

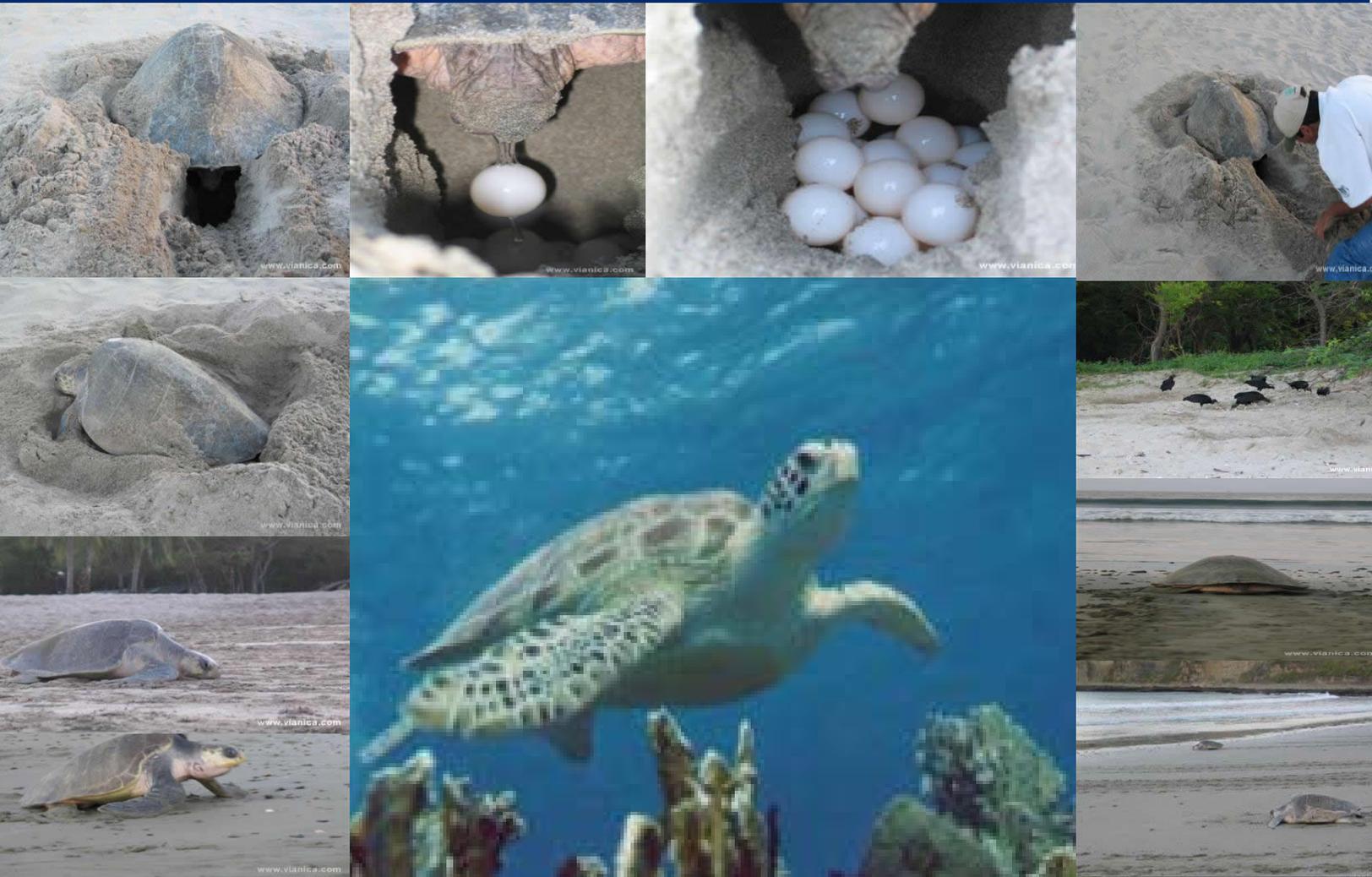


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THE COMMERCIALIZATION OF SEA TURTLE EGGS IN EL SALVADOR

IMPROVED MANAGEMENT AND CONSERVATION OF CRITICAL WATERSHEDS PROJECT



OCTOBER, 2008

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Authors: Steven Romanoff, Manuel Benitez, Reinaldo Chanchan
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By Steven Romanoff, Manuel Benítez, Reinaldo Chanchan

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Project Office: Calle Dr. José Zablah, 4-6 Col. Utila; Sta. Tecla, La Libertad, El Salvador
Dr. Steven Romanoff, Project Director
Phone (503) 2288-4198, (503) 2288-4318
Email: Steve_Romanoff@DAI.com

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EXECUTIVE SUMMARY

The four different turtle species that nest in El Salvador are endangered and this is concerning for the government of El Salvador, the environmental organizations and USAID. The USAID Improved Management and Conservation of Critical Watersheds Project carried out an appraisal of the collection and commercialization of sea turtle eggs in El Salvador. The study had the participation of the El Salvador Zoological Foundation (Fundación Zoológica de El Salvador, FUNZEL), the Institute of Ocean Sciences and Limnology of the University of El Salvador (ICMARES), and the Ministry of the Environment and Natural Resources (MARN).

The study interviewed experts on collection and commercialization of turtle eggs, including 24 turtle egg collectors from 12 different beaches, 11 *toponeros* (small scale merchants, who also collect), 3 large-scale merchants, 28 commercial outlets at the beach and in San Salvador (bars, restaurants), and 9 seafood points of sale. The study's methodology consisted of requesting information and opinions from qualified informants, who are well-versed on the typical patterns of their area. Due to the methodology that was applied, the results should be interpreted as approximate and not as exact.

Using weighted averages, the price per dozen of turtle eggs for 2008 are:

End consumer in San Salvador	
• In a bar, restaurant, business	\$7.90
• At the market	\$4.20
The business pays the merchant	\$5.20
The merchant pays the turtle egg collector or small-scale merchant	\$4.02
The turtle egg collector receives	\$3.70

According to the source – and with slight differences – the main turtle egg consumers are the following:

Families of turtle egg collectors	4 - 6%
People at the beaches	6 - 9%
In bars or restaurants at the beaches	22- 21%
In the metropolitan area of San Salvador	57- 52%
• Of these, in bars and restaurants	30 - 35%
• At homes	25 - 30%
In other cities	10 - 12%

The total national annual harvest is estimated at between 9,000 to 13,000 nests with eggs from approximately 3,000 additional nests imported from neighboring countries. The lowest of the estimates is based on consumer data provided by the sellers, and the higher of the two estimates is principally supported by reports from the turtle egg collectors themselves¹.

¹ We recognize that the estimates are greater than FUNZEL's preliminary data, whose total national annual calculations are less than 10,000 nests, according to personal information from Mike Liles, Coordinator of the Sea Turtle Project – FUNZEL. 2008.

According to the turtle egg collectors' estimates, 75% of the nests were laid by gulf turtles (ridley, lora, white) *Lepidochelys olivacea*; 2% by baule (laud, leather back) *Dermochelys coriacea*; 17% from green turtles (tortuga prieta) *Chelonia agassizi*; and 6% by hawksbill turtles (carey) *Eretmochelys imbricata*. These figures should be interpreted as very approximate.

In general, the turtle egg collectors do not believe there are problems with the amount of nests. Some collectors identified problems with fishermen and shrimp boats while others recognize natural problems. Few see problems with the lights from nearby homes and hardly any see problems with the collection of large amounts of eggs.

Approximately 4,000 people scour the beaches to harvest marine turtle eggs, of which 1,700 reside in the beach communities themselves while nearly 2,000 originate from other nearby areas. Approximately 1,200 people collect eggs on a full time basis during the nesting season. Few turtle egg collectors are dedicated to this activity as a full time occupation. Their main economic activities (or at least according to the answers of people interviewed, most of whom were men), include day labor on farms, taking care of a beach house, farmer, conch collector (*curilero*), extracting firewood, trade, cutting sugar cane, watching over cattle, bricklayer, waiter at restaurants, clam collector and commercial fishing.

The collective estimated income from eggs of the turtle egg collectors is about \$365,070. The average income depends very much on the amount used to calculate the number of turtle egg collectors –between 1,200 (those who work full time) and 4,000 (including the ones who come once in a while). This gives a range of between \$305 and \$92 per turtle egg collector in one year.

The government's control of the beaches, the nesting programs, and the beach communities varies from one case to another; overall it seems to be quite weak. Some, but not all turtle egg collectors comply with the existing nesting programs. There is a "tragedy of the commons" problem – if someone leaves some of the eggs behind, others follow behind and take the eggs. Generally speaking, neither the turtle egg collectors nor the merchants recognize problems that would limit their turtle egg collection. However, there are some positive elements; the turtle egg collectors state that nearly one tenth of the eggs end up in a nesting program.

The survey found that according to the vendors, there are certain principal reasons why the different types of buyers consume eggs, which we can summarize as follows:

- | | |
|---------------------------------|--|
| • Turtle egg collector's family | Food |
| • The tourist | Taste, to accompany alcoholic beverages, or to try something new |
| • At bars | Belief that it increases the sex drive |
| • At restaurants | Habit |
| • Men | Belief that it increases their sex drive |
| • Women | Habit, family custom |

The survey did not find that there was a strong ecological or conservationist awareness to reduce or control the consumption of sea turtle eggs, although some nesting program acceptance and collection control already exists among the turtle egg collectors.

The vendors acknowledge that some people, especially families, reject the consumption of turtle eggs. The main reason is that it disgusts them or they do not like the taste. The qualities of eggs not accepted by consumers are that they are not fresh or have a bad smell.

Recommendations:

Social communication for consumers. Campaigns to control turtle egg consumption should be oriented primarily towards the metropolitan population of San Salvador, which consumes the highest amount of turtle eggs and where beach-visiting tourists originate. It is possible that most of the people who purchase these eggs have sufficient economic income, considering the price of a dozen is relatively high.

The principal themes for popular messages that could be used to achieve a reduction in the consumption of turtle eggs are the following: 1) Recognizing the importance of the tradition or custom, and in order to keep the tradition going, we need to maintain the existence of the turtles. 2) Against the current belief, inform people that turtle egg consumption does not increase the sex drive. 3) Emphasize the fact that some people do not like turtle eggs, because of the taste or because they are repulsive. An effective message could be 4) inform people that turtles are an endangered species; however this would require educational efforts as the survey found no evidence that it connect with current attitudes effectively.

Restrictions on the commercialization of turtle eggs. There are certain disadvantages to prohibiting the collection of turtle eggs at the beaches: a large number of poor people earn a certain amount of money through this trade, even if it is minimum; the lack of control on the beaches; the fact that the turtle egg collectors in general do not recognize that there is a problem with the number of nests; and the fact that hardly anyone sees problems related to the collection of a large quantities of eggs.

