

Protocol of the Working group  
of the Commission on Aquatic Bioresources of the Caspian Sea  
on elaborating the main principles and criteria of management of the stocks of Caspian  
bioresources on long term management and conservation  
of aquatic bioresources in the Caspian Sea

November 29 - December 1, 2003

Pourkazemi M. (The Islamic Republic of Iran) was the Chairman of the Working group.  
Baymukanov M.T. (Republic of Kazakhstan) was the Deputy Chairman.

The following Members of the Working group were present:

The Azerbaijan Republic

1. Kuliev Z.M.

The Islamic Republic of Iran

2. Pourkazemi M.
3. Hosseini M.
4. Rezvani S.

The Republic of Kazakhstan

5. Baimukanov M.T.

The Russian Federation

6. Vlasenko A.D.
7. Katunin D.N.
8. Khodorevskaya R.P.
9. Kretova T.S.

Turkmenistan

10. Anisimov V.A.

Experts

of the Russian Federation: Levin A.V., Sedov S.I., Popova A.A., Zykova G.F.  
of the Republic of Kazakhstan: Kim Yu.A., Kamelov A.K.

Agenda issues

1. Discussion and adoption of the agenda.
2. Development of joint principles and criteria of management of the stocks of Caspian bioresources using CITES recommendations
3. Elaboration of the draft Regional program on the basis of presented National programs on conservation and management of aquatic bioresources of the Caspian Sea.
4. Discussion of the draft report.

1. In accordance with the Protocol of the meeting of the Working group on elaborating the main principles and criteria of management of the stocks of Caspian bioresources on long-term management and conservation of bioresources of October 10, 2003, there was presented a package of documents prepared by the Caspian Sea states and submitted to the Secretariat of the Commission.

In the course of discussion of the documents presented, the Working group came to the consensus concerning the elaboration of the agreed document "Regional Program on the Joint Management, Conservation and Sustainable Use of the Bioresources of the Caspian Sea" to submit it to the Secretariat of CITES in compliance with recommendations of the Paris Agreement (SC 45 Doc. 2.2) on the basis of the draft Regional Program developed by the Russian Federation.

2. The general structure of the document was proposed to the parties. It presented all the provisions of the Regional Program approved at the previous meeting of the Working group and recorded in the Protocol as Appendix I.

According to the structure, based on the preamble of the document, the parties came to an agreement in relation to the preface, the general objective of the Regional Program, principles and criteria of management taken from Article 6 and 7 of the Code of Conduct for Responsible Fisheries (FAO, 1995) and terms used in the text of the Regional Program.

3. The parties agreed on the following in relation to the subject-matter of the main part of the program:

a) to combine the first four items of the list of objectives of Appendix I to the Protocol of the meeting of the Working group and present the reviewed materials based on the Interstate Program of Monitoring Investigations on Stock Assessment and Caspian Sea Sturgeon TAC Determination in 2004-2006.

Preparation of this material was assumed by the Russian party.

b) on item 5) "creation of gene bank and collection of live specimens of different sturgeon species". parties agreed to present the necessary information for the final preparation of the mentioned section of the Program.

Preparation of this material was assumed by the Iranian party.

c) on item 6) "the development of aquaculture", parties agreed to summarize the information presented by the Caspian Sea states for the final preparation of the indicated section of the program.

Preparation of this material was assumed by the Russian party.

d) on item 7) "strengthening of regional and international collaboration and cooperation", parties agreed to finish the indicated section of the Program based on the information on the activities of the Commission presented by the Azerbaijan Republic for the period of 2001-2002 and the Russian Federation for the period of 2003.

Preparation of this material was assumed by the Secretariat of the Commission.

e) on item 8) "strengthening of protection of aquatic bioresources against poaching, pollution, habitat degradation etc.", parties agreed to allot obligations with regard to preparation of subsections of this item of the Program as follows:

measures of protection against poaching - the Iranian Party:

measures of protection against pollution — the Russian Party:

measures of protection against alien species - the Russian and Iranian Parties:

measures of protection against habitat degradation — the Kazakhstan Party

on item 9) "improvement of legislation and enforcement for fishery", parties agreed to delete it as c. separate section of the Program and include information on improvement of legislation in section 8) subsection "measures of protection against poaching".

Parties agreed to make all necessary additions to the Regional program and after coordination to sign it and send to CITES Secretariat.

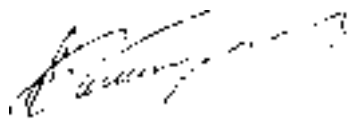
The given Protocol is made in 5 copies in two languages English and Russian and signed in Astrakhan (Russia) on the 4-th of December, 2003. All the copies are identical and equally valid.

Representatives from:

The Azerbaijan Republic

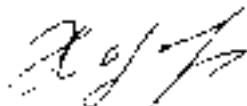
Z.M. kulirc

The Republic of Kazakhstan



M T. 13ainnikanuv

The Russian Federation



R.P. Khodorevskaya .

The Islamic Republic of Iran



M. Pourkazemi

The Turkmenistan

V.A. Anisimov

"I approve"  
Head of the Delegation  
from the Azerbaijan Republic -

Head of the Administration  
of Fish Stocks Reproduction and  
Conservation in the Ministry of Ecology  
and Natural Resources

R.V. Gajiev

» December. 2003

"I approve"  
Head of the Delegation  
from the Russian Federation -


Vice-chairman of the  
Russian Federation State Committee  
for Fisheries

 V.I. Volokh

« »» December. 2003

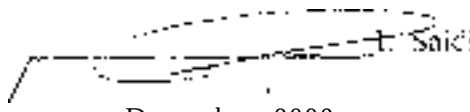
"I approve"  
Head of the Delegation  
from the Republic of Kazakhstan -

Chairman of the Committee for  
Fisheries in the Agriculture  
Minist of the Republic of Kazakhstan

 M.H. Mussataev  
» December. 2003

"I approve"  
Head of the Delegation  
from The Islamic Republic of Iran -

Deputy Minister of the  
Agricultural Ministry of the  
Islamic Republic of Iran

 Saïd  
» December. 2003

"I approve"  
Head of the Delegation  
from the Republic of Turkmenistan —

Head of the State Committee for  
Fisheries of the Republic of Turkmenistan

M.A. Ivlamedov

» December. 2003

REGIONAL PROGRAM OF THE CASPIAN LITTORAL STATES  
ON THE JOINT MANAGEMENT, CONSERVATION AND SUSTAINABLE USE OF THE  
CASPIAN SEA LIIORESOURCES

It is undertaken in compliance with the resolution of the 16-th Meeting of the Commission on Aquatic Bioresources of the Caspian sea (Protocol of December 6-8. 2001) and of the 18-th Meeting of the Commission on Aquatic Bioresources of the Caspian sea ( Protocol of December 9-11 2002) and the CITES Standing Committee recommendations (Paris. June 2001. SC 45 Doc.1 2.2. resolution of the international workshop "Methods of sturgeon stocks assessment and their TAC determination" (Astrakhan. March 12-14 2003).



## Introduction

The Caspian Sea is one of the largest inland brackish water bodies of our planet. Five sovereign Caspian states are located on its shores: Azerbaijan Republic, Islamic Republic of Iran, Republic of Kazakhstan, Russian Federation and Turkmenistan.

The sea area is some 400 000 km<sup>2</sup>, its depth reaches 1025 m, the depth of the largest part of the sea (69%) is 200 m. 130 rivers flow into the sea and the volume of runoff of the main seven rivers amounts to 98% of the total flow (Zonn, 1999)<sup>1</sup>. The basin area is 3.5 million km<sup>2</sup>. the Volga River is the most important in water supply, its input is 1.38 million km<sup>2</sup> (85.0% of the total continental runoff into the Caspian Sea).

The ichthyofauna of the sea and inflowing rivers accounts for 124 species and subspecies, including some 30 species of commercial importance. Considerable amounts of semi-migratory and river fish (common carp, bream, Black Sea roach, kutum, perch, catfish etc.) are caught in the Caspian Sea, their harvest is of great significance for the economy of the Caspian states. At the same time, it is the only water body inhabited by six sturgeon species. Fishing for these ancient fish in the Caspian Sea despite its considerable reduction in recent years remains more than 70% of their world's catch. The Caspian Seal is very important aquatic species too. Management of biological resources of the Caspian sea, their sustainable utilization is an important inter-state object.

Biological resources of the Caspian Sea develop under the influence of the single complex of natural and anthropogenic factors. Maintenance of integrity of the Caspian Sea ecosystem and its biodiversity is the main principle of fish stock management and conservation, it forms the basis for sustainable fishery in the Caspian states.

Biological characteristics of sturgeons and mass pelagic species (kilka) inhabiting the entire Caspian Sea, make it necessary to develop common measures for fishery management and uniformed approach to these five commercially important species.

Sturgeons (*Acipenseridae*) are represented in the Caspian Sea and its drainage by six species which belong to two genera: *Huso* and *Acipenser*: Beluga (*Huso huso*), Russian sturgeon (*Acipenser gueldenstaedtii*), Persian sturgeon (*Acipenser persicus*), stellate sturgeon (*Acipenser stellatus*), ship (*Acipenser nudiventris*), and sterlet (*Acipenser ruthenus*) (Caspian Sea<sup>2</sup>, 1989). Beluga, Russian sturgeon, Persian sturgeon, stellate sturgeon are of commercial importance, however ship and sterlet sturgeon are harvested in small amounts. Sturgeon species are not equally distributed in the Caspian sea. Some sturgeon species dominate in the North and some species in the South. However sturgeon species except sterlet migrate to different parts of sea and river (the Volga, Ural, Terek, Kura, Sefidrud rivers etc.) for feeding and spawning.

The fall in sturgeon catches because of the decline in their natural reproduction after damming the main rivers of the sea basin was halted due to artificial breeding biotechnology developed in the Soviet Union.

Subsequent to the collapse of the Soviet Union and appearance of new sovereign states, the common system of fishery management, reproduction and protection of sturgeons in their migration routes in the sea was destroyed, poaching increased immensely.

**Throughout** the history of Caspian fishing, sturgeon abundance and catches varied considerably depending on reproduction and fishing activity.

The current state of the sturgeon stock is characterized with a drastic decline in its size and legal fishery. The state of spawning stocks is a matter of great concern. Smaller numbers of sturgeon spawners reach spawning grounds in rivers which undoubtedly affects stock enhancement in the Caspian Sea and sturgeon catches. The rate of hatchery production of sturgeons can not halt the decline in their abundance because of an increase in the level of their illegal fishing at sea.

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<sup>1</sup>Zonn I.S. 1999. The Caspian: illusions and reality. M. T00" Korkis". 467 p.

<sup>2</sup>The Caspian Sea. 1989 Ichthyofauna and commercial resources. M. Science Press. 236 p.

Because of the establishment of independent Caspian states, it became necessary to develop scientific principles of inter-state management of sturgeon fisheries in the Caspian Sea. For joint management of the bioresources of the Caspian Sea, plenipotentiaries of the Caspian states including the Azerbaijan Republic, Republic of Kazakhstan, Russian Federation and Turkmenistan established the Commission on Aquatic Bioresources of the Caspian Sea in 1992. The representatives of the Islamic Republic of Iran became its members in 2002.

Functions of the Commission on Aquatic Bioresources of the Caspian Sea:

- Coordination of activities of the Caspian states with respect to management, sustainable utilization and protection of aquatic bioresources of the Caspian Sea;
- Coordination of joint investigations and scientific cooperation of the Caspian states in relation to the state of aquatic bioresources and their habitat;
- Establishment of cooperation in the field of reproduction of stocks including fish farming, conservation and restoration, if necessary, of spawning grounds, conservation of endangered species and poaching control;
- Establishment of the procedure of catch quota allocation for common-used stocks (sturgeons, kilka and seals) in compliance with international standards;
- Cooperation with international organizations.

