

Fish Species Composition in the Dinh An Estuary, Tra Vinh Province

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Received 12 August 2016

Revised 20 August 2016; Accepted 09 September 2016

Abstract: The Dinh An estuary is one of two mouths of the Hau river and also one of the mouths of the Mekong river, which flows into the East Sea of Vietnam. It has characteristics of a delta estuary and is under the strong influence of the tide. Based on the specimens collected in three field surveys, conducted in July 2011, April 2012 and August 2015, we have identified 103 fish species belonging to 43 families and 13 orders in the Dinh An estuary. Among these fish orders, Perciformes made up the highest and far superior percentages at all taxonomic levels, with 19 families (accounted for 44.19% of total family number), 44 genera (accounted for 54.32% of total genus number), and 53 species (accounted for 51.46% of total species number). The other orders had much lower number of species, genera, and families, with their percentages at each taxonomic level mostly lower than 10%. Even, there were six orders (46.15% of total order number) with only one family, one genus and one species in each. On average, each fish order found in the area was represented by 3.31 families, 6.23 genera and 7.92 species and each family was represented by 1.88 genera and 2.40 species. Among 103 fish species found in the area, 19 are pelagic and 84 are demersal, and one species, *Otolithoidesbiauritus* (Cantor, 1849) was listed at the Vulnerable level (VU) in Vietnam Red Data Book (2007). Results of this paper are the first published data of fish species composition in the Dinh An estuary.

Keywords: Dinh An, estuary, fish species composition, identification, specimens.

1. Introduction

Being one of two mouths of the Hau river and also one of the mouths of the Mekong river, which flows into the East Sea of Vietnam, the Dinh An estuary is very important for economic activities, including fisheries development. This

estuary is an area with high biodiversity and large aquatic resources, especially the richness of fishes. However, until now, there have been very few studies on biodiversity and no publication on fish species diversity in this area. Therefore, it is necessary to investigate the fish species composition in the area in order to provide a scientific database of fish diversity for protection and sustained utilization of fish resource in the Dinh An estuary.

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2. Materials and methods

Fish specimens were collected by using trawling nets, gill nets and all of other available kinds of gears, and obtained from the local fish markets within the Dinh An estuary during three field surveys: 21-27 July 2011, 15-22 April 2012, and 23-29 August 2015. These field surveys were supported by the sub-project I.6/ĐA-47 "Overall investigation of biodiversity of estuarine ecosystems in Vietnam".

Depending on the size of collected fishes, fish specimens were preserved in 5-8% formaline solution. The examination of fish specimens was based on the method of comparative morphology according to the manual "Guide to fish studies" by I. F. Pravdin (1973) [1].

The main documents used for identification were "FAO species identification guide for fishery purposes - The living marine resources of Western Central Pacific" - Vol. 3,4 (1999) [2, 3], and Vol. 5,6 (2001) [4, 5] due to Carpenter K.E. and Niem V.H. edited, and "Fishes of Japan - with pictorial keys to the species, English edition, Vol. I, II" of Nakabo Tetsuji (2002) [6].

The list of fishes is sorted according to the world fish classification system of W. N. Eschmeyer (1998) [7].

3. Results and Discussion

3.1. Fish species composition

Based on identifying results of fish specimens collected in three field surveys, conducted in July 2011, April 2012 and August 2015 respectively, the total number of fish species found in the Dinh An estuary was 103

species, belonging to 43 families, and 13 orders (Table 1).

Based on the vertical division (according to the water column), fishes in the Dinh An estuary contain two groups, the pelagic and the demersal ones. The pelagic group contained 19 species (18.45% of total species number), belonging to six families of three orders. The demersal group contained 84 species (81.55% of total species number), belonging to 38 families of 11 orders. Among 13 fish orders, Perciformes was the only order that had representatives belonging to both pelagic and demersal groups. Two orders, Clupeiformes and Characiformes, only contained pelagic species, while remaining 10 orders only contained demersal species (Table 1).

