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-Review-

Status of quantity, price and value of fishery products in Turkey between 2006-2010

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Abstract: The present study shows that Turkish fishery products comprise commercially important 65 sea fish, 28 other sea products (i.e., crustaceans, mollusks), 20 freshwater products and 5 aquacultured species (trout, carp, sea bream, sea bass and mussel). During the 2006-2010 period, the quantity of fishery products in Turkey varied from a low of 623 191 tons in 2009 to high of 772 323 tons in 2007. During this period the value of fishery products in Turkey varied from a low of 1 159 895 000 USD in 2009 to high of 1 726 241 000 USD in 2006. There was an increase in the contribution of aquacultured products to total fishery production. However, the contribution of freshwater products to total fishery production was relatively small and there was a decrease in the contribution of freshwater products to total fishery production in recent years. It can be concluded that Turkey produces important values of fishery products and has a great potential for the development of these products, but this potential has not been employed competently. In order to increase fish production, it is necessary to plan and implement a strategy by the Authorities to resolve the problems of fisheries in Turkey.

Key words: Turkey, fishery, aquaculture, production

Introduction

Turkey is surrounded by four seas on three sides and it possesses important potentials for fishery products production due to lakes, streams and dams it has. For example, Turkey has 8 333 km coastline and approximately 25 000 ha production field that is suitable for seafood production. Turkey also has approximately 500 fish species in the Mediterranean Sea, 300 fish species in the Aegean Sea, 247 fish species in the Black Sea and 200 fish species in the Marmara Sea (Duman *et al.,* 2007).

Therefore, the positive location of Turkey gives rise to a major benefit in having a large range of aquatic species and provides plenty of resources to carry out fisheries work.

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Consequently, fishery is one of the most significant parts of agriculture industry in Turkey. It has considerable contributions to employment and gross national product; thus, it has a vital importance in Turkish economy due to its role in domestic and foreign markets. It has also an essential importance in contributing beneficial nutrition for human beings (Yılmaz *et al.*, 2008).

After 1967, fishery statistics are being compiled by two types by the Turkish Statistical Institute (TurkStat or TUIK) in Turkey: "sea fish and other sea products statistics" and "freshwater products and aquaculture production statistics". To compile sea fish and other sea products statistics complete enumeration method (by conducting individual interviews with all fishermen at their addressees) for the years, 1967 – 1969; sampling surveys method for the years 1970 and 1971; and complete enumeration method for the years, 1972 and 1980 were used.

However, large scale fishermen are included by complete enumeration method and small scale fishermen have been included by sampling method since 1980. Annual surveys of sea products are carried out in January and February in the related year. In the application, information of the previous year is obtained by the method of face to face in coastal band of 28 provinces.

To compile freshwater products and aquaculture production statistics questionnaire forms in quarterly periods each year are sent to Province Directorates of Ministry of Food, Agriculture and Livestock. These forms compiled by staff of Province Directorates by interviewing with fishery cooperatives, fishery producers and aquaculture enterprising are sent back to the Ministry of Food, Agriculture and Livestock. After compiling by provinces and species questionnaire forms are sent to TurkStat by the Ministry of Food, Agriculture and Livestock (Anonymous, 2010).

Status of quantity, price and value of fishery products in Turkey

A fluctuation was observed in the quantity and value of fishery products in Turkey between 2006-2010. In 2006, total fishery production of Turkey was 661 991 tons with the value of 1 726 241 000 USD. In that year, 533 048 tons of production was obtained from capture fisheries with the value of 1 191 031 000 USD and 128 943 tons of production was obtained from aquaculture production with the value of 535 210 000 USD. It is significant to make a point that total fishery production of Turkey reached to 772 323 tons with the value of 1 659 477 000 USD in 2007 and decreased to 646 310 tons with the value of 1 507 119 000 USD in 2008. A relatively small decrease (to 623 191 tons with the value of 1 159 895 000 USD) occurred in the quantity and value of total fishery products of the country in 2009. However, in 2010 the quantity of total fishery

products reached to 653 080 tons with the value of 1 427 794 000 USD (Anonymous, 2010).

The distribution of quantity and value of sea fish, other sea products, freshwater products aquacultured species and combined amount of fishery products between 2006-2010 in Turkey were given in Figures 1 and 2, respectively.

