

SAMPLING ACTIVITIES FOR THE ICCAT ENHANCED RESEARCH PROGRAM IN GRENADA, 1990

P. Phillip, C. Isaac

Fisheries Biology Unit, Fisheries Division, Ministry of Agriculture, Lands, Forestry and Fisheries, St. George's, Grenada, West Indies

SUMMARY

Sampling activities related to the ICCAT billfish program for the 1990 fishing season were initiated in March, 1990. Sampling concentrated on the artisanal longline fishery which land their catch mainly on the western coast. For the purpose of this program, one landing center situated at the extreme north (Sauteurs) was included. This area (since the south should not be considered) marked the limit where billfish were targeted by local fishermen.

A total of 137 sailfish, 19 blue marlin, and one spearfish were sampled during the 1990 season. The samplers concentrated on size, weight and sex data. It must be noted here that the catch of spearfish should be described as incidental since local fishermen do not recognize this species as being part of a regular catch.

Plans to increase the sample size of billfish landings for the 1991 fishing season include initiating sampling activities in early November, 1990, and also include the sampling of the Spice Island Billfish Tournament that is held annually.

In addition an effort will also be made to measure the size of the artisanal longline fleet during the 1991 fishing season. During this season also, a concerted effort will be made to begin on-board sampling of local longliners though it must be borne in mind that most vessels engaged in such would experience great difficulty in accommodating additional personnel.

RESUME

Les activités de marquage du programme ICCAT sur les istiophoridés de la saison de pêche de 1990 ont démarré en mars de cette même année. L'échantillonnage s'est surtout axé sur la pêcherie palangrière artisanale qui débarque ses prises sur la côte ouest. Pour ce programme, un centre de débarquement situé à l'extrême nord (Sauteurs) a été inclus. Cette zone (vu que le sud ne doit pas être pris en considération) marque la limite où les istiophoridés sont visés par les pêcheurs locaux.

En tout, 137 voiliers, 19 makaires bleus et un "Spearfish" ont été échantillonnés au cours de la saison de 1990. Les échantillonneurs ont surtout porté leur attention sur les données de taille, poids et sexe. Il convient de signaler que les prises de "spearfish" sont accidentelles, vu que les pêcheurs locaux ne reconnaissent pas cette espèce comme faisant partie d'une prise habituelle.

Des plans permettant d'accroître l'échantillonnage des débarquements d'istiophoridés de la saison de pêche de 1991 comprennent le lancement d'activités d'échantillonnage au début de novembre 1990 ainsi que l'échantillonnage du Championnat d'istiophoridés de Spice Island qui a lieu tous les ans.

En outre, des efforts seront aussi déployés pour étudier l'importance de la flottille palangrière artisanale durant la saison de pêche de 1991. Au cours de cette saison, des efforts seront également déployés pour lancer un échantillonnage à bord des palangriers locaux bien que l'on ne doit pas oublier qu'il sera difficile de placer un personnel additionnel à bord pour la plupart des navires utilisés à cet effet.

RESUMEN

Las actividades de muestreo relacionadas con el Programa Marlines de ICCAT para la temporada de pesca de 1990, se iniciaron en marzo de ese mismo año. El muestreo se concentró en la pesquería artesanal de palangre, que desembarca sus capturas principalmente en la costa occidental. A efectos de este programa, se incluyó un centro de desembarco en el extremo norte (Sauteurs). Esta zona (dado que no deberá tomarse en cuenta el sur) señaló el límite hasta donde los pescadores locales persiguieron marlines.

