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Fishes collected during the Victor Hensen Costa Rica Expedition (1993/1994)*

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Abstract: A list is presented of 242 species of fishes taken in the Golfo de Nicoya, Golfo Dulce and on the Pacific continental shelf of Costa Rica. The specimens were collected using dredges and bottom trawls during December 1993 and February 1994. The Golfo Dulce revealed the lowest diversity with only 75 species represented; 118 species were collected in the Golfo de Nicoya and 129 species in offshore waters. It is presumed that low fish diversity in Golfo Dulce is due to the deep, unproductive waters in that embayment.The checklist includes presence-absence data for each locality.

Key words: checklist, biodiversity, fishes, estuaries, Pacific Ocean.

This report contains the final species identifications of fishes collected during the RV Victor Hensen Costa Rica Expedition. The preliminary cruise report (Wolff & Vargas 1994) grouped all collections into three general localities: Golfo Dulce, Golfo de Nicoya and the Bahía Coronado region. We chose to restrict the gulf fishes as those species found only in stations occurring inside each gulf. Fish species taken in stations made outside the gulf limits are treated with the species collected off the Bahía Coronado region and jointly called "offshore" species. These offshore collections were made over a wide range of depths (20 to 328 m).

Several studies, (Bartels *et al.* 1983 and Bartels *et al.* 1984) have shown how the Golfo de Nicoya fish fauna is distributed within the gulf and how diversity and biomass is related throughout its length. From the outset it was clear that regarding the trawl fishery, fish diversity in Golfo Dulce is considerably less (75 species *vs* 118 species) than that in Golfo de Nicoya. The total number of species taken in offshore waters (129) was greater than that of either gulf.

Table 1 is based entirely on species collected in dredges and benthic trawls, although sampling to a lesser degree surface and midwater species found in the water column. Those species commonly referred to as "reef fishes" associated with rock or coral reef structures were not sampled during this expedition. Certain other shallow water mud flat and tide pool species were not sampled. Hence, the total fish fauna for each of the three general localities is considerably greater than that collected solely utilizing soft-bottom sampling gear.

Fishes of the families Ariidae, Engraulidae, Pristigasteridae and Sciaenidae were found almost exclusively in the Golfo de Nicoya. The species composition of Golfo Dulce consists principally of eurytopic species, that is widely tolerant species, which are also found in the Golfo de Nicoya as well as offshore. These species which were found in all three localities were most commonly found in the families Carangidae, Cynoglossidae, Paralichthyidae, Scorpaenidae, Serranidae, Synodontidae, Tetraodontidae and Triglidae. No species taken

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only in Golfo Dulce during this expedition is unique to the gulf, since all have been collected on other occasions from outside the gulf.

TABLE I

Occurrence of 242 species of fishes in the Golfo de Nicoya, Golfo Dulce and on the Pacific continental shelf of Costa Rica, respectively
O: Offshore N: G. Nicoya D: G. Dulce