In the order Perciformes, families consisted of pelagic fishes are Carangidae (Jacks and Pompanos), which was accounted for the highest species number (six species); and two families, Clupeidae (Herrings) and Engraulidae (Anchovies), each contained five species. Three families that were represented by only one species each were Characidae, Caesionidae, and Scatophagidae. The number of families consisted of demersal fishes was higher but the number of species mainly concentrated in some families. The most diverse family was Gobiidae (Gobies) with 15 species; Sciaenidae (Drums or Croakers) with eight species, and Ariidae (Sea Catfishes) with seven species (Table 1).

Although the fish species composition in the Dinh An estuary is rather diverse, with 103 species in total, only one species, *Otolithoides biauritus* (Cantor, 1849) was listed in the Vietnam Red Data Book (2007) at the VU level (Vulnerable).

Table 1. List of fish species in the Dinh An estuary

No.	Scientific name	English name	Vietnamese name	Habitat	
				P	D
	CHONDRICHTHYES	CARTILAGE FISH	CÁ SỤN		
	Class ELASMOBRANCHII	SHARKS & RAYS	Lớp CÁ MANG TẮM		
I.	ORECTOLOBIFORMES	CARPET SHARKS	Bộ CÁ NHÁM RÊU		
1.	Hemiscylliidae	Bamboo sharks	Họ cá nhám trúc		
1.	<i>Chiloscyllium punctatum</i> Müller & Henle, 1838	Brownbanded bamboo shark	Cá nhám trúc vằn nâu		x
II.	MYLIOBATIFORMES	STINGRAYS	Bộ CÁ ĐUỐI Ó		
2.	Dasyatidae	Stingrays	Họ cá đuối bông		
2.	<i>Dasyatis zugei</i> (Muller & Henle, 1841)	Pale-edged stingray	Đuối bông mõm nhọn		x
	OSTEICHTHYES	BONY FISH	CÁ XƯƠNG		
B.	Class ACTINOPTERYGII	RAY-FINNED FISHES	Lớp CÁ VÂY TIA		
III.	ANGUILIFORMES	EELS AND MORAYS	Bộ CÁ CHÌNH		
3.	Moringuidae	Worm/spaghetti eels	Họ cá chình giun đầu to		
3.	<i>Moringua javanica</i> (Kaup, 1856)	Java spaghetti eel	Cá chình giun java		x
4.	Muraenidae	Moray eels	Họ cá lịch biển		
4.	<i>Gymnothorax isingteena</i> (Richardson, 1845)	Spotted moray	Cá lịch đốm		x
5.	<i>Gymnothorax fimbriatus</i> (Bennett, 1832)	Fimbriated moray	Cá lịch chấm bé		x
6.	<i>Gymnothorax punctatofasciatus</i> Bleeker, 1863	Bars'n spots moray	Cá lịch khoang chấm		x
5.	Ophichthidae	Snake eels	Họ cá chình rắn		
7.	<i>Caecula pterygera</i> Vahl, 1794	Finny snake eel	Cá chình rắn vây		x
8.	<i>Lamnostoma kampeni</i> (Weber & de Beaufort, 1916)	Freshwater snake-eel	Cá chình rắn nước ngọt		x
9.	<i>Phyllophichthus xenodontus</i> Gosline, 1951	Flappy snake-eel	Cá chình rắn		x
6.	Colocongridae	Short-tail eels	Họ chình đuôi ngắn		
10.	<i>Coloconger raniceps</i> Alcock, 1889	Froghead eel	Cá chình đầu ếch		x
7.	Congridae	Conger eels	Họ cá chình		
11.	<i>Uroconger lepturus</i> (Richardson, 1845)	Slender conger	Cá chình đuôi nhọn		x
8.	Muraenesocidae	Pike congers	Họ cá dưa		
12.	<i>Muraenesox bagio</i> (Hamilton, 1822)	Common pike conger	Cá dưa xám		x
IV.	CLUPEIFORMES	HERRINGS	Bộ CÁ TRÍCH		
9.	Clupeidae	Herrings	Họ cá trích		
13.	<i>Amblygaster leiogaster</i> (Valenciennes, 1847)	Smooth-belly sardinella	Cá trích bụng trơn		x
14.	<i>Dussumieria acuta</i> Valenciennes, 1847	Rainbow sardine	Cá lằm nhọn		x
15.	<i>Dussumieria elopsoides</i> Bleeker, 1849	Slender rainbow sardine	Cá lằm		x
16.	<i>Hilsa kelee</i> (Cuvier, 1829)	Kelee shad	Cá chấy chấm hoa		x
17.	<i>Sardinella gibbosa</i> (Bleeker, 1849)	Goldstripe sardinella	Cá trích xương		x
10.	Engraulidae	Anchovies	Họ cá trông		
18.	<i>Coilia lindmani</i> Bleeker, 18658	Lindman's grenadier anchovy	Cá lảnh canh lín		x
19.	<i>Coilia rebentischii</i> Bleeker, 1858	Many-fingered grenadier anchovy	Cá mè gà trắng		x
20.	<i>Setipinna taty</i> (Valenciennes, 1848)	Scaly hairfin anchovy	Cá lẹp vàng		x
21.	<i>Stolephorus chinensis</i> (Günther, 1880)	China anchovy	Cá Com trung hoa		x
22.	<i>Stolephorus commersonnii</i> Lacepède, 1803	Commerson's anchovy	Cá com thường		x

