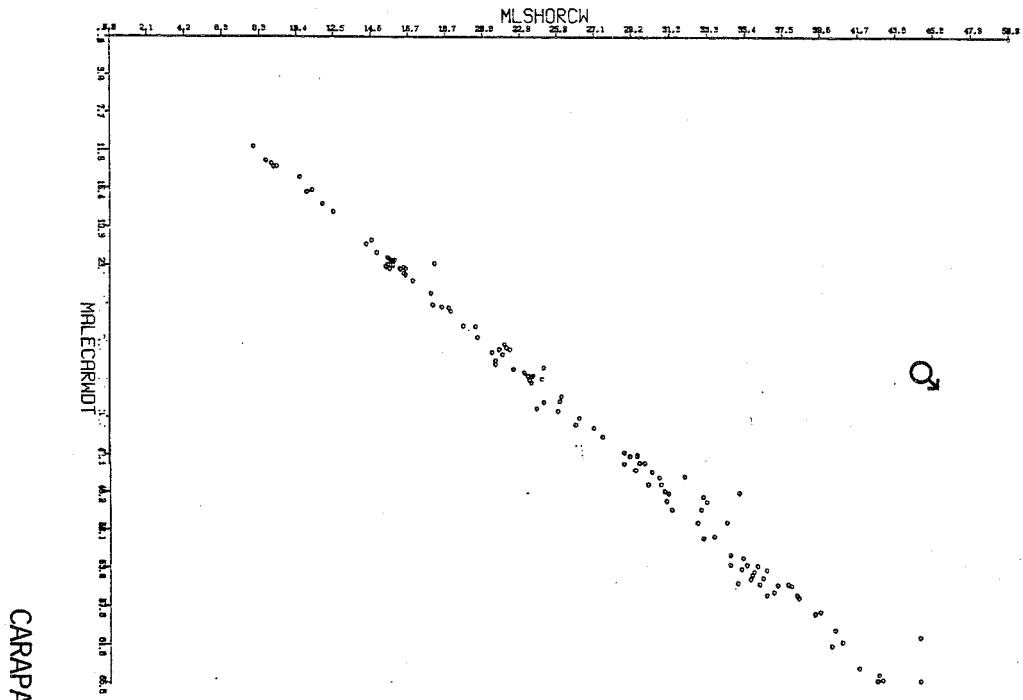


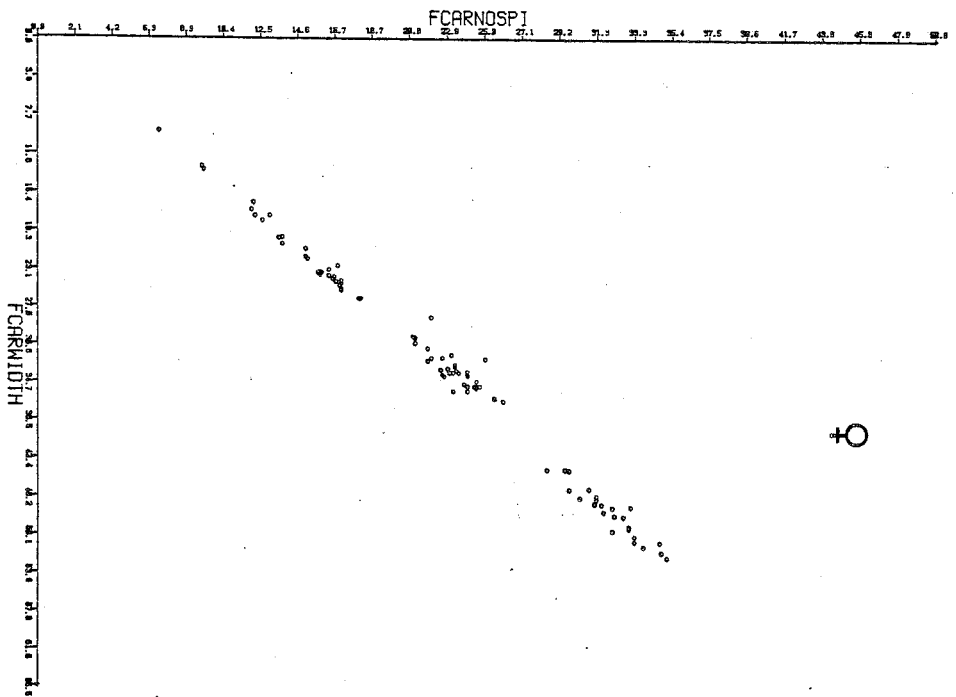
APPENDIX I

Computer-generated scatterplots for Chapter 3

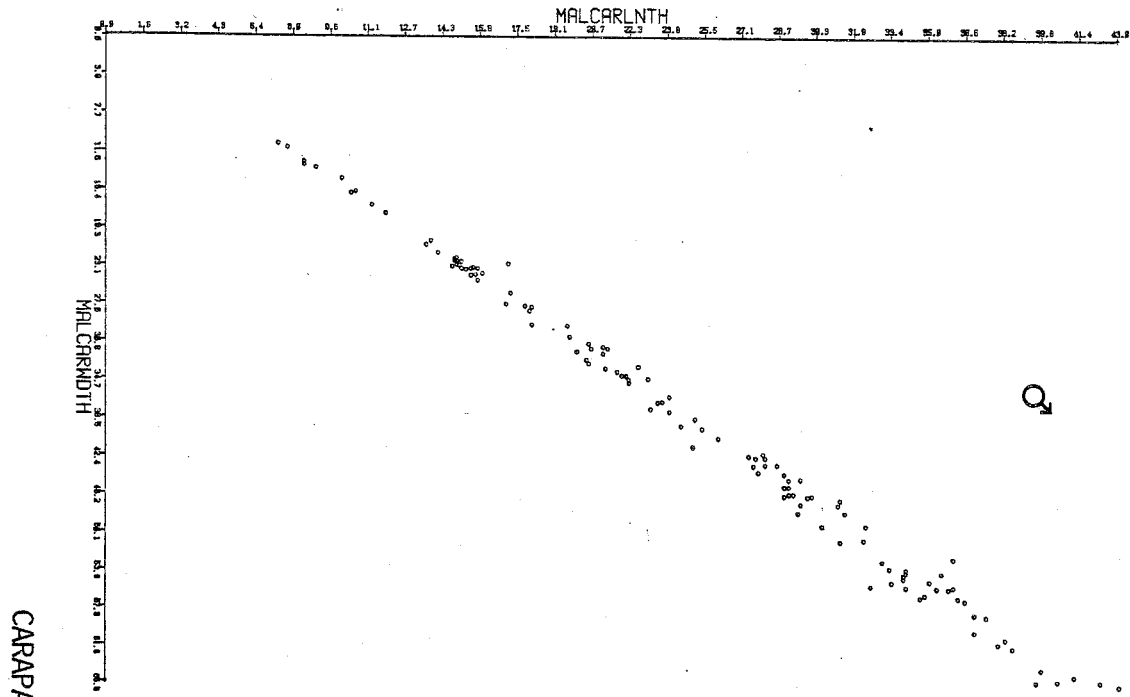
SHORT CARAPACE WIDTH



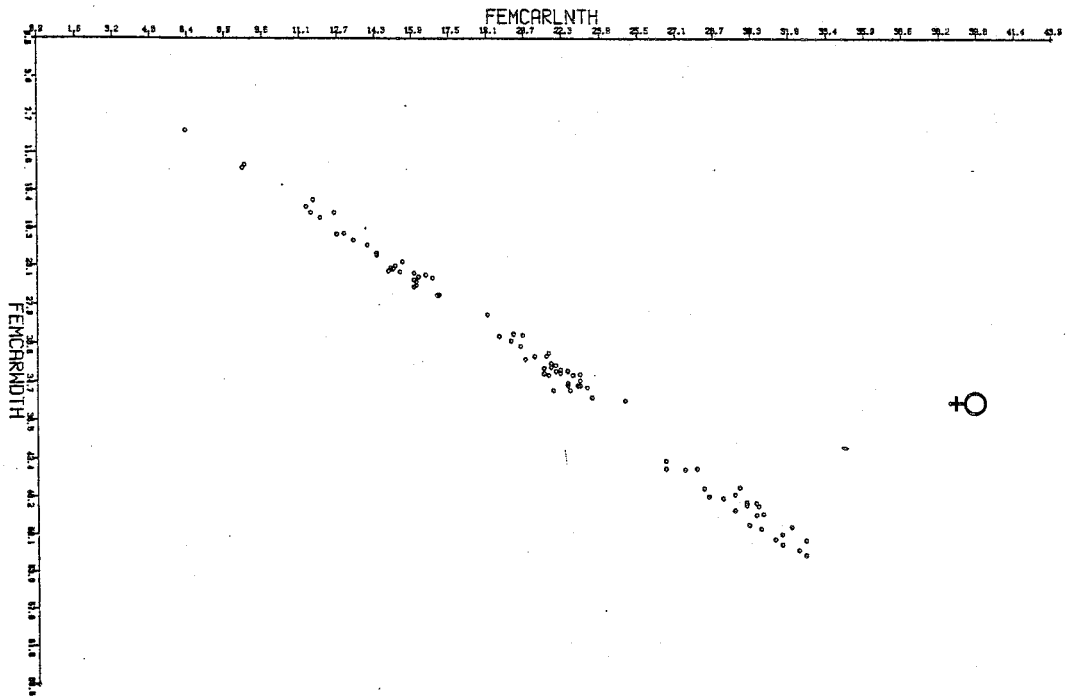
CARAPACE WIDTH



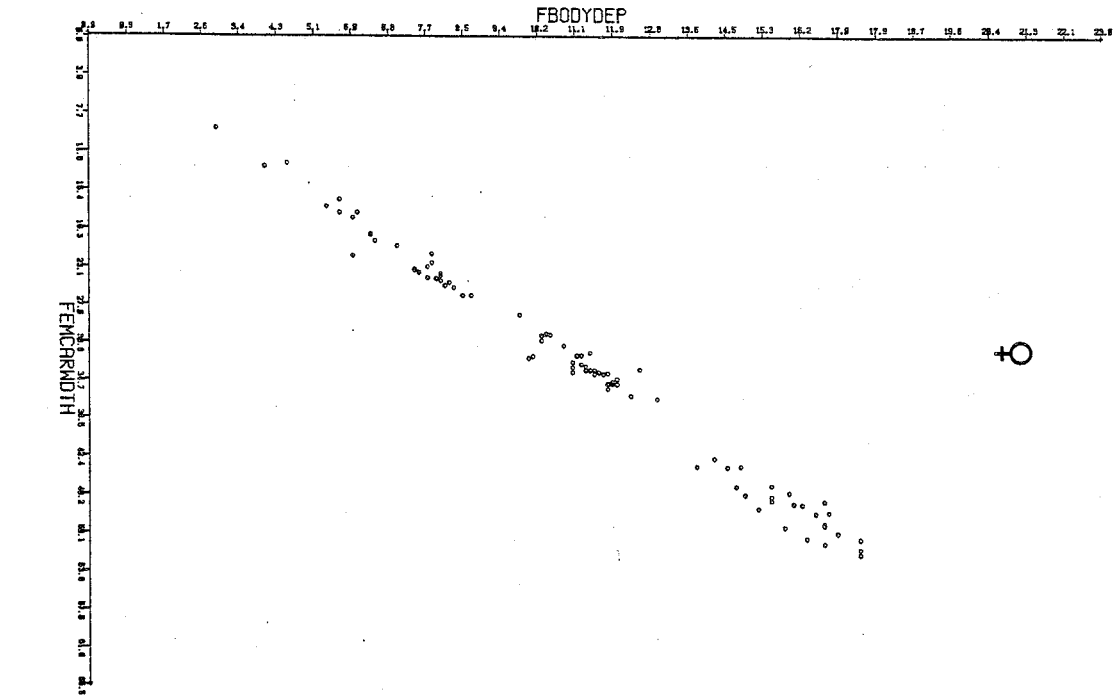
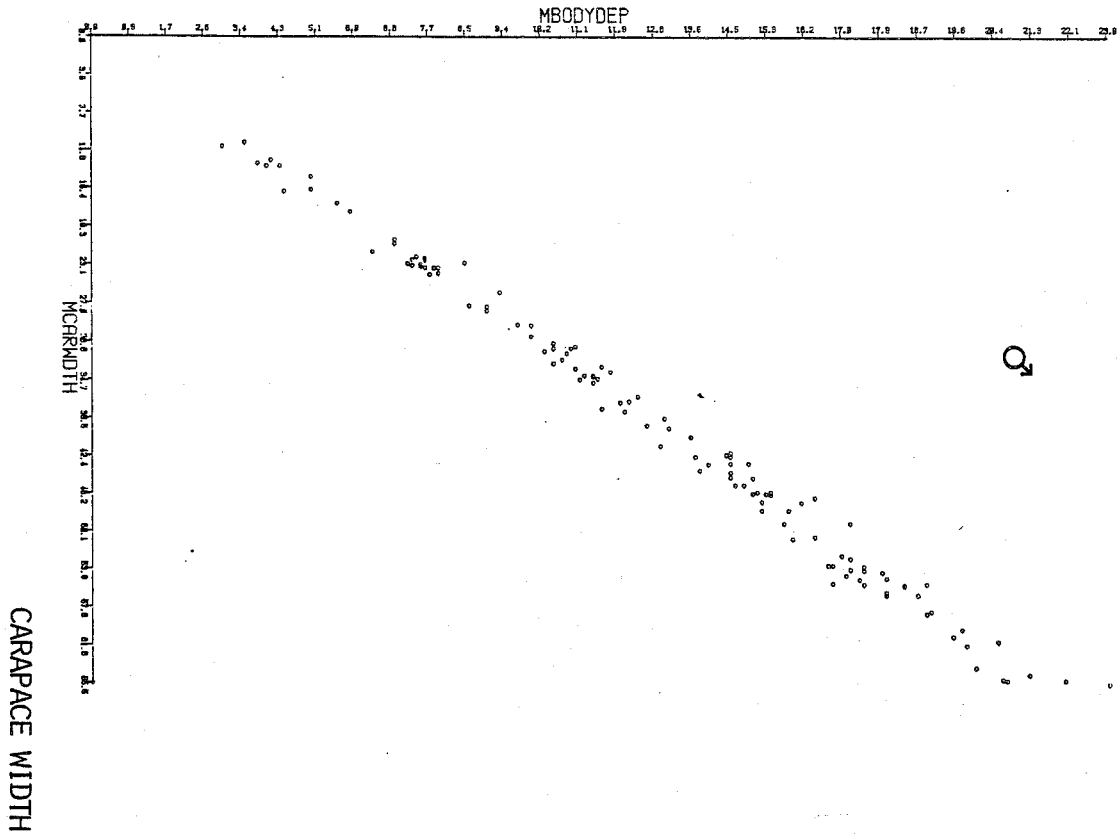
# CARAPACE LENGTH