Over the past 50 years, the maximum total annual catch of fish taken from the Caspian Sea and lower reaches of inflowing rivers amounted to 530 000 tons in 1970 while in 1994-1995 it did not exceed 190 000 tons (excluding Iran). Anadromous fish species are of deciding importance for the fishery. The volume of sturgeon harvest in 1983 was 28 500 tons, the catch quota in 2003 is 1 480 tons. Black caviar export in 1982 was 3 000 tons, in 2003 its export is planned to be 147.2 tons. This fall is caused both by the decline in the abundance of some commercially fish species, sturgeons through illegal catch and poaching and kilka due to invasive species caused drastic decline of the stocks in particular, and underexploitation of mass species such as common kilka. Nevertheless, even with this volume of harvest, the Caspian Sea is one of the productive water bodies in the world. At the same time, there is a reserve for an increase in its productivity which may be used due to rational management of the fishery. Sturgeon stock recovery is of primary importance for their exploitation at sustainable level at present and in future.

Acceptance of a number of agreements and strengthening of measures to combat poaching and annual coordination of catch and export quotas for sturgeons prescribed by CITES resolutions aimed at conservation of these unique species (Paris Agreement SC45 doc. 12.2) worked out the present regional program with the following objectives and tasks on the Caspian sea ecosystem and concerned species.

**Objective: to ensure ecological security and sustainable use of the Caspian sea biological resources with the view to develop social-economic conditions of people in the coastal zones of the Caspian States.**

**Tasks:** to study biological and ecological mechanisms, peculiarities and reasons, determining and impacting the dynamics of the Caspian sea bioresources, to elaborate recommendations stipulating positive trends of their development as well as rational and non-consumptive use of bioresources which meets national interests.

**Sturgeons:** Beluga *Huso-huso*

Russian sturgeon *Asipenser gueldenstaedtii*

Persian sturgeon *Asipenser persicus*

Stellate sturgeon *Asipenser stellatus*

Ship *Asipenser nudiventris*

Kilka: anchovy kilka *Clupeonella engrauiformis*

Big-eyed kilka *Clupeonella grimmi*

Ordinary kilka *Cupeonella cultriventris*. *Clupeoneila delicatula caspia*

Seal *Phoca caspica*

## **Principles and criteria on management and conservation of water bioresources stocks of the Caspian sea and fisheries regulation**

### Principles

- Avoid overfishing;
- Effective monitoring control and surveillance;
- Ensuring reversibility and rebuilding;
- Minimizing fisheries impact;
- Considering species interactions;
- Ensuring compatibility;
- Applying the precautionary approach;
- Allocating user rights;
- Broadening stakeholders participation;
- Maintaining ecosystem integrity;
- Open and transparent decision making and close consultation;
- Decisions should reflect the best scientific information available;
- Provide appropriate incentives for compliance as well as penalties for non-compliance;
- Develop integrated policies and plans for the terrestrial and aquatic environments;
- Encourage practices which are sustainable and do not result in avoidable damage;
- Develop and apply selective and environmentally safe fishing gear;
- Maintain the nutritional value of fish and fishery products during harvesting, handling, processing and distribution.

### Criteria

- Measures should be designed to maintain populations of harvested species at levels which can produce the maximum sustainable yield;
- Conduct appropriate research into all aspects of fisheries;
- Reduction of pollution through the development of waste disposal systems;
- States should monitor and assess the state of stocks under their jurisdiction;
- States should collect reliable accurate data which are required to assess the status of fisheries and ecosystems and provide this data at an appropriate time and level of aggregation, to relevant states and sub-regional, regional and global fisheries;
- Carry out studies on the selectivity of fishing gear and undertake a scientific evaluation of their impacts on the fisheries and ecosystems were they will be used before their commercial introduction;
- Set minimum standards for safety and quality assurance and make sure that these standards are effectively applied throughout the industry;
- Effective participation of industry, fish workers, environmental and other interested organizations in decision making with respect to the development of laws and policies related to fisheries management.

## **CODE OF CONDUCT FOR RESPONSIBLE FISHERIES**

(FAO, 1995. Article 6)

### GENERAL PRINCIPLES

The Caspian Littoral States and users of living aquatic resources should conserve aquatic ecosystems. The right to fish carries with it the obligation to do so in a responsible manner so as to ensure effective conservation and management of the living aquatic resources.

Fisheries management should promote the maintenance of the quality, diversity and availability of fishery resources in sufficient quantities for present and future generations in the context of food security, poverty alleviation and sustainable development. Management measures should not only

ensure the conservation of target species but also of species belonging to the same ecosystem or associated with or dependent upon the target species.

States should prevent overfishing and excess fishing capacity and should implement management measures to ensure that fishing effort is commensurate with the productive capacity of the fishery resources and their sustainable utilization. States should take measures to rehabilitate populations as far as possible and when appropriate.

Conservation and management decisions for fisheries should be based on the best scientific evidence available, also taking into account traditional knowledge of the resources and their habitat, as well as relevant environmental, economic and social factors. States should assign priority to undertake research and data collection in order to improve scientific and technical knowledge of fisheries including their interaction with the ecosystem. In recognizing the transboundary nature of many aquatic ecosystems, States should encourage bilateral and multilateral cooperation in research, as appropriate.

States and sub-regional and regional fisheries management organizations should apply a precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment, taking account of the best scientific evidence available. The absence of adequate scientific information should not be used as a reason for postponing or failing to take measures to conserve target species, associated or dependent species and non-target species and their environment.

Selective and environmentally safe fishing gear and practices should be further developed and applied, to the extent practicable, in order to maintain biodiversity and to conserve the population structure and aquatic ecosystems and protect fish quality. Where proper selective and environmentally safe fishing gear and practices exist, they should be recognized and accorded a priority in establishing conservation and management measures for fisheries. States and users of aquatic ecosystems should minimize waste, catch of non-target species, both fish and non-fish species, and impacts on associated or dependent species.

The harvesting, handling, processing and distribution of fish and fishery products should be carried out in a manner which will maintain the nutritional value, quality and safety of the products, reduce waste and minimize negative impacts on the environment.

All critical fisheries habitats in marine and fresh water ecosystems, such as reefs, nursery and spawning areas, should be protected and rehabilitated as far as possible and where necessary. Particular effort should be made to protect such habitats from destruction, degradation, pollution and other significant impacts resulting from human activities that threaten the health and viability of the fishery resources.

States should ensure that their fisheries interests, including the need for conservation of the resources, are taken into account in the multiple uses of the coastal zone and are integrated into coastal area management, planning and development.

States should, within their respective competencies and in accordance with international law, cooperate at sub-regional, regional and global levels through fisheries management organizations, other international agreements or other arrangements to promote conservation and management, ensure responsible fishing and ensure effective conservation and protection of living aquatic resources throughout their range of distribution, taking into account the need for compatible measures in areas within and beyond national jurisdiction.

States should, to the extent permitted by national laws and regulations, ensure that decision making processes are transparent and achieve timely solutions to urgent matters. States, in accordance with appropriate procedures, should facilitate consultation and the effective participation of industry, fishworkers, environmental and other interested organizations in decision making with respect to the development of laws and policies related to fisheries management, development, international lending and aid.

States should cooperate in order to prevent disputes. All disputes relating to fishing activities and practices should be resolved in a timely, peaceful and cooperative manner, in accordance with applicable international agreements or as may otherwise be agreed between the parties. Pending settlement of a dispute, the States concerned should make every effort to enter into provisional arrangements of a practical nature which should be without prejudice to the final outcome of any dispute settlement procedure.

States, recognizing the paramount importance to fishers and fishfarmers of understanding the conservation and management of the fishery resources on which they depend, should promote awareness of responsible fisheries through education and training. They should ensure that fishers and fishfarmers are involved in the policy formulation and implementation process, also with a view to facilitating the implementation of the Code.

States should ensure that fishing facilities and equipment as well as all fisheries activities allow for safe, healthy and fair working and living conditions and meet internationally agreed standards adopted by relevant international organizations.

States should consider aquaculture, including culture-based fisheries, as a means to promote diversification of income and diet. In so doing, States should ensure that resources are used responsibly and adverse impacts on the environment and on local communities are minimized.

States should consider aquaculture (including harvest of bred fish) as the means, contributing diversity increase of profit sources and people feeding. States should provide responsible resources use and annihilation of negative influence on environment and on local community.

### **Code of Conduct for Responsible Fisheries**

(DAO, 1995, Article 7)

#### **FISHERY MANAGEMENT**

##### **Management objectives**

Recognizing that long-term sustainable use of fisheries resources is the overriding objective of conservation and management, States and subregional or regional fisheries management organizations and arrangements should, inter alia, adopt appropriate measures, based on the best scientific evidence available, which are designed to maintain or restore stocks at levels capable of producing maximum sustainable yield, as qualified by relevant environmental and economic factors, including the special requirements of developing countries.

Such measures should provide inter alia that:

- a) excess fishing capacity is avoided and exploitation of the stocks remains economically viable;
- b) the economic conditions under which fishing industries operate promote responsible fisheries;
- c) biodiversity of aquatic habitats and ecosystems is conserved and endangered species are protected;
- d) depleted stocks are allowed to recover or, where appropriate, are actively restored;
- e) adverse environmental impacts on the resources from human activities are assessed and, where appropriate, corrected; and
- f) pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species, and impacts on associated or dependent species are minimized, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost-effective fishing gear and techniques.

States should assess the impacts of environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks, and assess the relationship among the populations in the ecosystem.

The system of joint Caspian sturgeon resources management should be based on following main principles:

- implementing of all works related to the sturgeon stock management use within the framework acting Interstate Commission, which aims at elaboration and realization of activities in the given sphere; conducting of joint (coordinated) sturgeon stocks investigations according to unified approved up-to-date methods; determination of criteria distribution of total allowable catches at national quotas:

- determination of volumes of total allowable catches of sturgeons: determination of national quota volumes, coordination of measures and mutual support provision, in cases when any of the Caspian Littoral states cannot develop its national quota;

- coordination of regulating measures of such types of fishery which directly or indirectly effect sturgeons;

- coordination of the abundance and species composition of hatchery released juveniles as well as implementing of joint inspection on their quantity and quality; step-by-step modification of the national legislations, dealing with issues of use and protection of sturgeons and their habitat as well as sturgeon, objects production and their turnover; coordination and joint conduct of research works on combating alien invasive species;

- coordination of molecular identification of sturgeons and their products as well as labelling of these products;

- measures coordination and mutual support provision in the combating illegal fishery.

### **Precautionary approach**

States should apply the precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment. The absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures.

In implementing the precautionary approach, States should take into account, inter alia, uncertainties relating to the size and productivity of the stocks, reference points, stock condition in relation to such reference points, levels and distribution of fishing mortality and the impact of fishing activities, on non-target species, as well as environmental and socio-economic conditions.

States and subregional or regional fisheries management organizations and arrangements should, on the basis of the best scientific evidence available, inter alia, determine:

a. stock specific target reference points, and, at the same time, the action to be taken if they are exceeded; and

b. stock-specific limit reference points, and, at the same time, the action to be taken if they are exceeded; when a limit reference point is approached, measures should be taken to ensure that it will not be exceeded.

