

FRY AND LARVAE OF FISHES AND CRUSTACEANS IN COASTAL
MARINE WATERS OF NEGROS ORIENTAL,
NEGROS ISLAND, PHILIPPINES

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One hundred and thirty-two species of fish belonging to 55 families and one order and ten species of crustaceans belonging to five families and three orders were found associated with Chanos chanos fry from seven sampling stations on the coast of Negros Oriental province, Negros Island, Philippines during a 12-month period from December 1984 through November 1985. About two-thirds of these species are used for food.

The fry and larvae of fishes and crustaceans collected together with those of Chanos chanos (bangus) have, in the past, been considered useless by fishermen, and are therefore discarded, often thrown on the ground to die at collection time (pers. obs.). Only in recent years have penaeid crustacean larvae been collected for culture in brackish water ponds (pers. obs.). However, the fry and larvae of fishes have remained unused.

In 1984 a research project to determine the culture potential of these fry and larvae was started jointly by a research unit of the Bureau of Fisheries and Aquatic Resources (BFAR) and the Silliman University Marine Laboratory. This paper, which is part of that project, reports on the fish and crustacean species caught from December 1984 through November 1985. Bañada (1983) gave a comparable listing of fish fry and larvae associated with Chanos chanos fry from Hamtik, Antique. Bagarinao and Taki (in press) studied the larval and juvenile fishes in Pandan Bay, Pandan Island for a different reason.

MATERIALS AND METHODS

Seven sampling stations, separated by distances ranging from 20 to 40 km, were established along the coast of Negros Oriental province (Fig. 1). The three stations at La Libertad, Manjuyod and Tanjay face the Tañon Strait, the three at Dumaguete, Zamboaguita and Siaton, the Mindanao Sea, and the station at Bayawan, the Sulu Sea. The seven stations were selected to encompass a wide range of coastal habitat types.

A sampling station measures 1,000 m parallel to the shoreline and is divided into 20 substations, each 50 m long. Twelve of these substations picked randomly at the start of the project

For fish identification, Herre (1927), Munro (1967), Allen (1975), Masuda et al. (1975), Rau and Rau (1980), Schroeder (1980) and Gloerfelt-Tarp and Kailola (undated) were used. The crustaceans were identified following Day (1969), Tamei (1979) and Grey et al. (1983). Voucher specimens are deposited in the Silliman University Marine Laboratory.

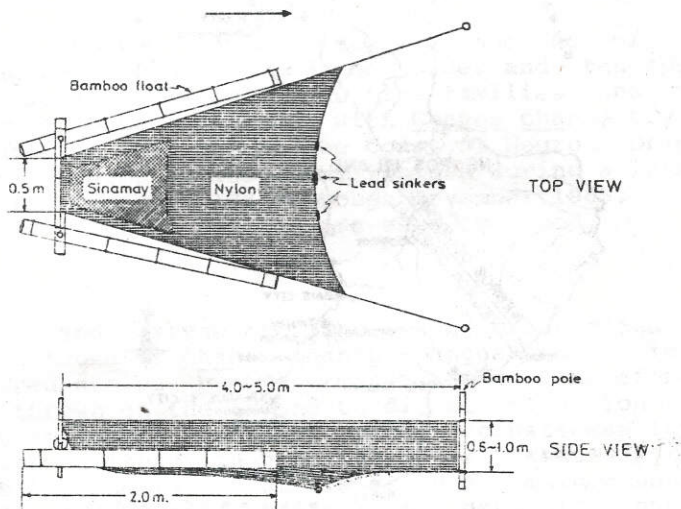


Fig. 2. Diagram of the fish fry and larva tow net (after Villaluna et al., 1983). Arrow points to the direction net is pushed.