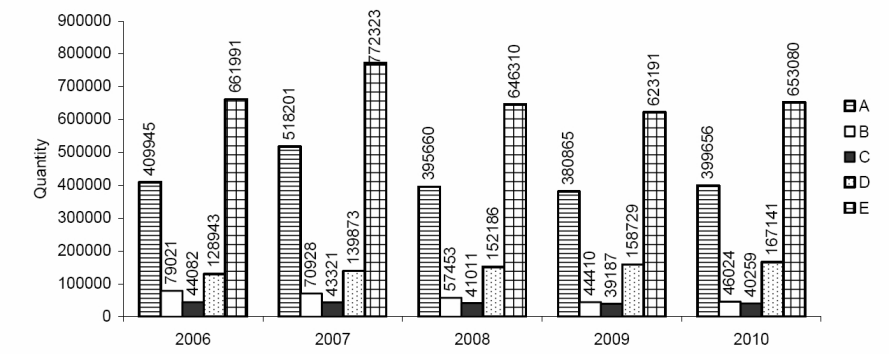

Fig. 1: The distribution of quantity (ton) of sea fish (A), other sea products (B), freshwater products (C), aquacultured species (D) and combined amount of fishery products (E) between 2006-2010 in Turkey.

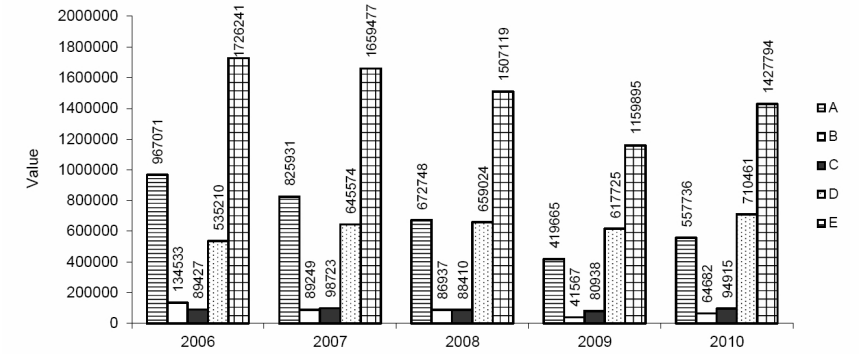

Fig. 2 The distribution of value (X1000 USD) of sea fish (A), other sea products (B), freshwater products (C), aquacultured species (D) and combined amount of fishery products (E) between 2006-2010 in Turkey.

Sea fish catch (Tab. 1) is the most important components in the fishery products of Turkey. For example, it constituted 61.2% of the total fishery products in 2010. It was 61.9% in 2006, 67% in 2007, 61.2% in 2008 and 61.1% in 2009. In addition, the value of sea fish catch contained 39% of the total fishery product's value in 2010. It was 56% in 2006,

Tab. 1: Quantity (ton), price (USD/kg) and value (X1000 USD) of sea fish between 2006-2010 in Turkey (Anonymous (2006-2010) (Rate of Exchange: US $ 1.00 = TL 1.43 in 2006, TL 1.30 in 2007, TL 1.29 in 2008, TL 1.54 in 2009 and TL 1.50 in 2010, URL 1).

	Quantity	Price	Value	Quantity	Price	Value	Quantity	Price	Value
Year	**Total**			**Leer fish**			**Greater Amberjack**		
2006	409945		967071	606	6.29	3812	53	5.59	296
2007	518201		825931	549	6.92	3799	57	5.76	328
2008	395660		672748	513	6.97	3576	75	5.81	436
2009	380865		419665	1167	4.64	5415	96	4.64	445
2010	399656		557736	883	6.53	5766	53	5.48	290
Year	**Albacore**			**Hake-Eurepean hake**			**Red mullet**		
2006	73	5.59	408	3460	6.99	24185	2617	9.09	23789
2007	852	4.38	3732	3337	7.69	25662	2091	10.0	20910
2008	208	3.1	645	1252	6.97	8726	1925	10	19250
2009	631	2.69	1697	1557	4.16	6477	2461	6.59	16218
2010	402	2.6	1045	1256	5.34	6707	2351	11.04	25955
Year	**Goldon banded**			**Sprat**			**Sea bream**		
2006	-	-	-	7311	0.34	2486	867	9.44	8184
2007	299	8.46	2530	11921	0.38	4530	759	10.38	7878
2008	110	8.52	937	39303	0.31	12184	1526	9.3	14192
2009	317	9.71	3078	53385	0.11	5872	1186	5.54	6570
2010	446	10.5	4683	57023	0.26	14826	1164	8.77	10208
Year	**Common sole**			**John dory**			**Common sea bream**		
2006	937	9.44	8845	95	6.99	664	168	13.98	2349
2007	810	10.76	8716	101	7.69	777	88	16.15	1421
2008	748	10.4	7779	72	7.75	558	176	16.27	2864
2009	882	8.45	7453	104	8.21	854	177	11.77	2083
2010	1062	10.57	11225	90	8.71	784	132	19.72	2603
Year	**Shore rockling**			**Meagre**			**Sand smelt**		
2006	17	3.84	65	20	6.99	140	993	2.79	2770
2007	23	3.84	88	60	6.92	415	999	3.07	3067
2008	11	3.87	43	56	6.97	390	1142	4.41	5036
2009	21	2.14	45	23	4.57	105	1721	2.78	4784
2010	9	3.1	28	101	5.87	593	1442	3.32	4787

