

# **Consumer Preferences as Drivers of Fishing Effort in the Eastern Caribbean**

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## **ABSTRACT**

The near-shore fishery resources of eastern Caribbean States in general, and coral reef fisheries in particular, are being exploited over, at or near sustainable yields. Additionally, the large migratory pelagic fish species are also near maximum exploitation rates in most instances. Island nations, in particular the Small Island Developing States of the eastern Caribbean, are rich in cultural values, mores and practices. In the mid 1980s it was observed that the consumers in one eastern Caribbean State appeared to show a preference for purchasing fish below a certain size. It appeared that this preference might indirectly influence fishing effort, with regard to the sizes of fish targeted by fishermen. These observations were however neither documented nor studied empirically. This contribution presents preliminary results of a study that

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drivers of fishing effort for effective fisheries management planning.

**KEY WORDS:** Fishing effort, consumer preferences, fisheries management planning

## **Preferencias del Consumidor como Conductores del Esfuerzo de la Pesca en el Caribe Oriental**

Los recursos de la industria pesquera de estados del Caribe del este en general, y las industrias pesqueras del filón coralino en detalle, se están explotando encima, en o cerca de las producciones sustentables. Además, las especies pelágicas migratorias grandes de los pescados están también cerca de tarifas máximas de la explotación en la mayoría de los casos. Las naciones de la isla, en detalle los estados que se convierten de la isla pequeña del Caribe del este, son ricas en valores, mores y prácticas culturales. En los años 80 mediados de fue observado que los consumidores en por lo menos dos sitios de aterrizaje en la isla de Santo Lucia aparecían demostrar una preferencia por

comprar un atún de cierto tamaño. Aparecía que esta preferencia cultural pudo influenciar indirectamente esfuerzo de la pesca, con respecto a los tamaños de pescados apuntado por los pescadores. Estas observaciones sin embargo ni fueron documentadas ni estudiadas empíricas. Esta contribución presenta resultados preliminares de un estudio que explore esta hipótesis para las islas de Virgen y el Santo británicos Lucia. Sugerimos que estos conductores del esfuerzo de la pesca necesiten ser tomados conocimiento para del planeamiento eficaz de la gerencia de las industrias pesqueras.

**PALABRAS CLAVES:** Que pescan el esfuerzo, preferencias de consumidor, planeamiento de la gerencia de las industrias pesqueras

### INTRODUCTION

At the Caribbean Ministerial meeting on the Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States, ministers reviewed efforts for fostering rational and sustainable use of fisheries resources in the Caribbean (including the FAO Programme of Assistance for SIDS) and considered the role that regional programmes are to play in helping achieve the broader fisheries conservation and management goals of the Code of Conduct (Anon. 1997). At the 1998 Caribbean Sea Forum, the view was clearly enunciated that sustainable ocean development in the Caribbean would require, *inter alia*, "... adherence to international codes of conduct ... (and that) ... Governments which have not done so should undertake to examine those ... Agreements which have a bearing on the management of the marine environment in particular, with a view to their ratification" (Anon. 1998: parentheses ours). As well, perusal of ICCAT's (2003) suggestions regarding the state of stocks under its jurisdiction gives the impression that most of these species are being exploited at levels near estimated maximum sustainable yields.

Against this backdrop, the Secretariat of the Organisation of Eastern Caribbean States (OECS) and the CARICOM Fisheries Resources Assessment and Management Program (CFRAMP) have worked with OECS Member and Associate States in the development of plans for the management of their fisheries. In most instances, the management measures proposed in the management plans, address reduction in fishing effort and speak to issues related to the size of fish caught. The fisheries management plans of nearly all of the members of the OECS suggest size limitations as a management measure to be utilized.

In the mid-1980s it was observed that the consumers in at least two landing sites on the island of Saint Lucia appeared to show a preference for purchasing a tuna of a certain size. This preference may indirectly influence fishing effort, with regard to the sizes of fish targeted by fishermen. However, compliance with the management measures proposed in the fisheries management plans would require that fishermen alter their fishing gear to ensure that larger fish are caught. However, the size preferences exhibited by their customers may discourage fishermen from making the necessary alterations to either mesh sizes or hook sizes. This contribution presents preliminary results

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of a study that explores the above hypothesis for the British Virgin Islands (BVI) and Saint Lucia.