RESULTS AND DISCUSSION

A total of 132 species of fish belonging to 55 families and one order and ten species of crustaceans belonging to five families and two orders were identified (Tables 1, 2). The number of fish species is almost twice the number (70) reported by Bagarinao and Taki (in press) for their onshore samples in Panda Bay and more than four times the number (30) reported by Bañad for Antique. Ninety-six out of the 142 fish and crustacea species (67.6%) are food species in the Central Visayas; few of the fish species may also be considered aquarium species (Table 1). Twenty-seven fish species (20.5%) may be classified as aquarium species; many are listed as such by Munro (1967), Masuda et al. (1975), Carcasson (1977), Schroeder (1980), Rau and Rau (1980) and Gloerfelt-Tarp and Kailola (undated). The seventeen remaining species (12.9%) are not of economic importance. The common food fishes belong to the families Acanthuridae, Belonidae, Carangidae, Haemulidae, Kyphosidae, Lethrinidae, Leiognathidae, Lutjanidae, Mugilidae, Mullidae

Table 1. List of fishes caught as larvae and fry with fry of Chanos chanos along the coast of Negros Oriental, Philippines from December, 1984 through November, 1985. Fish species are categorized primarily as food fish (FD), aquarium fish (AQ) or without commercial value (N).

TAXON	CATEGORY
1. ACANTHURIDAE (Surgeonfishes, unicornfishes)	
1. <u>Acanthurus triostegus</u> (Linnaeus)	FD/AQ
2. <u>Acanthurus</u> sp.	FD/AQ
3. <u>Naso</u> sp. (<u>N. brevirostris</u> ?)	FD/AQ
2. AMBASSIDAE (Glassy perchlets)	
4. <u>Ambassis</u> sp.	N
3. ANGUILLIFORMES (Eels)	
5. eel sp.	FD
4. ANTIENNARIIDAE (Frogfishes)	
6. <u>Histrio histrio</u> (Linnaeus)	AQ
5. APOGONIDAE (Cardinal fishes)	
7. <u>Apogon</u> sp.1 (<u>A. amboinensis</u> ?)	N
8. <u>Apogon robustus</u> (Smith & Radcliffe)	N
9. <u>Apogonichthys</u> sp. (<u>A. brachygrammus</u> ?)	N
10. <u>Apogonichthys marmoratus</u> (Alleyne & Maclean)	N
11. <u>Archamia</u> sp.	N
12. <u>Sphaeramia orbicularis</u> (Cuvier)	AQ
13. apogonid sp.1	N
14. apogonid sp.2	N
6. ATHERINIDAE (Siversides)	
15. <u>Allaneta</u> sp.	N
7. BELONIDAE (Needlefishes)	
16. <u>Strongylura strongylura</u> (van Hasselt)	FD
17. <u>Strongylura</u> sp.1	FD
18. <u>Tylosorus crocodilus</u> (Le Seuer)	FD
8. BLENNIIDAE (Blennies)	
19. <u>Alticus</u> sp.	N
20. <u>Meiacanthus</u> (<u>M. ditrema</u> ?)	AQ
21. <u>Omobranchus</u> sp.1	N
22. <u>Omobranchus</u> sp.2?	N
23. <u>Petroscirtes mitratus</u> Ruppell	AQ
9. CALLIONYMIDAE (Dragonets)	
24. <u>Eleutherochir opercularis</u> (Valenciennes)	AQ

Table 1. (Continued.)

TAXON	CATEGORY
10. CARANGIDAE (Jacks)	
25. <u>Alepes djedaba</u> (Forsskal)	FD
26. <u>Alepes</u> sp.	FD
27. <u>Caranx</u> sp.	FD
28. <u>Gnathanodon speciosus</u> (Forsskal)	FD/AQ
29. <u>Trachinotus blochi</u> (Lacepede)	FD
30. carangid sp.	FD
11. CENTRISCIDAE (Shrimpfishes, Razorfishes)	
31. <u>Aeoliscus strigatus</u> (Günther)	AQ
12. CLUPEIDAE (Sardines and Herrings)	
32. <u>Sardinella</u> sp.	FD
13. CYNOGLOSSIDAE (Tongue-soles)	
33. <u>Cynoglossus bilineatus</u> (Lacepede)	N
34. <u>Cynoglossus puncticeps</u> (Richardson)	N
14. DIODONTIDAE (Porcupinefishes)	
35. diodontid sp.	AQ
15. ELEOTRIDAE (Sleepers, Gadgeons)	
36. <u>Butis</u> sp.	FD
37. <u>Eleotris</u> sp.	FD
38. <u>Ophiocara</u> sp.	FD
39. eleotrid sp.1	FD
40. eleotrid sp.2	FD
16. ELOPIDAE (Tarpons and Ten-pounders)	
41. <u>Elops</u> sp. (<u>E. machnata</u> ?)	FD
42. <u>Megalops cyprinoides</u> (Broussonet)	FD/AQ
17. ENGRAULIDAE (Anchovies)	
43. <u>Stolephorus</u> sp.1	FD
44. <u>Stolephorus</u> sp.2	FD
18. EPHIPPIDAE (Batfishes)	
45. <u>Platax orbicularis</u> (Forsskal)	FD/AQ
46. <u>Platax teira</u> (Forsskal)	FD/AQ
19. EXOCOETIDAE (Flyingfishes)	
47. <u>Parexocoeteus</u> sp.	FD
48. <u>Cypselurus</u> sp.	FD
20. GERREIDAE (Mojarras)	
49. <u>Gerres oyena</u> (Forsskal)	FD

