

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

**REPORT OF THE INTERNATIONAL SEMINAR ON THE ORGANIZATION OF
THE IOC-UNESCO 'FLOATING UNIVERSITY' PROJECT IN THE CASPIAN SEA**
(Astrakhan, Russian Federation, 22-23 November 1999)

This document contains the report of the Astrakhan meeting where experts from countries bordering the Caspian Sea addressed scientific issues and exchanged views on the Training-Through-Research Programme for the region. As a main result of the meeting, the participants agreed that the launching of a '*Floating University*' Project in the Caspian Sea would offer an important contribution to the capacity building of the countries concerned. To this end, the participants (i) formulated a list of scientific and research tasks which can be included in the future Caspian Sea Floating University Project, (ii) agreed on an organizational structure, (iii) formulated a Plan of Action for 2000, and (iv) made an estimate of expenses needed to make the project operational.

This report is submitted to the Thirty-third Session of the IOC Executive Council (June 2000) which will consider the deliberations of the Seminar, comment on the proposal and identify follow-up actions.

The International Seminar was held from 22-23 November 1999 at the Caspian Fisheries Research Institute (KaspNIRKh), in Astrakhan, Russian Federation.

This meeting brought together experts from all countries of the Caspian Sea region, Republic of Azerbaijan, Islamic Republic of Iran, Republic of Kazakhstan, Russian Federation and the Republic of Turkmenistan, as well as the representatives of IOC/UNESCO and Germany (Rostock University). A total of 24 experts and 26 observers took part in the Seminar (Annex I).

Reports to the Seminar addressed activities of the IOC/UNESCO project '*Floating University*' in the Black Sea (Moscow State University) and the Baltic Sea (Russian State Hydrometeorological University), as well as the proposals of the Caspian Fisheries Research Institute on establishing the regional component of the '*Floating University*' project in the Caspian Sea. Reports from leading scientists of the littoral countries were heard as well. The Deputy Executive Secretary IOC informed the participants of the IOC activities and the decisions of the Twentieth Session of the IOC Assembly related to the Caspian Sea. The participants were acquainted with the posters prepared by the young scientists of KaspNIRKh.

In the course of discussions on scientific reports and the '*Floating University*' project, the participants stressed the importance and the unique characteristics of the Caspian Sea for the world community. The participants admitted that during the last few years, the Caspian ecosystem was subjected to considerable alterations caused by anthropogenic and natural causes that resulted in increasing eutrophication and pollution of rivers and marine waters. Research studies indicated that further development and expansion of oil and gas exploitation in the region, navigation and illegal fisheries may lead to so much irreversible processes that our generation may witness again an ecological disaster like that in the Aral Sea.

The participants unanimously agreed that the IOC/UNESCO '*Floating University*' project in the Caspian Sea would offer substantial support to the countries of the region. This support would entail ecosystem research, studies and improvement of the methods aimed at sustainable development and management of commercial bio-resources, and would provide assistance to train marine ecologists.

The participants formulated the following objectives and goals for the '*Caspian Sea Floating University*' (CSFU) as a training-through-research programme of the Caspian region:

- The main goal is the upgrading of the scientific and professional abilities of young scientists and specialists in the fields of oceanography and marine ecology, with the aim of developing co-operation and mutual understanding between countries of the region on such issues as the conservation and rational exploitation of the Caspian natural resources;
- Scientific objectives of the programme include:
 - Study of the impact of sea-level fluctuations on aquatic and coastal ecosystems,
 - Study of the impact of pollution on ecosystems and living resources under conditions of increased oil extraction from the sea and coastal zones,
 - Study of biodiversity and its conservation in the unique ecosystem of the Caspian Sea,
 - Assessment of changes in species composition and biological productivity of ecosystems in the North Caspian and the Volga Delta, caused by fluctuations of the Caspian sea-level and increased anthropogenic impact,

- Study of the distribution of suspended materials and phytoplankton in sea surface layers using remote-sensing methods for monitoring the marine environment;
- Implementation of extensive research/training activities for young scientists including practical work, lectures, operating modern oceanological equipment, as well as making them acquainted with modern methods of water chemistry and biochemistry analysis, data management and preparation of reports and scientific papers.

The participants agreed that scientific objectives could be reached only on the basis of a complex approach to the solution of hydrological, geochemical, biological, environmental and social problems. The list of applied research problems is given in Annex II.

The participants agreed to create the '*Caspian Sea Floating University*' within the framework of KaspNIRKh activities. The CSFU Executive Board with representatives of all participating countries in the project will be responsible for developing plans of research and training activities, as well as programmes of expeditions. The meetings of the Executive Board are to be held not less than once a year. The management of the project is entrusted to the Project Co-ordinator and Co-ordinating Centre. The organization design of the project is given in Annex III.

