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DELIVERABLE 3.1: SOCIO-ECONOMIC BASELINE

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DELIVERABLE 3.1: SOCIO-ECONOMIC BASELINE

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EXECUTIVE SUMMARY

Hawksbill turtle (*Eretmochelys imbricata*) populations have been reduced by more than 80% around the globe, threatening the future viability of the species (Mortimer & Donnelly 2008). Nowhere is this more apparent than in the Eastern Pacific Ocean (EP), where hawksbills were once common from Mexico to Ecuador, but today are the rarest sea turtle in the region (Cliffon et al. 1982). Protection of hawksbills was recently cited as the most pressing sea turtle conservation issue in the EP; only a few hundred nests are estimated to be deposited annually along more than 15,000 kilometres of coastline (Gaos et al., 2010). These low nesting numbers suggest that the species is unlikely to survive without coordinated conservation actions to protect eggs, increase hatchling production and generate biological information.

The recognition of possible conservation action for hawksbills in the EP is fairly recent. Before 2008 and the inception of the Eastern Pacific Hawksbill Initiative (ICAPO), the idea of consistently encountering hawksbills in the EP, let alone recovering the population, was beyond the imagination of even the most optimistic researcher. Despite the gloomy outlook for EP hawksbills in 2007, ICAPO pioneered activities to seek out information and identify remnant nesting rookeries. Bahia Jiquilisco, El Salvador, and Estero Padre Ramos, Nicaragua, in the Gulf of Fonseca, were identified as the two most important hawksbill nesting sites in the entire EP. Combined, these two areas host approximately 90% of the known hawksbill nesting in the region. Both of these nesting sites are located at the mouth of the Gulf of Fonseca (GOF), a transboundary sea-inlet under joint jurisdiction by El Salvador, Honduras and Nicaragua.

ICAPO has been leading hawksbill conservation efforts in conjunction with local community groups, non-profit organizations and government agencies at Bahia Jiquilisco and Estero Padre Ramos since 2008 and 2010, respectively. USAID'S Regional Program began supporting ICAPO'S conservation efforts in the region in 2011, during which time ICAPO and its partners carried out a socio-economic study in the communities surrounding the program sites. The data collected serves to demonstrate the socio-economic benefits of the program over time.

The Eastern Pacific Hawksbill Initiative (ICAPO) was formally established in July 2008 to promote the recovery of hawksbill turtles (*Eretmochelys imbricata*) in the eastern Pacific. We fulfill our mission to protect and recover hawksbills in the eastern Pacific by sharing information, raising awareness, forming alliances, conducting research and initiating conservation. This is achieved through close collaborations with coastal community members, scientists and policy makers throughout the region. ICAPO has established numerous conservation programs, consolidated an important body of scientific literature, and brought hawksbill turtles to the forefront of the marine conservation agenda in the eastern Pacific.



INTERVIEWS, PERSONAL INFORMATION AND COMMUNITIES VISITED

In November of 2011 ICAPO conducted a total of 103 interviews with locals involved (i.e. direct employment, participants of the incentive program, local market owners, etc.) with our hawksbill programs at Bahia Jiquilisco, El Salvador, and Estero Padre Ramos, Nicaragua. Via these interviews we were able to establish a socio-economic baseline for these stakeholders and understand the socio-economic benefits of our program over the course of the first years of its implementation. In the region of Bahia Jiquilisco a total of 41 interviews (39.8% of total) were administered at eight communities including, Venecia, La Ballona, El Tintal, Padre Ramos and Los Zorros in Estero Padre Ramos (Figure 1). In the region of Estero Padre Ramos a total of 62 interviews (60.2% of total) were administered at five communities, including Corral de Mulas 2, El Tular, El Icaco, Punta San Juan, Rancho Viejo, La Pirraya, La Pirrayona and El Cojoyon (Figure 2).

We collected extensive information on the socio-economic conditions of community members who collaborate with the program using a standardized interview protocol at both sites (Annex 1), which included data within the categories of personal information, living conditions, education and economic conditions. For a list of interviewee names, communities and other details for Bahia Jiquilisco and Estero Padre Ramos see Annex 2 and 3, respectively. Of the 103 interviewees, 19 (18.4%) were individuals currently working as staff for ICAPO hawksbill program, while the remaining 84 (81.6%) were individuals indirectly benefitting through our program's egg/hatchling incentive program. The overwhelming majority (91.3%) of individuals interviewed were males, with an average of 32.3 years of age (min = 13, max = 76). The average time interviewees had lived in the communities was 24 years (min = 1, max = 76).

