

PROGRESS REPORT OF THE “AQUACULTURE EDUCATION” WORKING GROUP

1. Education for aquaculture

One of the most important conditions for aquaculture development is supplying it with high qualification specialists. There is a network of universities in Central and Eastern Europe where the education process goes on on various levels and in a wide range of directions and specializations. There is a good reason to develop international integration for increasing the efficiency of education. It is especially important due to the changing of education according to the Bologna Convention.

During the Second Meeting of NACEE Directors on 8–9 September 2005, in Astrakhan (Russian Federation), the participants agreed to bring out higher education and vocational training between NACEE members as one of the subjects of NACEE joint activities. During the Second Meeting, the Working Group on Higher Education and Training was established.

The main aims of this group are to establish cooperation in higher education and vocational training between NACEE member institutions and to facilitate exchange of experiences in application of Bologna Convention in aquaculture studies in the area. Another important objective is to elaborate and discuss the possibility of launching a Joint NACEE Master Programme in Aquaculture.

Experts from Universities in all countries have provided information about aquaculture education in NACEE member states. These data have been evaluated and will be presented at the Third Meeting of NACEE as a NACEE Report on the status of aquaculture education in NACEE member states. We intend to evaluate and to compare the present aquaculture and aquaculture-related studies (i.e. fishery, marine biology, water resource management, etc.) in the Universities of NACEE countries, to publish a detailed booklet and to include this survey in NACEE internet site.

On the basis of the recommendations and conclusions of the session during the Astrakhan meeting, the main target in the next period is the establishment of a NACEE Joint Master Study in Aquaculture. The idea of the NACEE Master Degree in aquaculture should be based on the present education schemes of different present and future members of the Consortium, where each university with cooperating research institutions should have some area of aquaculture, for which it be recognized in Eastern Europe and worldwide as a centre of excellence. Each University, as well as research institutes that are currently NACEE members, are well-known in different aspects of aquaculture, from culture of different species to reproduction, physiology and genetics. This knowledge forms an excellent base for different courses, currently not available at universities.

2. List of Universities with aquaculture education in NACEE member States

Croatia

Department of Aquaculture, University of Dubrovnik

Address: Cira Carica 4, 20000 Dubrovnik, Croatia

Head of Department: Branko GLAMUZINA

Contact person: Sanja TOMŠIĆ

Tel.: +385 20 445 700

Fax: +385 20 435 590

E-mail: sanja@unidu.hr

Department of Fisheries, Beekeeping and Special Zoology
 Faculty of Agriculture, University of Zagreb
 Address: 25 Svetošimunska, 10 000 Zagreb, Croatia
 Head of Department: Roman SAFNER
 Contact person: Roman SAFNER
 Tel.: +385 1 239 3876
 Fax: +385 1 231 5300
 E-mail: rsafner@agr.hr

Estonia

Department of Aquaculture, Estonian University of Life Sciences
 Address: 1 Kreutzwaldi, 51014 Tartu, Estonia
 Head of Department: Olav KÄRT
 Contact person: Tiit PAAVER
 Tel.: +372 7 313 402, +372 7 313 401
 Fax: +372 7 313 429,
 E-mail: tpaaver@emu.ee

Hungary

Department of Pig and Small Animal Breeding, University of Kaposvár
 Address: Guba S. u 40. H-7400 Kaposvár, Hungary
 Head of Department: Csaba HANCZ.
 Contact person: István LEHOCZKY
 Tel.: +36 82 314 155
 Fax: +36 82 320 170
 E-mail: leis0106@yahoo.com

Department of Fish Culture, Faculty of Agricultural and Environmental Sciences
 Szent István University
 Address: H-2103 Gödöllő, Páter Károly u. 1., Hungary
 Head of Department: Béla URBÁNYI
 Contact person: Ákos HORVÁTH
 Tel.: +36-28-522-000 ext. 2311
 Fax: +36-28-410-804
 E-mail: Horvath.Akos@mkk.szie.hu

Poland

Division of Ichthyobiology and Fisheries, Faculty of Animal Sciences,
 Warsaw Agricultural University
 Address: 8 Ciszewskiego, 02 – 786 Warsaw, Poland
 Director: Teresa OSTASZEWSKA
 Contact person: Mirosław CIEŚLA
 Tel.: +48 22 59 36 642
 Fax: +48 22 59 36 646
 E-mail: mirosław_ciesla@sggw.pl

