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Fish Taxonomic Studies in the South China Sea, Area IV: Vietnamese Waters

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ABSTRACT

Work was undertaken on fish taxonomy of marine fish found in Vietnamese waters in order to revise the “Field guide to important commercial marine fishes of the South China Sea”. Two field surveys were carried out at 9 separate locations from April 23 to May 17, and 2 other locations from September 20-26, 1999. A total of 442 specimens of fish from 107 different families were collected and photographed. Among the 442 specimens, 336 specimens were successfully identified to the species level, 99 specimens to the genus level, and only 7 specimens to the family level. The sampling areas at Qui Nhon, Nha Trang and Phan Thiet provided the most number of samples of 96, 94 and 79 fish, respectively. A total of 348 fish were new candidates for the Field Guide. More field surveys are necessary to cover the rather extensive array of new fish specimens expected to be found in these waters.

Key words : Fish taxonomy, marine fish, Vietnamese waters

Introduction

In 1998, SEAFDEC/MFRDMD published a book entitled “Field guide to important commercial marine fishes of the South China Sea” which mostly emphasized on fish specimens collected in Malaysian waters (Mansor *et al.*, 1998). To enlarge the scope of interest, the Marine Fishery Resources Development and Management Department (MFRDMD) proposed the revision of the Field Guide as part of its three-year program. Since 1998, MFRDMD has instituted fish taxonomic work in Vietnamese waters to seek for fish still unlisted in this book, in collaboration with the Research Institute of Marine Products (RIMP), Vietnam. The marine fisheries of Vietnam are considered as multi-species, multi-gear, small-scale and free-assessed fisheries. The marine fish fauna is diverse in nature, with an estimated number of more than 2000 species belonging to over 700 genera and 200 families (Vinh and Chung, 2000). Most of the fishing efforts are by relatively small vessels of engine capacity less than 60 hp. The major fishing gears operated by these vessels are trawls, purse seines, gillnets, lift nets, long lines and hand lines. This paper reports the important findings obtained in this study.

Materials and Methods

Fish samples, including both commercial and trash, which have not been listed in the Field

Guide, were collected at the main fish landing centers and markets along the coast of Vietnam. To accomplish this work, RIMP provided a vehicle and driver, and assigned a senior researcher as the responsible Vietnamese counterpart. Both researchers from MFRDMD and Vietnam carried out two sampling surveys from Halong City in the north to Rach Gia in the south (Fig. 1). The first survey covered 9 areas, such as Haiphong, Thanh Hoa, Vinh, Danang, Quay Nhon, Nha Trang, Phan Thiet, Vung Tau, and Rach Gia during the period 23rd April - 17th May, 1999 when M/V SEAFDEC was cruising off the coast of Vietnam. The second survey covered Cat Ba, which is in the vicinity of Hai Phong, and Halong City during 20th-26th September, 1999.

Fish were carefully chosen after referring to the Field Guide. If the selected fish was not mentioned in the Field Guide, at least three fish per species were purchased from the fish vendor. The collected fish samples were stored properly in ice-boxes. In the first survey, samples disposal was undertaken in two ways. If the research vessel M/V SEAFDEC was in the vicinity, fish in the ice-boxes were sent directly to be stored in the M/V SEAFDEC cold room, and the measurement, identification and photographing of fish samples were undertaken at the laboratory of MFRDMD. These specimens were later preserved in 10% formaldehyde and kept in the collection room. In cases where M/V SEAFDEC was not available, the measurement, identification and photographing of fish samples were undertaken at the accommodation shelters of the researchers, in which fresh water was readily available, right after sampling.

Fish were identified using FAO species catalogues and taxonomic literatures prepared by Abu Khair and Mohd Azmi (1996), Axelrod *et al.* (1988), Burgess *et al.* (1990), Chin (1998), Dakin (1975), Gloerfelt-Tarp and Kailola (1984), Heemstra and Randall (1993), Last and Stevens (1994), Mansor *et al.* (1996), Mansor *et al.* (1998), Masuda *et al.* (1975), Masuda *et al.* (1984), Masuda and Allen (1987), Min *et al.* (1996) and Satapoomin and Poovachiranon (1997). The ICLARM database CD known as "FishBase 97" was also referred using the facilities available within MFRDMD.



Fig. 1. Map of the coast of Vietnam indicating the main landing centres where sampling was carried out.

Results

A total of 442 specimens of fish from 107 different families were collected and photographed (listed in Table 1). Of these fish, 336 specimens were successfully identified to the species level, 99 specimens to the genus level, and only 7 specimens to the family level. Work is still on-going to identify these fish to the species level. A total of 348 fish specimens were new candidates for the Field Guide (Table 2).

Table 3 shows the numbers of family, genus and species of the fish specimens classified according to the localities. The sampling areas at Qui Nhon, Nha Trang and Phan Thiet provided the most number of samples of 96, 94 and 79 fish, respectively.

Table 1. List of fish specimens sampled at the various landing sites in the study.

