

Strengthening aquaculture health management in Bosnia and Herzegovina: highlights of project implementation

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ABSTRACT

This paper provides a background to the FAO Technical Cooperation Programme (TCP) Project TCP/BiH/3101 Strengthening aquaculture health management in Bosnia and Herzegovina and a brief narrative of the major accomplishments of the project. The project, implemented from late 2006 to mid-2009, was successfully concluded with a regional seminar/workshop on aquatic animal health which provided the venue to disseminate the outcomes of the TCP and which generated support for the development of a regional proposal. In addition to the many capacity building activities and documentation outputs, the TCP had assisted Bosnia and Herzegovina in being included in the list of third countries and territories from which imports of fishery products in any form for human consumption are permitted. Four Bosnia and Herzegovina fish processing facilities and establishments were included in the list in December 2008. A second major outcome was the development of a regional technical programme, taking the lessons learned from the Bosnia TCP, which will give another opportunity to Bosnia and four other countries in the western Balkan to improve capacity on aquatic animal health that will support the sustainable development of aquaculture for food security, nutritional well-being, poverty reduction and socio-economic development.

BACKGROUND TO TCP/BiH/3101 (A): STRENGTHENING CAPACITY ON AQUACULTURE HEALTH MANAGEMENT

Bosnia and Herzegovina has a long history of aquaculture production but this was interrupted during the 1991-1995 war destroying a large part of the production infrastructure. Since then, modern fish production and processing facilities have been established and trade in fish and fish products has resumed.

The Government of Bosnia and Herzegovina strongly supports the further expansion of the aquaculture sector as a means to increase access to animal protein, particularly by the poorer segments of the population, as an important tool for development and income generation in rural areas and as source of foreign exchange earnings through trade, especially with the European Union (EU).

While in the process of negotiating an export licence to the EU, the competent authorities, in particular the State Veterinary Office (SVO) of the Ministry of Foreign Trade and Economic Relations and other stakeholders recognized the lack of capacity in fulfilling some of the EU requirements on issues related to aquatic animal health management and food safety.

In order to fill this gap, the Government of BiH has therefore requested FAO's assistance through a Technical Cooperation Programme (TCP). An official visit of BiH officials to FAO headquarters on 27–28 April 2005 and subsequently an official request from the State Veterinary Office (SVO) dated 6 May 2005 lead to an Inception Mission undertaken by FAO Fishery Resources Officer, Dr M.B. Reantaso from 10 to 17 July 2005 to assist in the preparation of a TCP proposal on “National Surveillance Program in Aquaculture Farms in Bosnia and Herzegovina (BiH), Training and Equipping Veterinary Inspectors and Upgrading a National Fish Disease Laboratory”. The proposal was developed and submitted following the usual protocol and the project “Strengthening capacity on aquaculture health management” was officially approved on 14 June 2006. The National Project Coordinator (NPC) was appointed in September 2006, followed by preparatory work for the Inception Planning Workshop.

The development objective of the project was to increase the effectiveness and efficiency of the SVO Bosnia and Herzegovina in aquatic animal health management to support sustainable and healthy aquaculture production in Bosnia and Herzegovina that will enable the country to improve the value and efficiency of aquaculture production through the implementation of international animal health and food safety standards, especially those of its trading partners in Europe.

The specific objectives of the project were to:

- develop and assist in implementing national policies in the area of aquatic animal health management and disease control and aquaculture development in general, in accordance with those of the EU through the development of an appropriate national biosecurity framework;
- improve the management of aquatic animal health practices that will support sustainable and healthy aquatic production through the development of a National Aquatic Animal Health (NAAH) Strategy;
- improve and strengthen the institutional capacity of the veterinary administration, veterinary inspection, laboratories and producers on aquatic animal health management to support the growing aquaculture industry and for better compliance with aquatic animal health and food safety and quality requirements for international trade, with both the EU and non-EU trading partners;
- prepare extension materials and technical guides (e.g. uniform inspection procedures, hatchery technical standards, good seed quality production, better management practices, etc.) to support good health management practices at extension and farm/producer levels; and
- assist in disseminating the outcome of the project to neighbouring trading partners in order to promote future cooperation in aquaculture and aquatic animal health management.

