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Animal



Regional training seminar for OIE focal points on aquatic animal diseases in Africa

Swakopmund, Namibia, 15 – 19 June 2010

OIE Sub-Regional Representation for Southern Africa
Gaborone, Botswana



Regional Information Seminar funded by the OIE and the European Union (European Commission) under the DG SANCO *'Better Training for Safer Food'* programme.

WORLD ORGANISATION FOR ANIMAL HEALTH



REPORT

REGIONAL TRAINING SEMINAR

*“OIE Focal Points for Aquatic
Animal Diseases in Africa”*

15.06.2010 – 19.06.2010

Swakopmund ▼ Namibia

OIE Sub-regional representation for Southern Africa

Gaborone ▲ Botswana

Seminar funded by the OIE and
the European Union
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ACRONYMS

AADCP-RPS	ASEAN – Australian Development Cooperation Programs Regional Partnership Scheme
AAHRI	Aquatic Animal Health Research Institute [Thailand]
AAHS	Aquatic Animal Health Services
AAHSC	Aquatic Animal Health Standards Commission [OIE]
AAPQIS	Aquatic Animal Pathogen and Quarantine Information System
AASA	Aquaculture Association of Southern Africa
AFOP	<i>Programme d'appui à la rénovation et au développement de la Formation Professionnelle dans les secteurs de l'Agriculture, de l'Élevage et des Pêches</i> [Cameroon]
ALOP	Appropriate Level of Protection [SPS]
ANAF	Aquaculture Network for Africa
APEC	Asia-Pacific Economic Cooperation
APFSWG	Animal Production Food Safety Working Group
ASEAN	Association of Southeast Asian Nations,
AU	African Union
BTSF	Better Training for Safer Food (programme) [DG SANCO]
CABI	Commonwealth Agricultural Bureaux International [UK]
CEFAS	Centre for Environment, Fisheries and Aquaculture Science [UK]
CIRAD	<i>Centre de coopération internationale en recherche agronomique pour le développement</i>
COFI SCA	COFI Sub Committee on Aquaculture
COFI SCT	COFI Sub Committee on Fish Trade
COFI	Committee on Fisheries [FAO]
CPD	Continuous Professional Development
CVO	Chief Veterinary Officer
DAFF	Department of Agriculture Forestry and Fisheries [South Africa]
DG-SANCO	Health and Consumer Directorate General [EC]
DIPA	<i>Direction des Pêches et de l'Aquaculture</i> [Cameroon]
DNA	deoxyribonucleic acid
DoF	Department of Fisheries [Canada]
DRC	Democratic Republic of Congo
EAC	East African Community
EAFP	European Association of Fish Pathologists
EC	European Commission
EHN	epizootic haematopoietic necrosis
EHN(V)	epizootic haematopoietic necrosis (virus)
ELISA	enzyme-linked immunosorbent assay
EU	European Union
EUS	epizootic ulcerative syndrome
FAO	Food and Agricultural Organization of the United Nations
FHS/AFS	Fish Health Section of the American Fisheries Society
FHS/AFS	Fish Health Section of the Asian Fisheries Society
FI	Fisheries Department [FAO]
FP7	Framework Programme n° 7 [CE]
GATT	General Agreement on Tariffs and Trade [WTO]
GMO	Genetically modified organism
HACCP	Hazard Analysis & Critical Control Points
IBAR	Inter-african Bureau for Animal Resources [AU]
IHN	infectious haematopoietic necrosis
IHN(V)	infectious haematopoietic necrosis (virus)
IMN	infectious muscular necrosis
IMND	infectious muscular necrosis disease
IPN	infectious pancreatic necrosis
IPN(V)	infectious pancreatic necrosis (virus)
IPOA-IUU	International Plan of Action on Illegal, Unreported and Unregulated fishing
IPPC	International Plant Protection Convention [CIPV]
ISA	infectious salmon anaemia
ISAAE	International Society for Aquatic Animal Epidemiology,
IUU	Illegal, Unreported and Unregulated (fishing)