No.	Family name	Genus	Species	Length(mm)TL	Locality
1	ACANTHURIDAE	<i>Acanthurus</i>	sp. 1	412	Phan Thiet
2		<i>Acanthurus</i>	sp. 2	224	Phan Thiet
3		<i>Naso</i>	<i>brevirostris</i>	350	Qui Nhon
4		<i>Naso</i>	<i>hexacanthus*</i>	500	Phan Thiet
5		<i>Naso</i>	<i>lituratus</i>	252	Qui Nhon
6		<i>Naso</i>	<i>lituratus</i>	250	Qui Nhon
7		<i>Naso</i>	<i>Unicornis*</i>	375	Nha Trang
8	AMBASSIDAE	<i>Ambasis</i>	<i>Nalua</i>	101	Qui Nhon
9	ANTENNARIDAE	<i>Antennarius</i>	sp. 1	162	Cat Ba
10		<i>Antennarius</i>	<i>Striatus</i>	105	Phan Thiet
11	APOGONIDAE	<i>Apogon</i>	<i>Aureus</i>	150	Qui Nhon
12		<i>Apogon</i>	<i>Doederleini</i>	85	Qui Nhon
13		<i>Apogon</i>	<i>Ellioti</i>	101	Qui Nhon
14		<i>Apogon</i>	<i>Kiensis</i>	98	Phan Thiet
15		<i>Apogon</i>	<i>Kiensis</i>	90	Phan Thiet
16		<i>Apogon</i>	<i>Quadrifasciatus</i>	118	Halong Bay
17		<i>Apogon</i>	<i>Quadrifasciatus</i>	88	Halong Bay
18		<i>Apogon</i>	sp. 1	107	Phan Thiet
19		<i>Apogon</i>	sp. 2	96	Phan Thiet
20		<i>Apogon</i>	<i>trimaculatus</i>	148	Qui Nhon
21		<i>Cheilodipterus</i>	<i>macrodon</i>	140	Qui Nhon
22		<i>Cheilodipterus</i>	<i>macrodon</i>	169	Qui Nhon
23	ARIIDAE	<i>Arius</i>	<i>maculatus*</i>	105	Vinh
24		<i>Arius</i>	<i>thalassinus*</i>	185	Cat Ba
25	ARIOMMATIDAE	<i>Ariomma</i>	<i>indica*</i>	260	Qui Nhon
26		<i>Ariomma</i>	<i>indica*</i>	205	Qui Nhon
27		<i>Ariomma</i>	sp. 1	163	Thanh Hoa
28	ATHERINIDAE	<i>Atherinomorus</i>	<i>ogilbyi</i>	122	Qui Nhon
29	BALISTIDAE	<i>Canthidermis</i>	<i>maculatus</i>	300	Danang
30		<i>Canthidermis</i>	<i>maculatus</i>	160	Qui Nhon
31		<i>Canthidermis</i>	<i>maculatus</i>	290	Qui Nhon
32	BATRACHOIDIDAE 1			167	Phan Thiet
33	BELONIDAE	<i>Ablennes</i>	<i>hians*</i>	750	Haiphong
34		<i>Strongylura</i>	<i>strongylura</i>	295	Haiphong
35		<i>Tylosurus</i>	<i>crocodilus crocodilus</i>	1010	Rach Gia
36	BERYCIDAE	<i>Centroberyx</i>	<i>druzhinini</i>	265	Danang
37	BLENNIIDAE	<i>Xiphasia</i>	<i>setifer</i>	420	Nha Trang
38	BOTHIDAE	<i>Bothus</i>	<i>myriaster</i>	172	Phan Thiet
39		<i>Bothus ?</i>	sp. 1	117	Phan Thiet

Table 1. (Continued).

No.	Family name	Genus	Species	Length(mm)TL	Locality
40		<i>Pseudohombus</i>	<i>cinnamoneus</i>	277	Nha Trang
41		<i>Pseudohombus</i>	<i>lexisquamis</i>	330	Vinh
42		<i>Pseudohombus</i>	<i>lexisquamis</i>	280	Vinh
43		<i>Pseudohombus</i>	sp. 1	152	Vinh
44		<i>Pseudohombus</i>	sp. 2	152	Nha Trang
45		<i>Pseudohombus</i>	sp. 3	247	Vinh
46	BRAMIDAE	<i>Brama</i>	<i>japonica</i>	387	Danang
47	BRANCHIOSTEGIDAE	<i>Branchiostegus</i>	<i>albus</i>	244	Nha Trang
48		<i>Branchiostegus</i>	<i>argentatus</i>	307	Danang
49		<i>Branchiostegus</i>	sp. 1	160	Cat Ba
50		<i>Branchiostegus</i>	sp. 2	230	Haiphong
51	BREGMACEROTIDAE	<i>Bregmaceros</i>	<i>macclllandii</i>	89	Cat Ba
52	CAESIONIDAE	<i>Caesio</i>	<i>caerulaureus*</i>	225	Nha Trang
53		<i>Caesio</i>	<i>lunaris</i>	330	Qui Nhon
54		<i>Caesio</i>	<i>pisang</i>	180	Qui Nhon
55		<i>Paracaesio</i>	<i>xanthurus</i>	410	Nha Trang
56		<i>Paracaesio</i>	<i>xanthurus</i>	260	Qui Nhon
57	CALLIONYMIDAE	<i>Callionymus</i>	sp. 1	110	Vinh
58		<i>Callionymus</i>	sp. 2	235	Qui Nhon
59		<i>Dactylopus</i>	<i>dactylopus</i>	230	Cat Ba
60		<i>Dactylopus</i>	<i>dactylopus</i>	141	Cat Ba
61		<i>Dactylopus</i>	sp. 1	122	Phan Thiet
62		<i>Repomucenus</i>	<i>richardsonii</i>	153	Cat Ba
63		<i>Repomucenus</i>	sp. 1	66	Haiphong
64		<i>Repomucenus</i>	sp. 2	178	Haiphong
65		<i>Repomucenus</i>	sp. 3	169	Haiphong
66		<i>Repomucenus</i>	sp. 4	415	Haiphong
67		<i>Synchiropus</i>	sp. 1	103	Phan Thiet
68	CARANGIDAE	<i>Alepes</i>	<i>djedaba*</i>	145	Haiphong
69		<i>Alepes</i>	sp. 1	100	Vinh
70		<i>Alepes</i>	sp. 2	137	Haiphong
71		<i>Carangoides</i>	<i>hedlandensis*</i>	405	Qui Nhon
72		<i>Carangoides</i>	<i>orthogrammus</i>	260	Qui Nhon
73		<i>Caranx</i>	<i>sexfasciatus*</i>	450	Danang
74		<i>Caranx</i>	<i>tille*</i>	233	Danang
75		<i>Decapterus</i>	<i>maruadsi*</i>	390	Danang
76		<i>Decapterus</i>	<i>maruadsi*</i>	210	Haiphong
77		<i>Decapterus</i>	<i>russelli*</i>	345	Danang
78		<i>Elagatis</i>	<i>bipinnulata*</i>	295	Qui Nhon
79		<i>Scomberoides</i>	<i>tol*</i>	147	Haiphong
80		<i>Scomberoides</i>	<i>tala*</i>	490	Danang
81		<i>Seriolina</i>	<i>nigrofasciata*</i>	148	Halong Bay
82		<i>Trachinotus</i>	<i>baillonii</i>	390	Nha Trang
83		<i>Trachinotus</i>	<i>baillonii</i>	233	Qui Nhon
84		<i>Trachinotus</i>	<i>baillonii</i>	232	Qui Nhon
85		<i>Trachurus</i>	<i>japonicus</i>	186	Haiphong
86		<i>Uraspis</i>	<i>helvola*</i>	295	Danang
87		<i>Uraspis</i>	<i>helvola*</i>	270	Qui Nhon
88	CARCHARHINIDAE	<i>Carcharhinus</i>	<i>sealei</i>	610	Haiphong
89		<i>Carcharhinus</i>	sp. 1	310	Haiphong
90		<i>Carcharhinus</i>	sp. 2	440	Rach Gia

