

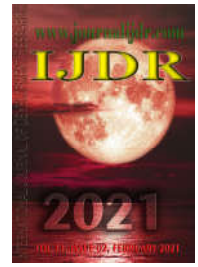


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RESEARCH ARTICLE

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## CATCH ANALYSIS OF THE SPEED BOAT FISHERY IN THE UNITED ARAB EMIRATES

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### ABSTRACT

A survey was conducted aimed to investigate the speed boat fishery from the main landing sites along the coastal area of the United Arab Emirates. Data was collected through 1827 fishing vessel (speed boat) during the fishing season 2020. The results revealed that, the fishing gears used in speed boat were: trap, net and hand-line. For each gear, species composition, catch size and catch per unit effort were estimated. The results stated the traditional traps had a major catch in speed boat fishery and constitute 57.0% followed by nets 28.0% and hand-line with 15%. Of 33 fish families caught by different fishing gear, the dominant families in mass were Scombridae (20.0%), Lethrinidae (19.0%), Carangidae (16.0%) and Serranidae (8.0%). The highest species composition was: *Lethrinus nebulosus* (7.9%), *Scomberomorus commerson* & *Lethrinus lentjan* (7.2% for each) and *Rastrelliger kanagurta* (6.5%).

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## INTRODUCTION

The United Arab Emirates (UAE) has coasts on both the southern Arabian Gulf and the northern Gulf of Oman. The fisheries of the United Arab Emirates are small-scale in nature with two distinct fishing vessel types: fiberglass speed boat, locally called (*tarrad*) and traditional wooden *dhows* (lanch). *Tarrads* are typically 6-8m in length and equipped with 1-2 outboard engines, allowing a crew of 1-4 people to fish for 6-8 hours and sometimes extended to a day at a time (Grandcourt et al., 2002; Al-Abdulrazzak, 2013 and Farrag, 2020). Gear types used in the Emirates are all, without exception, artisanal and clustered into three main groups: trap (*gargour*), net (*leikh*) and hand-line. On the other hand, *Gargour* is a dome shaped trap made of metal mesh wire with a mesh size of maximum 5 cm and has a funnel shaped entrance allowing easy access for fish at the front, and an escape panel allowing undersized fish to escape at the back. The diameter of the trap base varies between 1 and 3m, they are supported by tubular steel bars. Fixed inter-tidal enclosure trap also used in shallow areas along the beach. Net (*leikh*) is used in deep water targeting large pelagic species. Different kind of nets are used based on water depth there are; (encircling gill net, cast net and set gill net and large meshed gill net). Hand-line (*Hadaq*) is one of the simplest and most versatile active fishing gears,

consisting only of a nylon line with a small weight and a single or multiple baited hook. It is usually operated either deep or shallow waters, day and night. The present work is aimed to investigate the speed boat fishery in the United Arab Emirates and centered on catch and species composition for the different fishing gear used in speed boat fishery and sheds light on the catch rate and catch per unit effort CPUE of the common species as well as the species distribution for the different emirates of the country.

## MATERIALS AND METHODS

Three enumerators monitor the speed boat fisheries at Seven fish landing sites; Ras Alkheima, Umm Alqwain, Ajman, Sharjah, Dubai, Abu-Dhabi and eastern area, Figure 1) during the period from January to December 2020. Survey landing sites were chosen to be representative of the all fishing gears in the speed boat fishery. Moreover, information about boats; their length, and number of fishermen per boat as well as the fishing grounds were collected. Fish species identification was done using field identification guide to the living marine resources of the Arabian Gulf countries (FAO, 1997 and Fish-Base, 2019). The unit of weight was kilograms (kg). Key species for all country and for each Emirate was selected based on the relative abundance and should be higher than 3.0% of



Figure 1. Map showing where data were collected (black dots)