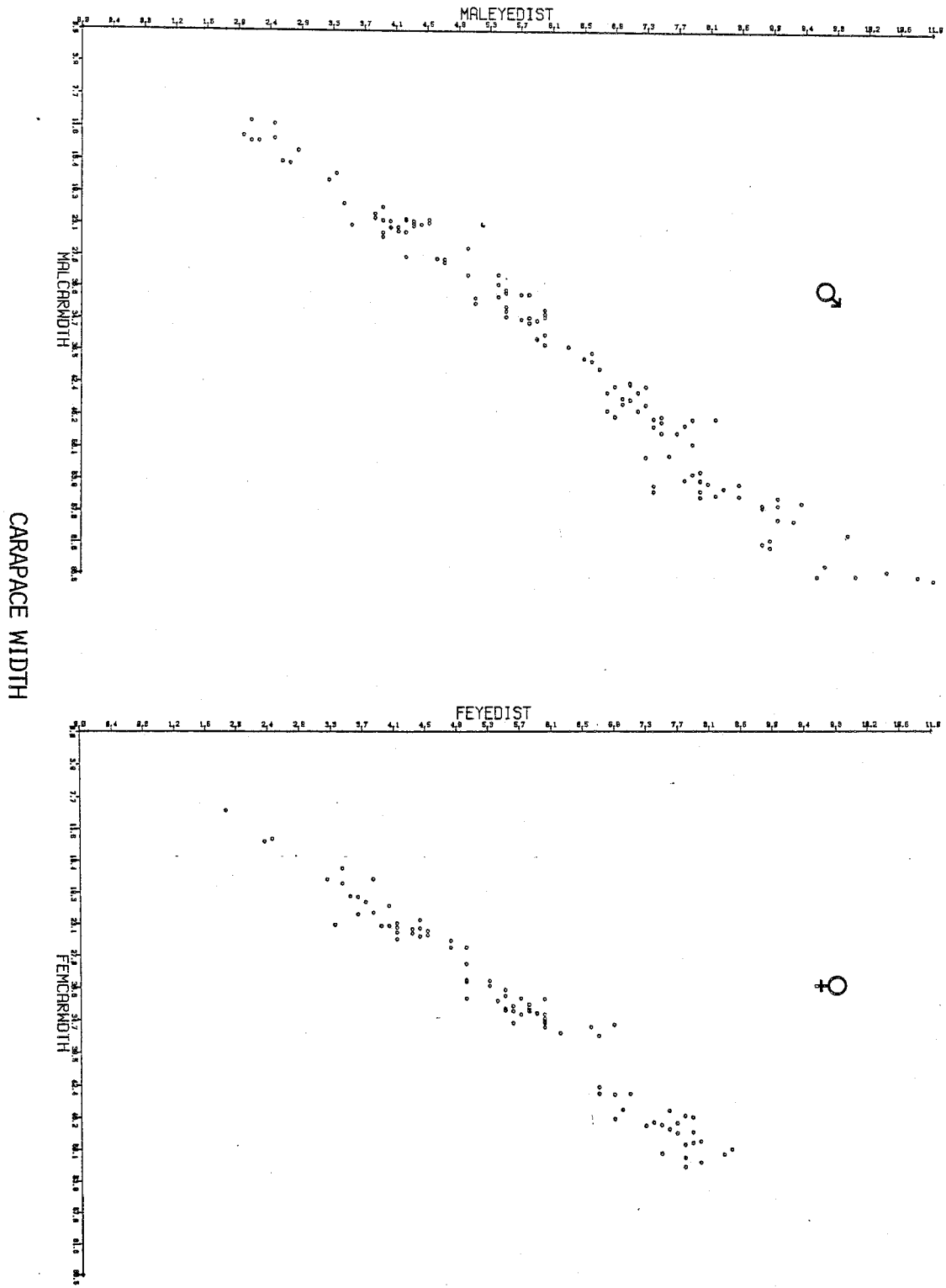
CARAPACE WIDTH



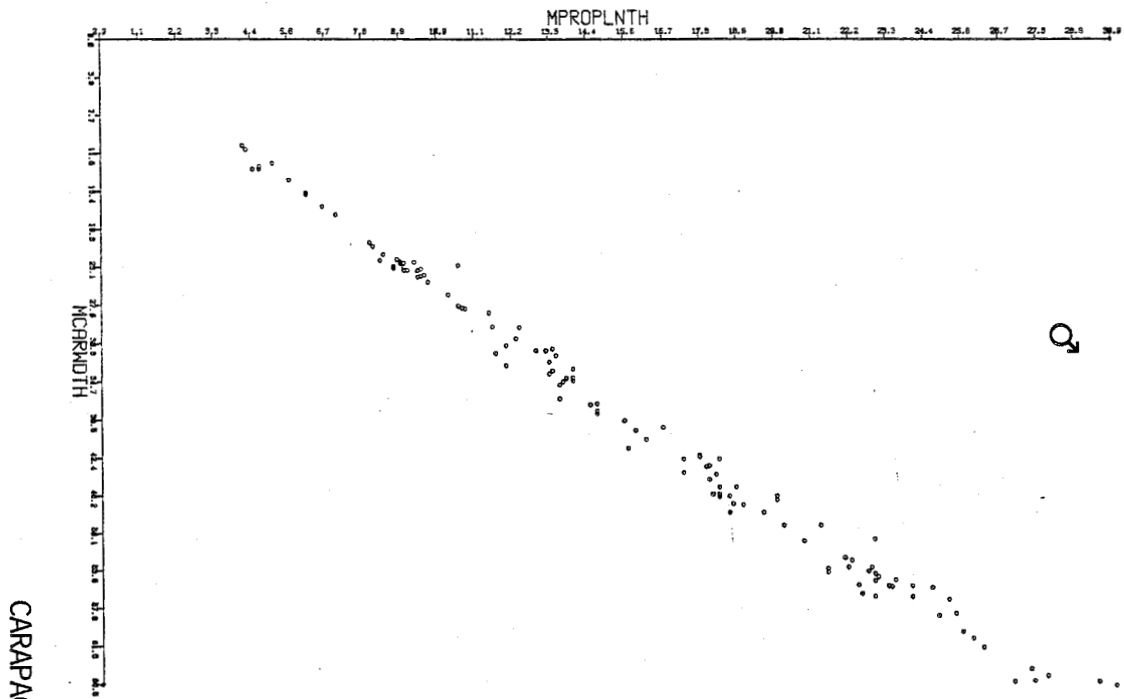
BODY DEPTH



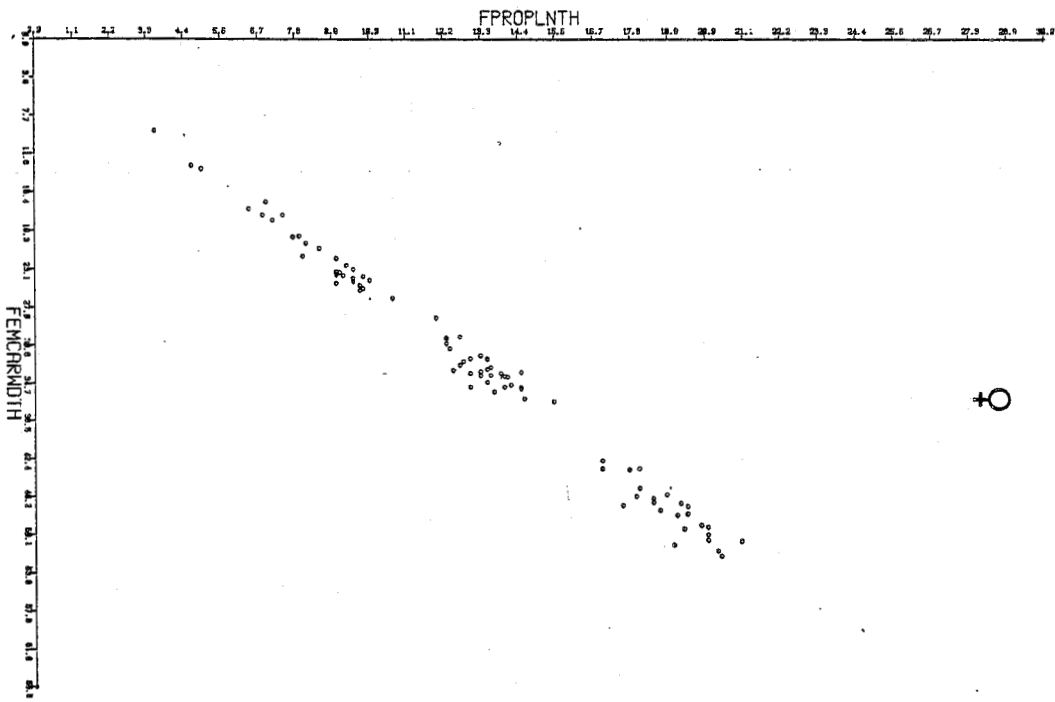
# DISTANCE BETWEEN THE EYES



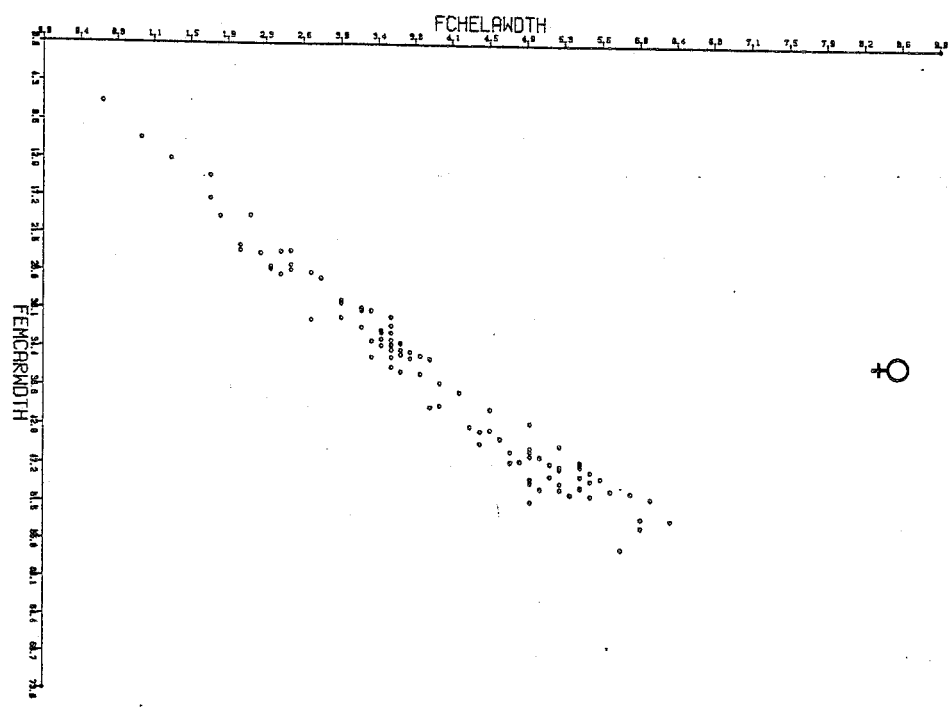
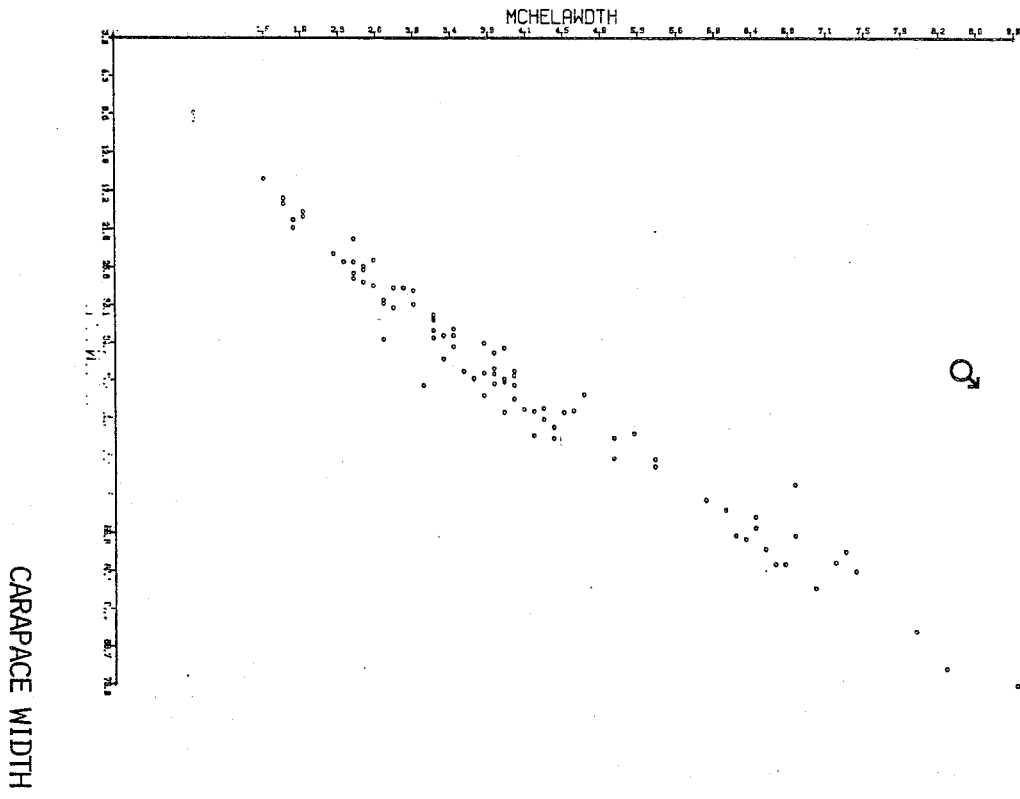
# PROPODUS LENGTH



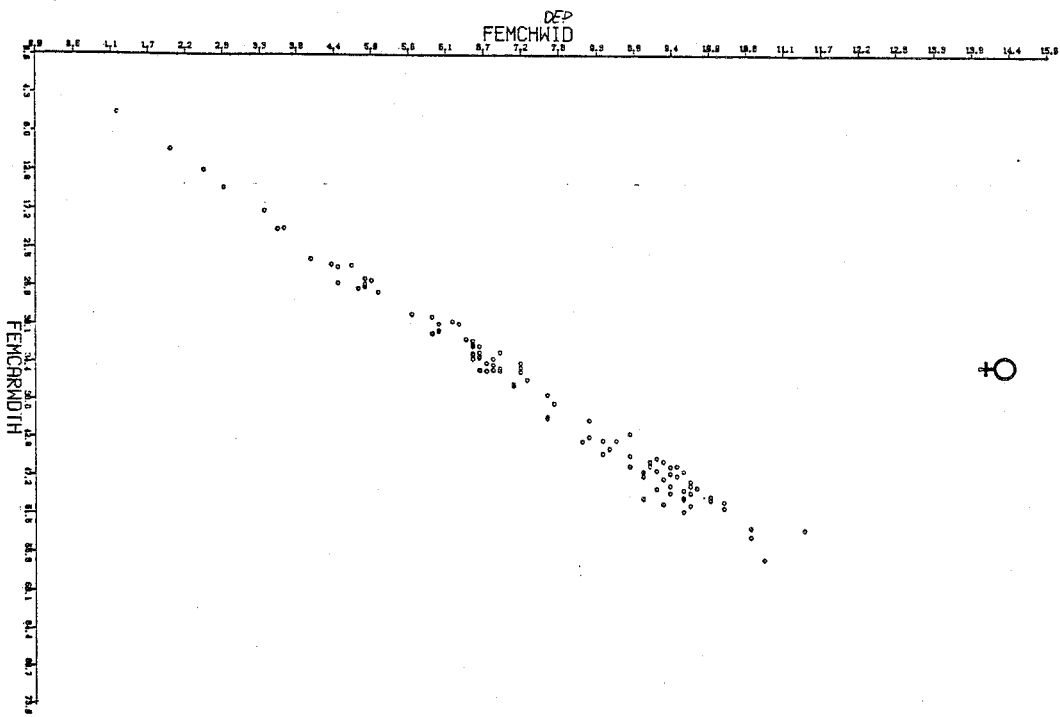
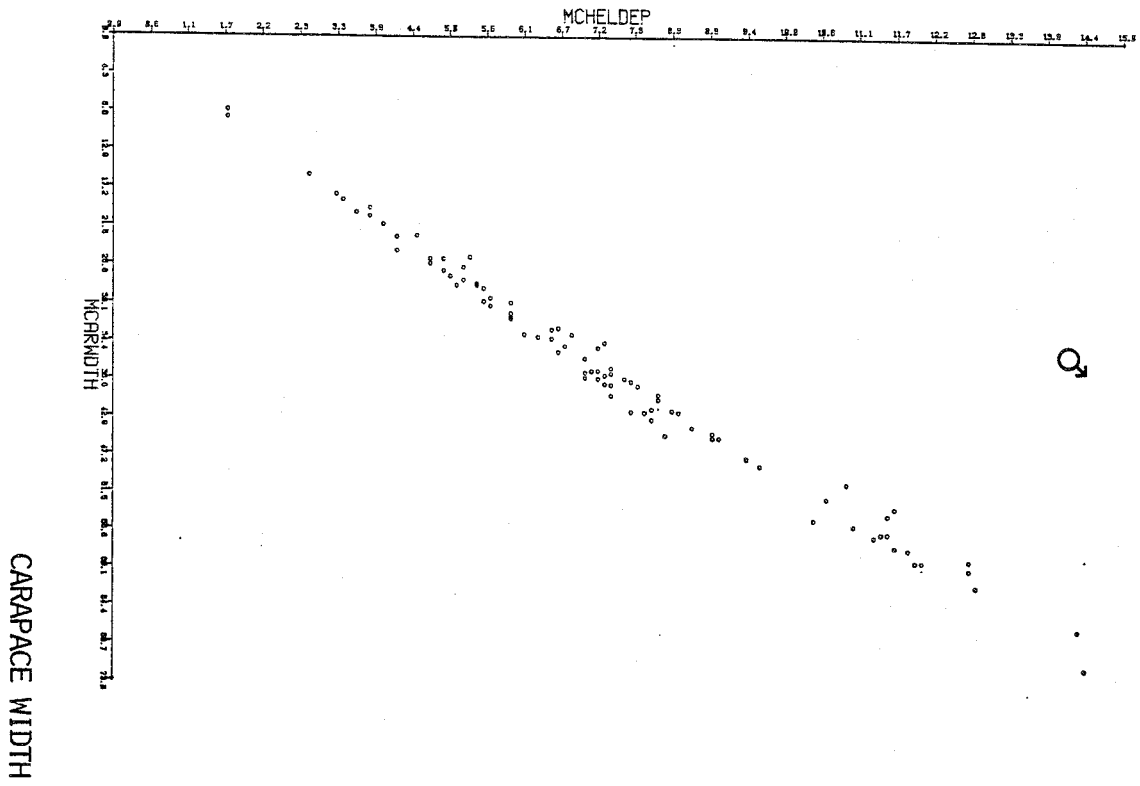
CARAPACE WIDTH