JSFP	Japanese Society of Fish Pathology
KHV	koi herpes virus
MFMR	Ministry of Fisheries and Marine Resources [Namibia]
MIDEPECAM	<i>Mission de Développement de la Pêche Artisanale Maritime</i> [Cameroon]
MMAF	Ministry of Marine Affairs and Fisheries [Indonesia]
NACA	Network of Aquaculture Centres in Asia and the Pacific
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organisation
NHP-BD	Necrotising Hepatopancreatitis – Bacterium Disease
NNF	Namibian Nature Foundation
NPoA	National Plan of Action
NVI	Norwegian Veterinary Institute
OIE	World Organisation for Animal Health
OIR	<i>Organisation(s) d'intégration régionale</i>
OIRSA	<i>Organismo Internacional Regional de Sanidad Agropecuaria</i>
QWOH	One World, One Health
PAF	Partnership African Fisheries
PCR	polymerase chain reaction
PSMA	Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated fishing
PVS	Performance of Veterinary Services [OIE]
PWB	Program of Work and Budget
QAAD	Quarterly Aquatic Animal Disease report
REC	Regional Economic Communities
RFMO	Regional Fisheries Management Organisation
RR	Regional Representation [OIE]
RR-AF	RR for Africa
RRC	Regional Resource Centres
RRE	Regional Resource Experts
RRL	Regional Reference Laboratories
SADC	Southern African Development Community
SARNISSA	Sustainable Aquaculture Resource Networks in Sub Saharan Africa
SAVC	South African Veterinary Council
SEAFDEC	Southeast Asian Fisheries Development Center
SIF	Stop Illegal Fishing
SOP	Standard Operating Procedure(s)
SPADA	Special Program for Aquaculture Development in Africa
SPC	Secretariat of the Pacific Community
SPS	[Agreement on the application of] Sanitary and Phytosanitary Measures [WTO]
SRR	Sub-Regional Representation [OIE]
SRR-SA	SRR for Southern Africa
SSOP	Standard Sanitary Operation Process(es)
SVC(V)	spring viraemia of carp (virus)
TAHC	Terrestrial Animal Health Code (OIE)
TCP	Technical Cooperation Program
ToT	Training of Trainers
TS(V)	Taura syndrome (virus)
UK	United Kingdom
UNZA	University of Zambia
VEE	veterinary educational establishments
VHS	viral haemorrhagic septicaemia
VHS(V)	viral haemorrhagic septicemia (virus)
VNN	viral nervous necrosis
VS	Veterinary Services
WAHID	World Animal Health Information Database [OIE]
WAHIS	World Animal Health Information System [OIE]
WAS	World Aquaculture Society

WHO	World Health Organization,
WSD	white spot disease
WSSV	white spot syndrome virus
WSV	white spot virus
WTO	World Trade Organisation
WVA	World Veterinary Association,
YHD	yellow head disease
YHV	yellow head virus

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All weight units expressed in tonnes are metric tons.

All distance and surface area units are expressed in metric units (km and km²)

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PREFACE

More than eighty (80) specialists and focal points on aquatic animal diseases from 36 African countries, along with representatives from the OIE (Paris), EC (Brussels), FAO (Rome), SARNISSA (Stirling), NVI (Oslo) and AAHRI (Bangkok) met in the coastal town of Swakopmund in Namibia from June 15 - 19th, 2010 for a regional training seminar to share experiences and improve their knowledge of the OIE and its activities, in general terms and more specifically as regards aquatic animal diseases, i.e. diseases of amphibians, crustaceans, fish and molluscs.

The seminar was facilitated by the European Commission (DG SANCO) and the Government of Namibia and was complemented by field visits to producers and processors of aquatic products, such as (farmed) fish, shell fish and oysters in Swakopmund and neighbouring Walvisbay.

The meeting covered the overall mandates (amongst others : notification through WAHIS and general trade issues) as well as the specific mandates pertaining to aquatic animal diseases, i.e. the *Aquatic Animal Health Standards Commission* (represented by Dr. Ricardo Enriquez) and the Aquatic Code and Manual it produces annually. External speakers provided inputs on the inland and marine aquatic production sectors in the world and in Africa, the challenges of illegal, unregistered and unregulated fisheries, international and regional stakeholders working on aquatic health issues, and import, export and certification of aquatic products. Seven countries (including the host country) were given an opportunity to present the challenges they face in meeting OIE international standards, while case studies were presented by international experts on koi herpes virus, abalone virus mortality, white spot disease in shrimps, epizootic ulcerative syndrome in (fin)fish and *Francisella* infections in tilapia.

The meeting was attended by OIE focal points (or designated officials) from Angola, Botswana, Burkina Faso, Burundi, Cameroon, Chad, Comoros, Congo (DRC), Cote d'Ivoire, Egypt, Eritrea, Equatorial Guinea, Gabon, Ghana, Guinea Bissau, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mauritania, Morocco, Namibia, Niger, Nigeria, São Tome & Príncipe, Senegal, Seychelles, Sudan, Swaziland, Tanzania, Togo, Tunisia, Zambia and Zimbabwe. The meeting was also attended by all 4 (sub) Regional Representatives of the OIE in Africa, based in Bamako, Gaborone, Tunis and Nairobi