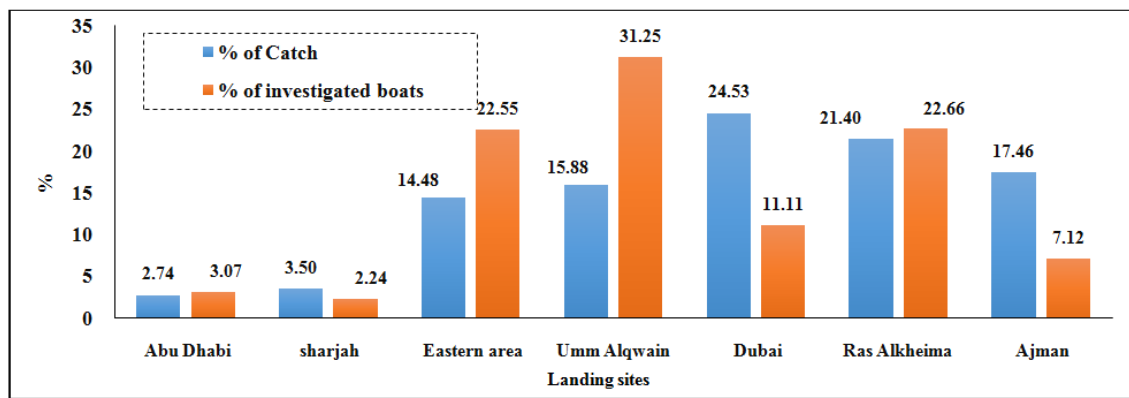


Figure 2. Catch and boat numbers (in percent) from different landing sites

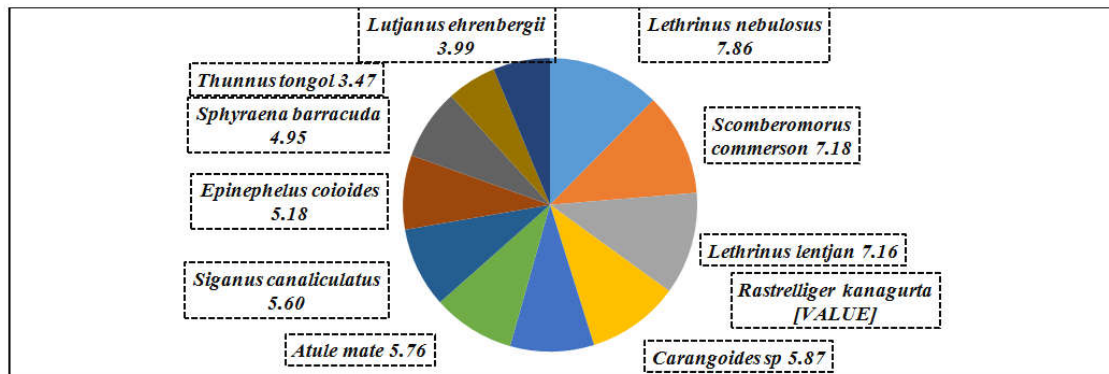


Figure 3. Dominant species (%) caught by all gears in speed boat fishery

the total landing as well as the species should be recorded at least in three landing sites. The list of species composition lacked from species less than 1.0% of the catch. The catch per unit effort (CPUE) was investigated for different fish species for each fishing gear and tested with analysis of variance (ANOVA) for significant differences.

## RESULTS

**Catches by all gears:** 1827 speed boat (89% of the fishing vessels) was investigated from the main landing sites. The highest investigated boats were recorded from Umm Alqwain (31.0%), followed by Ras Alkheima (22.66%) and eastern area (22.55%).

A total of 256481kg of fish were landed during the survey with all fishing gear. The highest catch in mass was represented from Dubai 24.53% then Ras Alkheima (21.40%) and Ajman (17.46%) Figure 2. A total of 70 species from 33 families (all gear types) were recorded in the total landing excluding the non-identified species, which were species constituting *Terapon spp*, *Gobiidae spp*, an unknown species from families Tetraodontidae, Balastidae and Blennidae. Of the 33 fish families recorded, the dominant families in mass were Scombridae (20.0%), Lethrinidae (19.0%), Carangidae (16.0%) and Serranidae (8.0%). On the other hand, the majority of fish species (57.0%) are classified as demersal, 22.0% as small pelagic and 21.0% as migratory pelagic. Table 1 shows the species composition of different fishing gear in the speed boat fishery.

Table 1. Species composition harvested by speed boat (all fishing gear) from all landing sites

