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The status of artisanal fisheries in the lower reaches of Mesopotamian rivers, north Basrah, Iraq

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Abstract

The artisanal fisheries of the lower reaches of Euphrates, Tigris and Swab rivers, at Qurna, north of Basrah, Iraq have been described from January to December 2005. The fishing effort, type and number fishing gears, catches and species composition were estimated from survey data collected by interviews and a questionnaire of the artisanal fishermen at fish landing sites in these regions.

A total of 23 species were recorded from the Tigris site and 22 species from the Euphrates site, of which 8 were marine species return to the 12 family of fish as well as shrimp in both sites. Either Swab River have been fishing 15 species only, where it was noted the absence of some freshwater and marine species, in addition to shrimp.

The catfish, *Silurus triostegus* was the main species exploited (69.65%, 53.02% and 44.76%) of the annual catches in the three sites, respectively. The crucian carp, *Carassius carassius* ranked second in Tigris and Euphrates sites by 11.02% and 10.2% respectively, while the cyprinid, *Barbus sharpeyi* by 24.51% in Swab site. The mullet, *Liza abu* ranked third in the Tigris and Euphrates sites by 6.26% and 8.08% respectively, the cyprinid, *Aspius vorax* by 10.39% in Swab site. The percentage of shrimps in Euphrates was 13.7% of the total catch, whereas in Tigris formed 0.5% and absent from Swab.

The average catch per unit of effort was 19.8 Kg/hr/100m for seine nets and 2.42 Kg/hr/100m for gill nets in Tigris site, 21.5 Kg/hr/100m for seine nets in Euphrates site and 1.41 Kg/hr/100m for gill nets in Swab site. The sizes of economically-important species were differed between the three study sites.

Key words: Iraq, artisanal fisheries, inland fisheries, catch, fishing effort, Tigris-Euphrates Rivers, Basrah.

Introduction

The ancient name Mesopotamia means "between the rivers", and this is where many historians believe the first "civilizations" developed. The Rivers Euphrates (2300 km) and Tigris (1700 km), the largest river system in southwest Asia are like twins, starting near each other in the eastern mountains of Turkey, and flowing parallel through dry flat land until they confluence at Qurna, north of Basrah, to form the tidal Shatt Al Arab waterway, which flows some 110 km to enter the Arabian Gulf. The inland fresh water bodies in Iraq cover between 600,000 and 700,000 ha, made up of marshes (44%), natural lakes (39%), dams and reservoirs (13.3%) and rivers and their branches (3.7%), in addition to coastline of approximately 50 km along the NW Arabian Gulf (FAO, 1999). There are over 58 freshwater fish species in Iraqi inland waters, about a further 53 marine species penetrating estuarine and fresh water (Coad, 1991) and 125 fish species and five species of shrimps in the Iraqi marine waters (Mohamed, *et al.* 2001). Therefore, fishing activities in Iraq may be divided geographically into two main groups, inland water fisheries and marine fisheries. The mean production from inland fisheries for 1981-1997 was 18 800 t/year and 13 000 t/year from marine fisheries, and the individual quota equal 1.6 kg/yr (FAO, 1999). The number of fishing boats used in their activities in inland waters were about 15,430; most of them (85%) without engine, and 15% with engine (5-25 hp), whereas, in marine waters was about 1,600, 3% were large vessels with 100-250 hp engine, the rest were with less horse power (FAO, 1999).

During the last two decades, there have been major environmental changes to Iraq's inland and coastal habitats as a result of a long term trend of damming of the Tigris and Euphrates rivers, with a consequent reduction in the downstream flows and the draining of the extensive marshes in southern Iraq by diversion of major rivers around the marsh areas (Richardson and Hussain, 2006).

Therefore, the fish production from all sources was declined over the past decade, it is estimated that 8 000 t was produced in 2001 from inland fisheries and 5 000 t/year from marine fisheries (FAO, 2004).

The total area of wetland surrounding Qurna province is about 15,500 km2 (Maulood, *et al.* 1979) and provide environments suitable for aquatic plants and other living endemic and migratory fish from the river and sea shrimp and birds. The southern part of Iraq is a potentially rich source of fish, FAO reported that over 60% of the total inland catch of fish in Iraq in 1990 coming from the southern region (UNEP 2001). The region takes human population gatherings represented several towns and villages like Qurna, Madaina and Alhoer and other. The region is also the site of some of the richest oil deposits in the country.