This TCP was expected to increase the capacity of the SVO and other stakeholders to support sustainable and healthy aquaculture production, both for domestic consumption and for trade, through the implementation of the same international animal health and food safety requirements that apply to its trading partners. Specifically, the project

will develop national policies in the areas of biosecurity, aquatic health management and disease control and would strengthen the capacity of veterinary administration, inspectors, laboratories and producers to ensure compliance with international health and food safety and quality requirements and practices. The project was to disseminate the lessons learned to neighbouring trading partners in order to promote future regional cooperation in aquaculture and aquatic animal health management.

PROJECT HIGHLIGHTS

A number of training/workshops were held in various places in the country; overseas training opportunities were provided to key staff of the project and laboratory personnel; SVO was equipped with basic office equipments; virology laboratory at the Faculty of Veterinary Medicine was provided with additional equipments and a regional seminar/workshop on aquatic animal health was organized back to back with the Project Terminal Workshop. More details on these are provided below.

1. Training/workshops

A total of 6 training/workshops were conducted between 2006 and 2008 on a wide range of topics and issues such as policy and strategy development in aquaculture, EU trading and aquatic animal health requirements, risk analysis for aquatic animal movement, food safety, diagnostics, surveillance and reporting of aquatic animal diseases. A brief narrative is provided below.

1.1 Inception Planning Workshop (Mostar, 30–31 October 2006)

The Inception Planning Workshop laid down the detailed implementation plan for the TCP. It was participated by 30 representing the various stakeholder groups from government and industry. A number of presentations were provided to the participants before breaking them into three working groups to tackle on the following topics: national biosecurity framework, national aquatic animal health strategy and capacity building, extension materials and technical guides. During the workshop, the participants also prepared a logical framework (logframe) for these three topics.

1.2 Training workshop on Policy and Strategy Development in Aquaculture (Mostar, 1 November 2006)

The one-day training session was provided with a number of presentations on: (i) policy and strategy development in the aquaculture sector in BiH; (ii) current state of the world aquaculture; (iii) concepts of SWOT (strengths, weaknesses, opportunities and threats); (iv) possible structure for a National Aquatic Animal Health Strategy (NAAHS); and (v) FAO Code of Conduct for Responsible Fisheries. The fourth presentation became the basis for the working group discussions to start the NAAHS policy formulation process with specific emphasis given to the formulation of a long-term vision on aquatic animal health and related principles.

1.3 Training/Workshop No. 2 on Aquatic Animal Health Strategy Development, Preparation of Extension Materials (Mrakovica, 16–19 April 2007)

The objectives of this training/workshop No. 2 were to: (a) initiate the development of the National Strategy framework (i.e. agree on the elements of the National Strategy); (b) elaborate on the legislative framework; (c) elaborate on the extension manual; and (d) update on other thematic issues.

Seven plenary presentations were provided on the following topics: (i) current status and future trends in aquaculture and trade in live aquatic animals and their products in BiH; (ii) role of fish disease laboratories in NAAHS; (iii) general principles of biosecurity; (iv) international experiences in NAAHS development; and (v) a proposed framework for a NAAHS for Bosnia and Herzegovina.

Training/workshop No. 2 was successfully implemented by 34 representatives from State Veterinary Office, Ministries of Agriculture and Management, Canton/Municipality Veterinary Inspectors, private sector representatives, translators and FAO officers contributed and participated to a productive training/workshop.

The Workshop achieved the following: (i) development of the National Strategy framework with agreed elements; (ii) elaborated programme/element on legislative framework; (iii) elaborated programme/element on information and communication where two types of materials were proposed: an extension manual and a brochure for politicians and the general public; (iv) updated information on aquaculture, aquatic animal health, food safety aspects in Bosnia and Herzegovina; and (v) increased awareness on aspects of biosecurity.

