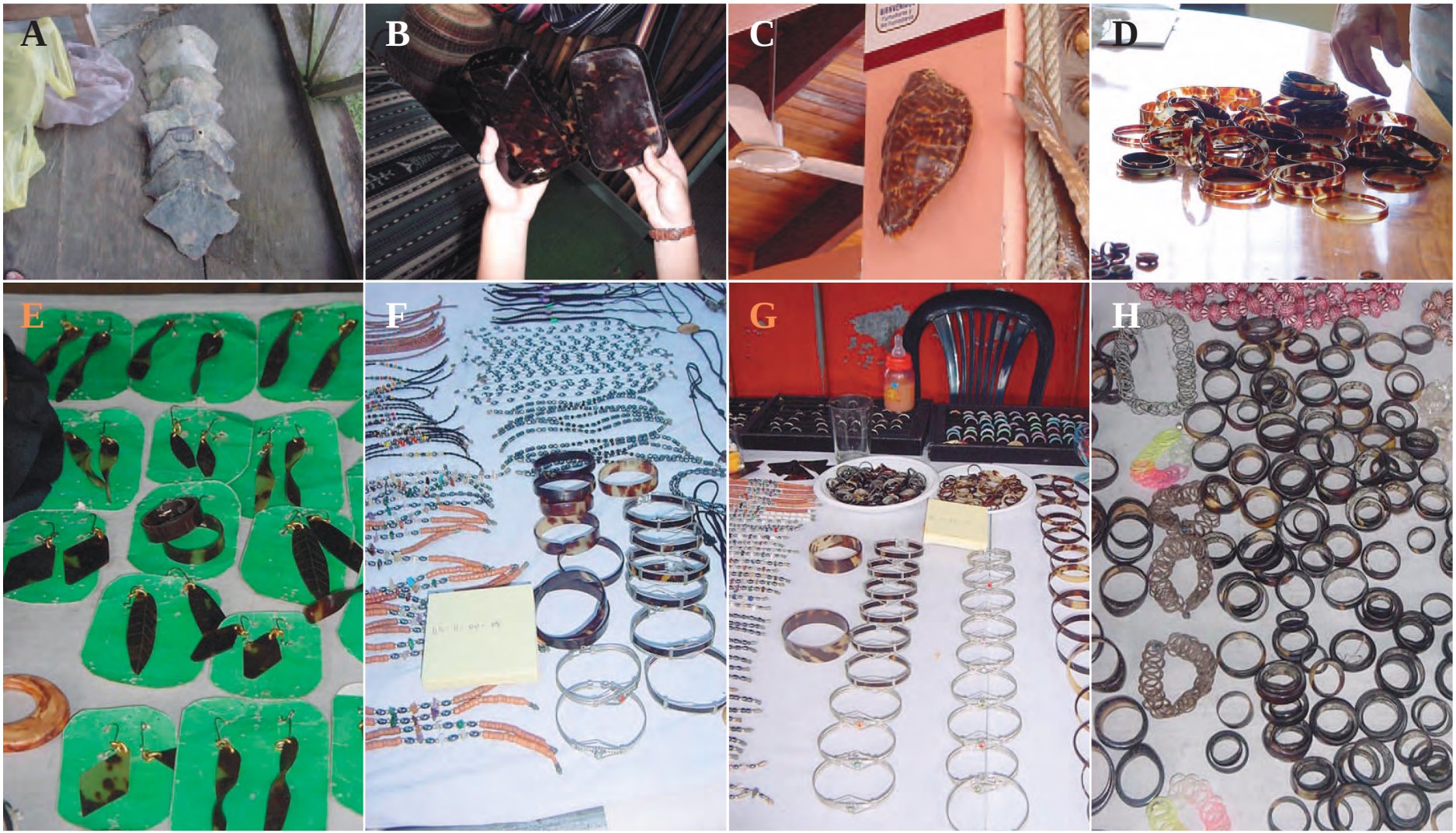
Apéndice 1: A, Tortuga mutilada en Jalova, Tortuguero, Costa Rica. B-H,Captura y comercialización de las tortugas marinas en la Costa Caribeña de Nicaragua. , Appendix 1: A, Mutilated turtle, found in Jalova, Tortuguero, Costa Rica . B-H, Capture and ommercialization of sea turtles in the Caribbean Coast of Nicaragua . (Fotos/Photos:A, Håkan Troedsson; B-H, Jean-Phillipe Soulé)