Family	Scientific name	Common name	Catch (kg)	%	
Scombridae	<i>Scomberomorus commerson</i>	Kingfish	18419	7.2	
	<i>Rastrelliger kanagurta</i>	Indian mackerel	16590	6.5	
	<i>Thunnus tonggol</i>	Longtail tuna	8905	3.5	
	<i>Auxis thazard</i>	Frigate tuna	4369	1.7	
Lethrinidae	<i>Euthynnus affinis</i>	Mackerel tuna	1670	0.7	
	<i>Lethrinus nebulosus</i>	Spangled emperor	20169	7.9	
	<i>Lethrinus lentjan</i>	Pink ear emperor	18355	7.2	
	<i>Lethrinus barbonicus</i>	Snubnose emperor	6815	2.7	
Carangidae	<i>Lethrinus microdon</i>	Small tooth emperor	3244	1.3	
	<i>Atule mate</i>	Yellow tail scad	14768	5.8	
	<i>Carangoides chrysophyres</i>	Longnose trevally	8305	3.2	
	<i>Carangoides bajad</i>	Orange spotted trevally	6758	2.6	
	<i>Gnathonodon speciosus</i>	Golden trevally	2616	1.0	
	<i>Scomberoides commersonianus</i>	Talang Queenfish	1774	0.7	
	<i>Scombroides tol</i>	Needlescaled queenfish	1485	0.6	
	<i>Seriola dumerili</i>	Greater amberjack	1500	0.6	
	<i>Megalaspis cordyla</i>	Torpedo scad	1195	0.5	
	<i>Caranx heberi</i>	Blacktip trevally	750	0.3	
	<i>Trachinotus blochii</i>	Snubnose pompano	738	0.3	
	<i>Seriolina nigrofasciata</i>	Blachbanded trevally	576	0.2	
	<i>Decapterus russelli</i>	Indian scad	228	0.1	
	<i>Parastromateus niger</i>	Black pomfret	38	0.01	
	Serranidae	<i>Epinephelus coioides</i>	Orange spotted grouper	13290	5.2
		<i>Epinephelus bleekeri</i>	Dusky tail grouper	1657	0.7
<i>Cephalopholis hemistiktos</i>		Yellowfin hind	1591	0.6	
<i>Epinephelus areolatus</i>		Areolate grouper	1302	0.5	
<i>Epinephelus diacanthus</i>		Thornycheek grouper	446	0.2	
<i>Epinephelus stoliczkae</i>		Banded grouper	2	<0.01	
Siganidae	<i>Siganus canaliculatus</i>	White-spotted spinefoot	14355	5.6	
	<i>Siganus javus</i>	Streaked spinefoot	418	0.2	
Sparidae	<i>Rhabdosargus sarba</i>	Goldlined seabream	6203	2.4	
	<i>Argyrops spinifer</i>	King soldier bream	4378	1.7	
	<i>Acanthopagrus bifasciatus</i>	Two bar seabream	2951	1.2	
	<i>Acanthopagrus latus</i>	Yellowfin seabream	519	0.2	
	<i>Sparidentex hasta</i>	Sobaity seabream	89	0.03	
Sphyaenidae	<i>Sphyaena barracuda</i>	Great barracuda	16590	4.9	
Lutjanidae	<i>Lutjanus ehrenbergii</i>	Blackspot snapper	9079	3.5	
	<i>Lutjanus malabaricus</i>	Red snapper	826	0.3	
	<i>Lutjanus argentimaculatus</i>	Mangrove red snapper	224	0.1	
	<i>Lutjanus fulviflamma</i>	Black spot snapper	90	0.04	
Gerridae	<i>Gerres longirostirs</i>	Longtail silver biddy	7040	2.7	
Haemulidae	<i>Diagrama pictum</i>	Painted sweetlip	3314	1.3	
	<i>Plectorhinchus sordidus</i>	Sordid sweetlips	1715	0.7	
	<i>Pomadasys hasta</i>	Silver grunt	839	0.3	
	<i>Plectorhinchus gaterinus</i>	Blackspotted rubberlip	60	0.02	
Nemipteridae	<i>Scolopsis ghanam</i>	Arabian monocle bream	4922	1.9	
	<i>Nemipterus sp</i>	Threadfin bream	1866	0.7	
Ariidae	<i>Arius thalassinus</i>	Giant catfish	4168	1.6	
Coryphaenidae	<i>Coryphaena hippurus</i>	Common dolphin fish	2183	0.9	
Chaetodontidae	<i>Pomacanthus maculosus</i>	Yellowbar angelfish	1965	0.8	
Labridae	<i>Scarus persicus</i>	Gulf parrotfish	1548	0.6	
Mugilidae	<i>Valamugil seheli</i>	Blue spot mullet	1330	0.5	
Rachycentridae	<i>Rachycentron canadum</i>	Cobia	1386	0.5	
Trichiuridae	<i>Trichiurus lepturus</i>	Largehead hairtail	1374	0.5	
Chanidae	<i>Chanos chanos</i>	Milkfish	948	0.4	
Ephidae	<i>Platax orbicularis</i>	Batfish	1127	0.4	
Belonidae	<i>Tylosurus c.crocodilus</i>	Needlefish	851	0.3	
Mullidae	<i>Parupeneus cyclostomus</i>	Gold-saddle goatfish	465	0.2	
Synodontidae	<i>Saurida tumbil</i>	Greater lizardfish	445	0.2	
Teraponidae	<i>Pelates quadrilineatus</i>	Five lined terapon	299	0.2	
Clupeidae	<i>Sardinella longiceps</i>	Indian oil sardine	189	0.1	
Engraulidae	<i>Stolephorus indicus</i>	Indian anchovy	13	0.01	
Hemiramphidae	<i>Hemiramphus marginatus</i>	Jumbing halfbeak	2	<0.01	
Platycephalidae	<i>Platycephalus indicus</i>	Bartail flathead	11	<0.01	
Crabs	<i>Portunus pelagicus</i>	Blu swimming crab	2831	1.1	
Sharks	<i>Carcharhinus sp</i>	Shark	2178	0.8	
Cephalopods	<i>Sepia sp.</i>	Cuttlefish	1357	0.5	
Batoidea	<i>Gymnuridae/Dasytidae</i>	Butterfly ray/Whipray	771	0.3	
Lobster	<i>Panulirus versicolor</i>	Painted spiny lobster	70	0.03	
	<i>Thenus orientalis</i>	Flathead locust lobster	3	<0.01	

The major catch composition comprised *Lethrinus nebulosus* (7.9%), *Scomberomorus commerson* & *Lethrinus lentjan* (7.2% for each) and *Rastrelliger kanagartha* (6.5%). Figure 3 illustrate the dominant species recorded in all areas. Ten species caught by different fishing gear were selected as a key species for each landing site. These species were the most dominant according to the index of relative importance and contributed 48.0% of the total catch. Species included are from the family Lethrinidae (three species); two species of families Scombridae and Carangidae and one species of the families; Serranidae, Siganida, and Lutjanidae (Table 2).

23.85% respectively. Because Some important species not exist at least in three landing sites, the list didn't have these species despite its importance. These species are *Gerres longirostris* (20.58% in Abu-Dhabi), *Rhabdosargus sarba* (5.22% and 3.26% in Dubai and Ajman), in eastern area (*Thunnus tonggol* and *Argyrops spinefer* are contribute 17.59% and 6.99% respectively).

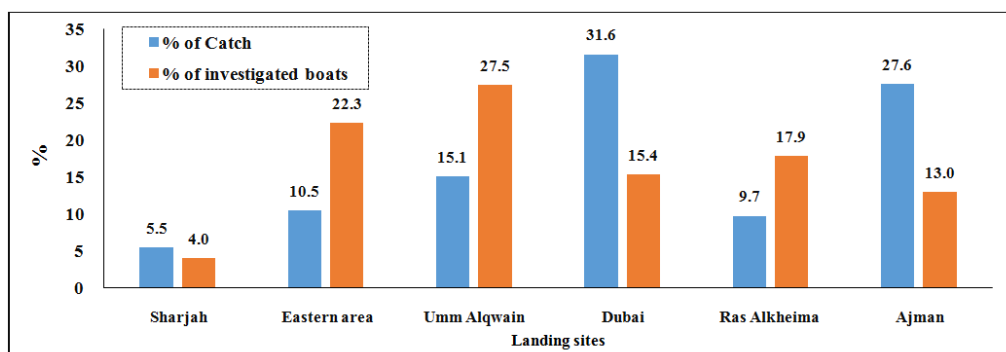
**Catch per unit effort (CPUE):** Table 3 shows the fish gear efficiency using the catch per unit effort (CPUE) of various fishing gear used in the study.

