Fish survey of inland lagoons and water surrounding Sammaliah Island – Abu Dhabi, UAE

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Abstract - Fishing was conducted from March, 2001 to August, 2006 in the water surrounding Samalliah Island, Abu Dhabi, UAE and intertidal laggons of this island using different fishing gears. Traps and hooks and lines were used five days a week, cast nets were used once a week, while seine nets and fixed gillnets were used seasonally. A total of 65 fish species belonging to 35 families and to 51 genera were recorded during sampling period. Fish species are classified according to their appearance in the samples to four groups. Very common species comprising 26.1% (17 species), common species comprising 24.6% (16 species), rare species comprising 35.4% (23 species) and very rare species comprising 13.8% (9 species) of total fished species. Sixteen species were captured by hooks and lines, eleven species by garkoors and fourteen species by cast net.

Introduction

The Arabian Gulf is an extension of the Indian Ocean and has an area of about 24832 km², while the volume of its water is around 6000 km³, and its average depth is 35 m (Al-Moosawy and Karim, 1991). The Arabian Gulf was bordered by several wealthy states undergoing rapid economic growth involving substantial construction along shores and offshore regions, underpinned by its massive oil and gas industries, and by wealth derived from financial centres (Sheppard *et al.*, 2010). The Arabian Gulf is characterized by the phenomena of the existence of Khors especially in its Arabian Coasts (Karim, 1988).

The United Arab Emirates is a coastal country located on the southern part of the Arabian Gulf having extensive coastlines on its west and east facing the Arabian Gulf and the Gulf of Oman respectively. UAE has numerous islands and lagoons, and length of its coastlines is 700 km and total length of its islands coasts is 700 km. Pelagic, demersal, and migratory fish species can be observed at different periods of the year. Al Sammaliah Island is located between 54 longitude and 24 latitude and approximately 12 km for Abu Dhabi City (Fig.1). The Island has an area of 13.448 km² and it has many inland intertidal lagoons.

First fish survey was undertaken during 1977-1978 for the demersal and pelagic resources of the Arabian Gulf and the Gulf of Oman (FAO, 1981a, b). Fishery survey for Arabian Gulf region of UAE was conducted by Marine Resources Research Centre, Umm Al Qaiwain cooperative with Japan International Cooperation Agency during 1980-1998, depending on observations at fish markets, diving and using fine mesh seine net towing on the beach and seaweed areas (Tamaie, 1999). This survey showed a total number of 209 fish species belonging to 72 families and 144 genera.

Another survey was also undertaken during the period February 2002-Jannuary 2003 with the objective of assessing the status of demersal and pelagic fishes of UAE waters depending on trawling and trapping (Shallard *et al.*, 2003). This survey showed a total number of 227 species. The aim of this study is determining fish species inhabits inland lagoons and water surrounding Sammaliah Island.

Figure 1. Satellite picture of Sammaliah Island and Abu Dhabi City.

Materials and Methods

Fishing was conducted during the period from March, 2001 to August, 2006 in water surrounding Samalliah Island and also the intertidal laggons of the island using five fishing methods. These methods are hooks and lines, traps (Garkoors), cast nets, seine nets and fixed gill nets. Traps and hooks and lines were used five days a week, cast nets were used one day a week, while seine nets and fixed gillnets were used seasonally. Different baits were used in hooks method, while only bread were used as a bait in garkoors. Animal baits include living crabs, living small fishes, shrimp, pieces of squids and pecies of fishes, while plant bait was used as boiled dough only. All fishing methods were used in water surrounding Samalliah Island, while in itertidal laggons of the island only cast net was used. Fishes were transported to laboratory and identified according to FAO (1984); Al-Bbaharna (1986); Kuronuma and Abe (1986) and Carpenter *et al.* (1997). The local names of fishes were determined based on fishermen in seven UAE emirates.

Results

A total of 65 fish species were recorded during the sampling period. These species are belonging to 35 families and to 51 genus (Table 1). Fish species were classified according to their presence in fish sampling to four groups, very common species appeared in all samples, common species appeared in most samples, rare species appeared in some samples and very rare species that appeared one time only. Very common species comprised 26.1% (17 species), common species 24.6% (16 species), rare species 35.4%

Table 1. List of fish species in inland lagoons and water surrounding Sammaliah Island.