### METHODOLOGY

A questionnaire survey was conducted in the British Virgin Islands and Saint Lucia to capture data regarding consumer and fisher preferences. All respondents were asked to indicate size preferences when purchasing tuna, snapper or "pot fish". They were also asked to indicate the preferred species group when purchasing a fish meal in restaurants, the size preference for fish in the meal and the preferred method of preparation.

Respondents that are fishers were asked additional questions. They were required to indicate the species group they preferred to catch and size preference thereof. The questionnaire also attempted to elicit from the fisher respondents whether the size preference was a personal preference, based on customer demand, based on what they had been taught when learning to fish, or for no particular reason. In addition, these respondents were asked whether the gear they utilised was chosen deliberately and whether they would change their gear if the customers' requirements made this necessary.

Results were summarised and presented in Excel<sup>®</sup>.

### RESULTS

Figures 1 - 4 graphically present some of the responses of the 150 males and 98 females to whom the questionnaire was administered in the British Virgin Islands. Sixty three males and 12 females of this number were fishers. Thirty six percent of males and 35 % of females indicated that their meal preferences were for whole fish while to 45 % and 32 %, respectively, it did not matter.

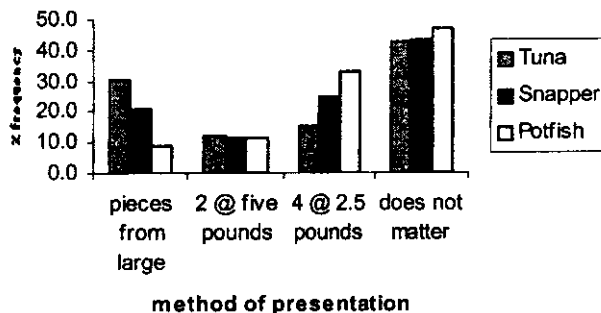
Table 1a shows fishers' preferences by species group in the BVI, while table 2a shows the reasons for their size preferences. Among fishers in the BVI, 39 % of males and 45 % of females preferred to catch fewer large fish while to 39% and 45% respectively it did not matter. The numbers in each category, as well as the non-parametric method of analysis, do not allow for determination of statistical significance in these instances.

Figures 5 - 8 graphically present some of the responses of the 22 males and 27 females to whom the questionnaire was administered in Saint Lucia. 13 males of this number were fishers. Of the respondents to whom it mattered, most respondents in St. Lucia preferred to purchase a particular weight of fish made up of a number of individual fish rather than pieces of a larger one. In the case of potfish, however, women appeared to prefer the larger number of smaller rather than fewer larger whole fish, which appears to be more of a preference of men. St. Lucian consumers expressed a general preference for dolphin fish meals over other species, but it must be noted that the next largest percentage expressed a preference was for potfish in the case of males and tunas or snapper in the case of females. Both St. Lucian men and women expressed a preference for meal containing pieces of fish rather than whole fish. While the largest percentage of male respondents to whom it mattered

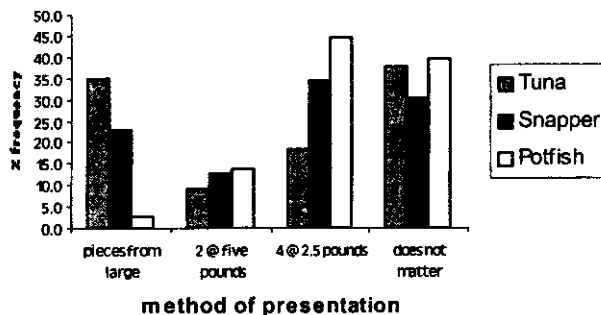
preferred a "fish broth" meal, in females the preference was for steamed fish, this was followed by boiled fish in the case of males and (equally) by fried and stewed in the case of females.

Tables 1b and 2b show fishers' preferences in Saint Lucia. Fishers preferred to catch tunas and potfish or otherwise whatever was "in season", and most preferred to catch a few large fish rather than many small ones. This in the main was stated as being because of customer preference. The respondent fishers of St. Lucia, all of whom were male, mostly were quite deliberate in the choice of fishing gear used to catch their preferred species and would change the gear used to suit changes in customer preference.