More information :

http://www.rr-africa.oie.int/en/en_index_annex59.html

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**WELCOMING ADDRESS BY THE OIE SUB-REGIONAL
REPRESENTATIVE FOR SOUTHERN AFRICA**

Bonaventure J. Mtei

Representative
Sub-Regional Representation for Southern Africa
OIE
Gaborone, Botswana

Guest of Honour,

Invited guests and speakers

Dear participants

Ladies and gentlemen

On behalf of Dr Bernard Vallat, the Director General of the OIE and on behalf of the OIE personnel here present, may I welcome you to this meeting and to Namibia, - the land of the brave. I would like to join the OIE Delegate for Namibia, Dr Shilongo and the OIE National Focal Point for Aquatic Diseases, Mrs. Currie to thank you all for finding the time to come to Swakopmund and share with us your knowledge and experiences on this very important subject on *Aquatic Animal Health* (AAH) as it relates to the African Continent.

Guest of Honour,

May I also thank you and the Government of Namibia for agreeing to host this meeting which has gathered representatives from all African Countries and world experts on AAH here to learn and share new developments and issues pertaining to the fisheries and aquaculture sub sector of animal agriculture. This training seminar is organised by the OIE, with financial support from the European Union through the *Better Training for Safer Food* (BTSF) for Africa programme for which we are thankful.

There is a great deal of involvement in preparing a meeting of this magnitude and I would like to pay special gratitude to my colleagues at the OIE Sub Regional Representation in Gaborone and of course the local organising team here in Namibia, including *Kingfisher Conference Management*, for excellent work done especially in terms of what I call effective communication.

The OIE was established in 1924, with a purpose to prevent and control the spread of animal diseases prevailing in Europe and neighbouring regions at the time. From 28 founding members, the current OIE membership has grown to 176 to date (2010). During the course of this meeting we will focus on the role and mandate of the OIE in relation to aquatic animal health standards and try as much as possible to link this with aquaculture production and bio-security.

According to FAO statistics aquaculture continues to grow more rapidly than all other animal food-producing sectors. Worldwide aquaculture has grown significantly in recent times to over 60 million metric tonnes, with a value of more than EUR 50.5 billion with Asia and in particular China dominating in the industry.

Africa region is a minor player in aquaculture despite its huge natural potential. Even aquaculture of tilapia, which is native to the continent, is not significantly developed. Nigeria leads in Africa, with reported production of 50 000 metric tonnes of catfish, tilapia and other freshwater fishes. There are some encouraging signs in the continent : e.g. black tiger shrimp production in Madagascar, seaweed production in the United Republic of Tanzania and production of niche species such as abalone in South Africa. In North Africa, Egypt by far dominates in terms of aquaculture production and is now the second biggest tilapia producer after China.

Aquatic health is a fairly recent science compared to terrestrial animal health. The OIE only published the first aquatic health standards in 1995 in the OIE *Aquatic Animal Health Code (Aquatic Code)* as compared to the terrestrial animal health standards which were published many decennia back.

The clinical signs manifested by aquatic animals infected with pathogens are not always obvious (*pathognomonic*) as referred to by veterinarians.

The only reliable approach for detecting aquatic animal diseases therefore lies on identification of pathogens using laboratory methods. Such methods are contained in the OIE *Manual of Diagnostic Tests for Aquatic Animals (Aquatic Manual)* and are applied to detect cases of disease and or infections as part of national aquatic animal health surveillance programmes.

Such surveillance programmes are aimed at determining health status of aquatic animal stocks of a particular production site and even a geographical zone or the entire country. Implementation of aquatic animal health surveillance requires existence of both adequate legislation and resources in each country interested in aquatic animal health.

To guarantee effectiveness of surveillance at national, regional and worldwide at large, all countries have to comply with OIE standards on the quality and governance of aquatic animal health authorities. In addition to their surveillance mission, aquatic animal health authorities are responsible for the reliability of health certificates they issue for trade purposes. These certificates have to accompany every consignment of live animals or their products transported for domestic or external trade. Compliance with the OIE's standards on the quality and governance of competent authorities ensures that these certificates are issued under conditions that guarantee their reliability, so that markets access does not pose a threat to the safety of consumers.

At the moment the OIE is looking at the possibility of making provisions on the quality and governance of *Aquatic Animal Health Services* in the *Aquatic Animal Health Code* as a result of growing demand to extend the OIE PVS evaluations for Veterinary Services. In principle the same competencies are required e.g. appropriate legislations and good governance in order to comply with OIE standards.

Guest of Honour

As an outcome of this training, OIE would like to see a stronger AAH networking both at continental and *Regional Integration Organisations (RIOs)* level with specific resolves geared towards creating an improved governance and harmonization among national governments and aquaculture industry stakeholders to institutionalise mechanisms for addressing aquatic animal health and welfare issues in Africa. We are privileged to have world experts and OIE staff here present to share their knowledge on the subject.