Tab. 1: continued

	Quantity	Price	Value	Quantity	Price	Value	Quantity	Price	Value
Year	**Anchovy**			**Anchovy-Fish meal-oil factories**			**Painted comber**		
2006	210000	1.92	403200	60000	0.08	4800	90	4.54	409
2007	215000	1.34	288100	170000	0.09	15300	103	5.0	515
2008	155933	1.39	216747	95742	0.11	10532	229	4.65	1065
2009	114488	0.70	80142	90211	0.12	10825	51	1.37	70
2010	115892	1.02	118210	113131	0.20	22626	23	3.1	71
Year	**Eurepean barracuda**			**Black skorpion fish**			**Annular bream**		
2006	234	3.49	817	326	3.84	1252	552	2.62	1446
2007	417	3.07	1280	202	4.23	854	336	2.69	904
2008	218	3.1	676	362	4.45	1611	298	2.71	808
2009	178	3.18	566	339	2.97	1007	427	1.58	675
2010	459	3.76	1726	254	4.48	1138	745	3.06	2280
Year	**Horse mackerel**			**Scad**			**Brown mearge**		
2006	14127	2.97	41957	11800	3.49	41182	54	5.59	302
2007	22991	2.69	61846	9030	3.46	31244	73	6.15	449
2008	22134	2.32	51351	10043	2.71	27217	41	6.2	254
2009	20373	1.59	32393	7895	1.77	13974	32	2.91	93
2010	14392	2.42	34829	6055	2.32	14048	20	7.7	154
Year	**Picarel**			**Turbot**			**Two banded bream**		
2006	1321	2.62	3461	807	15.73	12694	185	8.39	1552
2007	1044	2.30	2401	769	17.30	13304	189	8.46	1599
2008	742	1.55	1150	528	18.6	9821	263	7.75	2038
2009	1116	1.05	1172	383	17.11	6553	282	6.07	1712
2010	1243	1.64	2039	295	20.07	5921	202	7.22	1458
Year	**Gobies**			**Grey mullet**			**Angel shark**		
2006	113	3.49	394	8915	3.49	31113	51	2.79	142
2007	136	4.23	575	8291	3.07	25453	15	3.46	52
2008	164	4.65	763	3345	3.1	10370	34	3.1	105
2009	124	8.56	1061	2987	2.44	7288	20	3.09	62
2010	130	10.96	1425	3119	3	9357	19	5.08	97
Year	**Sword fish**			**Red gurnard**			**Chup mackerel**		
2006	410	9.79	4014	560	5.59	3130	2760	3.14	8666
2007	423	11.53	4877	339	7.69	2607	2263	3.07	6947
2008	386	9.3	3590	362	7.75	2806	1818	3.1	5636
2009	301	8.97	2700	362	7.75	2806	2952	2.03	5993
2010	334	8.87	2963	316	9.55	3018	2004	3.14	6293