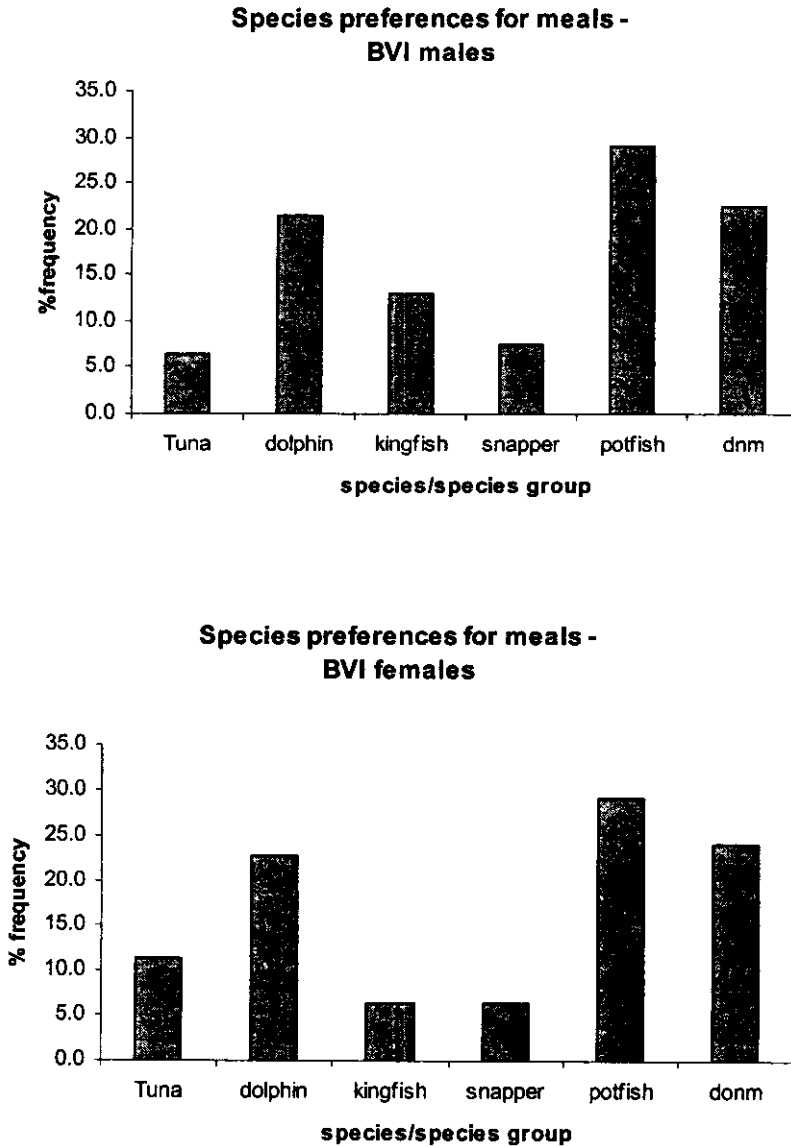
### Fish purchase preferences - BVI males