Despite the importance of the inland artisanal fishery as prime fisheries of southern Iraq, limited works have been published (Al-Nasiri and Sharma, 1977; Salman, 1978, 1983 and Sharma, 1980) referred to the fish marketing conditions in Basrah Governorate. However, several studies on the Iraqi marine artisanal fisheries have been published (Mohamed and Ali, 1992, 1993; Mohamed, 1993; Mohamed, *et al*. 1998; Ali, *et al*. 1998, 2000, 2001; Mohamed, *et al*. 2002) focused on species composition, fishing effort, total catch and stock assessment of different fish species.

Therefore, this paper examines the inland artisanal fisheries at the lower parts of Mesopotamian Rivers within Qurna province, north of Basrah, focusing on the species composition, total catch and efforts from the landing places in these rivers.

Materials and methods

Study area

The study was carried out on three landing sites, the first was located at lower Tigris River and was approximately 5 km north the confluence of Qurna, whereas the second

at lower Euphrates River and was approximately 10 km west the confluence. The third site was at lower Swab River, this river (14 km) flows from Huwaza marsh and into the Shatt Al-Arab River, 15 km south the confluence of Qurna (Fig. 1).

Data collection

The system is designed to collect information about the fishing activities at three major areas of fishing and landing sites in Tigris, Euphrates and Swab Rivers within Qurna province, north of Basra, Iraq. A questionnaire and interviews for the fishermen were proposed by authors in

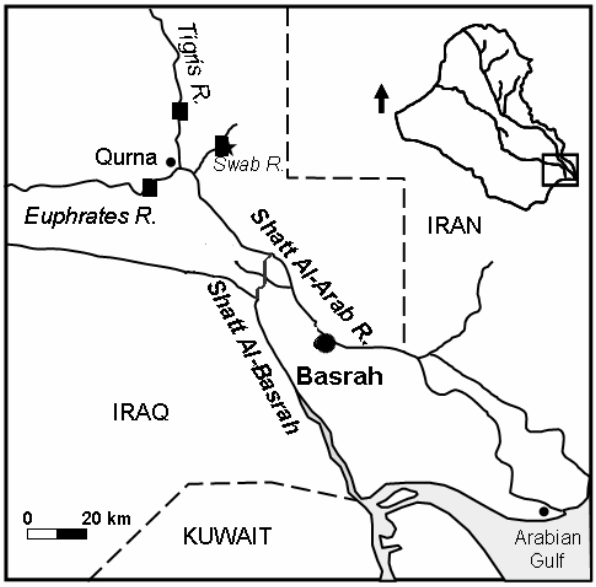

Fig. 1. Map of southern of Iraq, showing the location of study sites

each site using information form following Bazigos (1974). The majority of fishermen were interviewed between 2-3 days per month as soon as they reached landing sites, from January to December 2005. Interviews essentially followed the same model in all sites and included questions on the characteristics of the fishing activities (type and size of fishing boat, HP of motorized boat, number of fishermen per boat, type of gears employed, length and mesh sizes of nets, duration of haul, number of hauls per day, number of fishing days per week, catch size and composition). Four seasons (periods) were delineated: (i) winter from January to March, (ii) spring from April to June, (iii) summer from July to September, and (iv) autumn from October to December.

Data processing

Catch per unit of effort (CPUE) was determined, using the information about total catch per day, duration of haul, number of hauls per day and length of nets, and expressed as fish biomass caught (kg)/hr/100 m of nets. Catch rates were calculated for both fishing gears, gill nets and seine nets, separately. Fishes were identified according to Beckman (1962). The total lengths (TL mm) of fish, especially for the more valuable species were determined using a portable metric measuring board.

The relative abundance (% by biomass) of each species was calculated according to the formula of Krebs (1974). The Similarity of species composition between seasons and sites was calculated using Jaccard Similarity Index (Boesch, 1977).