Table 1. (Continued).

No.	Family name	Genus	Species	Length(mm)TL	Locality
91	CENTROPOMIDAE	<i>Lates</i>	<i>japonicus</i>	366	Qui Nhon
92		<i>Psammoperca</i>	<i>waigiensis*</i>	238	Danang
93	CEPOLIDAE	<i>Acanthocephala</i>	<i>limbata</i>	250	Phan Thiet
94	CHAETODONTIDAE	<i>Chaetodon</i>	<i>guentheri</i>	116	Qui Nhon
95		<i>Chaetodon</i>	<i>wiebeli</i>	124	Haiphong
96		<i>Chaetodon</i>	<i>wiebeli</i>	198	Nha Trang
97		<i>Chaetodon</i>	<i>xanthurus</i>	130	Nha Trang
98		<i>Heniochus</i>	sp. 1	270	Qui Nhon
99		<i>Heniochus</i>	sp. 2	300	Qui Nhon
100	CHAUNACIDAE	<i>Chaunax</i>	sp. 1	150	Qui Nhon
101	CLUPEIDAE	<i>Amblygaster</i>	sp. 1	135	Haiphong
102		<i>Dussumieria</i>	<i>acuta (F)</i>	140	Phan Thiet
103		<i>Dussumieria</i>	<i>acuta (M)</i>	148	Haiphong
104		<i>Dussumieria</i>	<i>elopsoides</i>	195	Haiphong
105		<i>Ilisha</i>	<i>elongata</i>	260	Haiphong
106		<i>Nematolosa</i>	<i>come</i>	170	Haiphong
107		<i>Nematolosa</i>	<i>come</i>	177	Halong Bay
108		<i>Nematolosa</i>	<i>come</i>	183	Qui Nhon
109		<i>Nematolosa</i>	sp. 1	220	Vinh
110		<i>Sardinella</i>	<i>gibbosa*</i>	130	Haiphong
111		<i>Sardinella</i>	<i>melanura</i>	167	Haiphong
112		<i>Sardinella</i>	<i>melanura</i>	145	Vinh
113		<i>Sardinella</i>	<i>zunasi</i>	135	Vinh
114	CONGIPODIDAE	<i>Amblyapistus</i>	sp. 1	120	Phan Thiet
115		<i>Erisphex</i>	<i>potti</i>	83	Qui Nhon
116		<i>Hypodytes</i>	<i>rubripinnis</i>	75	Nha Trang
117		<i>Hypodytes</i>	<i>rubripinnis</i>	89	Phan Thiet
118	CONGRIDAE	<i>Gnathopis</i>	<i>nystromi nystromi</i>	130	Cat Ba
119	CORYPHENIDAE	<i>Coryphaena</i>	<i>equiselis</i>	412	Danang
120	CYNOGLOSSIDAE	<i>Cynoglossus</i>	<i>arel</i>	180	Qui Nhon
121		<i>Cynoglossus</i>	<i>bilineata</i>	145	Nha Trang
122		<i>Cynoglossus</i>	<i>bilineata</i>	218	Thanh Hoa
123		<i>Cynoglossus</i>	<i>interruptus</i>	110	Nha Trang
124		<i>Cynoglossus</i>	<i>interruptus</i>	95	Nha Trang
125		<i>Cynoglossus</i>	<i>interruptus</i>	90	Vinh
126		<i>Cynoglossus</i>	<i>interruptus (yg)</i>	107	Danang
127		<i>Cynoglossus</i>	<i>robustus</i>	350	Nha Trang
128		<i>Cynoglossus</i>	<i>robustus</i>	460	Qui Nhon
129		<i>Cynoglossus</i>	sp. 1	144	Phan Thiet
130		<i>Cynoglossus</i>	sp. 2	213	Rach Gia
131		<i>Cynoglossus</i>	sp. 3	250	Phan Thiet
132		<i>Paraplagusia</i>	<i>bilineata</i>	118	Danang
133		<i>Paraplagusia</i>	<i>bilineata</i>	120	Nha Trang
134	DACTYLOPTERIDAE	<i>Dactyloptena</i>	<i>orientalis</i>	360	Qui Nhon
135		<i>Dactyloptena</i>	sp. 1	185	Qui Nhon
136	DASYATIDAE	<i>Dasyatis</i>	<i>annotatus</i>	230	Vinh
137		<i>Dasyatis</i>	<i>violacea</i>	500	Qui Nhon
138		<i>Gymnura</i>	sp. 1	226	Vinh
139		<i>Taeniura</i>	<i>lymma</i>	280	Vinh
140	DREPANIDAE	<i>Drepane</i>	<i>puntata</i>	260	Danang
141		<i>Drepane</i>	<i>puntata</i>	455	Thanh Hoa

Table 1. (Continued).