Romania

Department of Fishing and Aquaculture, “Dunărea de Jos” University

Address: 47 Domneasca Str., Galați – 6200, Romania

Head of Department: Victor CRISTEA

Contact person: Isabelle METAXA

Tel.: +40 236 415 641, +40 236 414 112, +40 236 413 602, +40 72 297 4685

Fax: +40 236 461 353, +40 236 460 904

E-mail: isabelle.metaxa@ugal.ro

Department of Fish Farming, Aquaculture and Fish Processing

Banat University of Agricultural Sciences

Address: 119 Calea Aradului, 1900 Timișoara, Romania

Dean: Marian BURA

Contact person: Adrian GROZEA

Tel.: +40 741 127 825, +40 256 442 821, +40 256 212 581

Fax: +40 256 200 296

E-mail: adigrozea@yahoo.com

Russian Federation

Faculty of Biological Resources and Nature Exploitation

Kaliningrad State Technical University

Address: 1, Sovetskiy ave., 236000 Kaliningrad, Russian Federation

Dean: Konstantin TYLIK

Contact person: Konstantin TYLIK

Tel.: +7 4012 935 009

Fax: +7 4012 595 232

E-mail: tylik@klgtu.ru

Astrakhan State Technical University

Address: 16, Tatishcheva St., 414025 Astrakhan, Russian Federation

Rector: Yuriy Timofeevich PIMENOV

Contact person: Sergey Vladimirovich PONOMAREV

Tel.: +7 8512 250 429, +7 8512 542 723

Fax: +7 8512 257 368

E-mail: doc_ponomarev@astranet.ru, kafavb@yandex.ru

Dagestan State University

Address: 43a M. Gadzhieva St., 367025 Makhachkala, Republic of Dagestan, Russian Federation

Rector: Omar Alievich OMAROV

Contact person: Feliks Magomedovich MAGOMAEV

Tel.: +8 8722 675 915, +8 8722 682 326

Fax: +8 8722 675 915

E-mail: felix_magomaev@mail.ru

Ukraine

Department of General Zoology and Ichthyology, National Agricultural University

Address: 15 Geroev Oborony St., Kiev, Ukraine

Head of Department: Petro Grigor'evich SHEVCHENKO

Contact person: Viktoriya Valentinovna TSEDIK

Tel.: +380 44 267 8918

E-mail: vikaz@gala.net

Faculty of Hydrobiological Resources and Aquaculture, Kherson State Agrarian University

Address: 23 R. Luxemburg Str., 73006 Kherson, Ukraine

Rector: Viktor USHKARENKO

Coordinator: Isaak SHERMAN

Contact person: Yuriy Vladimirovich PILIPENKO

Tel.: +380 55 242 9451

Fax: +380 55 242 9289

E-mail: webneon@mail.ru, lyanzberg@mail.ru

Faculty of Ecology, Belaya Tserkov' State Agricultural University

Address: 8/1 Sobornaya Sq., 09117 Belaya Tserkov, Kievskaya obl., Ukraine

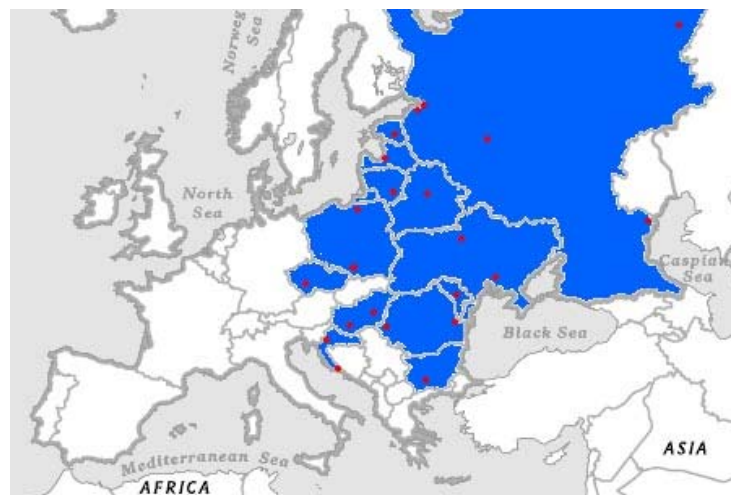
Dean: Mikhail KIVA

Contact person: Mikhail KIVA

Tel.: +4463 5 30 29; 8 067 753 97 26

E-mail: daria@btsau.kiev.ua

3. NACEE Universities' map



4. Level of education and qualification in NACEE Universities

Years of professional education									Level of education	Qualification	Country of Continuing professional education (years)
1	2	3	4	5	6	7	8	9			
									Bachelor degree	Bachelor of fish facilities (fish passes), Bachelor of aquaculture	Croatia, Hungary
									Bachelor degree	Bachelor of fish facilities	Russia, Ukraine, Romania, Belarus
									*Specialty		Russia, Ukraine, Belarus
									*Master degree	Master of fish facilities, Master of mariculture	Croatia, Hungary,
									*Master degree	Master	Romania
									*Master degree	Master	Ukraine
									*Master degree	Master of fish facilities	Russia, Ukraine, Romania,
									Postgraduate studies	PhD	Romania
									Postgraduate studies	PhD	Croatia, Hungary,
									Postgraduate studies	PhD	Russia, Ukraine, Belarus
									Postgraduate studies	PhD	Russia, Ukraine, Romania