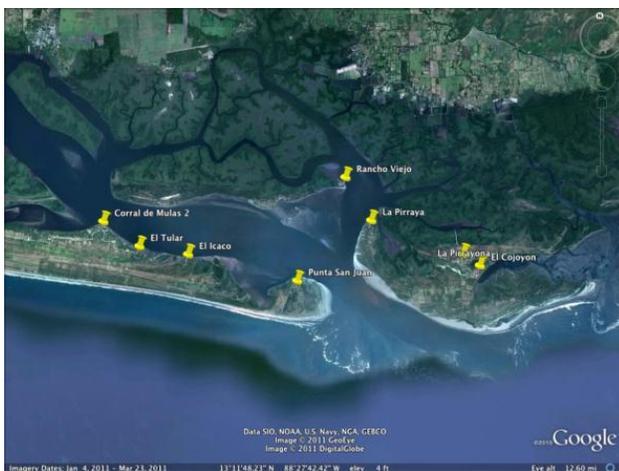


Figure 1. Location of the eight communities where 41 interviews were conducted in Bahia Jiquilisco, El Salvador.



Figure 2. Location of the five communities where 62 interviews were conducted in Estero Padre Ramos, Nicaragua.

LIVING CONDITIONS

In general, living conditions are very rustic in the communities surrounding both program sites. Housing is typically of meager construction, consisting principally of corrugated iron or plastic for both walls and roofs (Figure 3). Seventy nine (76.7%) of the individuals interviewed reporting owning their homes, while the remaining individuals did not. Houses are typically used by one family (82%), and to a lesser extent by two (13%) and three (5%) families, with a varying number of children (Figure 4).

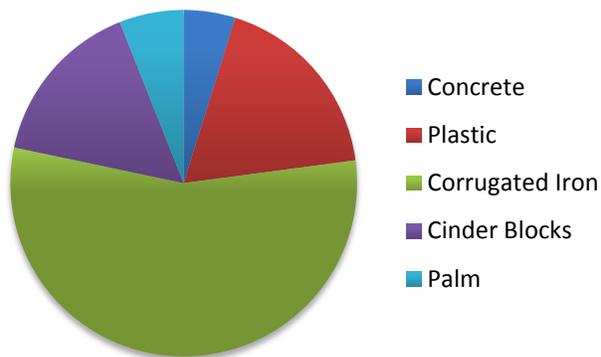


Figure 3. Most common materials used in construction of local houses at program sites.

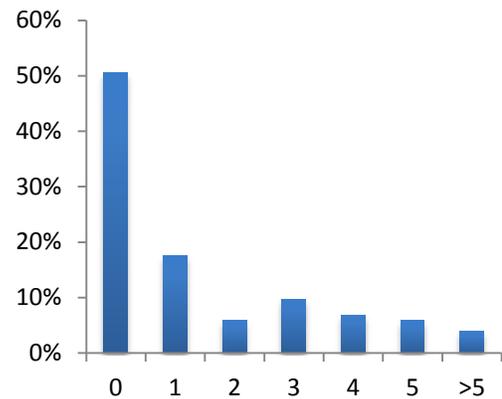


Figure 4. Number of children living in households in communities surrounding project sites.



Figure 5. Typical housing and living conditions in communities surrounding Bahia Jiquilisco, El Salvador, and Estero Padre Ramos, Nicaragua.

There is no formal garbage collection services in these communities and 63.3% of interviewees reported burning their refuse waste, 9.2% reported burying the waste, 21.4% reported burning and/or burying their waste and 6.1% reported disposing of their waste in local water bodies or natural environments (Figure 5). In dealing with human waste, 59.6% of individuals reported having an outhouse (no septic, just a simple hole in the ground) available for use, a surprising 36.2% reported having no latrine at all (i.e. waste disposed in surrounding environment), while only 3.9% reported having an actual toilet with running water. Interviewees reported acquiring their drinking water primarily from ground wells (81.2%) and to a lesser extent through municipality provided sources (i.e. running water)(18.8%).

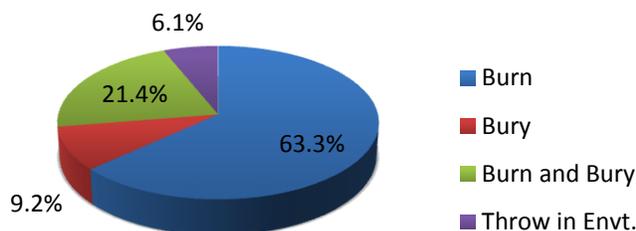


Figure 6. Methods for dealing with refuse waste in local communities surrounding project sites.