Tab. 1: continued

	Quantity	Price	Value	Quantity	Price	Value	Quantity	Price	Value
Year	**Tope shark**			**Bogue**			**Waker**		
2006	668	2.27	1516	3601	2.44	8786	384	13.98	5368
2007	496	2.3	1141	3851	2.69	10359	345	16.92	5837
2008	413	2.32	958	2580	2.32	5986	313	20.93	6551
2009	618	1.12	692	2919	1.74	5079	566	16.57	9379
2010	285	2.18	621	2761	1.89	5218	672	18.62	12513
Year	**Sea bass**			**Small-Scalled**			**Blue fish**		
2006	490	10.48	5135	60	7.69	461	8399	8.04	67528
2007	421	11.53	4854	37	9.23	342	6858	10.76	73792
2008	751	11.62	8727	35	10.07	352	4048	12.79	51774
2009	615	5.31	3266	107	7.09	759	5999	6.96	41753
2010	577	10.02	5782	80	9.77	782	4744	7.2	34157
Year	**Saddled sea bream**			**Striped bream**			**Whiting**		
2006	332	5.94	1972	1021	8.39	8566	9112	3.49	31801
2007	169	6.15	1039	689	9.23	6359	12940	3.07	39726
2008	128	6.20	794	634	9.88	6264	12231	2.79	34124
2009	241	3.57	860	724	5.9	4272	11146	1.57	17499
2010	243	5.35	1300	742	10.10	7494	13558	2.94	39861
Year	**Striped sea bream**			**Corb**			**Dusky grouper**		
2006	283	5.94	1681	29	8.04	233	97	11.88	1152
2007	249	5.76	1434	19	9.23	175	95	12.30	1169
2008	349	5.81	2028	22	9.30	205	25	14.34	359
2009	390	3.48	1357	24	6.83	164	83	11.31	939
2010	281	5.94	1669	41	9.15	375	63	14.78	931
Year	**Blue fin tuna**			**Little tunny**			**Atlantic bonito**		
2006	806	5.59	4506	1230	3.14	3862	29690	3.49	103618
2007	918	6.15	5646	785	2.69	2112	5965	5.76	34358
2008	887	5.42	4808	1072	2.71	2905	6448	6.20	39978
2009	1210	3.26	3945	1309	1.5	1964	7036	3.99	28074
2010	423	3.42	1447	1046	1.87	1956	9401	4.67	43903
Year	**Pilchard**			**Black sea bream**			**Sauppe**		
2006	15586	2.79	43485	320	9.79	3133	599	3.14	1881
2007	20941	2.30	48164	71	10.76	762	321	3.46	1111
2008	17531	2.32	40672	30	12.01	360	190	3.1	589
2009	30091	1.23	37012	30	10.99	330	348	1.54	536
2010	27639	1.16	32061	38	12.23	465	305	3	915

Tab. 1: continued

	Quantity	Price	Value	Quantity	Price	Value	Quantity	Price	Value
Year		**Dentex**			**Striped red**			**Twaite shad**	
2006	242	15.73	3807	1256	6.99	8779	1738	3.49	6066
2007	106	19.23	2038	1732	7.69	13319	2252	2.69	6058
2008	146	18.60	2716	1978	8.52	16853	2289	2.32	5310
2009	165	16.24	2680	2818	4.74	13357	3070	1.39	4267
2010	170	20.31	3453	4455	5.73	25527	2574	1.26	3243
Year		**Frigate mackerel**			**Blue spatled bream**			**Mackerel**	
2006	1031	2.79	2876	80	11.88	950	783	4.89	3829
2007	993	3.46	3436	82	15.38	1261	1076	5.76	6198
2008	836	3.10	2592	119	13.95	1660	516	6.20	3199
2009	1873	1.15	2154	86	13.96	1201	505	4.59	2318
2010	1081	1.83	1978	115	17.46	2008	226	5.96	1347
Year		**Thornback ray**			**Gar fish**			**Saury**	
2006	813	2.09	1699	375	3.49	1309	289	3.84	1110
2007	974	2.30	2240	400	4.07	1628	409	4.15	1697
2008	591	2.32	1371	335	3.87	1296	348	4.65	1618
2009	707	0.81	573	346	3.09	1069	487	3.94	1919
2010	668	0.87	581	661	3.54	2340	565	5.24	2961
Year		**Angler fish**			**Trigla lineata**			**European coger**	
2006	-	-	-	-	-	-	-	-	-
2007	204	5	1020	292	6.92	2021	8	3.84	31
2008	360	4.65	1674	24	6.97	167	77	3.10	239
2009	317	3.97	1258	47	6.4	301	3	4.44	13
2010	219	4.96	1086	92	3.65	336	8	5.02	40
Year		**Piper**			**Large eye-dentex**			**Flounder**	
2006	-	-	-	-	-	-	-	-	-
2007	24	3.07	74	97	6.15	597	41	10.76	441
2008	14	2.71	38	143	6.58	941	100	11.24	1124
2009	12	3.66	44	98	4.53	444	156	4.18	652
2010	14	5.45	76	91	6.72	612	104	10.40	1082
Year		**Sharp snout sea bream**			**Other**				
2006	-	-	-	1109	3.10	3438			
2007	20	7.15	143	754	4.23	3189			
2008	17	6.97	118	321	3.87	1242			
2009	26	5.01	130	486	1.95	948			
2010	21	8.39	176	646	3.54	2287			

49.8% in 2007, 44.6% in 2008 and 36.1% in 2009.

