



# Toledo Institute for Development & Environment (TIDE)

Queen Conch Report – March 2009

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## Conch Monitoring within PHMR – March 2009

The first monitoring of 2009 Queen Conch (*Strombus gigas*) populations in PHMR took place between 11<sup>th</sup> and 13<sup>th</sup> March. Data were collected from 14 out of 16 possible sites including both No Take Zones (NTZ) and General Use Zones (GUZ). Two sites (Brion Bank and Punta Ycacos) were not surveyed due to poor visibility. At each of these sites, a minimum of five 50m by 2m transects were conducted. For each *S. gigas* individual located, shell length, lip width and lip thickness were measured and recorded (to the nearest mm). Data presented here includes comparisons to data collected during 2008.

During the March surveys, significantly more Queen Conch were observed at sites within the No Take Zones compared to sites in the General Use Zones (Figure 1). Such results were anticipated given the restrictions on fishing within the No Take Zones. In addition, the conch season has been open for five months allowing for high levels of fishing within the General Use Zones.

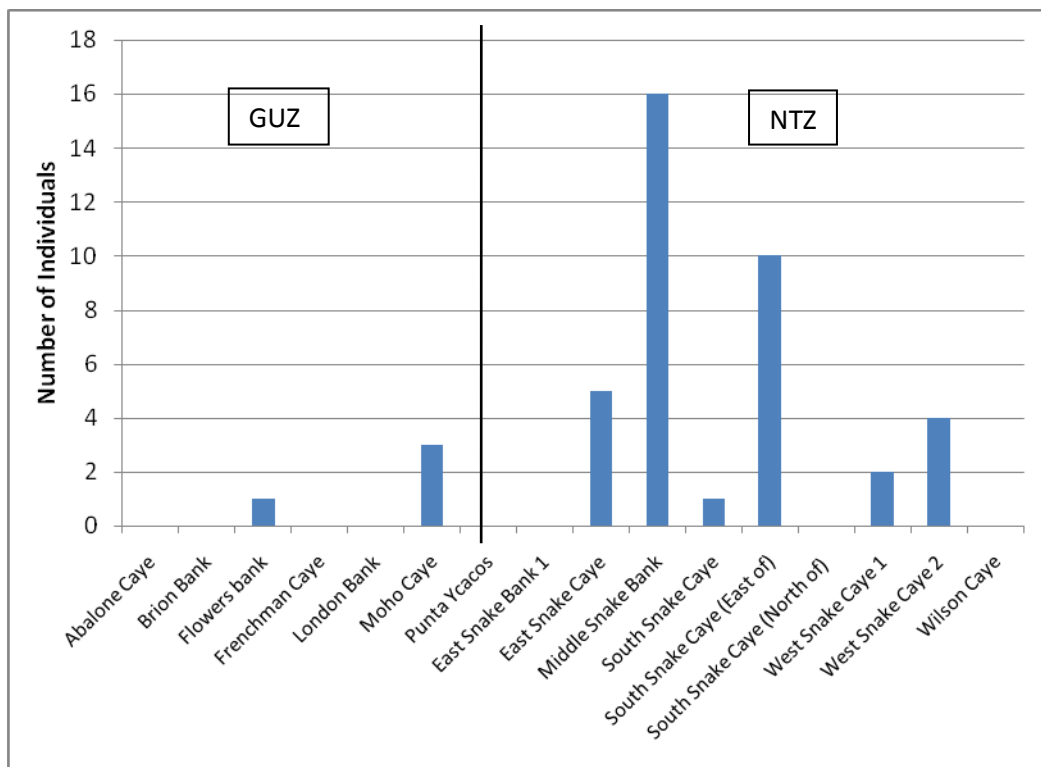


Figure 1: Numbers of Queen Conch observed at each site within PHMR in March 2009. GUZ = General Use Zone, NTZ = No Take Zone.

Comparing the 2009 data to that collected in 2008 shows a similar pattern (Figure 2). In September 2008, significantly more conch were observed within the No Take Zones compared to the General Use Zones. Interestingly, the opposite was observed in July 2008 where more Queen Conch individuals were recorded in the General Use Zones. Queen Conch numbers were very low across all sites surveyed within PHMR in July 2008, compared to September 2008 and March 2009, 11, 45 and 42 individuals respectively. It is difficult to suggest a reason for the low numbers

as it was wide spread across the entire reserve and not restricted to the General Use Zones (Figure 2). However, numbers in March 2009 are similar to September 2008, indicating that conch populations have been persistent during the open season, particularly in the No Take Zones. Nevertheless, a total of 42 Queen Conch in 7000 m<sup>2</sup> of survey area is extremely low, with approximately one conch every 166 m<sup>2</sup>. Such a low density of conch is not conducive to successful reproduction as male and female conch need to be in close proximity.