OIE through its Regional Representation for Africa in Bamako, Mali and the Sub Regional Representations in Tunis, Nairobi and Gaborone will be happy to maintain the networking together with our traditional collaborators and partners like the FAO, AU-IBAR and NEPAD to implement some of the resolves of this training workshop for the benefit of OIE member countries keen to comply with the OIE standards.

Our motto is '*aquatic farming and trading safely to protect the consumer*' who is becoming more and more demanding as time passes.

I thank you for your attention

WELCOMING ADDRESS BY THE GOVERNOR OF THE REGION OF ERONGO IN NAMIBIA

Samuel S. Nuuyoma

Governor
Erongo Region
Walvisbay, Namibia

Director of Ceremonies,

The Deputy Minister of Fisheries and Marine Resources,
Honourable Kilus Nguvauva,

Dr Abdoulaye Niang, Dr Bonaventure Mtei,

The mayor of the beautiful town of Swakopmund, Honourable
Germina Shitaleni

Honourable members of the International Fishing Industry

Honourable Local and Regional Councillors of the Erongo
Region,

Members of the media, Ladies and gentlemen,

I am honoured to welcome you to the Mighty Erongo Region,
the region which I'm sure is known all over the world as
Africa and most specifically Namibia's unique holiday
destination. I further welcome you to the beautiful coastal
town of Swakopmund, the Jewel of Namibia.

I hope you realize that you are privileged to have ever set foot
in this part of the world, because this is where you get relaxation, friendly faces, rare natural beauty
and favourable cool weather in one package. Be assured that you will spend a productive week here
during your deliberation on aquatic issues. Indeed! Because the fresh sea breeze will ensure that you
have an open mind that will in turn allow good decisions.

Please feel free to explore as much as you can about our coastal environment and go back with minds
full of memories that will force you to come back to Namibia and the Erongo region soon. At the same
time, also remember to share your memories with friends and family. Do not forget to alert especially
those who are planning to have seminar, conferences and other events that require much thinking that
Erongo is the best place for that.

Director of ceremonies, Ladies and gentlemen,

We are gathered here with one aim of discussing and training on issues surrounding the health of our
Aquatic animals, which is quite important. I reiterate the statement that oceans and the creatures
living in it, is something that is very important and vital to the earth and its inhabitants.

The oceans area full of life and benefits that we can simply not afford to live without. Most of us
survive by harvesting fish and other sea species that provides a significant portion of our daily protein
needs.

However, unhealthy aquatic species is an issue that should be prevented at all cost, as species with
diseases will not only affect the ocean, but the entire world environment and economy, not forgetting
entire environment as a whole.

I hope that you will work hard at identifying especially species that are important to the region's
economy, and find ways to keep them safe from threats that are posed by foreign species from other
parts of the world.



As we go along with our training, let us not forget to remember our younger generation, especially those living in disadvantaged communities. We have many brilliant brains out there who could be involved in training concerning aquatic species. By having them as part of our human resources, we could enhance the issue of aquatic problems in the world.

This platform is indeed an important one as we are especially facing environmental changes that affect fish and other aquatic organisms. Inspecting such issues will also improve our understanding of how human actions affect ecosystem health.

We should actively monitor aquatic ecosystems and evaluate how activities on land affect the waters. I therefore urge all of you present here to make use of this opportunity to evaluate perspective, learn about ocean creatures health and the best ways to solve them.

I thank you

**OPENING ADDRESS BY THE DEPUTY-MINISTER OF THE MINISTRY OF FISHERIES
AND MARINE RESOURCES OF NAMIBIA**

Kilus Nguvauva

Deputy-Minister
Ministry of Fisheries and Marine Resources
Windhoek, Namibia

It is my great pleasure to welcome you to Namibia, to the "*Regional Seminar for OIE National Focal points for Aquatic Animals*" here in Swakopmund. This very important seminar marks a milestone by bringing together experts from across Africa and from around the world, to address a critical issue: How to keep Africa's rivers, inland waters and surrounding oceans healthy.