Apéndice 2: A-B, Comercio de aceites de ***Lepidochelys olivacea***, Puerto de San José, Guatemala. C-D. Restaurantes que ofrecen tortuga en su menú. E. Comercio clandestino de tortugas marinas, F. Comercio callejero de tortuga marina en Puerto Limón, Costa Rica (1999). G. Destace furtivo de tortugas en el Puerto de Limón, Costa Rica. H. Venta callejera de partes de tortuga marina, Costa Rica (1999). Fotos: Didiher Chacón y La Nación.

Appendix 2: A-B, Trade of ***Lepidochelys olivacea*** oil, Port of San Jose, Guatemala. C-D, Restaurants offering turtle on the menu. E, Clandestine trade of sea turtles. F, Street vendor selling sea turtle meat in the Port of Limon, Costa Rica (1999). G, Poaching and slaughtering of sea turtles in the Port of Limon, Costa Rica. H. Street vendor with sea turtle parts, Costa Rica (1999). Photos: Didiher Chacón and La Nación.

Apéndice 3: Comercio de productos elaborados con escamas del caparazón de carey (***Eretmochelys imbricata***), A. Catálogo de artículos encontrados en Costa Rica, B. Anillos, Puntarenas, Costa Rica. C. Anillos, Playas del Coco, Costa Rica. D. Pulseras, Puerto Limón, Costa Rica. E. Pulseras, Aeropuerto La Aurora, Guatemala. F. Venta de accesorios de carey, Isla Carenero, Bocas del Toro, Panamá. G. Artículos de carey decomisados por el MINAE, Puntarenas, Costa Rica.
H. Collar de carey, Honduras. Fotos: Didiher Chacón y Carlos Molinero (H). Appendix 3: Trade of products made with the scutes of hawksbill shells (***Eretmochelys imbricata***). A, Catalogue of articles found in Costa Rica. B, Rings in Puntarenas, Costa Rica. C, Rings in Playas del Coco, Costa Rica. D, Bracelets, Port Limon, Costa Rica. E, Bracelets, La Aurora airport, Guatemala. F, Sale of hawksbill accessories, Carenero Island, Bocas del Toro, Panama. G, Confiscated hawksbill articles by MINAE, Puntarenas, Costa Rica. H, Hawksbill necklace, Honduras. Photos: Didiher Chacón and Carlos Molinero (H).

Apéndice 4: Comercio de productos elaborados con escamas del caparazón de carey (***Eretmochelys imbricata***), A.Pulsera, Antigua Guatemala, B-D. Artesanía de Carey, Honduras. E. Pulseras, Puerto Cabezas, Nicaragua. F. Venta de artesanía de carey, P. Cabezas, Nicaragua.G.Placas de carey, Bocas del Toro, Panamá. H. Artículos de carey, Managua, Nicaragua.I-L. Tortugas disecadas (I. ***L. olivacea***, J. ***E. imbricata***, K. ***C.m. agassizii***, L. ***E. imbricata***.) Fotos: Didiher Chacón (A,I,J,K,L), Wagner Quirós (G), Reinaldo Francis (E,F), Gabriel Cáceres (H)y Carlos Molinero (B,C,D).
Appendix 4: Trade of products made with the scutes of hawksbill shells (***Eretmochelys imbricata***). A, Bracelet, Antigua Guatemala. B-D, Hawksbill crafts, Honduras. E, Bracelets, Port Cabezas, Nicaragua. F, Sale of hawksbill crafts, P. Cabezas, Nicaragua. G, Hawksbill scales, Bocas del Toro, Panama. H, Hawksbill articles, Managua, Nicaragua. I-L, Stuffed turtles (I. ***L. olivacea***, J. ***E. imbricata***, K. ***C.m. agassizii***, L. ***E. imbricata***.) Photos: Didiher Chacón (A,I,J,K,L), Wagner Quirós (G), Reinaldo Francis (E,F), Gabriel Cáceres (H) and Carlos Molinero (B,C,D).