### Fish purchase preference - BVI females

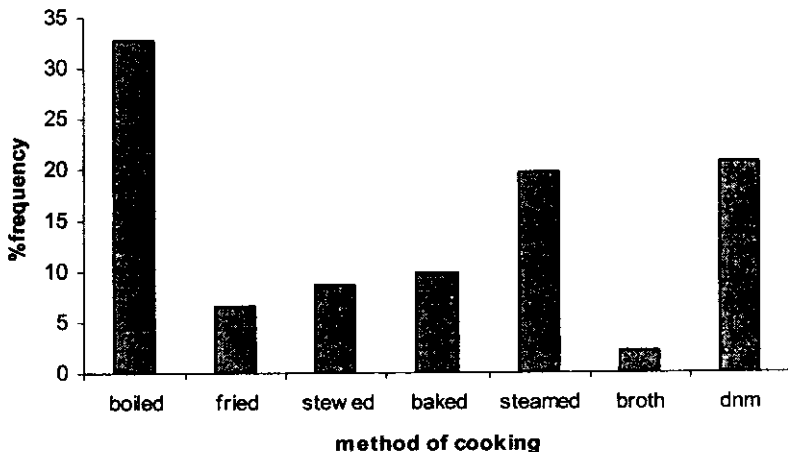


**Figure 1.** Fish purchase preferences indicated by respondents in the British Virgin Islands



**Figure 2.** Species preferences for meal purchased by respondents in the British Virgin Islands

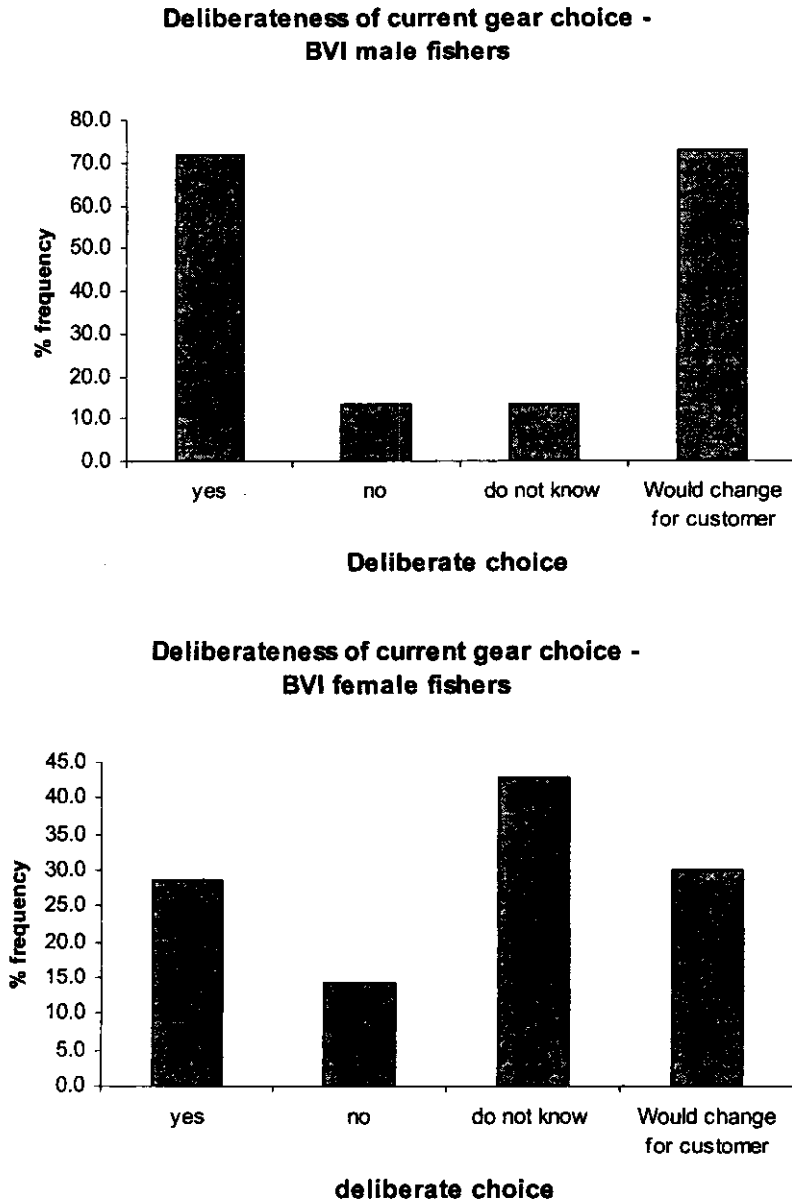
**Cooking preferences -  
BVI males**



**Cooking preferences -  
BVI females**

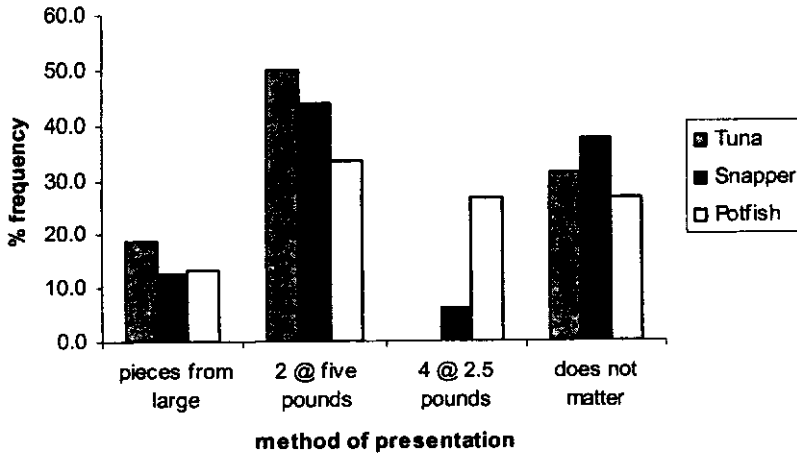


**Figure 3.** Preferences for method of cooking fish in meals purchased by respondents from the British Virgin Islands (dnm: does not matter)