Results

Fishing effort

Information about fishing efforts in the artisanal fisheries of the study sites are summarized in Table 1. Only data from 464 interviews at the three landing sites were used because some forms were deemed to have provided reliable data suitable for further analysis, 248 in Tigris, 128 in Euphrates and 88 in Swaeb, during January to December 2005. In contrast to the other sites, the Euphrates fishery has the largest fishing boats in terms of length and motor power. The boat sizes ranged from 8 to 10m, of which 55% of size 9m. All boats were from wooden with outboard motors of 75 hp. The other fisheries comprised both wooden boats with outboard engines and propelled by paddles, but Tigris fishery has the larger boats in terms of length and motor power, of which 50% of the enterprises operate motorized boats.

The type of fishing gears varied among the sites, in Euphrates, fishing was carried out almost exclusively with seine nets. The nets varied in length from 120 to 220m with mesh sizes of 12-100mm (knot-to-knot). In Tigris, seine and drift gill nets were the most common fishing gears. They ranged in length from 100 to 200m with mesh sizes of 12-100mm and 7-32mm, respectively. Some fishermen were also used electro-fishing gear. In Swab, in contrast, the fixed gill nets were the principal gear, in addition to electro-fishing gear. The length of nets ranged from 100 to 200m with mesh sizes of 8-30mm. Generally, crews (number of fishermen) in each boat varied among the sites, a range from 1 to 7 was observed in Tigris, 5 to 15 in Euphrates and 1 to 2 fishermen in Swab. Fishing activities take place during daytime.

Table 1. Information about fishing efforts in the artisinal fisheries of the lower reaches of Tigris, Euphrates and Swab River.

		Tigris	Euphrates	Swab
No. of interviews		248	128	88
Boat type		1- Wooden boats with motor (Shachtora). 2- Wooden boats propelled by paddles (Balam)	Wooden boats with motor (Shachtora)	1- Wooden boats with motor (Shachtora). 2- Wooden boats propelled by paddles (Balam)
% Boat Length (m)	5	9	-	11
	6	16	-	32
	7	23	-	15
	8	13	23	28
	9	29	55	2
	10	10	22	%
% Boats with motor		50	100	15
Engine power (hp)		25-75	75	15-75
Crews		1-7	5-15	1-2
Net lengths (m)		100-200	120-220	100-200
Fishing gear (nets type & mesh sizes)		-Drift gill nets (7 – 32mm) - Seine nets (12 – 100mm) -Electrical fishing	Seine nets (12 – 100mm)	-Fixed gill nets (8 – 30mm) -Electrical fishing

Species composition

A total of 22 fish species belonging to 12 families, in addition to shrimps were identified in the artisanal catches in this study (Table 2). Cyprinidae, the dominant family in terms of number of species was represented by nine species (*Carassius carassius, Barbus luteus, Barbus sharpeyi, Aspius vorax, Barbus xanthopterus, Barbus grypus, Cyprinus carpio, Ctenopharyngodon Idella* and *Alburnus* sp.

Other species belonged to the families Clupeidae (*Nematolosa nasus* and *Tenualosa ilisha*), Mugilidae (*Liza abu* and *Liza subviridis*), Siluridae (*Silurus triostegus*), Mastacembelidae (*Mastacembelus mastacembelus*), Heteropneustidae (*Heteropneustus fossilis*), Sparidae (*Acanthopagrus latus*), Bagridae (*Mystus pelusius*), Engraulidae (*Thryssa hamiltoni*), Pelonidae (*Strongylurus strongylurua*), Gobiidae (*Johnius aneus*), and Poecillidae (*Gambusia holbrooki*). The fish fauna was comprised of nine native, five alien and eight marine species (Table 2). All these fish species and shrimps (*Metapenaeus affinis*) were found at Tigris and Euphrates fisheries, except for *G. holbrooki* which was only taken at Tigris. Only fourteen species were found in Swab fishery, where some freshwater (*B. xanthopterus, C. idella, M. mastacembelus* and *G. holbrook*) and marine species (*L. subviridis, T. hamiltoni, M. pelusius* and *S. strongylurua*), and shrimps were missing.

Table 2. Relative abundance (%) of the fish recorded in the artisanal fisheries in the lower parts of Tigris, Euphrates and Swab sites during 2005.

