

JOB REPORT

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Project No. M-5-R-1 Date 31 May 1960.  
Project Name: Oyster and Fisheries Investigations of Area M-5.  
Period Covered: May 1, 1959 - April 30, 1960. Job No. A-2

Analysis of Forage and Predator Species

Objectives: To investigate the life histories and interrelationships of food, game, and forage fish in the San Antonio Bay area.

Procedures: Fish were collected, identified, preserved, counted, and measured. Nets and other methods were used to obtain fish for tagging. Food habits were studied whenever feasible.

Throughout the year covered by this study trawl samples were taken twice each month at fourteen established stations in the area, (Figure I). These samples were taken with a ten foot trawl and the usual sampling time was five minutes.

Each trawl sample was examined and all species generally occurring in the area were measured and counted. All species encountered for the first time were identified, preserved, and added to the permanent collection being established for Area M-5.

Findings: Below is a checklist of the species collected and identified that occurred within this area.

Checklist of Vertebrates of Area M-5

CARCHARHINIDAE - Requiem Sharks  
Carcharhinus Blainville

C. limbatus (Muller and Henle) - Blacktip Shark. Commonly occurring through summer months.

DASYATIDAE - Sting Rays  
Dasyatis Rafinesque

D. sabina (LeSueur) - Sting Ray (Stingaree). Common throughout area all year.

LEPISOSTEIDAE - Gars  
Lepisosteus Lacepede

L. spatula Lacepede - Alligator Gar. Commonly occurring throughout area. Most abundant in Hynes Bay.

ELOPIDAE - Tarpons  
Elops Linnaeus

E. saurus Linnaeus - Skipjack. Common throughout area in summer months.

Megalops Lacepede

- M. atlanticus Valenciennes - Tarpon. Sighted only once in Pass Cavallo.

CLUPEIDAE - Herrings

Brevoortia Gill

- B. gunteri Hildebrand - Bay Menhaden. Occurred fairly often during the fall and winter months.

Dorosoma Rafinesque

- D. petenense (Gunther) - Threadfin Shad. A fresh water fish found near the mouth of the Guadalupe River only once.

- D. cepedianum (LeSueur) - Gizzard Shad. Common during the winter months.

ENGRAULIDAE - Anchovies

Anchoa Jordan & Evermann

- A. mitchilli (Valenciennes) - Anchovy. Commonly occurring throughout the year.

SYNODONTIDAE - Lizardfishes

Synodus Gronow

- S. foetens (Linnaeus) - Atlantic lizardfish. Common all year in the area. Most abundant in summer.

ARIIDAE - Sea Catfishes

Bagre Oken

- B. marina (Mitchill) - Gafftopsail Catfish. Common throughout all of area. Most abundant in summer.

Galeichthys Valenciennes

- G. felis (Linnaeus) - Sea Catfish. Commonly occurring in area. Most abundant in summer months.

BELONIDAE - Needlefishes

Strongylura van Hasselt

- S. marina (Walbaum) - Atlantic Needlefish. Fairly common in area.

HEMIRAMPHIDAE - Halfbeaks

Hyporhamphus Gill

- H. unifasciatus (Ranzani) - Halfbeak. Commonly seen in area at night.

SYNGNATHIDAE - Pipefishes & Seahorses

Syngnathus Linnaeus

- S. louisianae Gunther - Louisiana Pipefish. Common in areas of vegetation.

- S. scovelli (Evermann and Kendall) - Pipefish. Common in areas of vegetation.