In the case of new or exploratory fisheries, States should adopt as soon as possible cautious conservation and management measures, including, inter alia, catch limits and effort limits. Such measures should remain in force until there are sufficient data to allow assessment of the impact of the fisheries on the long-term sustainability of the stocks, whereupon conservation and management measures based on that assessment should be implemented. The latter measures should, if appropriate, allow for the gradual development of the fisheries.

If a natural phenomenon has a significant adverse impact on the status of living aquatic resources, States should adopt conservation and management measures on an emergency basis to ensure that fishing activity does not exacerbate such adverse impact. States should also adopt such measures on an emergency basis where fishing activity presents a serious threat to the sustainability of such resources. Measures taken on an emergency basis should be temporary and should be based on the best scientific evidence available.

## **Terminology used in the programme:**

*The sustainable use of aquatic bioresources:* The use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations. ( Article 63(2) UNCLOS FAO) ( Fisheries Technical Paper 382 - X2465).

*Rational fishery* means fishery which meets the main biological, ecological, economical and other requirements related to commercial use of aquatic bioresources.

*Resources:* Biological resources include genetic resources, organisms or parts thereof, populations or any other biotic component of ecosystems with actual or potential use of value for humanity. Fishery resources are those resources of value to fisheries [FAO Fisheries Technical Paper 382 (X2465)].

*Anadromous stocks:* Fish that spend their adult life in the sea but swim upriver to freshwater spawning grounds in order to reproduce. United Nations (1997).

*Semi-migrating (semidromous) fish:* means fish feeding in pre-mouth sea areas and migrating to the rivers for spawning. Carpi, perch species, cat-fish species belong to them.

*The marine fish:* fish spending all their life-cycle in the sea.

*Fishing:* Any activity, other than scientific research conducted by a scientific research vessel, that involves the catching, taking, or harvesting of fish; or any attempt to do so; or any activity that can reasonably be expected to result in the catching, taking, or harvesting of fish and any operations at sea in support of it (Modifies from US Department of Commerce, 1996). [FAO Fisheries Technical Paper 382 (X2465)].

*Fishery:* The sum (or range) of all fishing activities on a given resources (e.g. a hake fishery or shrimp fishery). It may also refer to the activities of a single type or style of fishing (e.g. beach seine fishery or trawl fishery). The fishery can be artisanal, or/and industrial, commercial, subsistence, and recreational, and can be annual or seasonal. Activity of catching fish, from one or more stocks of fish, that can be treated as a unit for purposes of conservation and management and that is identified on the basis of geographic, scientific, technical, recreational, social or economic characteristics, and/or method of catch. [FAO Fisheries Technical Paper 382 (X2465)]

*Straddling stocks:* Stock which occurs both within the EU and in an area beyond and adjacent to eez (Article 63(2) of UNCLOS). (FAO Fisheries Technical Paper 382-X2465).

Following to the 45<sup>th</sup> meeting of the Standing Committee (19-22 June, 2001) and its recommendation on the 3<sup>rd</sup> stage "Actions to be implemented before 20 of June 2002 which were extended till December, 31, 2003 at the 47<sup>th</sup> meeting of the Standing Committee in Chile 2003 and Resolution 12.7 the representatives of the Range States of the Caspian sea at the 19<sup>th</sup> meeting of the Commission of Aquatic Bioresources of the Caspian sea decided to establish a Working group to prepare a long-term regional program for management and conservation of the Caspian sea bioresources with particular concern on sturgeon stocks.

The Working group held two meetings in Astrakhan on the October, 7-10. 2003 and November. 29-December. 1, 2003.

The Working group members agreed to use the principals and criteria defined by FAO and elaborated the following 8 tasks for joint management of the Caspian sea biological resources:

**TASKS AND TERMS OF THE REGIONAL PROGRAM ON THE JOINT  
MANAGEMENT, CONSERVATION AND SUSTAINABLE USE OF THE CASPIAN  
SEA BIORESOURCES**

| Nz | Tasks  | Terms    | Period     |
|----|--|----------|------------|
| 1  | Investigations on hydrological, hydrobiological, hydrochemical and toxicological conditions of the Caspian sea | annually | 10 years   |
| 2  | Investigations on generic, biochemical, physiological, parasitological status of aquatic organisms             | annually | 10 years   |
| 3  | Investigation on efficiency of reproduction (natural & artificial)   | annually | 10 years   |
| 4  | Stock assessment (abundance, biomass and distribution, etc.)   | annually | 10 years   |
| 5  | Creation of gene bank of sturgeons   | annually | 15 years   |
| 6  | Development of aquaculture   | annually | 5-10 years |
| 7  | Strengthening of regional and international collaboration and cooperation                                      | annually | 3-5 years  |
| 8  | Strengthening of protection of aquatic bioresources against:   | annually |            |
|    | - poaching   |          | 5 years    |
|    | -  |          | 5 years    |
|    | - invasive species   |          | 2 stars    |
|    | - habitat degradation, etc.  |          | 5-10 years |

**1-4**

The research works by the following lines: "Investigations on hydrological, hydrobiological, hydrochemical and toxicological conditions of the Caspian sea", "Investigations on genetic, biochemical, physiological, parasitological status of aquatic organisms", "Investigation on efficiency of reproduction (natural & artificial)", "Stock assessment (abundance, biomass and distribution, etc.)" are carried out by five Caspian Littoral States during the conduct of trawl record surveys in the Caspian sea according to the approved by all Caspian Littoral States "Interstate program of monitoring investigations on stock assessment and Caspian sea sturgeon TAC determination" (Annex I).

Investigations are to be conducted annually from 2004 till 2006 in two year seasons — in winter (January-February) and in summer (July-August). Data for investigations is collected during the conduct of complex surveys in the Northern, Middle and Southern Caspian on board the scientific-research vessels. The vessels are provided by the Russian federation, Azerbaijan Republic and Islamic Republic of Iran. Representatives of all Caspian Littoral States participate in the surveys on board of any vessel. Types of vessels are determined in the above mentioned-program. The used equipment should be of the same kind including trawls size and rigging as well as acoustic equipment. Trawling methods, grid of stations and grid of tacks for acoustic works is coordinated by all the Caspian Littoral state.

Fish for analysis is taken from trawl and net catches. Each trawl and net catches are sorted out by species: sturgeons (Russian and Persian sturgeon, beluga, stellate sturgeon, ship, starlet, and hybrids), kilka and the others. It is determined the quantitative ratio of caught fish and the total biological analysis is carried out by generally accepted methods. Identification of the Russian and Persian sturgeons is carried out according to morphological character and molecular markers. Sturgeons are subjected to the total biological analysis (total and fork length, -weight, sex, stage of gonad maturity. presence of ecto- and endoparasites is determined, ray for age determination is taken). When the volume of catch is high (more than 50 specimens) share of it (it is determined by the head of the working group and representative of state where the survey is conducted) is only measured. weighed and released to the water basin. Fish of all weight-size groups are included into the sampling for bioanalysis pro rate their share in catch as \veil as all fish with anomalies in olfactory organs (ADO). The following samples: blood, tissue: muscle, an, liver. gonads, gills, gastrointestinal tract fixation are taken from the caught fish.

Forage reserve and trophic feeding conditions of fish are determined.

Data processing and analysis is conducted by scientific-research institutes of each Caspian States independently and jointly.

Monitoring investigations of hydrologo-hydrochemical basis of the sea bioresources formation is the component part of fish stocks and TAC volume forecasting. The collected data allows estimating the conditions of main hydrologo-hydrochemical parameters (sea level, salinity, oxygen, Mogen substances, phyt pigment, etc.) and on this base to elaborate forecast for future development of ecosystem processes.

Numerous investigations of latest years in ecological physiology and biochemistry of fish indicate the higher sensitivity of physiological-biochemical and hystophysiological indices reacting the anthropogenic changes in water basin Much earlier than they appear on morphological, biological or population levels. The complex of these indices gives the opportunity to distinguish hidden processes in population, set cause-effect connections among changes in environment and physiological state of fish much earlier till external factors appear. As a result the system of monitoring of physiological and biochemical fish state is characterized by potentially diagnostical and prognostic opportunities, and it is very important from the point of view of sustainable use of biological resources of the Caspian sea.

The Caspian Littoral states (excepting Turkmenistan) evaluate the efficiency of natural spawning of the most valuable, relict fish species – sturgeon species. Decrease of natural reproduction led to the decline of sturgeon abundance and their commercial stocks.

The main task of pasture sturgeon breeding is conservation of potential productivity of sturgeon population due to juveniles release into the Caspian sea pastures. Objects of artificial reproduction of sturgeons at the Caspian hatcheries are beluga, Russian sturgeon, Persian sturgeon, stellate sturgeon and ship. 21 hatcheries were constructed since 1950-ies in the Caspian basin: 10 – in the Russian federation, 4 – in the Azerbaijan Republic, 2 – in the Republic of Kazakhstan and 5 – in Iran. At the end of 80-ies-the beginning of 90-ies total volumes of juveniles release in the whole basin reached their maximum volumes – 101 mln. specimens (without Iran). In 2003 total volume of juveniles release reached 81.43 mln. specimens. At the same time there is the threat of loss of genetic biodiversity of sturgeon population of the Caspian sea.

During the long-term fishery in the Caspian sea sturgeon catches varied greatly and it was determined by the reproduction levels and by fishery efficiency. The greatest catches in the Caspian bases were observed at the beginning of the last century (39,4 th. t. ). At the period from 1920 till 1990 catches fluctuated from 10 to 28 th.t. making up nearly 90% of the world catch. The present day status of sturgeon stocks Were characterized by sharp decline of abundance. And it was reflected in the catches. In 1990 sturgeon catches in the Caspian basin (without Iran) comprised 13,7 th. t. and 1995 – 2,9 th. t. and in 2002 – 0,680 th. t.

The analysis of long term research data indicates that the Caspian sturgeon abundance decreased in twice – twice and a half times during last 10 years. During last years negative impact on sturgeon stock status and catches is caused by illegal harvest taking place in the sea and basin Rivers. It should be noted that sturgeon fishery in the Caspian basin has not reached the critical level yet. Remained sturgeon stocks can be recovered by means of suitable management and in outlook can be sustainably exploited. The primary task for all Caspian littoral state is to solve the problem of sturgeon stocks protection, rebuilding and combating illegal catch. It means that the common regime of the optimal sea bioresources use should be coordinated.

At present state marine fish species of the Caspian sea can be distinguished into 2 groups: species in depression belong to the 1<sup>st</sup> group: anchovy and big-eyed kilka, black-back shad; species in rather stable state belong to the 2<sup>nd</sup> group: marine migrating shads, common kilka and grey mullet.

The conservation and recovery of stocks of the 1<sup>st</sup> group are regulated by the decrease of TAC, by regulating terms of catch (anadromous herring). These measures are directed to the decrease of fishery mortality rate and correspondingly to the conservation of the greatest part of spawners in order to enhance the volumes of natural reproduction.

Developing of stocks reserves of the 2<sup>nd</sup> group can be the factor compensating the total losses of harvest losses in species of the 1<sup>st</sup> group as well as contributing to the development of multispecific fishery in the littoral zone.

The state of anchovy kilka population, the main fishery object, is very critical as consequence of development of the above-mentioned negative processes and mass losses in spring and summer 2001. In 2002 there was a tendency of some improvement of functional state of anchovy kilka, and its integral expression was recovery of reproductive function of spawning part of population. Along with the anchovy kilka the stocks of big-eyed kilka sharply declined and it reflected in the specific content of fishery and research catches. Spawning grounds of these 2 species of kilka are mainly in the Southern Caspian and partly in the Middle Caspian sea and their reproduction is subjected to a greater negative impact according to forage supply as well as according to eating of eggs and larvae by *Mnemiopsis*.