On the other hand, in San Salvador, where most of the turtle eggs are consumed, there are approximately 20 seafood markets and about 100 bars and restaurants where the eggs are sold. This number of markets and outlets is manageable, when compared to 200 Km. of beaches and 4,000 turtle egg collectors. If a control program is to be established, with income generation alternatives to mitigate any negative effects, it would be advisable to get active participation from the people who live on the beaches.

Other programs. This is a study of the commercialization of sea turtle eggs and not a study of the general conservation of the species. However, information has been presented that is relevant to nesting programs and the possibility of involving the turtle egg collector's communities in conservation programs. A considerable number of people obtain part of their income from the collection of sea turtle eggs; their way of life includes the use of several natural and agricultural resources. Most of these people are poor. Very little information has been found

about the primary users of this resource; therefore more information about their lives, activities, needs and habits, needs to be known so that we can back a comprehensive conservation program. A turtle conservation program would be more feasible if it included the users as beneficiaries, and not only as part of the problem.

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We wish to thank all of the people, turtle egg collectors, and merchants who provided important information and their insights regarding the trade and consumption of turtle eggs. FUNZEL's support, represented by Mike Lyles, was equally important. The following persons played a very important role in obtaining information through several interviews: Juan Alberto León Henríquez, Itamar Merino, Eduardo Flores and José Luis Ventura, zone coordinators linked to the general study of the El Salvador Zoological Foundation (Fundación Zoológica de El Salvador - FUNZEL); the Institute of Ocean Sciences and Limnology of the University of El Salvador (ICMARES); Xiomara Henríquez and Esmeralda Martínez, from SalvaNATURA; José Gil Magaña, Carlos Portillo, Dorys Fajardo, Mario Sagastizado and Ovidio Sandoval, from the USAID Improved Management and Conservation of Critical Watersheds Project. USAID supervision was done by Mary Latino de Rodríguez and Lawrence Rubey, with technical contributions from Carlos Hasbún. Oliver Komar from SalvaNATURA read a draft of the report and had very precise comments on the draft. Neither USAID nor any of the persons who supported the study have any responsibility for its conclusions, recommendations or mistakes.

CHAPTER 1 INTRODUCTION

1.1. PROBLEMS AND OBJECTIVES

The purpose of this report is to contribute to the knowledge regarding the commercialization and consumption of sea turtle eggs throughout the country, to support the conservation of these endangered species, while keeping in mind the social and economic conditions of the population that collects, commercializes and consumes the turtle eggs.

One of the very few and very useful publications that were found regarding the trade of turtle products was written by Didiher Chacón from Costa Rica. He systematically reviewed the trade of turtle products in the Central American countries, together with all of the pertinent laws, with a description of the trade in El Salvador, among other countries².

However, in order to understand the turtle egg industry, there needs to be rough estimates of the volume of eggs and nest, and indications of the reasons why people (turtle egg collectors, merchants, and consumers) participate in this trade. Also, a conservation program could benefit the affected population. This study expects to contribute such elements as a first diagnostic sketch of the sea turtle eggs commercialization chain.

1.2. AREA OF THE STUDY

The area of study covers all of the sandy beaches of El Salvador where turtles lay their eggs; it also covers the main markets where the eggs are sold and where they are consumed.

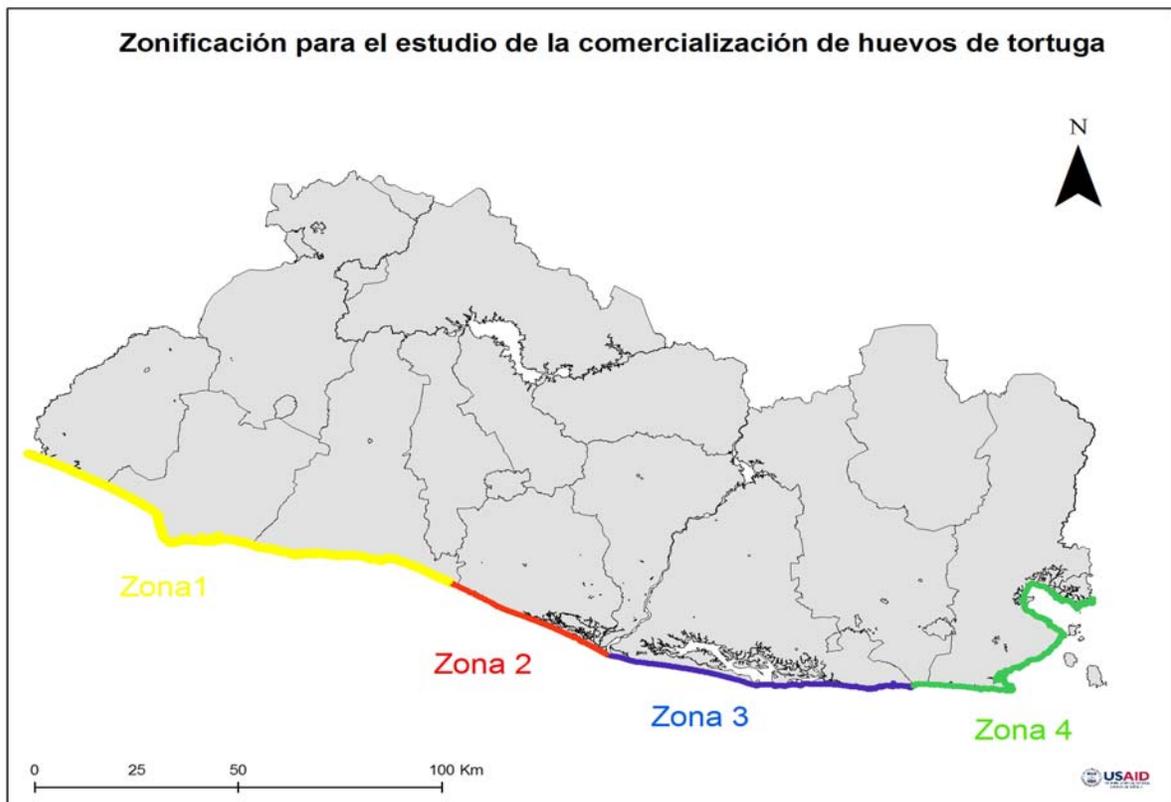
The El Salvador Zoological Foundation (FUNZEL) has a monitoring survey of beaches. It has divided the beaches of El Salvador into four zones, and this division has been used in the current study (Table 1). Zone 1 begins at the border with Guatemala, and Zone 4 extends all the way to the coastal and insular beaches of the Gulf of Fonseca and the border with Honduras.

² Chacón, D. 2002. Diagnosis regarding the trade of sea turtles and their derivatives in the Central American Isthmus. Regional Network for the Conservation of Sea Turtles I Central America (Red Regional para la Conservación de las Tortugas Marinas en Centroamérica (RCA). San José, Costa Rica. 219 pp. + annex

TABLE 1. ZONING OF THE SANDY BEACHES IN THE COAST OF EL SALVADOR

Zone	Departments	Main Beaches	Km. of beach
Zone 1	Departments of Ahuachapán, Sonsonate and La Libertad, Western and Central Region	Bola de Monte, Garita Palmera, Barra de Santiago, Toluca	76.1
Zone 2	Departments of La Paz and San Vicente, Central Region	Cangrejera, Amatecampo, La Costa del Sol, Las Hojas	42.2
Zone 3	Departments of Usulután. Para Central Region	Isla de Méndez, Isla de San Sebastián, El Espino, La Ventana, El Pimental	64.0
Zone 4	Departments of San Miguel and La Unión. Eastern Region	El Cuco, Las Tunas, El Tamarindo, El Icacal, El Jaguey	38.5
Total			220.8

FIGURE 1. ZONES OF THE MAIN BEACHES OF EL SALVADOR USED FOR THIS STUDY



1.3. METHODOLOGY

This report is an exploratory study. It is based on interviews of qualified informants who participate in the trade of sea turtle products in the typical beaches of each of the zones of the country (Table 1) and on merchants who sell these products in the main markets. The interviews that form part of this study were aimed at different links of the commercialization chain, defined below.

- **Turtle egg collectors, in each of the beaches that make up the sample.** These are people who are dedicated to the search, extraction and sale of sea turtle eggs on the sandy beaches that meet the sea turtle nesting requirements. In general, most of these collectors are adult men, although some women and children participate. Some of these people live in primarily coastal communities, while others live further inland on the coastal plains or neighboring mountainous areas.
- **Toponeros or small-scale merchants on the beaches included in the sample.** These are people who buy and sell sea turtle eggs. Usually they buy the eggs at the beaches directly from the turtle egg collector. They sell the eggs locally, or they travel by bus or any other form of public transportation to medium-sized cities or to the metropolitan area of San Salvador, where they sell the eggs to re-sellers either at markets, bars, restaurants or directly to consumers. They usually manage quantities equal to two or three turtle nests.
- **Wholesale merchants who transport and sell eggs.** These people are dedicated to the purchase and sale of marine products, not just turtle eggs. They buy from egg collectors at the nesting beaches or from the small-scale merchants in coastal communities. Generally, they transport the eggs to the main cities, especially to the metropolitan area of San Salvador, using their own pick-up trucks, in which they also transport other types of sea food: fish, shrimp, crabs and mollusks. They usually sell these products at the markets in the main cities, or at bars, restaurants and hotels. They also provide the retailers on the streets with these products. They usually handle amounts of eggs equal to about ten nests.
- **Bars and restaurants at the beach and in the metropolitan area of San Salvador.** These establishments are dedicated to the sale of food and beverages, with an emphasis on seafood as a main dish, or as snacks to accompany alcoholic beverages. At these places sea turtle eggs are part of the open or hidden menu. Also included in this group of establishments are bars and restaurants located at beach resorts. Turtle eggs are provided by *toponeros* or merchants. For the beach establishments, the turtle eggs are usually provided by the turtle egg collectors themselves, and they in turn serve the turtle eggs already cooked to the clients.
- **Markets or seafood points of sale in the metropolitan area of San Salvador.** These are permanently established and dedicated to the sale of seafood: they sell fish, shrimp, conch, and sea turtle eggs. They buy their products from wholesalers and from small-scale merchants, and sell the eggs directly to consumers, generally by the dozen.

None of the links along the commercialization chain recognizes restrictions for the harvest or sale of turtle eggs.

The sample used for this study was intermediate between a sample that could be considered appropriate for the purpose of a quick reconnaissance (few people interviewed, usually a special niche) and a typical household survey (many interviews with a non-skewed selection). The first phase of sample selection consisted of choosing 12 typical beaches (three per zone) with characteristics suitable for marine turtle nesting, based on the opinions of the biologist who collaborated on this study. The “typical” characteristic of the beaches refers to representation of the physical features of the selected beaches and the socioeconomic characteristics. Using a geographic information system (GIS) methods, the team calculated the length of the beaches of each zone; this was done with prior knowledge of the characteristics of beach and its propensity for sea turtle nesting, discarding those parts of the beach that did not meet sea turtle nesting requirements, such as rocky cliffs, beaches with rocky intertidal platforms, muddy banks along the estuary of a river, and beaches with slopes in the intertidal zone, among others (Table 2).