Table 1. (Continued.)

TAXON	CATEGORY
50. <u>Gerres filamentosus</u> Cuvier	FD
51. <u>Gerres macrosoma</u> Bleeker	FD
21. GOBIIDAE (Gobies)	
52. <u>Acentrogobius criniger</u> (Valenciennes)	AQ
53. <u>Acentrogobius</u> sp. 1	FD
54. <u>Amblygobius albiglaculatus</u> (Ruppell)	FD
55. <u>Bathygobius</u> sp.	FD
56. <u>Glossogobius biocellatus</u> Cuvier & Valenciennes	FD
57. <u>Glossogobius</u> sp. (<u>G. circumspectus</u> ?)	FD
58. <u>Oxyurichthys</u> sp.?	N
59. goby sp.1	N
22. HAEMULIDAE (Sweetlips, Grunts)	
60. <u>Plectrorinchus gibbosus</u> Lacepede	FD
61. <u>Pomadasys hasta</u> (Bloch)	FD
23. HEMIRAMPHIDAE (Halfbeaks, Garfishes)	
62. <u>Hemiramphus far</u> (Forsskal)	FD
63. <u>Zenarchopterus</u> sp.1	FD
64. <u>Zenarchopterus</u> sp.2	FD
24. KUHLIIDAE (Flagtails)	
65. <u>Kuhlia marginata</u> (Cuvier)	FD
25. KYPHOSIDAE (Rudderfishes)	
66. <u>Kyphosus cinerascens</u> (Forsskal)	FD
26. LABRIDAE (Wrasses, Tuskfishes)	
67. <u>Cheilio inermis</u> (Forsskal)	FD/AQ
68. <u>Halichoeres</u> sp.(?)	AQ
69. <u>Halichoeres</u> sp.1	AQ
70. <u>Halichoeres</u> sp.2	AQ
71. <u>Halichoeres</u> sp.3	AQ
72. <u>Stethojulis</u> sp.	AQ
73. <u>Novaculichthinae</u> (<u>Cymolates</u> sp.?)	AQ
27. LEOGNATHIDAE (Slipmouths)	
74. <u>Gazza achlamys</u> Jordan & Starks	FD
75. <u>Gazza minuta</u> (Bloch)	FD
76. <u>Leiognathus</u> sp.	FD
77. <u>Secutor</u> sp.	FD
28. LEPTOCEPHALIDAE (= CONGRIDAE) (Conger eels)	
78. <u>Conger cinereus</u> Ruppell	FD

Table 1. (Continued.)

