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**A Checklist of Fishes Caught in San Miguel Bay\***

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**Abstract**

A checklist of fishes harvested by the capture fisheries in San Miguel Bay between July 1992 and June 1993 is presented. The list was assembled from fish identifications made during the course of the following activities: (1) monitoring of commercial and municipal landings from July 1992 to June 1993; (2) a trawl survey from August 1992 to June 1993; and (3) monitoring of fishing activities in reef areas from January to June 1993. A total of 175 species distributed among 110 genera and 70 families was identified and included in the list. This total includes 77 species which have not been previously reported from the catches and taxonomic collections made in the area. The results indicate the high diversity of the catch and the fauna supporting the fisheries in San Miguel Bay.

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## Introduction

San Miguel Bay (Fig. 1) is a shallow, estuarine body of water located on the Pacific coast of the Philippines. Spanning an area of 1,115 km<sup>2</sup> and a 188-km coastline, the bay offers a variety of habitats to fishes and invertebrates. About 95% of the bay's area is covered with soft-bottom substrate (i.e., sand and/or mud). Fringing reefs and associated communities (e.g., algal beds) surround the islands and line the coast near the mouth of the bay. Mangroves are concentrated on the northeastern coastline around Siruma, although some stands remain near Cabusao and Mercedes (Garces et al., this vol.). Brackish waters characterize the inner part of the bay, particularly around Cabusao and Sabang near the discharge of Bicol River into San Miguel Bay. Salinity increases towards the mouth of the bay where marine conditions prevail throughout the year (Mines et al. 1982; Villanoy et al., this vol.).

A multiplicity of gear is used by fishers operating in San Miguel Bay. Currently, about 27 gear types (mostly simple ones like gill nets, lines and traps) are reported to be in use in the area (Cinco et al., this vol.). The fisheries exploit a highly diverse, multispecies complex. This paper attempts to provide a list of fishes caught by the various gear types used in San Miguel Bay between July 1992 and June 1993. The study forms part of a wider range of investigations of the fisheries in the bay under the "San Miguel Bay Resources and Ecological Assessment Project" executed by International Center for Living Aquatic Resources Management with funding from the Philippine Fisheries Sector Program.

## Materials and Methods

The fish samples used for purposes of this study were collected in San Miguel Bay between July 1992 and June 1993. Fish specimens for identification in the laboratory were obtained during the course of the following activities: (1) monitoring of commercial and municipal landings from July 1992 to June 1993; (2) a trawl survey in the bay from August 1992 to June 1993; and (3) monitoring of fishing activities in reef areas from January to June 1993.

Commercial and municipal landings were monitored in five places, namely: Castillo and Filarca in Tinambac; Sibobo and Sabang in Calabanga; and Pandawan in Mercedes. As access to the landings of commercial trawlers was difficult, samples were also collected during a trawl survey in the bay to supplement the checklist. Landings monitoring of fishing units known to operate in reef areas and adjacent seagrass beds were also monitored at a later stage. This was in view of the high diversity of the catches from such areas and the possibility that observation of such catches may be missed during the regular monitoring in Mercedes.

All samples were collected and identified in the laboratory while fresh to preserve color and other identifying marks. The literature used for purposes of identification is given in the References section.

## Results and Discussion

Appendix 1 gives a summary of the fishes observed to occur in the catches of various types of fishing gear used in San Miguel Bay between July 1992 and June 1993. The list includes 7 species of cartilaginous fishes (Class Chondrichthyes) distributed among 7 genera

and 6 families. Bony fishes (Class Osteichthyes) consisted of 168 species distributed among 103 genera and 64 families. Overall, the checklist includes 175 species distributed among 110 genera and 70 families. Almost all of these species may be classified as edible, given the eating habits of the population in the San Miguel Bay area.

The checklist provided here illustrates the high species diversity of the catch generated by the fisheries in San Miguel Bay. It should be noted, however, that only about 30 species may be considered common or dominant in the catch in the area (see other contributions in this vol.). Many of the species listed here may be considered incidental catches during the course of fishing operations in the bay.