TABLE 2. SAMPLE OF BEACHES FOR INTERVIEWS WITH TURTLE EGG COLLECTORS AND SMALL-SCALE MERCHANTS

Zone	Beaches in the sample	Longitude of the beaches in the sample (Km.)	Total longitude of beaches in the zone (Km.)	Expansion Factor
Zone 1	<ul style="list-style-type: none"> • Bola de Monte, • Barra de Santiago, • Toluca 	17.5	76.1	4.3
Zone 2	<ul style="list-style-type: none"> • Amatecampo, • Costa del Sol, • Las Hojas 	42	42.2	1.0
Zone 3	<ul style="list-style-type: none"> • Isla Méndez, • Isla San Sebastián • El Espino 	58.0	64.0	1.1
Zone 4	<ul style="list-style-type: none"> • El Icacal, • El Cuco • El Tamarindo 	24.0	38.5	1.6
Totals		143.5	220.8	1.5

On each beach, two interviews were held with local turtle egg collectors and one with a *toponero*. In many cases, the interviews were held with groups of turtle egg collectors; in such cases, between 2 and 5 turtle egg collectors participated in the interview and contributed their information by consensus. More than one interview was held to achieve consensus regarding

the typical patterns at the beaches. The questions dealt with the general conditions of the beach. The interviews did not inquire about the experience of the interviewees, nor specifically the conditions of the current year. Those interviewed were treated as “qualified informants” or “local experts”.

A list frame was prepared to select the turtle egg merchants in San Salvador. The list included all of the turtle egg points of sale, such as bars and restaurants in San Salvador, which were known by the investigators and support experts. The investigators were not able to make a list of the turtle egg wholesalers because for the most part they were not willing to be interviewed. The three interviews with wholesalers, therefore, were as the opportunity arose in the areas where they bought eggs, and they were interviewed as “qualified informants” or “experts”. The samples of the beach restaurants were also done as the opportunity arose. In all, 75 interviews were conducted (Table 3)

TABLE 3. SAMPLE SIZE

Zone	Turtle Egg Collectors	<i>Toponeros</i>/ small-scale merchants	Wholesalers	Bars and Restaurants	Markets w/sales to the public
Zone 1	6	4	2	7	
Zone 2	6	2	0	0	
Zone 3	6	3	0	0	
Zone 4	6	2	1	11	
San Salvador				10	9
Total	24	11	3	28	9

Most of the data regarding production, prices and destination of the eggs were consistent, except for the following: 1) estimates of production in zone 1 turned out to be very high, so the team returned to Zone 1 to do new interviews with informants or experts of that zone, 2) the sales prices of toponeros and merchants were nearly the same as the buying prices, but are not consistent with the purchase prices for the next link in the commercialization chain. In that case, the team supposed that the intermediaries were reluctant to divulge profits.

1.4. FOCUS OF THE STUDY: MARINE TURTLE EGGS

The study inquired about the production and commercialization of turtle products and by-products at each one of the beaches, including eggs for sale, eggs for consumption, meat for sale, meat for consumption, oil for sale, oil for consumption, Carey (type of shell), turtle shells, bones, blood, others.

This report only deals with sea turtle eggs because, according to the people interviewed (Table 4), turtle eggs are the only product collected for sale and consumption at any of the sandy beaches in El Salvador. They do not admit that they extract or process any other product. The

study by Chacón (2002) study found only limited quantities of products in El Salvador apart from eggs.

TABLE 4. IDENTIFICATION OF MARINE TURTLE PRODUCTS AND BY-PRODUCTS

1.1. Pr	1.2 Response	1.3. Origin	1.4. Main Markets	1.5. Typical price ranges per unit
Eggs for sale	100 % of the beaches	National beaches According to merchants, 16% come from Nicaragua, 1% from Honduras and 3% from Guatemala	San Salvador See table 1.3 below	Egg collector receives \$1 - \$6 per dozen, average weighted price \$3. Consumer pays \$4 - \$14 per dozen in San Salvador, average \$6.65
Eggs for consumption	100% of the beaches	National beaches	Egg collector families	NA
Meat for sale, Meat for consumption, Oil for sale, Oil for consumption, Carey, Turtle shells, Bones, Blood, & Others	0% de playas	NA	NA	NA

Sources: Turtle Egg Collector's Forms. See Annex 1 for details

Consequently, the study is limited to eggs and not to the other products, although it is known that turtle oil and other products are sold in San Salvador in small quantities.

Other details from the interviews: sea turtle eggs are known as turtle eggs, *parlamo* eggs, *mapalam*, and *parlama* eggs (source: merchants form). Eggs are eaten in two different ways: raw and cooked. There are four species of turtles, however, in the market the eggs are not differentiated and are treated as one product.

The annex of this study presents the questionnaires that were used.

CHAPTER 2 RESULTS: TURTLE EGGS PRODUCTION, COMMERCIALIZATION AND CONSUMPTION

This chapter presents the complete chain of production and commercialization of the sea turtle eggs, from the beach to the end consumer.

2.1. TOTAL PRODUCTION AND PRODUCTION ZONES

The total national annual harvest is estimated at between 9,000 to 13,000 nests, plus the equivalent of approximately 3,000 nests imported from neighboring countries. The smaller estimate is based mainly on consumption data provided by sellers; the larger estimate is based mainly on reports from turtle egg collectors. Turtle egg production is concentrated on beaches located in Zone 1 (Table 5). According to interviews with merchants, approximately 20% of the eggs consumed in the country come from other countries. However, these are not exact figures.

TABLE 5. PRODUCTION ZONE OF EGGS CONSUMED IN EL SALVADOR

Source	Beaches (KM)	Estimated Nests	Eggs (dozens)	% of eggs
Beaches Zone 1	76	7,062	63,559	41.8
Beaches Zone 2	42	2,593	23,341	15.3
Beaches Zone 3	64	1,966	17,696	11.6
Beaches Zone 4	38	1,817	16,355	10.7
Sub-total National Production	220	13,439	120,950	80.0
Nicaragua		2,819	25,372	16.7
Honduras		190	1,711	1.1
Guatemala		462	4,161	2.7
Sub-total Imports		3,472	31,244	20.0
Total		16,910	152,193	100.0

Source: National Production: Turtle egg collectors' form. Imports: Merchant estimates. Note that figures are not as precise as they appear.

According to the interviews, the most common nesting species is the Ridley (*Lepidochelys olivacea*) or *golfina* in Spanish. According to interviews with the turtle egg collectors, the hawksbill (*Eretmochelys imbricata*), which is of special interest because it is critically endangered and the Salvadoran population is the largest in the eastern Pacific, represents 6% of the nesting turtles (Table 6). These figures are very approximate.

TABLE 6. MARINE TURTLE EGGS FARMED IN EL SALVADOR, BY SPECIES

Species	Approximate % of nests	Greater collection months
1. Lora, blanca or golfina (ridley)	75	The whole year, however there is a greater amount between July and October
2. Baule or Laud (leather black)	2	October to January
3. Prieta or verde (green)	17	Same as the golfina but in a smaller scale and during the same seasons
4. Carey (hawksbill)	6	Mainly from June to September
Total	100	

Source: turtle egg collectors' form

Data from two sources (turtle egg collectors and establishments that sell turtle eggs) agree on the months of greater production and consumption. Imports partly replace the local production whenever national production declines.

TABLE 7. NATIONAL PRODUCTION AND CONSUMPTION CALENDAR, ACCORDING TO PRODUCERS AND MERCHANTS

Month	Approximate production average (nests*)	Total dozens	% national production according to turtle egg collectors	% consumption, according to establishments
January	408	3,673	3.0	8.6
February	389	3,504	2.9	4.6
March	272	2,444	2.0	1.2
April	287	2,580	2.1	1.0
May	443	3,989	3.3	4.9
June	631	5,678	4.7	6.9
July	1,184	10,653	8.8	9.6
August	2,618	23,566	19.5	19.1
September	2,694	24,243	20.0	19.6
October	2,192	19,724	16.3	9.8
November	1,511	13,599	11.2	8.1
December	811	7,296	6.0	6.6
Total	13,439	120,950	100.0	100.0

Sources: Turtle egg collectors' forms

* Based on an average of nine dozen eggs per nest

FIGURE 2. CALENDAR OF PRODUCTION AND CONSUMPTION OF TURTLE EGGS (% BY MONTH)