Apéndice 5: A. Escamas vertebrales de ***E. imbricata***, Bocas del Toro, Panamá. B. Joyero, Isla Carenero, Panamá, C. Caparazón de ***E. imbricata***, Costa Rica. D. Pulseras de carey, confiscadas en Puntarenas, Costa Rica. E. Aretes de carey, Playas del Coco, Costa Rica, F-H. Artesanía de carey, Puntarenas, Costa Rica. Fotos: Didiher Chacón (D-H), Wagner Quirós (A,B). Appendix 5: A, Vertebral scutes of ***E.imbricata***, Bocas del Toro, Panama. B, Jeweler, Carenero, Panama. C, Carapace of ***E. imbricata***, Costa Rica. D, Hawksbill bracelets confiscated in Puntarenas, Costa Rica. E, Hawksbill earrings, Playas del Coco, Costa Rica. F-H, Hawksbill crafts, Puntarenas, Costa Rica. Photos: Didiher Chacón (D-H), Wagner Quirós (A,B)

Apéndice 6: A,B,L, Artículos de carey confiscados por el MINAE, Costa Rica. C. Artículos de carey, El Salvador. D. Pulsera de carey, Guatemala. E. Accesorios de carey, Honduras. F. Pulseras y anillos de carey, Nicaragua. G,H,I,K, Artefactos de carey, Bocas del Toro, Panamá. J. Expescador de tortuga mostrando Flotador para redes de captura. Fotos: Didiher Chacón (A,B,D,G,H,K,L), Wagner Quriós (I,J), Celina Dueñas (C),Carlos Molinero (E). Reinaldo Francis (F). Appendix 6: A,B,L Hawksbill articles confiscated by MINAE, Costa Rica. C, Hawksbill articles, El Salvador. D, Hawksbill bracelets, Guatemala. E, Hawksbill accessories, Honduras. F, Hawksbill bracelets and rings, Nicaragua. G,H,I,K, Hawksbill artifacts, Bocas del Toro, Panama. J, Former turtle fisherman showing a float for capture nets. Photos: Didiher Chacón (A,B,D,G,H,K,L), Wagner Quirós(I,J), Celina Dueñas (C), Carlos Molinero (E), Reinaldo Francis (F).

Apéndice 7: A-B-E. Ventas de Huevos, San José, Costa Rica. C. Bolsa de huevos de Ostional.D. Vendedora de huevos, Puerto de San José, Guatemala. F-G. Recolecta comunitaria de huevos, Ostional, Costa Rica. H. Recolector ilegal de huevos, Tamarindo, Costa Rica (2000). I-K. Cosmético a base de aceite de Tortuga, Costa Rica. L. Aceite de tortuga, Honduras. Fotos: Didiher Chacón (A-C,E,H,I-K), Yoshihiro Degawa (F,G), Carlos Molinero (L). Appendix 7: A,B,E, Sale of eggs, San Jose, Costa Rica. C, Bag of eggs from Ostional. D, Egg vendor, Port of San Jose, Guatemala. F-G, Community harvest of eggs, Ostional, Costa Rica. H, Poacher, Tamarindo, Costa Rica (2000). I-K, Cosmetic with turtle oil base, Costa Rica. L, Turtle oil, Honduras. Photos: Didiher Chacón (A-C,E,H,I-K), Yoshihiro Degawa (F,G), Carlos Molinero (L).

Apéndice 8: A, B,E,H, Cosméticos a base de aceite de tortuga, El Salvador. C,D,G, Cosméticos a base de aceite de tortuga, Costa Rica, F. Crema a base de aceite de tortuga, Honduras. Appendix 8: A,B,E,H, Cosmetics with turtle oil base, El Salvador. C,D,G, Cosmetics with turtle oil base, Costa Rica. F, Cream with turtle oil base, Honduras.