[illegible]

	University of Zagreb Croatia	University of Dubrovnik, Croatia	Estonian University of Life Sciences, Estonia	University of Kaposvár, Hungary	Szent István University, Hungary	„Dunărea de Jos” University, Romania	Banat University, Romania	Kaliningrad Technical University, Russian Federation	Astrakhan Technical University, Russian Federation	Dagestan University, Russian Federation	National Agricultural University, Ukraine	Kherson State Agrarian University, Ukraine
Breeding biotechnologies in animal improvement							+					
Nutrition and food base							+					
Sturgeons									+			
Biotechnologies in Aquaculture						+						
PhD education (3 years)												
Ichthyology	+				+			+	+	+		+
Aquaculture	+				+		+	+	+	+		+
Hydrobiology	+				+			+				
Ichthyopatolgy					+			+				
Fisheries management	+				+			+				
Physiology					+			+				
Environmental science	+				+			+	+			+
Applied Marine Sciences		+										
Breeding biotechnologies							+					
Nutrition and feeding							+					
Industrial Engineering						+						

Aquaculture education at “Dunarea de Jos” University complying with the Bologna Convention brought about some modifications starting from the academic year 2005, such as:

- Specialty** in Fisheries and Fish Processing under the Domain of Food Engineering. After 4 academic years, graduates will receive **2 degrees**: Bachelor Degree in the Domain of Food Engineering and Supplement Bachelor Degree in Specialization of Fisheries and Fish Processing.
- Master** in Biotechnologies in Aquaculture (**1 year** /yearly)
- PhD education (3 years)** for doctoral qualification in the Fundamental Domain of Engineering Science, Domain of Industrial Engineering.

6. Number of students (in the last three years)

Name of the University	Bachelor	Specialty	Master	PhD students	Foreign students	From what countries
University of Zagreb Croatia	58	-	13	17	1	Mexico
University of Dubrovnik, Croatia	52					-
Estonian University of Life Sciences, Estonia						
University of Kaposvár Hungary	120		180	5	120	
Szent István University Hungary	-	-	23	8	1	Lybia
“Dunărea de Jos” University, Romania	10**	28**	11**	12	-	-
Banat University of Agricultural Sciences, Romania	72*	-	38	3	-	-
Kaliningrad Technical University, Russian Federation	120	25	10	15	3	Belarus, Lithuania, Estonia
Astrakhan Technical University, Russian Federation	120	25	10	15	2-3	Benin, Vietnam, Bangladesh, etc.
Dagestan University, Russian Federation	100					
National Agricultural University, Ukraine						
Kherson State Agrarian University, Ukraine	405	81	11	6	3	Russian Federation, Moldova

*These students were enrolled in the academic year 2005/2006. In 2006, the first generation graduated (11 alumni) in the field “Fish farming, aquaculture”.

**In the year 2005/2006

7. Staff (involved in education and training)

University	Number of staff	Candidates or Doctors	Average age	Average experience (years)
University of Zagreb, Croatia	8	6	43	15
University of Dubrovnik, Croatia	42	16	42	19
Estonian University of Life Sciences, Estonia				
University of Kaposvár Hungary	12	4	32	14
Szent István University Hungary	11	5	38	15
“Dunărea de Jos” University, Romania	21	21	43	19
Banat University of Agricultural Sciences, Romania	28*	28	45	17
Kaliningrad Technical University, Russian Federation	50	30	45	20
Astrakhan Technical University, Russian Federation				
Dagestan University, Russian Federation				
National Agricultural University, Ukraine				
Kherson State Agrarian University, Ukraine	48	31	43,7	18,5

- staff involved in teaching, exclusively in the “Fish farming and aquaculture” field. Total staff was specified in the Report of the First Meeting of NACEE Directors.

8. Short information about the educational process.

University of Dubrovnik, Croatia. All studies now run according to the principles of the Bologna Convention. Now, they have the third generation of students in the Bachelor Programme of Aquaculture, while from 2007, they will start a new Master Programme of Mariculture (as a 2-year study). From 2007, they will start a new PhD study on Applied Marine Sciences together with the University of Split (Croatia).