The bulk of sea fish catch (63.9%) is obtained from the East Black Sea. It is followed by the West Black Sea (12%), the Marmara Sea (9.1%), the Aegean Sea (8.8%) and the Mediterranean Sea (6.1%) (Anonymous, 2006-2010).

After sea fish catch, production from aquaculture (Tab. 2) takes the second place in the fishery products of Turkey. In recent years a fast increase was observed in the quantity and total value of aquacultured species. For example, the quantity of aquaculture contained 25.6% of the total fishery products in 2010. It was 19.5% in 2006, 18.1% in 2007, 23.5% in 2008 and 25.5% in 2009. In addition, the value of aquaculture contained 49.8% of the total fishery product's value in 2010. It was 31.1% in 2006, 38.9% in 2007, 43.7% in 2008 and 53.2% in 2009. On the other hand, the aquaculture production of sea products enlarged more rapidly than the aquaculture production of freshwater products.

Tab. 2: Quantity (ton), price (USD/kg) and value (X1000 USD) of aquacultured species between 2006-2010 in Turkey

	Quantity	Price	Value	Quantity	Price	Value	Quantity	Price	Value
Year	**Total**			**Inland water**					
				Trout			**Carp**		
2006	128943		535210	56026	2.97	166397	668	2.79	1864
2007	139873		645574	58433	3.46	202178	600	3.26	1956
2008	152186		659024	65928	3.10	204377	629	3.50	2202
2009	158729		617725	75657	2.75	208057	591	3.24	1915
2010	167141		710461	78165	2.86	223552	403	3.46	1394
Year	**Marine water**								
	Trout			**Sea bream**			**Sea bass**		
2006	1633	3.84	6271	28463	5.41	153985	38408	5.24	201258
2007	2740	4.30	11782	33500	5.46	182910	41900	5.61	235059
2008	2721	3.87	10530	31670	4.26	134914	49270	5.81	286259
2009	5229	3.40	17779	28362	4.54	128764	46554	5.03	234167
2010	7079	3.53	24989	28157	5.8	163311	50796	5.33	270743
Year	**Mussel**			**Other**					
2006	1545	1.04	1607	2200	1.74	3828			
2007	1100	1.23	1353	1600	6.46	10336			
2008	196	0.77	151	1772	11.62	20591			
2009	89	0.64	57	2247	12.01	26986			
2010	340	0.63	214	2201	11.93	26258			

Rainbow trout, sea bass and sea bream are the main cultured species. Sea trout and mussels are also cultured in smaller amounts. In 2010, trout culture carried out in inland waters had the highest production rate in aquaculture with 46.8%. It was followed by sea bass with 30.4% and sea bream with 16.8%.

On the other hand, the contribution of freshwater products (Tab. 3) and other sea products (Tab. 4) to total fishery production are fairly low. It was 6.2% for freshwater products and 7% for other sea products in 2010.

Tab. 3: Quantity (ton), price (USD/kg) and value (X1000 USD) of freshwater fish between 2006-2010 in Turkey

	Quantity	Price	Value	Quantity	Price	Value	Quantity	Price	Value
Year	**Total**			**Chub**			**Trout**		
2006	44082		89427	85	2.09	178	374	4.19	1567
2007	43321		98723	82	3.07	252	550	4.23	2327
2008	41011		88410	71	2.71	192	630	3.87	2438
2009	39187		80938	63	2.96	186	557	3.57	1988
2010	40259		94915	92	3.23	297	738	3.76	2775
Year	**Bream**			**Van Shah Kuli**			**Sand smellt**		
2006	259	1.74	451	49	1.04	51	6677	1.39	9281
2007	225	1.92	432	45	1.15	52	6540	1.53	10006
2008	170	1.55	264	47	1.16	55	6630	1.55	10277
2009	148	1.94	287	42	0.97	41	6184	1.62	10018
2010	151	2	302	37	1.06	39	4438	1.66	7367
Year	**Tarek**			**Tench**			**Catfish**		
2006	11978	1.39	16649	1953	1.39	2715	478	2.09	999
2007	11623	1.53	17783	1884	1.92	3617	486	2.30	1118
2008	11758	1.55	18225	1632	1.93	3150	339	2.71	919
2009	10685	1.62	17310	1482	1.62	2401	310	2.27	704
2010	11382	1.76	20032	1162	2	2324	341	2.46	839
Year	**Bighand goby**			**Mullet**			**Rudd**		
2006	101	2.09	211	948	2.44	2313	285	1.78	507
2007	70	2.69	188	927	2.69	2494	258	1.92	495
2008	57	3.10	177	1023	2.71	2772	261	1.93	504
2009	51	2.59	132	970	2.43	2357	239	1.29	308
2010	47	3	141	1512	2.53	3825	251	1.33	334