Vice versa the stocks of common kilka are in stable state as their reproduction is in the Northern Caspian and is not subjected to *Mnemiopsis* influence. There are some reserves in the stocks of this species and it is reflected in the substantiation of TAC.

Non-coordinated use of different methods for sturgeons stocks assessment can lead to overfishing of the population. The acceptance of unified methods of TAC assessment contributes to elaboration of unified strategy of aquatic bioresources management in the Caspian sea

Financing of joint trawl survey conduction is not always enough for conduction of necessary work volume. In this connection, taking into account that the task on sturgeon conservation is of world importance, it is necessary to have financial support of international organizations.

Terms of work conduction are 2004-2006 and then clarification and agreement of the regional programme are planned. During the joint researches it is planned to conduct annually workshops, consultation of the working groups, conferences and symposiums.

Besides it fishery research organizations of all Littoral Caspian States conduct monitoring of habitat and aquatic bioresources state on the basis of their national programs within their sovereign territories.

## **5. The creation of genetic collection of sturgeon**

When the population of a given species in any ecosystem declines sharply, it is necessary to establish a genetic collection of samples from different species, populations and races of various origins. Sturgeon species in the Caspian Sea comprise of different populations and the condition of stocks are not identical at present situation of the Caspian Sea. In order to conserve the genetic resources of different sturgeon population it needs to collect live, sperm or tissues for futures. For this purposes the following activities can be recognized by the Caspian Sea Littoral States:

### **1. Collection of sturgeon live specimens:**

Due to sturgeon decline some Caspian Sea countries have collected live specimens of different generation of sturgeon and rare them in captive condition. Islamic republic of Iran has started these experiments more than six *years* ago. Annually certain number of sturgeon fingerlings is collected from different origin and on the base of genetic principals a selection procedure is performed to all samples. All selected fingerling are grown in captive condition and a tagging system has been applied to all of them. Islamic republic of Iran plans to extent this program for the next 10 years. Since sturgeon are long life fish and reach to the maturity at late age at 10-18 years, this experiment should be practiced for one or two generation.

Similar experiments with living samples of sturgeon species have been performed by the Russian Federation since 1987. By the data of 2000 the brood stock in volume of more than 2.5 thousand specimens with mass of 10 t is situated at the base of Scientific-Industrial Center "Rios". The brood stock is created from the roe of pure species and hybrids of Caspian sturgeons. Since 1998 the domesticated brood stocks from natural populations of beluga, Russian sturgeon and stellate sturgeon have been created at the hatcheries of the North-Caspian Department of Fishery Conservation. Reproduction and Regulation (SevCaspRybVod). The total volume of brood stock makes up 250 females. In 2003 there were noted the repeated maturing of sturgeon and beluga females which were operated in 1999-2000.

In practice, collection of live specimens especially for late maturing species such as sturgeons needs huge investments, facilities and experience. For future program not only financial support: but also co-operation, exchange of information and species within drainage is essential to extent such

program. It also recommended to get benefit the experience of live specimen collection of other aquatic species.

## 2. Cryopreservation of sperm:

Another practical method to conserve the genetic resources of endangered species is the creation of the system of genetic cryobanks and making there the representative collections of sperm and other genetic material closely connected with creation of collection of live specimens. Russia was the first country where the scientists combined all the achievements of cryobiology and biology into the unified complex of biotechnologies of genetic diversity conservation.

The conception of use of cryopreservation for rare and endangered plants and animals species conservation was first introduced by d-r R.N. Veprientev at the Congress of the International Union for Conservation of Nature in 1976. During the last years (1990-1996) the practical realization of the conception was carried out through the complex program "Conservation of genetic resources". While fulfilling the program methods of cryopreservation of sperma of many fish species and the marine invertebrate embryos were worked out. Besides the foundation for creation of genetic cryocollection of fish and other hydrobionts were laid. The Central cryocollection is in VNIPRh (Rybnoe, Moscow region), experimental one – in Russian Academy of Science and regional – in St. Petersburg and other cities.

These techniques provide the possibility of frozen live sperms even for a century. Sturgeon cryopreservation also has been practiced in Islamic republic of Iran. The computerized cryopservation system has been placed in Iran and annually certain amounts of sperm from different species and population are collected. For the next five year plan Iran is planning to collect the sperms of all sturgeon population and preserve them in the liquid nitrogen.

Since this activities, needs both financial and technical support, Iran has already spent some investment, is ready to act as a reference lab for sperm collection and exchange samples. It also recommended establishing regular annual workshop to report the progress and achievement and also get the benefit of international institution.

## 3. Sample collection for biochemical and molecular (DNA) experiments:

In order to identify different populations of sturgeon stocks and races it is necessary to collect tissues of different species.

DNA samples can be collected both during sea survey and brood stock migration for spawning at different rivers. It is also possible to use such samples for caviar identification. At present molecular genetic labs are active in the Islamic Republic of Iran and Russia. There is the net of molecular-genetic laboratories in Russia at the head of the Federal center in Moscow and regional branches in Astrakhan. Rostov, Krasnodar. In the Islamic Republic of Iran a molecular genetic laboratory equipped with new technologies is established in International Sturgeon Research Institute and is actively performing many population genetic studies.

The Caspian Sea littoral state agreed to collect and exchange tissues during the joint program of stock assessments. It also recommends coordinating and establishing uniformed methodology for analysis and annual workshop to exchange the information.

## **6. Aquaculture development**

It should be recognized that only development of traditional methods of fishery regulation, protection of natural reproduction, and increase in the rate of hatchery production is not sufficient for conservation of sturgeons in the Volga-Caspian basin. In this connection, the development of sturgeon farming makes a crucial rule for providing the meat and caviar of domestic and international markets.

The main objective of sturgeon farming is production of sturgeon meat and caviar. Owing to this, a heavy pressure of marine and river fishery may be reduced. Besides, like any other cultivation, sturgeon farming can accumulate, conserve and reproduce the gene pool of natural populations of these ancient members of the chthyofauna driven to the verge of extinction. The biological principle of sturgeon farming development is the high technological plasticity and adaptability of these fish. The

current technology of sturgeon breeding and rearing may produce a multiple increase in the amount of products due to cultivation in different environmental conditions.

At present, a principal model of sturgeon farming has been developed. It provides for effective functioning of the enterprises of the industry. The commercial fish hatchery may be profitable on condition the following issues are settled:

- qualitative planting stock should be supplied;
- areas for rearing of any sturgeon species should be available;
- special diets should be available;
- a packet of normative documents on biotechnology for marketable fish production using various methods should be available;
- sufficient financing;
- marketing and processing of sturgeon products should be organized properly;
- competent fish-farmers should be staffed.

The systems with closed water supply should be preferably used in rearing the planting stock of different age and brood stocks to produce ecologically safe caviar.

Under the conditions of the southern Volga-Caspian region (the Astrakhan, Volgograd Regions, Republic of Dagestan, Kalmykia), the scheme of management of sturgeon farming may be presented by all existing forms and it is planned to increase production of marketable sturgeons in the Russian region of the Caspian Sea to 2 750 tons by 2015, including 2 450 tons in the Astrakhan Region, 200 tons in Volgograd, 200 tons in Dagestan, 50 tons in Kalmykia.

Investigations into sturgeon farming in plastic tanks and in fresh water and cages set in the coastal zone of the Caspian Sea which are performed by the Islamic Republic of Iran made it possible to work out instructions on sturgeon farming and present proposals for management of commercial sturgeon farms. The amount of production of marketable sturgeon meat in the Islamic Republic of Iran is expected to reach 1000 tons for the next 10 years.

The Republic of Azerbaijan plans the construction of a marine sturgeon farm producing 20 tons per year.

The construction of a sturgeon farm with closed cycle of water supply is projected by the Decree of the President of Turkmenistan in the area of the Kianly Bay of the Caspian Sea. It will produce 1000 tons of broilers and 3 tons of caviar with subsequent development of its own brood stock from eggs and domesticated sturgeon females.

The selection of species for cultivation should be individual for certain farms and hatcheries taking into account their technological characteristics, available protection works to prevent hybrids from entering natural water bodies, market requirements, regional resources to produce the planting stock and marketable fish, scientific recommendations.

The main objectives of sturgeon farming at the present day are the following:

- scientific development of the biotechnology for a full-cycle commercial fish farm including the development and maintenance of sturgeon recovery and brood stocks, biotechnique of planting stock (fingerlings and one-year olds) production and rearing, biotechnique of farming in different environmental conditions;

- determination of economically valued characteristics of pure sturgeon species and their hybrids which are promising for manufacturing commercial products (with a ban on releasing hybrids into natural water bodies) aimed at the development of domesticated stocks and, subsequently, of races intended for industrial rearing (beater as an example);

- preparation of a list of farms and hatcheries of federal importance to be used as supporting scientific-production centers for industrial sturgeon culture. Priority and sufficient purposeful financing of these centers should be stipulated to develop the basic elements including the construction of new hatcheries and reconstruction of existing ones as well as compensation for expenses to release young fish of pure species into natural water bodies;

- introduction of differentiated pay for the work to restore the most depleted populations and species of sturgeons which makes it feasible to commercial farms to re-introduce indigenous species into natural habitats;

- organization of genetic control of wild spawners transported to fish farm and hatcheries, preparation of their individual genetic passports which may scientifically ground the way of their handling to produce the offspring and control (including export-import) the transference of eggs, planting stock and mature individuals;
- establishment of the permanent ichthyopathological service to attend to fish farms and hatcheries which maintain their own recovery and brood stocks;
- supplying commercial (industrial) farms and hatcheries with sound, high-quality (man-made) pelleted feeds containing a full set of components according to developed formulae.

To recommend the development of sturgeon farming in the Republic of Kazakhstan.

Solution of the problem of sturgeon farming development in the Caspian region depends on the coordination of efforts of central authorities, departments, and scientific institutions and fisheries enterprises. The importance and complexity of the problem of sturgeon farming makes it necessary to finance it using government funds and sponsorship.

## **7. Strengthening of regional and international collaboration and cooperation**

The Commission on aquatic bioresources of the Caspian sea is a main coordinating body on all aspects of management, conservation of bioresources and regional interaction.

According to the "Statute on the Commission of Aquatic Bioresources of the Caspian Sea" for the next two terms (2001-2002) the Azerbaijan Party was appointed as the Chairman of the Commission, the representative of the Russian Federation was appointed as Vice- chairman at the 14th session of the Commission which took place on December 19-20, 2000, in Astrakhan (the Russian Federation), as a result of expiring term of office of the former Chairman and Vice-chairman of the Commission of Aquatic Bioresources of the Caspian Sea.

Five sessions of Commission on Aquatic Bioresources of the Caspian Sea were held during the mentioned terms.

The first (15-th) extraordinary session of the Commission took place on May, 22-23, 2001, in Baku, with participation of the Secretary General of CITES Mr. Willem Wijnstekers.

The following issues were considered at the session of the Commission: "On adopted Total Allowable Catch (TAC) recommendations for 2001" and "On export quota for fish and sturgeon caviar for 2001".

The second (16-th) session of the Commission took place on December 6-7, 2001 in Astrakhan (the Russian Federation), chaired by the Head of the Azerbaijan Republic Mr. Mamedli.

