

Montego Bay to Ocho Rios in One Hour at the Cost of Essential Fish Habitat

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ABSTRACT

Between March and August an estimated million land crabs (*Cardisoma guanhumi*) leave their burrows and become subject to one of Jamaica's most socially universal fishery. Boys, women and men search at night with flaming torches for crabs which are caught by hand. The fishery requires no boats, no seamanship skills and no special equipment, only a bag, some twine, a glass bottle, kerosene and a rag. The typical catch during a "fishing trip" of 2-4 hrs is 18-80 crabs by a group of 2-7 people. The crabs are caught along roads bordering low lying coastal areas and wetlands. They are sold along the road alive for about \$J500 to \$800 for about a dozen crabs. The net value to a single fisher is higher than typical fin fishers who must venture out for longer periods with a higher capital investment to catch dwindling catches. The crabs can reach 13 cm in carapace width, but the mean size measured 7.3cm. Females are smaller and more are required to make a saleable bundle. Until the construction of the north coast highway in 2002 linking Montego Bay with the northern Jamaican tourist destination town of Ocho Rios there were was no sign of declining catches. The completion of the road will see the development of a modern, paved road replacing the narrow, winding and pot holed road that previous served the area. Transit time between the Montego Bay airport and Ocho Rios will be cut in half. Already the fishers are reporting it is harder to find crabs as there is less essential habitat as the construction of the road further destroys mangrove communities, shore line habitats, wetlands and essential habitat for the land crab. This fishery represents another example how valuable natural resources are being destroyed thereby shifting economic value to another sector of society.

KEY WORDS: Land crabs, *Cardisoma guanhumi*, Jamaica

Montego Bay a Ocho Ríos en Una Hora a Expensas del Hábitat Esencial del Cangrejo

Se estima que entre los meses de marzo y agosto alrededor de un millón de cangrejos abandonan sus cuevas para ser expuestos a una de las pesquerías más sociales en Jamaica. Niños, mujeres y hombres se dedican a buscar cangrejos (*Cardisoma guanhumi*) durante la noche con antorchas de fuego, a los cuales capturan con sus manos. Esta pesca no requiere embarcación o equipo especial, ni destrezas o conocimiento en navegación, tan solo se necesita un

saco o bolsa, alambre, una botella de cristal, queroseno y un pedazo de tela. La captura típica durante un “viaje de pesca” que dure de 2 a 4 horas, por un grupo compuesto de 2 a 7 personas es de 18 a 80 cangrejos. Los cangrejos son capturados en los caminos que bordean áreas costeras bajas y en áreas pantanosas. Los mismos son vendidos vivos en los caminos o carreteras a un precio entre J\$500 y J\$800 la docena. El valor neto para un pescador de cangrejo es mayor que para un típico pescador de peces de aleta, el cual se tiene que aventurar al mar por un período de tiempo más largo y hacer una inversión mayor para poder pescar. El cangrejo puede alcanzar 14 centímetros de ancho en su caparazón, pero la mayoría de los cangrejos capturados tenían una medida aproximada de 9.1 centímetros de ancho. Los pescadores dicen que la pesca de cangrejo era estable antes de la construcción de la carretera en la costa norte que une a Montego Bay con Ocho Ríos, destino turístico en el norte de Jamaica, en el año 2002. Al completar este proyecto de construcción se contará con una moderna carretera pavimentada la cual reemplazará el camino angosto de tierra lleno de hoyos que existía anteriormente. El tiempo de recorrido entre el aeropuerto de Montego y Ocho Ríos se reducirá a la mitad. Sin embargo, la construcción de esta nueva carretera a tenido impacto sobre los mangles, las áreas pantanosas y las áreas que bordean la playa las cuales son áreas de hábitat de esta especie. Los pescadores de esta especie están reportando que se les hace más difícil encontrar cangrejos. La merma de esta pesquería representa otro ejemplo del impacto negativo a causa del desarrollo a los valiosos recursos naturales, sustituyendo los valores económicos de un sector de la sociedad a otro.

PALABRAS CLAVES: *Cardisoma*, Jamaica, hábitat esencial

INTRODUCTION

The government of Jamaica embarked on construction of a north coast road improvement program in 2001 between the tourist centers of Negril, Montego Bay and Ocho Rios. By straightening, grading, widening and providing a smooth road surface traveling time will be greatly reduced. However, one of the consequences of this on-going effort is the filling in of more wetland and the further destruction of mangroves.