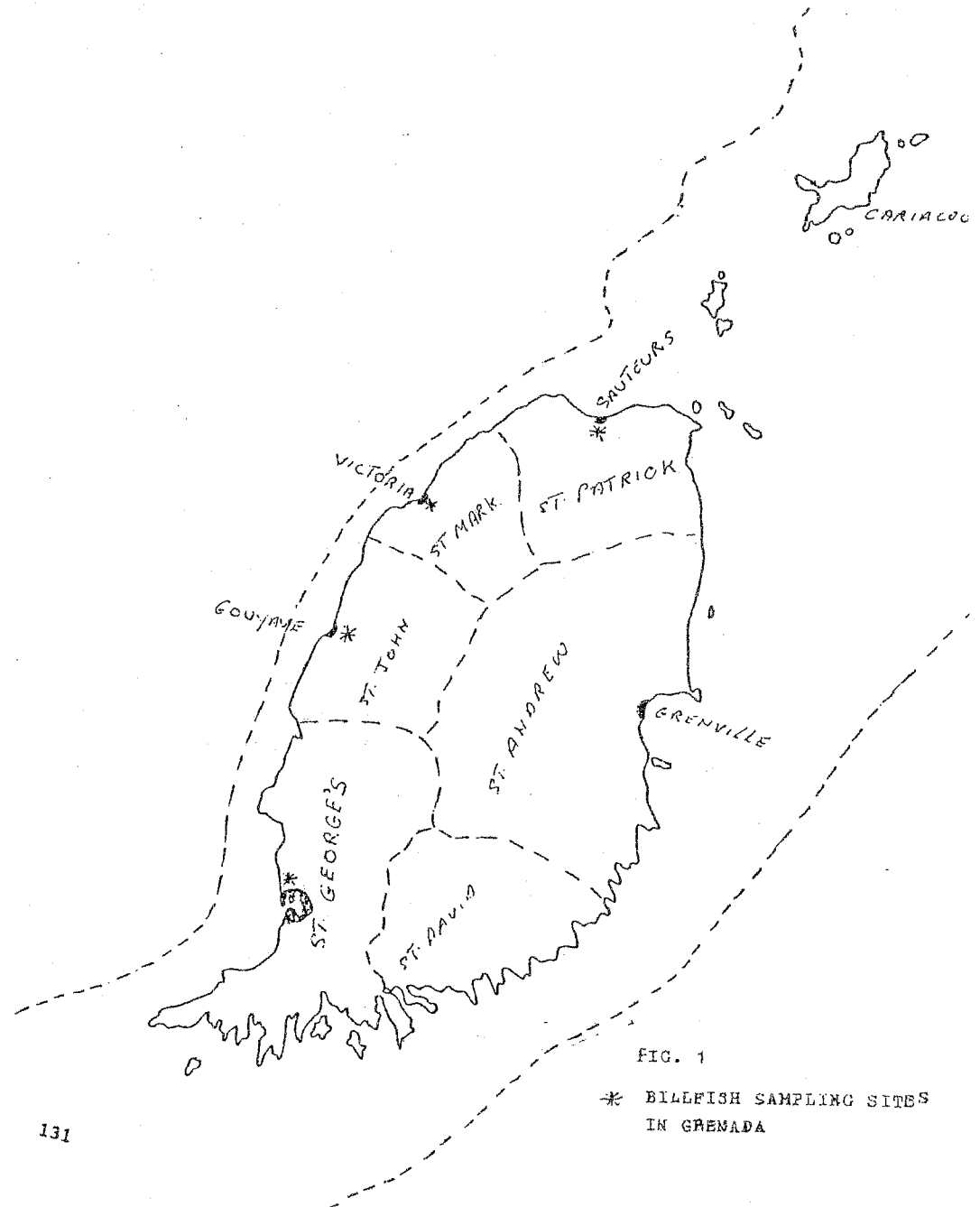
Se muestreó un total de 137 peces vela, 19 agujas azules y un *Tetrapturus pfluegeri* durante la temporada de 1990. Los muestreadores se concentraron en los datos de talla, peso y sexo. Hay que observar que la captura de *Tetrapturus pfluegeri* debe describirse como una captura accidental, dado que los pescadores no reconocen a esta especie como parte de la captura regular.

Los planes para incrementar el tamaño de la muestra de los desembarques de marlines para la temporada de pesca de 1991 incluyen el inicio de las actividades de muestreo a comienzos de noviembre de 1990 y el muestreo de "Spice Island Billfish Tournament" que se celebra anualmente.

Además, se realizará un esfuerzo para medir el tamaño de la flota artesanal de palangre durante la temporada de pesca de 1991. Durante esta estación, se harán esfuerzos para comenzar actividades de muestreo a bordo de palangreros locales, si bien debe tenerse en cuenta que la mayor parte de los barcos comprometidos en esta actividad tendrán dificultades para acomodar personal adicional.