CYPRINODONTIDAE - Killifishes & Topminnows

Lucania Girard

L. parva (Baird and Girard) - Rainwater fish. Fairly common in vegetated areas.

MUGILIDAE - Mulletts

Mugil Linnaeus

M. cephalus Linnaeus - Striped Mullet. Common all year in this area.

ATHERINIDAE - Silversides

Menidia Bonaparte

M. beryllina (Cope) - Atlantic Silversides. Occurs in shallow grassy areas over most of area M-5.

POLYNEMIDAE - Threadfins

Polydactylus Lacepede

P. octonemus (Girard) - Eightfingered threadfin. Abundant throughout area in spring.

CENTROPOMIDAE - Snooks

Centropomus Lacepede

C. undecimalis (Bloch) - Snook. Found only once in Saluria Bayou. Occurs in area in summer months.

SERRANIDAE - Sea Basses & Groupers

Promicrops Gill

P. itaiara (Lichtenstein) - Spotted Jewfish. Sighted several times in wrecked ship in Pass Cavallo.

GADIDAE - Codfishes & Hakes

Urophycis Rose

U. floridanus - Ling. Occurs commonly throughout area. Taken in this area in winter and early spring.

CARANGIDAE - Jacks, Scads, & Pompanos

Trachinotus Lacepede

T. carolinus (Linnaeus) - Common Pompano. Taken only once in trammel nets. Common in summer.

Chloroscombrus Girard

C. chrysurus (Linnaeus) - Bumper. Taken only once near Panther Pt. Two specimens taken November 1959.

Selene Lacepede

S. vomer (Linnaeus) - Lookdown. Fairly common in the higher salinities of the area.

LOBOTIDAE - Tripletails

Lobotes Cuvier

L. surinamensis (Bloch) - Tripletail. One specimen taken in Saluria Bayou, July 1959.

GERRIDAE - Mojarra  
Eucinostomus Baird and Girard

- E. gula (Cuvier) - Mojarra. First taken in Saluria Bayou; found in much of area in spring months.

HAEMULIDAE - Grunts  
Orthopristis Girard

- O. chrysopterus (Linnaeus) - Pigfish. Commonly occurring throughout area all year.

SCIAENIDAE - Croakers  
Stellifer Oken

- S. lanceolatus (Holbrook) - Star Drum. Common throughout fall and winter months.

Sciaenops Gill

- S. ocellata (Linnaeus) - Redfish. Very common in this area. Occurs all year though most common in the fall. Along with C. nebulosus it is one of the most important food and game fishes of the Texas coast. Very high commercial and sport production of this species.

Leiostomus Lacepede

- L. xanthurus Lacepede - Spot. Very common in area.

Micropogon Cuvier

- M. undulatus (Linnaeus) - Atlantic Croaker. Very common throughout this area most of the year.

Menticirrhus Gill

- M. littoralis (Holbrook) - Gulf Kingfish. Only one specimen taken June 1959. Apparently uncommon.

Pogonias Lacepede

- P. cromis (Linnaeus) - Black Drum. Very common. Occurs all year but most abundant in summer. One of the most important commercial fishes of the area. Has some sports value.

Cynoscion Gill

- C. arenarius Ginsburg - Sand Squeteague. Occurs in area. Has some small sport and commercial value. They have not been taken in large numbers and their exact value to sport and commercial interests is not known.

- C. nebulosus (Cuvier) - Spotted Squeteague. Occurs throughout year but most abundant in fall months. This is the most important sports fish of the area. Commercial production of this species in area is also high. Rivalled in importance only by S. ocellata.

SPARIDAE - Porgies  
Lagodon Holbrook

- L. rhomboides (Linnaeus) - Pinfish. Very common throughout area. Most abundant in summer.

Archosargus Gill

- A. probatocephalus (Walbaum) - Sheepshead. Common. Has some commercial and sports value in area.

EPHIPPIDAE - Spadefishes

Chaetodipterus Lacepede

- C. faber (Broussonet) - Spadefish. Common in the higher salinities near Gulf passes in summer.

BLENNIIDAE - Blennies

Chasmodes Valenciennes

- C. bosquianus (Lacepede) - Striped Blenny. One specimen taken at Steamboat Pass July 1959.

TRICHIURIDAE - Cutlassfishes

Trichiurus Linnaeus

- T. lepturus Linnaeus - Atlantic Cutlassfish. Common throughout most of the area during summer months.

SCOMBRIDAE - Mackerels

Scomberomorus Lacepede

- S. maculatus (Mitchill) - Spanish Mackerel. Common in summer months in Pass Cavallo.

STROMATEIDAE - Harvestfishes

Peprilus Cuvier

- P. paru (Linnaeus) - Harvestfish. Only one specimen taken in June, 1959.

- P. triacanthus (Peck) - Butterfish. Only one specimen taken in Pass Cavallo, April 1960.

GOBIIDAE - Gobies

Gobionellus Girard

- G. hastatus Girard - Sharptail Goby. Not uncommon. Two specimens taken in area in early spring.

Gobiosoma Girard

- G. bosci (Lacepede) - Naked Goby. Common in vegetated areas and sometimes on reefs.

TRIGLIDAE - Sea Robins

Prionotus Lacepede

- P. tribulus (Cuvier) - Southern Sea Robin. This species appears to be the common one of this area but it is believed that P. rubio also occurs.

PLEURONECTIDAE - Flounders

Paralichthys Girard

- P. lethostigmus Jordan and Gilbert - Southern Flounder. Important game and commercial fish in this area.

Ancylopsetta Gill

- A. quadrocellata Gill - Ocellated Fluke. Although reported uncommon in bays it has been taken repeatedly throughout this area.