CHELA WIDTH

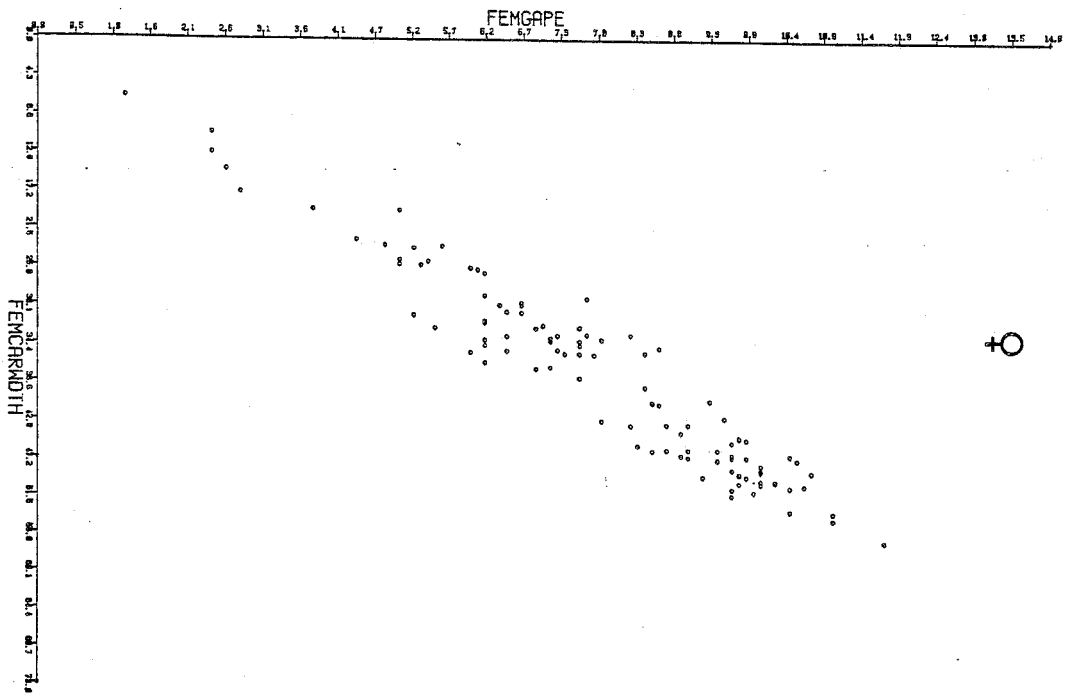
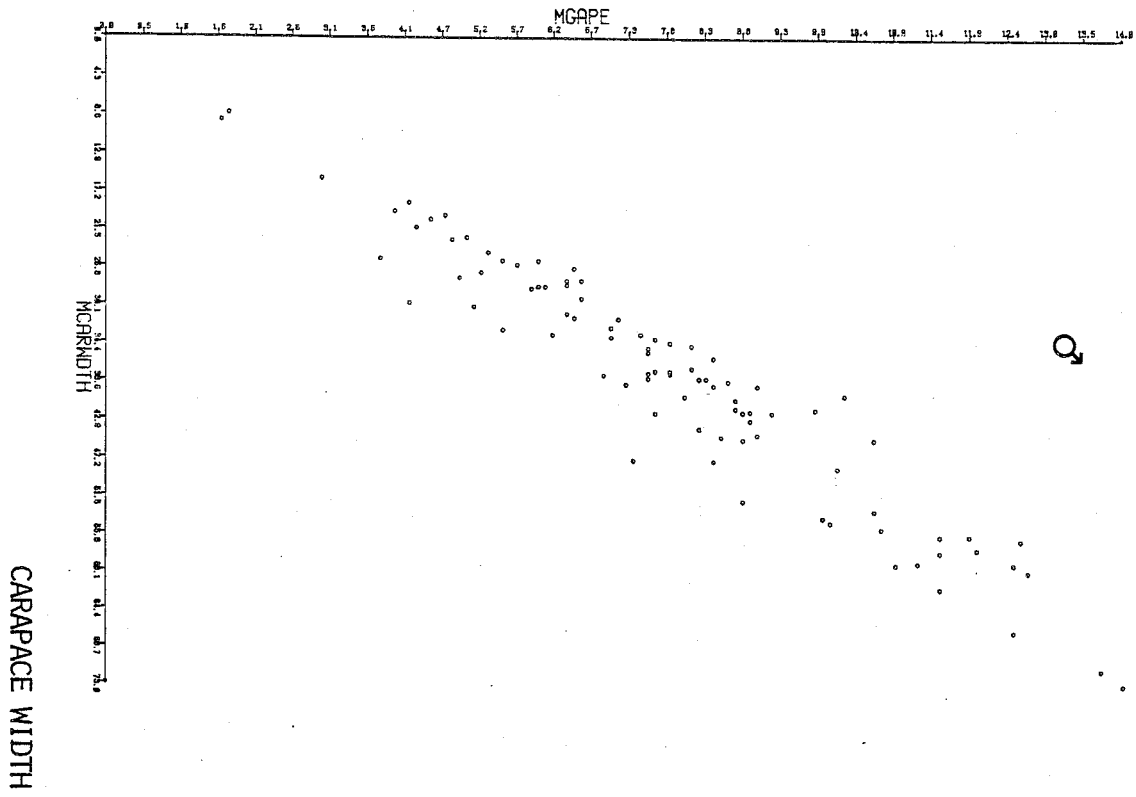


# CHELA DEPTH

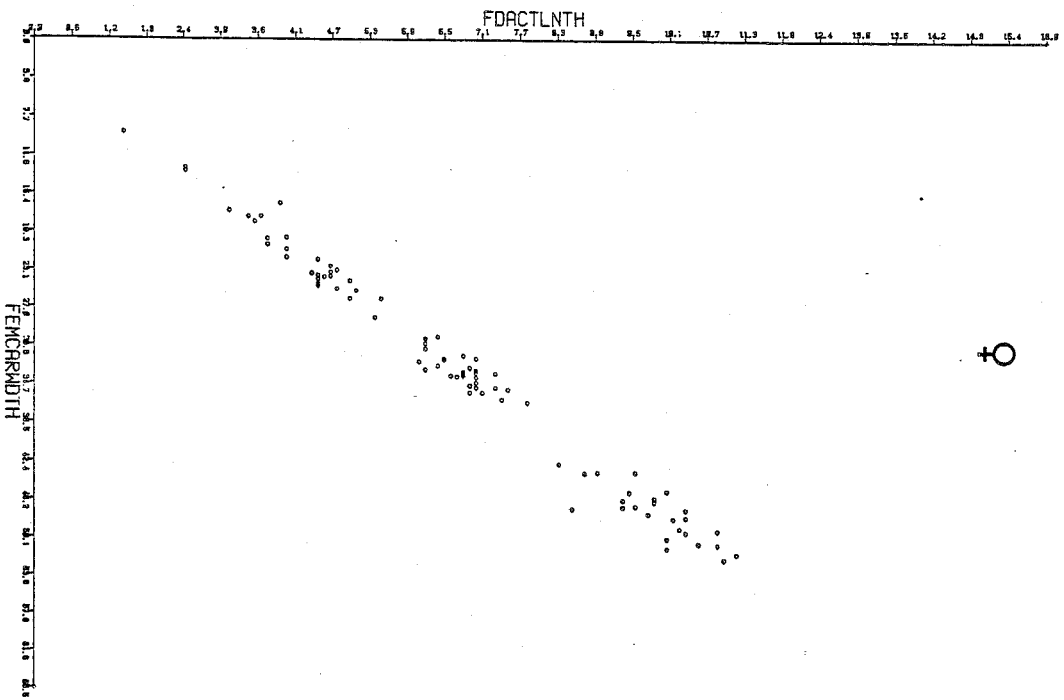
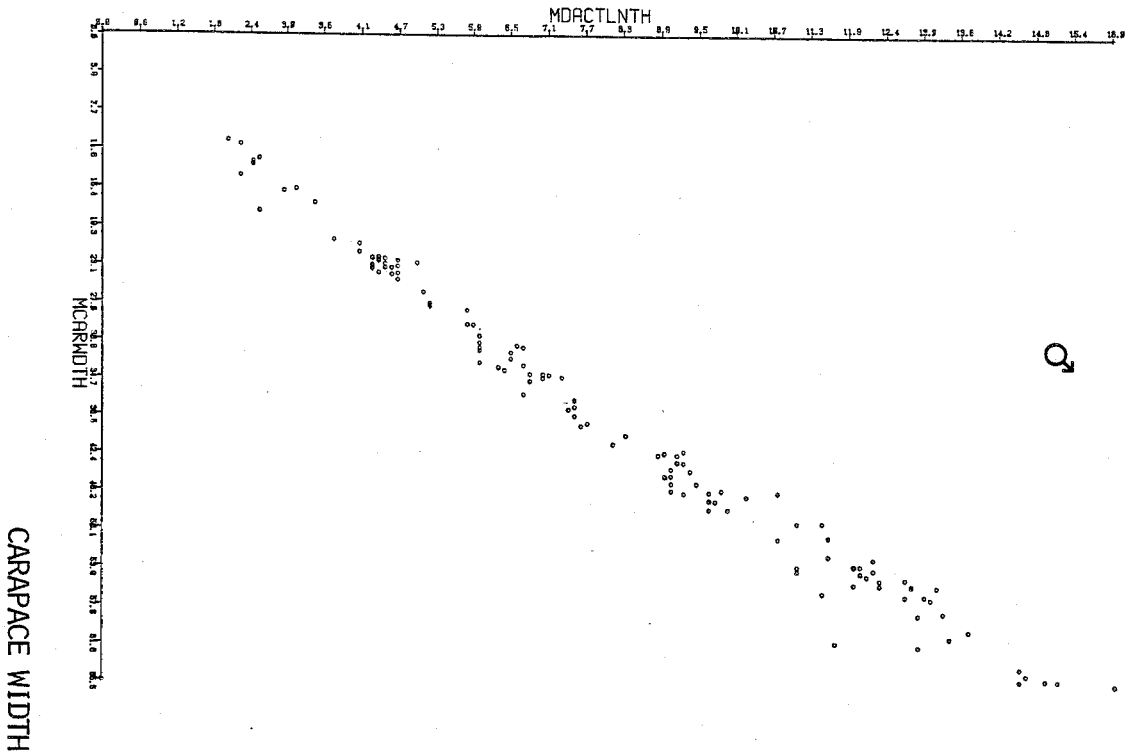




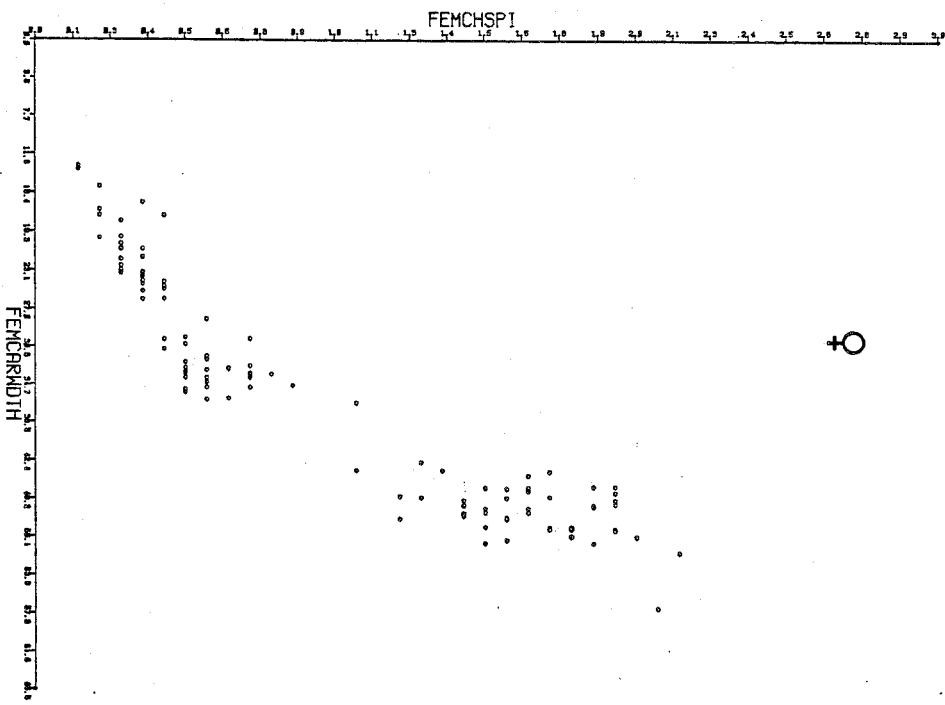
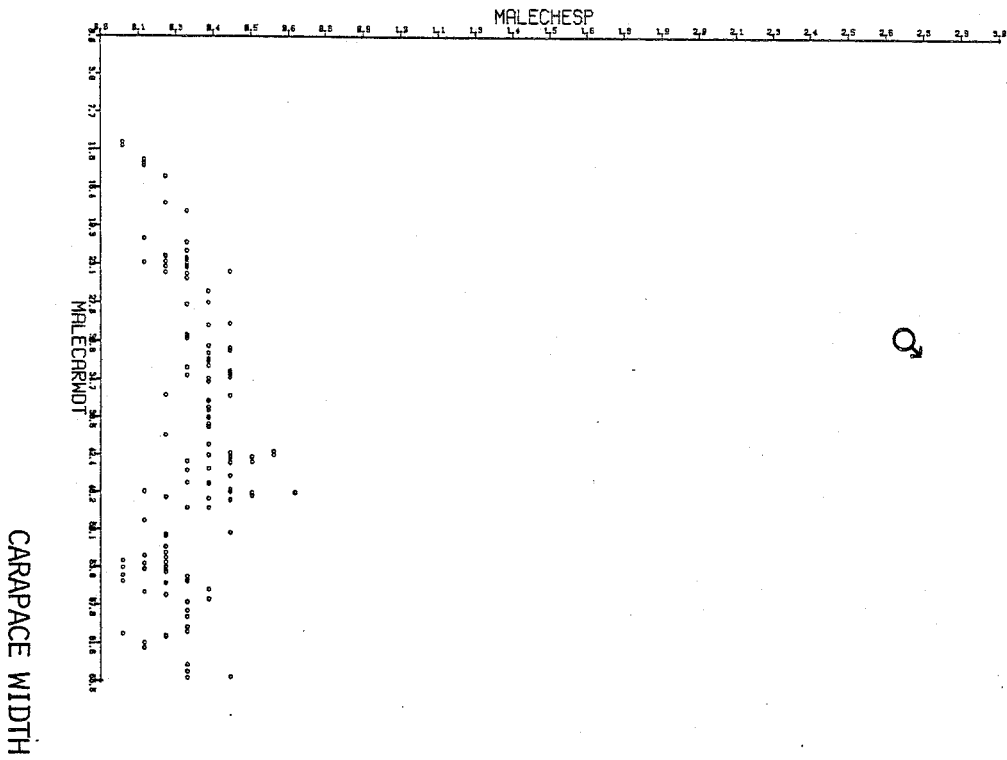
CHELA GAPE