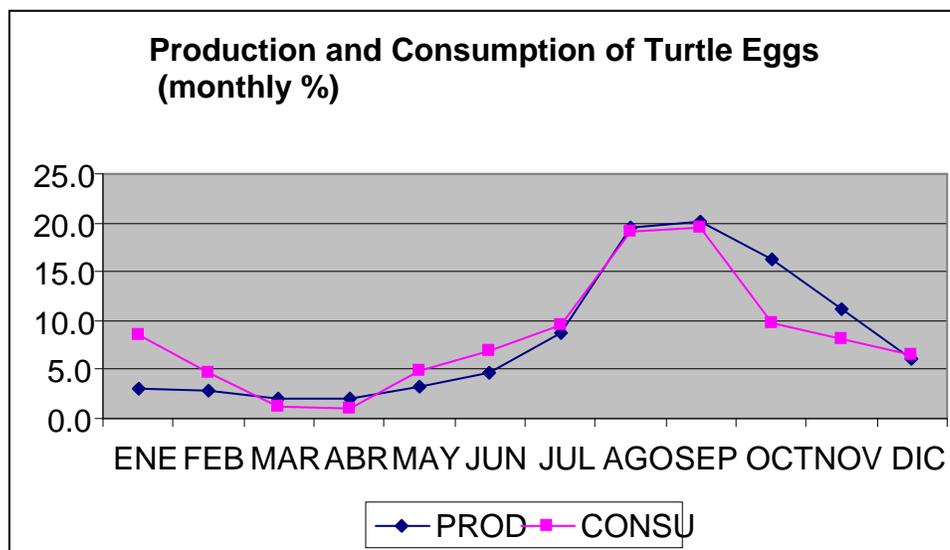


TABLE 8. OBSERVATIONS ON THE HARVEST

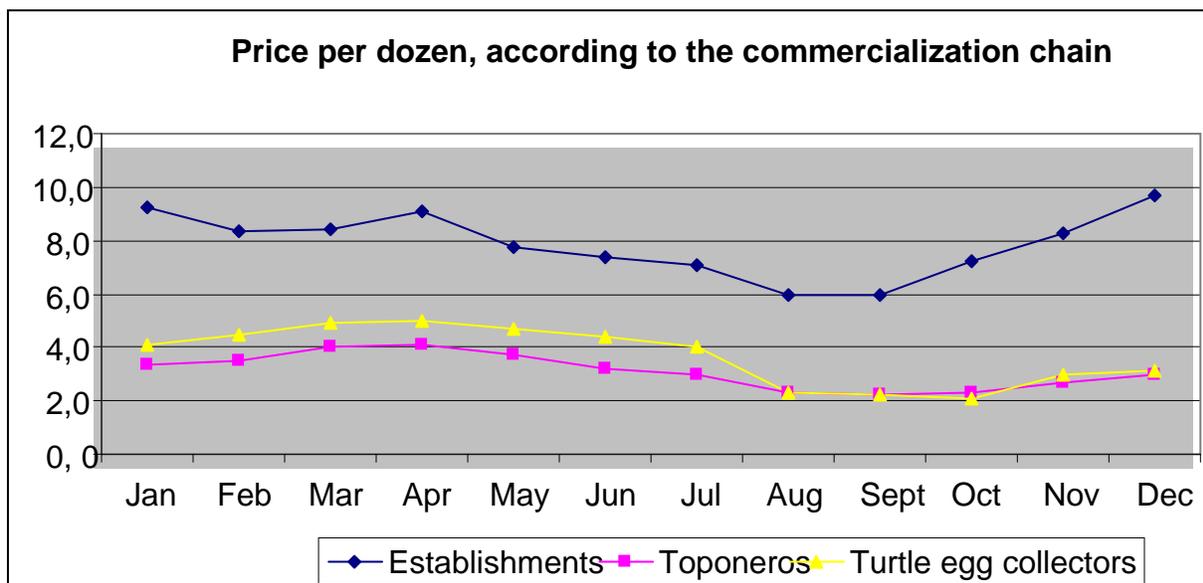
Months	% National Production	Relevant Production Events, per Gatherers	Relevant Consumption Events
January	3.0	There is little production as this is the dry season and there is a lot of wind. Turtle eggs cost approximately \$4.50 per dozen received by the turtle egg collector.	
February	2.9	All species are scarce. The price increases up to \$6.00 per dozen. This is not the mating season; there are very high tides and a lot of wind.	
March	2.0	Dry season and a lot of wind.	
April	2.1	All species are scarce and price reaches approximately \$7.00 per dozen. Begins to rain.	Easter holidays
May	3.3	All species are scarce and price reaches approximately \$8.00 per dozen. Rainy season begins.	
June	4.7	All species are scarce and the price reaches approximately \$7.00 per dozen. Rainy season in full.	
Julio	8.8	The Hawksbill is scarce but the Ridley or Leather Back start appearing.	
August	19.5	Egg production season begins, although the Hawksbill is still scarce. Moon changes affect the turtles. There is wind and rain. When it is windy the turtles come out.	Holidays (high consumption)
September	20.0	Eggs are cheap and the weather and changes in the moon help to get the turtles out. This is the season. Sometimes the Hawksbill comes out. The eggs become cheaper as there is a great abundance at this time.	High consumption
October	16.3	This is the mating season; also low tides and much rain, the abundance of eggs is maintained.	High consumption
November	11.2	The prices start to increase again and production drops. Low tides and not much rain.	
December	6.0	When the moon changes and it does not rain anymore, the turtles come out and nest.	Holidays

Throughout the year, the average prices that turtle egg collectors receive varies between \$2.10 and \$5.00/dozen (extreme prices at individual beaches are between \$1 and \$6). The largest quantities of eggs are sold between September and November, when there is an abundance of eggs in the market due to the nesting periods of the marine turtles and consequently, the price lowers. The average weighted price is \$3; similarly, the price received by the establishments varies between \$6 and \$9.70 (Table 9)

TABLE 9. PRICES ACCORDING TO SURVEYED SECTORS

Month	Turtle egg collector receives (USD/ dozen)	Pays to <i>Toponero</i> (USD/ dozen)	Consumer pays the Establishment (USD/ dozen)
Jan	\$4.1	\$3.4	\$9.3
Feb	\$4.5	\$3.5	\$8.4
Mar	\$4.9	\$4.0	\$8.4
Apr	\$5.0	\$4.1	\$9.1
May	\$4.7	\$3.7	\$7.7
Jun	\$4.4	\$3.2	\$7.4
Jul	\$4.0	\$3.0	\$7.1
Aug	\$2.3	\$2.3	\$6.0
Sept	\$2.2	\$2.2	\$6.0
Oct	\$2.1	\$2.3	\$7.2
Nov	\$3.0	\$2.7	\$8.3
Dec	\$3.1	\$3.0	\$9.7
Average of all months	\$3.7	\$3.1	\$7.9
Weighted average	\$3.0		\$7.3

FIGURE 3. PRICE SCHEDULE (\$ PER DOZEN)



2.2. CHARACTERISTICS OF THE TURTLE EGG COLLECTOR AND HIS FAMILY

Based on interviews with the turtle egg collectors, it was estimated that nationally approximately 4,000 people collect sea turtle eggs (Table 10). The turtle egg collectors are people who live in neighboring beach communities or who come from more distant areas. On average, the furthest community is about 12 kms away from the beach where people collect the eggs.

TABLE 10. NUMBER OF PEOPLE COLLECTING EGGS, ACCORDING TO PLACE OF ORIGIN

	CC of the Beach	CC Nearby	Furthest % CC	All CC
Beaches Zone 1	680	1703	46	2429
Beaches Zone 2	291	235	62	588
Beaches Zone 3	686	81	0	767
Beaches Zone 4	67	132	22	221
Total	1,724	2,151	130	4,005
% of all zones	43%	54%	3%	100%

Source: Turtle egg collectors' forms.

Age and gender of turtle egg collectors' reports show broad participation in this activity (Table 11).

TABLE 11. REPORTS OF AGE AND GENDER OF THE PEOPLE WHO COLLECT TURTLE EGGS

Who	#	% of Multiple Responses
Boys	14	12
Girls	9	7
Male youths	17	16
Female youths	13	13
Adult Men	21	20
Adult Women	18	18
Senior Citizens	17	15
All	24	100

Source: Interviews at 12 beaches, 2 interviews per beach

The turtle egg collectors earn money from multiple occupations (Table 12), of which most are appropriate for a local beach dweller. The responses must be interpreted because they concern a) people who live at the beach (but we know that many turtle egg collectors come from other communities) and b) men (but we know that there are also women and children involved in the collection of turtle eggs). For example, we did not see “student” or “house worker” as complementary occupational activities.

TABLE 12. OTHER OCCUPATIONS OF THE PEOPLE WHO COLLECT EGGS

First Option	Second Option	Third Option
Fishing, day laborer, taking care of beach house, farmer, collect conks	Obtaining firewood, merchant, cutting sugarcane, taking care of cattle, bricklayer, waiter at a restaurant	Taking care of beach houses, agriculture, collect clams, and commercial fishing

One third of the turtle egg collectors specialize in the collection of sea turtle eggs, at least during the season (Table 13).

TABLE 13. PEOPLE WHO COLLECT EGGS AND SPECIALIZATION ACCORDING TO TURTLE EGG COLLECTORS' INTERVIEWS

	Number of Persons	%
Collect turtle eggs full time	1,202	30%
Do not collect eggs full time	2,472	62%
Do not know their category	331	8%
Total	4,005	100%

On average, one third of the typical turtle egg collectors are dedicated full time to the collection of eggs, at least during the nesting season of the sea turtles (August – October); in other words, “full time” should be interpreted as during the “months where the turtle eggs are in season”. Full time gatherers use 26 nights per month, which can be interpreted as “during the season”.

From the turtle egg collectors' perspective, the collection and sale of eggs makes up a small part of their typical income (Table 14).

TABLE 14. OF YOUR TOTAL YEARLY INCOME, HOW MUCH OF THIS COMES FROM TURTLE EGG COLLECTION?

Amount of Income	Frequency	Percentage
Very little	14	58
“Regular” or less than half	9	38
A lot or more than half	1	4
Total	24	100

The turtle egg collectors reported a typical income from gathering eggs in their community to be \$706 per year (Table 15); this has to be for a turtle egg collector who is a specialist. The average price of \$3.00 per dozen implies that the typical turtle egg collector would have to gather 235 dozens of eggs or 26 nests per year. But if there are more than 1,000 turtle egg specialists at the national level, this study does not estimate that there is a corresponding amount of nests available in the country. Hence, the estimate of \$706 must refer to the relatively few who dedicate themselves full time to the collection of eggs.

TABLE 15. HOW MUCH DOES A TYPICAL TURTLE EGG COLLECTOR MAKE PER YEAR IN THIS COMMUNITY ON THE COLLECTION OF TURTLE EGGS?

Type of year, according to the egg harvest and its income	Income
In a good year	\$ 1,058
In a regular year	\$ 706
In a bad year	\$ 361

To better understand these figures, we asked about the typical total family budget of beach communities. Using this as a comparison, the contribution of the turtle egg harvest is not the major source of income, but would be significant, comprising the income to sustain a typical family for a three-month period (Table 16).

TABLE 16. HOW MUCH DOES A TYPICAL TURTLE EGG COLLECTORS' FAMILY SPEND MONTHLY ON LIVING EXPENSES?

	Number of responses	Monthly expenses	Average number of persons per family
How much does a typical turtle egg collectors' family spend on living expenses per month?	24	\$228	
How many members of the family?	19		5.5

Using a different set of information to estimate the importance of collecting eggs, the aggregate figures show that the collection of turtle eggs by itself would not be the source of substantial income for the turtle egg collectors as a whole; on an aggregate basis, it is a marginal occupation, that complements other occupations (Table 17).

TABLE 17. SUMMARY OF INCOME AND FAMILY BUDGET (AGGREGATE)

Characteristics	Data
Total (dozen) eggs	120,950 dozen
Average price (\$USD)	\$3.00
Turtle egg collectors income from egg collection (\$USD)	\$362.850
Total amount of turtle egg collectors	Between 1,200 and 4,000
Average income per turtle egg collector from egg collection	Between \$305 and \$99
Average monthly expenses turtle egg collector families	\$228
Annual expenditures per turtle egg collector (family scale)	\$2,736
Income on sale of eggs as % of necessary family expenditures	3.6%

2.3. THE COMMERCIALIZATION CHAIN

As a whole, the commercialization chain is a system of transferring eggs from their places of origin (the beaches of El Salvador, mainly, but also from other countries) to the consumers, particularly in the capital city of San Salvador, and, on a lesser scale, at other beaches, the coast and smaller cities.