1.4 Training/Workshop No. 3 on EU Trading and Aquatic Animal Health Requirements and Risk Analysis for Aquatic Animal Movement (2–5 October 2007, Bejašnica, Sarajevo, Bosnia and Herzegovina)

The workshop was attended by some 20 participants, including staff of the SVO, state representatives, government officers, private-sector aquaculturists, two FAO backstopping officers (FIMA and LEGN) and two FAO consultants. The workshop reviewed the EU trading and aquatic animal health requirements and conducted a brief course on application of risk analysis in aquaculture.

1.5 Training/Workshop No. 4 on Product Safety and Quality Assurance (4–7 December 2007, Neum, Bosnia and Herzegovina)

The workshop was attended by 46 participants from various organizations such as SVO, food safety agencies, veterinary laboratories, veterinary inspectors and officials from fish farms, fish hatcheries and fish processing facilities. The topics covered during this workshop included Sanitary and Phytosanitary (SPS) and Technical Barriers to Trade (TBT) agreements, causes of detentions and rejections in international trade, responsible use of antibiotics and residue monitoring, application of risk analysis in food safety, principles of risk management, Codex standards and codes of practice.

1.6 Training/Workshop No. 5 on Diagnostics, Surveillance and Reporting of Aquatic Animal Diseases, 18–21 March 2008, Fojnica

The workshop was attended by some 25 participants, including staff of the SVO, state representatives, government officers, private-sector aquaculturists, international consultant, and one FAO backstopping officer. The presentation of the National Consultant on epidemiology provided an exhaustive status of diagnostics and surveillance of aquatic animal diseases in Bosnia and Herzegovina. Identified constraints include issues related to: (i) organizational and structural problems; (ii) legislation; (iii) management of animal movement; (iv) diagnostic laboratories; (v) education/motivation related problems. A number of recommendations addressing these issues were also provided.

2. Overseas training

Three staff of the SVO (Drs Nihad Fejzic, Sanin Tankovic and Zorana Mehmedbasic) participated in the FAO Expert Workshop on Understanding and Applying Risk Analysis in Aquaculture held from 7 to 11 June 2007 in Rayong, Thailand. This expert workshop gave the SVO staff opportunity to better understand the seven risk sectors in aquaculture production, i.e. pathogen, food safety, genetics, environmental, ecological, financial and social risks and for them to contribute their own experience in dealing with these risks, particularly pathogen and food safety risks which were important components of FAO Project TCP/BiH/3101.

The recipients of the overseas training on diagnosis of viral fish diseases, Drs Nermina Vejzagic and Dejan Stojanovic, attended an on-the-job training conducted by the European Community Reference Laboratory for Fish Diseases at the National Veterinary Institute at Aarhus, Denmark, from 28 January to 15 February, 2008. The training consisted of lectures and hand-on practice on several techniques for viral disease examination (e.g. sampling procedures; handling and preparation of fish tissue for virological examination; preparation of cell culture growth media; introduction to fish cell lines used for diagnostics; cell cultivation and maintenance; preparation of cell culture plates for diagnostic use; inoculation of samples on cell culture and subcultivation; identification of virus-mediated CPE; cell sensitivity tests; freezing and thawing of cells; Mycoplasma testing; ELISA test for identification of VHS, IHN, and IPN virus; neutralization test; virus titration; purification of viral RNA; RT-PCR and gel electrophoresis; handling of proficiency tests and introduction to quality assurance schemes according to ISO 17025 accreditation.

3. Purchase of laboratory equipment

The purchase and delivery of laboratory equipment were completed in early 2009. The equipments include incubators, laminar flow, inverted microscopes, deep freezer, refrigerated centrifuge and laboratory consumables. These equipments are now being productively used by the Faculty in monitoring fish viral diseases. The laboratory is now able to maintain two cell lines, i.e. EPC and BF-2 cell lines which can potentially be used for diagnosis of a number of OIE-listed diseases such as EHN, IHN, VHS, IPN and SVC. BF-2 and EPC cell lines would cover the culture of all fish viruses of interest within a similar growth temperature that will reduce the need for more incubators. One of the staff who received training at the EU Community Reference Laboratory at Aarhus University in Denmark has since been doing maintenance and preservation of the cell lines, preparation of samples for diagnosis, quantifying viral particles and performing diagnosis based on cell line culture and serological identification of each of the OIE-listed fish viral diseases.