Tab. 3: continued

	Quantity	Price	Value	Quantity	Price	Value	Quantity	Price	Value
Year		**Frog**			**Pike perch**			**Snail**	
2006	833	2.79	2324	1656	3.84	6359	1462	1.39	2032
2007	895	3.07	2748	1586	4.23	6709	1397	1.53	2137
2008	668	2.71	1810	1346	3.87	5209	1007	1.55	1561
2009	622	2.59	1611	1234	3.73	4601	2227	1.29	2873
2010	780	3.2	2496	1476	4.33	6391	1991	1.33	2648
Year		**Common Carp**			**Transcaucasian barb**			**Wels**	
2006	12116	2.44	29563	967	1.39	1344	1245	4.54	5652
2007	12286	2.69	33049	985	1.53	1507	1293	5	6465
2008	11625	2.32	26970	993	1.55	1539	1275	5.03	6413
2009	10964	2.27	24888	891	1.62	1443	1193	4.22	5034
2010	12058	2.66	32074	962	1.40	1347	1193	4.22	5034
Year		**Eel**			**Pike**			**Crayfish**	
2006	162	5.59	906	279	3.84	1071	797	4.19	3339
2007	179	6.15	1101	242	4.23	1024	816	4.61	3762
2008	171	6.58	1125	213	4.65	990	783	4.26	3336
2009	158	5.84	923	197	4.22	831	734	3.57	2620
2010	182	6.33	1152	228	4.66	1062	1030	3.50	3605

Year	**Other**		
2006	1378	1.39	1915
2007	952	1.53	1457
2008	312	1.55	484
2009	236	1.62	382
2010	223	2	446

Anchovy, sprat, pilchard and horse mackerel have the highest rate of catch of sea fish. For example, anchovy has the highest catch of sea fish with 229 023 t in 2010. It had 57.3% of sea fish catch. After anchovy, sprat with 14.3%, pilchard with 6.9 % and then horse mackerel, whiting, atlantic bonito, scad had the highest rate of catch of sea fish. Other fish species contained only 10.7% in part of total (Anonymous, 2010).

As regarding other sea products by types in the same year, striped venus had the highest ratio of catch of other sea products with 58.5%. It was followed by sea snail with 18.3%, cuttle fish with 3.5%, deepwater rose prawn with 3.1%, giant gamba prawn with 3%, caramote prawn with 2.1% and mediterranean mussel with 1.6%. The part of remaining in total of

other sea products was about 10%.

There has been a decrease in the quantity and value of freshwater products in recent years. The quantity of freshwater products in 2006 was 44 082 tons. It was reduced to 39 187 tons in 2009 and to 40 259 tons in 2010. The value of freshwater products in 2006 was 89 427 000 USD. Similarly, it was reduced to 80 938 000 USD in 2009, but it reached to 94 915 000 in 2010 because of high exchange rate. When the distribution of freshwater products is considered by types in 2010, it is found that

Tab. 4 Quantity (ton), price (USD/kg) and value (X1000 USD) of other sea products between 2006-2010 in Turkey