Family	Scientific Name	Common Name
Sparidae	*Acanthopagrus latus*	Yellowfin seabream
	Acanthopagrus bifasciatus	Twobar seabream
	Crenidens crenidens	Karanteen seabream
	Diplodus sargus kotscheyi	One spot seabream
	Rhabdosargus sarba	Goldlined seabream
	Sparidentex hasta	Sobaity seabream
Carangidae	*Carangoides bajad*	Orange spotted trevally
	Gnathanodon speciosus	Golden trevally
	Scomberoides commersonnianus	Talang queenfish
	Trachinotus blochii	Snubnose pompano
Haemulidae	*Plectorhinchus flavomaculatus*	Lemon sweetlip
	Plectorhinchus schotaf	Minstrel sweetlip
	Plectorhinchus sordidus	Sordid rybberlips
	Pomadasys hasta	Silver grunt
	Pomadasys stridens	Striped piggy
Clupeidae	*Nematalosa nasus*	Gizzard shad
	Amblygaster sirm	Spotted sardinella
	Sardinella longiceps	Indian oil sardine
Gerreidae	*Gerres acinances*	Longtail silver-biddy
	Gerres oyena	Common silver-biddy
	Gerres filamentosus	Wipfin mojarra
Lutjanidae	*Lutjanus argentimaculatus*	Mangrove red snapper
	Lutjanus ehrenbergi	Blackspot snapper
	Lutjanus quinquelineatus	Five-lined snapper
Sphyraenidae	*Sphyraena pulnamiae*	Chevron barracuda
	Sphyraena jello	Pickhandle barracuda
	Sphyraena obtusata	Obtuse barracuda
Lethrinidae	*Lethrinus mahsena*	Mahsena emperor
	Lethrinus lentjan	Redspot emperor
	Lethrinus nebulosus	Spangled emperor
Terapontidae	*Terapon puta*	Smallscalled terapon
	Terapon jarbua	Jarbua terapon
	Pelates quadrilineatus	Fourlined terapon
Belonidae	*Tylosurus crocodilus crocodilus*	Hound needlefish
	Strongylura leiura	Banded needlefish
Mullidae	*Upeneus sulphureus*	Sulphur goatfish
	Parupeneus rubescens	Rosy goatfish
	Upeneus tragula	Freckled goatfish
Mugilidae	*Valamugil seheli*	Blue-spot mullet
	Liza macrolepis	Largescale mullet
Nemipteridae	*Scolopsis ghanam*	Arabian monocle bream
	Scolopsis taeniatus	Black-streaked monocle bream
Scaridae	*Scarus persicus*	Gulf parrotfish
	Scarus ghobban	Yellowscale parrotfish
Siganidae	*Siganus canaliculatus*	White-spotted spinefoot
Serranidae	*Epinephelus malabaricus*	Malabar grouper
Holocentridae	*Sargocentron rubrum*	Redcoat
Syngnathidae	*Hippocampus kuda*	Spotted seahorse
Apogonidae	*Apogon thurstoni*	One spot cardinal fish
Atherinidae	*Atherinomorus lacunosus*	Hardyhead silverside
Batrochoididae	*Batrachus grunniens*	Toadfish
Sillaginidae	*Sillago sihama*	Silver sillago
Chanidae	*Chanos chanos*	Milkfish
Gobiidae	*Amblygobius albimaculatus*	Butterfly goby
Pomacanthidae	*Pomacanthus maculosus*	Yellow-marked butterflyfish
Cyprinodontidae	*Aphanius dispar*	Arabian barred killifish
Hemirhamphidae	*Hemirhamphus archipelagicus*	Jumping halfpeak
Platacidae	*Platax orbicularis*	Orbicular batfish
Platycephalidae	*Platycephalus indicus*	Bartail flathead
Pomacentridae	*Abdefduf saxatilli*	Sergeant major
Monodactylidae	*Monodactylus argenteus*	Silver moony
Soleidae	*Pardachirus marmoratus*	Finless sole
Plotosidae	*Plotosus lineatus*	Striped eel catfish
Monacanthidae	*Paramonacanthus japonicus*	Hairfinned leatherjacket
Dasyatiddae	*Dasyatis imbricatus*	Scaly stingray

(23 species) and very rare species 13.8% (9 species) of total species (Table 2). The results based on UAE fishermen in seven emirates indicated that most species have more than one local names in different emirates (Table 3). The differences between local names of fishes were cleared between Abu Dhabi Emirate and Northern Emirates (Fujairah Emirate, Ras Al Khaimah Emirate and Umm Al Qaiwain Emirate). From 65 species fished in Samalliah Island, only two species (*Plotosus lineatus, Paramonacanthus japonicus*) havent local names.