We can summarize the primary production data of the turtle egg collectors with the sale % estimates of the establishments (Figure 4). This representation of the marketing chain uses the results from several sources and in some cases from only a few interviews, so the results must be taken as only an approximation of reality.

FIGURE 4 A. THE COMMERCIALIZATION CHAIN: FLOW OF EGGS FROM SOURCE TO CONSUMER

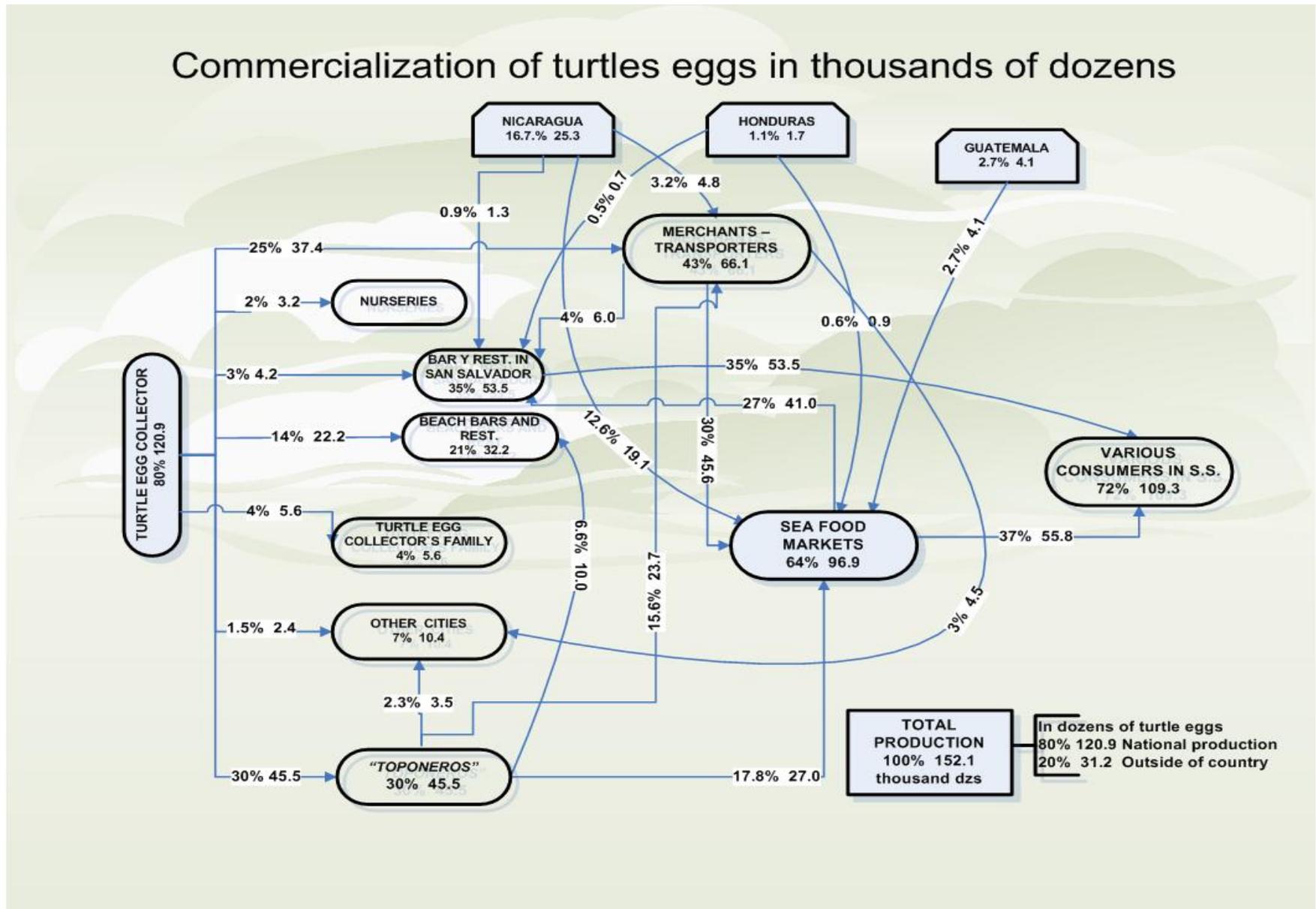


FIGURE 4 B. THE COMMERCIALIZATION CHAIN: FLOW OF MONEY, ACCORDING TO TURTLE EGG BUYERS

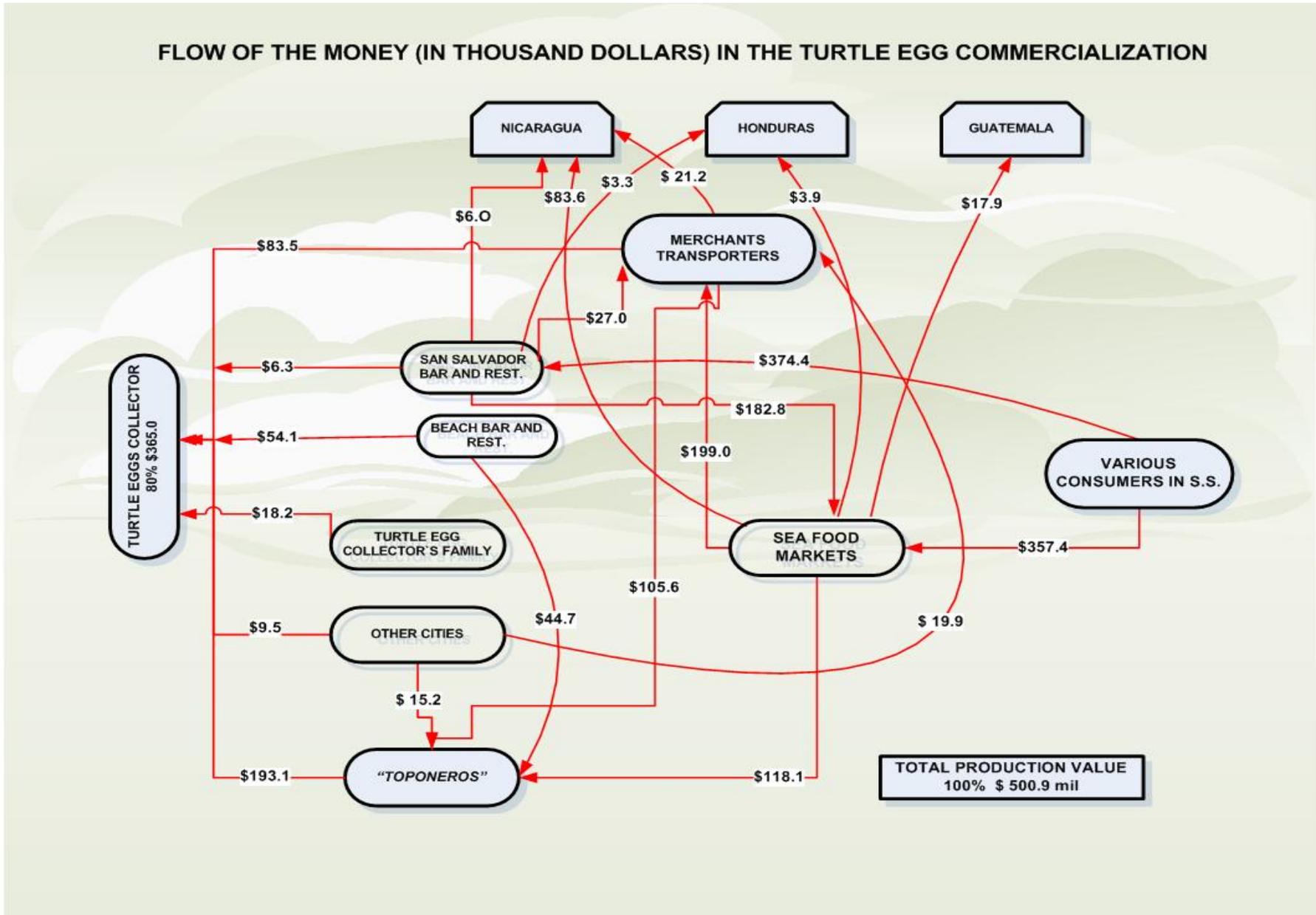


TABLE 18. PRICES, ACCORDING TO THE COMMERCIALIZATION LINK

Who receives \$	Who pays \$	Price \$/dozen
Turtle egg collectors	Merchant	\$3.00
	<i>Toponero</i>	\$3.00
	Bar at the beach	\$4.45
Merchant		\$ 4.45
		\$4.45
Bar in San Salvador		\$8.45
Restaurant in San Salvador		\$8.45

TABLE 19. DESTINATION OF TURTLE EGGS, ACCORDING SEVERAL SOURCES

Place of consumption	Destination of eggs according to turtle egg consumers including imports (dozens)	% approximate	Consumption, according to establishments (dozens)	% approximate	Months of greater consumption
Turtle egg collector families	6,048	4.0	6,048	5.5	August-September
At the beach (not egg collectors: private homes and others)	9,675	6.4	9,675	8.9	August-October
Locally at bars, restaurants, hotels and other establishments.	32,942	21.6	22,700	20.9	June-November
San Salvador (includes bars, restaurants & markets, homes)	87,842	57.7	57,012	52.4	Whole year/ August-October
Other cities and other places (vivariums)	15,686	10.3	13,330	12.3	No data
Total dozen	152,193	100.0	108,765	100.0	

Place of consumption	Destination of eggs according to turtle egg consumers including imports (dozens)	% approximate	Consumption, according to establishments (dozens)	% approximate	Months of greater consumption
eggs					
Equivalent in nests (national beaches & neigh. countries)	16,910		12,085		

The Turtle Egg Collectors

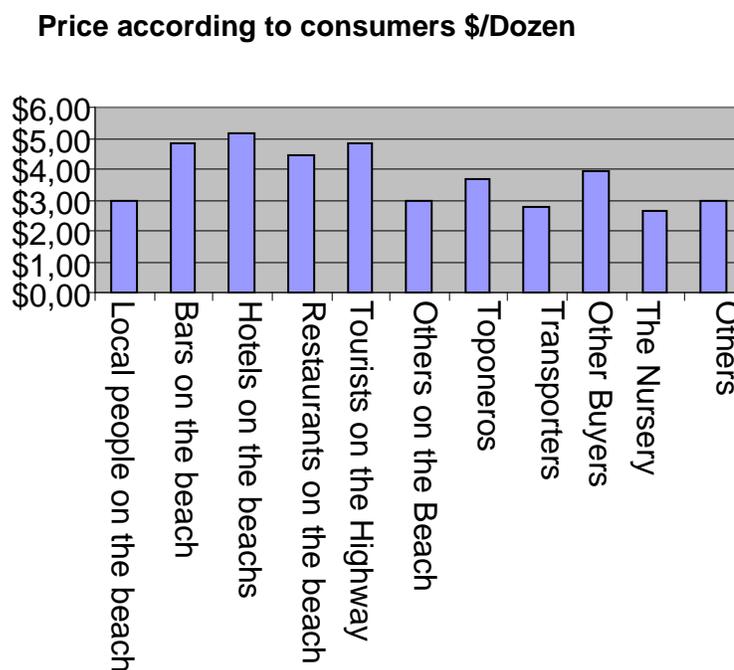
The commercialization chain begins with the turtle egg collectors, who collect eggs from the beach nests. They pass the eggs on to a large scale merchant (usually owner of a pick-up truck) or to a small-scale merchant, the *toponero*. Smaller parts of the harvest are sold directly to the consumer or to a bar/restaurant, or the families of the collector eat the eggs. Their radius of action is local, in the sense that not too many collectors reach the capital.