INTRODUCTION

Apart from the eastern coast where most of the fishing is targeted at small pelagic tuna (bonito, skip jack) and dolphin fish, the other areas are concerned primarily with larger species. Historically, the fishermen on the western coast have, in the "ocean (pelagic) season" targeted the larger tunas. (see map)



In recent years artisanal fishermen have engaged in the practice of longlining (western coast) from St. George's to St. Patrick's. With one or two exceptions most of the vessels employed have no storage facilities and use, along with the larger vessels (40-42 ft.) 300 hook longlines. These return to shore immediately after hauling in their lines to deposit their catch. Thus they do not stay "out" for more than a day. The larger vessels may contain the capacity to store 2000 pounds of fish on ice.

Fishermen engaged in fishing during the "ocean"(pelagic) season primarily target yellow fin tuna and blue marlin. However, a considerable amount of sailfish are captured and sold but it is important to note that, locally at least, this is not the preferred specie.

The ICCAT billfish research programme in Grenada aims at gathering data on landing statistics. These include lower jaw fork length (L.J.F.L.), pectoral anal length (P.A.L.), pectoral fork length (P.F.L.), weight (kg) and sex.

METHODS

In order to gather the above data it was necessary to enlist the assistance of fish market employees. At all sampling centres the samplers were given instructions on the relevant sampling methods/techniques. This was followed up by frequent supervision by officers of the Fisheries Biology Unit. Data was submitted and scrutinized by the Biology Unit biweekly. The samplers used fibreglass measuring tapes (because of their resistance to corrosion) and were instructed in their use by the officers. Supervisors from time to time took measurements alongside the samplers.

Data were submitted by samplers bi-weekly to supervisors who, after examining the data, dispatch them to National Marine Fisheries Service in Florida, U.S.A.

GENERAL

Regarding the competency of the samplers we are satisfied that they have demonstrated the level of reliability that is prerequisite for the taking of accurate data. In this connection we expect that future on-shore sampling can proceed with a reduced level of supervision. Also it is important to note that since the samplers are also responsible for the storage of the catch they are able, in most instances, to sample at their leisure. This, in our view, have direct bearing on the accuracy, of the data they collect.

Attention must be drawn to the relative quantities of dressed fish. Although the percentage of such fish landed is not exceedingly high it does provide sufficient reason for setting up structures for future on-board sampling. In addition we recommended that as soon as they are ready sex identification kits be made available for shore-based sampling.

Notwithstanding what may have been accomplished with respect of setting up an effective sampling regime (identifying and instructing samplers, data collection, supervision and raw data handling), we feel strongly that the sampling period should extend from November of one year to June the following year. Based on reports from both fishermen and samplers we suspect that as much as 75% of data were lost when a reduced period (like the last) is chosen.

SPICE ISLAND BILLFISH TOURNAMENT

Because of its nature the Spice Island Billfish Tournament (S.I.B.T.) organisers do not collect nor organise data in any scientific way. They are instead interested mainly in quantity and weight of catch - criteria for placing competitors. We might add also that fishing effort in this tournament (number of hours, test lines, hooks) are predetermined. However, the potential for this tournament to serve as a source of valuable data is well recognised.

It is necessary, therefore to make special arrangements with S.I.B.T. organisers so that they can be incorporated into ICCAT sampling programme. The Fisheries Division can address the logistics and work directly in implementing these. However, we feel that a letter direct to the S.I.B.T. from ICCAT explaining their objectives will greatly help to facilitate their willingness to work with local fisheries officers. (Please find the enclosed address of S.I.B.T.)

RESULTS AND DISCUSSION

The first six(6) months of 1990 recorded an unusually large catch of tuna fish*. approximately 345,909 pounds (160,967 Kg) were recorded in the sample area.

Of this figure sailfish(SAI) and blue marlin(BUM) accounted 25.3. (or 37,459 Kg). The accompanying pie chart illustrates the relative proportions of round weight(Kg) of blue marlin sailfish and other tuna. It will be observed that blue marlin represents less than $\frac{1}{3}$ of all billfish sampled.

In the sample group female blue marlin and sailfish have been consistently slightly slightly heavier than males (Fig.2). With female blue marlin the magnitude of this difference is approximately 16.2 whereas with sailfish it is much smaller(6.2%).