EDUCATION

The level of education of the individuals involved with our hawkbill program is extremely limited. Middle school was the highest level reached by 68.9% of individuals, while only 5.8% attended high school and 16.5% had no education at all. An additional 7.8% of interviewees declined to respond (Figure 6). The majority (74.8%) of individuals reported having at least the basic ability to read and write, while 23.3% did not and an additional 1.9% did not respond.

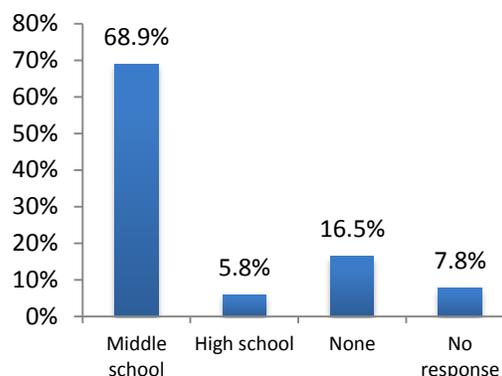


Figure 6. Education levels of interviewees in communities surrounding program sites.

Of the children under the care of adults in the household, less than half (44.2%) were reported to attend school. Parents of the individuals interviewed also had low formal education levels, with 39.5% never having attended school, 23% attending middle school, 4.5% attending high school, and only 0.5% (1 individual) having graduated high school. An additional 32.5% of respondents reported not knowing the education levels of their parents.

OCCUPATIONS

The principal occupation reported by interviewees prior to establishment of the hawksbill program was fishing (67.7%), agriculture (11.1%), turtle egg collection (10.1%), small business ownership (2.0%) and other (9.1%) (Table 1A). Secondary occupations included construction work, stay at home parenting, odd jobs, property caretaking, among others. Since the establishment of the hawksbill conservation program, principal occupations were reported as a combination of fishing/egg collecting (51.5%), a combination of program staff/fishing (18.4%), strictly egg collecting (13.6%), combination of agriculture/egg collecting (9.7%), small business ownership (3.9%) and other (2.9%) (Table 1B). A much higher number of community members reported the increasing importance of (hawksbill) egg collection in their occupations and indicated that this is because the eggs are now being protected in the program hatchery rather than illegally sold on the black mark, thus now the work is considered an honorable endeavor, whereas before it was frowned upon by many, in addition to being illegal and risky.

Table 1: Principal occupations reported by interviewees A) prior to the establishment of the hawksbill program and B) subsequent to the establishment of the hawksbill program.

A	Fishing	Agriculture	Egg collection	Small business	Other
	67.7%	11.1%	10.1%	2.0%	9.1%

B	Fishing/Egg collecting	Program staff/Fishing	Egg collection	Agriculture/Egg collecting	Small business	Other
	51.5%	18.4%	13.6%	9.7%	3.9%	2.9%

ECONOMIC CONDITIONS

According to interviews, an average of 2.3 individuals work in each household and the reported combined average monthly income at both sites prior to the establishment of the hawksbill conservation program was \$120 USD. By site, locals reported an average monthly income of \$154 in Bahia Jiquilisco and an average of \$98 in Estero Padre Ramos (Annex 2 and 3, respectively).

Since the establishment of ICAPO's hawksbill conservation programs in Bahia Jiquilisco and Estero Padre Ramos in 2008 and 2010, respectively, locals reported an average monthly income of \$155 USD, a percent increase of 25%. By site/country, locals reported an average monthly income of \$164 USD in Bahia Jiquilisco and an average of \$159 USD in Estero Padre Ramos, a percent increase of 7% and 62%, respectively. Additionally, prior to the establishment of ICAPO's hawksbill program interviewees reported generating an average of \$102 USD per year via the (illegal) collection and sale of hawksbill eggs. Meanwhile, subsequent to the establishment of ICAPO's hawksbill egg incentive program, non-staff interviewees (i.e. community members participating in

the egg incentive program only) reported generating an average of \$144 USD per year, for an increase of 41%.

The majority of household funding is used for food (56.8%), followed by clothing (10.6%), livelihood/business inversions (10.5%), transportation (9.8%), debts (4.4%), recreation (3.4%), education (2.7%) and household items (1.8%) (Figure 7).