TABLE 20. COMMERCIALIZATION CHAIN: DELIVERIES AND SALES ACCORDING TO TURTLE EGG COLLECTORS

Who receives \$	% delivered to each buyer or consumer	Price \$/dozen
His family	5	\$3.00
Directly to consumer	9	\$3.30
To small scale merchant	40	\$3.29
To the transport merchant	33	\$3.50
To a bar at the beach	11	\$3.81
To a bar in San Salvador	3	\$6.00
Other	5	\$1.58
TOTAL	100	

Each potential buyer has a typical price. Bars and hotels located at beaches or tourists on the roads pay better prices. Wherever there is a nursery, the sale price is half of the maximum local price (Figure 5).

FIGURE 5. PRICES PAID TO TURTLE EGG COLLECTORS



Source: Turtle
Collectors Forms

Egg

We also asked where eggs are consumed instead of asking who buys the eggs. The responses are similar; the difference we observed was that approximately 9% of the eggs reach the nursery (at the beaches where they exist). This data emphasize the importance of the San Salvador market where more than half of the eggs are consumed.

TABLE 21. MARINE TURTLE EGG CONSUMPTION, ACCORDING TO PRODUCERS AND MERCHANTS

	approximate%	Months of greater consumption
Turtle egg collector families	5	August - September
At the beach (no egg collectors)	8	August – October
Locally	21	June-November
San Salvador	56	The whole year/ August-October
Other cities	1	No data
Other places (Nurseries)	9	No data
Total	100%	

Sources: Survey to turtle egg collectors

The Small-scale Merchants (*Toponeros*)

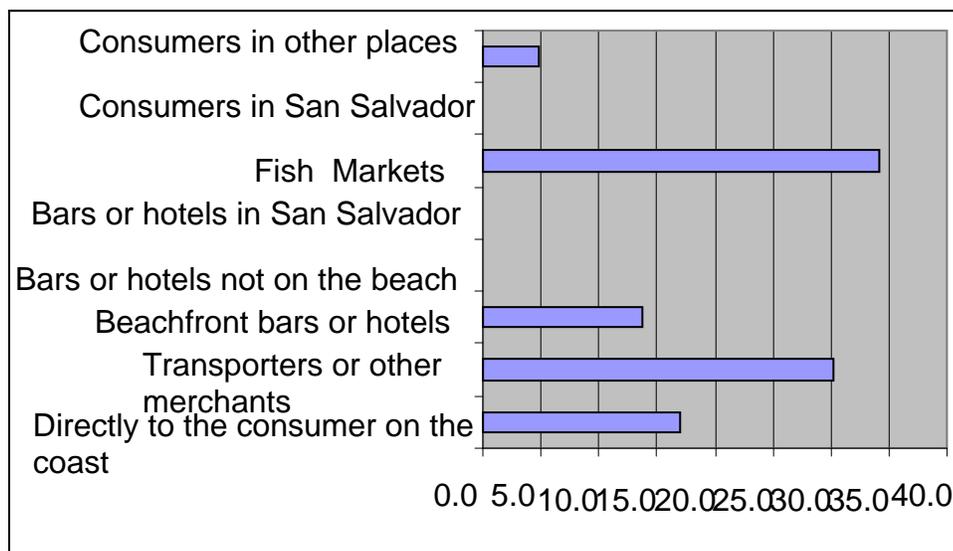
The typical *toponero* is a local beach resident. He is capable of harvesting his own eggs. He receives the eggs from the turtle egg collector and packages them. In turn, he takes the eggs to a fish market on the coast or in San Salvador, or he takes them to a wholesaler. Like the turtle egg collector, he sells a substantial portion to large-scale merchants; however, the big difference is that he takes a part of the eggs to the capital city to the fish markets. On a smaller scale, he delivers the eggs to consumers at the beach or to local establishments (bars or restaurants).

TABLE 22. THE TYPICAL CONSUMER AT THE BEACHES, ACCORDING TO TOPONEROS AND LOCAL MERCHANTS

Place	% & frequency
Directly to the consumer at the beach	17 (3)
To other merchant or carrier	30 (4)
To a bar or hotel at the beach	13 (2)
To a bar or hotel not on the beach	0
To a bar or hotel in San Salvador	0
To a fish market	30 (4)
To consumers in San Salvador	5 (1)
To consumers in other places	5 (1)
	100

Sources: *Toponeros* and merchants' forms

FIGURE 6. PRICES PAID TO THE TOPONEROS



Establishments on the beaches

At the beach and in general terms on the coast, bars and restaurants are the most important establishments for turtle egg commercialization; sometimes they can also be associated with hotels. During the year-end holidays in particular, tourists make up a very important part of this market.

The Merchants

The typical merchant has a pick-up truck, with which he transports seafood from the coast to internal markets. He buys turtle eggs from the turtle egg collectors or from *toponeros* to sell them to the fish markets, especially those located in San Salvador. In some cases, the merchant transports eggs that come from other countries, taking them to be sold at the fish markets, especially during those months when there is no local production (although there is no ecologically logical explanation available for why there is production in neighboring countries during those months).

The larger sources of eggs sold by the merchants are at beaches located in the western part of the country, which agrees with the turtle production figures.

TABLE 23. SOURCE OF EGGS, ACCORDING TO LARGE-SCALE MERCHANTS

Source	%
Eastern beaches	10.7
Central beaches	26.9
Western beaches	41.8
Honduras	1.1
Nicaragua	16.7
Guatemala	2.7
	100.0

Source: Establishments Form

Establishments in the capital city

In San Salvador, the fish markets, bars and restaurants are the most important establishments for the sale of turtle eggs. These are generally establishments dedicated to the sale of food and beverages, their main dishes being seafood, or as snacks to accompany some alcoholic beverage. The sea turtle eggs are an open menu dish or sometimes a hidden dish at these establishments. Turtle eggs are provided by *toponeros* or merchants. At bars and restaurants the product is generally sold cooked and served to customers.

The seafood markets or points of sale in San Salvador are permanent seafood sales establishments: they sell fish, shrimp and conk and turtle eggs. They buy from small-scale merchants or large-scale merchants. They sell eggs to consumers, generally by the dozen.

2.4. DESCRIPTION OF THE TURTLE EGG CONSUMERS

The turtle egg collectors have a good idea regarding the type of consumers that buy turtle eggs at the beaches, how they consume the eggs and why. It is obvious that tourists are the largest consumers at the shore; they eat them raw or cooked; and the turtle egg collectors suppose that they eat them as food or because they taste good, though as we shall see not all agree (Table 24).

TABLE 24. ACCORDING TO TURTLE EGG COLLECTORS, EGG CONSUMERS AT BEACH AREAS

Who consumes at beaches?	Frequency (n = 24)	Ways of consuming turtle eggs	Frequency (n = 24)	Why are they consumed?	Frequency (n = 24)
Tourist or visitors	11	Raw	9	Food	14
Beach houses	3	Cooked or boiled	13	Flavor, taste	7
Families, neighbors	5			Custom	3
Nobody, they are not sold	1			Aphrodisiac	2
Others	1 (merchant)			Good with alcoholic drinks	3
				Other	Medicine

The turtle egg collectors or small-scale merchants have ideas about why people consume at the beach and on the coast. They place emphasis on consumption for food, taste, custom, and with alcoholic beverages (Table 25).

TABLE 25. ACCORDING TO TURTLE EGG COLLECTORS, WHY DO PEOPLE LIKE TO EAT TURTLE EGGS?

Why are they consumed	Turtle egg collectors' opinion of why eggs are consumed, by locale			Toponero's opinion of why eggs are consumed, by locale		Total
	Locals	Tourists	Cities	Locals	Tourists	
Like the taste	2	1	1	2	7	13
Food, vitamins, energy	8	4	4	3	1	20
Sexual help	1	1				2
Luxury	1	2	1			4
Custom	3	2	3	2	1	11
Don't like them, don't eat them	1	1		1		3
Try something exotic, typical	0	2	3		3	8
With alcoholic beverage	0	3			5	8
Fresh, because of heat	1	1				2
Medicine						0

In San Salvador the people who work at the establishments place an emphasis on something else: sex drive and custom (including family customs). In the city, the term “energy” has a sexual connotation, while at the coast it is associated with food. There is a division: the restaurants emphasize “custom,” yet the bars emphasize sexual vigor.

TABLE 26. ACCORDING TO ESTABLISHMENTS (BARS AND RESTAURANTS), WHY PEOPLE LIKE TO CONSUME TURTLE EGGS

	Why men eat them	Why women eat them	Why families, groups eat them	Total
They like the taste	4	3	5	12
Food, vitamins, energy	5	1	2	8
Sexual drive	16	1	12	29
Custom	5	7	16	28
They don't like them, don't eat them			5	5
With alcoholic beverages	6		1	7
Medicine		1	2	3

Keeping in mind the interviews with turtle egg collectors, *toponeros* and establishments, the general pattern of the most common responses are:

Consumer:	Reason:
Family, egg collector	food
Tourist, according to collector	taste, alcohol, try something new
Bars	sex drive
Restaurants	custom

An issue related to the reasons for consumption, are the characteristics that the consumers look for. We asked at the establishments about the quality that attracts the consumer.

TABLE 27. ACCORDING TO ESTABLISHMENTS, QUALITY THEY DO LIKE.

	N		N
Freshness	14	With sand	2
Large size	9	Price	2
Color	4	Taste	1
Not refrigerated	3	Not squashed	1
Texture	2		

It is also a fact that some people do not eat turtle eggs. At the 28 establishments in the survey, we asked about the people who do NOT like to eat turtle eggs. The family groups are the ones that do not show an appreciation, for the most part (Table 28).

TABLE 28. ARE THERE PEOPLE WHO DO NOT LIKE TO EAT TURTLE EGGS? (MULTIPLE ANSWERS ALLOWED)

	n	%
Nobody, because everyone likes them	13	41.9
Some men	2	6.5
Some women	4	12.9
Some families	11	35.5
Most of them	1	3.2
TOTAL	31	100.0

What are the characteristics for which the people do not eat turtle eggs, or if they eat them, why they do not like them?