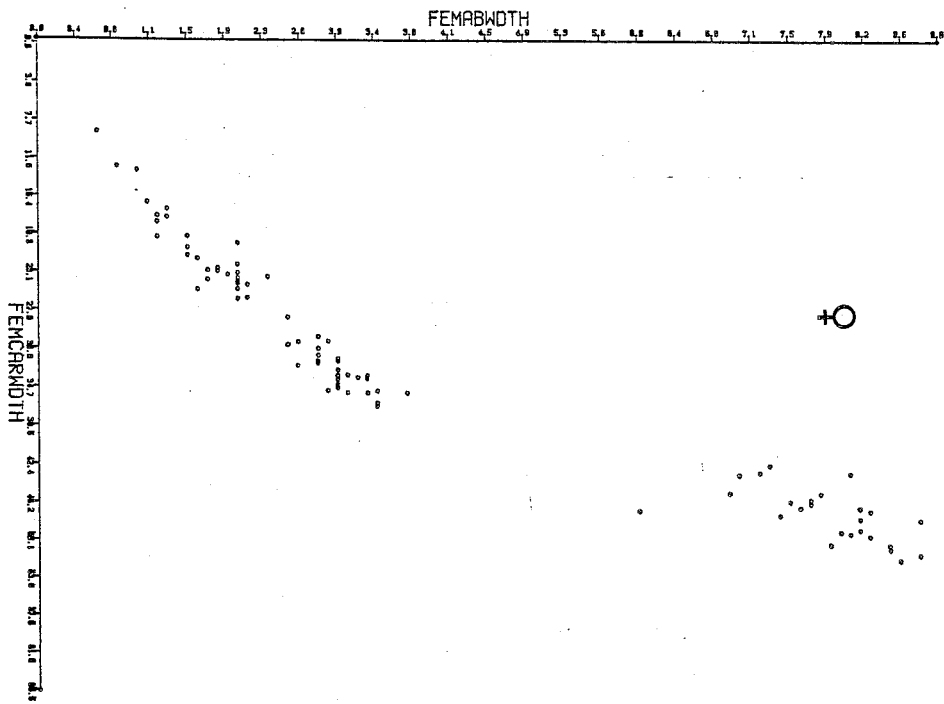
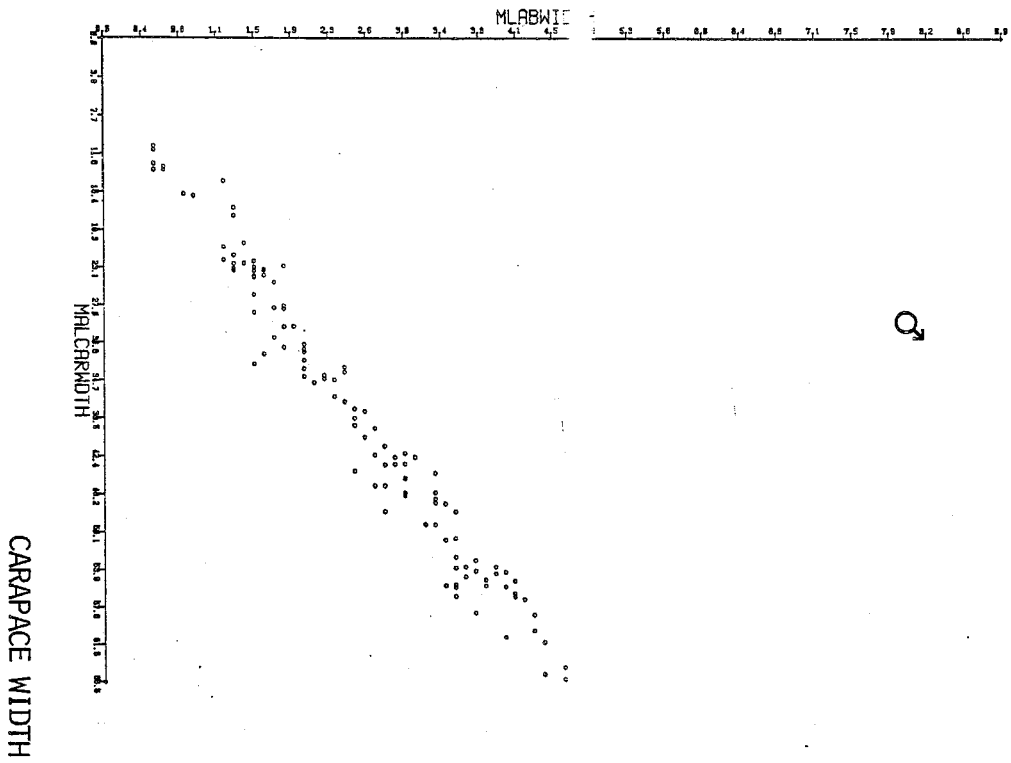
DACTYLUS LENGTH



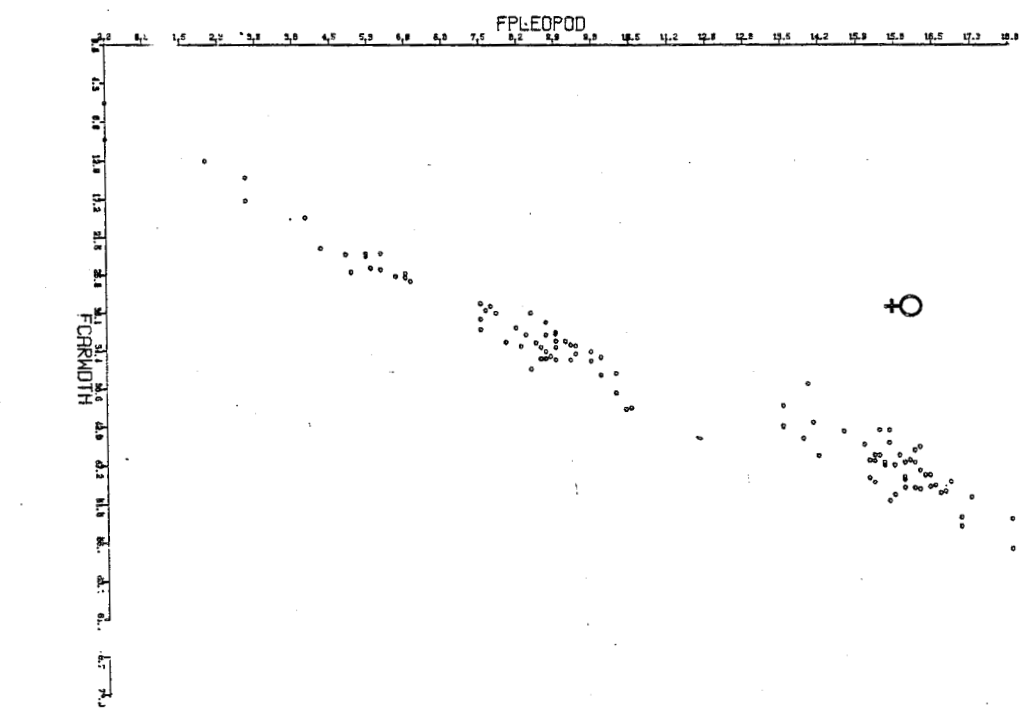
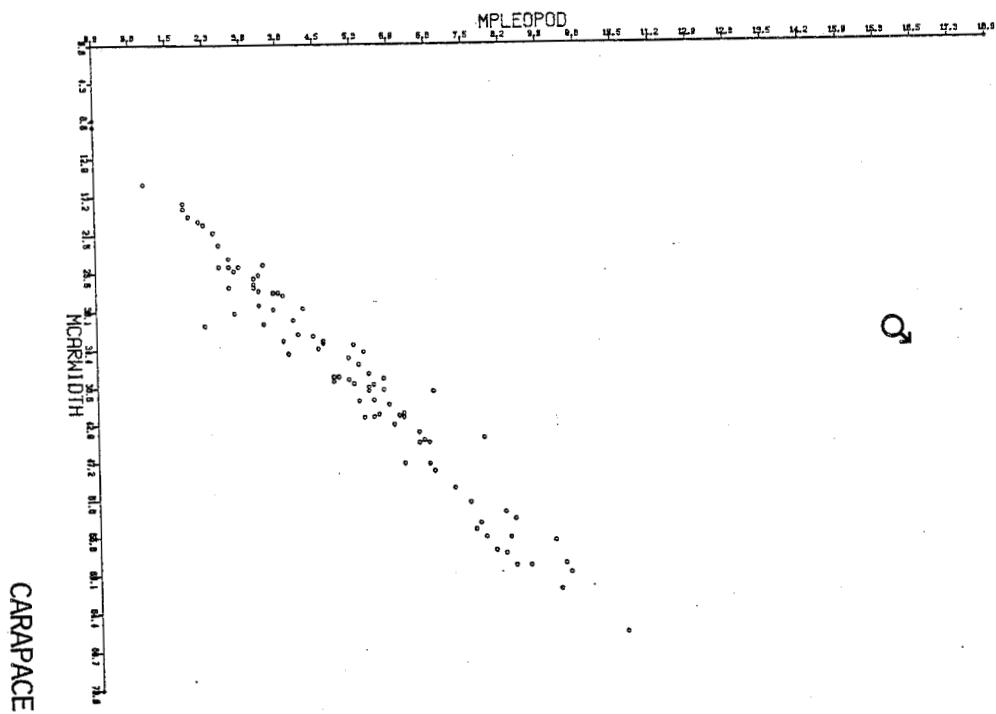
# CHELA SPINE HEIGHT



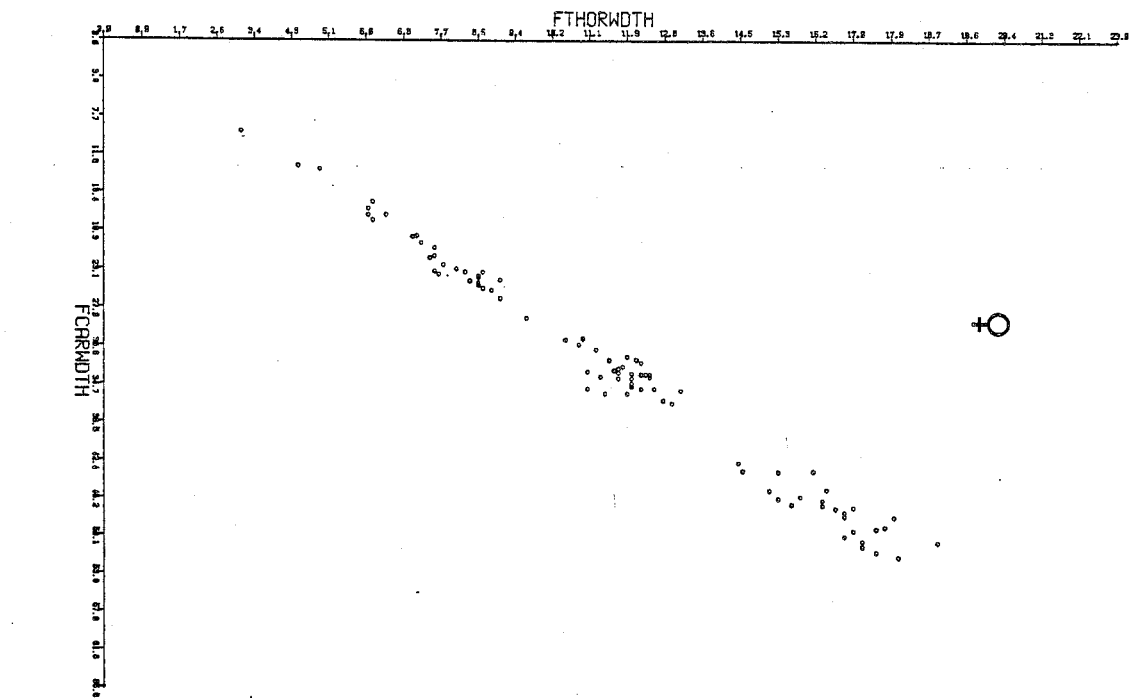
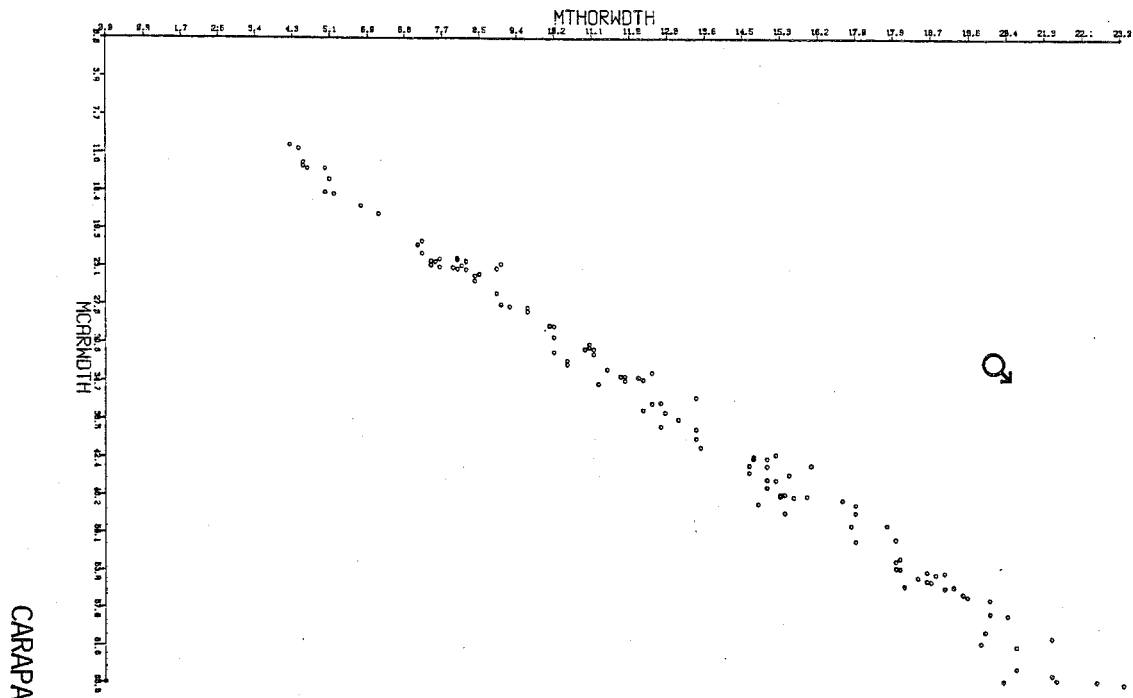
ABDOMINAL WIDTH



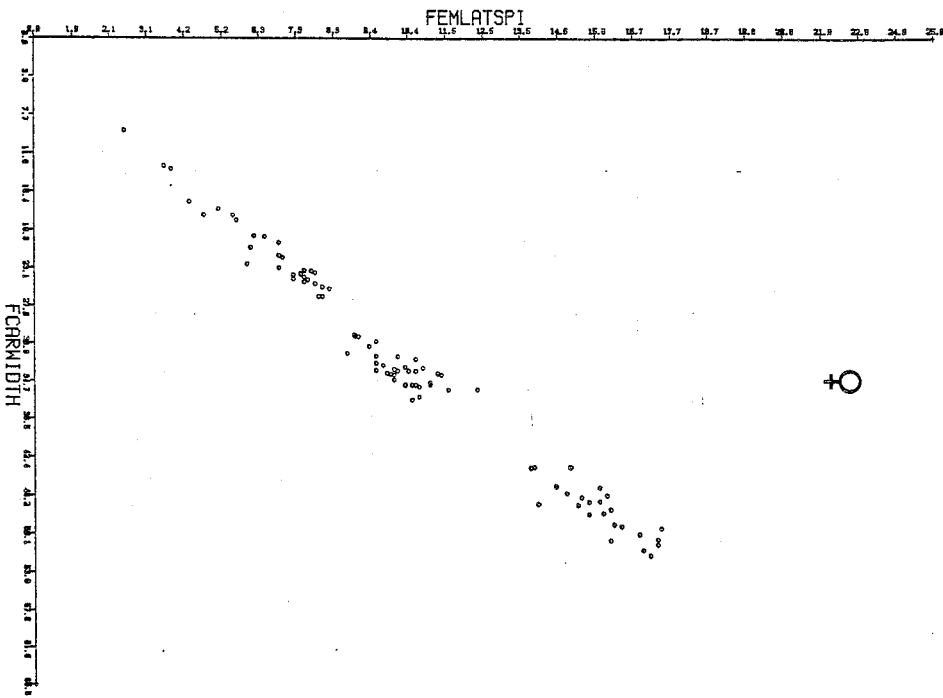
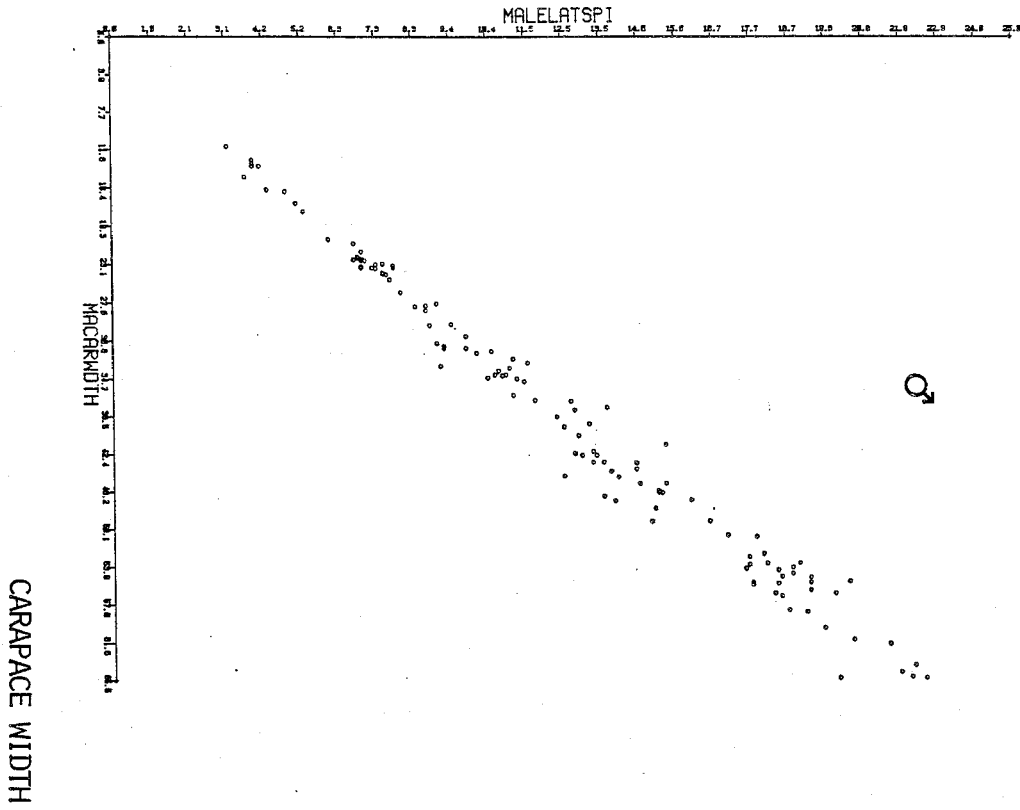
# PLEOPOD LENGTH