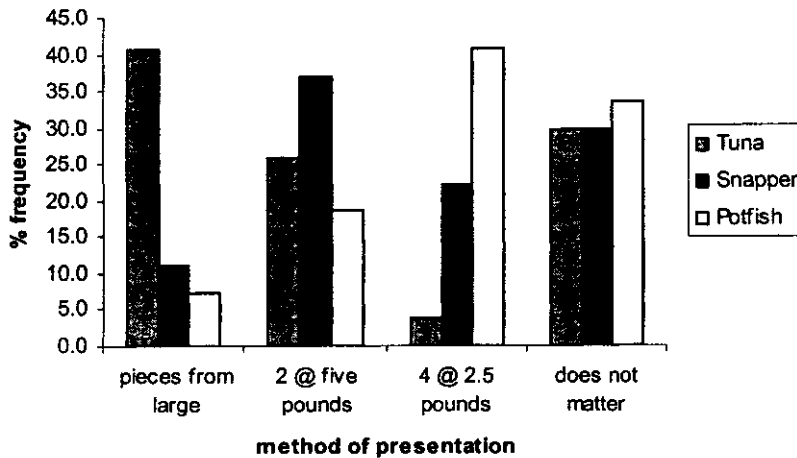


**Figure 4.** Deliberateness of gear choice as it relates to size of fish caught, and percentage of fishers that would change gear to suit changes in customers' fish size preference in the British Virgin Islands

**Fish purchase preference -  
St. Lucia males**



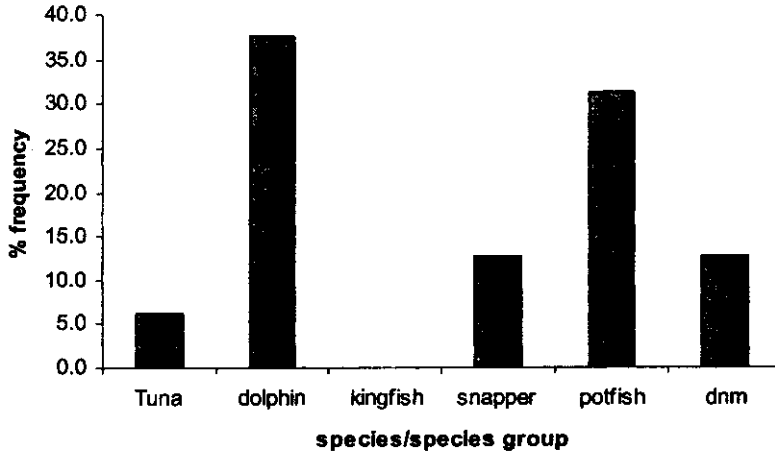
**Fish purchase preferences -  
St. Lucia females**



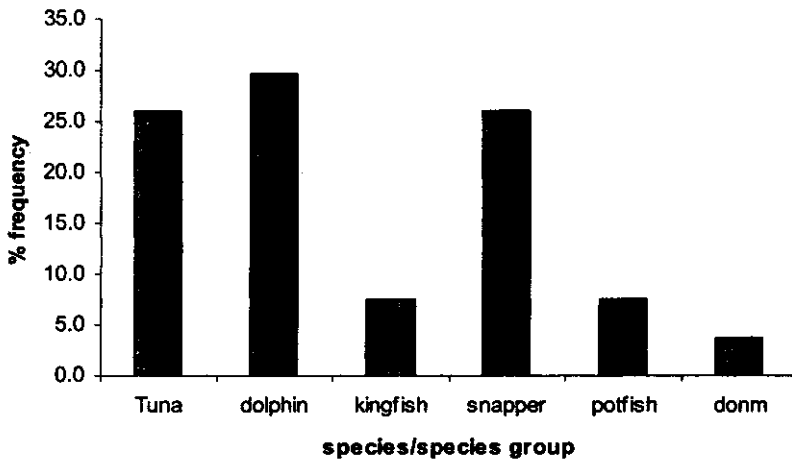
**Figure 5. Fish purchase preferences indicated by respondents in Saint Lucia**