There is a severe lack of food, and most specially of protein, in Africa. Africa's waters - and by that I mean not only the rivers and inland lakes and ponds, but also the oceans that surround Africa - are of critical importance to the livelihoods of millions of African people. Countless rural communities living on the banks of rivers and inland lakes depend solely upon the harvest of fish from these waterways for their protein intake. Increased effort is being made throughout Africa to supplement this protein supply through aquaculture activities. On the commercial side, industries based on marine fisheries and budding aquaculture ventures, are a major contributor to the national economy in terms of employment, business generation and export revenues for some African countries, including my own. A critical issue for maintaining the fishery supplies that Africa presently has - both in the inland waterways and in the sea, and for increasing the output through aquaculture, - is the control of disease in the aquatic environment. Only a healthy system can be productive, and productive ecosystems are urgently needed in Africa. I believe that the focus of this seminar over the next few days is to discuss mechanisms that are desirable and effective for maintaining healthy aquatic ecosystems and I look forward to hearing of the progress made.

Through the World Organisation for Animal Health (known as the OIE), together with the European Commission, the project aimed at "*Better Training for Safer Food for Africa*" the OIE has taken up the challenge to build capacity to improve aquatic animal health and food safety of aquatic animals. The effort being made by the OIE to build such capacity is praiseworthy. It is remarkable to bring together the aquatic animal health focal points from the whole of Africa - I believe that all 52 OIE Members are invited. It is expected that good governance concepts for improving aquatic animal health in member states will be discussed, as well as the need for consistency and harmonization of national programmes within the bigger African picture of providing a sustainable food resource base from our aquatic environment. This is your challenge dear participants. I therefore congratulate the OIE Regional Representation for Africa, and the Sub-Regional Representation for Southern Africa based in Botswana, for spearheading and organising this initiative. By selecting Namibia to host this prestigious event you have chosen well. We regard the health of the aquatic environment as extremely important and as you will see later in this week, we take our commitment seriously.

Even though the weather at the coast can be very chilly at this time of the year we offer our warmest Namibian hospitality and wish you an enjoyable and productive week ahead. With these words of welcome and wishes for fruitful deliberations and progress, it is my privilege and pleasure to declare the "*Regional Training Seminar for OIE national focal points for Aquatic Animals*" open.

Session 1

Structure and operation of the OIE

GENERAL PRESENTATION OF THE OIE

Fauzi Kechrid

Representative
Sub-Regional Representation for North Africa
OIE
Tunis, Tunisia

The *Office International des Epizooties* (OIE) is an intergovernmental Organisation funded in 1924 by 28 countries, with the aim to prevent spreading of animal diseases around the world. In May 2003 the *International Committee*, currently the *World Assembly of Delegates*, adopted the new name of the *World Organisation for Animal Health* maintaining its original acronym, to better reflect its role, responsibilities and field of action. The OIE is funded by ordinary contributions from Member Countries and by voluntary contributions for specific activities, as well as by the *World Fund for Animal Health and Welfare*. By March 2010 the OIE has 175 OIE Members : Americas 29, Africa 51, Europe 53, Middle East 20, and Asia and the Pacific 35. Some members belong to more than one region. OIE objectives are directed to:

- Ensure transparency in the global animal disease situation, disseminating information on animal diseases reported by affected countries, to allow other countries to take preventive measures;
- Collect, analyse disseminate latest veterinary scientific information on animal disease control, in order to support Member Countries to improve the methods to control and eradicate animal diseases.
- Encourage international solidarity in the control of animal diseases, providing technical support to Member Countries and maintaining permanent contact to international, regional and national financial organizations in order to convince them to invest on the control on animal diseases and zoonoses.
- Safeguard world trade by publishing health standards for international trade in animals and animal products, which can be used to protect Member countries from the introduction of diseases and pathogens, without setting up unjustified sanitary barriers.
- Improve the legal framework and resources of National Veterinary Services, considered by the OIE as a Global Public Good, to enable Member Countries to benefit from WTO *Sanitary and Phytosanitary Agreement* (SPS Agreement) while at the same time providing greater protection for animal health and public health.
- Provide a better guarantee of food of animal origin and to promote animal welfare to a science based approach, focusing on eliminating potential hazards existing prior to the slaughter of animals or the primary processing of their products that could be a source of risk for consumers.

The functioning of OIE is based in its structure comprising: i) the *World Assembly of Delegates*, which is its highest authority comprised by all OIE Delegates; ii) the *Council*, which examines technical and administrative matters to be presented for approval of the World Assembly of Delegates; iii) the *Director General*, elected for a 5 years period; iv) the *Specialist Commissions*, which address scientific and technical issues and develop international standards; v) the *Regional Commissions*, which address regional needs in terms of prevention, control and eradication of diseases of regional concern proposing regional policies for further endorsement and support; vi) the *Collaborating Centres and Reference Laboratories*, as centres of expertise and worldwide standardization; vii) the *Ad hoc groups and Working groups* as key players for preparing recommendations for Specialist Commissions and World Assembly of Delegates.