ACHIRIDAE

Trinectes Rafinesque

- T. maculatus (Bloch) - Hogchoker. Commonly occurring in this area.

CYNOGLOSSIDAE - Tonguefishes

Symphurus Rafinesque

- S. plagiusa (Linnaeus) - Tonguefish. Specimens have been taken from time to time in this area.

OSTRACIIDAE - Trunkfishes

Lactophrys Swainson

- L. tricornis (Linnaeus) - Cowfish. One specimen taken in Pass Cavallo.

TETRAODONTIDAE - Puffers

Sphoeroides Lacepede

- S. nephelus (Goode and Bean) - Puffer. Commonly occurring in this area.

DIODONTIDAE - Porcupine Fishes

Chilomycterus Bibron

- C. schoepfi (Walbaum) - Spiny Boxfish. Not common though several individuals taken.

GOBIESOCIDAE - Clingfishes

Gobiesox Lacepede

- G. strumosus Cope - Clingfish. One specimen taken with oyster dredge sample. Occurs in winters.

BATRACHOIDIDAE - Toadfishes

Opsanus Rafinesque

- O. beta (Goode and Bean) - Toadfish. Common throughout this area. Occurs most of year.

Porichthys Girard

- P. porosissimus (Valenciennes) - Midshipman. One specimen taken at Steamboat Pass in April 1959.

This list is far from complete and is not intended to include all the vertebrates known to occur in this area. These are merely the species that have actually been observed. This work was not done as a separate survey, but was compiled through the joint sampling of several jobs. In the future any new species that are observed will be added to the list. An intensive survey is not visualized, but rather the routine sampling will be the medium of search for new species.

Tagging: As a part of this job a fish tagging program was carried on throughout the job period. Due to lack of tag returns very little information

has been obtained from this phase of the job. Out of the approximately three hundred fish tagged there has not been a single tag returned.

The gear used in catch the fish is highly selective and the greatest numbers tagged were between 225 mm and 275 mm long (standard length). This does not reveal a size range of the population at any one time. The smallest fish caught was 200 mm and the largest, 395 mm.

The fish tagged during the period of this job were predominately Cynoscion nebulosus. Most of these were tagged in the early fall months of 1959.

Future studies may show that additional sampling devices may be needed for adequate coverage. Tagging will need to be continued for several consecutive years before conclusive results can be anticipated. Although a lack of adequate nets hampered the tagging program early in the study period, the three hundred individuals tagged may eventually bring some helpful results.

The dominant species tagged was Cynoscion nebulosus amounting to about 80% of the number tagged. Also tagged were Sciaenops ocellata, Pogonias cromis, and Paralichthys lethostigmus. However, these last three species were obtained in such small numbers that very little information has been obtained from the work.

The most commonly occurring species of the forage fish are Leiostomus xanthurus, Micropogon undulatus, and Lagodon rhomboides. All of these species have been found in the stomach contents of some of the predator species of this area. Since these are believed to be important in the food chain of the larger fish, they have been measured and counted in the trawl samples that are taken twice monthly through the study period. Figures I through IV show the growth and average lengths that appeared in this area.

The most commonly occurring species of the forage fish is Leiostomus xanthurus. They appeared in large numbers throughout the year. The new spawn began to appear in February and these were the dominant size group by early April. It is thought that this species is of most importance of the forage fish of this year. They are part of the diet of the predator species throughout most of the year. Micropogon undulatus also plays an important part in the food cycle of the area.

Food Habits: During the course of this study too few specimens of the predator species were examined to determine definite traits in their food habits. This work will be continued until conclusive results are obtained. Even though no definite results were obtained on the food habits of food and predator species it was noted that the most frequent food of the Cynoscion nebulosus examined was shrimp with the afore mentioned forage fish also appearing in the diet. Most of the stomachs were empty. The method of sampling could effect this in causing regurgitation of stomach contents and thus produce an erroneous conclusion. Additional studies will be conducted before an attempt is made to assay feeding trends.