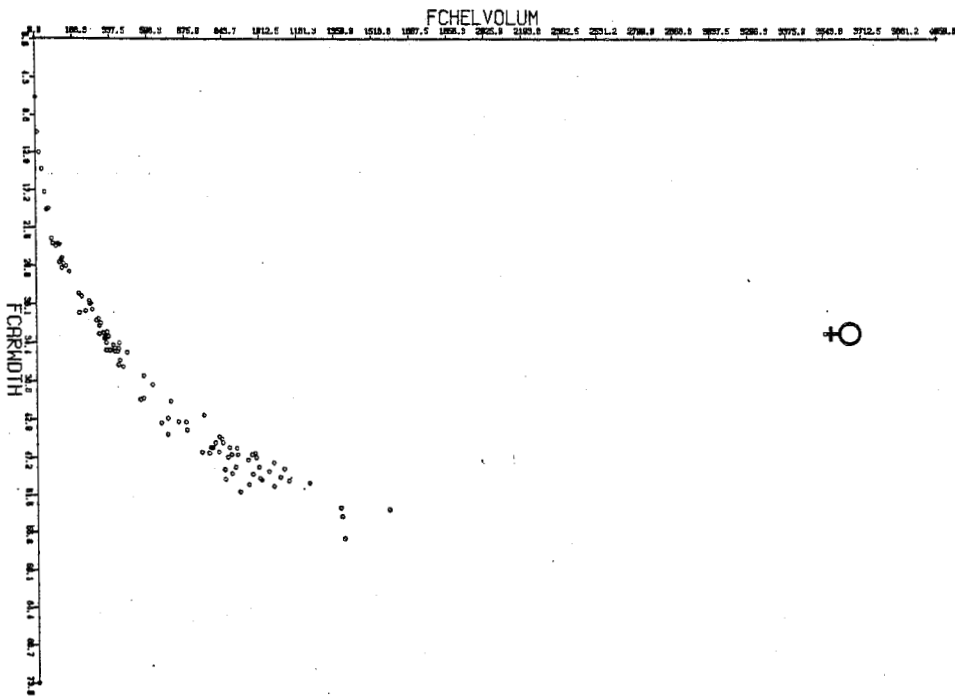
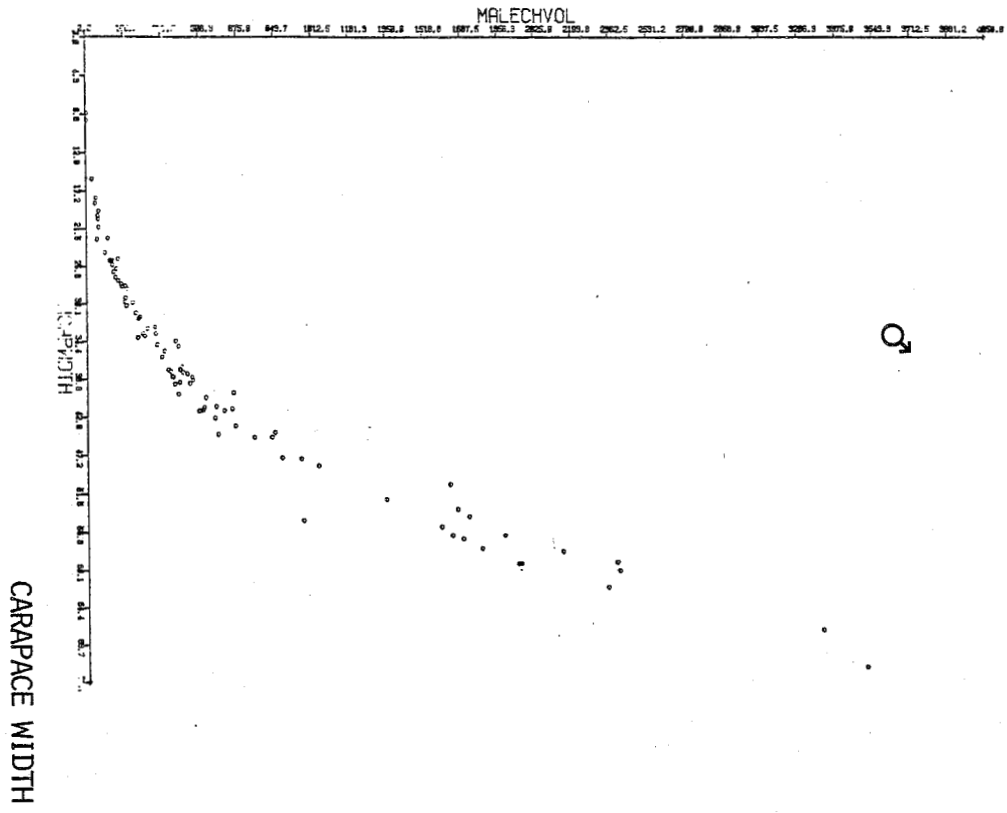
# THORACIC WIDTH



# LATERAL SPINE LENGTH

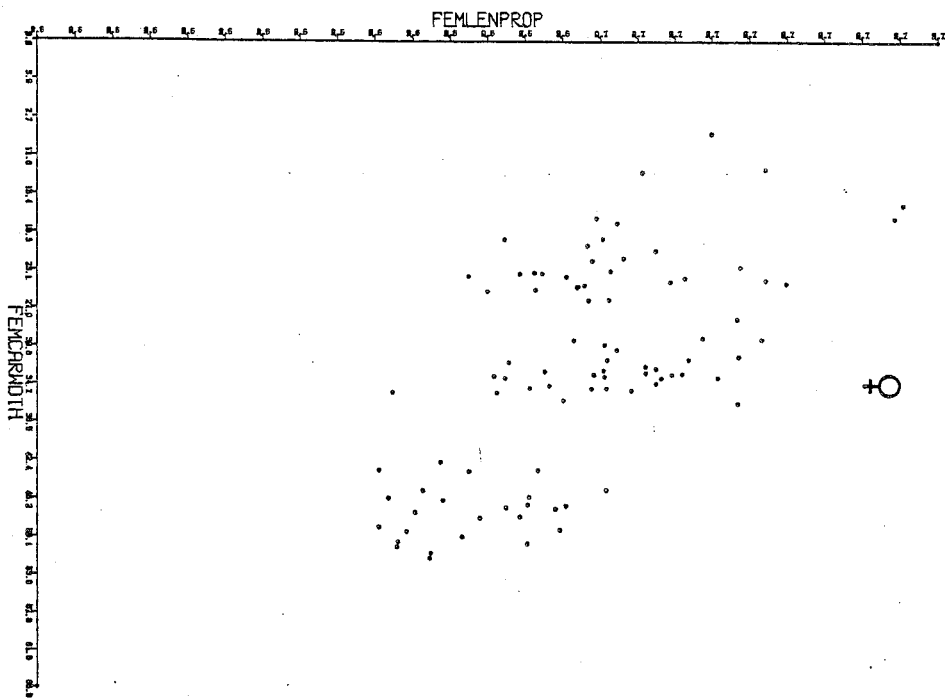
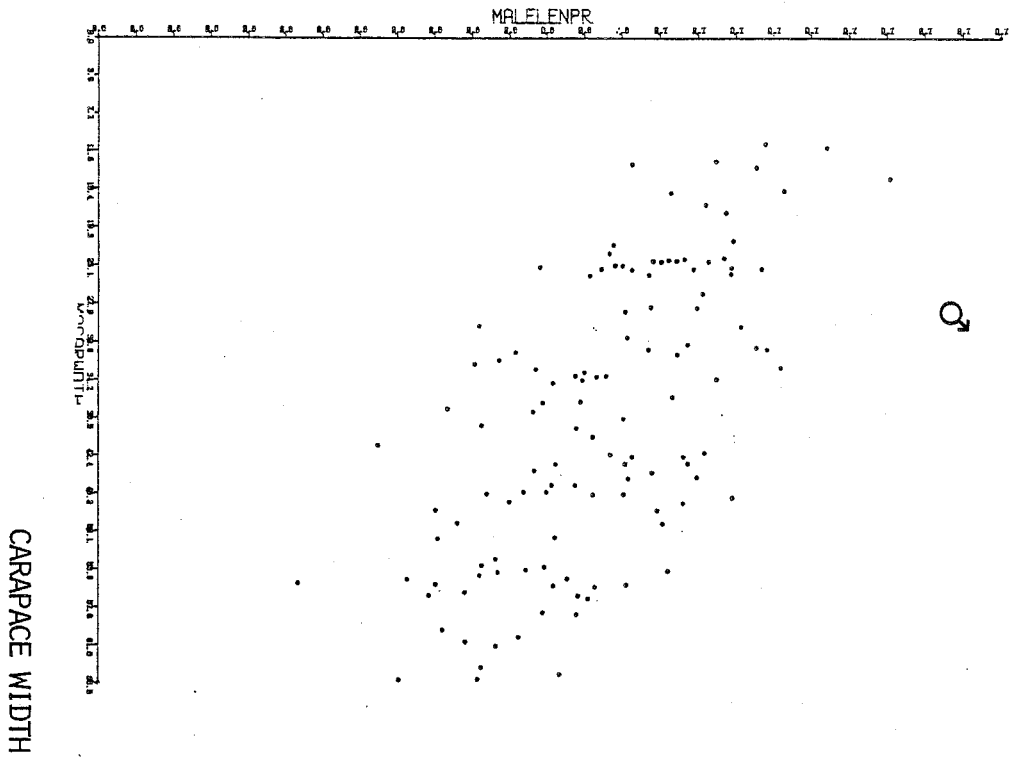


# CHELA VOLUME

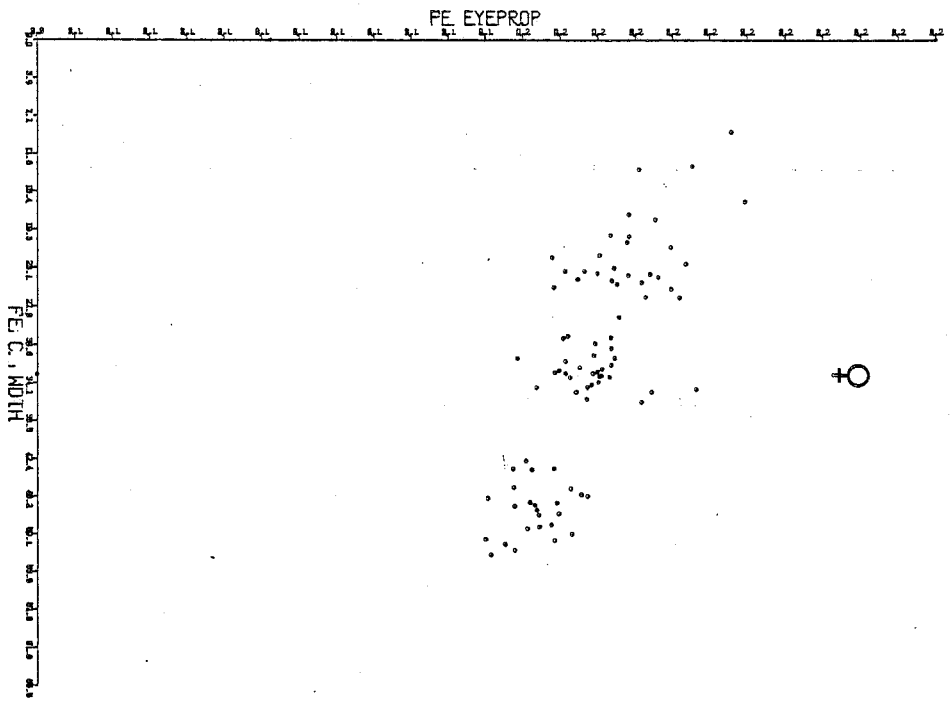
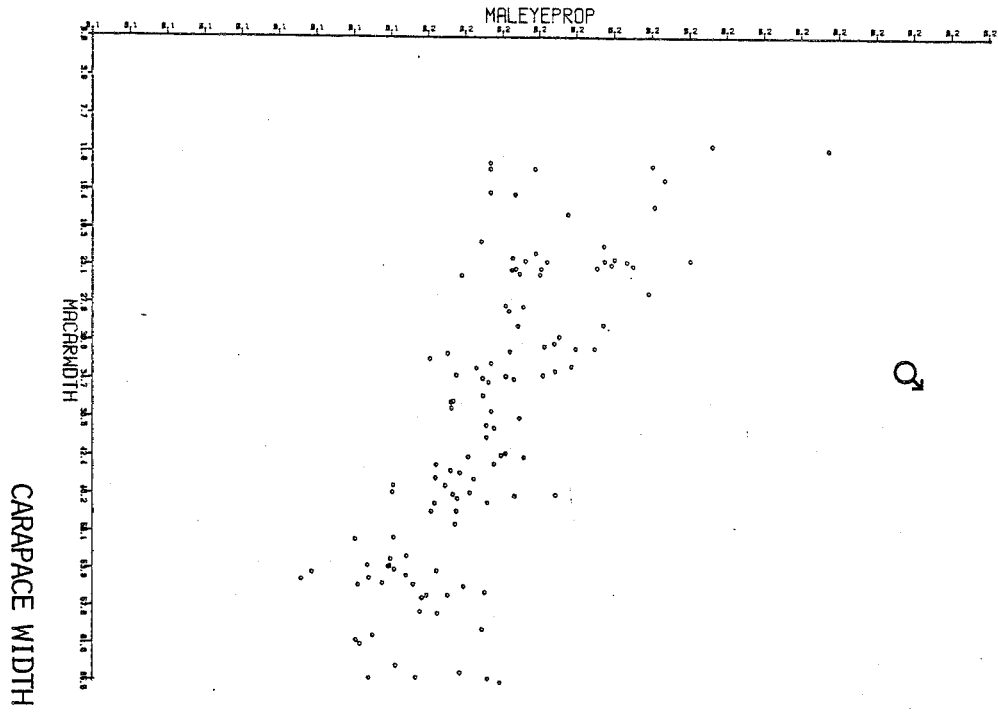




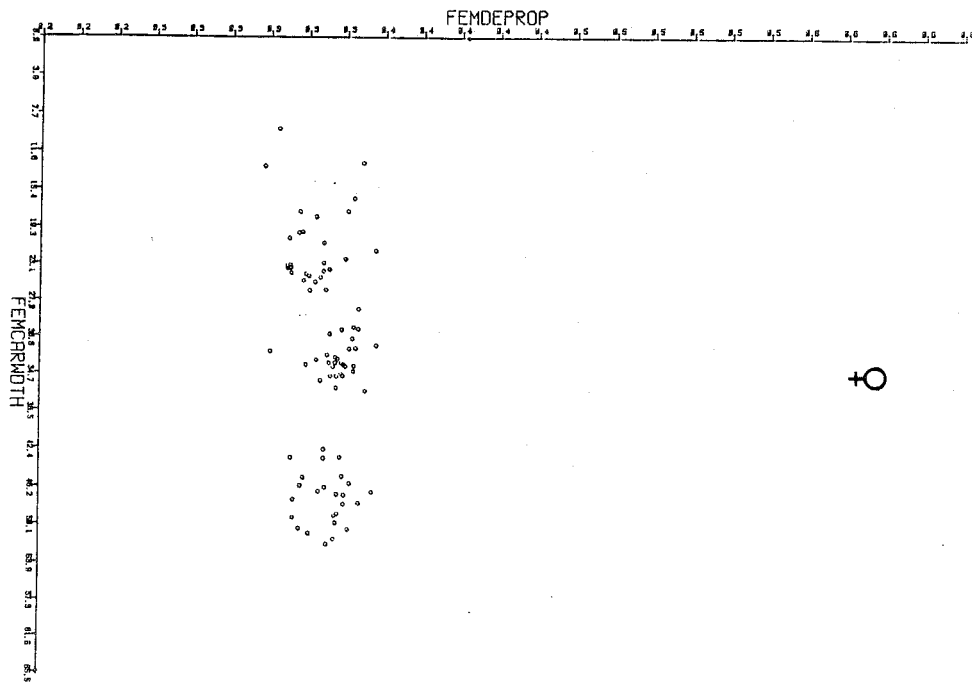
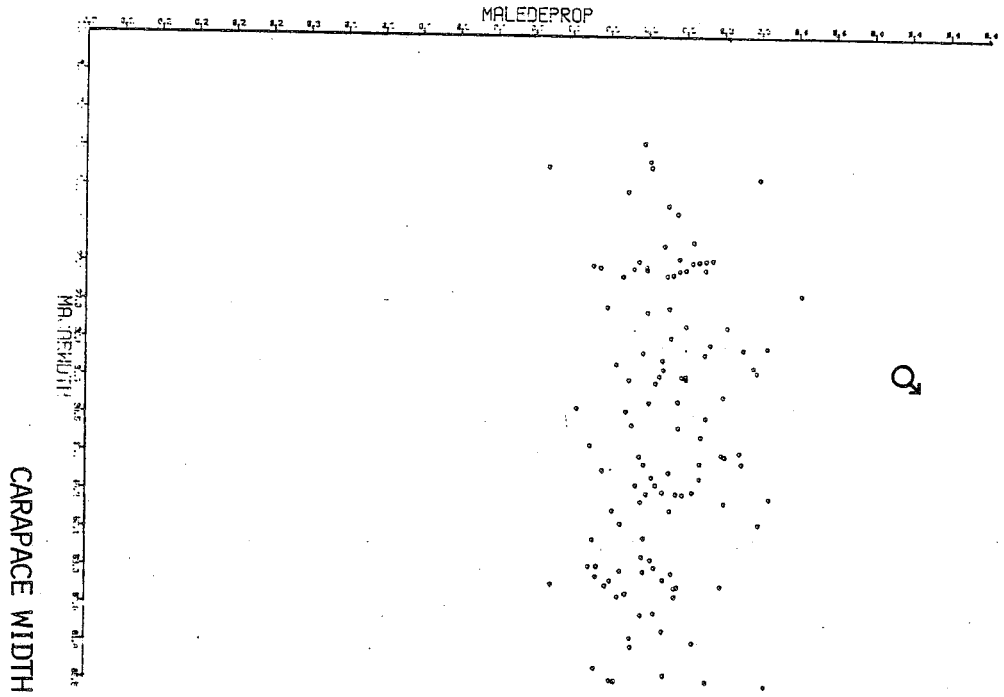
# RELATIVE CARAPACE LENGTH