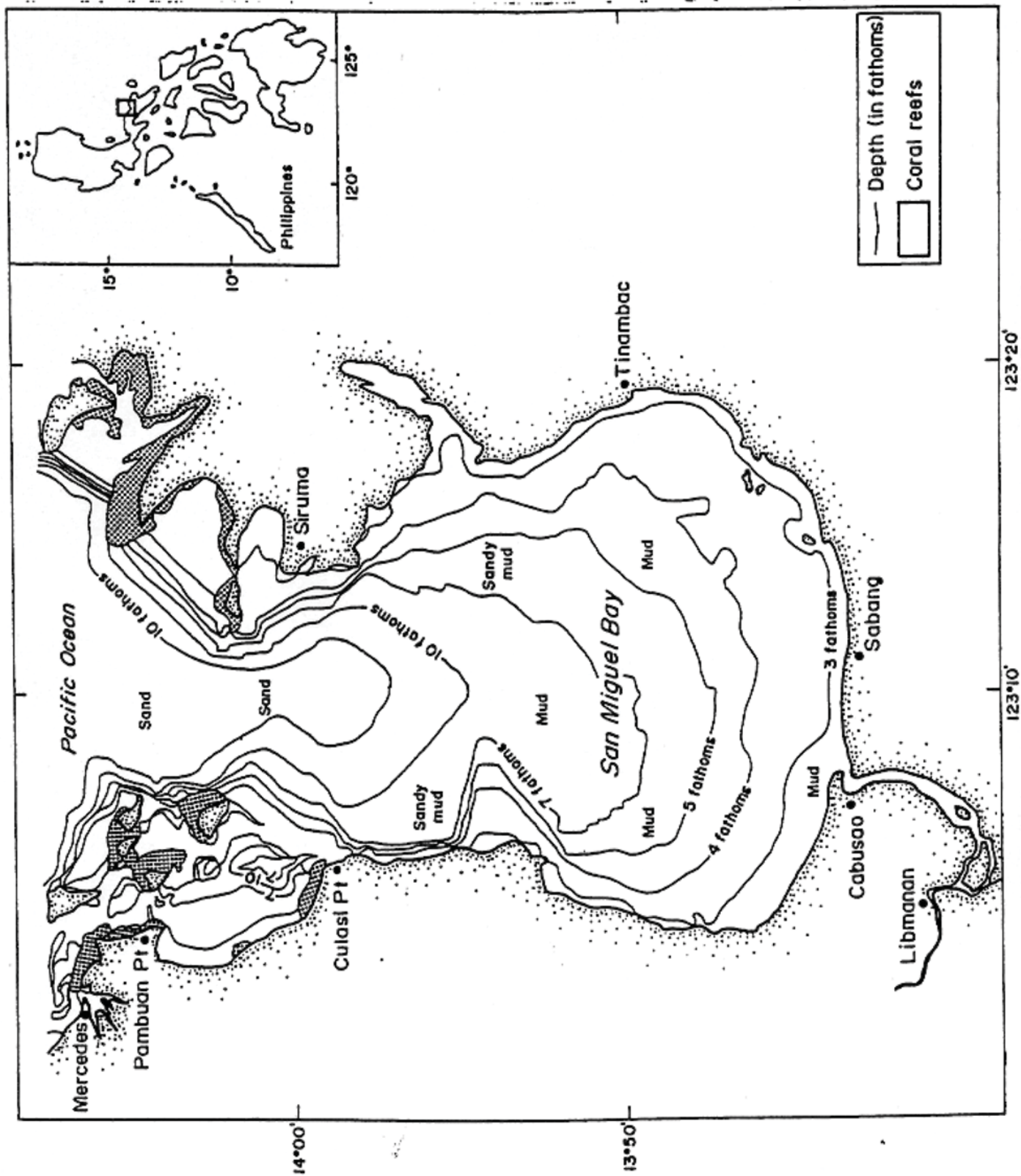
To the list of 175 fish species exploited in the bay, we may add a number of invertebrates and seaweeds: at least 26 species (in 16 genera and 8 families) of decapod crustaceans (see Pauly 1982); 2 of shelled molluscs (*Placuna placenta* or *kapis* and the abalone *Haliotis* sp.); at least 3 of cephalopods (*Loligo* sp., *Sepia* sp. and *Sepioteuthis* sp.); at least 4 of seaweeds (*Eucheuma*, *Gracilaria*, *Gelidium* and *Caulerpa*); and 2 of brown algae (*Padina* and *Sargassum*).

Pauly (1982) provides a summary of the fishes reported to occur in San Miguel Bay based on collections made in the area between 1868 and 1981. He reports a total of 188 species of fish (in 158 genera and 122 families) from an exhaustive review of the literature about San Miguel Bay; collections of the National Museum of the Philippines; and monitorings conducted in the area between 1979 and 1981. The checklist given in Appendix 1 includes 77 species of fish which have not been previously reported in the catches or taxonomic collections in the area. Combined with the list given by Pauly (1982), this brings the total number of fishes reported to occur in San Miguel Bay to 265 species. This figure indicates the high diversity of the fish fauna supporting the fisheries in San Miguel Bay.

