

COMPARATIVE ANALYSIS OF FISH FARMING IN AZERBAIJAN AND THE STATE OF CALIFORNIA, USA

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Authors of this report describe peculiarities of fish farming in the water basin of Azerbaijan and the State of California (USA). Authors of the report also offer the description of the natural conditions of lakes and river basins, as well as coastal zones where fish farming is developed in the selected country.

Keywords: fish farming, climatic zone, etesian climate, moderate climate, water resources, international collaboration, biologists, economics, representatives of industry.

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Climatic conditions are quite various in Azerbaijan. Their difference is first of all connected with the location of Azerbaijan on the world map - in the spot where moderate and subtropical climate zones meet and mix. Most of the territories of Azerbaijan Republic belong to subtropical climatic zone, but only north-east of the Great Caucasus range is located in the moderate climatic zone.

The climate in the State of California varies from etesian climate to subarctic climate. A large part of the State is under influence of etesian climate. It's cool, rainy winter months and dry summer months are natural for these lands. Cool California stream flowing by ocean shores frequently brings causes foggy weather to the coastal areas during summer months. Summer months are hotter in inland areas, winter months are cooler there. Northern part of the State is more humid than its southern part. North-West of California has moderate climate.

Location of Azerbaijan and the State of California within the same climatic zone and on the same latitude has led to similar natural environment there.

Many economic fields have been developed in Azerbaijan and California. One of these economic areas is fish farming industry. Fishing trip (fishing)

is the oldest and very popular hobby of millions of people. The largest rivers in Azerbaijan are Aras and Kur, but there are a lot of other rivers and lakes. Sarisu is the only lake where commercial fishing trips are allowed; regional fishing trips were permitted in Minhechaur and Shamkir water reservoirs. Jeyranbatan water reservoir, the closest reservoir to Baku cannot be used for the fishing purposes. It is the source of drinking water for Baku and Sumgait. There are 100 species of fish in Azerbaijan. Most of them are anadromous and half-anadromous. The most valuable anadromous species of fish include salmon, sturgeon, stellate sturgeon and white fish. Aspius, Chalcalburnus and eel fish also are anadromous. Meat and caviar of sturgeon are very valuable products. Basin of Azerbaijan water sources is also inhabited by bream, carp, roach and omul. Fish species such as herring are trolled here. Due to the construction of some hydro-technical plants on the Kur river, regulating flow of river water, pollution of water in Caspian sea lead to the significant reduction in the number of fish species. In order to improve the situation and for fishing purposes (to restore fish resources and to increase the number of fish species) three incubators were built: Kuraghzi,

Alibayramli and Kur experimental sturgeon incubator. Valuable fish species such as sturgeon can mainly be found in the Caspian Sea. Therefore, international collaboration is important in this area. This collaboration would promote protection of fish resources and would improve water ecosystems. It is very important to reach these objectives and to guarantee protection and management of the sturgeon fish. Principles of such development are the following:

- To evaluate and assess sturgeon resources in the Caspian sea;
- Fish reproduction control and management;
- International collaboration aimed at improvement of fish resources and their usage;
- Reproduction and improvement of fish resources in internal water sources;
- Expansion of fish with artificially increased population to the Caspian Sea.

Fish that can be found in Azerbaijan is allocated into several on the basis of some peculiarities:

1. The biggest fish for its size and weight, beluga;
2. The fish most trolled in Azerbaijan, sprat;
3. Exporting meat and caviar from the types of sturgeon-beluga, sturgeon and long nose fish;

Tab. 1

Caspian Sea and inland waters catch, 2000–2010

Fish species	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	(tonnes)										
Bream	55	127	48	50	43	63	66	75	76	72	56
Carp	93	51	10	13	16	17	20	17	16	9	9
Crucian carp	4	17	6	8	7	3	13	10	20	19	12
Roach	8	64	19	26	36	33	32	48	58	39	34
Kutum	-	-	16	31	16	18	20	46	50	41	54
Asp	1	5	1	4	3	2	2	4	4	1	3
Pike	28	25	6	9	10	8	5	3	4	1	-
Mullet	3	55	3	10	14	15	21	62	35	40	62
Catfish	9	8	4	8	8	4	3	4	7	8	4
Sander	5	19	17	35	33	41	39	25	27	27	20
Goby	-	-	-	-	1	2	1	1	-	-	1
Sturgeon	70	76	76	105	89	85	-	67	65	-	2
Trout	-	5	-	-	-	-	-	-	-	-	-
Herring	1	52	24	48	64	60	68	96	108	79	90
Sprat	18 520	10 389	10 950	6 073	8 897	8 637	3 667	2 450	1020	839	708
Vimba	-	-	-	-	1	2	4	7	9	5	6
Shemava	-	-	6	7	8	5	5	10	16	18	14
Other fishes species	-	-	2	8	13	8	10	18	2	4	7
Other sources											
All fish caught by fishers without quota	185	7 712	10 634	16 743	15 357	17 283	17 344	17 534	17 709	15 912	16 000
All fish caught by fishing companies	140	95	78	122	184	114	110	122	144	137	123
Aquaculture production	-	-	-	-	-	-	-	-	39	183	227
Total volume of caught fish	19 122	18 700	21 900	23 300	24 800	26 400	21 430	20 599	19 409	17 434	17 432

