Job Report
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Project Name: Coastal Fisheries Management Co-ordination.


Objective: To provide co-ordination of the investigative and developmental activities in the Coastal Fisheries Division.

Procedure: The co-ordinator was responsible for conducting his operations so as to produce results of material consequence. He served as co-ordinator and was responsible for furnishing reports on the status and accomplishments of the Coastal Fisheries Division of his own activities. Periodical trips were made to field stations and meetings of biologists were held as needed.

Findings: The new system of reporting on projects seemed to function well enough during the first year. Weekly reports which were summarized in a weekly news letter and monthly reports on job activities were made. Job completion or annual job reports were made on completion of the time duration allotted for the jobs in the Job Descriptions.

Field work and job activities closely followed the outlines of the Project Plans, Specifications and Estimates and the Job Descriptions. This is a great improvement over earlier programs in which field work was rather aimless in direction and purpose. Cost estimates are now more easily made and supplies can be purchased in advance of their need.

Some shortcomings in this year's reports were noted, however. The majority of the reports were late because work on them was slow in starting. Some reports are still outstanding at the time of this writing. It is believed that after the experience of compiling the field data and writing these reports the preparation of the reports for next year will begin earlier. A deadline set in the job description should be closely observed.

It was found that only one area had been completely mapped with the location of live and exposed oyster reefs shown in relation to the State Land Tracts. This should be completed in all areas during the next project year.

It was also noted that more emphasis should be made on the shrimp study program. More information on all phases of shrimp abundance is sorely needed. Especially nursery area data which can support an intelligent prediction on future harvests are lacking. A more intensified study of post larval forms and the abundance and location of juvenile shrimp in the nursery grounds should be undertaken immediately. Additional information is needed on seasonal abundance of near shore Gulf populations.

From the amount of work done in the past, the amount of time currently spent in the program, and from the information thus far received, it seems
vector. It is of interest that Sparks and Mackin (1957) have reported a larval trypanorhynchian (procerci) from the common commercial shrimp Penaeus setiferus from Galveston Bay. However, it must remain speculative that this might be the infective vector for sciaenids. The presence of trypanorhynchian larvae (identified as genus Butetrarhynchus, or possibly Tentacularia) in shrimp which are migratory and of adult trypanorhynchans in Texas coast elasmobranchs provide all the prerequisites necessary for a complete life cycle. The fact that Hyman (1951, p. 368) indicates that a complete life cycle for a marine trypanorhynchid is not known only increases the necessity of gaining more information on 'Poecilancistrium'.

The differences found in percent infestation for the various sciaenids opens the question as to whether each species of fish is a normal vector in the life cycle of the parasite or whether it is accidentally infected by chance feeding. The high infestation for Bairdiella chrysura indicates that it is probably a common intermediate host. Cynoscion nebulosus and C. arenarius as well as C. nothus might be infected directly by the same vector as Bairdiella and therefore be normal intermediate hosts, or it is possible that they are infected by occasional feeding on infected Bairdiella. Although Bairdiella does not appear to be a preferred element in the fish diet of C. nebulosus (Guest & Gunter, 1956; Gunter, 1947) it was found during this study in the stomachs of both C. nebulosus and C. arenarius. The sciaenids with low infestation probably are accidentally infected by occasional feeding on vectors carrying the procerci.

To understand the infection of various teleosts it is necessary that the vector and/or vectors which carry the procerci to the fish must be ascertained.

PHYSIOLOGICAL PROBLEMS

The presence of the plerocerci in various sciaenids as well as lutianids and serranids (Chandler, 1954) poses the question as to whether the internal milieu of the various species are similar or whether the parasite shows adaptive plasticity. In addition, the fact that many of the fish carrying 'Poecilancistrium' occur in widely varying salinities suggests that either the life cycle of the parasite can be carried out at varying salinities or that the parasites are carried into the various ecologic situations by their hosts. If an elasmobranch is the host for the adult tape worm (an almost undisputed probability), few possibilities exist for the proglottids to be shed in salinities much below 25 parts per thousand since few elasmobranchs commonly occur below these salinities in Texas waters (members of the genus Dasyatis are exceptions). If the eggs hatch in salinities of 25 to 35 parts per thousand and are carried by a crustacean (larval shrimp, etc.) it is possible they enter the bays with the yearly invasion of young shrimp and are thus innoculated into the fish population. The mass exodus of sciaenids during winter months to Gulf waters could be expected to complete the life cycle by introducing the intermediate vector into the diet of the more stenohaline elasmobranchs.

Such a cycle would infer that physiological tolerances of the parasite are probably narrow and that the parasites dependent on the ability of their respective hosts to maintain homeostatic balance in their tissues. The vacuoles noted in muscles of Pogonias cromis might possibly represent evacuation of Poecilancistrium due to intolerable changes in tissue constituents, such as inorganic ions, resulting from exposure to high salinities.

The fact that the parasite occurs in many hosts suggests that the physi-
ology of the various hosts is similar. It is probably not unique therefore
that it is found primarily in one family of fish in the Texas lagoons and
that more aberrant members, like Leiosostomus xanthurus, (which has dark
musculature) are not highly infected. Certainly such distributions warrant
physiologic inquiry.

In conclusion it may be said that determination of the major hosts in
the life cycle of Poecilancistrium robustum is necessary and paramount to
further physiologic studies, to predicting what fishes will be most heavily
infected and to possible means of prevention.

SUMMARY

(1) The distribution of the plerocerci larvae of the cestode, Poecilancis-
trium robustum Chandler, was investigated for several teleosts from Texas
coastal waters. Infestation fishes of the family sciaenidae was heavy,
individual species giving the following percentages: Bairdiella chrysura sp.
- 44.6; Cynoscion nebulosus sp. - 32; C. arenarius sp. - 14.8; Menticirrhus
americanus sp. - 10; Cynoscion nothus sp. - 6.3; Pogonias cromis sp. - 3.4;
Micropogon undulatus sp. - 2.2; Leiosostomus xanthurus - 0.2. Larimus fasci-
atus and Stellifer lanceolatus had no parasites, but an insufficient number
of specimens were examined to eliminate them as normal hosts. Of eight
redfish, Sciaenops ocellata, three were found to be parasitized. Other fishes
investigated were not infected with plerocerci. They were: Mugil cephalus,
Polydactylyus octonemius, Chloroscombrus chrysurus, Conodon nobilis, Lagodon
rhomboides and Peprilus paru.

(2) Infestation is related to age, younger fishes not being infected. It
is suggested infection occurs only with ontogenetic food changes which in-
troduces the proper vector into the diet. Data indicate that older fishes,
particularly Cynoscion nebulosus and C. arenarius are not as often parasit-
ized as three year old fish suggesting a differential mortality of parasit-
ized versus non-parasitized fish.

(3) Superficial morphologic examination of the larvae indicates that the
same species of cestode, or, at least very closely related forms, infest
the different sciaenids, with the possible exception of Menticirrhus americanus.

(4) No significant difference in percentage infestation could be found for
fish taken from different geographic and ecological localities in southern
Texas marine waters.

(5) Examination of the cestode fauna of elasmobranch spiral valves revealed
that trypanorhynchids were present in Dasyatis sayi, D. sabina, Rhinoptera
bonasus; several specimens of Sphyrna tiburo and S. diplana did not reveal
the presence of adult trypanorhynchids.
LITERATURE CITED