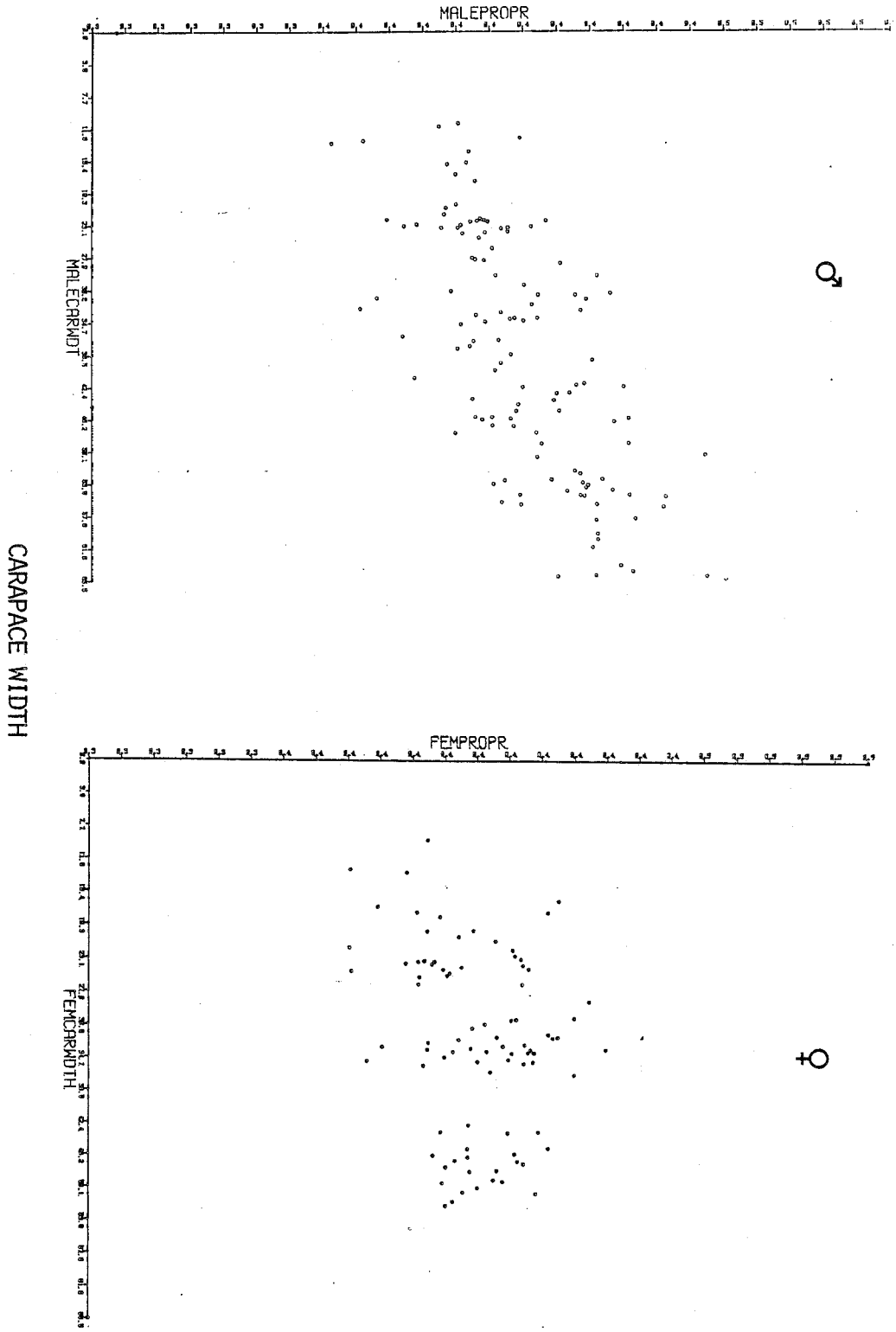
RELATIVE DISTANCE BETWEEN THE EYES



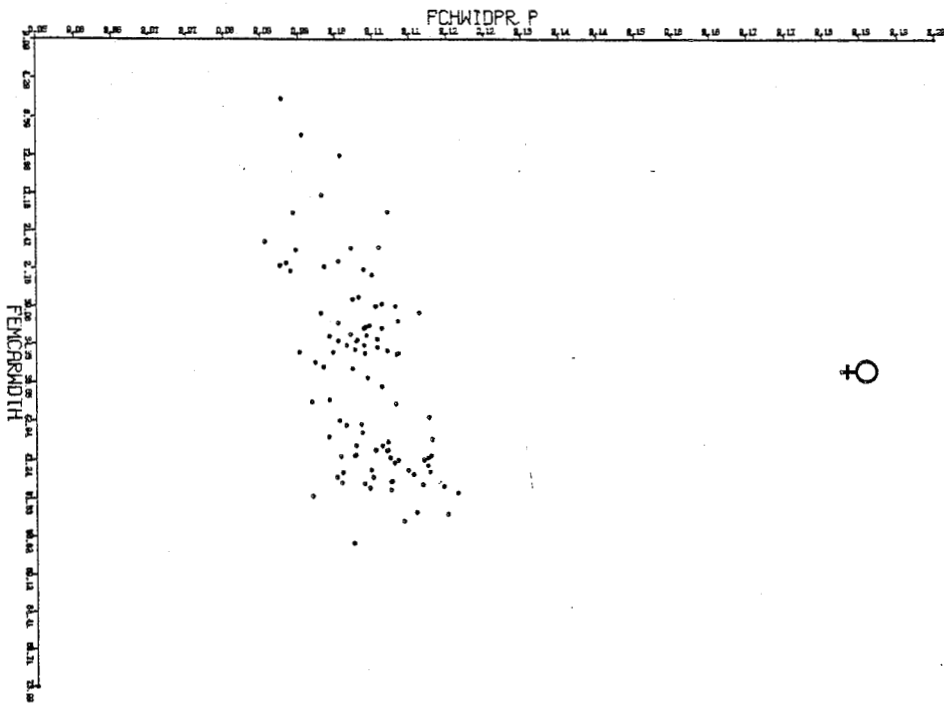
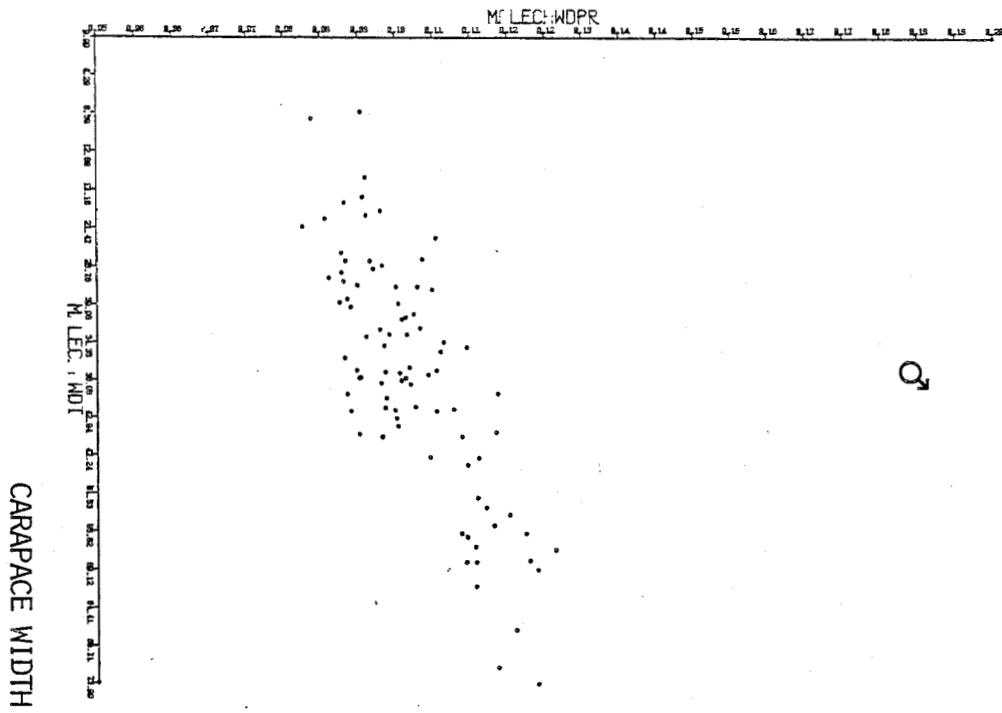
# RELATIVE BODY DEPTH



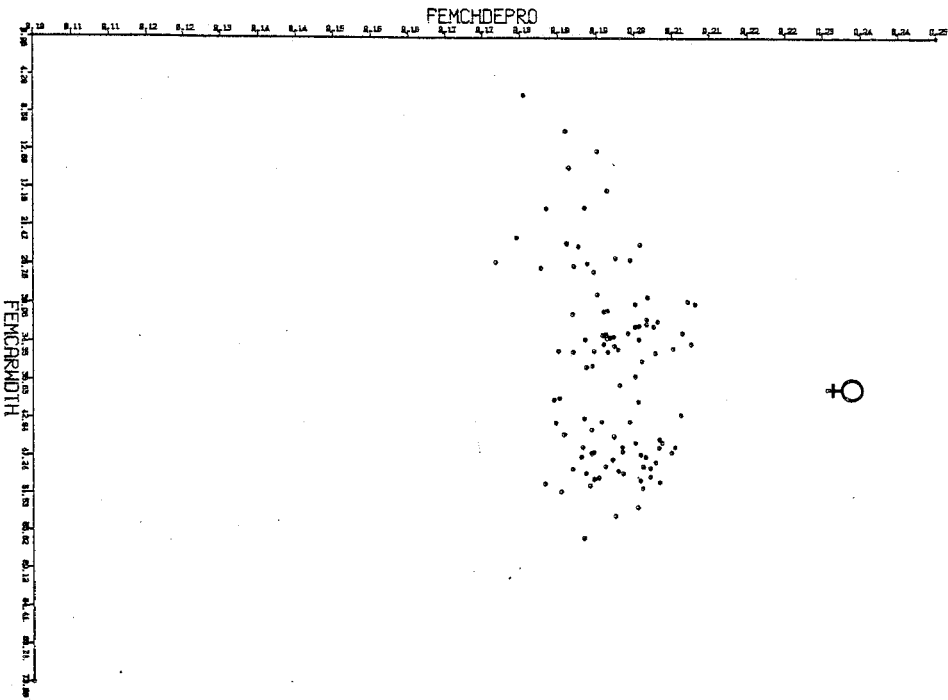
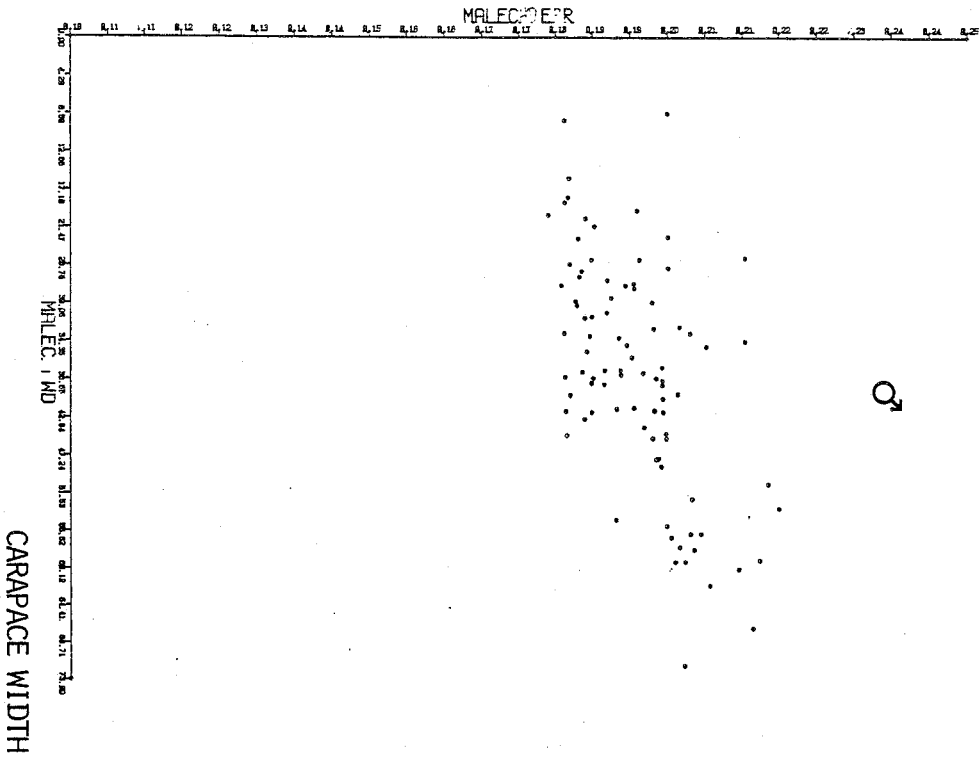
RELATIVE PROPODUS LENGTH