Source: State Statistical Committee of the Republic of Azerbaijan (2011).

4. Types of sturgeon species with artificially increased population in Azerbaijan - beluga, karamo, sturgeon and shovel-nosed sturgeon;

5. Places of natural spawning of sturgeons – Kur and Aras rivers;

6. Types of sprats in the Caspian sea – sprat, big-eyed sprat, anchovy sprats;

7. Types of salmon living in Azerbaijani water objects of fishing value;

8. Fishes spending all their life cycle at sea – sprat and herrings;

9. Types of fish that can be found in the main locations of fishing trips (Mingechaur and Shamkir water reservoirs) – bream.

The length of coastline of California is more than 1000 miles from San Diego in the south to Crescent city in the north. From Southern California to San Francisco and from Norman islands to Farallon islands fishing is a very important industry.

There are ocean harvests such as sea elves, Dungeness crabs, salmon, pink shrimps and ground fish in Northern California. Coastline waters of Central California are the source of some types of products: rockfish, squid, sword-fish and albacore tuna. There are mackerel fishes, squids, sardines and mackerels in the ocean from Southern California to Santa Barbara Point Conception in the north. Actually, this “wetfish” covers more than 50% of annual commercial

benefits of the state. Other significant types of fishing products found in southern California are sword-fish, sharks, prickly lobsters, crabs, rockfish and halibut, shrimps and sea elves.

Pacific Fishing Management Council (PFMC)

PFMC was established in 1976 by the federal legislation act known as Magnuson-Stevens Fishery Conservation and Management Act (FCMA). This act was adopted in reply to the increasing concern for unregulated foreign fishing in the waters of USA.

PFMC includes representatives of commercial and regional fishery interests, as well as state and federal officials. Biologists, economics and representatives of industry are serving as consultants. Resolutions made by PFMC should be approved by the US Ministry of Trade.

Classification of fishes in California is the following: Garibaldi fish in the coast of Southern California and Mexico; California salmon trout; rockfish, yellowtail; white sea-bass; calico bass; redbass, golden trout, California sheep-head, lingcod, mackerel, grunion etc.

Main type presented by California Seafood Council is mackerel. California halibut, mackerel, ground-fish, rockfish (usually called Pacific red perch), solar and sand-bass, sardines, white bass, sharks, sword fish and tunes, shellfish

(mollusk), types of crabs, California prickly lobsters, Pacific shrimps, prawn and market squids. Approximately 300 various species of fish and lobsters (mollusks) can be found by the coasts of Alaska and California where fishermen troll fishes every year. California fishermen use different harvesting methods to get profits.

Sacramento is one of the most convenient places to troll fish. Lakes and rivers are usually open here.

Moreover, McCloud, Pit River, Hat Creek, Fall River, Manzanita Lake, Trinity River etc. are fishery regions.

There are the same species of fish in the waters of Azerbaijan and California: white bass, sword-fish, golden trout, trout etc. Our aim is to solve the problems of finding areas having similar climatic conditions in order to transfer valuable species of fish between California and Azerbaijan and analyzing natural conditions for them in each country in our next investigations.

On the final stage all geo-information has been included into the geo-information Data Bank “GEOLAND” using MAPINFO geographical information system. All works are marketed in Scientific and Information Centre “GEOINFORMATICS AND COMPUTER GEOGRAPHY” at the Baku State University (www.ali-nabiyev.narod.ru).



Photo 1. California fly fishing

References:

1. Fauna of Azerbaijan., Assecc mode: en.wikipedia.org/wiki/Fauna_of_Azerbaijan
2. California., [Assecc mode: zapmeta.com/Fish+Farms+In+California]
4. Physical geography of Azerbaijan., M.A. Museyibov. – Baku., 1998

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