The project will be funded by the participating countries, the international organizations that agreed to support the project and other sponsors. The annual budget for the project is expected to amount to approximately US\$300,000. The budget estimate with reference to the main budget items is given in Annex IV.

The participants stressed the importance of a wide information and propaganda campaign, both at the regional and international levels, in order to make the public at large and administrations acquainted with the goals and objectives of the project, as well as with the benefits the countries may receive through the implementation of the project in regard of the sustainable development of the region and the solution of socio-economic problems.

The '*Caspian Sea Floating University*' is open for participation to the representatives of all countries interested in it. It will be executed in different Caspian Sea regions. Experts from bordering countries will be given priority to participate in the expeditions.

In order to complete the project and adjust it to the countries needs, the participants agreed to establish an initiative group consisting of: Ivanov, V.P. (Leader, Russia); Belyaeva, V.N.; Mikhailichenko, Yu.G; Tolkachev, A.Ya. (Russia); Kuliev, Z.M.; Salmanov, M.A. (Azerbaijan); Kim, J.A. (Kazakhstan); Shakirova, F.M. (Turkmenistan); Zomorrodian, H.; Alizadeh Lahijani, H. (Islamic Republic of Iran).

Taking into account the experience of IOC in organizing and implementing the '*Floating University*' programme, as well as the experience of UNESCO in science, education and culture, the participants recommended the National Oceanographic Committees and the UNESCO National Commissions in the countries of the region to address UNESCO and IOC's governing bodies for support to the project.

The participants agreed on the Action Plan on the CSFU project for the year 2000, which is presented, in Annex V.

ANNEX I

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ANNEX II

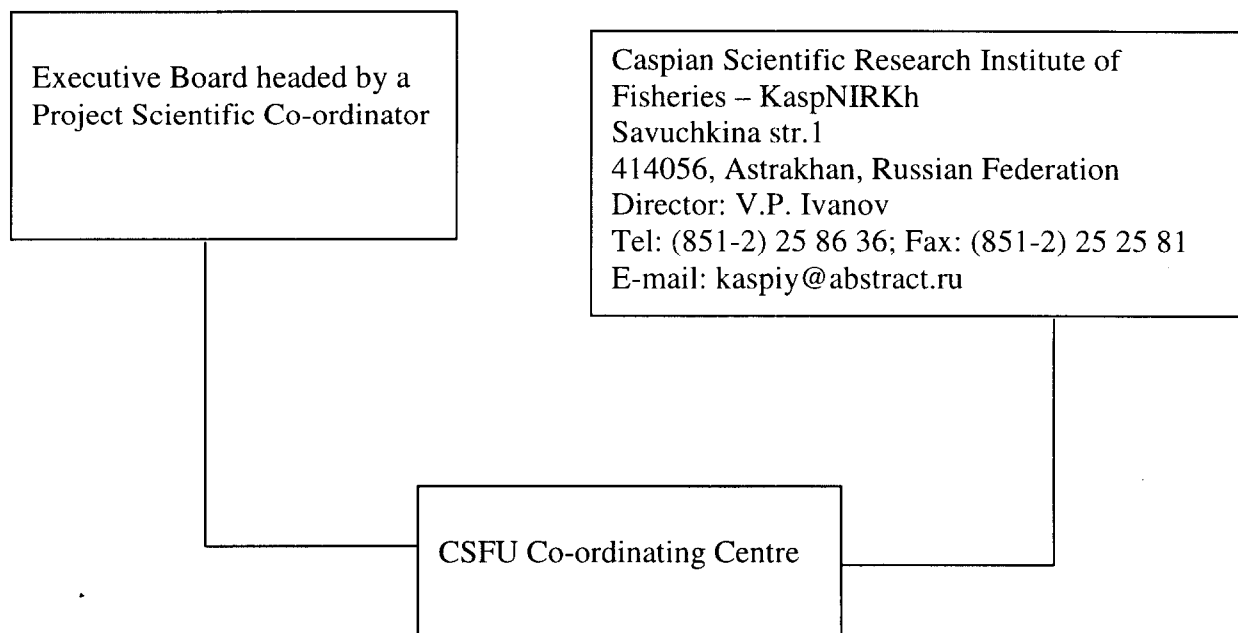
**LIST OF APPLIED SCIENTIFIC TASKS FOR THE 'CASPIAN SEA
FLOATING UNIVERSITY' PROJECT**