Szent István University, Department of Fish Culture, Faculty of Agricultural and Environmental Sciences, Hungary. Currently, the Department’s education activity (together with the entire university’s) is in the process of transition to the education structure known as the Bologna Process. The main education activity of the department concentrates on the teaching of basic knowledge concerning fish culture for graduate students. Fish Biology and Fish culture are part of the compulsory curriculum of the MSc courses of Agriculture and Environmental Engineering. Apart from this, the Department takes part in the teaching of subjects for the course of Wildlife and Fisheries. The number of students voluntarily taking the two-year fisheries course is 10–12 every year. Of these, 5–8 students prepare their MSc thesis at the department. As of this year, the Department participates in the BSc training in Animal Husbandry and one of the optional courses is Fish Culture. The students (20–

25 people a year) who take the course of wildlife learn several fisheries subjects as well. The Department takes an active part in the scientific work of students at the University. Their students successfully participate at national scientific student contests, as well. **Doctoral (PhD) education:** Fish Biology and Fisheries is one of the theme groups of the Doctoral School of Animal Husbandry under the supervision of Szent István University. The Department also carries out the task of coordination of the doctoral school. **Training of foreign students:** the Department systematically trains foreign students interested in fish culture both on graduate and later levels and teaches several subjects in English. **Professional courses:** recently, the Department has organized several very successful professional courses for adults. Their future plans include the continuation and, due to the increasing interest, the expansion of these courses.

University of Kaposvár, Hungary

BSc : 1 semester (oral and written examination)

MSc: 1 semester (oral and written examination)

PhD: 6 semesters (oral examination and research practice)

“Dunărea de Jos” University, Romania. Romanian education institutions are coordinated by the Ministry of Education and Research, but university autonomy is fully guaranteed.

All students of aquaculture education acquire knowledge and experience in the areas of water quality monitoring and analysis, aquaculture husbandry techniques, management, construction, plumbing and other areas that could lead to an aquaculture, natural resource, or environmental science career.

Education for aquaculture in Romania is offered by the public academic institutions at undergraduate, graduate and postgraduate level. The Romanian undergraduate aquaculture educational system provides training for obtaining vocational skills in aquaculture at Arts and Vocational Schools (SAM). The Graduates of SAM obtain the Vocational Certificate in Aquaculture and they do not have the right to apply for higher education programmes without obtaining the Bachelor Diploma.

Higher education for aquaculture in Romania is organized in specialized departments of Universities into two main academic domains, as:

- 1) Domain of Food Engineering, Specialization of Fisheries and Fish Processing (“Dunărea de Jos” University of Galati, Romania)
- 2) Domain of Animal Husbandry, Specialization of Pisciculture, Aquaculture and Fish Processing (University of Agricultural Science & Veterinary Medicine of Banat, Timisoara, Romania).

Also, higher education for aquaculture in Romania is organised as short courses at other academic domains as: Domain of Biology, Specialization of Ecology and Environmental Protection and at Domain of Sylviculture.

University education comprises: short university education carried out in university colleges (3 years), long university education (duration 5 years) and postgraduate university education (duration 2 years).

Short-term university education is organized separately and leads to a Bachelor Degree for short-term studies. Long-term university education leads to a Bachelor Degree for long-term studies.

Holders of a first university degree may continue their training by taking a two-year Master programme, which leads to an examination and a Master Degree. This second university degree may only be attended by graduates with a graduation diploma and with good marks.

The Doctorate in Romania is the highest postgraduate stage of professional specialization (third level), lasting 4/6 years. There is only one type of Doctorate, which is comparable to the PhD. Candidates who have passed the examination for the Doctor's Degree are awarded the Doctor Diploma in science.

9. Training and retraining (regular training courses, their frequency, irregular training courses held in the last three years)

University	Regular training courses	Irregular training courses
University of Dubrovnik, Croatia	Shellfish culture	Shellfish hatchery
University of Zagreb, Croatia	6	
Szent István University Hungary	2-year professional training in Aquaculture	Annual 2-week training in commercial and recreational pond management
University of Kaposvár, Hungary		Special course on Aquaculture and Fisheries Management (Every third year).
Research Institute for Fisheries, Aquaculture and Irrigation (HAKI), Hungary		
“BIOS” Research-and-Production Center for Sturgeon Breeding, Russian Federation	Sturgeon culture	
Kaliningrad Technical University, Russian Federation		Special courses for inspectors of fish protection “Protection of water bioresources”.
Astrakhan Technical University, Russian Federation		Since 2000, annually till 2004 rates special courses “Aquaculture”, “Sturgeon breeding”, “Ichthyology and Ichthyopatolgy”, “Protection of water bioresources”.
Kherson State Agrarian University, Ukraine		Special courses for inspectors of fish protection

[illegible]

11. Exchange of teachers and scientists with other Universities (how many staff members visited other Universities for study tours/training/work exceeding one week in the last three years, how many of them are below 35 years)

University	How many staff members visited other Universities for study tours/training/work	below 35 years
University of Zagreb, Croatia	Not with NACEE members There is exchange with the Institute in Szarvas, Hungary	
Szent István University, Hungary	2 (each year)	2
Banat University of Agricultural Sciences, Romania	1 below 35 years at Iowa State University (USA) – 5 weeks, visitor scientist; 4 below 35 years at Fishery Research Institute, Wollershof (Germany), 2 weeks, training; 1 at HAKI (Hungary) – 5 days, training;	6
“Dunărea de Jos” University, Romania	Wageningen University, Netherlands: 2 (1 for study tour + 1 for research activities), Montpellier II University, France: 2 for research activities	1 1
Astrakhan Technical University, Russian Federation	2 below 35 years at National Agricultural University, Ukraine. Official contacts with 2 universities of Benin, with 3 universities of Iran, with universities of Azerbaijan, Kazakhstan, Dagestan within the framework of the common work of the association of Caspian states. Annual exchange and working trips for 5-6 person in one year.	2
Kherson State Agrarian University, Ukraine	3-5 (each year) to the National Agricultural University, Ukraine	