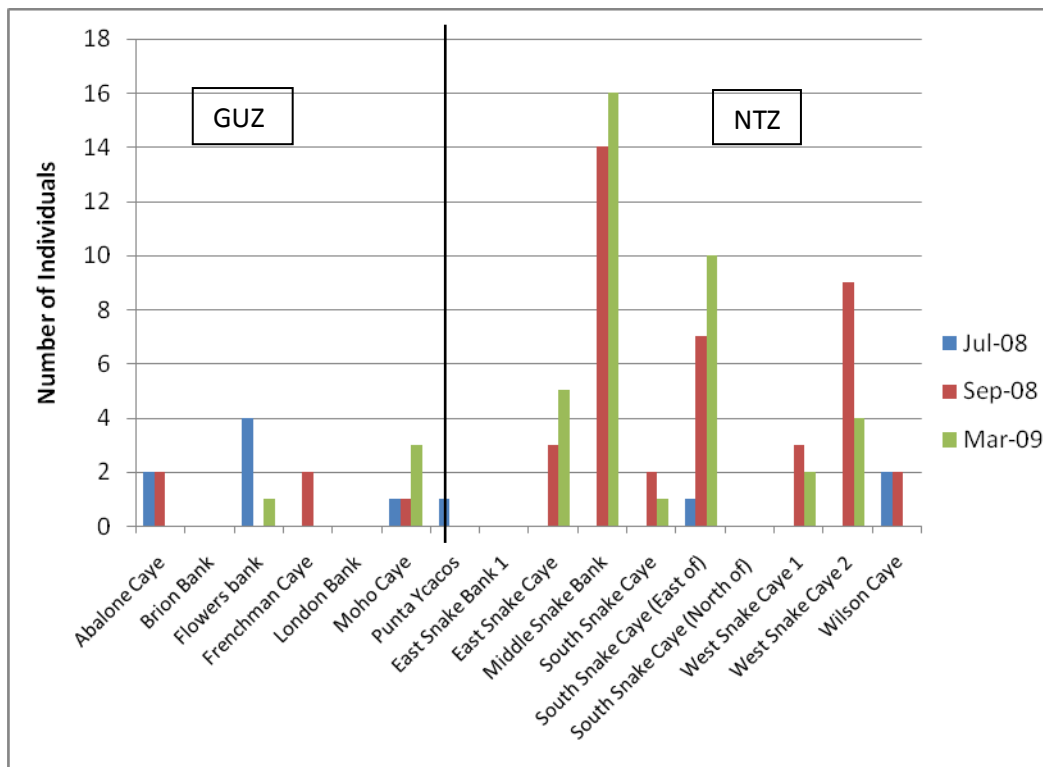


Figure 2: Numbers of Queen Conch recorded at sites within PHMR in July 2008, September 2008 and March 2009. GUZ = General Use Zone, NTZ = No Take Zone.

The average shell length of Queen Conch recorded during the March 2009 surveys does not differ significantly among sites or between the General Use Zones and the No Take Zones (Figure 3). The majority of conch encountered were approximately 20cm long, which would suggest late-stage juveniles or young adults. In comparison to conch measured during the 2008 surveys, shell length in March 2009 was very similar (Figure 4). In addition, there was no significant difference in the size of conch measured in the General Use Zones and the No Take Zones (Figure 4).