However, the above would seem to indicate that lower jaw fork length (LJFL) measurements should also be larger for females. Fig. 3(LJFL SAI) shows that males register higher values in that category. As regards the distribution of individuals within a range of 151 - 191cm(Fig.3) over 80% were between 161 to 190cm. The largest group(171 - 180cm) is occupied by 36.4%.

All sailfish sampled (sexed and unsexed) shows a similar distribution of LJFL (Fig.4), i.e. the 171 - 180cm range consisted of 37.4% of the 125 sailfish sampled.

* The tunas are: Blackfin tuna(Thunnus atlanticus); Skipjack tuna(Katsuwonus pelamis); Yellowfin tuna(Thunnus albacares); Bigeye tuna(Thunnus obesus); Atlantic bonito(Sarda sarda); Ocean gar (sailfish)(Istiophorous albicans); Blue marlin(Makaria nigricans)

Table 1. Mean round weights (kg) for all sexes combined, female, and male blue marlin, sailfish, and spearfish sampled from the artisanal longline fishery in Grenada, 1990. Sample sizes are in parentheses.

Species	All sexes combined	Females	Males
Blue marlin	54.5 (19)	54.1 (9)	46.6 (5)
Sailfish	22.6 (137)	23.2 (46)	21.8 (59)
Spearfish	8.62 (1)	8.62 (1)	

FIG. 1

pectoral fin to anus length (PAL), and pectoral fin to fork length (PLF) measurements (Figs. 5 and 6 respectfully) both indicate two dominant classes. In the case of IAL the classes 51 - 60cm and 61 - 70cm are occupied by 39.7% and 41.5% of the individuals sampled respectively, while PFL 121 - 130cm and 131 - 140cm were occupied by 36.6% and 40.7% of individuals respectively. (i.e SAI). (Note that for PFL 77.2% were between 121cm and 140cm, while for PAL 78.9% were between 51cm and 70cm.)

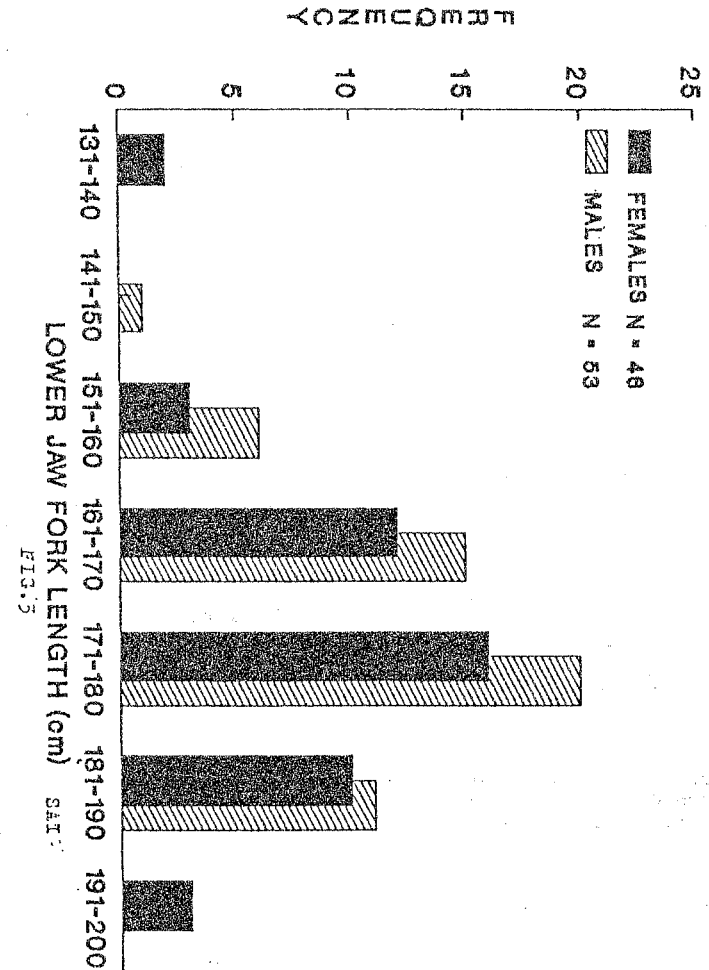
As regards fishing effort, constraints on time did not permit a systematic analysis of this important aspect. In any event it is known that fish centres do not keep records of hours fished by each boat, (this was done during the flying fish programme but has since ceased). Also for each boat the gear deployed must be determined (i.e length of lines, number of hooks etc).