No.	Family name	Genus	Species	Length(mm)TL	Locality
142	DROSOMATIDAE	<i>Konorisus</i>	<i>punctatus</i>	185	Haiphong
143	ELEOTRIDIDAE	<i>Bostrichthys</i>	<i>sinensis</i>	110	Qui Nhon
144	ELOPIDAE	<i>Elops</i>	<i>machnata</i>	167	Nha Trang
145	ENGRAULIDAE	<i>Coilia</i>	<i>macrograthus</i>	165	Haiphong
146		<i>Stolephorus</i>	<i>tri</i> *	100	Haiphong
147		<i>Stolephorus</i>	<i>tri</i> *	100	Vinh
148		<i>Thryssa</i>	<i>dussumieri</i>	113	Vinh
149		<i>Thryssa</i>	<i>hamiltonii</i> *	128	Haiphong
150		<i>Thryssa</i>	<i>setirostris</i>	180	Haiphong
151		<i>Thryssa</i>	<i>setirostris</i>	160	Vinh
152	EXOCOETIDAE	<i>Cypselurus</i>	<i>hiraii</i>	233	Danang
153		<i>Cypselurus</i>	<i>poecilopterus</i>	344	Danang
154		<i>Cypselurus</i>	<i>poecilopterus</i>	353	Danang
155		<i>Cypselurus</i>	<i>poecilopterus</i>	240	Danang
156	FISTULARIDAE	<i>Fristularia</i>	<i>commersonii</i>	910	Danang
157	GEMPYLIDAE	<i>Ruvettus</i>	<i>pretiosus</i>	340	Qui Nhon
158	GOBIIDAE	<i>Acentrogobius</i>	<i>audax</i>	119	Halong Bay
159		<i>Brachyamblyopus</i>	<i>coecus</i>	128	Thanh Hoa
160		<i>Istigobius</i>	sp. 1	164	Phan Thiet
161		<i>Boleophthalmus</i>	<i>pectinirostris</i>	117	Qui Nhon
162	GOBIIDAE 1			112	Haiphong
163	GRAMMISTIDAE	<i>Diploprion</i>	<i>bifasciatus</i>	146	Nha Trang
164	HAEMULIDAE	<i>Hapalogenys</i>	<i>kishinouyei</i>	228	Danang
165		<i>Parapristipoma</i>	<i>trilineatum</i>	435	Nha Trang
166		<i>Parapristipoma</i>	<i>trilineatum</i>	176	Nha Trang
167		<i>Parapristipoma</i>	<i>trilineatum</i>	177	Nha Trang
168		<i>Plectorhynchus</i>	<i>cinctus</i>	136	Phan Thiet
169		<i>Plectorhynchus</i>	<i>diagrammus</i>	199	Nha Trang
170		<i>Plectorhynchus</i>	<i>diagrammus</i>	300	Qui Nhon
171		<i>Plectorhynchus</i>	<i>pictus</i>	445	Danang
172		<i>Plectorhynchus</i>	<i>pictus</i>	152	Phan Thiet
173		<i>Plectorhynchus</i>	<i>polytaenia</i>	98	Phan Thiet
174		<i>Plectorhynchus</i>	sp. 1	145	Phan Thiet
175		<i>Pomadasys</i>	sp. 1	160	Nha Trang
176	HARPADONTIDAE	<i>Harpadon</i>	<i>nehereus</i> *	270	Haiphong
177	HEMIRAMPHIDAE	<i>Hemiramphus</i>	<i>far</i> *	338	Nha Trang
178	HOLOCENTRIDAE	<i>Myripristis</i>	<i>melanosticta</i> *	255	Phan Thiet
179		<i>Ostichthys</i>	<i>hypsipterygion</i>	300	Qui Nhon
180		<i>Ostichthys</i>	<i>hypsipterygion</i> (yg)	135	Qui Nhon
181		<i>Sargocentron</i>	<i>rubrum</i> *	146	Danang
182	KYPHOSIDAE	<i>Kyphosus</i>	<i>cinerascens</i> *	310	Qui Nhon
183		<i>Kyphosus</i>	<i>cinerascens</i> *	200	Qui Nhon
184	LABRIDAE	<i>Bodianus</i>	<i>oxycephalus</i>	340	Nha Trang
185		<i>Cheilinus</i>	<i>chlorurus</i> *	244	Qui Nhon
186		<i>Cheilinus</i>	<i>trilobatus</i> *	198	Qui Nhon
187		<i>Choerodon</i>	<i>azurio</i>	180	Halong Bay
188		<i>Coris</i>	<i>gaimard</i>	252	Qui Nhon
189		<i>Halichoeres</i>	<i>bicolor</i>	134	Halong Bay
190		<i>Halichoeres</i>	<i>bicolor</i>	132	Halong Bay
191		<i>Halichoeres</i>	<i>bicolor</i>	143	Phan Thiet
192		<i>Halichoeres</i>	<i>nigrescens</i>	133	Phan Thiet

Table 1. (Continued).