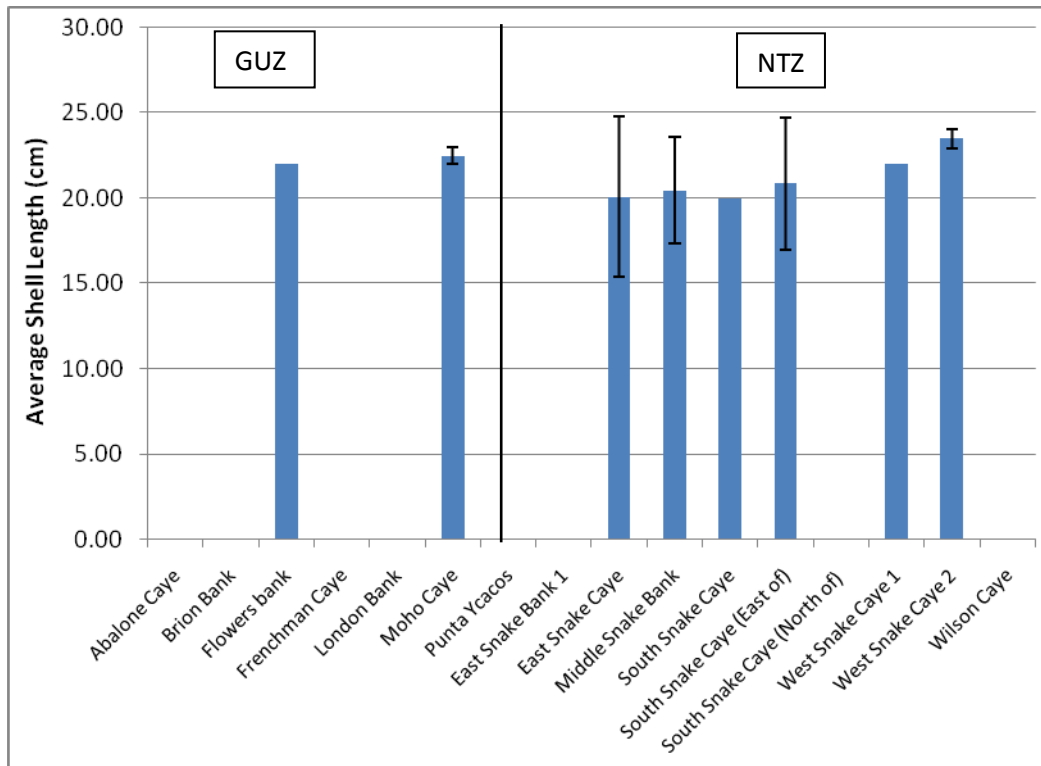


Figure 3: Average shell length (cm) of Queen Conch at sites within PHMR in March 2009. Error bars denote  $\pm 1$  standard deviation. No error bars denotes only 1 individual measured at the site.

Once conch reach maturity, shell length stops increasing and the conch begins to develop a shell lip. The width and thickness of the lip can be used to estimate weight and age of conch. Since July 2008 the average lip thickness of conch measured with PHMR has declined in both the General Use and No Take Zones (Figure 5). A decline in lip thickness suggests a younger population of conch is now present within the reserve compared to mid-2008.

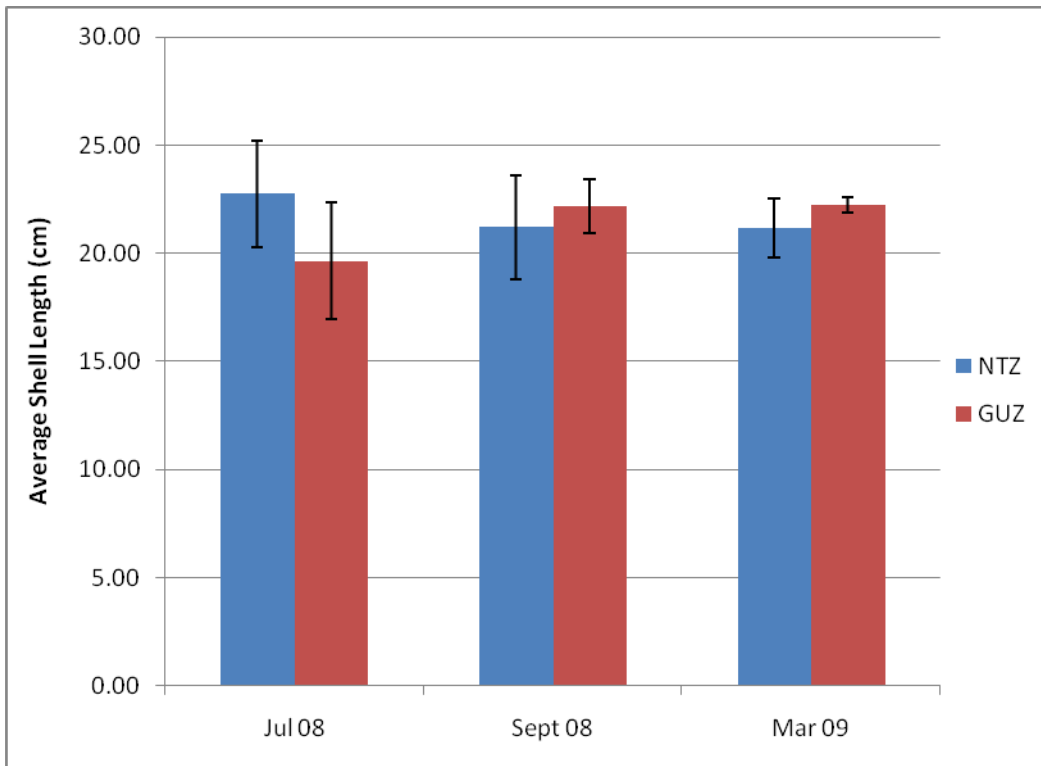


Figure 4: Average shell length (cm) of Queen Conch within PHMR in July 2008, September 2008 and March 2009. Error bars denote  $\pm 1$  standard deviation. GUZ = General Use Zone, NTZ = No Take Zone.