The third (17-th) extraordinary session of the Commission took place on March, 29-30, 2002, in Baku (the Azerbaijan Republic). The Islamic Republic of Iran officially became the member of the Commission on Aquatic Bioresources of the Caspian Sea at this session of the Commission. Issues connected with elaboration of agreement on conservation and use of bioresources, combating with poaching and ctenophore *Mnemiopsis*, specification of principles for quota distribution

The plenary session of the Secretariat and Working groups, formed in accordance with the decision of the 17-th session of the Commission on Aquatic Bioresources of the Caspian Sea took place on July, 16-18, 2002, in Baku (the Azerbaijan Republic)

The plenary session of the Secretariat and Working groups of the Commission on Aquatic Bioresources of the Caspian Sea took place on October, 8-11, in Baku (the Azerbaijan Republic).

The fourth (18-th) session of the Commission on Aquatic Bioresources of the Caspian Sea was held on December, 9-10, 2002, in Baku (the Azerbaijan Republic).

Besides considering of procedural questions at the Commission session- a special. session was devoted to the 10-th anniversary of the Commission and a collection of documents of the Commission on Aquatic Bioresources of the Caspian Sea for 1992-2002 was issued.

For the next two terms chairman (the Russian Federation) and Vice- chairman (Kazakhstan) of the Commission were appointed in order of rotation at the session of the Commission. (2003-2014)

In 2003 in accordance with the Plenary session of the Secretariat and the Working groups of

the Commission on Aquatic bioresources of the Caspian sea (October, 9-11, 2002. Baku) in March. 12-14, 2003 the First International Workshop "Methods of Sturgeon stock assessment and their TAC determination" was held in Astrakhan, the Russian Federation (FSUI KaspNIRKH). 46 specialists from fisheries research institutes and organizations: from the Azerbaijan Republic (AzerNIRKh, the Ministry of Ecology and Natural Resources), the Islamic Republic of Iran (IFRO. International Research Sturgeon Institute), the Kazakhstan Republic (Atyrau Branch of Scientific Fisheries Research Centre), the Russian Federation (the State Committee for Fisheries, KaspNIRKh, Sevkaspybvod (the North Caspian Department of Fish Conservation, Reproduction and Regulation). VNIRO, PINRO, SevPINRO, AzNIIRKh) as well as representatives of CITES, FAO, "Innovative solutions, Ltd." (New Zealand), IFREMER (France) took part in the Workshop.

Within the framework of the workshop there were given reports concerning methodology aspects of stock assessment and total allowable catch determination of sturgeon as well as criteria choice under quotas distribution of aquatic bioresources of the Caspian sea at the same time recommendations according to issues related to methodology approaches of stock assessment determination and commercial objects forecasting.

According to recommendations of the regular 19<sup>th</sup> session of the Commission on aquatic bioresources of the Caspian sea it is planned to conduct **the second International Workshop "Methods of sturgeon stocks assessment and their TAC determination" on 13<sup>th</sup> — 15<sup>th</sup> November, 2003 in Astrakhan, Russian Federation.**

Within **the Working group on control for quantity and quality of released juveniles of valuable fish species** (the Protocol of the 18<sup>th</sup> session of the Commission on aquatic bioresources of the Caspian sea, December, 9-11, 2002, Baku, the Azerbaijan Republic) in 2003 there was carried out the commission control of hatcheries activity according to the reliable accounting on release volume and fish products quality. The representative of Sevkaspybvod (the Russian Federation) visited Azerbaijanian experimental marine and Ali-Bairamlinskyi sturgeon hatcheries on the 16-17<sup>th</sup> of May, 2003. On the 30<sup>th</sup> of June and on the 1<sup>st</sup> of July 2003 bonitation was carried out under the participation of Atyrau Branch of Scientific Research Center of Fisheries of the Republic of Kazakhstan at hatcheries of the Astrakhan region (Kizanskii and Lebyazhii). The return visit of the Russian Federation for participation in control catches of juveniles reared at hatcheries of the Republic of Kazakhstan (Atyrauskii and Ural-Atyrausskii) was on the 16<sup>th</sup> -20<sup>th</sup> of July 2003.

**The 19<sup>th</sup> extraordinary session of the Commission on aquatic bioresources of the Caspian sea was conducted in Astrakhan on the 24<sup>th</sup> -25<sup>th</sup> of July, 2003.**

The following delegations took part in the work of the Commission:

- from the Azerbaijan Republic, at the head of R. Vagitovich, Head of the Administration of Fish Stocks Reproduction and Conservation in the Ministry of Ecology and Natural Resources of the Azerbaijan Republic;
- from the Islamic Republic of Iran, at the head of Yahya Mohammadzadeh, Deputy Minister of Jihad-e-Agriculture, Managing Director of "Shilat - Iran";
- from the Republic of Kazakhstan, at the head of Mussataev M., Chairman of the Committee for Fisheries in the Agriculture Ministry of the Republic of Kazakhstan
- from the Russian Federation, at the head of V. Voloch, Vice-chairman of the RF State Committee for Fisheries;
- from Turkmenistan, at the head of Mammedov M., Chairman of the Committee for Fisheries

The significant result of the joint work was the Statute of the Commission on aquatic bioresources of the Caspian sea which meets interests of 5 Littoral Caspian States.

It was planned to conduct the meeting of the Working groups in the first decade of October, 2003 and issues were determined according to the following directions: elaboration of the draft Agreement on Conservation of aquatic bioresources of the Caspian sea and their management: elaboration of main principles and criteria of water bioresources stocks of the Caspian sea; on long-term management and conservation of bioresources of the Caspian sea: methods (sturgeon stocks abundance determination and their TAC determination) elaboration: control for quantity and quality of released sturgeon juveniles, coordination work on combating Ctenophore M. *Leidy* and creation of monitoring centre for alien species intrusion into the Caspian sea.

**On the 7<sup>th</sup> -10<sup>th</sup> of October, 2003 the session of 5 Working groups of the Commission on aquatic bioresources of the Caspian sea was conducted in Astrakhan, the Russian Federation.**

During the meeting of the Working groups there were signed the Protocols of the Working groups reflecting the following decisions and recommendations.

In accordance with the Agenda at the Working group on elaboration of draft Agreement on conservation of bioresources of the Caspian sea and their management the following issues were discussed:

1. Further elaboration of draft Agreement on conservation of bioresources of the Caspian sea and their management.
2. Consideration of the draft Agreement on establishing of the Commission of aquatic bioresources of the Caspian sea.
3. Consideration of draft Declaration of heads of Fisheries Ministries and Departments of Littoral Caspian states.

During the session of the Working group on elaborating the main principles and criteria for management of bioresources stocks in the Caspian sea and on long term management and conservation of aquatic bioresources the following issues were discussed:

- elaboration of common principles and criteria for management of bioresources stocks of the Caspian sea using CITES recommendations Conf. Resolution 12.7 and documents of Conf. 12. Doc.42.1, 42.2 on the basis of proposals of Littoral Caspian states.

- Consideration of presented National programs of conservation and management of bioresources of the Caspian sea.

- Elaboration of draft of Regional program on *the* basis of presented National programs of conservation and management of bioresources of the Caspian sea.

During the session of the Working group on abundance and quality control of hatchery released juveniles of valuable fish species the draft of Statute on the Working group on quantity and quality control of hatchery released juveniles of valuable fish species prepared by the Russian Party was considered;

- there were discussed proposals of Littoral Caspian states representatives according to the time-table of joint visits to hatcheries in 2004 taking into account the significance of works on beluga juveniles reproduction;

- there was elaborated and agreed upon the form of Information on sturgeon hatcheries activities on juveniles reproduction for submitting to the Commission Secretariat;

- there were prepared proposals to *the* Work Program of *the* Working group for 2004

*The Working group on work coordination on combating ctenophore M Leidy and creation centre of monitoring of alien species intrusion into the Caspian sea:*

- there were considered *the* Caspian Littoral States experts' proposals on combating Ctenophore *M. Leidy* and creation of monitoring center for alien species intrusion into the Caspian sea;

- there were given the reports of representatives from the Islamic Republic of Iran and Russian Federation on the results of experimental works conducted in 2003 concerning possible introduction of *Beroe ovata* into the Caspian sea;

- it was approved the scheme of "Biological substantiation of possibility for *Beroe ovata* introduction into the Caspian sea" proposed by the Russian party for elaborating the common form of "Biological substantiation ..." for all the Caspian Littoral States;

- it was planned to hold the conference in the Islamic Republic of Iran on *the* results of experimental works conducted by specialists from the Caspian Littoral States on possibility for *Beroe ovata* introduction into the Caspian sea.

In accordance with Protocols of the October Working Groups it is planned to conduct **meeting of Working Groups from November 29 till December 1, 2003** with participation of specialists in International law from all the Parties.

**The regular 20-th meeting of the Commission on Aquatic Bioresources of the Caspian sea** with participation of the official representatives of the Azerbaijan Republic, the Islamic Republic of Iran, the Republic of Kazakhstan, the Russian Federation and Turkmenistan will take place **from December 2 till 4, 2003**. It is planned to conduct annually international workshops on the biological data received during the joint research work, meeting of the Working groups *and* further coordination of the activity on conservation and recovery of sturgeon stocks of *the* Caspian basin.

International experts, neutral international organizations are attracted to the work of the Commission.

## **8. Strengthening of aquatic bioresources protection**

### **a) against poaching**

Illegal catch, overfishing and also development of sturgeon poaching especially after the collapse of former Soviet Union (199C) caused dramatic decline of sturgeon resources in the Caspian sea. Since all sturgeon fish reach their maturity at late stage (10-20 years) to extract caviar, this approach will remove immature and young fish which shows an adverse impact on resources. Trends of larger fish removal are higher than the growth of juveniles and therefore the age composition of sturgeon will shift to younger generation.

Since most sturgeons in the Caspian sea are considered as "shared stocks" and during their 15-20 year life span they migrate to the territory of other range states for this reason without joint management on sturgeon regulation and combat against poaching sturgeon stocks will diminish in the whole Caspian sea. Therefore at the first stage it is necessary for each Range States to develop its national policies, legislation and enforcement for sturgeon conservation.

Since the sturgeon resources are quite unique and very crucial for long-term conservation, there should be strong management for domestic catch and consumption. Some part of illegal harvest will be distributed locally and some will enter into the International Market through organized mafia system.

Further brief national reports from each Littoral Caspian state are provided.

#### **The Islamic Republic of Iran**

Fisheries management in the Caspian Sea aims at conservation and sustainable use of stocks and aquatic resources (sturgeons and bony fishes). Apart from restocking programs, conservation and regulation have always been considered as priority issues by the Iranian Fisheries.

In 1994 the I.R. of Iran has established and implemented a regulation system based on conservation and utilization of aquatic resources and since then annual harvests from the Caspian Sea, fishing gear, fishing seasons and hatcheries and rearing centers for aquatic organisms as well as rivers, wetlands etc. are continually under control and regulation. In recent years to protect sturgeon species the use of gill nets was totally banned in the Caspian Sea and violators were strictly prosecuted. Fishery security guards are set up in 25 fishing centers located between Astara and the Torkman Port to protect the aquatic stocks. Totally 656 sea guards equipped with communication systems are on patrol round the clock at sea and on the coasts in the southern coasts of the Caspian Sea. They are responsible for monitoring, control and security of the area. Apart from this the sea guards also collaborate in conservation and restocking programs. During the catch season for bony fishes every year about 256 fishery guards are posted in the fishing cooperative societies to control the release of sturgeon fingerlings.

In 2000 during a sea patrol several violators were arrested and taken to court. In the III Five Year Economic Plan the Iranian Fisheries aims at improving and developing the organization of the security guards and thus increase their efficiency to protect aquatic resources.