V.	CHARACIFORMES	CHARACINS	BỘ CÁ HỒNG NHUNG	
11.	Characidae	Characins	Họ cá Chim nước ngọt	
23.	<i>Piaractus brachipomus</i> (Cuvier, 1818)	Pirapitinga	Cá chim trắng nước ngọt	x
VI.	SILURIFORMES	CATFISH	BỘ CÁ NHEO	
12.	Bagridae	Bagrit catfishes	Họ cá Lăng	
24.	<i>Mystus gulio</i> (Hamilton, 1822)	Long whiskers catfish	Cá chốt	x
13.	Clariidae	Airbreathing catfishes	Họ cá Trê	
25.	<i>Clarias meladerma</i> Bleeker, 1846	Blackskin catfish	Cá trê xám	x
14.	Ariidae	Sea catfishes	Họ cá Úc	
26.	<i>Arius maculatus</i> (Thunberg, 1792)	Spotted catfish	Cá Úc chấm	x
27.	<i>Arius venosus</i> Valenciennes, 1840	Veined catfish	Cá Úc vân	x
28.	<i>Arius caelatus</i> Valenciennes, 1840	Engraved catfish	Cá Úc quạt	x
29.	<i>Arius arius</i> (Hamilton, 1822)	Threadfin sea catfish	Cá Úc	x
30.	<i>Arius truncatus</i> Valenciennes, 1840	Engraved catfish	Cá ục nghệ	x
31.	<i>Arius sona</i> (Hamilton, 1822)	Sona sea catfish	Cá ục sô na	x
32.	<i>Osteogeneiosus militaris</i> (Linnaeus, 1758)	Soldier catfish	Cá ục thép	x
15.	Plotosidae	Eeltail catfishes	Họ cá Ngát	
33.	<i>Euristhmus nudiceps</i> (Günther, 1880)	Naked-headed catfish	Cá ngát nu đi	x
34.	<i>Plotosus lineatus</i> (Thunberg, 1787)	Striped eel catfish	Cá ngát	x
VII.	AULOPIFORMES	GRINNERS	BỘ CÁ ĐÈN LÔNG	
16.	Synodontidae	Lizardfishes	Họ cá mối	
35.	<i>Trachinocephalus myops</i> (Forster, 1801)	Snakefish	Cá mối hoa	x
VIII.	LOPHIIFORMES	ANGLERFISHES	BỘ CÁ LƯỚI DONG	
17.	Antennariidae	Frogfishes	Họ cá lưới dong	
36.	<i>Antennarius striatus</i> (Shaw, 1794)	Striated frogfish	Cá lưới dong đen	x
IX.	SYNGNATHIFORMES	PIPEFISHES AND SEAHORSES	BỘ CÁ NGỰA XƯƠNG	
18.	Fistulariidae	Cornetfishes	Họ cá môm ống	
37.	<i>Fistularia petimba</i> Lacepède, 1803	Red cornetfish	Cá lao không vây	x
X.	SCORPAENIFORMES	SCORPIONFISHES AND FLATHEADS	BỘ CÁ MÙ LÀN	
19.	Synanceiidae	Stonefishes	Họ cá mặt quỷ	
38.	<i>Choridactylus multibarbus</i> Richardson, 1848	Orangebanded stingfish	Cá mù làn gai	x
20.	Apistidae	Wasp scorpionfishes	Họ cá mù làn	
39.	<i>Apistus carinatus</i> (Bloch & Schneider, 1801)	Ocellated waspfish	Mù làn vây chấm	x
XI.	PERCIFORMES	PERCH-LIKES	BỘ CÁ VƯỢC	
21.	Opistognathidae	Jawfishes	Họ cá miệng rộng	
40.	<i>Opistognathus castelnaui</i> Bleeker, 1860	Castelnaud's jawfish	Cá miệng rộng	x
22.	Teraponidae	Grunters	Họ cá cãng	
41.	<i>Terapon theraps</i> Cuvier, 1829	Largescaled terapon	Cá cãng vây to	x
42.	<i>Terapon jarbua</i> (Forsskål, 1775)	Jarbua terapon	Cá ong	x
23.	Priacanthidae	Bigeyes or catalufas	Họ cá Trác/mắt to	
43.	<i>Priacanthus hamrur</i> (Forsskål, 1775)	Moontail bullseye	Cá trác đỏ	x
44.	<i>Priacanthus tayenus</i> (Richardson, 1846)	Purple-spotted bigeye	Cá trác đuôi dài	x
24.	Apogonidae	Cardinalfishes	Họ cá sơn	
45.	<i>Apogon timorensis</i> Bleeker, 1854	Timor cardinalfish	Cá sơn ti-mo	x
25.	Sillaginidae	Smelt-whitings	Họ cá đục	
46.	<i>Sillago sihama</i> (Forsskål, 1775)	Silver sillago	Cá đục bạc	x
26.	Carangidae	Jacks & pompanos	Họ cá nục	
47.	<i>Alepes melanoptera</i> Swainson, 1839	Blackfin scad	Cá khế vây đen	x
48.	<i>Alepes vari</i> (Cuvier, 1833)	Herring scad	Cá khế vây đuôi dài	x