4. Regional Seminar/Workshop on Aquatic Animal Health and Project Terminal Workshop (20–23 May 2008, Sarajevo)

The Western Balkan Regional Seminar/Workshop on Aquatic Animal Health was held from 20–22 May 2008 in Sarajevo. The regional seminar/workshop was successful as demonstrated by the presence of high-level officials from Bosnia and Herzegovina (i.e. Minister of Foreign Trade and Economic Relations, the Director and Chief Veterinary Officer (CVO) of the SVO) and representatives from OIE and FAO/SEUR (FAO Subregional Office for Central and Eastern Europe), and participation of 2 or 3 representatives (CVOs and/or Veterinary Officers) from Croatia, The former Yugoslav Republic of Macedonia, Montenegro and Serbia. Although Albania was not able to participate, they prepared a statement of support and a powerpoint presentation. A major outcome was the finalization of TCP Facility Concept Note “Assistance to Western Balkan Countries for Improving Compliance with International Standards for Aquatic Animal Health”.

The Project Terminal Workshop held on 23 May 2008 recognized that the overall implementation of the TCP was in good order, although there were some delays in the completion of remaining tasks. The major objectives of the project were achieved, particularly noting that the project had greatly assisted the country in getting an export licence to the EU. Other achievements include: (i) five training/workshops (inception workshop, aquatic animal health strategy and policy workshops, EU trading requirements, risk analysis, surveillance and diagnostics and food safety aspects), one internal stakeholder consultation and a regional workshop successfully carried out; (ii) two overseas capacity building activities (i.e. three SVO officers participated in the

FAO Expert Workshop on Understanding and Applying Risk Analysis in Aquaculture, Rayong, Thailand, June 2006; two staff from the Faculty of Veterinary Medicine were trained on virology at the EU Community Reference Laboratory in Denmark); (iii) provision of miscellaneous office equipment to SVO and laboratory equipments to the University of Sarajevo, Faculty of Veterinary Medicine as National Reference Laboratory for Fish Disease; and (iv) expected five major documentations outputs (national strategy, veterinary inspector's checklist, disease diagnostic manual, seminar/workshop report and an FAO Fisheries and Aquaculture Technical Paper).

5. TCP/RER/3206 Assistance to Western Balkan Countries for Improving Compliance with International Standards for Aquatic Animal Health

One of the major outcomes of FAO Project TCP/BiH/3101 was a follow-up TCP facility – TCP/RER/3206 “Assistance to Western Balkan Countries for Improving Compliance with International Standards for Aquatic Animal Health”, submitted in December 2008 and subsequently approved in February 2009.

The overall objective of this TCP facility was to prepare a future regional TCP proposal for submission to FAO later this year. The processes involved in the development of a regional TCP include the following: (i) regional survey of aquatic animal health capacity and performance (May to August 2009); (ii) regional field assessment (May to August 2009) by two teams (i.e. Reantaso/Tankovic – first mission to Serbia, Croatia and Bosnia and Herzegovina; Arthur/Fejzic – second mission to The former Yugoslav Republic of Macedonia and Montenegro); (iii) regional proposal preparation (August 2009); and (iv) regional workshop to build consensus and finalize the regional TCP proposal (September 2009 in Croatia).