Species	O	N	D
ALBULIDAE			
Albula nemoptera	-	X	X
ANTENNARIIDAE			
Antennarius avalonis	X	-	X
ARGENTINIDAE			
Argentina aliceae	X	X	-
ARIIDAE			
Arius dasycephalus	-	X	-
Arius kessleri	-	X	-
Arius osculus	-	X	-
Arius platypogon	X	X	-
Arius sp. A	-	X	-
Arius sp. B	-	X	-
Cathorops furthii	-	X	-
Cathorops steindachneri	-	X	-
Cathorops tuyra		X	
Sciadichthys troschelii	-	X	-
Selenaspis dowii	-	X	-
ATELEOPODIDAE			
Guentherus altivela	X	-	-
BALISTIDAE			
Balistes polylepis	X	-	-
Pseudobalistes naufragium	-	-	X
BATRACHOIDIDAE			
Batrachoides sp.	-	X	-
Porichthys greenei	X	X	X
Porichthys margaritatus	X	X	X
BOTHIDAE			
Engyophrys sanctilaurentii	X	X	X
Monolene danae	X	-	-
Monolene maculipinna	X	-	-
Perissias taeniopterus	X	-	-
BREMACEROTIDAE			
Bregmaceros bathymaster	X	X	X
CALLIONYMIDAE			
Synchiropus atrilabiatus	X	X	-
CARANGIDAE			
Caranx caballus	-	X	-
Caranx caninus	-	X	X
Caranx otrynter	X	X	X
Caranx speciosus	X	X	-
Caranx vinctus	X	X	X
Hemicaranx leucorus	-	X	-
Selar crumenophthalmus	X	X	-
Selene brevoortii	-	X	-
Selene oerstedii	X	X	X
Selene peruana	-	X	X
Trachinotus paitensis	X	X	-
CONGRIDAE			
Chiloconger labiatus	X	X	-
Ophisoma macrurum	X	-	-
Ophisoma prorigerum	X	X	-
Rhynchoconger nitens	X	X	-
CYNOGLOSSIDAE			
Symphurus atramentatus	X	X	X
Symphurus callopterus	X	X	X
Symphurus chabanaudi	-	X	-
Symphurus elongatus	X	X	X
Symphurus gorgonae	X	X	X
Symphurus leei	X	X	X
Symphurus melanurus	-	X	-
Symphurus melasmatotheca	X	-	X
Symphurus oligomerus	X	X	-
Symphurus undecimplerus	X	X	-
Symphurus williamsi	-	X	-
DASYATIDAE			
Dasyatus longus	X	X	X
Himantura pacifica	-	X	X
DIODONTIDAE			
Diodon holocanthus	-	-	X
Diodon hystrix	-	X	-
ENGRAULIDIDAE			
Anchoa exigua	X	-	-
Anchoa ischana	-	X	X
Anchoa lucida	-	X	-
Anchoa nasus	-	X	-
Anchoa starksi	-	X	-
Anchoa walkeri	-	X	-
Anchovia macrolepidota	-	X	-
Cetengraulis mysticetus	-	X	-
EPHIPPIDAE			
Chaetodipterus zonatus	-	X	-
Parapsettus panamensis	-	X	-
FISTULARIIDAE			
Fistularia commersoni	-	-	X
GERREIDAE			
Diapterus aureolus	-	X	X
Diapterus peruvianus	-	X	X
Eucinostomus argenteus	X	X	X
Eucinostomus currani	-	X	-
Eucinostomus gracilis	X	X	X
Gerres cinereus	-	X	-
GOBIESOCIDAE			
Gobiesox milleri	-	X	-
GOBIIDAE			
Bollmania chlamydes	X	X	X
Bollmania stigmatura	X	X	X
Bollmania sp. nov.	X	-	-
Microgobius erectus	X	X	-
GOBIOIDIDAE			
Gobioides peruanus	-	X	-
HAEMULIDAE			
Anisotremus dovii	X	X	-
Anisotremus pacifici	-	X	-
Haemulon scudderi	-	X	-
Haemulopsis elongatus	-	X	-
Haemulopsis leuciscus	-	X	-
Haemulopsis nitidus	-	X	-
Pomadasys macracanthus	-	X	-
Pomadasys branickii	X	-	-
HETERENCHELYIDAE			
Pythonichthys asodes	-	X	-