49.	<i>Atropus atropos</i> (Bloch & Schneider, 1801)	Cleftbelly trevally	Cá bao áo	x
50.	<i>Decapterus macrosoma</i> Bleeker, 1851	Shortfin scad	Cá nục thuôn	x
51.	<i>Decapterus kurroides</i> Bleeker, 1855	Redtail scad	Cá nục đuôi đỏ	x
52.	<i>Decapterus russelli</i> (Rüppell, 1830)	Indian scad	Cá nục hồng nhạt	x
53.	<i>Selaroides leptolepis</i> (Cuvier, 1833)	Yellowstripe scad	Cá chì vàng	x
27.	Lutjanidae	Snappers	Họ cá hồng	
54.	<i>Etelis carbunculus</i> Cuvier, 1828	Ruby snapper	Cá hồng đỏ	x
28.	Caesionidae	Fusiliers	Họ cá miền	
55.	<i>Pterocaesio trilineata</i> Carpenter, 1987	Three-stripe fusilier	Cá miền ba sọc	x
29.	Sciaenidae	Drums or croakers	Họ cá ù	
56.	<i>Bahaba polykladiskos</i> (Bleeker, 1852)	Spine bahaba	Cá ù gai	x
57.	<i>Boesemania microlepis</i> (Bleeker, 1858)	Boeseman croaker	Cá sừ	x
58.	<i>Atrubuccanibe</i> (Jordan & Thompson, 1911)	Blackmouth croaker	Cá ù mõm đen	x
59.	<i>Dendrophysa russelii</i> (Cuvier, 1829)	Goatee croaker	Cá ù ngắn	x
60.	<i>Chrysochir aureus</i> (Richardson, 1846)	Reeve's croaker	Cá ù mõm nhọn	x
61.	<i>Johnius belangerii</i> (Cuvier, 1830)	Belanger's croaker	Cá úp	x
62.	<i>Otolithoides biauritus</i> (Cantor, 1849) VU	Bronze croaker	Cá đường	x
63.	<i>Panna microdon</i> (Bleeker, 1849)	Panna croaker	Cá ù	x
30.	Polynemidae	Threadfins	Họ cá nhụ	
64.	<i>Eleutheronema tetradactylum</i> (Shaw, 1840)	Fourfinger threadfin	Cá nhụ bốn râu	x
65.	<i>Polynemus melanochir melanochir</i> Valenciennes, 1831	Blackhand paradise fish	Cá phèn vàng	x
31.	Drepaneidae	Sicklefishes	Họ cá hiên	
66.	<i>Drepanelongimana</i> (Bloch & Schneider, 1801)	Concertina fish	Cá hiên vắn	x
32.	Mugilidae	Mulletts	Họ cá dổi	
67.	<i>Moolgarda seheli</i> (Forsskål, 1775)	Bluespot mullet	Cá dổi cò	x
68.	<i>Crenimugil crenilabis</i> (Forsskål, 1775)	Fringelip mullet	Cá dổi môi dày	x
33.	Pomacentridae	Damselfishes	Họ cá rô biển	
69.	<i>Neopomacentrus filamentosus</i> (Macleay, 1882)	Brown demoiselle	Cá rô biển	x
34.	Labridae	Wrasses	Họ cá bàng chài	
70.	<i>Xyrichtys cyanifrons</i> (Valenciennes, 1840)	Wrasse	Cá bàng chài	x
71.	<i>Xyrichtys dea</i> Temminck & Schlegel, 1845	Wrasse	Cá bàng chài vây lưng dài	x
35.	Pinguipedidae	Sandperches	Họ cá lú	
72.	<i>Parapercis filamentosa</i> (Steindachner, 1878)	Threadfin sandperch	Cá lú	x
73.	<i>Parapercis tetracantha</i> (Lacepède, 1802)	Reticulated sandperch	Cá lú vân lưới	x
36.	Callionymidae	Dragonets	Họ cá Đàn lia	
74.	<i>Callionymus meridionalis</i> Suwardji, 1965	Whiteflag dragonet	Cá đàn lia	x
37.	Eleotridae	Sleepers	Họ cá bóng đen	
75.	<i>Pogoneleotris heterolepis</i> (Günther, 1869)	Sleeper	Cá bóng đen	x
76.	<i>Butis koilomatodon</i> (Bleeker, 1849)	Mud sleeper	Cá bóng cừ	x
38.	Gobiidae	Gobies	Họ cá bóng trắng	
77.	<i>Periophthalmodon schlosseri</i> (Pallas, 1770)	Giant mudskipper	Cá thòi lòi lớn	x
78.	<i>Scartelaos histophorus</i> (Valenciennes, 1837)	Walking goby	Cá bóng đạo	x
79.	<i>Glossogobius giuris</i> (Hamilton, 1822)	Tank goby	Cá bóng cát	x
80.	<i>Glossogobius aureus</i> Akihito & Meguro, 1975	Golden tank goby	Cá bóng cát vàng	x
81.	<i>Pseudapocryptes borneensis</i> (Bleeker, 1855)	Goby	Cá bóng	x
82.	<i>Pseudapocryptes elongatus</i> (Cuvier, 1816)	Goby	Cá bóng dài	x
83.	<i>Parapocryptes serperaster</i> (Richardson, 1846)	Goby	Cá bóng	x
84.	<i>Apocryptodon maduresis</i> (Bleeker, 1849)	Goby	Cá bóng	x
85.	<i>Stigmatogobius sadanundio</i> (Hamilton, 1822)	Goby	Cá bóng	x
86.	<i>Oligolepis acutipennis</i> (Val., 1837)	Sharptail goby	Bóng đuôi nhọn	x
87.	<i>Aulopareia janetae</i> Smith, 1945	Scalycheek goby	Cá bóng ja-net	x