The regional proposal development workshop was successfully implemented from 8 to 9 September 2009 and participated by 34 delegates from five countries (Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Serbia) and FAO. The regional workshop agreed that the Regional Technical Cooperation Programme on Assistance to Western Balkan Countries for Improving Compliance with International Standards for Aquatic Animal Health will have the overall objective of improving participating country compliance with international health standards for aquatic animals. The specific objectives include: (i) building capacity on specific themes (legislation, risk analysis, surveillance (aquatic epidemiology), diagnostics, emergency preparedness/contingency planning, aquaculture development and promotion); (ii) review of national legislation to harmonize with respect to compliance with international standards of aquatic animal health (WTO-SPS, OIE, EU); (iii) design a regional disease surveillance programme for aquatic animal diseases (regional in scope, e.g. five Western Balkan countries, surveillance design based on international standards); and (iv) promote communication mechanisms and networking systems for aquaculture development. The workshop was concluded with a note on the following: (i) active participation and strong interest and support in the development of the proposal; (ii) strong support (four of five Chief Veterinary Officers of participating countries, competent authorities, laboratories, research institutes and universities); (iii) systematic, logical and transparent process (two regional workshops, regional survey, country level field assessment/stakeholder consultation); and (iv) strong consensus on the scope and elements of regional proposal through regional cooperation.

6. Documentation output of the project

In addition to the above, the project had accomplished a number of documentation outputs. These include the following:

1. FAO. 2008. Report of FAO Western Balkan Regional Seminar/Workshop on Aquatic Animal Health. Sarajevo, Bosnia and Herzegovina, 19–21 May 2008. *FAO Fisheries and Aquaculture Report*. No. 879. Rome, FAO. 2009. 25p.

2. Draft national aquatic animal health strategy for Bosnia and Herzegovina (bilingual, in English and Bosnian languages)
3. Veterinary inspector's checklist for aquaculture farms and fish processing establishments in Bosnia and Herzegovina (bilingual, in English and Bosnian languages)
4. Manual on health management of animals in aquaculture in Bosnia and Herzegovina (in Bosnian language)
5. Strengthening aquaculture health management in Bosnia and Herzegovina. FAO Fisheries and Aquaculture Technical Paper No. 524.

CONCLUSIONS

The project was successfully implemented with outputs much more than originally anticipated. The project provided the services of three international consultants, four national consultants and technical backstopping support from the FAO Fisheries and Aquaculture Department Services (FIMA, FIEP and FIU) and the FAO Development Law Service (LEGN). In addition, the project provided laboratory equipment and supplies, official international and in-country travel, several training courses and workshops, a study tour, and general as well as direct operating expenses. The project concluded with a Regional Workshop/Seminar on aquatic animal health and a Project Terminal Workshop held in May 2008.

In addition to the many capacity building activities and documentation outputs, the TCP had assisted Bosnia and Herzegovina in being included in the list of third countries and territories from which imports of fishery products in any form for human consumption are permitted. Four Bosnia and Herzegovina fish processing facilities and establishments were included in the list of December 2008. A second major outcome was the development of a regional technical programme, taking the lessons learned from the Bosnia TCP, which will give another opportunity to Bosnia and four other countries in the Western Balkan to improve capacity on aquatic animal health that will support the sustainable development of aquaculture for food security, nutritional well-being, poverty reduction and socio-economic development.

PLATE 1

Left column (top to bottom): M. Reantaso (FAO, second from left) meeting with officials of Sarajevo University Veterinary Faculty during an inception mission in July 2005; modern trout cages of Norfish Blagaj in Mostar; processed fish products from Tropic Rivarstvo, Banja Luka. Right column (top to bottom): M. Reantaso (FAO, second from left seated) meeting with officials of State Veterinary Office (SVO) and Entity Ministry of Agriculture during an inception mission in July 2005; carp farm of Sanicani Farm, Priedor, Banja Luka; processed fish products from Tropic Rivarstvo, Banja Luka



PLATE 2

Left column (top to bottom): processing facility of Tropic Rivarstvo, Banja Luka; Participants to the Training/Workshop on Diagnostics, Surveillance and Reporting of Aquatic Animal Diseases held in March 2008 in Fojnica; compound microscope provided by the project. Right column (top to bottom): processing facility of Tropic Rivarstvo, Banja Luka; tissue cell culture facility; clean bench provided by the project; cell culture incubators provided by the project. Bottom photo: 40 participants (fisheries and veterinary authorities and private sector representatives from Bosnia and Herzegovina, Croatia, Macedonia, Montenegro and Serbia; representatives from OIE and FAO) to the Western Balkan Regional Seminar/Workshop on Aquatic Animal Health held in Sarajevo from 19–22 May 2008