- **Carry out** continuous remote monitoring in the Caspian Sea to control distribution of suspended substances and phytoplankton in the sea surface layer.
- **Implement** field observations of phyto-, zoo-, ichthyoplankton development and benthos, and fish bio-cenoses, as a basis for long-term monitoring of typical ecosystems in the Caspian. Study bio-cenotic links between hydrobiont communities.
- **Study** changes in the structure of hydro-front 'river-sea' in the northern Caspian, distribution of fish in this area, hydrological-hydro-chemical fields and structure of bio-cenoses, including bottom one.
- **Study** processes of exchange of 'live substances' (organic matter, organisms of flora and fauna, fish) between the northern and middle parts of the Caspian, as well as formation of fish concentrations (kilka, sturgeon and goby) in this area.
- **Study** formation of a zone of hypoxia in the northern and middle Caspian (more precise determination of its borders and factors forming them of the structure of gas components: oxygen, hydrogen, sulphide, etc.). Influence of this process on benthos, fish migrations and production processes and micro-flora. Development of self-purification processes in this zone under conditions of probable oil pollution.
- **Study** ventilation of close-to-bottom water layers in the middle and southern Caspian, mechanisms determining its formation, changes in oxygen content with respect to seasonal (probably to shorter period as well) and inter-annual variations.
- **Study** production-destructive processes in aquatic ecosystems, determination of primary production (concentration of phyto-pigments, dissolved and suspended organic substances: proteins, lipids, carbohydrates, nucleic acids),
- **Study** dynamics of content of organic and inorganic toxicants in water, bottom sediments and hydrobionts, detection of the most important pollutants.
- **Implement** research on integral toxicity of natural seawater by methods of bio testing.
- **Determine** technogenic and biogenic origin of hydrocarbons.
- **Study** impact of pollution on structural and functional indices of coastal ecosystems and conditions for their rehabilitation after taking down anthropogenic pressure.
- **Assess** bio-diversity and productivity of marine ecosystems; influence of natural and anthropogenic factors on distribution and number of dominating hydrobiont species.

- **Elaborate** methods of determination of sea capacity for commercially valuable fish species (sturgeons).
- **Implement** research of plankton and demersal communities that are formed during flooding of new areas due to sea-level rise.
- **Develop** a system of bio-indicators of ecological state of the Volga Delta and adjacent water bodies at present sea level and taking into account anthropogenic impact.
- **Implement** comparative analysis of morpho-functional peculiarities of osmo- and iono-regulation systems of sturgeon *Acipenser persicus* (Borodin) and *A. gueldenstaedti* Brandt.
- **Determine** ecological euryvalence dynamics in fish ontogeny for choosing optimal times and places to release reared juveniles into natural water bodies.

ANNEX III

**ORGANIZATIONAL STRUCTURE OF THE IOC/UNESCO PROJECT:
*CASPIAN SEA FLOATING UNIVERSITY (CSFU)***



ANNEX IV

**AN ESTIMATE OF FINANCIAL RESOURCES NEEDED TO IMPLEMENT THE
CASPIAN SEA FLOATING UNIVERSITY (CSFU) PROJECT IN 2000**

	US\$
1. Make proceedings of Seminar ready for publication	1,000
2. Funds needed to implement an expedition on board the ship	89,000
3. Development of international co-operation:	
- organization of international seminar ' <i>Young Scientists about the Future of the Caspian Sea</i> '	7,000
- publication of the bulletin about work and results of seminar	2,000
4. Organization of Executive Board meetings to discuss the preparation and programme of CSFU	5,000
5. Supply modern equipment for RV <i>Issledovatel Kaspia</i>	196,000
Total:	300,000

ANNEX V

**PLAN OF ACTION FOR THE
CASPIAN SEA FLOATING UNIVERSITY (CFU) FOR 2000**

	Task	Month	Responsible
1.	Finalize proceedings of international seminar and provide IOC/UNESCO with master copy ready for publication	Jan-Feb.	KaspMIRKh
2.	Publish and distribute materials among Member States	Mar.	IOC/UNESCO
3.	Develop detailed project proposal and have agreement of Member States of the region in its implementation	Jan-Feb.	KaspNIRKh Members of Task Force
4.	Develop organizational structure of CSFU	Jan.	KaspNIRKh
5.	Develop statement on behalf of Caspian Sea countries in support of CSFU and submit to IOC/UNESCO	Feb.	KaspNIRKh
6.	Executive Board meetings on first cruise programme preparation	Mar.	IOC/UNESCO
7.	Carry sea expedition and implement research activities within scientific programmes of CSFU. Organize participation of CSFU in expeditions within the Federal Programme 'Volga Revival'	Jun-Aug.	Minnanki RF
8.	Make preparations and implement international seminar 'Young Scientists About the Future of the Caspian Sea'	Nov.	IOC/UNESCO