12. Main research areas

University	Main research areas
Dubrovnik, Croatia	Mariculture, Reproduction and Hatchery, Technology
Banat University of Agricultural Sciences, Romania	Implementation and improvement of new technologies for breeding and farming of aquatic animals; Biotechnologies applied in aquaculture: sex reversal, obtaining of monosex cloned populations and chimera fish, polyploidy etc.; Development of sturgeon rearing technologies in intensive and very-intensive systems; Development of intensive technologies in fish farming and aquaculture, for species with high economical value; Animal nutrition and feeding; Influences of some chemical elements on aquatic organisms.
Szent István University, Hungary	Investigation and development of methods for fish reproduction and artificial propagation; cryopreservation of sperm of farmed as well as as threatened and endangered fish species; fish genetics and biotechnology; fish farming and aquaculture; environmental stress and toxicology
Kaposvár University, Hungary	Fish genetics, intensive rearing systems, fish nutrition, hidrobiology
Astrakhan Technical University, Russian Federation	Breeding of salmonids, cyprinids and sturgeons; Ichthyopathology; Fish nutrition and feeding; Cryopreservation; Fisheries management; Biotechnologies in Aquaculture
“Dunărea de Jos” University, Romania	Intensive rearing systems for fish; Biology of cultured species; Cultured fish pathology; Freshwater ecology; Evaluation of aquatic bio-resources
University of Zagreb Croatia	Ichthyology, Fisheries management, Hydrobiology
Kaliningrad Technical University, Russian Federation	Ichthyology; Fisheries management; Hydrobiology; Biotechnologies in Aquaculture; Breeding of salmonids, cyprinids and sturgeons; Fish nutrition and feeding; Recirculation systems; Diseases in aquaculture - pathology and parasitology; Water management; Aquaculture and the Environment; Management in the aquaculture; Biology of threatened and endangered fish species; Freshwater ecology; Evaluation of aquatic bio-resources; Fish Hematology; Information systems in Fisheries.
Kherson State Agrarian University, Ukraine	Breeding of cyprinids and sturgeons; Aquaculture and the Environment; Evaluation of aquatic bio-resources; fish genetics and biotechnology; fish farming and aquaculture.

13. Joint education and research projects (programs) with other Universities in field of Aquaculture.

University	Education and research projects (programs) with other Universities
University of Zagreb Croatia	Not with NACEE members. There is a project with the Institute in Szarvas, Hungary
Kaposvár University, Hungary	Szent Istvan University - Fish genetics research, cryobiology
Banat University of Agricultural Sciences, Romania	University of Agricultural Sciences and Veterinary Medicine – Cluj-Napoca (Romania), University of Agricultural Sciences and Veterinary Medicine – Bucharest (Romania), University of Agricultural Sciences and Veterinary Medicine – Iasi (Romania), “Dunărea de Jos” University (Romania), Iowa State University (USA), Ghent University (Belgium)
“Dunărea de Jos” University, Romania	“Brâncuși” Program - Bordeaux I University, France European R&D Program - Bucharest University (Romania), Romanian National R&D Program - University of Agricultural Sciences & Veterinary Medicine of Banat (Romania), “Al. I. Cuza” University of Iasi (Romania), “Ion Ionescu de la Brad” University of Agricultural Sciences and Veterinary Medicine of Iasi (Romania), University of Agronomical Science and Veterinary Medicine of Bucharest (Romania), University of Agricultural Sciences and Veterinary Medicine of Cluj (Romania), «Transilvania» University of Brasov (Romania), Bacau University (Romania).
Astrakhan Technical University, Russian Federation	Joint education and research programmes with the National Agricultural University, Ukraine and universities in Benin, Iran and others.
Kherson State Agrarian University, Ukraine	Joint education and research programs with the National Agricultural University, Ukraine

REPORT OF THE AD HOC MEETING OF THE “AQUACULTURE EDUCATION” WORKING GROUP

The report “NACEE Aquaculture education - present status” was presented by Prof. Konstantin Tylik (Kaliningrad State Technical University, Russian Federation), followed by an oral review by Prof. Branko Glamuzina (University of Dubrovnik, Croatia). Both reports indicated a very diverse situation considering higher education in aquaculture in the member states and pointed to the need of the unification of courses including development of special parts specific for each university.