TABLE 29. ACCORDING TO ESTABLISHMENTS, REASONS WHY THEY DON'T LIKE EGGS, AND QUALITIES THEY DON'T LIKE.

Reasons why people don't like eggs	N	Qualities they DO NOT like	N
Taste, disgusting	8	Old, ruined, not fresh, bad taste	13
Price	2	Pale color, yellowish	9
		Texture, shriveled	4
		Price	4
		Size	4
		Other: too sandy, smell, refrigerated	3

CHAPTER 3 CONSERVATION PERSPECTIVES

3.1 TRENDS AND REASONS

According to most of the turtle egg collectors and *toponeros* the amount of turtles has not changed in the past few years.

TABLE 30. ARE THERE MORE TURTLES NOW OR WERE THERE MORE 15 YEARS AGO?

Response	Percentage
More	36.4
Less	18.2
Same	45.5
Total	100.0

According to a minority of the turtle egg collectors who stated there were less turtles, their reasons were because of fishing boats and sudden death. They also refer to the red tide (Table 32).

TABLE 31. ACCORDING TO TURTLE EGG COLLECTORS, REASONS FOR DECREASE IN THE NUMBER OF TURTLES

Why are there less turtles?
Because of the shrimp boats
They do not reproduce
Depredation by man and natural enemies.
Better than 10 years ago; there are more young turtles who still lay few eggs
A lot of them died 5 years ago and there are less turtles since that time
There is greater mortality now than 4 years ago, and the number decreased
The boats kill them
There was a tide whereby 37 turtles were found dead, reasons unknown; this was two years ago

They state there are many factors that have affected the turtles.

TABLE 32. ACCORDING TO TURTLE EGG COLLECTORS, ACTIVITIES THAT NEGATIVELY AFFECT THE ARRIVAL AND NESTING OF TURTLES

Response	Percentage
Fishermen	7.3
Shrimp boats	43.6
Presence of tourists	0.0
Lights of homes and restaurants at the beaches	10.9
The red tide	9.1
Garbage	7.3
Presence of domestic animals	9.1
Changes on beaches caused by storms	7.3
Collection of too many eggs	3.6
Capturing turtles	1.8
	100.0

The same questions were asked to the small-scale merchants. They stated that a series of factors had affected the turtles.

TABLE 33. ACCORDING TO THE TOPONEROS, FACTORS THAT POSITIVELY OR NEGATIVELY AFFECT TURTLES.

Why are there more	Why are there less
Because of the incubation programs	Because the boats kill them, they die trapped in the nets
Possibly there are more turtles	There are more vivariums and now they are younger when they lay their eggs.
Because of turtle cultivations.	Because of the destruction at the coast and killings from the boats

TABLE 34. ACCORDING TO TOPONEROS, FACTORS THAT AFFECT THE ARRIVAL OF TURTLES

What affects turtles	%
Fishermen	5
Shrimp boats	45
City lights	15
Lights of homes	5
Garbage	5
Lay too many eggs	15
Turtle hunting	0
Other	10
TOTAL	100

TABLE 35. CHANGES IN THE ENVIRONMENT HAVE HARMED THE TURTLES THAT NEST HERE (THEIR ARRIVAL, THEIR NESTING SITES, SURVIVAL OF EGGS, OTHERS)

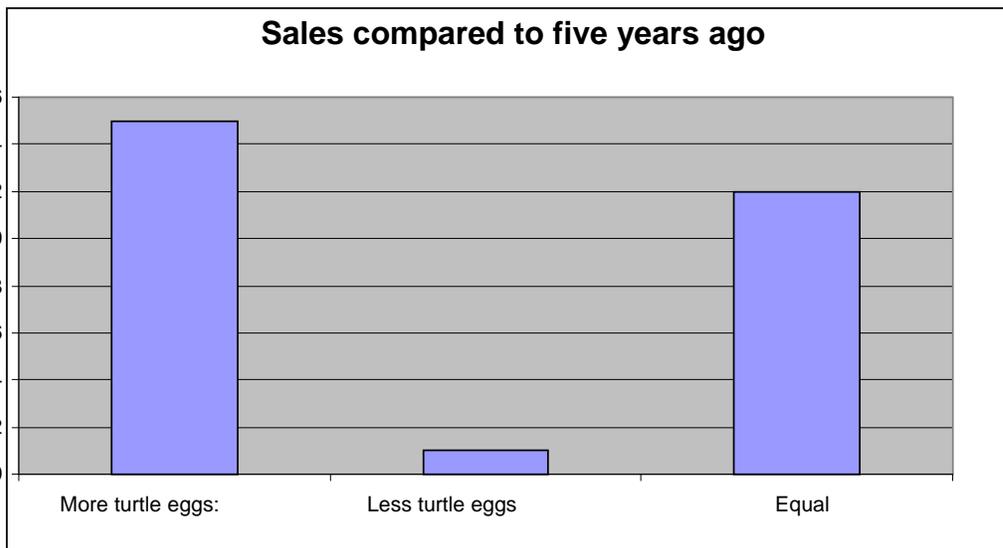
Drought
They drown in the nets of the shrimp boats.
They are killed in other places and at the beaches
They do not reproduce normally
There are none in the environment
Hurricanes and earthquakes have changed beaches
The beach has become wider in the past three years and this does not favor the turtles.
None
The beach is very natural, the turtle is not bothered when laying eggs

On the other hand, the establishments state that in the past they used to sell more turtle eggs than now.

TABLE 36. ACCORDING TO ESTABLISHMENTS, TURTLE EGG SALES 5 YEARS AGO

CONCEPT	%
More turtle eggs	53.6
Less turtle eggs	3.6
Same	42.9
TOTAL	100.0

FIGURE 7. TURTLE EGG SALES TRENDS, ACCORDING TO ESTABLISHMENTS



3.2 PERSPECTIVES REGARDING THE NURSERY OR NESTING PROGRAMS

The turtle egg collectors from more than half of the beaches state that they know nurseries or nesting programs, or at least know of them.

TABLE 37. ARE THERE NESTING PROGRAMS AT THIS BEACH?

Program?	%
Yes	58.0
No	42.0
Total	100.0

However, out of the 14 beaches with programs, on only six do gatherers comply with the standards, according to expert turtle egg collectors.

TABLE 38. ACCORDING TO TURTLE EGG COLLECTORS, DO THEY COMPLY?

Response	Percentage
No response	20.8
Yes	25.0
No	29.2
Little	25.0
Total	100.0

When asked why they did not comply and what can be done so that the turtle egg collectors do comply, they stated different ideas, which are quite diverse (Table 39).

TABLE 39. ACCORDING TO TURTLE EGG COLLECTORS, WHY DON'T THEY FULLY COMPLY? WHAT CAN BE DONE?

Why don't they fully comply?	What can be done for them to fully comply?
They don't want to share	MARN should oblige them
Generally those who do not cooperate come from outside of the community and lack of awareness.	Prohibit and regulate the entrance by people from other communities
Irresponsible.	Create programs ensuring turtle egg collectors will comply with obligations to donate eggs to vivariums and if they do not comply, seize their turtle eggs.
Because they know the laws are not enforced	Make pressure to enforce the law, call the PNC.
There is no support	Prepare a work plan and ensure it is implemented
Poverty and culture	Make agreements and report; provide economic alternatives
Not everyone is required to comply; it is for awareness.	Awareness or sensitization; enforce laws and encourage support from companies (such as lamps and batteries sales)
Are not aware	Needs greater awareness from all / Identification card
Sometimes they need fast money and the vivariums pay once a month.	Involve the municipalities, MARN, PNC, NGOs, CENDEPESCA to train and create awareness with the turtle egg collectors.
Need for money	Nothing because these people have always been very poor; incentives need to be in place for the turtle egg collector.
They don't want to stop earning the money	Nothing, in order not to get enemies in the zone
There was no surveillance	Awareness and training programs on environmental education.
They must get organized	The people who keep watch get well paid
	Organize and create awareness

3.3 KNOWLEDGE ABOUT THE RULES

The turtle egg collectors were asked if they have any knowledge regarding the existence of regulations.

TABLE 40. DO TURTLE EGG COLLECTORS KNOW ABOUT REGULATIONS?

	Percentage
Yes	71.0
No	29.0
Total	100.0

Most of them said they knew of the existence of laws or regulations, and only a few said they were unaware of the existence of any law or regulation.

3.4 CONTROL OF COMMERCIALIZATION

In the case of some products, such as coffee, there are programs for certified product sales (organic, for example) that comply with the environmental regulations. In the case of the turtle eggs, these do not exist. The small-scale merchants know that people buy turtle eggs for nesting programs. At the final consumer level, there is no knowledge regarding the origin of the eggs, and least of all if gatherers have complied with the regulations.

TABLE 41. ACCORDING TO SMALL-SCALE MERCHANTS, ARE THERE PEOPLE WHO ONLY BUY EGGS WITH AN ACCREDITATION FROM A NESTING PROGRAM?

Response	%
Yes	36,4
No	63,6
Total	100,0

However at the consumer level, there is no knowledge regarding these programs.

TABLE 42. ACCORDING TO COMMERCIAL ESTABLISHMENTS, ARE THERE PEOPLE WHO ONLY BUY EGGS WITH A CERTIFICATION OF A NESTING PROGRAM?

Concept	%
Yes there are	0,0
There are not	42.9
Does not know what it is about	57.1
Total	100.0

When asking the establishments if they were aware of the existence of a turtle egg commercialization control, 96% of the establishments said “none.”

TABLE 43. COMMERCIALIZATION CONTROL, ACCORDING TO THE ESTABLISHMENTS (ARE THERE ANY TYPES OF LIMITATIONS REGARDING THE SALE OF EGGS?)

Limitations	%
Closures, or times when they must not be sold	3.6
Prohibition	0.0
Limitation regarding the number of eggs that can be farmed	0.0
Any other rule	0.0
None	96.4
Total	100.0

3.5 POTENTIAL OF THE ORGANIZATIONS

Is it possible to organize the local turtle egg collectors to control and reduce turtle egg collection? Generally, some factors would favor the organization of turtle egg collectors: 1) Present existence of an organization, even if it is rudimentary; 2) clearly established geographical rights; 3) scarcity of the resource (eggs) and competition for the resource and 4) economic reasons to become organized. Each topic has been described below.

1) Existence of an organization

According to half of the turtle egg collectors that were interviewed, they have a turtle egg collectors’ organization at their beaches, and there is an organization that helps them to organize the work of the turtle egg collectors.