The 4th OIE Strategic Plan (2006-2010), extended the OIE original mandate from “prevent animal diseases from spreading around the world” to “the improvement of animal health all over the world” and brought OIE to play even a greater role in policies linked to: i) improve public health by controlling zoonoses and food borne diseases; ii) improvement of safety of trade of animals and animal products; iii) promotion of access to regional and international markets; iv) promotion of animal welfare by ensuring animal health and adopting international standards; and v) promotion of the role of National Veterinary Services influencing policies and providing capacity building.

*The Headquarters of the OIE in Paris.
Picture © D. Mordzinski (oie).*

RIGHTS AND RESPONSIBILITIES OF OIE DELEGATES AND FOCAL POINTS

Antonio Petrini

Deputy-Representative
Sub-Regional Representation for North Africa
OIE
Tunis, Tunisia

The OIE is subject to the authority of the *World Assembly of Delegates*. The OIE Delegate is appointed by the Government of the Member Country or Territory and represents it to the World Assembly of Delegates. The permanent Delegate is a technical representative chosen by the State taking into account its capabilities and he/she heads the Delegation of the Member Country or Territory to the World Assembly.

Rights and responsibilities of Delegates.

During the World Assembly (General Session), Delegates exercise the right to vote of the Member Country or Territory. The Delegate is a permanent Delegate who enjoys permanent and full rights to represent the State on the World Assembly of Delegates (General Session) and to maintain permanent relations along the year with the OIE. He/she is considered as empowered with national prerogatives to represent its country having permanently the corresponding national status.

The Delegate must guarantee the regular payment of the Member's compulsory contributions to the OIE.

The OIE Delegate maintains permanent relations with OIE

On the field of Animal Health Information he/she must present at International Committee a report on animal health situation and prophylaxis methods applied at country and notify to OIE animal diseases present in Member Country or Territory, in accordance with Chapter 1.1. of the *Terrestrial Animal Health Code* and *Aquatic Animal Health Code*.

Regarding OIE Standards, the Delegate:

- participate actively in the debate and setting of international standards;
- ensure that animal health legislation in his/her country is based on OIE reference standards or on a scientific risk analysis carried out in accordance with Section 2 of the *Terrestrial Animal Health Code* and the *Aquatic Animal Health Code*, and WTO/SPS Agreement;
- ensures that, as far as possible, the resolutions of the World Assembly of Delegates are applied;
- ensure that Veterinary Services are kept updated on OIE standards;
- maintain informed the national animal disease diagnostic laboratories of the activities of the OIE worldwide network of Reference Laboratories and Collaborating Centres, in order to promote scientific and technical cooperation in this field.

The Delegate is also requested to designate, if possible, national focal points to comply with national obligations and to support him/her in the following fields:

- animal disease notification,
- wildlife,
- aquatic animals diseases,
- veterinary products,
- animal production food safety,
- animal welfare.

Focal points have an important role in the standard setting procedure, through the preparation of comments for the Delegate for new or revised OIE standards. Activities of the focal points in relation with OIE rights and obligations are under the authority of the OIE Delegate.

Information transmitted to the OIE from focal points must be under the designated authority of the OIE Delegate either if focal points are located in other Departments or Ministries not under jurisdiction of Veterinary Authority

Role of the National Focal Point for Aquatic Animals:

- establish a network of aquatic animal health experts within his country or to communicate with existing network;
- establish a dialogue, cooperation and communication with Competent Authority for aquatic animal health and relevant authorities;
- support collection and submission of aquatic animal disease information to the OIE through WAHIS in relation with the Focal Point for terrestrial animal disease notification (when relevant).
- act as a contact point with the OIE Animal Health Information Department in relation with terrestrial animal disease notification (when relevant)
- receive reports of the *Aquatic Animal Health Standards Commission* and other relevant reports, and conduct the in-country consultation process
- prepare comments for the Delegate on relevant meeting reports, including comments on the proposals for new or revised OIE standards related to aquatic animals.

GOOD GOVERNANCE AND THE EVALUATION OF VETERINARY SERVICES : THE AQUA PVS

*Patrick Bastiaensen & Gillian Mylrea**

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In this era of globalisation, the development and growth of many countries, as well as the prevention and control of major biological disasters, depend on the performance of their agricultural and food policies and economies, and this, in turn, directly relates to the quality of their *Veterinary Services* (VS). Important roles for VS include veterinary public health – including food-borne diseases – and regional and international market access for animals and animal products. To meet current and future opportunities and challenges, VS should be independent and objective in their activities and decisions should be based on sound science and immune from political pressure.