	Quantity	Price	Value	Quantity	Price	Value	Quantity	Price	Value
Year	**Total**			**Octopus**			**Carpet shell**		
2006	79021		134533	1114	4.54	5058	1266	2.09	2646
2007	70928		89249	664	4.61	3061	1334	2.30	3068
2008	57453		86937	681	4.65	3167	1255	3.87	4857
2009	44410		41567	649	3.91	2538	68	5.22	355
2010	46024		64682	509	4.71	2397	56	4.46	250
Year	**Spider crab**			**Striped venus**			**Mediterranean mussel**		
2006	5	2.44	12	48344	1.22	58980	-	-	-
2007	-	-	-	47215	0.76	35883	1466	1.15	1686
2008	-	-	-	36896	0.77	28410	342	0.77	263
2009	-	-	-	24574	0.09	2212	1660	0.53	880
2010				26931	0.2	5386	735	0.47	345
Year	**Bearded horse mussel**			**Mussels**			**Warty venus**		
2006	-	-	-	9234	1.04	9603	-	-	-
2007	27	1.73	47	-	-	-	73	3.07	224
2008	-	-	-	-	-	-	1	2.32	2.32
2009	4601	0.12	552	-	-	-	11	3.24	36
2010	246	0.5	123	-	-	-	8	3	24
Year	**Spiny lobster**			**Norway lobster**			**Sea snail**		
2006	42	17.48	734	-	-	-	11613	0.69	8013
2007	14	23	322	7	5	35	13791	0.76	10481
2008	20	23.25	465	35	6.58	230	11442	0.77	8810
2009	26	20.59	535	43	4.19	180	6085	0.51	3103
2010	26	27.64	719	19	3.77	72	8437	0.52	4387

Tab. 4: continued

	Quantity	Price	Value	Quantity	Price	Value	Quantity	Price	Value
Year	**Common lobster**			**Oyster**			**Squids**		
2006	18	20.97	377	31	3.84	119	972	6.29	6114
2007	8	26.92	215	31	3.07	95	844	6.92	5840
2008	15	27.13	407	13	3.10	40	537	8.13	4366
2009	8	23.42	187	-	-	-	576	6.42	3698
2010	7	28	196	1	3.16	3	528	7.98	4213
Year	**Green tiger prawn**			**Caramote prawn**			**Giant gamba prawn**		
2006	-	-	-	-	-	-	-	-	-
2007	275	15.38	4230	372	11.53	4289	150	6.15	923
2008	405	20.54	8319	449	9.68	4346	754	5.81	4381
2009	531	14.72	7816	442	7.22	3191	1239	4.16	5154
2010	562	16	8992	951	9.18	8730	1362	5.61	7641
Year	**Deepwater -rose prawn**			**Speckled shrimp**			**Cuttle fish**		
2006	-	-	-	-	-	-	1199	3.49	4185
2007	2761	4.61	12728	359	4.61	1655	1288	2.69	3465
2008	2623	4.65	12197	437	5.42	2369	1502	2.71	4070
2009	2073	3.48	7214	329	4.29	1411	1258	1.80	2264
2010	1413	5.04	7122	417	4.80	2002	1597	2.58	4120
Year	**Common shore crab**			**Great Scallop**			**Blue crab**		
2006	36	3.49	126	30	3.14	94	-	-	-
2007	4	2.69	11	-	-	-	22	6.15	135
2008	8	2.32	19	-	-	-	17	6.20	105
2009	7	4.20	29	-	-	-	77	0.36	28
2010	3	4.96	15	4	2.66	11	46	2.02	93
Year	**Crab**			**Edible crab**			**Swimming crabs**		
2006	49	2.79	137	59	3.49	206	35	2.79	98
2007	-	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-	-
2009	-	-	-	-	-	-	-	-	-
2010	-	-	-	-	-	-	-	-	-
Year	**Common jelly fish**			**Prawn**			**Other**		
2006	1017	-	-	3856	9.79	37750	101	2.79	281
2007	-	-	-	-	-	-	223	3.84	856
2008	-	-	-	-	-	-	21	5.42	114
2009	-	-	-	-	-	-	153	1.20	184
2010	-	-	-	-	-	-	2166	3.62	7841

common carp had the highest production rate of freshwater product catch with 30%. Van Shah Kuli followed it with 28.3%. Van Shah Kuli was fallowed by sand smelt (11%), snail (5.5%), mullet (4.5%), perch (4.5%) and wels (4%) followed it. The bulk of freshwater product catch is obtained from the East Anatolia Region.

During 2006-2010 dentex, turbot and waker were the most expensive (kg/USD) sea fish (Tab. 1). That of other sea products was lobsters, prawns and squids (Tab. 4). Eels, wels and pikes were the most expensive freshwater products in Turkey (Tab. 3).

Discussion and conclusion

It appears that Turkey produces important quantity of freshwater and sea water fishery products. For example, the total production of fishery products was 653 080 tons in 2010. In 2008, Turkey took the 30th place in the world fish capture production with 646 310 tons (Anonymous, 2008). It was in the 36th place in 2005 with 544 773 (Anonymous, 2005).