Family	Species	Tigris	Euph-rates	Swab
Siluridae	*S. triostegus*	69.7	53.0	44.8
Cyprinidae	*C. carassius* +	11.0	10.2	5.3
Mugilidae	*L. abu*	6.3	8.1	2.2
Cyprinidae	*B. sharpeyi*	0.3	0.7	24.5
=	*A.s vorax*	1.1	2.1	10.4
=	*B. luteus*	1.3	2.8	8.6
=	*B. xanthopterus*	0.7	0.4	-
=	*B. grypus*	0.2	0.04	0.2
=	*C. carpio* +	2.4	3.8	3.3
=	*C. idella* +	0.2	0.1	-
=	*Alburnus* sp.	0.2	1.7	0.5
Clupeidae	*N. nasus**	1.4	1.9	0.02
Clupeidae	*T. ilisha* *	1.2	0.1	0.1
Mugilidae	*L. subviridis* *	0.5	0.9	-
Sparidae	*A. latus* *	0.2	0.2	0.04
Mastacembelidae	*M. mastacembelus*	1.0	0.1	-
Heteropneustidae	*H. fossilis* +	0.3	0.03	0.1
Sciaenidae	*J. aneus**	0.2	0.01	0.04
Bagridae	*M. pelusius* *	0.1	0.2	-
Engraulidae	*T. hamiltoni* *	0.1	0.02	-
Pelonidae	*S. strongylurua* *	0.03	0.01	-
Poecillidae	*G.holbrook I* +	0.01	-	-
	M. affinis *	0.5	13.7	-
No. of fish species		22	21	14

* marine species + Alien species

The degree of similarity in the number of species 97.9% between the Tigris and the Euphrates, 76.9% and 78.9% between Swab and each of the Tigris and the Euphrates, respectively.

Abundance and landings

Table 2 shows relative abundance (%) of species harvested by the artisanal fisheries in the lower parts of Tigris, Euphrates and Swab sites during 2005. The catfish, *S. triostegus* was the main species harvested 69.7% (8,566 kg), 53.0% (5,343 kg) and 44.8% (1,185 kg) of the annual catch by weight in Tigris, Euphrates and Swab sites, respectively (Fig. 2). The second most harvested species in Euphrates and Tigris sites was the crucian carp, *C. carassius* constituted 10.2% (1,648 kg) and 11.0% (845 kg) of the annual catch respectively, while the cyprinid, *B. sharpeyi* in Swaeb site, represented 24.5% (649 kg) of the total catch. The mullet, *L. abu* ranked third in the Euphrates and Tigris sites by 8.1% (1,305 kg) and 6.3% (474 kg) of the annual catch respectively, and the cyprinid, *A. vorax* by 10.4% (275 kg) of the total catch in Swaeb site. Two other species were also important: the cyprinid *B. luteus* constituted 1.3% (450 kg), 2.8% (99 kg) and 8.6% (228 kg) of the catch in the three sites respectively, and the exotic cyprinid common carp *C. carpio* represented 2.4% (616 kg), 3.8% (179 kg) and 3.3% (86 kg) in the three sites respectively. Shrimps represented 13.7% (2,208 kg) of the annual catch in Euphrates site and only 0.5% (41 kg) in Tigris site.

The landings were differed significantly between the three study sites and seasons (Figs. 2, 3). However, Euphrates had the highest landing (16,157 k g), followed by Tigris (7,671 kg) and Swab(2,648 kg). In Euphrates site, the highest landing (5,793 kg) was recorded during winter and the lowest one (2,513 kg) during spring (Fig. 3). Similar seasonal trend was observed in Swab site, the landing ranged from 386 kg to 1,354 kg. In Tigris site, the landing was fluctuated between 629 kg during winter to 3,335 kg during summer.

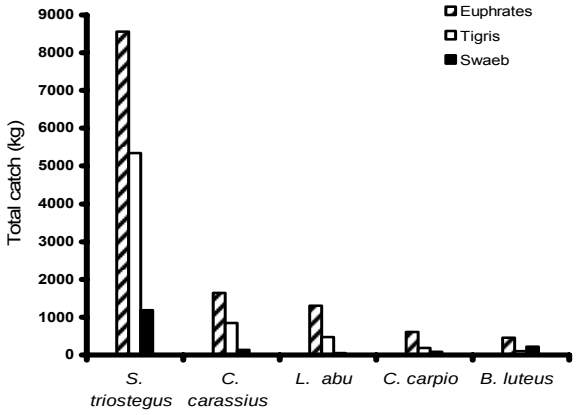

Fig. 2. Total catches of the dominated fish species in Tigris, Euphrates and Swab sites