Table (4) shows the arrangment of common species caughed by three fishig methods (Hooks and lines, traps and cast net). Thirteen species were caughed by using animal bait, the first was *Rhabdosargus sarba* and the last was *Lutjanus argentimaculatus,* while seven species were fished by using boiled dough, the first was *Siganus canaliculatus* and the seventh was *Gerres acinancea*. Eleven fish species were fished by garkoors, the first was *Pomacanthus maculosus* and the eleventh was *Lethrinus mahsena*. Fourteen species were captured by using cast net, the first was *Gerres oyena* and the fourteenth was *Terapon jarbua*.

Discussion

In the present study sixty five fish species recorded. Eighty two fish species were recorded at sea grass zones in Umm Al Qaiwain lagoon during 1990-1996, these species are belonging to 35 families and 63 genera. Tamaei (1999) found 209 species belonging to 72 families and 144 genera during the fishery survey for Arabian Gulf region of UAE waters. Shallard *et al.* (2003) collected 227 species during 2002-2003 by trawling and trapping.

Table 2. Four groups of fish species classified according to their appearance in fish sampling.

Very Common Species	Common Species	Rare Species	Very Rare Species
A. bifasciatus	*A. saxatilli*	*A. dispar*	*A. thurstoni*
A. latus	*A. albimaculatus*	*G. filamentosus*	*B. grunniens*
A. sirm	*A. lacunosus*	*H. archipelagicus*	*C. crenidens*
G. acinances	*C. bajad*	*L. quinquelineatus*	*D. imbricatus*
G. oyena	*C. chanos*	*N. nasus*	*D. sargus kotscheyi*
L. lentjan	*E. malabaricus*	*P. marmoratus*	*H. kuda*
L. nebulosus	*G. speciosus*	*P. rubescens*	*P. japonicus*
L. ehrenbergi	*L. mahsena*	*P. orbicularis*	*S. ghobban*
P. flavomaculatus	*L. macrolepis*	*P. lineatus*	*S. persicus*
P. schotaf	*L. argentimaculatus*	*P. hasta*	
P. sordidus	*M. argenteus*	*P. stridens*	
P. maculosus	*P. quadrilineatus*	*S. rubrum*	
R. sarba	*P. indicus*	*S. commersonnianus*	
S. longiceps	*T. puta*	*S. ghanam*	
S. canaliculatus	*T. jarbua*	*S. taeniatus*	
S. leiura	*V. seheli*	*S. sihama*	
T. crocodilus crocodiles		*S. hasta*	
		S. jello	
		S. obtusata	
		S. pulnamiae	
		T. blochii	
		U. sulphureus	
		U. tragula	

Table 3. Local names of species fished in inland lagoons and water surrounding Sammaliah Island.

Fish Species	Local Name			
	First	**Second**	**Third**	**Fourth**
A. saxatilli	Shenianoh	Rakeab Awal		
A. bifasciatus	Bent Al Nochaza	Faskar		
A. latus	Shaam	Shaam Khishri	Shaam Abyath	Shaam Al-Khour
A. sirm	Oama	Oama Zeinaba		
A. albimaculatus	Haffar			
A. dispar	Fangal			
A. thurstoni	Neisaraha Al Aamak			
A. lacunosus	Chesschus			
B. grunniens	Anza			
C. bajad	Jesh	Umm Al Halla		
C. chanos	Nemir	Eiffah		
C. crenidens	Ebaiseyah	Bitanah		
D. imbricatus	Luchmah	Samha		
D. sargus kotscheyi	Ebaiseyah	Mijwah		
E. malabaricus	Hamoor			
G. filamentosus	Bedha	Bedh Farisi		
G. oyena	BedhArabi	Badeh Mahaly		
G. acinancea	Bedha			
G. speciosus	Zereiday	Kifdar		
H. archipelagicus	Sils			
H. kuda	Buzizi			
L. nebulosus	Sheiri Arabi			
L. mahsena	Sheiri yemah			
L. lentjan	Sheiri shekaily	Bonteaa	Shekhabi	
L. macrolepis	Biah sfeti	Maid		
L. argentimaculatus	Umm Al durais			
L. ehrenbergi	Neisarah			
L. quinquelineatus	Neisarah	Akllah	Tymmoh	
M. argenteus	Farsoug			
N. nasus	Yawafa			
P. japonicus	None			
P. marmoratus	Khubzet Al Bahar	Tabak Lazik	Kalbiyah	Samakat Moosa
P. rubescens	Hedie			
P. quadrilineatus	Yamyam			
P. orbicularis	Omaad			
P. indicus	Waharah			
P. flavomaculatus	Yanam			
P. schotaf	Yanam			
P. sordidus	Yanam	Farsh		
P. lineatus	None			
P. maculosus	Anfooz			
P. hasta	Nakroor	Kinkser		
P. stridens	Yemyamah			
R. sarba	Gabet			
S. longiceps	Oama Aifa	Salyah		
S. rubrum	Sorkhoo			
S. ghobban	Gain	Gain Arabi		
S. persicus	Gain			
S. ghanam	Bezaimy	Owanat Saad	Eyn Batwa	Eyn Shmalooh
S. taeniatus	Bezaimy			
S. commersonnianus	Zelaa	Bassar		
S. canaliculatus	Safi Arabi			
S. sihama	Hasoom			
Sparidentex hasta	Sobaity	Halam		
Sphyraena jello	Gidd	Kheli		
Sphyraena obtusata	Gidd	Kheli		
S. pulnamiae	Gidd			
S. leiura	Hakool			
T. jarbua	Yaly	Baam		
T. puta	Keswan	Yamyam	Kalbah	
T. blochii	Al seben	Seben Arabi	Farsouk	
T. crocodilus crocodilus	Hakool			
U. sulphureus	Hammer	Hedie Farisi		
U. tragula	Hedie			
V. seheli	Biah Arabi			