Strengthening of VS to help them comply with OIE international standards for quality and evaluation requires active participation and investment by both the public and the private sector. The *World Organisation for Animal Health* (OIE) has refined an Evaluation Tool developed initially in collaboration with the *Inter-American Institute for Cooperation on Agriculture* (IICA) to produce, in 2009, a revised edition of the OIE Tool for the Evaluation of *Performance of Veterinary Services* (OIE PVS Tool). The OIE PVS Tool is designed to assist VS to establish their current level of performance, to identify gaps and weaknesses in their ability to comply with OIE international standards, to form a shared vision with stakeholders (including the private sector) and to establish priorities and carry out strategic initiatives.

The production of and trade in aquatic animals and their products is of increasing importance and the aquaculture sector is growing fast in response to the strong and growing global demand for high quality protein. In some countries the VS are the competent authority for *Aquatic Animal Health Services* (AAHS) but in some countries other agencies of government hold this responsibility. Regardless of whether veterinarians are involved in the AAHS, it is clear that the general principles for quality would be similar to those that apply to VS. For example, appropriate legislation and good governance are required to support AAHS in complying with OIE requirements, including for disease detection, reporting and control.

In the international trade of animals and animal products, the OIE promotes animal health and public health (as it relates to the prevention and control of zoonoses including food-borne diseases of animal origin) by issuing harmonised sanitary standards for international trade and disease control, by working to improve the resources and legal framework of VS / AAHS and by helping Members comply with the OIE standards, guidelines and recommendations, consistent with the *Agreement on the Application of Sanitary and Phytosanitary Measures* (SPS Agreement) of the *World Trade Organization* (WTO).

The traditional mission of VS was to protect domestic agriculture and most resources were directed towards the control of diseases that threatened primary production. The services began at the national borders and were focused domestically. The prevention and control of major aquatic animal diseases is similarly the basis of AAHS in many countries. The credibility of these services, as viewed by domestic stakeholders and other countries, largely depended on the effectiveness of these domestic programmes, and the response of VS and AAHS to animal disease emergencies.

In light of the growing technical requirements, consumer expectations and opportunities for international trade, the VS / AAHS should adopt an appropriate mandate and vision and provide services that respond to the needs and expectations of stakeholders. This will entail stronger alliances and closer cooperation with stakeholders, trading partners and other countries, national governmental counterparts and relevant intergovernmental organisations (in particular the OIE, the *Codex Alimentarius Commission* and the WTO SPS Committee).

Under the WTO SPS Agreement each WTO Member has the right to impose SPS measures to protect plant, animal and human life or health but measures should be based on science and risk analysis and implemented transparently. For animal health and zoonoses, the OIE is recognised as the reference organisation for measures relating to international trade in animals and animal products. The implementation of the OIE standards, including on quality and evaluation of VS / AAHS, is the best way to facilitate safe and fair international trade.

Effective VS / AAHS have four fundamental components:

- the human, physical and financial resources to attract resources and retain professionals with technical and leadership skills;
- the technical authority and capability to address current and new issues including prevention and control of biological disasters based on scientific principles;
- the sustained interaction with stakeholders in order to stay on course and carry out relevant joint programmes and services; and
- the ability to access markets through compliance with existing standards and the implementation of new disciplines such as the harmonisation of standards, equivalence and zoning.

The structure of the OIE PVS Tool recognises these four fundamental components.

To establish the current level of performance, form a shared vision, establish priorities and carry out strategic initiatives, six to twelve critical competencies have been elaborated for each of the four fundamental components. For each critical competency, qualitative levels of advancement are described. A higher level of advancement assumes that the VS / AAHS are complying with the preceding (non 1) levels (i.e. level 3 assumes compliance with level 2 criteria; level 5 assumes compliance with level 4 and preceding criteria; etc.). Additional critical competencies might be added with the evolution of the OIE PVS Tool.

For each critical competency a list of suggested indicators is used by PVS assessors. In addition, the OIE has provided a Manual for Assessors, containing information and procedures relevant to the conduct of an OIE PVS Evaluation.

In addition to the qualitative levels, provision has been made in each critical competency to expand upon or clarify responses, if so desired.

Chapters 3.1. and 3.2. of the *Terrestrial Animal Health Code* (Terrestrial Code) provide the legal base for the OIE quality requirements for VS and for the PVS evaluation and follow up activities.

Chapter 3.1. of the *Aquatic Animal Health Code* (Aquatic Code) provides a legal base for the OIE quality requirements for AAHS where these are not covered by the Veterinary Services.

Relevant definitions from the Glossary of the Terrestrial Code may be found in the Glossary of Terms. The most important Code references are quoted under each critical competency.