**Table 2. Key species caught by all gears in speed boat fishery from different landing site**

Species	% of the total landing						
	Abu-Dhabi	Dubai	Sharjah	Ajman	Umm Alqwain	Ras Alkheima	eastern area
<i>Scomberomorus commerson</i>	25.03		6.21	3.47	10.53	11.08	5.03
<i>Lethrinus lentjan</i>		6.18	14.63	10.90	10.86	6.20	
<i>Rastrelliger kanagartha</i>		11.93			10.41	6.67	
<i>Epinephelus coioides</i>	7.87	6.98	8.37	12.93			
<i>Lethrinus nebulosus</i>		8.12	11.22	9.51	8.73	4.88	9.53
<i>Siganus canaliculatus</i>	5.31	8.92	6.06	6.31	6.52	3.65	
<i>Lutjanus ehrenbergii</i>		4.11	7.35	4.18	5.89		
<i>Lethrinus barbonicus</i>		4.42	4.47	6.33			3.18
<i>Carangoides chrysophrys</i>		3.59			4.03		6.11
<i>Carangoides bajad</i>	3.14	3.19	3.03	3.67	3.20		
Total	41.35	57.44	63.73	57.3	60.17	32.48	23.85

**Table 3. Average catch per unit effort (kg/boat/trip) for different fishing gear**

Family	Species	CPUE (kg/gear/trip)			
		Trap	Net	Hand-line	Average
Scombridae	<i>Scomberomorus commerson</i>		179.86	473.29	326.58
	<i>Rastrelliger kanagartha</i>		599.23		599.23
	<i>Thunnus tonggol</i>		32.22	105.33	68.78
	<i>Lethrinus nebulosus</i>	303.29	14.91	53.19	123.80
Lethrinidae	<i>Lethrinus lentjan</i>	344.07	4.65	27.95	125.56
	<i>Lethrinus barbonicus</i>	154.74	1.80	0.13	52.23
Carangidae	<i>Carangoides bajad</i>	92.26	48.50	5.81	48.86
	<i>Carangoides chrysophrys</i>	83.80	52.16	32.84	56.27
	<i>Seriola dumerili</i>	17.43		134.80	76.12
	<i>Scomberoides commersonianus</i>		103.09	14.27	58.68
	<i>Atule mate</i>		325.78		325.78
Serranidae	<i>Epinephelus coioides</i>	330.34		79.62	204.98
Gerridae	<i>Gerres longirostris</i>	15.63	225.24	72.66	104.51
Ariidae	<i>Arius thalassinus</i>	54.47	68.10	30.75	51.11
Sphyraenidae	<i>Sphyraena barracuda</i>		152.88	302.92	227.90
Siganidae	<i>Siganus canaliculatus</i>	118.78	32.21	33.70	61.56
Shark	<i>Carcharhinus sp</i>		14.16	123.57	68.87
Average		158.06	129.02	106.07	



**Figure 4. Catch and boat numbers (in percent) from different landing sites**

The results revealed that, nine species constituted 57.44% of the total landing in emirate of Dubai, while eight species constitute 63.73%, 60.17% and 57.30% of the total landing from Sharjah, Umm Alqwain and Ajman respectively. The Table also illustrate four species were recorded in emirate of Abu-Dhabi and eastern area and contribute 41.35% and

Traps recorded the highest catch per unit effort (158.06kg/boat/trip), followed by the nets with a CPUE value of 129.02kg/boat/trip. The least CPUE value was recorded by hand-line (106.07kg/trip). The maximum CPUE of species caught by trap was 344.07kg, 330.34kg and 303.29kg for *Lethrinus lentjan*, *Epinephelus coioides* and *Lethrinus*



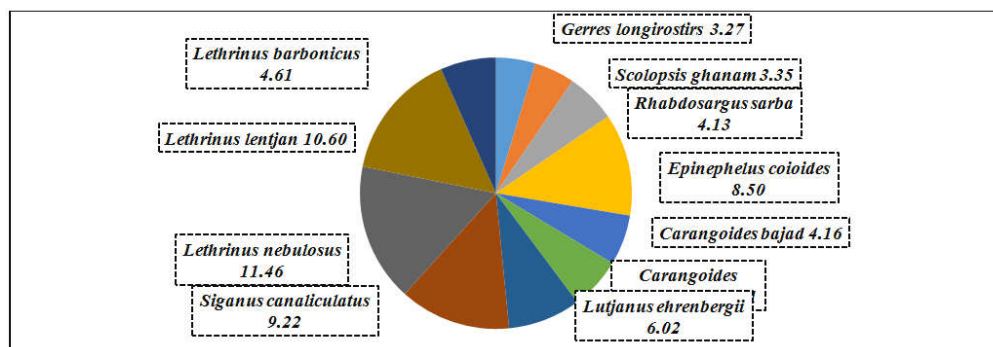
*nebulosus*. The catch per unit effort from different fishing gear for dominant species not significant difference  $p < 0.05$  ( $F$ -ratio is 0.36746. the  $P$ -value is 0.693824). Table 3 gave more details for CPUE of species harvested by different fishing gear in speed boat fishery.