Mangrove forests once covered some 75 percent of the coastlines of tropical and sub-tropical countries, but some 35 percent of the world's mangroves are already gone. In the Americas, mangrove forests are being cleared at a faster rate than the tropical rainforests. These mangroves and adjacent lands are important habitats for many land crabs.

This paper will examine the effect that the road improvement program is having on coastal wetlands and mangrove communities and the land crab fishery.

The Fishery

Land crabs, (*Cardisoma guanhumí*) (termed pond crabs by British Virgin Islanders and *jueyes* by people from Puerto Rico and Santo Domingo) are gray crabs that live in a network of holes found in low-lying areas near mangrove

swamps, salt ponds, wetlands and marshes. These crabs are traditionally harvested by people inhabiting coastal areas throughout the Caribbean. In Jamaica, the crab fishery requires no boats, no seamanship skills, and no special equipment - only a bag, some twine, a glass bottle, kerosene, and a rag. It is Jamaica's most socially universal fishery with boys, women, and men all participating.

Although the fishery is common around Jamaica, there are no published reports documenting it. It is also ignored in commercial fisheries reports for the US Virgin Islands (Kojis 2004) or only briefly mentioned in Puerto Rico fisheries reports where it is and not considered a significant fisheries species, although 6,327 lbs were recorded landed in Puerto in 2001 (Matos-Caraballo (2004).

Between March and August, numerous land crabs leave their burrows at night to mate and feed. May appears to be the main month of this nighttime activity. It is also often the month with the highest rainfall as the inter-tropical convergence zone passes over Jamaica at this time.

The crabs emerge from their burrows mainly at night to feed and mate. Crab hunting usually takes place on the waning moon when the moon rises late. Groups of boys, women, and men search at night with flaming torches for crabs which are caught by hand. Catching crabs at night is called "torching," a name which comes from the days before kerosene bottles were used instead. Then torches were made out of an oily wood, aptly named torchwood or in later years would be made out of a piece of cut up truck or automobile tire tied to a stick. Today, the torch is commonly kerosene in an old bottle blocked by an old rag. The use of flashlight is uncommon.

MATERIAL AND METHODS

Thirty two people out collecting crabs were surveyed between March and July 2004. They were asked several questions about the duration of their effort, the number of crabs they had caught and were expecting to catch. Ethnographic interviews were conducted with ten older fishers. They were asked if they thought it was easier to find crabs now than before. Random surveys of roadside vendors were used to assess the cost of road side sales.

A total of 22 crabs (14 male and 8 female) were weighed and carapace width measured using a vernier calipers.

The road from the Montego Bay airport to Ocho Rios was driven and qualitative observations were made at locations where road construction was having the greatest impact on crab habitats and mangrove communities.

RESULTS

The typical catch during a "fishing trip" of two to four hours is 18 - 80 crabs by a group of 2 - 7 people. Crab fishers are not usually reef fishers. They are typically youth and a few solitary "old timers". Occasionally, people in cars would be cruising the back roads looking for crabs to catch. The crabs are caught along roads bordering low lying coastal areas and wetlands. They are sold along the road alive for about \$J500 to \$J800 (J\$62 = US\$1.00 Nov.

2004) for eight to a dozen crabs. Females are smaller and more are required to make a saleable bundle. Although gravid females were observed being caught, they were not observed being sold. The crabs can reach 15cm in carapace width, but the mean size measured was 9.1cm for males and 8.4cm for females. The power relationship was significant for both male (Figure 1) and for female crabs (Figure 2).

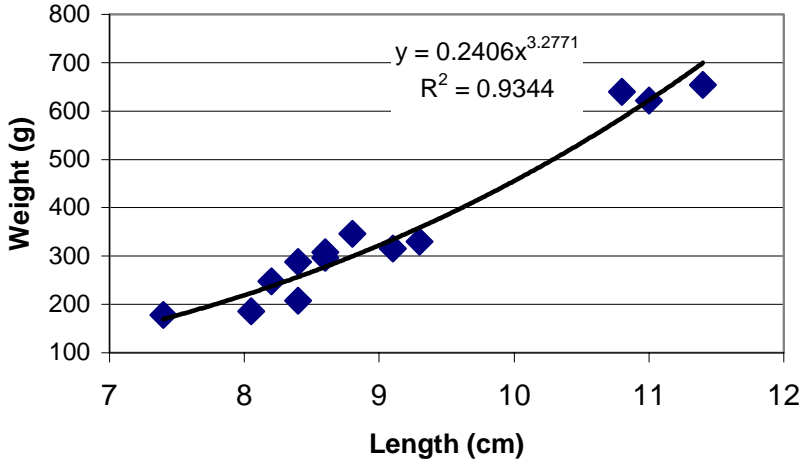


Figure 1: Length weight relationship for male crabs. N = 14.