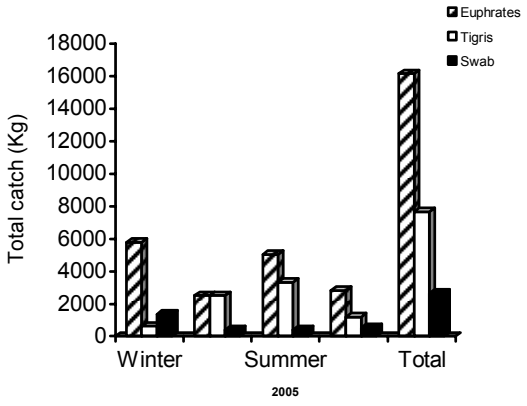

Fig. 3. Seasonal variations in the total catches of the artisanal fisheries in Tigris, Euphrates and Swab sites

Catch per Unit of Effort (CPUE)

Noticeable monthly variations in the CPUE by different fishing gears in the three sites are observed (Fig. 4). In Euphrates site, the annual average of CPUE by seine net was 21.5 Kg/hr/100m and fluctuated from 10.6 Kg/hr/100m in December to 51.1 Kg/hr/100m in February. Whereas, the inverse monthly trend for CPUE by seine net was observed

in Tigris site, values ranged between 2.9 Kg/hr/100m in December to 38.2 Kg/hr/100m in June, with overall value was 19.8 Kg/hr/100m. The annual average of CPUE by drift gill nets was 2.42 Kg/hr/100m in Tigris site, and varied between 1.6 Kg/hr/100m in December to 13.3 Kg/hr/100m in July. No data are available for June, July and November from Swab site, however, the lowest value of CPUE by fixed gill nets was 0.64 Kg/hr/100m in December and highest value was 2.7 in February, with overall value 1.41 Kg/hr/100m.

Sizes of fish

Histograms were plotted to compare the size-frequency distributions of the most important fish between Euphrates, Tigris and Swab fisheries (Fig. 5). The catfish occurred in the three fisheries around the year, but disappeared in February from Tigris fishery. The sizes of catfish ranged from 21-93, 17-104 and 30–80cm TL in Euphrates, Tigris and Swab fisheries, respectively and the dominant sizes were 48, 45 and 32cm, respectively. The crucian carp caught from all fisheries around the year and the fish sizes ranged from 10-35, 4-29 and 8–32cm TL in Euphrates, Tigris and Swab fisheries, respectively and the dominant sizes were 18, 12 and 15cm, respectively. Cyprinid *B. luteus* occurred in the three sites around the year, but disappeared in December and February from Tigris site. The sizes of *B. luteus* ranged from 9-27, 8-26 and 11-31cm TL in Euphrates, Tigris and Swab fisheries, respectively and the dominant sizes were 17, 13 and 17cm, respectively. Cyprinid, *B. sharpeyi* occurred around the year in Swab fishery, but disappeared from Euphrates fishery in January, April, May and September and appeared in Tigris fishery during March and May-August. The sizes of *B. sharpeyi* ranged from 14-48, 9-42 and 18-55cm TL in Euphrates, Tigris and Swab fisheries, respectively and the dominant sizes were 33, 9 and 38cm, respectively. The mullet *L. abu* caught from all fisheries around the year and the fish sizes ranged from 9-20, 2-19 and 7-22 cm TL in Euphrates, Tigris and Swab fisheries, respectively and the dominant sizes were 13, 12 and 14cm, respectively.

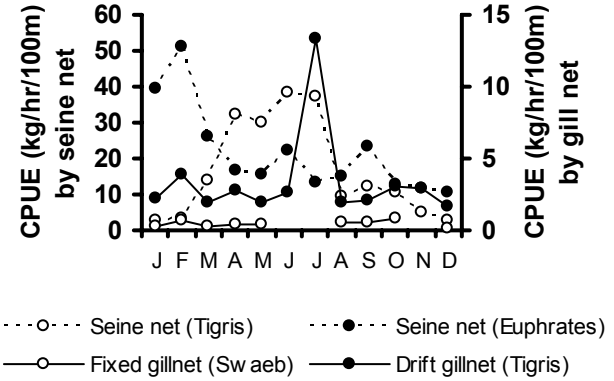

Fig. 4. Monthly variations in CPUE by various fishing gears in the Tigris, Euphrates and Swab sites.