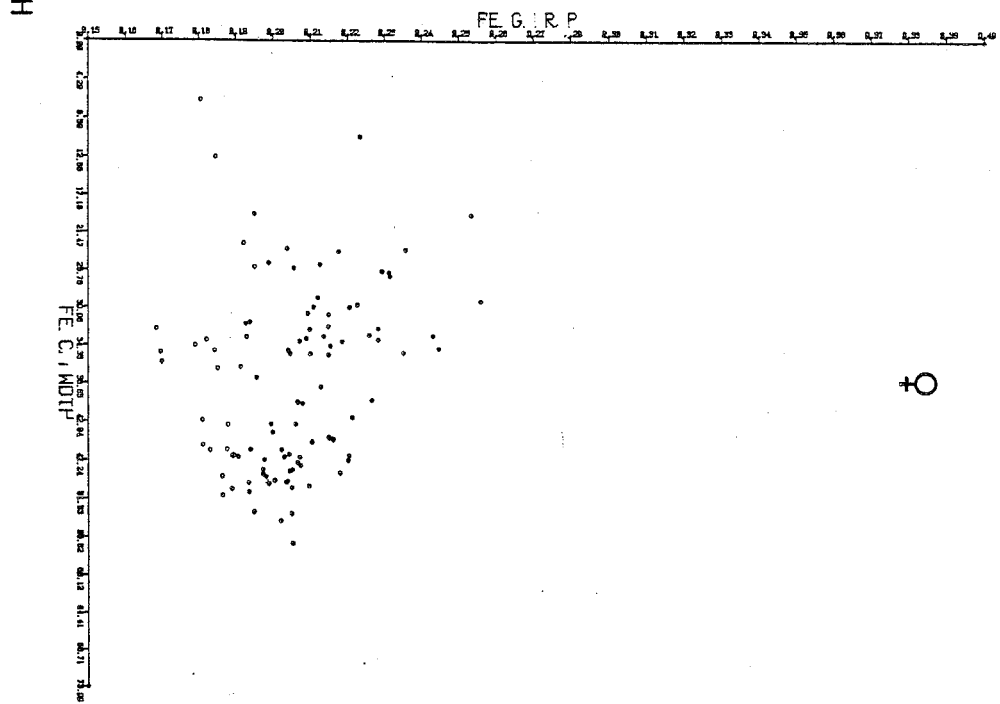
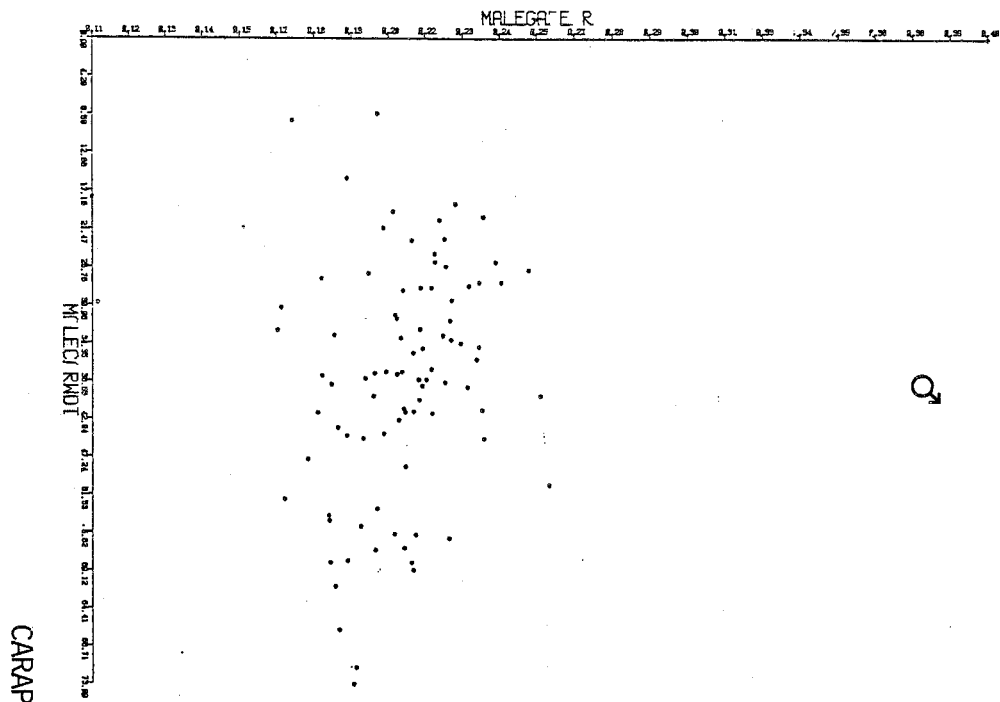
RELATIVE CHELA WIDTH



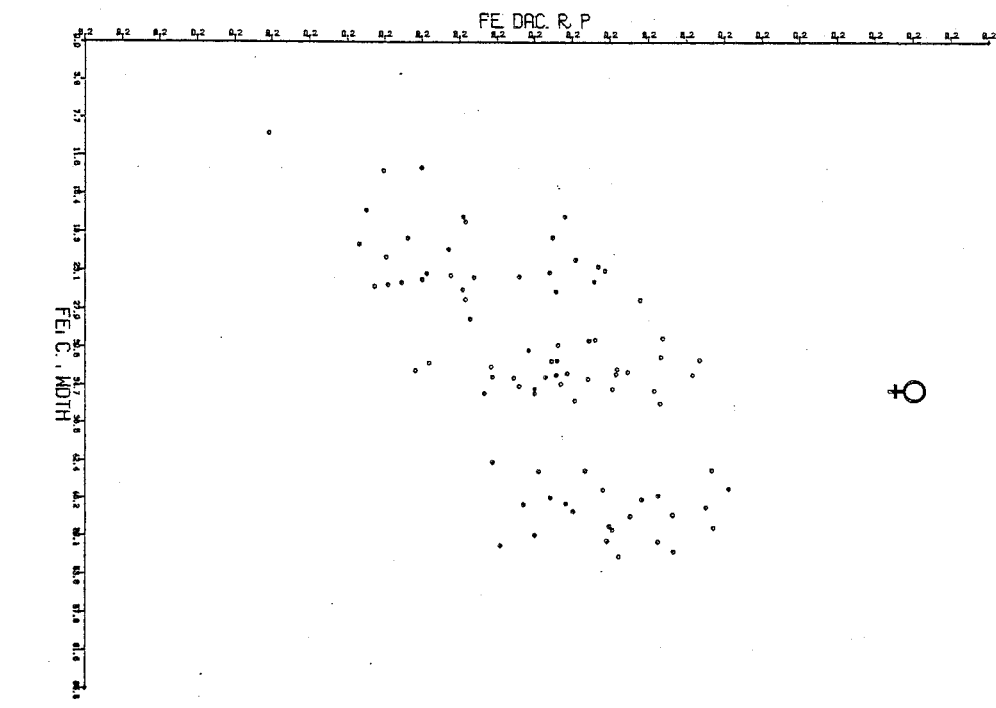
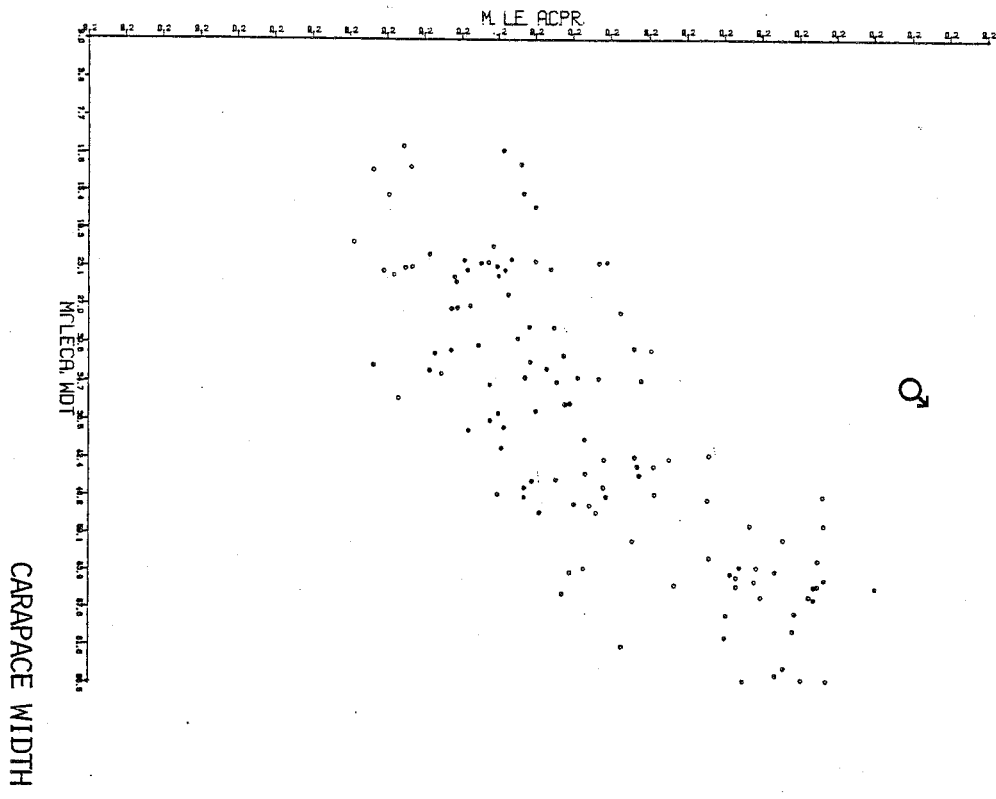
# RELATIVE CHELA DEPTH



RELATIVE CHELA GAPE

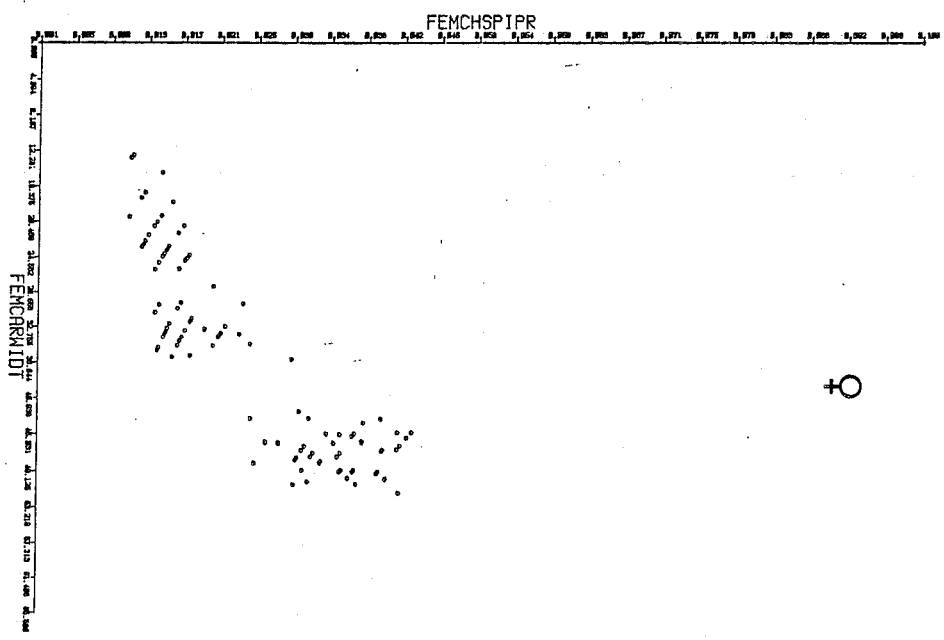
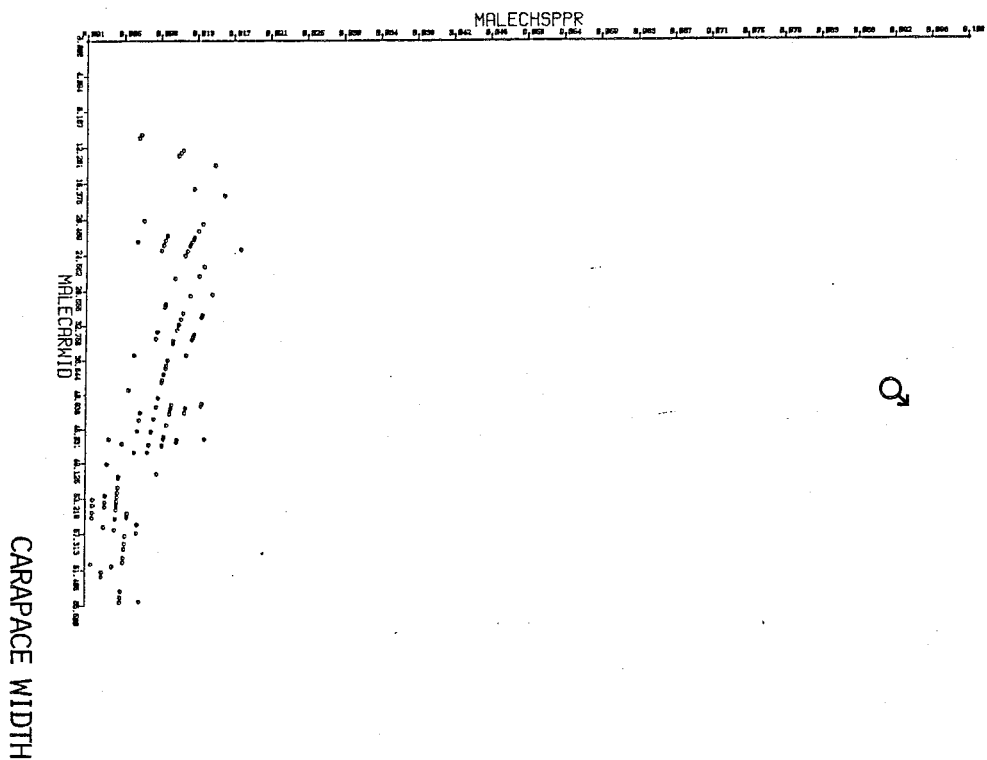


RELATIVE DACTYLUS LENGTH

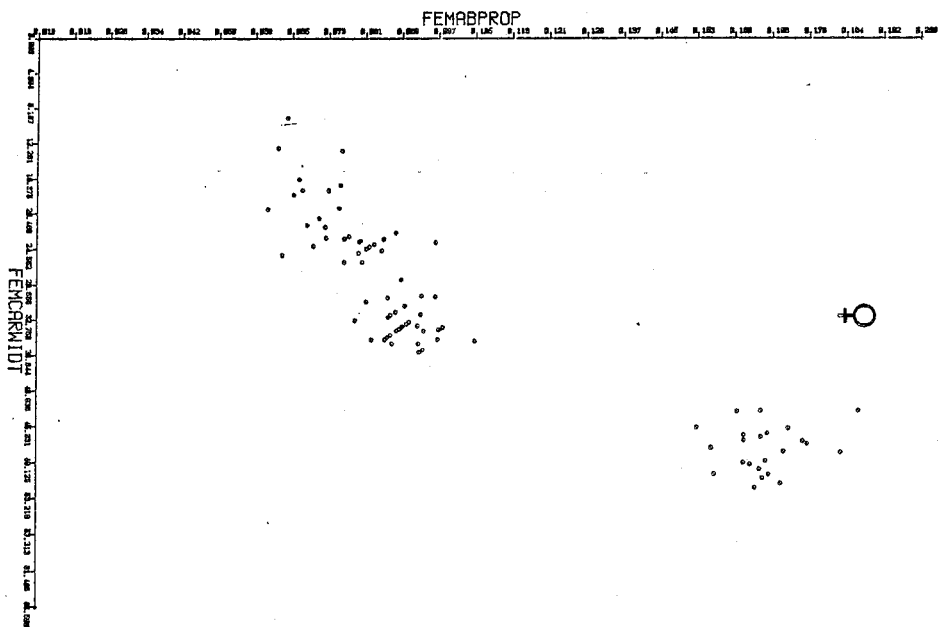
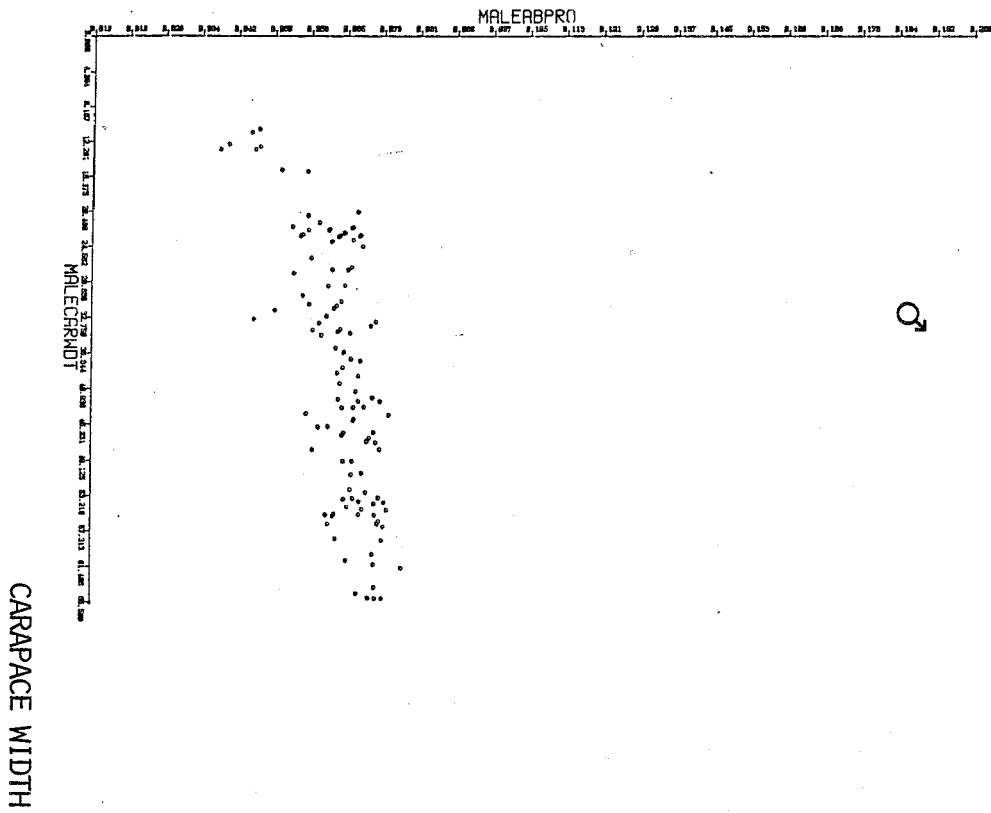