Conservation of rivers is also considered a priority issue in view of the role they play as natural spawning and nursery grounds. Therefore apart from the conservation measures referred to above, rivers are also safe guarded during the spawning season.

Security guards undergo vocational training in order to improve and upgrade their knowledge in using navigational and transmission equipment. They also receive scientific training to build awareness of stocks and ways to conserve them. The first long term training course (2-4 years) will soon commence in one of the fishery training centers in the I.R. of Iran.

The Iranian Party accepted to send the completed report for this section before December 20-th, 2003.

#### **The Russian Federation**

Taking into account the sturgeon stocks state in accordance with recommendations of scientific fisheries organization from 2000 specialized fishery is prohibited except for the aims of reproduction, researches as well as bycatch at catch of ordinary fishes in the Volga river.

The control catch and catch aiming at sturgeon reproduction is carried out in pre-mouth parts of the Volga, Terek, Suiak.

Sturgeon catch is limited by the volumes which annually undergo the State Ecological expertise, terms of catch, size in fishing gears (purse net 45-48 mm, driving gear — 45-50 mm, wing — 45-56 mm).

The protection of sturgeon fish species is carried out by 3 Basin Regulatory Bodies on protection and reproduction of fish stocks and fishery regulations of State Committee for Fisheries of the Russian Federation.

In the Caspian basin the fish stocks protection is carried out in collaboration with Federal Security Service (FSS) of Russia and Ministry of Internal Affairs of Russia according to plan and intensive pass of sturgeons to the rivers.

If there are some violations in fishery and in conservation of aquatic bioresources, violators are made answerable to management responsibility, criminal responsibility within the framework of the Russian Federation legislation.

Bodies of fish protection of State Committee for Fisheries of the Russian Federation together with specialists of law-enforcement and nature-conservative bodies take strict and active measures on preventing illegal catch of sturgeon in the Caspian region and additional preventing measure are under elaboration.

Measures on sturgeon protection in the Russian Federation are described in the National report of the Russian Federation or, environment protection and at the Conference of Parties of CITES the Russian Federation informs the member-parties of CITES on this problem.

On these issues within the framework of the State Commission on legislation improvement concerning fisheries complex of the Russian Federation the active work is done connected with aquatic bioresources protection and regulation of turnover of valuable aquatic bioresources species at the domestic market of Russia.

In order of efficiency increase of aquatic bioresources protection and especially sturgeons there are some special fish protection measures are carried out in the Russian Federation at the federal level. They aim at protection of natural spawning grounds. Additional forces and means including special subdivisions of bodies of internal affairs are also attracted to these measures.

Annually during spawning migration of sturgeons to the rivers such operations as "Nerest", "Putina" on preventing poaching as well as fingerlings saving are organized by bodies of executive powers of the Russian Federation.

In order to make legislation more strict for illegal sturgeon catch there were prepared the corresponding modifications in the Criminal Code of the Russian Federation and Code of Russian Federation on administrative violations which are under adoption in involved ministries and departments.

Besides FSUI "KaspNIRKh" elaborates the program on measures against poaching and according to this program methods on determination of sturgeon illegal catch level in the river and in the sea are identified.

Taking into account the necessity of trade regulation at the domestic market as an important factor of minimizing illegal sturgeon catch, the regulation from 28th of May 2003 Ns 304 "On Rules adoption of use of confiscated wild animals and plants, their parts and derivatives subjected to the Convention on International Trade in Endangered Species of Wild Fauna and Flora, from March, 3, 1973." was accepted.

The State Committee for Fisheries of the Russian Federation prepared the draft of the Decree of the President of the Russian Federation "On measures enforcement of state regulation of sturgeon turnover and their products including caviar" and it is envisaged:

- realization of sturgeons caviar at the territory of the Russian Federation under the presence of special permits issued by the Sturgeon Administrative Organ of CITES in Russia within the volumes adopted by the Government of the Russian Federation:

- realization of sturgeons products including caviar at the territory of the Russian Federation in the retailment only in special labeling package and having labels issued by the Sturgeon Administrative Organ of CITES in Russia:

- limitation of pass through state national boundaries of the Russian Federation for import and export of sturgeons and their products including caviar.

In accordance with fishery rules in the Caspian sea with rivers flowing into it. the bycatch of sturgeons of non-commercial size is released to the sea alive.

In case of finding sturgeons in catch of fishermen by controlling bodies, these fishermen are subjected to penalties and sanctions in accordance with existing legislation.

A strict record of all cases of illegal sturgeon catches is carried out by all relevant controlling bodies.

For minimizing illegal export of sturgeon species and their caviar there is a legislation base on export of sturgeons in the Russian Federation:

- regulation of Government of the Russian Federation from 18.08.1998 No 968 "On measures regarding the recommendations of the 10th Conference of Parties which signed the Convention on International Trade in Endangered Species of Wild Flora and Fauna on the 3d of March 1973 concerning sturgeon species";

- annual regulations of the Russian Federation government on sturgeon export quotas setting and their products including caviar:

- the order of application on export from the territory of the Russian Federation and import to the territory of the Russian Federation and re-export of sturgeons species and their products including caviar;

- the situation on sturgeon caviar labeling;

- order of label production of CITES;

- regulation of Government of the Russian Federation on confiscatory sturgeon species and their products including caviar.

### **Republic of Kazakhstan**

The Committee on the Fisheries of the Agriculture Ministry of the Kazakhstan Republic is the body of the state fisheries management in the Kazakhstan Republic.

Its objectives are:

1. The participation in the development and realization of the state policy on the fisheries issues.

2. Conducting of the state control for the protection, reproduction and use of fish resources and other aquatic animals and for the fisheries conducting.

3. State management of the fishery and fish-productive activity, organization of the complex of the works on the stocking, acclimatization of new fish, meliorative and technical and other actions in the fisheries.

4. Carrying out the procedures on the inclusion of the fish-processing enterprises into the list of the enterprises —exporters of the fish products into the states of the EU.

5. Preparation of the appropriate conclusions on the production export from sturgeons for the administrative body of CITES from the Kazakhstan Republic.

In order to provide with the effective control and protection of the spawning grounds, feeding places and spawners pass to the spawning grounds and also rational use of the resources of the Ural-Caspian basin there is the Ural-Caspian inter-regional basin department on the fish resources protection and fishery management (further Department) in Atyrau which is the structural subdivision of the Committee on Fisheries and its territorial body. The area of the served territory is covered the Caspian Sea in the limits of the Kazakhstan Republic at the length of the waterside of 1600 km to Turkmenistan and the Ural River with the extension of 1100 km to the border of the Orenburg region of the Russian Federation. The total personnel of this Department are 378 persons. The inspection is equipped by the necessary techniques and special means which are renewed due to the means of the republican budget on the state programs.

Annually starting from the spring fishing season the wide-ranging fish-protected action "Bekipe" is carried out in the territory of the Ural-Caspian basin in collaboration with the Ministry of Internal Affairs, Agencies of the financial policy and Agencies of the customs supervision of the Kazakhstan Republic in which along with the above-mentioned subdivisions, the officials of the boundary service of the National Safety Committee of the Kazakhstan Republic participate.

For the further increase and deepening of the collaboration on the Caspian Sea bioresources conservation and also the realization of the Decisions of the sessions of the Commission on the aquatic bioresources of the Caspian Sea which were held in December 19-20 2000, in Astrakhan, and in 2001 and also the Protocol meeting of 2003 in Astrakhan, Russian Federation between the Kazakhstan Republic ("Ural-Caspian interregional basin department on the protection of the fish resources and fishery management") and Russian Federation ("Sevkaspnbvod") it was completed the Agreement of the

mutual cooperation and collaboration on the protection of sturgeons in the Caspian Sea. According to this Agreement the exchange of the information necessary for the fulfillment of the terms is carried out, the joint actions on the combat poaching are made, the Plan of the joint actions on the matters of the protection and reproduction has been developed, the control for sturgeons harvest has been established.

At conducting of the control-inspection activity the structural subdivisions of the Department are guided by the following legislative and other normative legal statements of the Kazakhstan Republic: "On the environment protection"; "On the ecological expertise"; "On the especially protected zones"; Administrative Codex of the Kazakhstan Republic; Government regulations : "Regulations of the attaching, use and protection of the fishing water-bodies"; "Fishing regulations and harvest of other species of the aquatic animals" and other documents.

Fish export and export of the production from sturgeons is managed by the Regulations "On the order of the presentation of the permissions for the export and import of the wild species of the animals and plants under the disappearance by the administrative body of CITES from the Kazakhstan Republic".

### **Republic of Azerbaijan**

"**Law on fishing**" of the Azerbaijan Republic was approved by the decree of the president of the Azerbaijan Republic dated from March, 27, 1998, Ns 457-IQ. The law determines juridical foundation for fishery **organizing** and managing, as well as reproduction, conservation and regulation of fish stocks. In 1999, the Cabinet Council of the Azerbaijan Republic adopted the following standard juridical acts on the basis of the above mentioned law:

- A) "Maximum concentration limits of harmful substances in fishery water bodies".
- B) "Types of payment and coefficients, rules of their application for fish stock using, fines for illegal fish catch".
- C) Regulations and rights, determined for physical and juridical persons from abroad, using fish stocks of the Azerbaijan Republic.
- D) Code of fishing and conservation of fish stocks of the Azerbaijan Republic.

According to the legislation, physical and juridical persons of the Azerbaijan Republic, as well as from abroad, have the right to use fish stocks in the Azerbaijan Republic. Sturgeon and salmon species are excluded only, as their catch by physical and juridical persons of foreign countries isn't envisaged in the law. It should be noted that catch of above mentioned species for commercial purposes (ship, sea pike-perch, white eyed fish, sucking-fish and trout), entered in "The Red Book" of the Azerbaijan Republic is banned by the legislation.

After determination of catch quota for fish species of definite fishery water bodies, quota is determined for physical and juridical persons, and concrete licenses are issued to them in accordance with established procedure.

Quota for commercial catch of sturgeons is set with regard for available gears, processing, stocking up and storing of meat and fish roe.

Timely development of the given quota for the previous year, timely caviar export and contribution into fish stocks reproduction are taken into account while setting sturgeon catch quota for fishery organizations.

In 2003 commercial quota for sturgeon species was set to the following organizations:

1. "**Khazarbalyk**", company of limited liability
2. "Kaspy", public corporation
3. "Caspian Fish Co Azerbaijan", company of limited liability

On the basis "Code of fishing", the set quota for sturgeon catch is developed (excluding April and May) in the Kura River and in its pre-estuary part by floating nets and river haul seines.

The Administration issues catch license for piscicultural and research purposes excluding commercial purposes.

CITES Authority of the Azerbaijan Republic issues license for export of caviar, stored up by fishery enterprises on the bases of set quota. License (permit) for caviar export is issued after showing the following documents:

- I) Official address to issue the license;

- 2) Certificate about caviar storage;
- 3) Way-bills confirming fish catch;
- 4) Certificate about caviar origin;
- 5) Contract made with a purchaser;
- 6) Invoice of sending caviar;
- 7) Inference of the CITES Scientific Counsel of the Azerbaijan Republic.

State structures combat illegal fishing and trade in sturgeons and their caviar actively within the limits of their competence.

In particular the Ministry of Ecology and Natural Resources revealed 355 breaches of fish protecting legislation from September 2002 – October 2003. The sum of imposed fine in administrative procedure was 17279500 manat. 4926 kg of fish were confiscated. 4196 kg were sturgeon fish, 730 kg were ordinary fish out of this number. 77 kg of black caviar were confiscated.