Discussion

The analysis of the artisanal fisheries in the lower parts of the three rivers at Qurna province revealed that the fishing pressure was varied between these fisheries despite they are located in same region. In Euphrates site, the fishermen were better equipped (higher concentration of large motorized wooden boats and the number of fishermen per boat) and they were devoted exclusively to intensive fishing by seine nets, in addition to the continuation of fishing

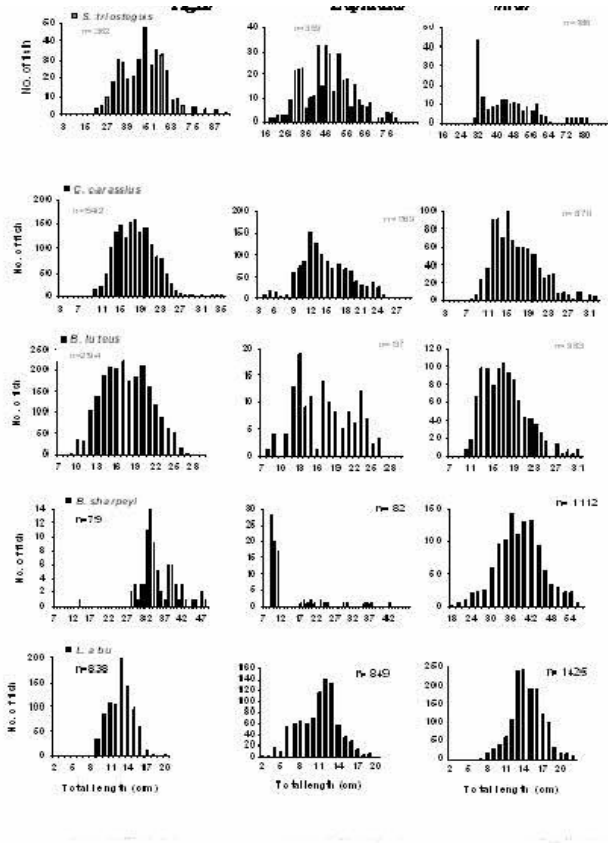

Fig. 5. Comparison of length–frequency distributions of important fish species in Tigris, Euphrates and Swab fisheries

activities throughout the year and therefore increased the catch of the unity effort especially during winter season. The other two fisheries comprised both wooden boats with outboard engines and propelled by paddles, but Tigris fishery has the larger boats in terms of length and motor power and the main fishing gears were the seine and the drift gill nets, whereas, in Swab site, the main fishing gear was the fixed gill net. This site of the Euphrates is the exchange of water with the marshlands of southern Iraq, where Hammar marsh from the south, Central marsh from the west and Prosperity River from the north. Also, this site is a plateau and wide, characterized by suitable beaches which allowed the use of seine nets, account for the small sizes of fish being harvested, in addition to that it is surrounding by communities represented by several small towns and villages, resulting in intense fishing pressure. The fish compositions of Euphrates and Tigris sites were distinguished primarily by high similarity and diverse than that at Swab site. Corroborating these results, beside they are greater rivers, the number of species that can populate them could be greatly influenced by the free exchange of fish species between them in the confluence region, as well as several marine species entering the region from the Arabian Gulf via Shatt Al-Arab River, due to the tidal action of Gulf waters, especially during the spring and summer seasons for spawning or for feeding (Richardson and Hussain 2006; Mohamed, *et al.* 2007). The occurrence of marine species in southern fresh waters was recorded by several authors (Al-Daham, 1982, 1988; Al-Hassan and Naama, 1986; Coad, 1991; Hussain, *et al.* 2006; Mohamed, *et al.* 2007). However, the number of species invading the region represents a small percentage of the total number of species in the fish assemblage of the Shatt Al-Arab estuary (Mohamed, *et al.* 2001; Hussain, *et al.* 2003). Swab river presumably reflects the harsh environmental conditions as a result of drainage of

the lower portion of Huwaza marsh during the mid-1990s, and water has flooded the region since 2003 (Anonymous, 2006; Richardson and Hussain, 2006). Cyprinid family occupied the first place in terms of number of species in all fishery sites, a situation common in inland waters of Iraq (Al-Daham, 1982; Coad, 1991; Hussain, *et al.* 2006; Mohamed, *et al.* 2007).