**Catches in trap:** 918 speed boat (50.0% of the total speed boat) was investigated from the landing sites. The highest investigated boats were recorded from the emirate of Umm Alqwain (27.5%), followed by eastern area (22.33%). A total of 146111kg of fish were landed during the survey from the trap. Regarding to the mass the highest catch was represented from Dubai (32.0%) then Ajman (28.0%) Figure 4. There was not recorded data for the trap fishery from Emirate of Abu-Dhabi because the trap is banned due to the fisheries management plan adopted by the emirate.

A total of 25 families and 56 species were identified. (*Terapon spp*, *Gobiidae spp*, an unknown species from families Tetraodontidae, Balastidae and Blennidae are excluded). The families Lethrinidae (four species), Serranidae (six species) and Carangidae (10 species) were the most abundant in the catch and contributes (29.0%, 12.0% and 11.0% respectively). Table 4 shows the species composition of fish caught by trap from different landing sites. The species less than 1.0% didn't mention in the table and it was added under other species. Twenty-two species constitute 88.0% in comparison of Thirty-four species only contribute 12.0% of the total mass. Figure 5 shows the dominant species caught by traps from all landing sites. Table 5 show the selected key species of the trap fishery. These species were the most dominant and contributed 68.8% of the total mass and ranged from 28.1% in the eastern area to 89.6% in Dubai landing sites.

**Table 4. Catch composition of species caught by traps in speed boat fishery**

Family	Scientific name	Common name	Catch (kg)	%
Lethrinidae	<i>Lethrinus nebulosus</i>	Spangled emperor	16751	11.46
	<i>Lethrinus lentjan</i>	Pink ear emperor	15485	10.60
	<i>Lethrinus barbonicus</i>	Snubnose emperor	6736	4.61
	<i>Lethrinus microdon</i>	Small tooth emperor	3186	2.18
Carangidae	<i>Carangoides chrysophyres</i>	Longnose trevally	6298	4.31
	<i>Carangoides bajad</i>	Orange spotted trevally	6.71	4.16
	<i>Gnathonodon speciosus</i>	Golden trevally	2277	1.56
Serranidae	<i>Epinephelus coioides</i>	Orange spotted grouper	12424	8.50
	<i>Cephalopholis hemistiktos</i>	Yellowfin hind	1581	1.08
	<i>Epinephelus bleekeri</i>	Dusky tail grouper	1464	1.00
Siganidae	<i>Siganus canaliculatus</i>	White-spotted spinefoot	13467	9.22
Sparidae	<i>Rhabdosargus sarba</i>	Goldlined seabream	6036	4.13
	<i>Argyrops spinifer</i>	King soldier bream	3863	2.64
	<i>Acanthopagrus bifasciatus</i>	Two bar seabream	2848	1.95
Lutjanidae	<i>Lutjanus ehrenbergii</i>	Blackspot snapper	8799	6.02
Gerridae	<i>Gerres longirostris</i>	Longtail silver biddy	4772	3.27
Haemulidae	<i>Diagrama pictum</i>	Painted sweetlip	3303	2.26
	<i>Plectorhinchus sordidus</i>	Sordid sweetlips	1644	1.13
Nemipteridae	<i>Scolopsis ghanam</i>	Arabian monocle bream	4899	3.35
	<i>Nemipterus sp</i>	Threadfin bream	1703	1.17
Ariidae	<i>Arius thalassinus</i>	Giant catfish	3043	2.08
Chaetodontidae	<i>Pomacanthus maculosus</i>	Yellowbar angelfish	1950	1.33
Other (34 species)			17519	12.0



**Figure 5. Dominant species in the trap fishery**

**Table 5. Key species caught by trap from different landing sites**

Species	% of the total landings from traps					
	Dubai	Sharjah	Ajman	Umm Alqwain	Ras Alkheima	eastern area
<i>Lethrinus nebulosus</i>	10.19	12.50	10.34	10.75	13.61	16.77
<i>Lethrinus lentjan</i>	8.25	16.29	11.86	14.02	13.30	
<i>Epinephelus coioides</i>	9.54	9.31	14.07	4.06		
<i>Siganus canaliculatus</i>	11.51	6.74	6.94	11.85	12.49	
<i>Lutjanus ehrenbergii</i>	5.57		4.60	10.45	8.30	
<i>Carangoides chrysophyres</i>	4.44			3.89	4.32	11.35
<i>Lethrinus barbonicus</i>	6.00	4.98	6.96			
<i>Carangoides bajad</i>	4.25		4.04	5.28	5.56	
<i>Rhabdosargus sarba</i>	7.13		3.58	3.33		
<i>Scolopsis ghanam</i>	4.42	3.07	4.88			
Total	89.6	52.9	80.10	87.90	74.20	28.10

Some of the commercial species in eastern area didn't mention in the table because those species only exist in that area and contribute less than 3.0% in some area and most landing sites lacked it. These species are; *Epinephelus bleekeri*, *Arius thalassinus* and *Argyrops spinifer* and they are constituting 5.74%, 10.11% and 14.82% respectively.

**Catches in hand-line:** 469 speed boat was investigated and constitute 26% of the total inspected boats. The highest investigated boats were recorded from the emirate of Ras Alkheima (34.54%), followed by Umm Alqwain (32.62%). A total of 38451kg of fish were landed during the survey from the hand-line fishery. The highest catch was recorded from eastern area (35.24%), followed by Ras Alkheima (29.98%), Figure 6. A total of 21 families and 41 species were identified.