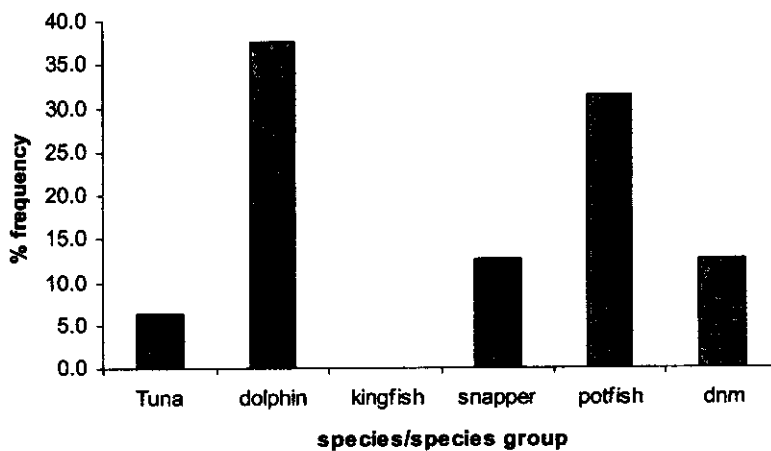
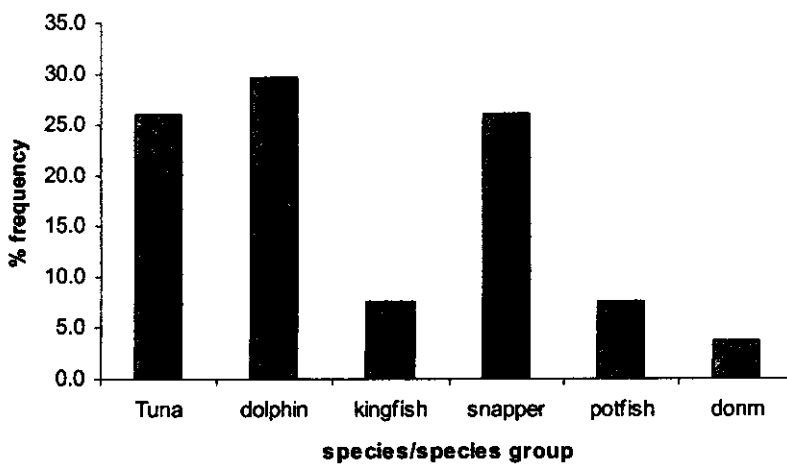
**Species preferences for meals -  
St. Lucia males**



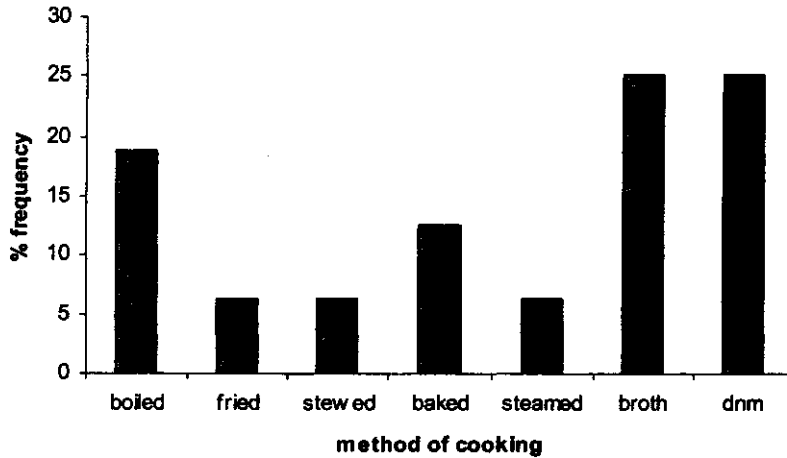
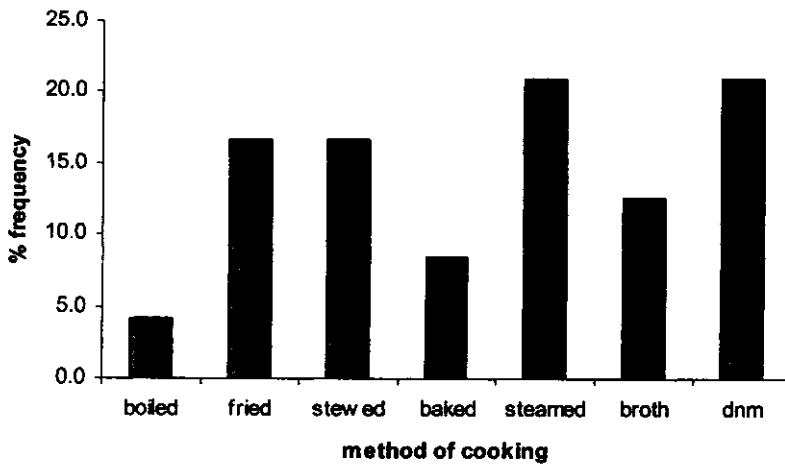
**Species preferences for meals -  
St. Lucia females**