These reports were followed by a working group meeting of all universities inside the NACEE network, where each representative provided data on the present situation of aquaculture education at their universities and expressed their opinions about the structure of future cooperation and structure of the NACEE Master Programme in Aquaculture.

SHORT SUMMARIES OF DISCUSSIONS OF REPRESENTATIVES

Belaya Tserkov’ State Agricultural University, Ukraine - Prof. M. Kiva reported that Ukraine was entering EHEA, had 3 cycles of higher education and was in process of adoption of the Bologna Declaration (later in text: BD) principles.

University of Sarajevo, Bosnia-Herzegovina - Prof. A. Ivanc reported that there was no aquaculture education in the country, but MSc should be started at the Faculty of Science in the near future.

Astrakhan State University, Russian Federation - Prof. M. Egorov reported about the present status of education, with BSc, MSc and PhD studies in different disciplines connected to aquaculture

Kaliningrad State Technical University, Russian Federation - Prof. K. Tylik reported about the present studies in fishery and aquaculture at the university and described possible problems in future cooperation, from financing of mobility of students, specification of the NACEE diploma and its recognition and exchange of curricula to the great diversity of studies.

University of Zagreb, Croatia - Prof. T. Treer suggested fast action in exchange of curricula and adoption of the principle that the third semester of present and future Master courses should be a semester when the student visits and studies at another university. The programme should not be unified.

Kherson State Agrarian University, Ukraine - Prof. Yu. Pilipenko provided some ideas to realization of the vision of the NACEE MSc Programme, with forming of blocks or modules of subjects and courses unique for each institution, ultimate unification of basic curricula and some sort of NACEE certificate as a supplement to the diploma.

University of South Bohemia, Czech Republic - Prof. O. Linhart reported that his institute was involved in a PhD course, while BSc and MSc were executed at the Faculty of Agriculture. The new Master Programme should be in English and linked to institutes as bases of scientific excellence in aquaculture.

Banat University of Agricultural Sciences, Romania - Prof. A. Grozea reported on the status of aquaculture education at the university, with specialization in fish farming and its transition to a BD Bachelor study. He pointed on possible problems of the future Master Programme, such as scholarship and funds for mobility and change of the present courses and studies.

“Dunarea de Jos” University, Romania - Prof. N. Patriche reported that they specialized in food industry and that the present 4+2+3 education scheme would be changed from the next year to a BD 4+1+3.

University of Life Sciences, Estonia - Prof. T. Paaver indicated a need to collect and publish at the NACEE web page all curricula of aquaculture studies at member universities.

University of Dagestan, Russian Federation - Prof. F. Magomaev focused on student exchange and promotion of mobility and offered an invitation to potential students in carp and sturgeon breeding.

Astrakhan State Technical University, Russian Federation - Prof. S. Ponomarev reported on education at his institution.

Szent István University, Hungary - Dr. Á. Horváth reported that they started a new BD bachelor course, as a single degree with different specializations. He offered to act as the grantholder or coordinator of a TEMPUS project.

University of Kaposvár, Hungary - Dr. T. Molnár reported that they started a BD bachelor study. He has no mandate to enter the Consortium. This will be done later.

The discussion was finished by a summary by Prof. B. Glamuzina. The most important issues are the following: Two processes were identified as crucial in developing efficient higher education in aquaculture as one of the NACEE activities. The first is to initiate the process of recognition of courses, curricula and teachers among member institutions of the NACEE network. The second is to start preparation of a Joint Master Programme in Aquaculture and to prepare a proposal for a TEMPUS project. The grantholder institution should be from Hungary or the Czech Republic and the coordinator from one of the non-EU states, depending on the future activity.

A fruitful discussion was initiated by Prof. T. Treer (University of Zagreb) with the aim to initiate a fast start of cooperation between the members of Consortium. The proposal was to combine the present MSc courses at different universities in a way that the first and second semesters should be organized by the home university, while the third semester could be a “visiting semester” at another university member of the Consortium. Each University should start the recognition process of MSc courses at all other university members of the Consortium.

The recognition should also be made by signing one document by all universities.

The process should be composed of:

- evaluation of the present MSc adapted to the principles of the Bologna Declaration
- preparing a material for the NACEE web page where all these MSc courses should be presented
- preparation of a programme for the third semester that will include the “best teaching practice and specificity” of each university, prepared especially for foreign students (i.e. the University of Dubrovnik will offer a semester on mariculture or the University of South Bohemia on fish reproduction, etc.)

CONCLUSIONS

1. The title of the new Master Programme should be: Joint NACEE Master in Aquaculture and Fisheries
2. The new Master of Science course should be composed of four semesters and 120 ECTS in total.
3. The first and second semesters’ structure should be unified, based on the evaluation of all present courses and future needs of aquaculture industries, while the third semester should

be specific for each university, offering specific courses or modules of interest for foreign students.