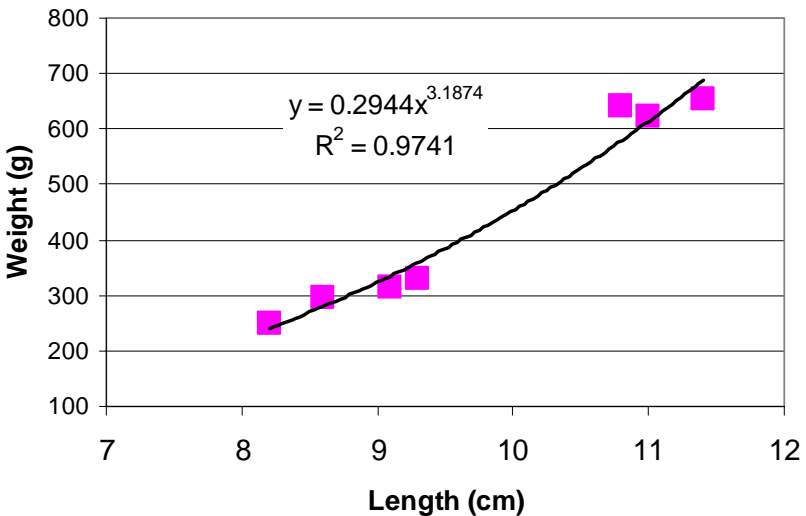


Figure 2: Length weight relationship for female crabs. N = 8.

DISCUSSION

Until the construction of the north coast highway linking Montego Bay with the northern Jamaican tourist destination town of Ocho fishers stated that there was no sign of declining catches. However, fishers are reporting it is harder to find crabs as there is less essential habitat as the construction of the road further destroys mangrove communities, shore line habitats, wetlands, and essential habitat for the land crab and further reduces the already diminished nursery capability of along the north coast of Jamaica (Quinn and Kojis 2004).

A socio economic comparison between the crab fishery and reef fishery is difficult. The reef fishery is centered on a specific beach where the fishers return and their catch can be counted, measured and weighed – usually in the daytime. In contrast, there are diffuse groups of crab fishers and it not possible to survey all or be there to survey their catch at the end of a fishing trip. It is estimated that during the initial weeks of the crab season a person will earn between US\$15 and US\$40 per collecting expedition. Per person return diminished with larger groups. The net value to a crab fisher is higher than typical reef fishers who must venture out for longer periods with a higher capital investment to catch dwindling catches and then sell the fish before they go bad.

While the market price of the crabs varies seasonally with their availability, the crabs do not quickly perish and can be sold several weeks after they were caught. In contrast the reef fish are not iced and must be sold that day. In 2001, Sary *et al* (2003) estimated that the reef fisher earned between US\$13 (line fishing) and US\$29 (trap fishing) per trip. The figure does not include the substantial start up costs which range from US\$800 to US\$8000, depending upon whether a new or second hand boat and engine are bought (Polunin *et al*, 2000).

Networks of marine protected areas work for people, fish and crabs. More are needed and should include coastal wetlands to help safeguard biodiversity and secure food resources. However, the protection of essential habitat is not enough. The land crab is over exploited on some islands of the Caribbean. Puerto Rico has adopted management measure for crabs that include minimum size, closed areas in territory controlled land, closed season from July 15 to October 15, gear restrictions, and export report requirements.

The establishment of fisheries management regulations is hampered by enforcement difficulties. In a country where homicides and violent crimes are at record highs, there is little support for the implementation and enforcement of fishery regulations. Most of the fishers are underemployed youth and would not be able to pay fines. However, a set of management guidelines with an environmental awareness program is advised. Fishers should recognize that they should not take juvenile crabs or crabs bearing eggs. Meetings with fishers and school youth are advised.

For centuries mangrove forests were considered by many as useless swamps, and many mangroves have been cleared to make way for development. This attitude has not changed in Jamaica as roads are constructed to facilitate the movement of people from the Montego Bay airport to tourist centers. While an environmental assessment was completed and the requisite

culverts installed to meet the reporting standards, the net effect is a loss of essential crab habitat. This fishery represents another example how valuable sustainable natural resources are being diminished in trade-offs that shift economic value from the subsistence sector of society to other sectors of Jamaican society.

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