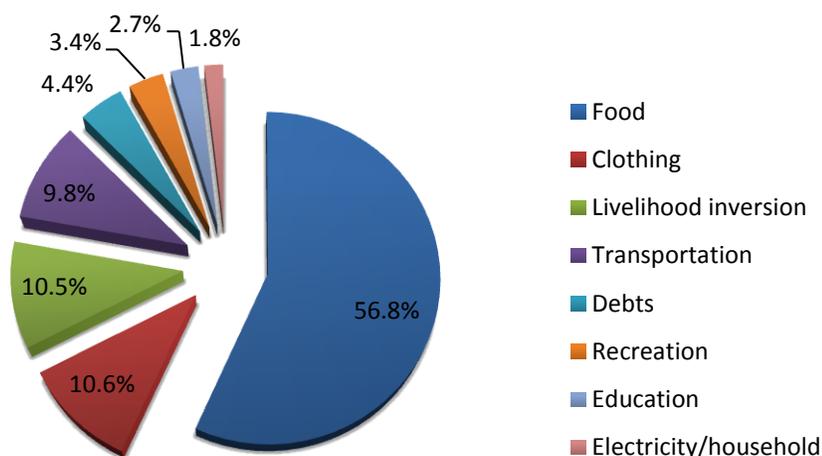


Figure 7: Destination of funds generated per household in program communities.

CONCLUSIONS AND RECOMENDATIONS

Via our surveys in the communities surrounding both Bahia Jiquilisco and Estero Padre Ramos we found high levels of poverty. Nearly all interviewees, who are representative of the typical community members living in these area, are experiencing subsistence living and are typically generating just barely enough to provide the most basic necessities such as food, clothing and a living structure. Job scarcity and extremely limited options to generate income in these areas is a major issue, often serving as the impetus for harmful activities such as illegal turtle egg collection, destructive fishing practices (e.g. bomb fishing, use of prohibited gear types, etc.) and mangrove/native vegetation destruction (e.g. for fuelwood, housing structures, agriculture).

The economic benefits of ICAPO's hawksbill conservation efforts represent an infusion of critical funding into these impoverished communities, as demonstrated by a combined 25% increase in monthly incomes of those surveyed. The social and ecological benefits of ICAPO's efforts are equally as important as the economic benefits. Prior to the establishment of ICAPO's hawksbill conservation program, 100% of nests were collected and illegally sold on the black market. This was obviously ecologically unsustainable as no hatchlings were being produced, attributing to the demise of the hawksbill population in the region. However, since the establishment of the program, eggs are now protected in program hatcheries and 100% of hatchlings make it to the sea, a fundamental step in

recovery of the species. Thus, in addition to providing increased economic benefits, ICAPO's programs have also developed sustainable conservation incomes.

The lack of any refuse collection services or proper disposal, and non-existent sewage treatment represent health risks for the local environment, wildlife and human population in these areas. These issues are further confounded by a lack of education by the local population, which makes it difficult for many of them to see the negative impacts of their actions. Nonetheless, most community members are aware of the fact that these actions pose risks, yet without any viable alternatives, are forced to continue such practices.

ICAPO recommends increased support via top-down mechanisms such as governmental programs and investments in these areas to improve the standard of living and avoid risks to both human health and the environment. Indeed, the ecological integrity and future viability of these, what continue to be highly productive natural protected areas, may ultimately depend on such actions.

The efforts undertaken by ICAPO and local partner organizations to raise awareness, support local economies and urge sustainable practices are having extremely beneficial results and have received enormous support from local community members. ICAPO's socio-economic support also extends beyond those interviewed as many represent heads of households, thus benefits actually reach multiple family members, representing hundreds of individuals in the program areas. ICAPO recommends a re-valuation of the socio-economic conditions in the program areas within 1-3 years to evaluate the ongoing, longer-term effectiveness of these programs. It is also recommended that initial steps be taken towards privatization of egg collection rights in these areas to ensure locals continue to be the recipients of the jobs and benefits created via ICAPO's programs, thus ensuring local stewardship of hawksbills as an economic resource.