4. The first two semesters should be done at the home university and the third, at another host university. In principle, the fourth semester is for research and thesis preparation and should be executed at the home university, or, in special cases, at the host university.
5. Other NACEE members, namely, research institutions, should be included in the process of higher education as partners, providing facilities and mentors for the scientific work of students.
6. The diploma of the Master of Science course should be issued by the home university, together with a diploma supplement. NACEE should issue some kind of diploma or certificate that will be an addition to the two basic documents. The meaning and structure of the NACEE diploma will be discussed later.
7. All universities inside the NACEE network should start the process of recognition of courses and ECTS in order to promote student mobility.
8. All members agreed to start the preparation of a TEMPUS project on the subject of Master of Science in Aquaculture and Fisheries.
9. The responsible persons to initiate the process are: dr. Á. Horváth (Szent István University) and Prof. B. Glamuzina (University of Dubrovnik). They will be supported by: Prof. K. Tylik (Kaliningrad State Technical University), Prof. Yu. Pilipenko (Kherson State Agrarian University), dr. Jan Kouřil (University of South Bohemia), Prof. A. Ivanc (University of Sarajevo) and dr. I. Metaxa ("Dunărea de Jos" University).

The work of the Working Group on Education in Aquaculture was finished with the signing of a Memorandum of Understanding by the 16 universities present at the 3rd Meeting of NACEE Directors at Dubrovnik/Slano, Croatia. The most important section of the MoU is as follows:

The purpose of this Memorandum of Understanding is to further the following objectives:

1. To develop co-operative and collaborative activities to further mutually reinforcing interests of the signatory institutions and programmes.

2. To develop higher education and research, development and technology transfer in the field of aquaculture and fisheries and related activities as may be of mutual interest to the signatories.

3. To facilitate the following:

Promote, as appropriate, beneficial exchange of graduate students between the participating parties.

Promote the exchange of study programs and curricula by using the facilities of NACEE web page.

Develop a joint degree of Master of Sciences in Aquaculture and Fisheries and prepare a project proposal for Tempus and other sources of funding.

4. The coordination of the Joint Degree program and the Tempus tender presentation should be the responsibility of either Szent István University, Hungary or the University of South Bohemia, Czech Republic.

The full version of the MOU is attached to this report.



SCHEDULE AND ARTICLES

comprising

A MEMORANDUM OF UNDERSTANDING

between

**THE UNIVERSITY OF DUBROVNIK, CROATIA
THE UNIVERSITY OF ZAGREB, FACULTY OF AGRICULTURE, CROATIA
UNIVERSITY OF SOUTH BOHEMIA, RESEARCH INSTITUTE OF FISH
CULTURE AND HYDROBIOLOGY, CZECH REPUBLIC
UNIVERSITY OF MONTENEGRO, MONTENEGRO
KALINIGRAD STATE TECHNICAL UNIVERSITY, RUSSIA
ASTRAKHAN STATE TECHNICAL UNIVERSITY, RUSSIA
ASTRAKHAN STATE UNIVERSITY, RUSSIA
DAGESTAN STATE UNIVERSITY, RUSSIA
KHERSON STATE AGRARIAN UNIVERSITY, UKRAINE
“DUNAREA DE JOS” UNIVERSITY, ROMANIA
BANAT’S UNIVERSITY OF AGRICULTURAL SCIENCES, ROMANIA
SZENT ISTVAN UNIVERSITY, HUNGARY
UNIVERSITY OF KAPOSVAR, HUNGARY
UNIVERSITY OF LIFE SCIENCES, ESTONIA
UNIVERSITY OF SARAJEVO, FACULTY OF SCIENCE, BOSNIA AND
HERZEGOVINA**

1

¹ This document was formulated during the Third Meeting of Directors of the Network of Aquaculture Centers in Central and Eastern Europe, held 28.-30.Sept.2006. in Dubrovnik, Croatia



Intended to Foster Collaborative Activities in Higher Education in Aquaculture and Fishery and establishing of NACEE Joint Master in Aquaculture and Fisheries

WHEREAS, the above mentioned Universities has committed considerable resources in developing as an international centers of excellence for Aquaculture and Fishery and in initiating research, training and technology transfer in Central and Eastern Europe and as they are mutually interested in collaboration in research, development, graduate and postgraduate education and related activities in applied aquaculture and fisheries which from time to time may be identified as being national and international priorities; and,

WHEREAS, these institutions have co-operated on an informal basis to further these interests and now desire to record their mutual understanding in this regard;

NOW, THEREFORE, the parties do hereby record their understanding as follows;

ARTICLE I

The purpose of this Memorandum of Understanding is to further the following objectives:

1. To develop co-operative and collaborative activities in furtherance of the mutually reinforcing interests of the signatory institutions and programmes.
2. To develop higher education and research, development, technology transfer in the field of aquaculture and fisheries and related activities as may be of mutual interest to the signatories.
3. To facilitate the following:
 - (a) Promote, as appropriate, beneficial graduate student exchange between the participating parties.
 - (b) Promote the exchange of study programs and curricula by using the facilities of NACEE web page.
 - (c) Develop a joint degree of Master of Sciences in Aquaculture and Fisheries and to prepare a project proposal for Tempus and other sources of funding.
4. The coordination of the Joint Degree program and the Tempus tender presentation should be the responsibility of either Szent Istvan University, Hungary or University of South Bohemia, Czech Republic.