88.	<i>Acentrogobius caninus</i> (Valenciennes, 1837)	Tropical sand goby	Cá bống tro	x
89.	<i>Amblytrypauchen arctocephalus</i> (Alcock, 1890)	Armour eelgoby	Cá bống đáy	x
90.	<i>Odontamblyopus rubicundus</i> (Hamilton, 1822)	Rubicundus eelgoby	Cá nhâm	x
91.	<i>Trypauchen vagina</i> (Bloch & Schneider, 1801)	Burrowing goby	Cá rế cau	x
39.	Scatophagidae	Scats	Họ cá nẫu	
92.	<i>Scatophagus argus</i> (Linnaeus, 1766)	Spotted scat	Cá nẫu	x
XII.	PLEURONECTIFORMES	FLATFISHES	Bộ CÁ BÓN	
40.	Soleidae	Soles	Họ cá bơn sọc	
93.	<i>Achiroides leucorhynchus</i> Bleeker, 1851	Sole	Cá bơn sọc chấm	x
94.	<i>Aesopia cornuta</i> Kaup, 1858	Unicorn sole	Cá bơn sừng	x
95.	<i>Liachirus melanospilos</i> (Bleeker, 1854)	Carpet sole	Cá bơn vảy tròn	x
96.	<i>Solea elongata</i> Day, 1877	Elongate sole	Cá bơn sọc dài	x
41.	Cynoglossidae	Tonguefishes	Họ cá bơn cát	
97.	<i>Cynoglossus maculipinnis</i> Rendahl, 1921	Tonguesole	Cá bơn lưỡi	x
98.	<i>Cynoglossus kopsii</i> (Bleeker, 1851)	Short-headed tonguesole	Cá bơn lưỡi đầu ngắn	x
99.	<i>Cynoglossus lingua</i> Hamilton, 1822	Long tongue sole	Cá bơn lưỡi trâu	x
100.	<i>Cynoglossus cynoglossus</i> (Ham., 1822)	Bengal tongue sole	Cá bơn lưỡi bengal	x
XIII.	TETRAODONTIFORMES	PUFFERS AND FILEFISHES	Bộ CÁ NÓC	
42.	Monacanthidae	Filefishes	Họ cá bò	
101.	<i>Aluterus monoceros</i> (Linnaeus, 1758)	Unicorn leatherjacket filefish	Cá bò 1 gai lưng	x
102.	<i>Paramonacanthus japonicus</i> (Tilesius, 1809)	Japanese filefish	Cá bò nhật	x
43.	Diodontidae	Porcupinefishes	Họ cá nóc nhím	
103.	<i>Diodon liturosus</i> Shaw, 1804	Black-blotched porcupinefish	Cá nóc nhím gai ngắn	x