Annex 1: Interview survey used in the socio-economic study

Encuesta socio-económica de las personas que participan en la conservación de la tortuga Carey

A. Datos de la toma de Encuesta

Fecha: _____ N° Encuesta: _____
 Encuestador: _____ Encuestado: Careyero ___ Pulpero ___ Asistente ___

B. Datos del informante local:

1) Nombre: _____ 2) Comunidad: _____
 3) Sexo: M ___ F ___ 4) Edad: _____
 5) Ubicación (GPS) N _____ O _____
 6) Estado Civil: Soltero ___ Casado ___ Acompañado: ___
 7) Cuanto tiempo tienen viviendo en su comunidad? _____

C. Datos del Hogar:

1) Integrantes de la Familia: Hombres _____ Mujeres _____ Niños _____ Total _____
 2) Número de Hijos: _____ Hijos a su cargo: _____
 3) Cuántas familias comparten el hogar: una ___ más de una ___
 4) Vivienda: a. Propia ___ b. prestada/cuidador ___ c. alquiler: ___ d. otros: ___
 5) Tipo de Vivienda (Describirla rápidamente) _____
 6) Uso del suelo: Habitacional ___ Agrícola ___ Construcción ___ Uso múltiple ___ Otros ___
 7) Servicio higiénico: Letrina ___ Inodoro ___ Ninguno ___ Otro ___
 8) Animales de crianza: Gallinas/pollos ___ Patos ___ Conejos ___ Cerdos ___ Vacas ___ Pavos ___ Cabras ___
 9) Tratamiento de basura: La queman ___ La entierran ___ La queman y la entierran ___ Tren de aseo ___ La tiran al patio o al agua ___
 10) Fuentes de agua potable: Envasada ___ Se compra de pipa ___ Río/fuente de agua ___ Pozo ___ Tubería domiciliar ___

D. Educación

1) Sabe leer y escribir: _____
 2) Nivel de educación:
 Primario _____ (_____) Secundario _____ (_____)
 Superior _____ (_____) Ninguno _____
 3) Escolaridad de los padres: Mamá _____ Papá _____
 4) Cuántos hijos estudian?: _____ que nivel? _____

E. Situación económica antes del proyecto

1) Actividades a que se dedicaba antes del Proyecto Carey (señale la actividad principal):
 * _____ y desde hace cuantos años _____ Ingreso: _____
 * _____ y desde hace cuantos años _____ Ingreso: _____
 * _____ y desde hace cuantos años _____ Ingreso: _____
 * _____ y desde hace cuantos años _____ Ingreso: _____
 2) Que hacía con sus productos: Vende ___ Intercambia ___ Procesa /valor agregado ___ Consumo ___ Acopia ___
 3) Bienes que poseía: lanchas _____ terrenos _____ Animales _____ Otros _____
 4) Tenía algún negocio? Pulpería ___ Acopio ___ Venta de cosechas ___ Otro ___
 5) Cuántos miembros del hogar trabajaban: Hombres _____ Mujeres _____ Niños _____ Total Activa _____
 6) Completar la tabla de ingresos

Familiar	Ingresos Mensual \$	Actividad
1		
2		
3		
4		
5		
Total Ingresos		

7) Completar tabla de gastos familiares

Rubro	Gasto mensual \$
Alimentación	
Transporte	
Deudas	
Ropa y Calzado	
Educación	
Electricidad	
Inversión en Negocio	
Recreación	
Total Gastos	

Evaluación del Sistema Incentivo del Proyecto Carey 2010-2011
F. Actividad de Careyeo

- 1) A qué edad comenzo a Careyar? _____ Playa _____
 - 2) En la actualidad donde Careyea? _____
 - 3) Con qué frecuencia Careyea? _____
 - 4) Como se mantiene despierto durante la Careyada? (Café, Sin Sueño, etc) _____
 - 4) Que parámetros usa para Careyar? (marea, luna, etc) _____
-
- 5) Cuántas persona de su familia Careyean? _____
 - 6) Cuántos nidos promedio encontraba por temporada antes que comenzo el proyecto? _____
 - 7) Qué hacia con los huevos que recolectaba antes que comenzo el proyecto? Consumo ___ Venta ___ Acopio ___ Intercambiaba _____
 - 8) Cuánto dinero obtenia por la venta de huevos de Carey antes que comenzo el proyecto? _____
 - 9) En qué invertia el dinero de la venta de huevos antes que comenzo el proyecto? _____

G. Sistema de Incentivo (Bonos Carey):

- 1) Tiempo de participar en el sistema de incentivo?
 - 2) Beneficios que le brinda el Incentivo?
 - 3) Que no le parece del sistema de Incentivos (Desventajas)? _____
 - 4) Cuánto dinero ha ganado del Incentivo?
 - 5) En que invierte el dinero del Incentivo?
- Alimento: \$ _____
- Bebidas alcoholicas: \$ _____
- Ropa y Calzado \$ _____
- Transporte \$ _____
- Deudas \$ _____