ARTICLE II

1. This Memorandum of Understanding is effective upon its execution by the appropriate office of each of the signatory institutions and programmes.



2. This Memorandum may be amended at any time by mutual consent and shall continue to be in force and effect unless terminated by one of the parties by giving written notice of intent to withdraw. Insofar as possible, such notice will be given six months in advance of the withdrawal date. The overall agreement shall remain in force as long as the participating parties remain as active participants.
3. This Memorandum of Understanding will be considered as an enabling mechanism to be followed by specific agreements between participating parties.



RATIFICATION OF MEMORANDUM OF UNDERSTANDING

between

THE UNIVERSITY OF DUBROVNIK, CROATIA
THE UNIVERSITY OF ZAGREB, FACULTY FOR AGRONOMY, CROATIA
UNIVERSITY OF SOUTH BOHEMIA, RESEARCH INSTITUTE OF FISH
CULTURE AND HYDROBIOLOGY, CZECH REPUBLIC
UNIVERSITY OF MONTENEGRO, MONTENEGRO
KALINIGRAD STATE TECHNICAL UNIVERSITY, RUSSIA
ASTRAKHAN STATE TECHNICAL UNIVERSITY, RUSSIA
ASTRAKHAN STATE UNIVERSITY, RUSSIA
DAGESTAN STATE UNIVERSITY, RUSSIA
KHERSON STATE AGRARIAN UNIVERSITY, UKRAINE
“DUNAREA DE JOS” UNIVERSITY, ROMANIA
BANAT’S UNIVERSITY OF AGRICULTURAL SCIENCES, ROMANIA
SZENT ISTVAN UNIVERSITY, HUNGARY
UNIVERSITY OF KAPOSVAR, HUNGARY
UNIVERSITY OF LIFE SCIENCES, ESTONIA
UNIVERSITY OF SARAJEVO, BOSNIA AND HERZEGOVINA

WHEREAS, on this 29th day of September, 2006, in Dubrovnik, it is hereby agreed by the above mentioned organisations that they will develop co-operative and collaborative activities in education, training, research, development, and technology transfer, in furtherance of their mutually reinforcing interests particularly towards the rational utilisation of aquaculture and fisheries.

NOW, THEREFORE, the parties do hereby record their understanding, as set out in the attached Schedule and Articles I to II contained therein and as endorsed in Dubrovnik on the 29th day of September, 2006.



RATIFYING SIGNATURES:

.....
Prof. Branko Glamuzina,
THE UNIVERSITY OF DUBROVNIK, CROATIA

.....
Prof. Roman Safner
THE UNIVERSITY OF ZAGREB, FACULTY OF AGRICULTURE, CROATIA

.....
Prof. Otomar Linhart,
UNIVERSITY OF SOUTH BOHEMIA, RESEARCH INSTITUTE OF FISH
CULTURE AND HYDROBIOLOGY, CZECH REPUBLIC

.....
Prof. Konstantin Vladimirovich Tylik
KALINIGRAD STATE TECHNICAL UNIVERSITY, RUSSIA

.....
Prof. Sergey Vladimirovich Ponomarev
ASTRAKHAN STATE TECHNICAL UNIVERSITY, RUSSIA

.....
Dr. Mikhail Alekseevich Egorov,
ASTRAKHAN STATE UNIVERSITY, RUSSIA

.....
Prof. Feliks Magomedovich Magomaev
DAGESTAN STATE UNIVERSITY, RUSSIA

.....
Prof. Isaak Sherman
KHERSON STATE AGRARIAN UNIVERSITY, UKRAINE

.....
Prof. Victor Cristea,
“DUNAREA DE JOS” UNIVERSITY, ROMANIA



.....
Prof. Adrian Grozea,
BANAT'S UNIVERSITY OF AGRICULTURAL SCIENCES, ROMANIA

.....
Dr. Akos Horvath,
SZENT ISTVAN UNIVERSITY, HUNGARY

.....
Prof. Csaba Hancz,
UNIVERSITY OF KAPOSVAR, HUNGARY

.....
Prof. Tiit Paaver,
UNIVERSITY OF LIFE SCIENCES, ESTONIA

.....
Prof. Aleksander Ivanc,
**UNIVERSITY OF SARAJEVO, FACULTY OF SCIENCE, BOSNIA AND
HERZEGOVINA**