No.	Family name	Genus	Species	Length(mm)TL	Locality
193		<i>Hemigymnus</i>	<i>melapterus*</i>	355	Danang
194		<i>Hemigymnus</i>	<i>melapterus*</i>	300	Phan Thiet
195		<i>Xyrichthys</i>	<i>aneitensis</i>	135	Phan Thiet
196		<i>Xyrichthys</i>	<i>dea</i>	227	Haiphong
197		<i>Xyrichthys</i>	<i>dea</i>	204	Haiphong
198		<i>Xyrichthys</i>	<i>dea</i>	232	Qui Nhon
199		<i>Xyrichthys</i>	<i>pavo</i>	192	Haiphong
200		<i>Xyrichthys</i>	<i>pavo</i>	182	Qui Nhon
201		<i>Xyrichthys</i>	sp. 1	90	Phan Thiet
202		<i>Xyrichthys</i>	sp. 2	148	Phan Thiet
203		<i>Xyrichthys</i>	sp. 3	265	Danang
204		<i>Xyrichthys</i>	sp. 4	175	Haiphong
205		<i>Xyrichthys</i>	<i>verreus</i>	148	Qui Nhon
206		<i>Halichoeres</i>	sp. 1	157	Halong Bay
207		<i>Halichoeres</i>	sp. 2	92	Phan Thiet
208	LABRIDAE 1			182	Phan Thiet
209	LACTARIIDAE	<i>Lactarius</i>	<i>lactarius*</i>	224	Nha Trang
210	LEIOGNATHIDAE	<i>Leiognathus</i>	<i>elongatus</i>	113	Phan Thiet
211		<i>Leiognathus</i>	<i>nuchalis</i>	110	Vinh
212		<i>Leiognathus</i>	<i>rivulatus</i>	90	Phan Thiet
213		<i>Leiognathus</i>	<i>rivulatus</i>	110	Phan Thiet
214		<i>Leiognathus</i>	<i>ruconius</i>	87	Vinh
215	LETHRINIDAE	<i>Gnathodentex</i>	<i>aureolineatus*</i>	232	Qui Nhon
216		<i>Gymnocranius</i>	<i>affinis</i>	240	Nha Trang
217		<i>Lethrinus</i>	<i>haematopturus</i>	270	Danang
218		<i>Lethrinus</i>	<i>mahsena</i>	185	Nha Trang
219		<i>Lethrinus</i>	<i>miniatus</i>	320	Nha Trang
220		<i>Lethrinus</i>	<i>ornatus*</i>	304	Nha Trang
221		<i>Lethrinus</i>	<i>reticulatus</i>	414	Danang
222		<i>Lethrinus</i>	<i>xanthochilus</i>	560	Nha Trang
223	LOBOTIDAE	<i>Lobotes</i>	<i>surinamensis*</i>	285	Danang
224	LOPHIIDAE	<i>Lophiomus</i>	<i>setigerus</i>	315	Qui Nhon
225		<i>Lophiomus</i>	sp. 1	230	Phan Thiet
226	LUTJANIDAE	<i>Aphareus</i>	<i>furcatus</i>	210	Qui Nhon
227		<i>Aphareus</i>	<i>rutilans*</i>	320	Nha Trang
228		<i>Aprion</i>	<i>virescens*</i>	385	Qui Nhon
229		<i>Lutjanus</i>	<i>fulviflamma*</i>	145	Nha Trang
230		<i>Lutjanus</i>	<i>gibbus*</i>	490	Nha Trang
231		<i>Lutjanus</i>	<i>johni*</i>	390	Danang
232		<i>Lutjanus</i>	<i>johni*</i>	165	Qui Nhon
233		<i>Lutjanus</i>	<i>lutjanus*</i>	180	Nha Trang
234		<i>Lutjanus</i>	<i>malabaricus*</i>	190	Haiphong
235		<i>Lutjanus</i>	sp. 1	420	Danang
236		<i>Pinjalo</i>	<i>lewisi*</i>	670	Phan Thiet
237		<i>Symphorus</i>	<i>nematophorus*</i>	293	Danang
238		<i>Symphorus</i>	<i>nematophorus*</i>	248	Nha Trang
239	MEGALOPIDAE	<i>Megalops</i>	<i>cyprinoides*</i>	540	Danang
240	MONACANTHIDAE	<i>Cantherhines</i>	<i>dumerilli</i>	245	Qui Nhon
241		<i>Cantherhines</i>	<i>fronticinctus</i>	240	Qui Nhon
242		<i>Monacanthus</i>	<i>chinensis</i>	135	Qui Nhon
243	MONOCENTRIDAE	<i>Monocentris</i>	<i>japonica</i>	145	Qui Nhon

Table 1. (Continued).

No.	Family name	Genus	Species	Length(mm)TL	Locality
244	MONODACTYLIDAE	<i>Monodactylus</i>	<i>argenteus</i>	210	Qui Nhon
245	MUGILIDAE	<i>Liza</i>	<i>affinis</i>	165	Thanh Hoa
246		<i>Liza</i>	<i>vaigiensis</i>	157	Qui Nhon
247		<i>Valamugil</i>	<i>seheli</i>	198	Nha Trang
248	MULLIDAE	<i>Mulloidichthys</i>	<i>flavolineatus</i>	308	Nha Trang
249		<i>Parupeneus</i>	<i>barberinus</i>	295	Nha Trang
250		<i>Parupeneus</i>	<i>cyclostomus*</i>	393	Nha Trang
251		<i>Parupeneus</i>	<i>heptacanthus</i>	248	Nha Trang
252		<i>Parupeneus</i>	<i>pleurospilus*</i>	135	Phan Thiet
253		<i>Parupeneus</i>	sp. 1	285	Nha Trang
254		<i>Parupeneus</i>	<i>trifasciatus</i>	250	Nha Trang
255		<i>Parupeneus</i>	<i>trifasciatus</i>	115	Qui Nhon
256		<i>Upeneus</i>	<i>bensasi</i>	125	Qui Nhon
257	MURAENESOCIDAE	<i>Muraenesox</i>	<i>cinereus</i>	350	Nha Trang
258		<i>Muraenesox</i>	sp. 1	300	Nha Trang
259	MURAENIDAE	<i>Gymnothorax</i>	<i>fimbriata</i>	370	Nha Trang
260		<i>Gymnothorax</i>	<i>fimbriata</i>	660	Nha Trang
261		<i>Gymnothorax</i>	<i>reticularisus</i>	510	Danang
262		<i>Gymnothorax</i>	<i>reticularisus</i> (yg)	230	Nha Trang
263		<i>Gymnothorax</i>	sp. 1	562	Phan Thiet
264		<i>Gymnothorax</i>	sp. 2	347	Phan Thiet
265		<i>Gymnothorax</i>	sp. 3	610	Nha Trang
266		<i>Strophidon</i>	<i>ui</i> ?	1100	Nha Trang
267	MYLIOBATIDAE	<i>Aetomylaeus</i>	sp. 1	144	Phan Thiet
268	NEMIPTERIDAE	<i>Nemipterus</i>	<i>bathybius*</i>	260	Nha Trang
269		<i>Nemipterus</i>	<i>japonicus*</i>	240	Haiphong
270		<i>Nemipterus</i>	<i>japonicus*</i>	280	Haiphong
271		<i>Nemipterus</i>	<i>marginatus*</i>	170	Qui Nhon
272		<i>Nemipterus</i>	<i>marginatus*</i>	135	Vinh
273		<i>Nemipterus</i>	<i>thosaporni</i>	185	Cat Ba
274		<i>Nemipterus</i>	<i>virgatus</i>	350	Nha Trang
275		<i>Nemipterus</i>	<i>virgatus</i>	240	Qui Nhon
276		<i>Scolopsis</i>	<i>ciliatus</i>	196	Nha Trang
277		<i>Scolopsis</i>	<i>erionna</i>	322	Nha Trang
278		<i>Scolopsis</i>	<i>monogramma*</i>	345	Nha Trang
279		<i>Scolopsis</i>	<i>taeniopterus*</i>	225	Haiphong
280	OGCOEPHALIDAE	<i>Halieutaea</i>	<i>fumosa</i>	95	Qui Nhon
281	OPHICHTHIDAE	<i>Pisoodonophis</i>	sp. 1	980	Danang
282	OPHIDIIDAE	<i>Sirembo</i>	<i>imberbis</i>	137	Phan Thiet
283		<i>Sirembo</i>	sp. 1	164	Cat Ba
284	OPISTOGNATHIDAE	<i>Opistognathus</i>	sp. 1	141	Phan Thiet
285	ORECTOLOBIDAE	<i>Chiloscyllium</i>	<i>punctatum*</i>	315	Phan Thiet
286		<i>Chiloscyllium</i>	sp. 1	480	Phan Thiet
287	OSTRACIONTIDAE	<i>Lactoria</i>	sp. 1	62	Phan Thiet
288	OSTRACIIDAE	<i>Ostracion</i>	sp. 1	227	Nha Trang
289	PEMPHERIDAE	<i>Pempheris</i>	sp. 1	152	Nha Trang
290	PINGUIPEDIDAE	<i>Parapercis</i>	<i>filamentosa</i>	122	Phan Thiet
291		<i>Parapercis</i>	<i>filamentosa</i>	150	Phan Thiet
292		<i>Parapercis</i>	<i>snyderi</i>	90	Halong Bay
293		<i>Parapercis</i>	sp. 1	222	Phan Thiet
294		<i>Parapercis</i>	sp. 2	140	Cat Ba