TAXON	CATEGORY
29. LETHRINIDAE (Emperors) 79. <u>Lethrinus</u> sp.	FD
30. LOBOTIDAE (Tripletails) 80. <u>Lobotes surinamensis</u> (Bloch)	FD
31. LUTJANIDAE (Snappers) 81. <u>Lutjanus argentimaculatus</u> (Forsskal) 82. <u>Lutjanus fulviflamma</u> (Forsskal) 83. <u>Lutjanus russelli</u> (Bleeker)	FD FD FD
32. MONOCANTHIDAE (Filefishes and Triggerfishes) 84. <u>Aluterus scriptus</u> (Osbeck) 85. <u>Cantherhines fronticinctatus</u> (Gunther) 86. <u>Stephanolepis japonicus</u> (Tilesius)	FD/AQ AQ AQ
33. MONODACTYLIDAE (Silver batfishes) 87. <u>Monodactylus argenteus</u> (Linnaeus)	FD/AQ
34. MUGILIDAE (Mulletts) 88. <u>Crenimugil labiosus</u> (Valenciennes) 89. <u>Liza vaigiensis</u> (Quoy & Gaimard) 90. <u>Valamugil</u> sp. (cf. <u>V. seheli</u>)	FD FD FD
35. MULLIDAE (Goatfishes) 91. <u>Parupeneus barberinus</u> (Lacepede) 92. <u>Upeneus</u> sp.1 93. <u>Upeneus tragula</u> (Richardson)	FD/AQ FD/AQ FD/AQ
36. NEMIPTERIDAE (Treadfin-breems) 94. <u>Scolopsis lineatus</u> Quoy & Gaimard	FD/AQ
37. PARALICHTHYIDAE (Left-eyed flounders) 95. <u>paralichthyid</u> sp.1	FD
38. PARAPERCIDAE (Grubfishes) 96. <u>Parapercis</u> sp.	FD
39. PLATYCEPHALIDAE (Flathead) 97. <u>Cociella</u> sp.?	FD
40. PLOTOSIDAE (Marine catfishes) 98. <u>Plotosus lineatus</u> Valenciennes	FD/AQ
41. POMACENTRIDAE (Damsel-fishes) 99. <u>Abudefduf coelestinus</u> (Cuvier)	FD/AQ

Table 1. (Continued.)

	TAXON	CATEGORY
	100. <u>Abudefduf lorenzi</u> Hensley & Allen	FD/AQ
	101. <u>Abudefduf saxatilis</u> (Linnaeus)	FD/AQ
	102. <u>Pomacentrus</u> sp.1 (<u>P. burroughi</u> ?)	AQ
	103. <u>Pomacentrus</u> sp.2 (<u>P. vaiuli</u> ?)	AQ
42.	SCARIDAE (Parrotfishes)	
	104. <u>Scarus</u> sp.	FD
43.	SCATOPHAGIDAE (Scats)	
	105. <u>Scatophagus argus</u> (Linnaeus)	FD/AQ
44.	SCORPAENIDAE (Scorpionfishes)	FD
	106. <u>Parascorpaena</u> sp.?	
45.	SERRANIDAE (Seabasses, Groupers)	
	107. <u>Cephalopholis</u> sp.	FD/AQ
	108. serranid sp.	FD
46.	SIGANIDAE (Rabbitfishes)	
	109. <u>Siganus canaliculatus</u> (Park)	FD
	110. <u>Siganus guttatus</u> (Bloch)	FD
	111. <u>Siganus punctatus</u> (Schneider)	FD
	112. <u>Siganus spinus</u> (Linnaeus)	FD
	113. <u>Siganus</u> sp.(<u>S. virgatus</u> ?)	FD
47.	SILLAGINIDAE (Common whittings)	
	114. <u>Sillago sihama</u> (Forsskal)	FD
48.	SOLEIDAE (Soles)	
	115. <u>Heteromycteris hartzfeldi</u> (Bleeker)	FD/AQ
	116. soleidae sp.1	FD
49.	SOLENOTOMIDAE (Ghost Pipefishes)	
	117. <u>Solenostomus</u> sp. (<u>S. cyanopterus</u> ?)	AQ
50.	SPHYRAENIDAE (Barracudas)	
	118. <u>Sphyræna barracuda</u> (Walbaum)	FD
51.	SYNGNATHIDAE (Pipefishes, Sea horses)	
	119. <u>Hippocampus kuda</u> Bleeker	AQ
	120. <u>Syngnathoides biaculeatus</u> (Bloch)	AQ
	121. syngnathinae sp.1	AQ
	122. syngnathinae sp.2	AQ
52.	SYNODONTIDAE (Lizardfishes)	
	123. <u>Synodus</u> sp. (<u>S. variegatus</u> ?)	FD
	124. <u>Trachinocephalus myops</u> (Bloch & Schneider)	FD

Table 1. (Continued.)