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Appendix 1. Checklist of fishes caught in San Miguel Bay from July 1992 to June 1993. Species marked with asterisk indicate first reported occurrence in the catches from the area.

Class	Family	Species
Chondrichthyes	Carcharhinidae	<i>Carcharhinus melanopterus</i>
	Dasyatidae	<i>Dasyatis kuhlii</i> <i>Rhinoptera javanica</i>
	Mobulidae	<i>Mobula diabolus</i>
	Myliobatidae	<i>Aetobatus narinari</i>
	Rhynchobatidae	<i>Rhynchobatus djiddensis</i>
	Sphyrnidae	<i>Sphyrna zygaena</i>
	Osteichthyes	Apogonidae
Acanthuridae		* <i>Acanthurus xanthopterus</i> * <i>Naso lituratus</i>
Ariidae		* <i>Arius manilensis</i> * <i>Arius</i> sp.
Atherinidae		<i>Atherina forskali</i>
Belonidae		<i>Tylosurus strongylorus</i> * <i>Tylosurus giganteus</i>
Bothidae		* <i>Pseudorhombus arsius</i>
Caesionidae		* <i>Caesio caeruleus</i> * <i>Caesio erythrogaster</i>
Carangidae		<i>Alectis ciliaris</i> <i>Alectis indicus</i> <i>Alepes djedabba</i> <i>Alepes vari</i> <i>Alepes kalla</i> <i>Atule mate</i>

	<i>*Carangoides ferdau</i>
	<i>Carangoides malabaricus</i>
	<i>*Carangoides fulvoguttatus</i>
	<i>*Carangoides sp.</i>
	<i>Caranx armatus /</i>
	<i>Caranx ignobilis</i>
	<i>*Caranx melampygius</i>
	<i>Caranx sexfasciatus</i>
	<i>*Caranx tille</i>
	<i>Decapterus macrosoma</i>
	<i>Gnathanodon speciosus</i>
	<i>Megalaspis cordyla</i>
	<i>Scomberoides lysan</i>
	<i>Scomberoides tol</i>
	<i>Selar boops</i>
	<i>Selar crumenophthalmus</i>
	<i>Selaroides leptolepis</i>
Centropomidae	
	<i>Lates calcarifer</i>
	<i>Psammoperca waigiensis</i>
Chaetodontidae	
	<i>*Parachaetodon ocellatus</i>
Chanidae	
	<i>Chanos chanos</i>
Chirocentridae	
	<i>Chirocentrus dorab</i>
Cichlidae	
	<i>*Oreochromis mossambicus</i>
Clupeidae	
	<i>Pellona dischela</i>
	<i>Sardinella fimbriata</i>
	<i>Sardinella albella</i>
	<i>*Sardinella perforata</i>
Congridae	
	<i>*Conger cinereus</i>
Coryphaenidae	
	<i>*Coryphaena hippurus</i>
Cynoglossidae	
	<i>Cynoglossus bilineatus</i>
	<i>*Cynoglossus gracilis</i>
	<i>*Cynoglossus sp</i> γ
Dorosomatidae	
	<i>*Anodontostoma selangkat</i>
Dussumieriidae	
	<i>Dussumieria acuta</i>
Echeneidae	
	<i>*Echeneis naucrates</i>
Engraulidae	
	<i>Stolephorus commersonii</i>
	<i>Stolephorus indicus</i>
	<i>Thryssa setirostris</i>
Ephippidae	
	<i>Drepane punctata</i>
	<i>Platax orbicularis</i>