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Accepted by

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Date

4 November 1960

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FIGURE I

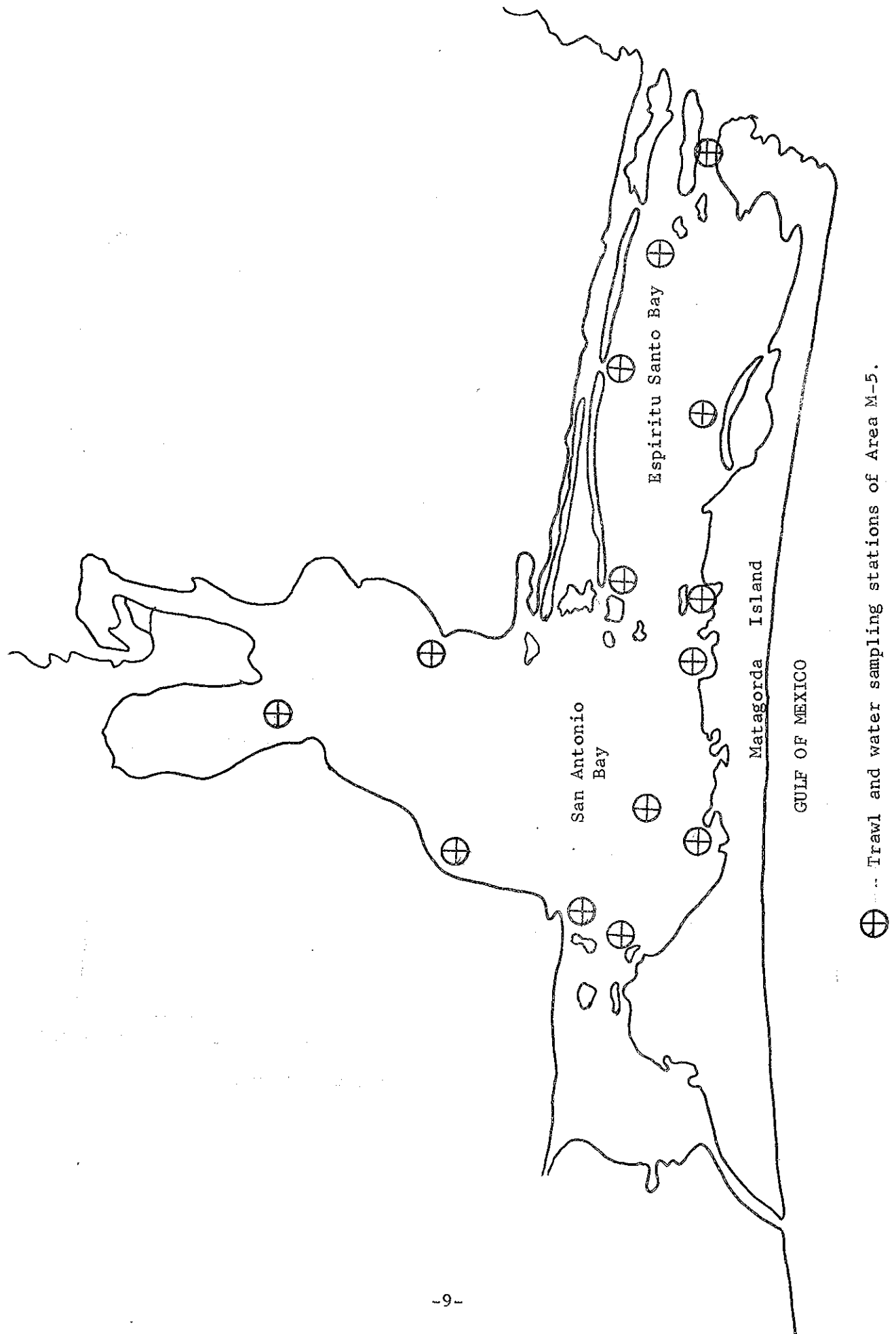