Similar seasonal trends in total catches were observed between Euphrates and Swab fisheries, although the fisheries of the Euphrates was more productive than the later, where the highest landings recorded during the winter months and the lowest during the spring months. In contrast, the highest landing of the Tigris fisheries was found during summer months and the lowest during winter months. The catfish, *S. triostegus* provides a remarkable effect on the three fisheries by high contribution of this species, where up to 70% in Euphrates, 53% in Tigris, 44% in Swab from total catches and these contributions were variable seasonally, probably due to species gregarious behavior; coincided with the migratory pattern of this species during February along the lower Euphrates and Swab rivers, where enters to the shallow waters in the marshes to spawn during March (AL-Saiab, 1988). Despite the catfish was the main species harvested in the three fisheries but considered to be of low marketable importance to the local population, most of them were discarded at rivers which may increase the contribution of this species in fish community structure and might have affect the state of the balance between this predator species and other prey species in the future.

Crucian carp, *C. carassius* and mullet, *L. abu* were followed the catfish in dominated the catches in Euphrates and Tigris fisheries. The crucian carp whom appear in Shatt Al-Arab River in early nineties (Al-Shammaa, *et al*. 2002) was the second most harvested species in Euphrates and Tigris fisheries. The same findings were recorded in other Iraqi waters; Habbaniya lake (Al-Rudainy, *et al*. 1999), Chybaesh marsh (Hussain, *et al.* 2006) and East Hammar marsh (Mohamed, *et al.* 2007). This species is aliened species, widely distributed, endemic to many countries around the world (Wheeler, 2000). The rapid increase in its populations in many Iraqi waters has been recorded since the early 1990s (Al-Shammaa, *et al*. 2002, Al-Rudainy, *et al*. 1999). The abundance and dominance of this species in the study region could be related partly to their food availability and prevailing environmental factors. They are omnivorous with high tendency to be herbivorous fed mainly on algae 36-46%, diatoms 26% and copepods 17.5% (Hussain, *et al.* 2006). The mullet ranked third in the Euphrates and Tigris fisheries and was dominated the fish community in many Iraqi waters; Habbaniya Lake and Al-Qadisiya reservoir (Al-Rudainy, *et al*. 1999, 2001), Habbaniya, Tharthar and Razzazah Lakes (Epler, *et al*. 2001), Chybaesh marsh (Hussain, *et al.* 2006) and East Hammar marsh (Mohamed, *et al.* 2007). By contrast, in Swab river, which is the southern part of Huwaza marsh, the cyprinids species, B*. sharpeyi, A. vorax, B. luteus* and the exotic cyprinid common carp *C. carpio* were dominated the fish community.

Perhaps one of the most striking outcomes of this study was the change in species composition of artisanal catches in the present study compare with the previous studies dealing with the production and marketing fish in Basrah fish markets during the 1970s (Khayat, 1978; Sharma, 1980). Sharma (1980) state that the contribution to the landings of major cyprinid fish species, B*. sharpeyi, B. xanthopterus* and *B. luteus* in Basrah markets from October 1975 to June 1977 were 36.4%, 24.1% and 12.6% respectively. He also mentioned that the fish merchants bring freshwater fish to Basrah markets from three different locations i.e. one from Al-Sinafi, another from Madaina and third from Qurna. After exclusion the catfish catches from the present study, the most three dominant species in Tigris and Euphrates fisheries were *C. carassius, L. abu* and *C. carpio,* whereas, in Swab fishery were *B. sharpeyi, A. vorax* and *B. luteus.* However, *B. xanthopterous* and *B. grypus* formed very low contributions from the three fisheries.