Note: P: pelagic fishes; D: demersal fishes; VU: Vulnerable (in the Vietnam Red Data Book, 2007)

3.2. Diversity in the taxonomic structure of fish species

The Table 1 showed that, the fish species composition in the Dinh An estuary is formed by two large groups: sharks and rays (class Elasmobranchii) and ray-finned fishes (class Actinopterygii).

In particular, from the Table 2, we can see that, the group of sharks and rays was represented by only two species belonging to two families of two different orders, while the group of ray-finned fishes was dominant at all taxonomic levels with 101 species belonging to 79 genera, 41 families, and 11 orders.

The Table 2 also showed that, the order Perciformes made up the highest and far superior percentages at all taxonomic levels, with 19 families (accounted for 44.19% of total

family number), 44 genera (accounted for 54.32% of total genus number), and 53 species (accounted for 51.46% of total species number). Twelve other fish orders had much lower number of species, genera, and families. In particular, the order Aguiliformes made up 13.85% of total family number and Siluriformes made up 10.68 % of total species number, each of the remaining orders made up less than 10% of the total number of species, genera, and families respectively. There were six orders (46.15% of total order number) that were represented by only one family, one genus and one species each. On average, in the ray-finned fish group (class Actinopterygii), each order was represented by 3.73 families, 7.18 genera, and 9.18 species.

Table 2. The diversity at different taxonomic levels in 13 fish orders found in the studied area

No.	Order	Family		Genus		Species	
		n	%	n	%	n	%
1	Orectolobiformes	1	2.33	1	1.23	1	0.97
2	Myliobatiformes	1	2.33	1	1.23	1	0.97
3	Aguiliformes	6	13.95	8	9.88	10	9.71
4	Clupeiformes	2	4.65	7	8.64	10	9.71
5	Characiformes	1	2.33	1	1.23	1	0.97
6	Siluriformes	4	9.30	6	7.41	11	10.68
7	Aulopiformes	1	2.33	1	1.23	1	0.97
8	Lophiiformes	1	2.33	1	1.23	1	0.97
9	Syngnathiformes	1	2.33	1	1.23	1	0.97
10	Scorpaeniformes	2	4.65	2	2.47	2	1.94
11	Perciformes	19	44.19	44	54.32	53	51.46
12	Pleuronectiformes	2	4.65	5	6.17	8	7.77
13	Tetraodontiformes	2	4.65	3	3.70	3	2.91
	TOTAL:	43	100.00	81	100.00	103	100.00