Species	O	N	D
LABRIDAE			
Decodon melasma	X	-	-
Polylepion cruentum	X	-	-
LOPHIIDAE			
Lophiodes caulinaris	X	-	-
Lophiodes spilurus	X	-	-
LUTJANIDAE			
Hoplopagrus guentheri	-	X	-
Lutjanus argentiventris	-	X	-
Lutjanus guttatus	X	X	X
Lutjanus peru	-	X	X
MACROURIDAE			
Coelorinchus scaphopsis	X	-	-
Coryphaenoides leucophaeus	X	-	-
MALACANTHIDAE			
Caulolatilus affinis	X	-	-
MERLUCCIIDAE			
Merluccius angustimanus	X	-	-
MORIDAE			
Physiculus nematopus	X	X	-
Physiculus rastrelliger	X	X	-
MULLIDAE			
Mulloides dentatus	-	X	-
Pseudupeneus grandisquamis	X	X	X
MURAENESOCIDAE			
Cynoponticus coniceps	-	X	-
MURAENIDAE			
Gymnothorax equatorialis	X	X	X
Gymnothorax sp. nov.	X	-	-
Muraena argus	-	-	X
OGCOCEPHALIDAE			
Zalieutes elater	X	X	X
OPHICHTHIDAE			
Echiophis brunneus	X	-	-
Myrichthys aspetochirus	X	-	-
Myrichthys tigrinus	-	X	-
Ophichthus ramiger	X	X	-
Ophichthus sp. A	X	-	-
Ophichthus sp. B	X	X	-
Ophichthus sp. C	X	-	-
Ophichthus sp. D	-	X	-
Pseudomyrophis micropinna	-	X	X
OPHIDIIDAE			
Brotula clarkae	X	X	-
Lepophidium microlepis	X	-	-
Lepophidium negropinna	X	-	-
Lepophidium prorates	X	X	-
Neobythites stelliferoides	X	-	-
OPISTOGNATHIDAE			
Opistognathus rhomaleus	X	-	-
PARALICHTHYIDAE			
Ancylopsetta dendritica	-	X	-
Citharichthys gilberti	X	X	X
Citharichthys platophrys	X	X	X
Cyclopsetta panamensis	X	X	-
Cyclopsetta querna	X	X	-
Etropus crossotus	X	-	-
Etropus peruvianus	-	X	X
Hippoglossina bollmani	X	X	-
Hippoglossina tetropthalmus	X	X	-
Paralichthys woolmani	X	X	-
Syacium latifrons	X	X	X
Syacium cf. longidorsale	X	X	
Syacium ovale	-	X	X
PERISTEDIIDAE			
Peristedion barbiger	X	X	-
Peristedion crustosum	X	X	X
POLYNEMIDAE			
Polydactylus approximans	-	X	-
PRIACANTHIDAE			
Pristigenys serrula	-	X	-
PRISTIGASTERIDAE			
Ilisha furthii	-	X	-
Neoopisthopterus tropicus	-	X	-
Opisthopterus dovii	-	X	-
Opisthopterus equatorialis	-	X	-
Pliosteostoma lutipinnis	-	X	-
RAJIDAE			
Raja equatorialis	X	X	-
Raja velezi	X	X	X
RHINOBATIDAE			
Rhinobatos leucorhyncus	-	X	-
Zapteryx exasperata	X	X	-
SCIAENIDAE			
Bairdiella armata	-	X	-
Cynoscion albus	-	X	-
Cynoscion nannus	X		X
Cynoscion phoxocephalus	-	X	-
Cynoscion reticulatus	-	X	-
Cynoscion squamipinnis	-	X	-
Cynoscion stolzmanni	-	X	-
Isopisthus altipinnis	-	X	-
Larimus acclivis	-	X	-
Larimus pacificus	-	X	-
Menticirrhus nasus	-	X	-
Menticirrhus panamensis	-	X	-
Nebris occidentalis	-	X	-
Ophioscion sciera	-	X	-
Ophioscion typicus	-	X	-
Paralonchurus dumerilii	-	X	-
Paralonchurus rathbuni	-	X	-
Stellifer chrysoleuca	-	X	-
Stellifer furthii	-	X	-
Stellifer illecebrosus	-	X	-
Stellifer mancorensis	-	X	-
Stellifer oscitans	-	X	-
Stellifer zestocarus	-	X	-
Umbrina bussingi	X	-	X
Umbrina xanti	-	X	-
SCOMBRIDAE			
Auxis sp.	X	-	-
Scomber japonicus	-	X	-
SCORPAENIDAE			
Pontinus furcirhinus	X	X	X
Pontinus sierra	X	X	X
Pontinus sp. nov.	X	-	-
Scorpaena histrio	X	X	-
Scorpaena mystes	X	X	-
Scorpaena russula	X	X	X
SERRANIDAE			
Alphestes multiguttatus	-	X	-
Diplectrum eumelum	X	X	-
Diplectrum euryplectrum	X	X	-
Diplectrum labarum	X	X	X
Diplectrum macropoma	X	X	X