The major catch composition comprised Scombridae; *Scomberomorus commerson*, *Thunnus tonggol*, *Auxis thazard* and *Rastrelliger kanagurta* (46.82%) followed by *Sphyraenidae* (*Sphyraena barracuda*) and constitute 16.06% of the total hand-line fishery in speed boat. Table 6 shows the species composition of fish caught by hand-line from the different landing sites. The species less than 1.0% didn't mention in the table and it was added under other species. 15 species contribute 95.0% in comparison of 26 species only constitute 5.0% of the total catch caught by hand-line. Figure 7 illustrate the dominant species caught by hand-line from all landing sites. Five species were selected as a key species based on the catch rate and their occurrence in the different localities. These species were the most dominant and contributed 57.58% of the landing and ranged from 11.31% in the eastern area to 85.39% in Sharjah Table 7.

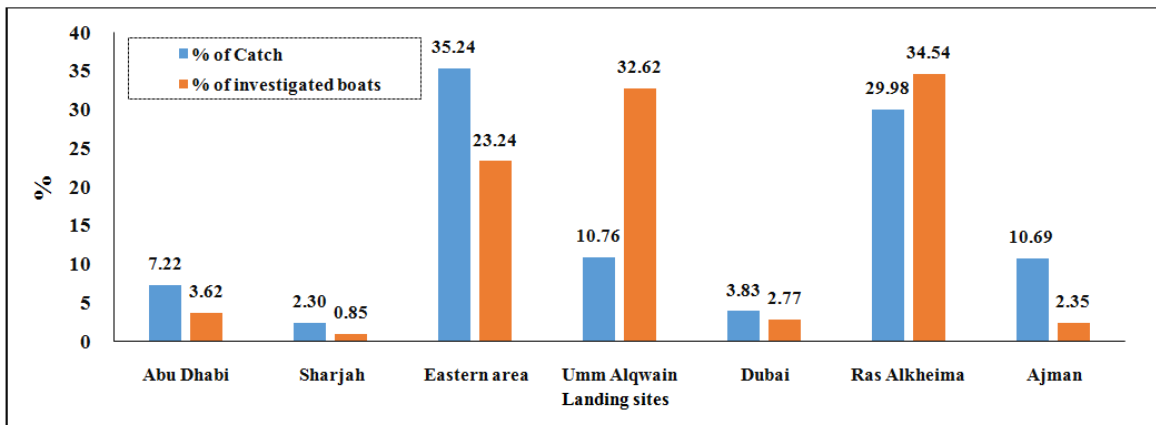


Figure 6. Catch and boat numbers (in percent) from different landing sites

Table 6. Species composition of hand-line fishery of speed boat

Family	Scientific name	Common name	Catch (kg)	%
Scombridae	<i>Scomberomorus commerson</i>	Kingfish	9460	24.60
	<i>Thunnus tonggol</i>	Longtail tuna	6470	16.83
	<i>Auxis thazard</i>	Frigate tuna	1904	4.95
Sphyraenidae	<i>Sphyraena barracuda</i>	Great barracuda	6174	16.06
Lethrinidae	<i>Lethrinus lentjan</i>	Pink ear emperor	2470	6.42
	<i>Lethrinus nebulosus</i>	Spangled emperor	2270	5.90
Carangidae	<i>Scomberoides commersonianus</i>	Talang queenfish	898	2.34
	<i>Seriola dumerili</i>	Great amberjack	806	2.09
	<i>Carangoides chrysophyes</i>	Longnose trevally	655	1.70
	<i>Caranx heberi</i>	Blacktip trevally	450	1.17
Coryphaenidae	<i>Coryphaena hippurus</i>	Common dolphin fish	2027	5.27
Trichiuridae	<i>Trichiurus lepturus</i>	Largehead hairtail	990	2.57
Serranidae	<i>Epinephelus coioides</i>	Orange spotted grouper	847	2.20
Sharks	<i>Carcharhinus sp</i>	Shark	661	1.72
Ariidae	<i>Arius thalassinus</i>	Giant catfish	402	1.05
Other (26 species)			1968	5.12