TABLE 44. IS THERE AN ORGANIZATION IN THE COMMUNITY TO COLLECT EGGS AT THE BEACH?

	n	%
Yes	14	50.8
No	13	49.2
Total	27	100.0

There are diverse types and characteristics of these organizations:

TABLE 45. CHARACTERISTICS OF THEIR ORGANIZATIONS, ACCORDING TO THE TURTLE EGG COLLECTORS

- Composed of three employees from the community and a biologist. Presently there are no funds.
- There used to be a human resources committee.
- There used to be a committee.
- Meetings by groups.
- Turtle egg collector committee.
- Same as an ADESCO, list of turtle egg collectors.
- In July, meetings will be held to inform how they are going to start collecting the eggs for the nurseries and where they will be collected
- Meetings are held to give them their identification cards and permits.
- Informal, with a 15 member board. Only turtle egg collectors meet.
- Made up only by turtle egg collectors. Agreements through the board of directors (informal) made up by 15 respectable turtle egg collectors.
- Turtle egg collectors' organization is the same, but receive support from CODEPA.
- Organization Barra de Santiago.
- Hold meetings to know where the eggs will be collected and where they will be left.

2) Clearly established geographical rights

More important than the role of a particular kind of organization is the idea that the local people can exercise control over who can and who cannot harvest the eggs. There are a few indications of some geographical control. Still, most of the turtle egg collectors come from outside the beach communities.

In the few cases where there is a certain degree of control, the locals exclude outsiders and in their opinion, those who come from outside sometimes respect their rules. According to data, the majority say they have control over the people who come from outside. Most of the persons interviewed state that people from outside the area, have limited access.

TABLE 46. DO THE PEOPLE WHO LIVE HERE PROHIBIT OTHER TURTLE EGG COLLECTORS FROM COLLECTING EGGS AT THIS BEACH?

	Frequency	%
Yes	23	86.1
No	4	13.9
Total	27	100.0

However, according to them, they allow everyone to come, but they must comply with the rules.

TABLE 47. EXPLANATIONS

ANYONE CAN COME

- Anyone can come
- They are not happy about it, but they come just the same.
- Everyone can come
- Everyone can come to collect eggs.
- They do allow other communities to come. In Amatecampo the community has not become organized to prohibit it, but if they do that, they foresee conflicts with the people from out of the community.
- It is allowed. Few people live in the community
- It is allowed, but they do not come (everyone has the right)
- They allow, as long as it does not affect local people's egg collection

PEOPLE FROM OUT OF THE COMMUNITY MUST ACCEPT RULES

- There are agreements with turtle egg collectors to respect the rules. Those from out of the community must equally respect the rules.
- There are agreements between turtle egg collectors.
- As long as the established rules are respected
- They have rules; the beach is divided in sectors.

They were asked if those who come from out of the community act differently regarding the people who come to collect turtle eggs from out of the community. The responses were mixed.

TABLE 48. BEHAVIOR OF THE PEOPLE WHO COME TO COLLECT TURTLE EGGS, FROM OUTSIDE OF THE COMMUNITY

<p>THEY BEHAVE WELL</p> <ul style="list-style-type: none">• Yes, they are more careful and comply more.• Yes, but it is by coincidence• They are respectful.• They adapt to the rules. If someone does not comply with the rules, any turtle egg collector will explain them.• Yes, because they adapt to the organization's rules.• They establish limits at the beach (by sectors)• Yes, they are more careful.• Yes, but they did not want to get their identification cards <p>THOSE FROM OUT OF THE COMMUNITY DO NOT ACT LIKE THE LOCALS</p> <ul style="list-style-type: none">• No• Those coming from outside do not act the same• They do not leave eggs for the nurseries.• Some are opportunists.• The turtle egg collectors from this area are respected• Gang members come from out of the community.• The turtle egg collectors from outside come on bicycles or horseback.• They don't come. They have other beaches nearby their communities.

When they were asked the distance of the furthest community, we found that whenever people come from outside of the communities, they come from a mean distance 8 kms from the beach.

TABLE 49. HOW MANY KMS AWAY ARE THE COMMUNITIES FROM WHICH THE TURTLE EGG COLLECTORS COME?

Km. distance	n
1	1
2	1
2	1
7	1
8	6
10	2
12	5
15	1
25	1
50	1
Total	19
No data	7
Total	27

A very basic control element is zoning the resources. In this case, there are some beaches already zoned, but only a few of them.

TABLE 50. IS THE BEACH ZONED FOR COLLECTION OF EGGS?

	N	%
Yes	6	21.8
No	21	78.2
Total	27	100.0

3) Competition for the resource

The scarcity of a resource and the competition for the resources is an indication that it would be useful to have greater controls to reduce or manage the conflict. However, if the conflict is acute, it can be too strong for a local organization to control.

The majority of turtle egg collectors stated that there have not been any conflicts collecting nests at their beach, but an important minority (18%) said there had been conflicts, and others mentioned conflicts and affirmed they were not common.

TABLE 51. HAVE THERE BEEN ANY CONFLICTS ON THE COLLECTION OF NESTS AT THIS BEACH?

	n	%
Yes	5	17.7
No	22	82.3
Total	27	100.0

The reasons given for conflicts are competition and social differences, such as occurs with some who are not turtle egg collectors, people from outside of the community, or pregnant women.

TABLE 52. CONFLICTS REGARDING TURTLE EGG RESOURCE

<p>COMPETITION</p> <ul style="list-style-type: none"> • Sometimes there are quarrels over the turtles. • When they see them at the same time, they do not share the nest (they even take out weapons and threaten) • They take the turtle to avoid sharing. This is very violent for the animal. This is not a frequent issue. • Misunderstanding due to competition over the turtles <p>SOCIAL DIFFERENCES</p> <ul style="list-style-type: none"> • Sometimes there are conflicts with non-turtle egg collectors. • There have been conflicts with turtle egg collectors from out of the community leading to deaths. • Arguments over the nests; people from outside of the communities who are drunk. They have killed turtles that lay few eggs. • Pregnant women. <p>FEW CONFLICTS</p> <ul style="list-style-type: none"> • There is no conflict as this is a free activity. • Conflicts rarely occur. • Eggs are shared. Share equally. • When two or more turtle egg collectors (sometimes up to eight) see the same turtle, they share the nest in equal parts.
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4) Financial reasons

Finally, there could be economic reasons for the existence of an organization that controls the use of a resource. In this case, a possibility could be that the organization manages the sales quotas for a nesting program.

3.6 LOOKING AT THE FUTURE

This section reports the main actors' suggestions – by the turtle egg collectors and small-scale merchants- to ensure or increase the number of turtles. Their suggestions are to establish uniform nesting programs, especially involving purchase of eggs.

TABLE 53. WHAT CAN WE DO SO THAT IN FUTURE THERE ARE MORE TURTLES?

<p>Invest in turtle reproduction and nurseries. Take care of them in the nurseries. Better nesting programs. Work more and better with nurseries. Regulate shrimp fishing / creation of nurseries. Control turtle egg collectors that do not donate. Nurseries and comply with the laws. The State should create programs to create awareness in the communities. Make nurseries and everyone should donate 1 dozen eggs. Nurseries should be organized and transparent. Nurseries and life. Continue working with the nurseries. Create awareness with merchants; regulate the merchants. There should be an institution that buys and farms the eggs, and then no-one could sell them for eating purposes. Should have institutions willing to pay the nurseries to buy all of the eggs. Have more nurseries and more funds. Have more nurseries and create greater awareness regarding turtle care. Nurseries, become organized, and shrimp boats should withdraw from the beaches There should be institutions to help nurseries. Create nurseries, keep control over boats so that they do not kill turtles with the nets (they don't put turtle protectors on), because they affirm they loose a large percentage of their fish. There should be an organization to look after the turtles and once there is sufficient production, then the eggs can be eaten.</p>

TABLE 54. WHAT CAN BE DONE TO INCREASE PRODUCTION OF TURTLES IN THE FUTURE?

Improve nesting.
Continue with the nesting project.
Nurseries should always exist.
Implement and control nurseries.
More nurseries projects, which should last more than just three months.
Continue with what is already being done with the reproduction in the nurseries.
Nurseries and prohibitions.
More nurseries in all of the beaches (such as at El Tamarindo).

The establishments were asked the same question; however they did not offer an opinion.

CHAPTER 4 RECOMMENDATIONS

There are several options to control the commercialization and consumption of turtle eggs. Each option has advantages and disadvantages.

Social communication with consumers

A campaign to control the consumption of turtle eggs should be aimed at the main consumers in the metropolitan area of San Salvador. This is where most of the eggs are consumed and the tourists that come to the beaches also originate in the metropolitan area of San Salvador. It is believed that the turtle egg consumers have high incomes, because a dozen eggs have a considerably high price and this is not a basic consumption product.

The survey found that according to the salesmen, there are some reasons why the buyers justify their consumption, and they are quite elemental:

The turtle egg collector's family	food
The tourist	taste, alcohol, try something new
At bars	sex drive
At restaurants	Custom
Men	sex drive
Women	custom, family custom

We did not find a strong ecological or conservationist awareness to reduce or control the consumption of sea turtle eggs. There was some acceptance of nursery/nesting programs and fishing control among the turtle egg collectors.

The egg sellers recognize that some people, especially families, reject the consumption of turtle eggs. The main reason is that they find them disgusting, or they don't like the taste. When they talk about the quality that the consumer does not like, then they refer to eggs that are not fresh or have a bad smell.

What messages could reduce turtle egg consumption? 1) recognizing and accepting the importance of tradition and custom, we need to emphasize the idea that to maintain tradition we must also maintain the turtles; 2) we must also note that regardless of public recognition, turtle eggs do NOT increase sexual energy; 3) reinforce the idea that there are people who find turtle eggs disgusting or they have a bad taste, or that eggs spoil easily, etc.

Restrictions on the commercialization of turtle eggs. There are disadvantages to prohibiting egg collection at beaches: a large amount of people earn money – even if they are small amounts – through the sale of eggs; lack of control at beaches; the turtle egg collectors in general do not recognize there is a problem with the number of nests; and the fact that few people see problems with the collection of too many eggs.

On the other hand in San Salvador, there are approximately 20 seafood markets and about 100 bars and restaurants; the city of San Salvador shows the greatest consumption of eggs. This amount of markets and establishments is manageable in comparison with 200 kms of beaches and 4,000 turtle egg collectors.

Other programs. This is a study of the commercialization of sea turtle eggs, and not a study of the general conservation of turtles. However, relevant information has been presented on nesting programs and the possibility of involving the turtle egg collector communities in conservation issues.

The information about turtle egg collectors presented in this report indicates the existence of a large population that obtains part of its income collecting turtle eggs. Their way of life includes use of several natural and agricultural resources. Most of them are poor. Very little information has been found about them as users of this resource; it is therefore necessary to find out more about their lives, activities, needs and customs to back a conservation program. A turtle conservation program would be more feasible if it were to include the users as beneficiaries and not only them as part of the problem.