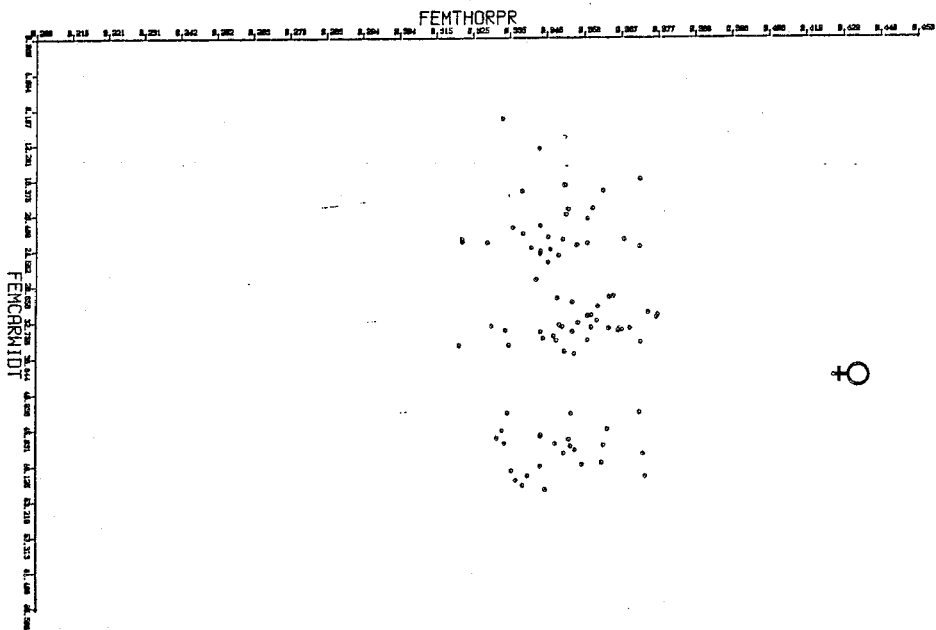
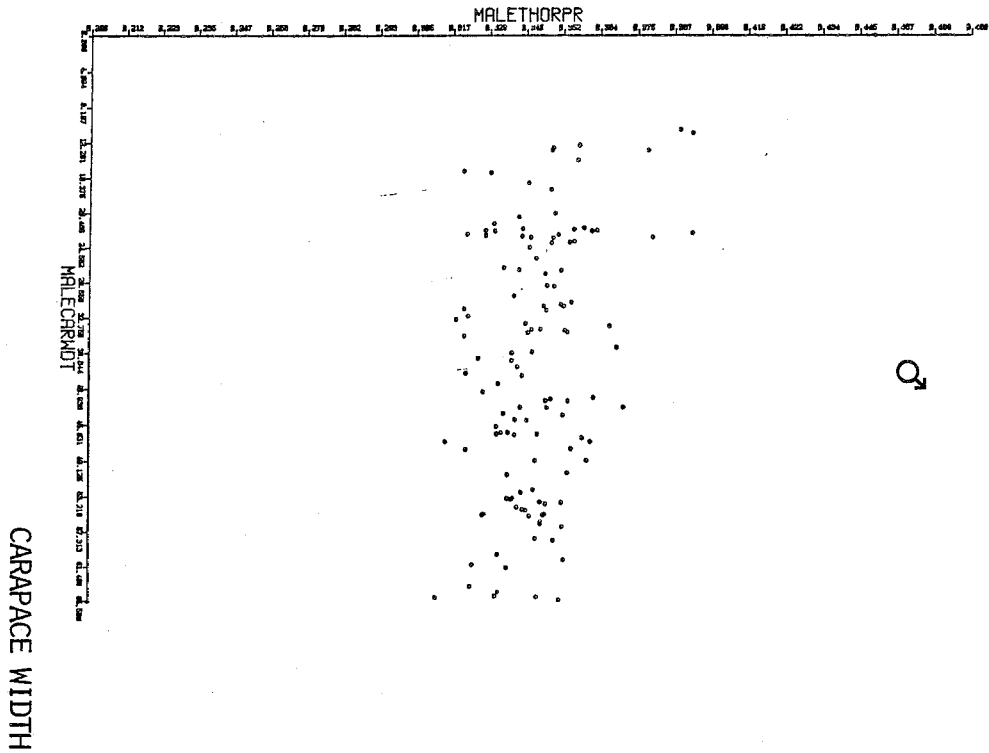
# RELATIVE CHELA SPINE HEIGHT



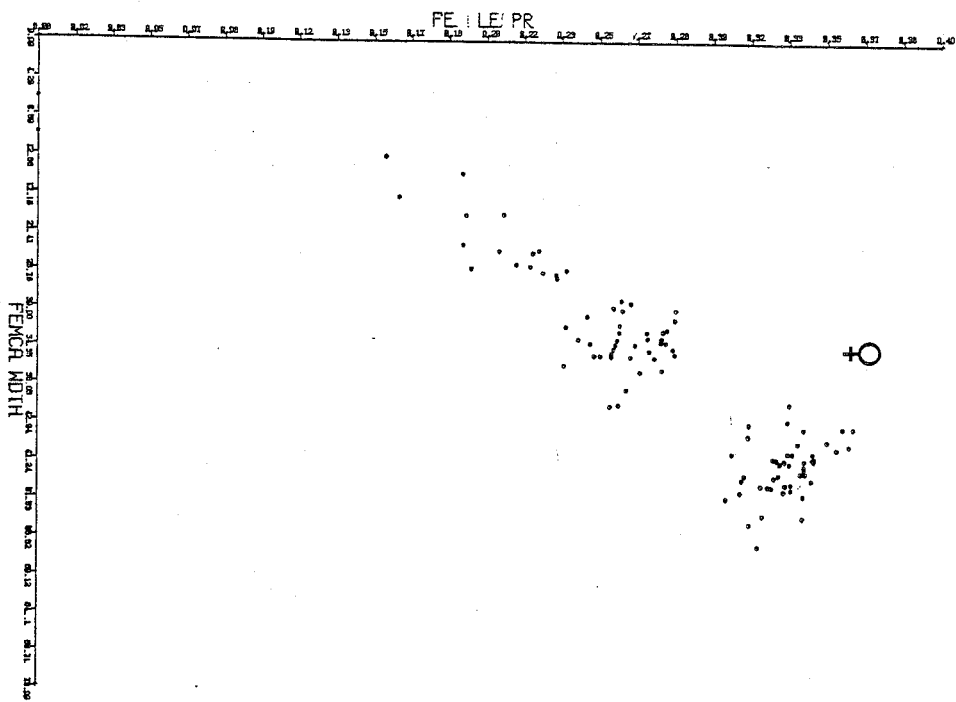
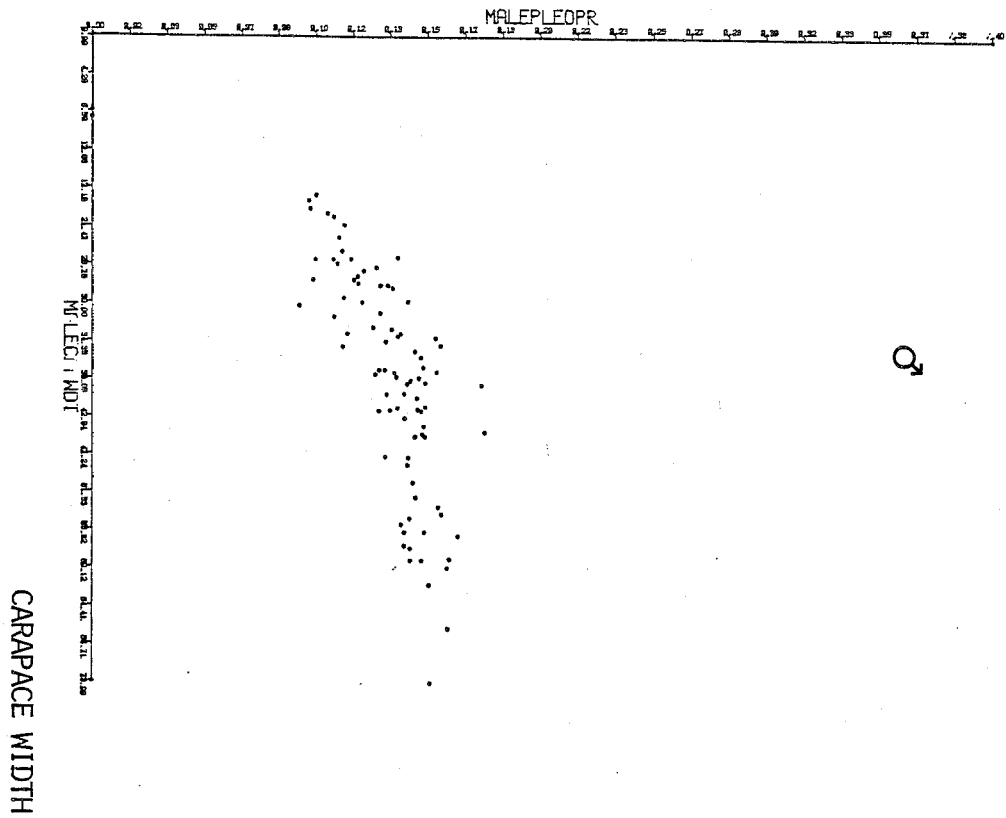
RELATIVE ABDOMINAL WIDTH



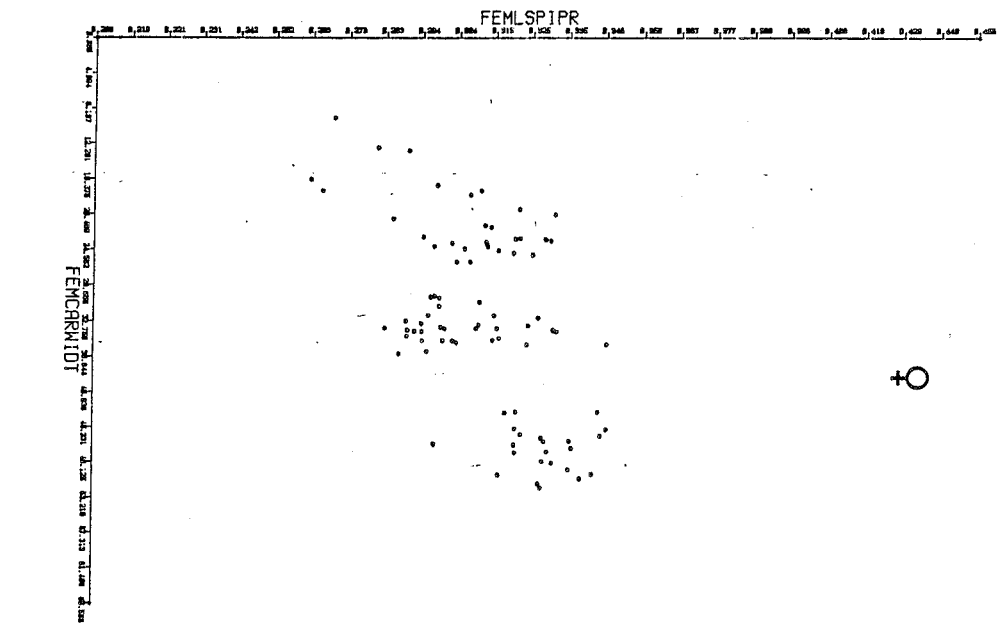
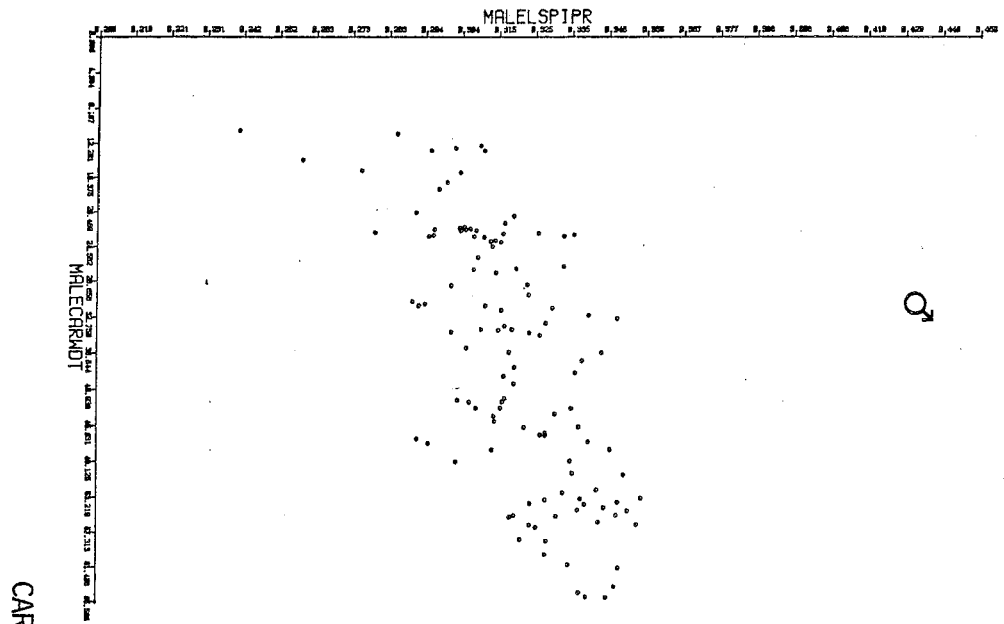
RELATIVE THORACIC WIDTH



# RELATIVE PLEPOD LENGTH



RELATIVE LATERAL SPINE LENGTH



## APPENDIX II

Histological Schedule for Processing Crab Gonads  
(following Winsor, 1983)

## 1. FIXATION

Fixative: Marine Bouins

Duration: one week

Post-fixation treatment: wash in 70% alcohol until supernatant is clear

## 2. PROCESSING

Method: by automatic processor

Schedule: 3/4 hour each in - 70%, 90%, 100%, 100% alcohol,  
Toluene 1, Toluene 2, wax 1, wax 2  
and wax 3

1/4 hour vacuum infiltration in wax

Embedding medium: paraffin wax

## 3. SECTIONING

Method: Rotary microtome

Section thickness: 6  $\mu$ m

Softening fluid: 10% aqueous ammonium hydroxide for 30 minutes

Mounting technique: sections were placed on slides flooded with 10% ethanol and then floated out on the water bath

Section adhesive: egg albumen

Drying technique: mounted sections were placed on a hotplate for 30 minutes and then placed in the oven at 60° C overnight

## 4. STAINING

Method: Haematoxylin & Eosin

Technique:

Xylene 1	5 minutes
Xylene 2	20 dips
Xylene-abs.alcohol	20 dips
Abs. alcohol 1	20 dips
Abs. alcohol 2	20 dips
70% alcohol	20 dips
Water	20 dips
Mayers Haemalum	5 minutes

Water	20 dips
Scotts Tap Water Substitute (TWS)	2 minutes
Water	10 dips
Eosin	30 seconds
Water	20 dips
70% alcohol	20 dips
Abs. alcohol 1	20 dips
Abs. alcohol 2	20 dips
Abs. alcohol-xylene	20 dips
Xylene 1	20 dips
Xylene 2	20 dips

Mountant: DPX

Drying technique: slides were placed in the oven at 30° C  
for a maximum of two days

## APPENDIX III

The tidal distribution of *M. lunaris*

## Introduction

The aim of this study was to investigate the distribution of *M. lunaris* in relation to tidal levels.

## Methods

This study was conducted at Site 'B', Pallarenda beach, Townsville on June 16, July 17 and September 26, 1984, these dates having been selected based on the similarity in their tidal regimes. Sampling was undertaken using a 10 m x 1 m, 25-mm mesh seine net, following the methods described in Chapter 2.

A series of tows (n=4) was carried out at high-, mid- and low-water levels on a receding tide. During the high tide sampling, individuals caught were sexed, measured and the dactylus of their 3rd right periopods trimmed. Individuals were then returned to the surf zone at the area of capture. Individuals caught during the midtide sampling were treated in a similar manner although this time, the dactylus of their 3rd left periopods was trimmed. Individuals caught during the low tide sampling were only sexed and measured. During both the mid- and low tide samplings, a note was made of the number of individuals caught with trimmed periopods.

## Results

The results of this study are summarized in Table AIII.



Table AIII A summary of the abundance, sex ratio, size and movement of *M. lunaris* in relation to tidal levels.

	DAY 1		DAY 2		DAY 3	
<b>I. Catch per Unit Effort</b>						
High tide	7.5 ± 2.1		3.5 ± 2.8		0.3 ± 0.8	
Mid tide	13.8 ± 15.8		7.0 ± 2.2		13.0 ± 2.9	
Low tide	42.0 ± 8.0		20.3 ± 9.8		20.8 ± 28.6	
<b>II. Total Numbers and Sex Ratio</b>						
High tide	30	1:1	14	1:1	1	-
Mid tide	55	1:1	28	1:1	52	1:1
Low tide	168	1:1	81	1:1	83	1:1
<b>III. Mean Size (± 95% C.I.)</b>						
High tide	45.5 ± 1.9		40.5 ± 3.9			
Mid tide	46.0 ± 2.7		47.9 ± 3.6		40.1 ± 3.4	
Low tide	45.3 ± 1.4		43.8 ± 2.3		44.6 ± 1.5	
<b>IV. Number of Marked Individuals Recaptured</b>						
High to Mid	0		0		0	
High to Low	1	3.3%	1	7.0%	0	
Mid to Low	8	14.5%	4	14.3%	6	11.5%