Regarding the diversity at family level, from the Table 1, we can see that, there were 30 families (69.76% of total family number) represented by only one genus each and 24 families (55.81% of total family number) represented by two genera each and nine families (20.93% of total family number) represented by two species each. Gobiidae was the family that had the highest number of genera and species, with 13 genera (16.05 % of total genus number) and 15 species (14.56 % of total species number). Sciaenidae was the second richest family, with eight genera (9.88% of total genus number) and eight species (7.77% of total species number). On average, in the Dinh An estuary, each fish family was represented by only 1.88 genera and 2.40 species.

4. Conclusion

1) Based on the samples from our field surveys in the Dinh An estuary, Trà Vinh province, 103 fish species belonging to 81

genus, 43 families, 13 orders and 2 classes were determined. Among them, 19 species were pelagic fish and 84 were demersal.

2) In the studied area, only one species *Otolithoides biauritus* (Cantor, 1849) was listed in the Vietnam Red Data Book (2007) at the VU level (Vulnerable).

3) The order Perciformes made up the highest and far superior percentages at all taxonomic levels (44.19%, 54.32% and 51.46% of the total number of families, genera, and species, respectively). Gobiidae (Gobies) was the family with the highest number of genera and species. On average, in the Dinh An estuary, each fish order was represented by 3.73 families, 7.18 genera, and 9.18 species and each fish family was represented by 1.88 genera and 2.40 species.

Acknowledgements

Fish specimens and data collected from the field work for this paper has been funded by the sub-project of I.6/ĐA-47 "Overall investigation of biodiversity of estuarine ecosystems in Vietnam". The authors wish to thank for supporting and funding.

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Thành phần loài cá ở vùng cửa sông Định An, tỉnh Trà Vinh

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Tóm tắt: Là một trong hai cửa sông của sông Hậu và cũng là một trong các cửa sông lớn của sông Cửu Long đổ ra Biển Đông, vùng cửa sông Định An là khu vực có vị trí quan trọng trong các hoạt động kinh tế, trong đó có phát triển nghề cá. Đây còn là vùng cửa sông có tính đa dạng sinh học cao và có nguồn lợi thủy sản phong phú, đặc biệt là nguồn lợi cá. Dựa trên kết quả định loại các mẫu cá thu được trong 3 đợt thực địa vào tháng 7/2011, 4/2012 và 8/2015 tại vùng cửa sông Định An, đã xác định được 103 loài trong 43 họ thuộc 13 bộ cá. Bộ cá Vược (Perciformes) có tỷ lệ cao nhất và chiếm ưu thế hơn hẳn trong tất cả các bậc phân loại, bao gồm 19 họ (chiếm 44,19% tổng số họ), 44 giống (chiếm 54,32% tổng số giống) và 53 loài chiếm 51,46% tổng số loài). Các bộ khác có số lượng loài, giống và họ ít hơn nhiều, đến mức hầu hết các bậc phân loại đều có tỷ lệ thấp hơn 10% so với tổng số. Thậm chí, có 6 bộ (chiếm 46,15% tổng số bộ) chỉ có 1 họ, 1 giống, 1 loài. Tuy nhiên, tính trung bình, mỗi bộ cá có 3,31 họ, 6,23 giống và 7,92 loài và mỗi họ cá có 1,88 giống và 2,4 loài. Trong số 103 loài cá đã xác định, có 19 loài cá nổi và 84 loài cá đáy và chỉ có 1 loài duy nhất là cá đường - *Otolithoides biauritus* (Cantor, 1849) có tên trong Sách Đỏ Việt Nam (2007) ở bậc Sẻ nguy cấp (VU). Kết quả của bài báo này là số liệu đầu tiên được công bố về thành phần loài cá ở vùng cửa sông Định An.

Từ khoá: Định An, cửa sông, thành phần loài cá, định loại, mẫu vật.