We have been informed that several times sailfish were thrown overboard to make room for yellowfin tuna. This has occurred in small open artisanal fishing craft in which space is limited. While we are not certain as to the extent of this practice we well appreciate the reason for it - sailfish is not a preferred favourite in Grenada and fishermen will choose blue marlin and other tuna if faced with a choice. However, fish discarded represent lost data.

The following is a rough approximation of factors influencing fishing effort in the sampling areas:

- Large longliners (38ft. +) - fish 4 days/wk
- Small longliners (38ft) - fish 14 hours/day, 5 days/wk.
- Length of longline - ranging from $\frac{1}{2}$ mile to 1 mile
- Number of hooks - ranges from 60 - 500.

As can be seen above there is a category of small longliners. This reflects a growing trend of more and more small craft utilizing the longline as the primary fishing gear. It is this category of craft that use the $\frac{1}{2}$ mile 60-hook longlines.



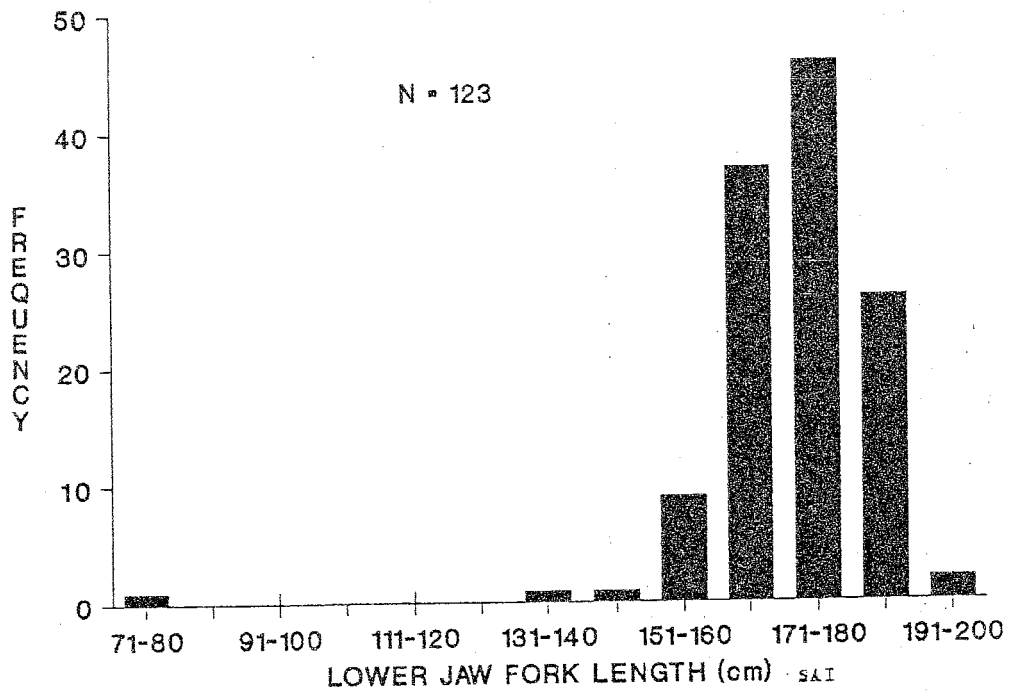


FIG. 4

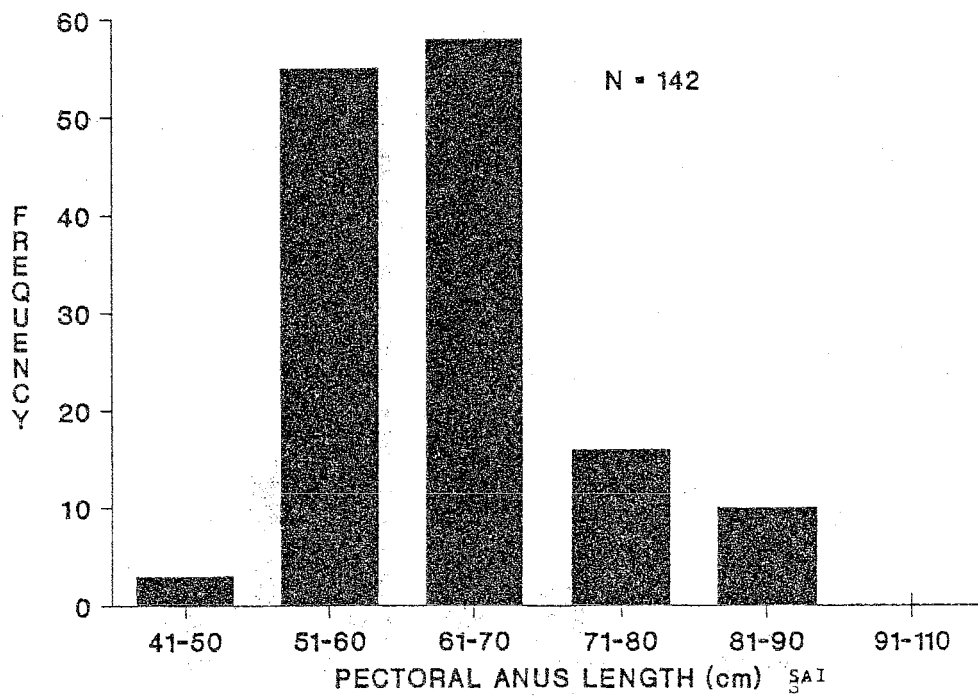


FIG. 5

An obvious question that needs to be addressed is whether the increased catch of tun this year is due directly to increased effort (i.e. the more widespread use of the longine). Whatever the reason it will have a direct bearing on the conservation of atlantiv tuna.

PAUL PHILLIP
FISHERIES RESOURCE BIOLOGIST

CHAFFON J. ISAAC
ASST. FISHERIES BIOLOGIST

FISHERIES DIVISION
MINISTRY OF AGRICULTURE, LANDS, FORESTRY AND FISHERIES,
CHURCH STREET,
ST. GEORGE'S,
GRENADA, W.I.

TEL: 440-3814; 440-3831
FAX: 440-6673
TELEX: 5448

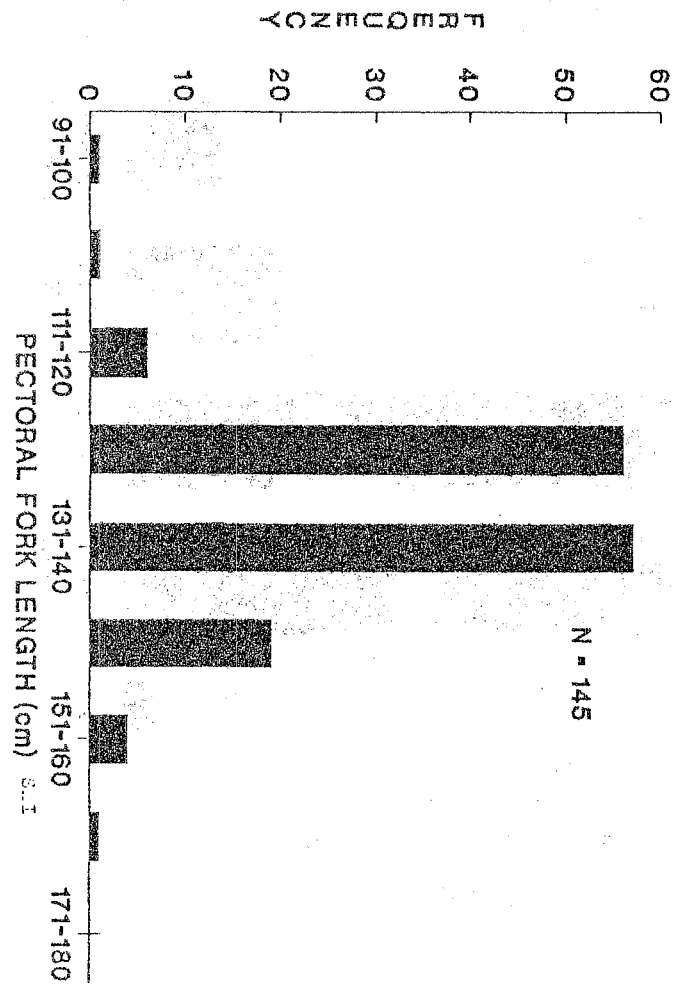


FIG. 6