Table 4. Arrangement of species fished by hooks and lines, garkoors and cast net in inland lagoons and water surrounding Sammaliah Island.

Species Arrangement	Hooks and Lines		Traps (Karkoors)	Cast Net
	Animal Bait	Boiled Dough		
1	R. sarba	S.canaliculatus	P. maculosus	G. oyena
2	A. bifasciatus	P. maculosus	A. bifasciatus	G. acinances
3	L. ehrenbergi	A. saxatilli	E. malabaricus	A. lacunosus
4	P. flavomaculatus	A.bifasciatus	R. sarba	A. sirm
5	P. sordidus	R. sarba	L. ehrenbergi	S. longiceps
6	A. latus	A. latus	P.flavomaculatus	A. bifasciatus
7	L. lentjan	G. acinances	P. schotaf	S.canaliculatus
8	L. nebulosus		L.argentimaculatus	V. seheli
9	S. leiura		L. lentjan	L. macrolepis
10	T. crocodilus crocodiles		L. nebulosus	L. ehrenbergi
11	E. malabaricus		L. mahsena	A.albimaculatus
12	L. argentimaculatus			P. indicus
13				T. puta
14				T. jarbua

Very common species in the present study comprised 26.1% (17 species), common species 24.6% (16 species), rare species 35.4% (23 species) and very rare species 13.8% (9 species). Tamaei (1999) found different group classification and species numbers, where very common species comprised 19.5% (16 species), common species 70.7% (58) and rare species 9.7% (8 species). About 35 fish species were recorded in both survey of Samalliah Island and Umm Al Qaiwain lagoon, so more than 50% of species were differed between Umm Al Qaiwain lagoon and Samalliah Island. These differences in number and kind of fish species may be related to high water salinity (more than 55 ppt) in Samalliah Island (Taher *et al.*, 2011) compared with moderate water salinity (less than 40 ppt) in Umm Al Quain lagoon (Personal Observations), and also due to very shallow water (about 4 meters) in Samalliah Island compared with more than 10 meters depth in Umm Al Quain lagoon. There was another reason of higher water temperature in Abu Dhabi shallow waters especially during long summer season. Shallard *et al.* (2003) stated that there aren't differences between surface and bottom water temperature in Abu Dhabi Emirates compared with small differences in Northern Emirates and very big differences in East Coast Emirates.

Sixteen species were fished by hooks and lines, eleven are carnivorous feed mainly on crustacean, mollusks, sponges, sea urchins and fishes, two are (*Strongylura leiura* and *Tylosurus crocodilus crocodiles*) piscivorous, two are (*Pomacanthus maculosus* and *Abdefduf saxatilli*) omnivorous and one species (*Siganus canaliculatus*) is herbivorous fed mainly on seaweeds and benthos algae (Taher, 2006). The first preferred animal bait was live crabs for all species fished by animal baits except three species (*E. malabaricus*, *Lethrinus lentjan* and *Lethrinus nebulosus*) that preferred pieces of fishes. It is important to point out that crabs don't recorded as food items for all species fished by hooks and lines. This may be related to availability of live crabs in hooks compared with free crabs in the nature that hide very well in pores of the bottom and coast.