TAXON	CATEGORY
53. TERAPONIDAE (Tigerfishes) 125. <u>Pelates quadrilineatus</u> Bloch 126. <u>Terapon jarbua</u> Forsskal	FD FD/AQ
54. TETRAODONTIDAE (Pufferfishes) 127. <u>Arothron immaculatus</u> (Bloch & Schneider) 128. <u>Arothron hispidus</u> (Linnaeus) 129. <u>Chelonodon patoca</u> (Hamilton-Buchanan) 130. <u>Torquigener brevipinnis</u> (Regan)	AQ AQ AQ AQ
55. TOXOTIDAE (Archerfishes) 131. <u>Toxotes jaculator</u> (Pallas)	FD/AQ
56. TRIACANTHIDAE (Tripodfishes) * 132. <u>Pseudotriacanthus striqilifer</u> (Cantor)	N

* Caught by stationary gear ("saplاد") in Tanjay August, 1985.

Table 2. List of crustaceans collected as larvae with Chanos chanos fry along the coast of Negros Oriental province, Philippines.

1. GRAPSIDAE

Varuna litterata Fabricius

2. MYSIDACEA

3. PALAEMONIDAE

Macrobrachium sp.

4. PENAEIDAE

Metapenaeus ensis (de Haan)

Penaeus indicus Milne-Edwards

Penaeus monodon Fabricius

5. PORTUNIDAE

Portunus sp.

Scylla serrata Forskal

6. SERGESTIDAE

7. STOMATOPODA

Table 3. A comparison of fish species in selected families reported from the Philippines.

F A M I L Y	NUMBER OF SPECIES		
	A	B	THIS STUDY
1. ACANTHURIDAE	26	25	3
2. BELONIDAE	7	4	4
3. CARANGIDAE	20	37	6
4. CLUPEIDAE	7	17	1
5. CYNOGLOSSIDAE	3	5	2
6. ELOPIDAE (including MEGALOPIDAE)	2	2	2
7. ENGRAULIDAE	6	10	2
8. EPHIPPIDAE (includes PLATACIDAE and DREPANIDAE)	3	3	2
9. EXOCOETIDAE	5	4	2
10. GERREIDAE	5	5	3
11. HAEMULIDAE (POMADASYIDAE)	6	8	2
12. HEMIRAMPHIDAE	4	6	3
13. KYPHOSIDAE	2	2	1
14. LABRIDAE	74	34	7
15. LEPTOCEPHALIDAE	3	-	1
16. LETHRINIDAE	13	16	1
17. LEIOGNATHIDAE	7	13	4
18. LOBOTIDAE	1	1	1
19. LUTJANIDAE	23	42	3
20. MUGILIDAE	2	8	3
21. MULLIDAE	14	16	3

Table 3. (Continued.)

F A M I L Y	NUMBER OF SPECIES		
	A	B	THIS STUDY
22. NEMIPTERIDAE (including SCOLOPSIDAE)	12	26	1
23. PLATYCEPHALIDAE	8	3	1
24. PLOTOSIDAE	1	1	1
25. POMACENTRIDAE	46	23	6
26. SCARIDAE	23	8	0
27. SCATOPHAGIDAE	1	-	1
28. SERRANIDAE	22	30	2
29. SIGANIDAE	13	13	5
30. SILLAGINIDAE	2	2	1
31. SOLEIDAE	2	2	2
32. SPHYRAENIDAE	5	4	1
33. SYNODONTIDAE	4	6	2
34. TERAPONIDAE	3	5	2
T O T A L	377	381	81

A

Herre (1953); includes only reports from localities in Cebu and Negros Oriental provinces.

B

Rau and Rau (1980); includes only fish landed at Cebu City.

Nemipteridae, Pomacentridae, Scaridae, Serranidae, Siganidae, Sphyraenidae and Teraponidae. The five families of crustacea used as food are the Grapsidae, Palaemonidae, Penaeidae, Portunidae and Sergestidae.

The number of species belonging to 34 selected families when compared with the number listed by Herre (1953) and Rau and Rau (1980), is roughly one-fifth (21%) of the number reported by each author (Table 3).

ACKNOWLEDGMENTS

We thank our BFAR colleagues, Mr. Louis Alcantara, Mr. Simeona Aypa and Mrs. Natividad Pacubas, for collecting the study material; Julieta Luchavez and Moonyeen Alava for sorting and rearing the larvae and for assisting in the identification and data analysis; Dr. David R. Bellwood for help in identifying the fishes; and Orpha S. Perez for identifying the prawns. The financial assistance of the International Development Research Center is gratefully acknowledged.

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