Exocoetidae	* <i>Cypselurus poecilopterus</i> * <i>Hemiramphus georgii</i>
Fistulariidae	* <i>Fistularia petimba</i>
Formionidae	<i>Formio niger</i>
Gerreidae	* <i>Gerres abbreviatus</i> <i>Gerres filamentosus</i> * <i>Gerres kapas</i> * <i>Gerres oyena</i> <i>Pentaprion longimanus</i>
Gobiidae	<i>Glossogobius giurus</i> * <i>Istigobius spence</i> * <i>Oxyurichthys microlepis</i>
Haemulidae	* <i>Plectorhynchus chaetodonoides</i> <i>Pomadasys hasta</i> <i>Pomadasys maculatus</i> <i>Pomadasys</i> sp. 1 † <i>Pomasadys</i> sp. 2 *
Labridae	* <i>Cheilinus trilobatus</i> * <i>Choerodon schoenleini</i>
Lactariidae	<i>Lactarius lactarius</i>
Leiognathidae	<i>Gazza minuta</i> <i>Leiognathus bindus</i> <i>Leiognathus elongatus</i> <i>Leiognathus equulus</i> <i>Leiognathus splendens</i> <i>Secutor insidiator</i> <i>Secutor ruconeus</i>
Lethrinidae	* <i>Lethrinus lentjan</i> * <i>Lethrinus miniatus</i> <i>Lethrinus nebulosus</i> * <i>Lethrinus ornatus</i> * <i>Lethrinus variegatus</i>
Lutjanidae	<i>Lutjanus argentimaculatus</i> * <i>Lutjanus bohar</i> * <i>Lutjanus carponotatus</i> * <i>Lutjanus decussatus</i> * <i>Lutjanus fulviflamma</i> * <i>Lutjanus monostigma</i> * <i>Lutjanus rivulatus</i> * <i>Lutjanus russelli</i> * <i>Lutjanus sebae</i> * <i>Lutjanus</i> sp. 1 † * <i>Lutjanus</i> sp. 2 †



	<i>*Lutjanus spilurus</i>
	<i>*Symphorus nematophorus</i>
Megalopidae	<i>Megalops cyprinoides</i>
Menidae	<i>Mene maculata</i>
Mugilidae	<i>Mugil cephalus</i>
Mullidae	<i>*Mulloidichthys flavolineatus</i>
	<i>Parupeneus indicus</i>
	<i>Upeneus sulphureus</i>
	<i>*Upeneus vitatus</i>
Muraenidae	<i>*Lycodontis javanicus</i>
Muraenesocidae	<i>Muraenesox cinerius</i>
Nemipteridae	<i>Nemipterus japonicus</i>
	<i>*Nemipterus metopias</i>
	<i>*Scolopsis dubiosus</i>
Ophichtidae	<i>*Ophichthus sp. †</i>
Paralichthyidae	<i>*Pseudorhombus cinnamoneus</i>
Platycephalidae	<i>*Platycephalus indicus</i>
	<i>*Cymbacephalus nematophthalmus</i>
Plotosidae	<i>Plotosus anguillaris</i>
	<i>*Plotosus lineatus</i>
Polynemidae	<i>Eleutheronema tetradactylum</i>
	<i>Polynemus microstoma</i>
	<i>Polynemus nigripinis</i>
Priacanthidae	<i>Priacanthus macracanthus</i>
Psettodidae	<i>Psettodes erumei</i>
Rachycentridae	<i>Rachycentron canadum</i>
Scaridae	<i>*Scarus ghobban</i>
Scatophagidae	<i>Scatophagus argus</i>
Sciaenidae	<i>Dendrophysa russelli</i>
	<i>Otolithes ruber</i>
	<i>Pennahia macropthalmus</i>
	<i>*Pennahia sp.</i>
Scombridae	<i>*Euthynnus affinis</i>
	<i>Rastrelliger brachysoma</i>
	<i>Rastrelliger kanagurta</i>

	<i>Scomberomorus commerson</i> <i>*Thunnus albacares</i>
Serranidae	<i>*Anyperodon leucogammicus</i> <i>*Cephalopholis pachycentron</i> <i>*Cromileptis altiveles</i> <i>*Ephinephelus areolatus</i> <i>*Ephinephelus fuscoguttatus</i> <i>*Ephinephelus macrospilus</i> <i>*Ephinephelus merra</i> <i>*Ephinephelus sexfaciatus</i> <i>*Plectropomus maculatus</i>
Siganidae	<i>Siganus canaliculatus</i> <i>*Siganus guttatus</i> <i>Siganus javus</i> <i>Siganus virgatus</i>
Sillaginidae	<i>Sillago sihama</i>
Soleidae	<i>*Solea sp.</i> ✕
Sparidae	<i>Acanthopagrus berda</i>
Sphyraenidae	<i>Sphyraena barracuda</i> <i>Sphyraena jello</i> <i>Sphyraena obtusata</i>
Synodontidae	<i>*Saurida micropectoralis</i> <i>Saurida tumbil</i>
Tetraodontidae	<i>Lagocephalus sp.</i> ✕
Theraponidae	<i>Therapon jarbua</i> <i>Therapon puta</i> <i>Therapon quadrilineatus</i>
Triacanthidae	<i>Tripodichthys blochi</i>
Trichiuridae	<i>Trichiurus haumela</i>
Trypauchenidae	<i>*Trypauchen vagina</i>