**Figure 6.** Species preferences for meal purchased by respondents in Saint Lucia

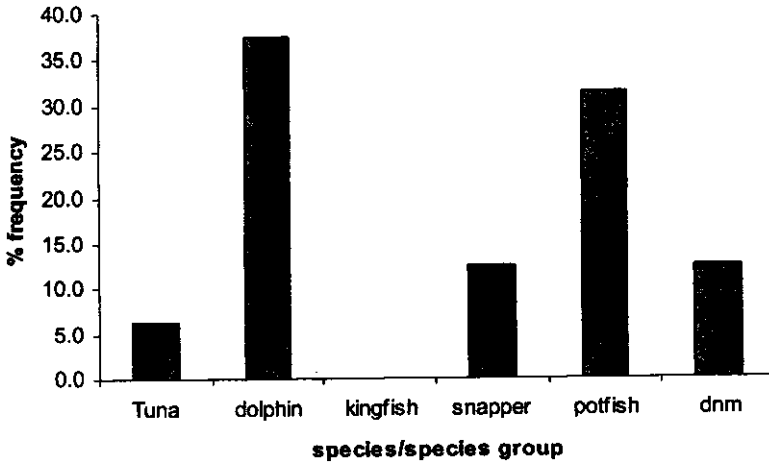
**Species preferences for meals -  
St. Lucia males****Species preferences for meals -  
St. Lucia females**

**Figure 6.** Species preferences for meal purchased by respondents in Saint Lucia

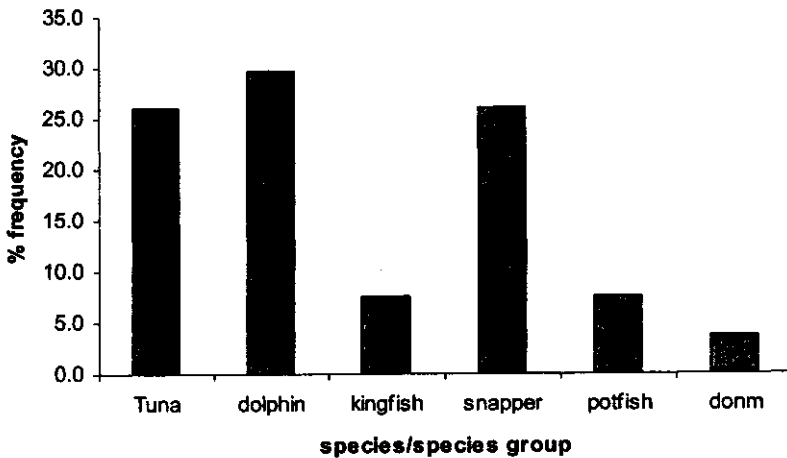
**Cooking preferences -  
St. Lucia males****Cooking preferences -  
St. Lucia females**

**Figure 7.** Preferences for method of cooking fish in meals purchased by respondents from Saint Lucia (dnm: does not matter)

**Species preferences for meals -  
St. Lucia males**



**Species preferences for meals -  
St. Lucia females**



**Figure 8.** Deliberateness of gear choice as it relates to size of fish caught, and percentage of fishers that would change gear to suit changes in customers' fish size preference in Saint Lucia .