Several factors behind the shift in the species composition in Tigris and Euphrates fisheries during the past 20 years. First, one of the most important impacts, the construction of more than thirty large dams, particularly those recently built in the headwater region of Turkey, the Southeast Anatolia Project (GAP), is that it has substantially reduced the water supply and effectively eliminated the flood pulses that sustained wetland ecosystems in the lower Tigris-Euphrates basin (UNEP, 2001). Prior to the end of the twentieth century the discharge rate of the Tigris ranged from 3000 $m^3.sec^{-1}$ to less than 500 $m^3.sec^{-1}$ while that of the Euphrates ranged from 2000 $m^3.sec^{-1}$ to less than 250 $m^3.sec^{-1}$ (Plaziat and Younis, 2005). In addition, there has been a marked degradation of water quality in the mainstreams of the Tigris and Euphrates, due to saline return drainage from irrigation schemes and dam retention of sediment and nutrients (UNEP, 2001). Second, other contaminants, including industrial and agricultural chemicals as well as urban effluent, have further aggravated the situation (Hussein, 2001). Third, the construction of drainage systems by diversions of major rivers surrounding the marsh areas, and drainage processes of southern marshlands in the 1990s (Richardson and Hussain, 2006). These factors may be related to such substantially decrease in the fish abundance in the lower Tigris-Euphrates basin, especially cyprinids species, *B. xanthopetrus*, *B. grypus*, *B. sharpeyi* and *B. luteus* due to highly sensitive for environmental changes (Al-Daham, 2001; Hussain, *et al.* 2006) or competition with the introduce species like common carp (Al-Kanaani, 1989; Hussain and Ali, 2006) and recently with crucian carp (Hussain, *et al.* 2006).

In contrast, the cyprinids species; *B. sharpeyi, A. vorax, B. luteus* were dominated the fishery of Swab river which is part from Huwaza marsh. The marsh lies to the east of the Tigris River, straddling the Iran-Iraq border, where it is fed primarily by the Karkeh River. Only about a third of the Hawizeh marsh remained natural marsh system in Iraq (approximately 1025 km2), where the dominant flora and fauna still existed and this represented the only remaining portion of the Mesopotamian marshlands (Richardson and Hussain, 2006).

Till recently, the fisheries in the region suffered from lack of efficient modern techniques in fishing, storage, processing and marketing hereof. The fish are usually taken to the nearest wholesale market either for sale there or for local consumption or for transport to other wholesale markets in open “pick-ups”. They are kept on a platform together with some large chunks of ice and covered either by straw mats or by canvas.

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حالة المصائد الحرفية في الأجزاء السفلى لانهار وادي الرافدين شمال البصرة، العراق

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الخلاصة

وصفت المصائد الحرفية في الأجزاء السفلى لانهار الفرات ودجلة والسويب في ملتقى القرنة، شمال محافظة البصرة، العراق خلال الفترة من كانون الثاني إلى كانون الأول 2005. جمعت بيانات عن جهد الصيد، عدد ونوع أدوات الصيد، كمية الصيد وتركيبة أنواع الأسماك من خلال المقابلات والاستبيان للصيادين الحرفيين في الثلاث مواقع لإنزال الأسماك وكذلك تم قياس أطوال الأسماك الاقتصادية.

سجل 23 نوع من الأسماك في مصائد دجلة و22 نوع في مصائد الفرات، 7 منها أنواع بحرية، تعود إلى 12 عائلة، أضافه إلى الروبيان. تم الحصول على 15 نوع من الأسماك فقط في مصائد السويب، حيث لم تتواجد الأسماك البحرية وبعض الأسماك النهرية، إضافة إلى الروبيان. سادت اسماك الجري *Silurus triostegus* المصائد الثلاث بنسب 69.65 و53.02 و44.76% على التوالي. جاءت اسماك الكراسين *Carassius carassius* بالمرتبة الثانية في مصائد دجلة والفرات وشكلت 11.02 و10.2% على التوالي، وفي مصائد السويب، شكلت اسماك البني *Barbus sharpeyi* 24.51%. احتلت اسماك الخشني *Liza abu* المرتبة الثالثة في مصائد دجلة والفرات وشكلت 6.26 و8.08 % على التوالي، واسماك الشلك *Aspius vorax* في مصائد السويب وبنسبة 10.39%. بلغت نسبة الروبيان 13.7% من مصائد الفرات و0.5% من مصائد دجلة.

بلغ معدل كمية الصيد لوحدة الجهد لشباك الكرفة 19.8 كغم/ساعة/100م وللشباك الخيشومية 2.42 كغم/ساعة/100م في مصائد دجلة و21.5 كغم/ساعة/100م لشباك الكرفة في مصائد الفرات و1.41 كغم/ساعة/100م للشباك الخيشومية في مصائد السويب. كانت أحجام الأسماك المهمة اقتصاديا تختلف بين المصائد الثلاث.