According to the present survey a total of 17 very common species recorded in all samples, while Shallard *et al.* (2003) recorded only 8 species. Four species were recorded in both surveys as very common species (*G.acinances, L. lentjan, L. nebulosus, p. sordidus*). These differences may be related to differences of coastal habitats only of Samalliah Island and open habitats for trawling in the survey of Shallard *et al.* (2003). As example *G. oyena* noticed swimming in small shoals (50-100 individuals) in the very shallow coast (20-50 cm) of Samalliah Island (Personal Observations), while it isn't recorded as very common species in the survey of Shallard *et al.* (2003), and recorded (with other 15 species) as a very common species at sea grass zone in Umm Al Quwain lagoon (Tamaei, 1999).

Acknowledgments

References

Al-Baharan, W.S. 1986. Fishes of Bahrain. Ministry of Commerce and Agriculture and fisheries. Bahrain, 294 pp.

Al-Moosawy, S.N. and Karim, H.H. 1991. Introduction in marine geology. Marine Science Center Publication No. 8, 650 pp. (in Arabic).

Carpenter, K.E., Krupp, F., Jones, D.A. and Zajons, U. 1997. FAO species identification guide for fishery purposes. The living marine resources of Kuwait, Eastern Saudi Arabia, Bahrain, Qatar and the United Arab Emirates. Rome, FAO, 293 pp.

FAO 1981a. Demersal resources of the Gulf and Gulf of Oman. Regional Fishery Survey and Development Project. FI:DP/RAB/71/278/11. 122 pp.

FAO 1981b. Pelagic resources of the Gulf and Gulf of Oman. Regional Fishery Survey and Development Project. FI:DP/RAB/71/278/11. 143 pp.

FAO 1984. Species Identification Sheets for Fishery Purposes, Western Indian Ocean, Fishing Area 51. Volumes I-V. FAO Rome.

Karim, H.H. 1988. The phenomena of multi laggonal system in the Northern Arabian Gulf. Marina Mesopotamica, 3(2): 225-238. (in Arabic).

Kuronuma, K and Abe, Y. 1986. Fishes of the Arabian Gulf. Kuwait Institute for Scientific Research, Kuwait, 356 pp.

Shallard, B., *et al.* 2003. Fish resources assessment survey project of Abu Dhabi and UAE waters. Environmental Research and Wildlife Development Agency, 132 pp.

Sheppard, C., Al-Husiani, M., Al-Jamali, F., Al-Yamani, F., Baldwin, R., Bishop, J., Benzoni, F., Dutrieux, E., Dulvy, N.K., Durvasula, S.R.V., Jones, D.A., Loughland, R., Medio, D., Nithyanandan, M., Pillingm, G.M., Polikarpov, I., Price, A.R.G., Purkis, S., Riegl, B., Saburova, M., Namin, K.S., Taylor, O., Wilson, S. and Zainal, K. 2010. The Gulf: A young sea in decline. Mar. Pollut. Bull., 60: 13-38.

Taher, M.M. 2006. Emirates Fishes. 349 pp. (Unpublished).

Taher, M.M., Mohamed, A.R.M. and Al-Ali, A.K.H. 2011. Physical and chemical characteristics and ichthyofauna of waters surrounding Sammaliah Island, Abu Dhabi, UAE. Ecology Conference of Science, 2011, (Accepted).

Tamaei, S. 1999. Operation manual of fish hatchery, aquarium and mangrove cultivation in UAE. Marine Resources Research Center-Ministry of Agriculture and Fisheries, UAE, 45 pp.

مسح مجموعة الأسماك في الخيران الداخلية والمياه المحيطة بجزيرة السمالية – أبو ظبي، الإمارات العربية المتحدة

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المستخلص - جمعت الأسماك من المياه المحيطة بجزيرة السمالية في إمارة أبوظبي ومن خيرانها المدية الداخلية باستخدام طرق صيد مختلفة للفترة من آذار 2001 لغاية آب 2006. إستخدمت القراقير والخيوط لمدة خمسة أيام في الأسبوع وشبكة السلية يوم واحد في الأسبوع، بينما إستخدمت شباك الجر الساحلية وشباك النصب الخيشومية فصلياً. سجل 65 نوعاً من الأسماك تعود لـ 35 عائلة و 51 جنساً خلال فترة الصيد، وصنفت الأسماك إعتماداً على ظهورها في الصيد أربعة مجاميع، وشكلت مجموعة الأنواع الشائعة جداً 35.4% (17 نوعاً) من الأنواع ومجموعة الأنواع الشائعة 24.6% (16 نوعاً) ومجموعة الأنواع النادرة 35.4% (23 نوعاً)، بينما شكلت مجموعة الأنواع النادرة جداً 13.8% (9 أنواع). إصطيد 16 نوعاً بواسطة الخيوط والسنارات و 11 نوعاً بواسطة القراقير و 14 نوعاً بواسطة شبكة السلية.