The suit for damage caused to fish stocks comprises 310901500 manats. 364 persons were made answerable for it. Criminal proceedings were instituted against 27 persons. 60 boats, 2242 m. of different nets, 14740 fish nooks of kalada, 18215 self-fishing hooks, 23 outboard motors were confiscated.

The sum of imposed fine and brought suit for the given period of time is 65638 S.

Poaching is combated actively according to adopted plan of joint measures together with the Ministry of Foreign Affairs and the State Frontier Service. Export and import of fish and caviar are supervised by the State Frontier Service and the State Custom Committee within the limits of their competence at the borders and custom stations.

## **b) Strengthening of protection of aquatic bioresources against pollution**

Water pollution of the Caspian Sea is caused by human activities in its basin, in the coastal zone of the sea and in its water area (oil production at sea, navigation).

But the main source of pollution of the Caspian Sea and its biota is the continental runoff and human activities at sea. The areas of river mouths, water areas near human settlements and developed oil fields are the most heavily polluted areas of the sea.

Petroleum hydrocarbons, heavy metals and phenols are priority pollutants of the Caspian at present. This is also may be referred, but to a lesser degree, to such toxicants as organochlorine pesticides and detergents.

Data of the toxicological survey of bottom sediments obtained during the expedition conducted under the CEP indicated the increased content of different compounds of organochlorine pesticides near the coast of Azerbaijan and Iran which may be attributed to their application in agriculture, rice-growing in particular.

Priority toxic pollutants of the Caspian Sea are petroleum hydrocarbons. Despite the fact that they belong to the fourth class of danger because of their wide distribution and dissolving properties in relation to organochlorine pesticides, they are the most dangerous toxicants for the Caspian Sea ecosystem. The main areas with increased concentrations of petroleum hydrocarbons are the zones of the Volga, Ural, Terek, Kura mouths, water areas near developed oil fields at sea. These are the eastern and southern coasts of the Northern Caspian, the Apsheron Peninsular and shelf zone of the Southern Caspian, water areas near large human settlements. Petroleum products occur everywhere in the Caspian Sea. Concentrations of petroleum hydrocarbons varying from 0.025 to 0.15 mg/l account for 54.1% in the Northern Caspian. The increased content of petroleum hydrocarbons in water results in their accumulation in bottom sediments.

In contrast to the 1960s-1970s, the sea pollution at present does not cause mass mortality of fish and may be regarded as their continued exposure to toxic pollutants. Under the present conditions, the toxic impact of pollutants on hydrobionts results in morphofunctional disturbances in fish including their reproductive function. Toxic pollutants accumulate, first of all, in gonads of many fish resulting in the decline in their factual fecundity, lower quality of reproductive products and, finally, in the decline in their potential [Iris] productivity. Toxic pollutants accumulate, to a larger extent, in ichthyocenosis in predators and long-living fish, such as sturgeons, and in Caspian ringed seal.

The existing ecotoxicological monitoring is not sufficient and does not include the technogenic

flow of toxicants. Therefore, data available on pollution need further investigation. The All-Caspian special ecological survey including river mouths is urgently needed to determine the wide spectrum of toxic pollutants in water, suspension, bottom sediments and biota.

At present the fisheries research institutions of the Azerbaijan Republic, Islamic Republic of Iran, Republic of Kazakhstan, and Russian Federation carry out the toxic monitoring of water, bottom sediments and ichthyofauna.

To provide an objective assessment of the current level of environmental pollution and biota of the Caspian Sea, it is necessary to take the following measures in the next 3 years (2004-2006):

- in 2004 perform the unification of methods for toxicant identification which are applied in the Caspian Sea states and work out a program of research activities;
- in 2005 carry out a joint project to determine the toxicological background in all the areas of the Caspian Sea: water, bottom sediments and in the mass commercially exploited fish based on the coordinated program of expeditions during one season of the year (summer);
- in 2006 render an account presenting the results of investigations, indicating focus water areas with the largest level of pollution and providing proposals to reduce the toxicological background in the Caspian Sea.

Under the conditions of the future large-scale development of oil fields at sea, it is necessary to give special attention to the development of measures which must be taken by all the Caspian Sea states to prevent the possible total pollution of the Caspian Sea ecosystem with petroleum hydrocarbons, aimed at young sturgeons, most vulnerable to these pollutants. The introduction of the technology of 'null discharge' by all the Caspian Sea states may be a practical step as it excludes any inputs of petroleum products and other toxic components of oil production and utilization into the coastal area.

### c) **Strengthening** of measures for **aquatic bioresources** protection against invasive species

On the threshold of the XX and XXI centuries unintended introduction of comb jelly from the Azov-Black basin into the Caspian Sea occurred.

Development of *M. leidyi* population in the Caspian Sea went on very rapidly. Peculiarities of biology of this predatory jelly-body representative (high reproduction and growth rates, absence of predators and wide food *range*, etc.) allowed the development of a Caspian population over a *short* period of time and outbreak of *its* abundance.

After *Mnemiopsis* appeared in the water body it started to compete with Caspian kilka for food, and that caused a sharp decrease in zooplankton species composition and abundance.

The greatest loss was brought to the most abundant fish among the Caspian species – Anchovy-like kilka – the main commercial species of the kilka fishery in the Caspian. Total biomass of the main food species of kilka decreased by 10 times and abundance – by 50 times in comparison with a period prior to comb jelly invasion. As a result, the average weight growth of kilka reduced by almost 2 times (from 6.8 to 3.5 g) and fatness – from 4 to 0.8 points.

Catches for Anchovy-like kilka, the main commercial species in the Caspian, declined significantly.

*Mnemiopsis* invasion had contributed to the destruction of ecosystem developed in the Middle and Southern Caspian, especially in pelagic layer. The impact caused by *Mnemiopsis* affected all trophic levels of the marine ecosystem including Caspian seals which diet consists mainly of kilka **along** with other fish species (gobies, etc.).

Experiments with *B. ovata* in the Russia and Iran were conducted in several directions:

- elaboration of methods for *B. ovata* transportation from the Black Sea to the Caspian Sea; - technology of culturing *B. ovata* during the period of its adaptation to the Caspian water;
- research into *B. ovata* feeding, reproduction and growth rates at various concentrations of *M. leidyi* and temperature of water;
- development of biotechnology for *M. leidyi* cultivation (optimal stock densities, feeding regime and standards, etc.);
- determination of contents of microflora, viruses and parasites in *B. ovata* of Azov-Black sea origin.

As a result of research conducted by the Russian scientists at the marine experimental station of KaspNIRKh "Turali – 2". success was reached in solving the questions related to cultivation biotechnology for comb-jelly *Beroe*, and in September 18, 2003 the second progeny was obtain from *Beroe* population developed in the Caspian water. That proved the possibility of introduction of this species into the Caspian Sea in order to decrease the productive potential of comb-jelly *M. leidy*.

Stages of future collaboration of the Caspian states on the issue of Berne acclimatization in the Caspian Sea for the nearest three years may be as follows:

- in 2004, "Biological justification for *Beroe* introduction into the Caspian Sea" should be considered by the Caspian states at the national level;
- on February 22-23, 2004 conduct an international workshop in the Islamic Republic of Iran (in Tehran) and summarize results of research into development of *Mnemiopsis* population in the Caspian Sea and experiments related to possible introduction of *Beroe*;
- in the first half of 2014, the Working Group on *Mnemiopsis* will prepare a joint and agreed "Biological justification for Berne introduction into the Caspian Sea" for all Caspian states and submit proposals on its practical implementation;
- if the first two points are approved it would be necessary to envisage the cultivation of *Beroe* and its introduction into the Caspian sea in 2004-2005;
- in early 2005 and early 2006 the Working Group on *Mnemiopsis* will conduct workshops in order to adjust activity of the Caspian states related to this problem for 2005-2006.

#### **d) Strengthening of protection of aquatic bioresources against habitat degradation**

Natural spawning grounds of sturgeons are located in the largest rivers flowing into the Caspian Sea: the Volga, Ural, Kura, Sefidrud Rivers etc. Large abundance of sturgeons results from favorable conditions for reproduction: large areas of sand-pebble grounds in the rivers.

River damming in the 20th century to provide for the development of power stations was responsible for considerable reduction in natural reproduction. Dams blocked sturgeons from reaching many of their historic spawning grounds, reservoirs constructed caused the destruction of some spawning grounds.

Complex impact of river damming and the use of water for irrigation purposes results in the reduction of river flow and changes in hydrological regime. The rise in the level of the Caspian Sea and, as a result, flooding of river mouths reduces inputs of inflowing rivers at the areas of their entering the sea. This may hamper sturgeon entering rivers to spawn.

Effectiveness of the natural reproduction of Caspian sturgeons depends on water content of the river. The years with large water content produce an increase in effectiveness while the years with small water content are less effective. Apart from other factors, this may be connected with reduction of spawning areas, their overgrowing with aquatic plants and silting in the years with low water content. The reduction in spawning areas during the years with low water content may be regarded as a natural factor that does not require human interference.

Existing specially protected natural territories provide for an increase in guarding small areas of sturgeons. The objectives of specially protected natural territories do not include that of conservation of the entire genetic diversity of sturgeons.

Thus, the decline in natural reproduction causes a decrease in sturgeon abundance and fishing stock. The decline in natural reproduction along with an increase in the level of artificial breeding results in the reduction of genetic diversity of sturgeons. Artificial propagation should be regarded as a forced measure to replenish fishing stocks. At the same time, it is necessary to make efforts to restore natural reproduction. It is advisable to reject the projects of hydraulic works in all the main spawning rivers of sturgeons; improve fish pass canals in hydro-electric stations. Establish specially protected natural territories in spawning areas in order to conserve sturgeon biodiversity. Ameliorate natural spawning grounds with indispensable assessment of their effectiveness. Consideration and acceptance of national programs on the increase in natural reproduction of sturgeons in the zones where spawning grounds remained intact.

Investments of international organizations and funds are needed to ensure the measure proposed.

## Methods of conduct of investigations in the Caspian sea on the marine fish

The methods include traditional kilka survey and trawl-acoustic survey.

Traditional kilka survey in the Middle and Southern Caspian is conducted according to the scheme of standard sections and stations at a depth of 20 to 200 m which transverse the coastal zone, the zone of circular current and the limit of halistatic zone. At that, the conic net (lift net) with electric light is used. Sections are located perpendicular to the shore. The length of a section varies from 20 to 70 miles depending on shelf width; the distance between stations is from 2 to 10 miles.

The work at a station is carried out when the vessel is at an anchor. At each station, there are determined the location of the vessel (coordinates, square, quadrant), depth, meteorological observation are maintained (wind direction and force, cloud amount, air temperature and pressure, wave condition, direction of current, water transparency, phase of Moon in quarters). Water temperature and salinity are measured at a depth of 10 to 100 m with an interval of 10 m. If special instruments are not available, the direction and force of the current are determined from the drift of a conic net when the vessel is at an anchor.

Kilka fishing is carried out at each station using conic lift net 2.5 m in diameter, net bag is as long as 4.0 m, mesh size is 6 mm. The electric lamp is fastened in the center in the plane of the circle making the inlet. The bulb is oriented upwards. The electric power is supplied using a special water proof wire RCM (rubber cable marine).

The net with a lamp is lowered to an appropriate depth, kept for 10 minutes and then lifted with kilka catch. RCM running from the lamp to the deck is lowered overboard with net and retrieved as the net is lifted. The hoisting rope is marked in every 10 meters. The first mark is made at the winch barrel. The net is hauled using a boat winch. The speed of lifting is not less than 0.5 m/sec. The lamp is switched on at a depth of fishing and is switched out at the surface.