**Table 1a.** Fishers' preferences for species caught in the BVI expressed as a percentage

Species group	Dolphin-fish	King-fish	Tunas	Snap-pers	"Pot fish"	"what ever is in season"	Does not matter
% Male	11	6	6	6	51	11	8
% Female	8	0	17	17	33	8	17
Overall	11	5	8	8	48	11	9

**Table 1b.** Fishers' preferences for species caught in St. Lucia expressed as a percentage

Species group	Dolphin-fish	King-fish	Tunas	Snap-pers	"Pot fish"	"what ever is in season"	Does not matter
% Male	17	0	25	0	17	17	25
% Female	-	-	-	-	-	-	-
Overall	17	5	25	0	17	17	25

**Table 2a.** BVI fishers' reasons for size preferences

Reason	Males	Females	Overall
% Personal preference	11	17	12
% Customer preference	52	8	45
% Taught at beginning of career	24	17	23
% No particular reason	13	58	20

**Table 2b.** St. Lucia fishers' reasons for size preferences

Reason	Males	Females	Overall
% Personal preference	18	-	18
% Customer preference	64	-	64
% Taught at beginning of career	0	-	0
% No particular reason	18	-	18

## DISCUSSION

It appears that in BVI a relatively high proportion of the persons interviewed have not expressed preferences in terms of the size of fish they would rather purchase. However, males and females that do express a preference, prefer tuna slices from a larger fish, but prefer a larger number of smaller fish when purchasing pot fish. This latter preference is quite marked while not as clear cut for snapper species. In the BVI the single most prevalent preference for fish for eating appears to be for potfish followed by dolphinfish. This trend is more or less the same for both males and females. Fishers' preferences for species caught follows this trend, and responses suggest that in the main the trend in size preference is driven by customer preferences. Further, most male fishers indicated that the gear was chosen deliberately to catch the size ranges of fish targeted and would change if customer preference changed; female fishers expressed less of a clear level of deliberateness. One suggestion (K.E. Nichols Pers. comm.) is that the prevalence of ciguatera in the northern part of the eastern Caribbean chain may serve as a deterrent to the purchase of larger reef fish, or pieces thereof. To the best of our knowledge no cases of ciguatera have been recorded as a consequence of ingestion of migratory pelagic species in the region. Thus, the trend shown in Figure 1 whereby a strong preference by respondents of both sexes is indicated for smaller potfish while at the same time notable acceptability of larger sizes of tunas, is consistent with this. All things considered therefore, the implication for the pot fishery is that management measures may only have effect if consumers' preferences can be changed consistent with the measures. The corollary of this is that fishers may not adhere to pot fishery management measures if these measures conflict with customer preference.

In St. Lucia there appears to be a disconnect between the pelagic fish species preferred for meals (dolphinfish) compared to that which fishers prefer to catch (tunas), this disconnect is not as obvious in the case of potfish. The results suggest that the preference for size of fish caught by St. Lucian fishers is clearly driven by customer preference and gear choice is deliberately made towards this end. Again, in St. Lucia, the implication is that management measures may only have effect if consumers' preferences can be changed consistent with the measures, and hence, fishers may not adhere to fishery management measures if these measures conflict with customer preference.

We must consider that what may be considered a cultural preference may itself have been supply driven. It is suggested (Andrew Magloire, Acting Chief Fisheries Officer Pers. comm., 2003) that in the Commonwealth of Dominica, a change in catch composition led to increased availability of a particular species and a consequential increase in demand as the consumer came to value that species. The result is that fishermen now target the "newer" preference, where hitherto it was landed opportunistically. This suggests that the changed preference has driven fishing effort in a "new direction".

From the preliminary results obtained to date, it appears that, for the two OECS States for which data has so far been collated, consumer preference is one of the main drivers of fishing effort. A recent study that was the first deliverable of a CPEC and Commonwealth Fund for Technical Cooperation-

supported project on building sanitary capacity through HACCP readiness and compliance, has also shown that consumer preference impacts on the health and sanitary regime used by fishers - whether ice is used or not (c.f. Landos and Kumar 2003). Fishery managers must be cognizant to this when determining management measures as well, quite possibly, when deciding on the international conservation agreements to which their countries should become party.

#### ACKNOWLEDGEMENTS

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