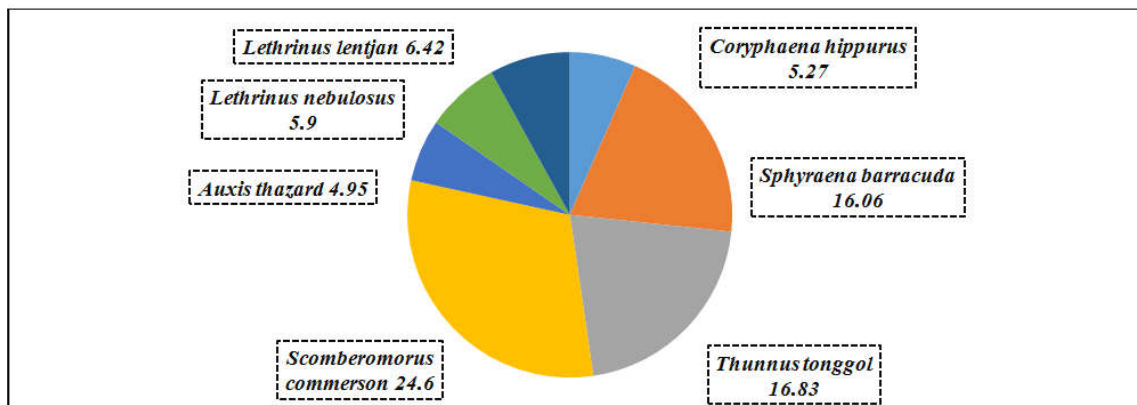


Figure 7. Dominant species caught by hand-line

Table 7. Key species caught by hand-line from different landing sites

Species	% of the total landings from hand-line							Average
	Abu-Dhabi	Dubai	Sharjah	Ajman	Umm Alqwain	Ras Alkheima	eastern area	
<i>Scomberomorus commerson</i>	4.56	33.76	61.01	36.72	26.38	38.87	8.06	29.91
<i>Sphyraena barracuda</i>	30.91	4.88	12.92	18.92	11.39	29.74	3.25	16.00
<i>Lethrinus nebulosus</i>	7.71	14.44			23.92	4.14		12.55
<i>Scomberoides commersonianus</i>		4.35	11.46	4.21				6.67
<i>Carangoides chrysophrys</i>		3.86		3.26	4.32			3.81
Total	43.18	61.29	85.39	63.11	66.01	72.75	11.31	

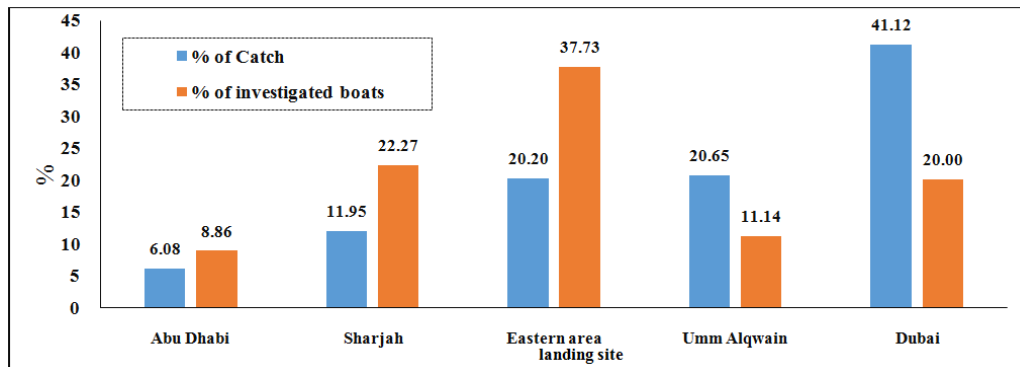


Figure 8. Catch and boat numbers (in percent) from different landing sites

Table 8. Species composition of the net fishery of speed boat

Family	Scientific name	Common name	Catch (kg)	%
Scombridae	<i>Rastrelligerkanagurta</i>	Indian mackerel	16189	22.51
	<i>Scomberomoruscommerson</i>	Kingfish	8504	11.82
	<i>Auxisthazard</i>	Frigate tuna	2465	3.43
	<i>Thunnustonggol</i>	Longtail tuna	2398	3.33
	<i>Euthynnusaffinis</i>	Mackerel tuna	1670	2.32
Lethrinidae	<i>Lethrinus nebulosus</i>	Spangled emperor	1148	1.60
Carangidae	<i>Atule mate</i>	Yellow tail scad	14410	20.04
	<i>Carangoideschrysophyres</i>	Longnose trevally	1352	1.88
	<i>Scombroidestol</i>	Needlescaledqueenfish	1246	1.73
	<i>Megalaspiscordyla</i>	Torpedo scad	1195	1.66
Sphyranidae	<i>Sphyraena barracuda</i>	Great barracuda	6204	8.63
Gerridae	<i>Gerreslongirostirs</i>	Longtail silver biddy	2268	3.15
Crabs	<i>Portunuspelagicus</i>	Blu swimming crab	1325	1.84
Sharks	<i>Carcharhinussp</i>	Shark	1103	1.53
Chanidae	<i>Chanoschanos</i>	Milkfish	874	1.22
Belonidae	<i>Tylosuruscrocodilus</i>	Needlefish	779	1.08
Batoidea	<i>Gymnuridae/Dasytidae</i>	Butterfly ray/Whipray	731	1.02
Ariidae	<i>Arius thalassinus</i>	Giant catfish	723	1.01
Other (40 species)			7336	10.0

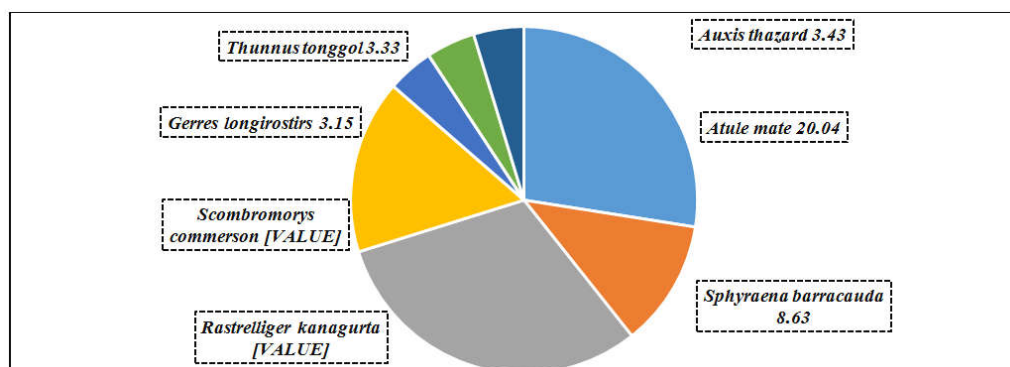


Figure 9. Dominant fish species caught by net in speed boat fishery

**Catches in the net fishery:** 440 speed boat was investigated and constitute 24.0% of the total boats from the different landing sites. The highest investigated boats were recorded from the emirate of Umm Alqwain (37.73%), followed by eastern area (22.27%). Figure 8 shows the highest catch was recorded from Dubai and constitute (41.12%) followed by Umm Alqwain and eastern area with (20.65% and 20.20) respectively.