FIGURE I

Population Size Range

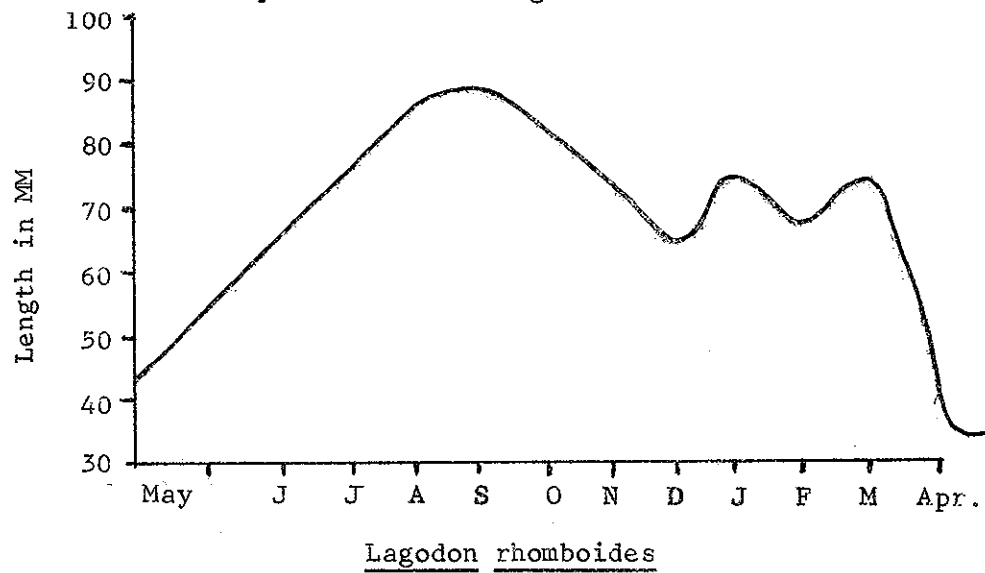


FIGURE II

Population Size Range

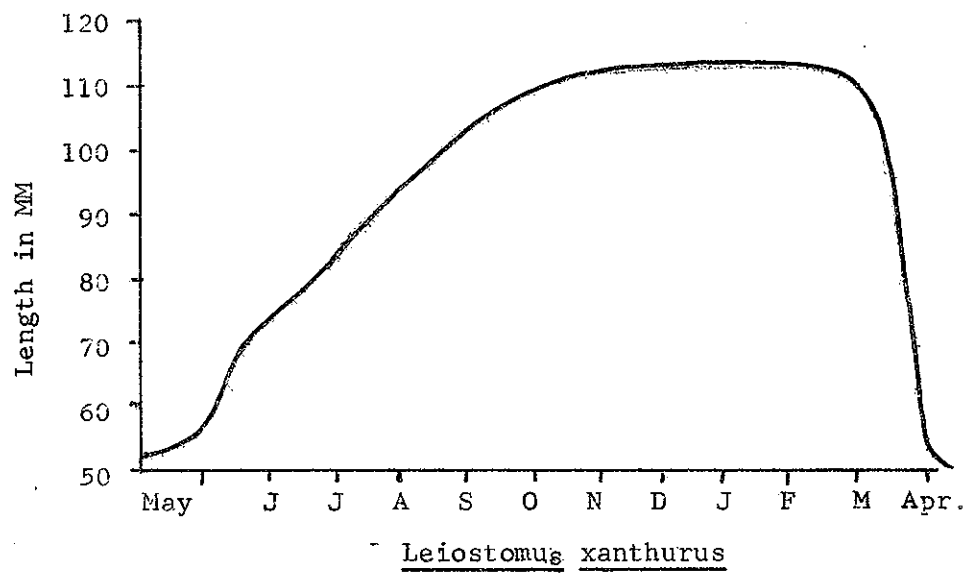


FIGURE III

Population Size Range

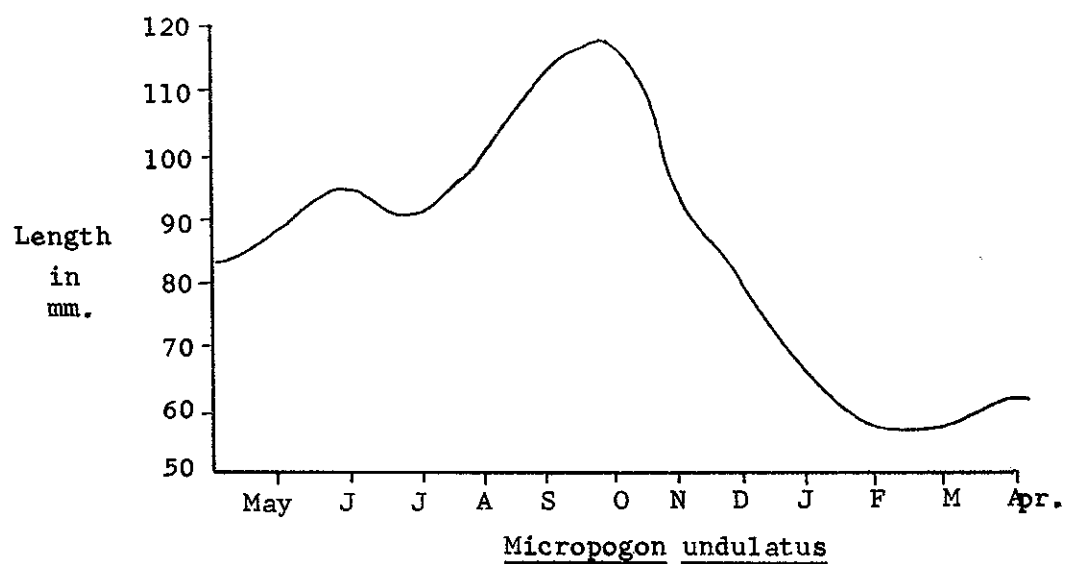


FIGURE IV