Table 1. (Continued).

No.	Family name	Genus	Species	Length(mm)TL	Locality	
295	PLATYCEPHALIDAE	<i>Elatis</i>	<i>ransonneti</i>	172	Qui Nhon	
296		<i>Platycephalus</i>	sp. 1	475	Haiphong	
297		<i>Platycephalus</i>	sp. 2	145	Haiphong	
298		<i>Platycephalus</i>	sp. 3	150	Phan Thiet	
299		<i>Rogadius</i>	<i>asper</i>	150	Phan Thiet	
300	PLEURONECTIDAE	<i>Pleuronectes</i>	sp. 1	275	Vinh	
301	PLOTOSIDAE	<i>Plotosus</i>	<i>lineatus*</i>	225	Vinh	
302	POLYNEMIDAE	<i>Polydactylus</i>	sp. 1	260	Rach Gia	
303	POMACANTHIDAE	<i>Apolemichthys</i>	<i>trimaculatus</i>	220	Phan Thiet	
304		<i>Pomacanthus</i>	<i>imperator</i>	330	Phan Thiet	
305		<i>Pomacanthus</i>	<i>semicirculatus</i>	292	Phan Thiet	
306		<i>Pomacanthus</i>	sp. 1	210	Phan Thiet	
307	POMACENTRIDAE	<i>Abudefduf</i>	<i>septemfasciatus</i>	155	Nha Trang	
308		<i>Abudefduf</i>	sp. 1	114	Cat Ba	
309		<i>Abudefduf</i>	<i>vaigiensis</i>	138	Qui Nhon	
310		<i>Chromis</i>	<i>funea</i>	125	Qui Nhon	
311		<i>Pristotis</i>	<i>jerdoni</i>	118	Haiphong	
312	POMACENTRIDAE 1			156	Phan Thiet	
313	POMACENTRIDAE 2			76	Phan Thiet	
314	POMACENTRIDAE 3			157	Qui Nhon	
315	PRIACANTHIDAE	<i>Priacanthus</i>	<i>cruentatus</i>	250	Phan Thiet	
316		<i>Priacanthus</i>	<i>hamrur*</i>	380	Danang	
317		<i>Priacanthus</i>	sp. 1	350	Danang	
318		<i>Priacanthus</i>	sp. 2	255	Nha Trang	
319		<i>Pristigenys</i>	<i>niphonia</i>	190	Qui Nhon	
320		<i>Pristigenys</i>	<i>niphonia</i>	155	Qui Nhon	
321		RAJIDAE	<i>Raja</i>	<i>boesemani (M)</i>	230	Haiphong
322		RHINOBATIDAE	<i>Rhinobatus</i>	<i>schlegelic</i>	500	Nha Trang
323		RHYACICHTHYIDAE	<i>Rhyncopelatus</i>	<i>oxyrhynchus</i>	117	Vinh
324	SCARIDAE	<i>Cetoscarus</i>	<i>bicolor</i>	470	Danang	
325		<i>Scarus</i>	<i>dimidiatus</i>	170	Qui Nhon	
326		<i>Scarus</i>	<i>psittacus*</i>	218	Qui Nhon	
327		<i>Scarus</i>	<i>psittacus*</i>	240	Qui Nhon	
328		<i>Scarus</i>	<i>rubroviolaceus*</i>	325	Qui Nhon	
329		<i>Scarus</i>	<i>rubroviolaceus*</i>	245	Qui Nhon	
330		<i>Scarus</i>	<i>rubroviolaceus*</i>	230	Qui Nhon	
331		<i>Scarus</i>	<i>sordidus*</i>	255	Qui Nhon	
332		<i>Scarus</i>	<i>sordidus*</i>	225	Qui Nhon	
333		SCATOPHAGIDAE	<i>Scatophagus</i>	<i>argus</i>	165	Danang
334	<i>Scatophagus</i>		<i>argus</i>	103	Vinh	
335	SCIAENIDAE	<i>Johnius</i>	<i>coitor</i>	135	Danang	
336		<i>Nibea</i>	<i>albiflora</i>	337	Danang	
337	SCOMBRIDAE	<i>Acanthocybium</i>	<i>solandri</i>	575	Qui Nhon	
338		<i>Euthynnus</i>	<i>affinis</i>	500	Vinh	
339		<i>Grammatorcynus</i>	<i>billineatus</i>	410	Nha Trang	
340		<i>Katsuwonus</i>	<i>pelamis*</i>	642	Qui Nhon	
341		<i>Scomberomorus</i>	<i>commerson*</i>	200	Halong Bay	
342		<i>Scomberomorus</i>	<i>guttatus*</i>	550	Qui Nhon	
343		<i>Scomberomorus</i>	sp. 1	203	Vinh	
344		<i>Thunnus</i>	<i>albacares</i>	580	Qui Nhon	
345	SCORPAENIDAE	<i>Pterois</i>	sp. 1	315	Qui Nhon	