Species	O	N	D
Diplectrum maximum	X	X	-
Diplectrum pacificum	X	X	X
Diplectrum rostrum	X	-	-
Epinephelus acanthistius	X	X	-
Epinephelus cifuentesi	-	X	-
Epinephelus exsul	-	X	-
Epinephelus niphobles	-	X	-
Hemanthius peruanus	X	-	-
Hemanthius signifer	X	X	-
Paralabrax loro	X	-	-
Paranthias colonus	-	-	X
Pikea longilepis	X	-	-
Pronotogrammus eos	X	X	X
Pronotogrammus multifasciatus	X	-	-
Rypticus bicolor	-	-	X
Rypticus nigripinnis	-	X	-
Serranus aequidens	X	-	-
Serranus psittacinus	X	X	X
SOLEIDAE			
Achirus klunzingeri	X	-	-
Achirus mazatlanus	X	X	X
Achirus scutum	-	X	X
Trinectes fonsecensis	-	X	-
Trinectes sp. nov.	-	X	-
SPARIDAE			
Calamus brachysomus	X	X	-
STROMATEIDAE			
Peprilus medius	-	X	-
Peprilus snyderi	X	X	-
SYNODONTIDAE			
Synodus evermanni	X	X	X
Synodus scituliceps	X	X	X
Synodus sechurae	X	X	X
TETRAODONTIDAE			
Arothron hispidus	X	X	X
Sphoeroides annulatus	X	X	X
Sphoeroides lobatus	X	X	X
Sphoeroides trichocephalus	-	X	-
TORPEDINIDAE			
Diplobatis ommata	-	X	X
Narcine brasiliensis	-	X	X
Torpedo tremens	X	-	-
TRIAKIDAE			
Mustelus lunulatus	X	-	X
TRICHIURIDAE			
Trichiurus nitens	X	X	X
TRIGLIDAE			
Bellator gymnostethus	X	-	-
Bellator loxias	X	X	X
Bellator xenisma	X	X	X
Prionotus albirostris	X	-	X
Prionotus horrens	-	X	-
Prionotus ruscarius	-	X	X
Prionotus stephanophrys	X	X	X
Prionotus teaguei	X	X	-
URANOSCOPIDAE			
Kathetostoma averruncus	X	X	-
UROLOPHIDAE			
Urolophis halleri	-	-	X
Urotrygon aspidura	-	-	X
Urotrygon chilensis	X	X	X
Urotrygon rogersi	-	X	-
Urotrygon munda	-	X	-
Urotrygon nana	-	X	-
SQUATINIDAE			
Squatina californica	X	-	-

Evidently the shallow, well-circulated, oxygen-rich waters of the Gulf of Nicoya are appropriate for a much larger variety and biomass of fish than the deeper, anoxic waters of Golfo Dulce. In Golfo Dulce the steep-sided shoreline limits the area of shallow waters available for corbinas, marine catfishes and other such fishes; also productivity is restricted due to the loss of nutrients in the anoxic depths.

Additional information on specific collections made during this expedition will be available on the Internet via Gopher (*fowler.acnatsci.org*). This service hosts the NEODAT Fish Biodiversity Gopher which contains the Museo de Zoología fish data base including the catalog number (UCR), locality, depth and other data.

RESUMEN

Se presenta una lista de 242 especies de peces del Golfo de Nicoya, el Golfo Dulce y la plataforma continental del Pacífico de Costa Rica. Los especímenes se extrajeron con dragas y redes de fondo en diciembre de 1993 y febrero de 1994. El Golfo Dulce tuvo la menor biodiversidad, con solo 75 especies; hubo 118 en el Golfo de Nicoya y 129 en la plataforma. La baja diversidad en Golfo Dulce podría deberse a sus aguas profundas y de poca productividad.

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