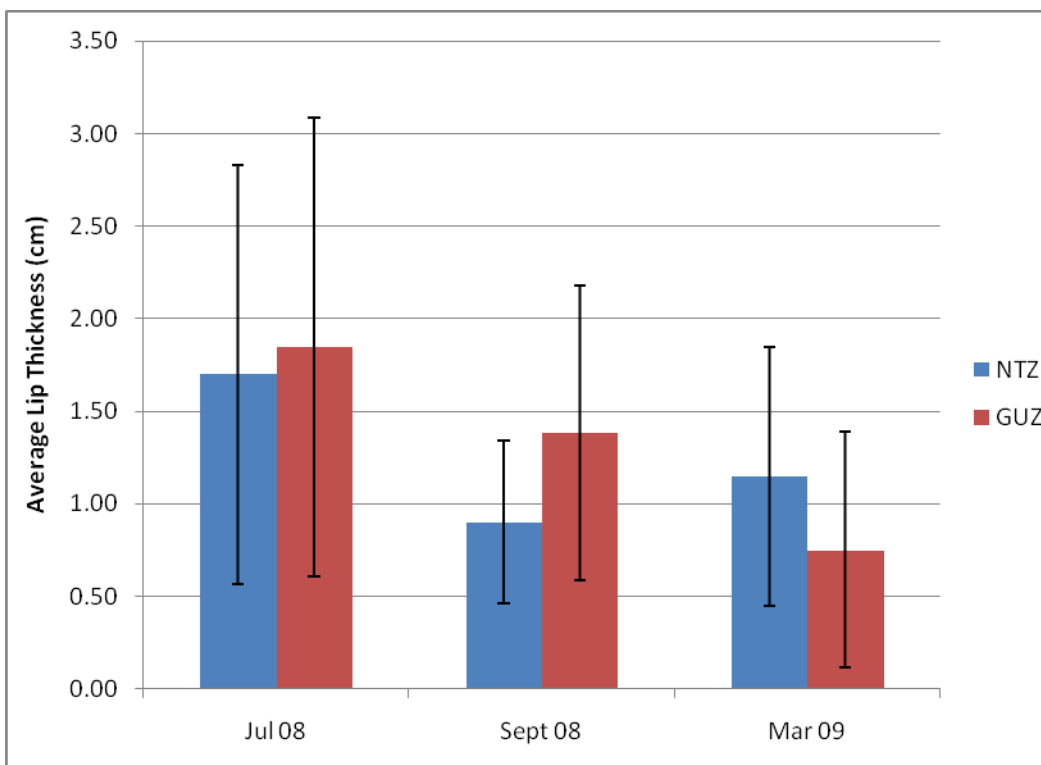


Figure 5: Average lip thickness (cm) of Queen Conch within PHMR in July 2008, September 2008 and March 2009. Error bars denote  $\pm 1$  standard deviation. GUZ = General Use Zone, NTZ = No Take Zone.

## Conclusions

Although numbers of Queen Conch appear to have remained stable between September 2008 and March 2009 (45 and 42 individuals recorded, respectively) within PHMR, the numbers are still extremely low. Approximately 7000 m<sup>2</sup> of habitat was surveyed between 11<sup>th</sup> and 13<sup>th</sup> March 2009, which equates to an average of one conch every 166 m<sup>2</sup>. In order for mating to occur, male and female conch are required to be in close proximity to one another. The density of Queen Conch in PHMR at present is much too low which may result in a poor reproductive season for the population. Nevertheless, the No Take Zones do appear to be having a positive effect on populations, as numbers of Queen Conch are consistently higher within these areas compared to the General Use Zones.

There are a number of options that can be utilised to increase the Queen Conch populations within the Port Honduras Marine Reserve. The first is increasing the No Take Area to provide a safe refuge for conch to reproduce and feed. The second option would be an extended closed season, for example, 6 months, which would provide the conch populations with a longer period of refuge from fishing each year. The third method would be to close the fishery for a minimum of 3 years to allow the population to recover. Given the large number of fishers who rely on the conch fishery for their livelihood the most appropriate action would be an increase in the No Take Areas within PHMR. Currently, only 5% of the reserve is allocated as a No Take Zone. Increasing the No Take Area to 20%, by incorporating new areas and extending the existing No Take Areas, would benefit the conch populations, as a larger proportion of individuals would be protected. Once the population of conch starts to increase in the No Take Areas, individuals will move out to enhance the populations in the General Use Zone, and boost the fishery.