At each station 3-5 kilka catches are carried out in surface layer of the sea (10-20 m), in the layer of temperature of change and near the ground. The goal of catches is determination of maximal catches of adult fish and juveniles of each three kilka species.

Kilka catch if it is not very large is weighted. The weight of the largest catch is determined by means of volumetric glass wan. The total catch (in kg) is recorded.

Specific composition of kilka is determined for each horizon of catch. Kilka sampling is taken out from each catch and it comprises 1 kg. If the catch is lower than 1 kg it is necessary to determine the composition of the whole catch. Samples are identified according to species separating adults from juveniles. The number of each species (adult and juveniles) is calculated and weighed to 1 gram.

According to the rules of fishery fish less than 7 cm of length belong to anchovy kilka juveniles, kilka less than 6 cm belong to ordinary juveniles and big-eyed kilka less than 7 cm belong to juveniles.

Bycatch of other fish species is selected from the catch and identified by species with determination of number and weight of each species.

From horizon of maximum catch of each species the sample is done (1 per one working night) in the volume of 200 specimens with size determination, weight, sex and sexual gonad maturity. For age determination otoliths are selected (15 from males and females of each size group).

All observations at stations and data characterizing catch conditions, volume and composition of catch as well as sample numbers which are recorded.

Trawl hydro-acoustic survey is conducted according to the scheme of transects covering all water area of Middle and Southern Caspian beginning from 20-m depth and including chalistatic zone. Control catch for specific determination and other biological parameters of each kilka species are determined by means of trawls used for different depth equipped with trawl sone. Grid of stations of trawl catches covers all sea water area (Annex 4). Methods of hydroacoustic stocks assessment conduction is presented in the part of the program on methods of sturgeons specimens sampling.

**Annex 3**

**List of sections and stations of kilka catches by means of conic grab with evaluation of volume of work (summer survey)**

| State        | Name of section    | Number of stations | Number of working nights | Name of the vessel |
|--------------|--------------------|--------------------|--------------------------|--------------------|
| Russia       | Central            | 7                  | 2                        |                    |
|              | Chechenskiy        | 7                  | 2                        |                    |
|              | Mahachkalinskiy    | 7                  | 2                        |                    |
|              | Derbentskiy        | 4                  | 1                        |                    |
| Kazakhstan   | Bektash            | 6                  | 2                        |                    |
|              | Adamtash           | 6                  | 2                        |                    |
|              | Rakushechny        | 4                  |                          |                    |
|              | Peschany           | 5                  |                          |                    |
|              | Melovo             | 6                  | 2                        |                    |
|              | Kysyl-Uzen         | 6                  | 2                        |                    |
| Azerbaijan   | Hachuras           | 3                  | 1                        |                    |
|              | Divi4 y            | 4                  | 1                        |                    |
|              | Kilyazi            | 5                  | 1                        |                    |
|              | Andrievskogo       | 3                  | 1                        |                    |
|              | Zhtloy             | 4                  | 1                        |                    |
|              | Makarova           | 4                  | 1                        |                    |
|              | Andreeva           | 4                  | 1                        |                    |
|              | Komilova-Pavi.     | 4                  | 1                        |                    |
|              | Borisova           | 4                  |                          |                    |
|              | Lenkoran           | 3                  | 1                        |                    |
| Turkmenistan | Grazny Vulkan 1    | 4                  | 1                        |                    |
|              | Grazny Vulcan 2    | 6                  | 2                        |                    |
|              | Ogurchinskiy 1     | 6                  | 2                        |                    |
|              | Ogurchinskiy 2     | 6                  | 2                        |                    |
|              | Livanovo           | 6                  | 2                        |                    |
|              | Kianlv             | 7                  | 2                        |                    |
|              | Kara-Bagaz-Gol     | 6                  | 2                        |                    |
| Iran'        | Limir              | 4                  |                          |                    |
|              | Assalem            | 4                  | 1                        |                    |
|              | Separate stations  | 11                 | 5                        |                    |
|              | peninsula Miankale | 5                  | 1                        |                    |

Total number of stations -161, working nights – 48.

- Iran will send the latest information regarding the number of stations and appropriate places

## Grid chart of catch stations of kilka by conic grab

| State      | Section         | No st. | Latitude |
|------------|-----------------|--------|----------|
| Russia     | 1. Central      | 1      | 44,08    |
|            |                 | 2      | 44,0     |
|            |                 | 3      | 43,52    |
|            |                 | 4      | 43,44    |
|            |                 | 5      | 43,36    |
|            |                 | 6      | 43,266   |
|            |                 | 7      | 43,19    |
|            | 2. Chechenskiy  | 8      | 43,375   |
|            |                 | 9      | 43,318   |
|            |                 | 10     | 43,262   |
|            |                 | 11     | 43,21    |
|            |                 | 12     | 43,16    |
|            |                 | 13     | 43,10    |
|            |                 | 14     | 43,06    |
|            | 3. Mahachkala   | 15     | 42,558   |
|            |                 | 16     | 42,53    |
|            |                 | 17     | 42,515   |
|            |                 | 18     | 42,49    |
|            |                 | 19     | 42,476   |
|            |                 | 20     | 42,454   |
|            |                 | 21     | 42,435   |
|            | 4. Derbent      | 22     | 42,143   |
|            |                 | 23     | 42,2     |
|            |                 | 24     | 42,24    |
|            |                 | 25     | 42,28    |
| Azerbaijan | 5. Hachuras     | 26     | 41,365   |
|            |                 | 27     | 41,38    |
|            |                 | 28     | 41,40    |
|            | 6. Divihi       | 29     | 41,21    |
|            |                 | 30     | 41,23    |
|            |                 | 31     | 41,28    |
|            |                 | 32     | 41,29    |
|            | 7. Kiiyazii     | 33     | 40,59    |
|            |                 | 34     | 41,029   |
|            |                 | 35     | 41,053   |
|            |                 | 36     | 41,08    |
|            |                 | 37     | 41,115   |
|            | 8. Andrievskogo | 38     | 40,4     |
|            |                 | 39     | 40,439   |
|            |                 | 40     | 40,49    |
|            | 9. Zhiloy       | 41     | 40,147   |
|            |                 | 42     | 40,115   |
|            |                 | 43     | 40,1     |
|            |                 | 44     | 40,07    |
|            | 10. Makarova    | 45     | 39,57    |
|            |                 | 46     | 39,546   |

|              |                              |    |        |
|--------------|------------------------------|----|--------|
|              |                              | 47 | 39,522 |
|              | 11. Andreeva                 | 48 | 39,498 |
|              |                              | 49 | 39,45  |
|              |                              | 50 | 39,44  |
|              |                              | 51 | 39,431 |
|              |                              | 52 | 39,421 |
|              | 12. Komilova-Pavlova         | 53 | 39,26  |
|              |                              | 54 | 39,25  |
|              |                              | 55 | 39,24  |
|              |                              | 56 | 39,24  |
|              | 13. Borisova                 | 57 | 39,068 |
|              |                              | 58 | 39,03  |
|              |                              | 59 | 39,0   |
|              |                              | 60 | 38,58  |
|              | 14. Lenkoran                 | 61 | 38,432 |
|              |                              | 62 | 38,443 |
|              |                              | 63 | 38,45  |
| Iran*        | 15. Limir                    | 64 | 38,13  |
|              |                              | 65 | 38,13  |
|              |                              | 66 | 38,13  |
|              |                              | 67 | 38,13  |
|              | 16. Assalen                  | 68 | 37,443 |
|              |                              | 69 | 37,45  |
|              |                              | 70 | 37,455 |
|              |                              | 71 | 37,46  |
|              | Separate stations            | 72 | 37,37  |
|              |                              | 73 | 37,33  |
|              |                              | 74 | 37,245 |
|              |                              | 75 | 37,135 |
|              |                              | 76 | 37,03  |
|              |                              | 77 | 36,552 |
|              |                              | 78 | 36,495 |
|              |                              | 79 | 36,44  |
|              |                              | 80 | 36,428 |
|              |                              | 81 | 36,49  |
|              |                              | 82 | 36,468 |
|              | 17. Miankale peninsula       | 83 | 37,015 |
|              |                              | 84 | 37,07  |
|              |                              | 85 | 37,14  |
|              |                              | 86 | 37,2   |
|              |                              | 87 | 37,26  |
| Turkmenistan | 18. Grazny Vulkan (Southern) | 88 | 37,55  |
|              |                              | 89 | 37,55  |
|              |                              | 90 | 37,55  |
|              |                              | 91 | 37,55  |
|              | 19. Grazny Vulkan (Northern) | 92 | 38,05  |
|              |                              | 93 | 38,05  |
|              |                              | 94 | 38,05  |
|              |                              | 95 | 38,05  |

|            |                             |     |        |
|------------|-----------------------------|-----|--------|
|            |                             | 96  | 38,05  |
|            |                             | 97  | 38,05  |
|            | 20. Ogurchinskiy (Southern) | 98  | 38,46  |
|            |                             | 99  | 38,46  |
|            |                             | 100 | 38,46  |
|            |                             | 101 | 38,46  |
|            |                             | 102 | 38,46  |
|            |                             | 103 | 38,46  |
|            | 21. Ogurchinskiy (Northern) | 104 | 39,06  |
|            |                             | 105 | 39,06  |
|            |                             | 106 | 39,06  |
|            |                             | 107 | 39,06  |
|            |                             | 108 | 39,06  |
|            |                             | 109 | 39,06  |
|            | 22. Livanova                | 110 | 39,45  |
|            |                             | 111 | 39,45  |
|            |                             | 112 | 39,45  |
|            |                             | 113 | 39,45  |
|            |                             | 114 | 39,45  |
|            |                             | 115 | 39,45  |
|            | 23. Kianly                  | 116 | 40,21  |
|            |                             | 117 | 40,235 |
|            |                             | 118 | 40,26  |
|            |                             | 119 | 40,28  |
|            |                             | 120 | 40,31  |
|            |                             | 121 | 40,335 |
|            |                             | 122 | 40,35  |
|            | 24. Kara-Bagaz-Gol          | 123 | 41,02  |
|            |                             | 124 | 41,02  |
|            |                             | 125 | 41,02  |
|            |                             | 126 | 41,02  |
|            |                             | 127 | 41,02  |
|            |                             | 128 | 41,02  |
| Kazakhstan | 25. Bektash                 | 129 | 41,32  |
|            |                             | 130 | 41,32  |
|            |                             | 131 | 41,32  |
|            |                             | 132 | 41,32  |
|            |                             | 133 | 41,32  |
|            |                             | 134 | 41,32  |
|            | 26. Adamtash                | 135 | 42,10  |
|            |                             | 136 | 42,09  |
|            |                             | 137 | 42,08  |
|            |                             | 138 | 42,07  |
|            |                             | 139 | 42,06  |
|            |                             | 140 | 42,05  |
|            | 27. Rakushechny             | 141 | 42,41  |
|            |                             | 142 | 42,38  |
|            |                             | 143 | 42,36  |
|            |                             | 144 | 42,34  |
|            | 28. Peschany                | 145 | 43,115 |

|  |             |     |        |
|--|-------------|-----|--------|
|  |             | 146 | 43,09  |
|  |             | 147 | 43,06  |
|  |             | 148 | 43,045 |
|  |             | 149 | 43,02  |
|  | 29. Melovov | 150 | 43.25  |
|  |             | 151 | 43,22  |
|  |             | 152 | 43,18  |
|  |             | 153 | 43.14  |