Although Turkey has reach freshwater potantials the contribution of freshwater catch to total fishery production is considerably low. For example, in 2010 the quantity of freshwater products was nearly 10% of the quantity sea products. However, the catch from freshwaters is remarkable especially for rural areas in terms of food supply and employment.

The production of fishery products from sea water is the most important portion of the total fishery production of Turkey. The anchovy is the most abundant species, However, a fluctuation in anchovy catch causes a fluctuation in total fishery production of Turkey. For example, a steady raise was observed in the marine fishery in Turkey until 1988 when the total catch inreased to 676 000 tons. Nevertheless, a reduction to 300 000 tons was observed in the marine fishery as a result of weakness in anchovy fisheries in the late 1980s. According to Rad (2002) the amount of marine production has steadily enhanced again and reached the level close to that observed just before the crisis in 1988 from 1992 to 1995. After 1995, there was a fluctuation in the marine fishery of Turkey. The main reason for this was that the volatility in anchovy catches. It was considered that overfishing, water pollution and increased eutrophication caused fluctuations in anchovy catches (Çelik *et al.,* 2012).

On the other hand, in recent years there was a decrease in the contribution of fishery products obtained from marine fishery to total fishery production. One of the reasons for this is that there has been a fall in the number of the most abundance caught sea fish species in Turkey. Nearly twenty years ago, about 20-25 fish species were caught commonly from the seas in Turkey, but in recent years this number diminished to 6-7 species. The diminished species are mainly picarel, twaite shad and sturgeon (Harlıoğlu, 2011a). Therefore, after 2008 the contribution of value obtained from

marine landings to total fishery product value was lower than the value obtained from aquaculture. In 2009 and 2010, the value of marine landings (including sea fish and other marine landings) was 461 232 000 USD and 622 418 000 USD. Those of aquaculture were 617 725 000 USD and 710 461 000 USD, respectively.

In recent years, aquaculture forms an increasingly important component of Turkish fish product industry. It is also considered an important source of employment. In addition, aquaculture sector in Turkey is a relatively recent industry and has rapidly been grown to have potential for both domestic fish supplies and exports earnings (Yılmaz *et al.,* 2008; Yılmaz and Özvarol, 2009). Total aquaculture production for 1986 and 2010 was 3 075 tons and 167 141 tons, respectively. In the same way, there has been an increase in the fishery exports and imports of Turkey in recent years. It was more than US$ 500 million in 2008, but that of 2004 was just over US$ 233 million. In addition, although Turkey has great potentials to develop its fisheries production with over 8 300 km of coastline, 25 million ha of useable sea, more than 350 natural and artificial lakes, 75 ponds and 33 rivers (Yücel-Gier *et al.,* 2009), fisheries production level is still far away from the production targets and fisheries sector is not an important part of the economy at present. Only 65 sea fish, 28 other sea products (i.e., crustaceans, mollusks) and 20 freshwater products are commercially caught, and 5 fishery products are cultured in Turkey.

Moreover, at present aquaculture sector in Turkey has some important problems from investment for reproduction to marketing, for example; intense bureaucracy in governmental procedures, conflicts between fish farms and environmental protection, tourism, recreation, urbanization, archaeology and navigation, overfishing and pollution, low technical level of fishery sector in Turkey in comparison to the European Union, inadequate cooling chain (deep freezing) at the stage of marketing (Harlıoğlu, 2011b).

On the other hand, per capita fishery product consumption in Turkey was 8.1 kg in 2006, 8.5 kg in 2007, 7.8 kg in 2008, 7.5 in 2009 and 6.9 kg in 2010, whereas it is 23.3 kg in developed countries and 13.7 kg in developing countries and the world average is 15.9 kg (Akpınar *et al.,* 2009). It seems that while Turkey holds a significant potential for fish production and there has been a steady increase in the fishery product consumption (Aydın *et al.,* 2011), per capita fishery product consumption is significantly lower than developed, developing countries and world average.

In conclusion, Turkish fishery has stagnated at an annual production of around 600,000 tons and depends mainly on small-scale and largely small pelagic species. Therefore, aquaculture has been seen as an alternative source for capture fisheries, potentially relieving the

pressure on the capture fishery sector. On the other hand, wild fish stocks are already under pressure from overfishing, environmental degradation and pollution. Furthermore, although there is a great potential for the development of fishery products in Turkey this potential has not been utilized efficiently. Moreover, fishery sector has still some troubles. In order to improve fish production, it is necessary to plan and implement a strategy by the Authorities to resolve the problems of fisheries in Turkey.

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