Table 1. (Continued).

No.	Family name	Genus	Species	Length(mm)TL	Locality
346		<i>Scorpaenopsis</i>	<i>diabolus</i>	205	Halong Bay
347		<i>Scorpaenopsis</i>	<i>diabolus</i>	217	Nha Trang
348		<i>Apistus</i>	<i>carinatus</i>	132	Haiphong
349		<i>Apistus</i>	<i>carinatus</i>	132	Haiphong
350		<i>Apistus</i>	<i>carinatus</i>	112	Phan Thiet
351		<i>Apistus</i>	<i>carinatus</i>	162	Phan Thiet
352		<i>Minous</i>	sp. 1	98	Cat Ba
353		<i>Minous</i>	sp. 2	99	Cat Ba
354	SCORPAENIDAE 1			192	Qui Nhon
355	SCYLIORHINIDAE	<i>Cephalosyllum</i>	<i>umbratile</i>	414	Qui Nhon
356	SERRANIDAE	<i>Cephalopholis</i>	<i>boenack*</i>	123	Phan Thiet
357		<i>Cephalopholis</i>	<i>sonnerati*</i>	437	Nha Trang
358		<i>Cephalopholis</i>	<i>sonnerati*</i>	390	Nha Trang
359		<i>Cephalopholis</i>	sp. 1	175	Nha Trang
360		<i>Epinephelus</i>	<i>amblycephalus</i>	280	Nha Trang
361		<i>Epinephelus</i>	<i>areolatus</i>	147	Nha Trang
362		<i>Epinephelus</i>	<i>awoara</i>	348	Danang
363		<i>Epinephelus</i>	<i>awoara</i>	385	Danang
364		<i>Epinephelus</i>	<i>bleekeri*</i>	640	Nha Trang
365		<i>Epinephelus</i>	<i>coioides*</i>	180	Phan Thiet
366		<i>Epinephelus</i>	<i>diacanthus</i>	175	Nha Trang
367		<i>Epinephelus</i>	<i>fasciatus*</i>	300	Nha Trang
368		<i>Epinephelus</i>	<i>melanostigma</i>	250	Nha Trang
369		<i>Epinephelus</i>	<i>polylepis</i>	620	Nha Trang
370		<i>Epinephelus</i>	<i>quoyanus*</i>	236	Qui Nhon
371		<i>Epinephelus</i>	<i>radiatus</i>	392	Nha Trang
372		<i>Epinephelus</i>	<i>trimaculatus</i>	340	Danang
373		<i>Epinephelus</i>	<i>tukula</i>	587	Nha Trang
374		<i>Plectropomus</i>	<i>aerolatus</i>	473	Nha Trang
375		<i>Plectropomus</i>	<i>leopardus*</i>	600	Nha Trang
376		<i>Plectropomus</i>	<i>leopardus*</i>	450	Nha Trang
377		<i>Plectropomus</i>	<i>oligacantus</i>	486	Nha Trang
378		<i>Trisotropis</i>	sp. 1	315	Qui Nhon
379		<i>Variola</i>	<i>louti</i>	595	Nha Trang
380	SIGANIDAE	<i>Siganus</i>	<i>canaliculatus*</i>	123	Cat Ba
381		<i>Siganus</i>	<i>canaliculatus*</i>	108	Cat Ba
382		<i>Siganus</i>	<i>canaliculatus*</i>	145	Nha Trang
383		<i>Siganus</i>	<i>canaliculatus*</i>	145	Vinh
384		<i>Siganus</i>	<i>chrysospilos</i>	375	Phan Thiet
385		<i>Siganus</i>	<i>corallinus*</i>	273	Phan Thiet
386		<i>Siganus</i>	<i>javus*</i>	154	Nha Trang
387		<i>Siganus</i>	sp. 1	270	Nha Trang
388		<i>Siganus</i>	sp. 2	180	Nha Trang
389	SILLAGINIDAE	<i>Sillago</i>	<i>parvisquamis</i>	166	Haiphong
390		<i>Sillago</i>	<i>sihama*</i>	330	Haiphong
391	SOLEIDAE	<i>Euryglossa</i>	<i>orientalis</i>	150	Haiphong
392		<i>Euryglossa</i>	<i>orientalis</i>	105	Vinh
393		<i>Heteromycteris</i>	sp. 1	96	Nha Trang
394		<i>Pardachirus</i>	<i>pavoninus</i>	195	Haiphong
395		<i>Solea</i>	<i>ovata</i>	100	Nha Trang
396		<i>Zebrias</i>	<i>zebra</i>	140	Thanh Hoa

Table 1. (Continued).