The traditional net caught 71920kg or 28.0% of the total landed catch. The catch comprised of 29 family with 58 species. The best catch of this gear includes family Scombridae (43.42%) and includes: *Rastrelliger kanagurta* and *Scomberomorus commerson* (22.51% and 11.82%), followed by family Carangidae represented by *Atule mate* (20.04%). Table 8 gave a details for species composition of fish caught by different kinds of nets. 18 species contribute

Table 9. Key species caught by nets from different landing sites

Species	% of the total landings from nets					
	Abu-Dhabi	Dubai	Umm Alqwain	Ras Alkheima	eastern area	Average
<i>Atule mate</i>		16.91		43.07		29.99
<i>Rastrillegger kanagurta</i>		48.24	29.9	12.93	13.26	26.08
<i>Scobromorus commerson</i>	33.76	6.67	21.63	5.16	7.49	14.94
<i>Sphyraena barracauda</i>			4.38	18.96		11.67
<i>Auxis thazard</i>		9.87			3.5	6.69
<i>Tebban</i>			4.15		6.26	5.21
<i>Carangoides chrysophyres</i>		7.62	3.48			5.55
Total	33.76	89.31	63.54	80.12	30.51	

90.0% in comparison of 40 species only constitute 10.0% of the total catch caught by nets. The species less than 1.0% not included in the table. The most abundant species caught by nets were illustrated in Figure 9. Table 9 shows the key species from different landing sites. These species were the most dominant and contributed in average 59.45%. The maximum value was recorded in Dubai (89.31%) and the minimum was observed in eastern area (30.51%).

## DISCUSSION

This study aimed at assessing the effectiveness of different fishing gear in speed boat fishery off the United Arab Emirates. Emirates' fishery is artisanal, multispecies multigear and show number of indications of overfishing. To further evaluate resources status and to enable the development of effective resources management, catch size, species composition by gear types of speed boat fishery were collected. Fish traps are the most used gear in Emirates, the results show approximately 57.0% (by weight) of the total landing caught by traps for the speed boat fishery. Fish traps caught smaller fishes than other gears for all studied species. The current result coincided with the results by Lincoln Smith et al. (1989). The best catches of this gear consisted of the family Lethrinidae (28.85%) and the major catch comprised of *Lethrinus nebulosus* and *Lethrinus lentjan* (11.46% and 10.60% respectively). There are different kind of nets are used with the fishermen; Encircling gill net, set net and boat net. The result shows a tendency to catch fish larger than those taken by fish traps and hand-line.

This gear accounted for approximately 28.0% (by weight) of the total landing. The targeted species caught by nets are; *Sphyraena barracuda* and *Atule mate* (22.51% and 20.04% respectively). Hand-lines appeared to have the most distinct selectivity in this fishery. Hand-line capture shows a tendency to catch larger fish in comparable of fish caught by traps and reported approximately 15.0% (by weight) of the total landings. The abundant species caught by hand-line are; *Scobromorus commerson*, *Thunnus tonggol* and *Sphyraena barracuda* (24.60%, 16.83% and 16.06% respectively). Only hand-line catch composed of four to five species per day, but over long periods of fishing and sampling at many landing sites the cumulative number of species is much larger and includes most of the species that occupy these habitats. Same results were observed by McClanahan, 1994. Despite the high diversity of the species caught, most of the catch was dominated by a few species and this result was concluded by Gell & Whittington, 2002. There was evidence that some gears catch different species while others were very similar in their selectivity (McClanahan & Mangi, 2004). Pauly et al. (2001) argued that the mean trophic level of landed fish could be used as a simple index of sustainability in multi-species fisheries.

Throughout the study, 65 fishes contribute 93% while 7% of the landings were crustacean, cephalopod and cartilaginous species were identified. The maximum number of species (58) was caught by the net and the minimum number was caught by hand-line (41 species). The catch composition suggested that Scombridae are the most caught taxa in speed boat fishery, followed by Lethrinidae for different fishing gear. The gear selectivity declared family Lethrinidae are the major for trap and Scombridae & sphyraenidae are the dominant for hand-line, while Scombridae are the most caught for net followed by Carangidae. This study identified species selectivity by gear type and revealed the species were caught by all types of gears (overlap in gear selectivity). Facts about the kind of species caught by each type of gear could lead to appropriate measures to manage the catch of certain species that are found to be overly depleted. Gear is more easily managed as it is easily identified, requires less monitoring and is often rooted in the flexible traditions of the fishermen (Ruddle 1996). This study is the first to address gear selectivity among the gears used in the southern part of the Arabian Gulf. It is proposed that the use of body size, trophic level, diversity and resource use among gears is a relatively simple way to evaluate a complex multispecies and gear fishery and to develop simple gear based management guidelines. More traditional fisheries techniques such as single species, size and fishing effort-based analyses would further refine findings and management recommendations, particularly if they were applied to the major fisheries species we identified in this study.

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