No.	Family name	Genus	Species	Length(mm)TL	Locality
397	SPARIDAE	<i>Acanthopagrus</i>	<i>latus</i>	267	Qui Nhon
398		<i>Acanthopagrus</i>	sp. 1	367	Danang
399		<i>Acanthopagrus</i>	sp. 2	183	Nha Trang
400		<i>Acanthopagrus</i>	sp. 3	273	Nha Trang
401		<i>Argyrops</i>	<i>bleekeri</i>	460	Nha Trang
402		<i>Argyrops</i>	sp. 1	470	Nha Trang
403		<i>Dentex</i>	<i>tumifrons</i>	400	Danang
404		<i>Dentex</i>	<i>tumifrons</i>	282	Danang
405		<i>Pagrus</i>	sp. 1	530	Nha Trang
406		<i>Pagrus</i>	sp. 2	550	Nha Trang
407	SPHYRAENIDAE	<i>Sphyraena</i>	<i>obtusatta</i> *	205	Haiphong
408	SQUALIDAE	<i>Isistius</i>	<i>brasiliensis</i>	438	Qui Nhon
409	STROMATEIDAE	<i>Pampus</i>	<i>chinensis</i> *	339	Nha Trang
410	SYNGNATHIDAE	<i>Hippocampus</i>	<i>kuda</i>	96	Phan Thiet
411		<i>Hippocampus</i>	sp. 1	96	Phan Thiet
412		<i>Hippocampus</i>	sp. 2	101	Phan Thiet
413		<i>Hippocampus</i>	sp. 3	92	Phan Thiet
414		<i>Hippocampus</i>	sp. 4	99	Phan Thiet
415		<i>Syngnathoides</i>	<i>biaculeatus</i>	189	Haiphong
416	SYNODONTIDAE	<i>Synodus</i>	sp. 1	175	Phan Thiet
417	TAENIODIDAE	<i>Taenioides</i>	<i>cirratus</i>	217	Thanh Hoa
418		<i>Taenioides</i>	sp. 1	187	Danang
419		<i>Taenioides</i>	sp. 2	170	Thanh Hoa
420		<i>Taenioides</i>	sp. 3	223	Thanh Hoa
421	TETRAODONTIDAE	<i>Arothron</i>	sp. 1	120	Phan Thiet
422		<i>Arothron</i>	sp. 2	82	Vinh
423		<i>Lagocephalus</i>	<i>gloveri</i>	145	Vinh
424	THERAPONIDAE	<i>Rhyncopelatus</i>	<i>oxyrhynchus</i>	120	Vinh
425		<i>Therapon</i>	<i>jarbua</i> *	340	Danang
426		<i>Therapon</i>	<i>jarbua</i> *	185	Haiphong
427	TORPEDINIDAE	<i>Narcine</i>	<i>timlei</i>	250	Cat Ba
428		<i>Narcine</i>	<i>timlei</i>	287	Phan Thiet
429		<i>Torpedo</i>	<i>marmoratus</i>	120	Phan Thiet
430		<i>Torpedo</i>	sp. 1	142	Phan Thiet
431		<i>Torpedo</i>	sp. 2	360	Phan Thiet
432	TRICHONOTIDAE	<i>Trichonotus</i>	sp. 1	200	Phan Thiet
433	TRIGLIDAE	<i>Lepidotrigla</i>	<i>abyssalis</i>	168	Qui Nhon
434		<i>Lepidotrigla</i>	<i>hime</i>	121	Cat Ba
435		<i>Satyrichthys</i>	<i>rieffeli</i>	290	Nha Trang
436		<i>Satyrichthys</i>	<i>rieffeli</i>	320	Nha Trang
437	URANOSCOPIDAE	<i>Ichthyocampus</i>	<i>lebeck</i>	340	Danang
438		<i>Uranoscopus</i>	<i>bicinctus</i>	147	Phan Thiet
439		<i>Uranoscopus</i>	<i>cognatus</i>	212	Phan Thiet
440		<i>Uranoscopus</i>	sp. 1	193	Qui Nhon
441	ZANCLIDAE	<i>Zanclus</i>	<i>canescens</i>	167	Qui Nhon
442	ZEIDAE	<i>Zeus</i>	<i>faber</i>	340	Qui Nhon

* Indicates fish that is already listed in the Field Guide book

Table 2. The number of new fish specimens still unlisted in the Field Guide according to the localities they were obtained.

	Halong City	Cat Ba	Haiphong	Thanh Hoa	Vinh	Danang	Qui Nhon	Nha Trang	Phan Thiet	Vung Tau	Rach Gia
No. of Family	6	11	18	7	15	19	45	32	32	0	4
No. of Genus	7	13	25	7	20	27	55	43	39	0	4
No. of Species	8	14	32	9	25	30	65	67	62	0	4

Table 3. Number of families, genera and species of fish specimens sorted according to the localities they were obtained (for all fish specimens).

	Halong City	Cat Ba	Haiphong	Thanh Hoa	Vinh	Danang	Qui Nhon	Nha Trang	Phan Thiet	Vung Tau	Rach Gia
No. of Family	8	13	23	7	19	29	48	37	36	0	4
No. of Genus	9	15	34	7	25	38	65	51	46	0	4
No. of Species	10	16	47	9	30	45	82	87	71	0	4

Discussion

Fish assemblage observed in the southern parts of Vietnam, such as Vung Tau and Rach Gia, was nearly similar to the one found in Malaysian coastal waters. Because most of the fish species here have been covered by Mansor *et al.* (1998), few samples were necessary. On the other hand, the large variety of fish specimens, which are still unlisted in the Field Guide, was observed at Qui Nhon, Nha Trang and Phan Thiet, and these specimens were collected. The reason for this large variety is probably related to the narrow continental shelf available in these waters.

Two distinct seasons are known to prevail in Northern Vietnam. From November to April, the northern part of Vietnam experiences a relatively cold and humid winter. This is precipitated by invading polar air currents that sweep into Vietnam from Siberia and China, often bringing temperatures down to as low as 0 °C in the mountainous regions of the area. Summer, from May to October, is characterized by higher temperatures, heavy rain and often typhoons. Under such a diverse condition, different types of fish species are perhaps available in this part, especially in the waters of Halong Bay in the Gulf of Tonkin.

Although two sampling activities have been carried out, more sampling efforts are still needed to focus on the Northern and Central areas, to cover the extensive array of new fish specimens expected to be found in Vietnamese waters.

MFRDMD and RIMP have successfully undertaken this study to examine some part of the full taxonomy of fishes found in Vietnamese waters. However, due to the constraints in the SEAFDEC funding, such works are often interrupted and possibly take some considerable time to complete.

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