To date, over 40 countries in Africa have gone through this PVS process, with most countries having cleared the reports to be shared with ICPs (*International Cooperation Partners*) such as donors and international technical agencies. So far, only two countries, Guinea Bissau and Namibia, have fully cleared the report for the public domain (these reports are available on both websites : www.oie.int and www.rr-africa.oie.int)

More than a diagnostic instrument, the OIE PVS Tool promotes a culture of raising awareness and continual improvement, which can be used either passively or actively depending on the level of interest, priorities and commitment of the VS / AAHS and its stakeholders. In the passive mode, the OIE PVS Tool helps to raise awareness and improve the understanding of all sectors including other administrations regarding the fundamental components and critical competencies these services must have in order to function effectively.

The active mode is where the maximum outcomes are realised but this mode requires a sustained commitment on the part of both the public and private sectors, that is, all relevant stakeholders. In this mode, performance is assessed, differences are explored and priorities are established. This mode is where strategic actions are outlined, investments are evaluated and agreed to, and commitments made and implemented. Continuity of this process requires a true partnership between the public and the private sectors. Leadership on the part of the public sector is a fundamental and critical determinant of success.

The benefits and outcomes of using the OIE PVS Tool include:

- An indication of overall performance for each of the four components and a relative performance rating within each of the critical competencies;
- A basis for comparing the performance of the VS / AAHS with that of other relevant government services in the region or globally, in order to explore areas for cooperation or negotiation ;
- Providing the basis for carrying out a process of verifying compliance with the OIE standards and assessments of VS / AAHS by external or independent bodies under the guidelines and auspices of the OIE.
- Where gaps in the legislative framework are identified in the course of a PVS Evaluation, through the conduct of an OIE Legislation Mission, obtaining an indication of the specific actions needed to modernise the veterinary legislation in compliance with OIE recommendations;
- Through the conduct of a specific follow up, i.e. the OIE PVS Gap Analysis, helping countries to identify priorities and present justifications when applying for national and/or international financial support (loans and/or grants) from national governments or international donors;
- Providing a basis for establishing a routine monitoring and follow up mechanism on the overall level of performance of the VS / AAHS over time;
- Helping to determine the benefits and costs of investing in VS / AAHS and, through the conduct of specific follow up activities, identifying the actions and securing the investments that are needed to help improve compliance with the OIE standards for Good Governance

Session 2

Overview of the
production sectors,
regional and
international
stakeholders

WHY ARE AQUACULTURE AND AQUATIC ANIMAL HEALTH SO IMPORTANT

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Aquaculture started as a freshwater food production system mainly in Asia and spread to all continents, various aquatic ecosystems and involved a wide range of aquatic species. The production systems can be small scale, (non-commercial and family based) or large scale commercial production for trade at national, regional and international levels. Capture fisheries have declined due to over capture and about one third of the species have disappeared in the last 30 years representing 50% reduction of the natural resources.

Aquaculture is the fastest growing food producing sector with an annual growth rate of 8.8% and is valued at EUR 50 billion. It represents about 45% of the world capture fisheries and supplies a growing global demand for aquatic food products. China is the largest producer at 32.4 million tons representing 67.3% production by volume compared to the Asia-Pacific and Western Europe regions at 10.7(22.3%) and 2 (4.2%) million tons respectively (Subasinghe et al., 2009). Sub Saharan Africa contributes about 0.2% production by volume. However this is a high value product at EUR 1,778/ton compared to China's EUR 790/ton.

The sector continues to intensify and diversify through implementing new production systems and practices to meet trade and consumer demands. Other notable developing trends are the increasing use of non GMO aquaculture supplies and substitution of fish meal protein by vegetable protein. Sub-Saharan Africa has experienced limited development in aquaculture. The *per capita* consumption of fish in the region has also dropped. However there is full resource potential for growth in the region as demonstrated by the growing cage culture in Ghana, Kenya, Malawi, Uganda, Zambia and Zimbabwe. To further support growth of the sector, the region needs to develop relevant agencies and institutions sustained by harmonized and coordinated policies. This will allow the use of the limited resources available to deliver quality public services, better regulation and governance for a sustainable development. Long-term focused assistance through public-private partnerships has to be renewed through international cooperation in provision of quality feeds and genetic improvement of tilapia seed. Improvements in aquatic animal welfare and reduction of wildlife impacts due to aquaculture production also need to be addressed.

Aquaculture faces numerous constraints including global economic changes, the impact of climate change such as increasing ambient temperatures, changing weather patterns and natural disasters. The supply and quality of the water is also deteriorating due to pollution especially in the freshwater expanses. These environmental changes and instabilities result in increasing disease epidemics experienced in aquaculture in recent history. The environment is a very critical component in the epidemiology of aquatic diseases. Aquatic diseases; infectious, none infectious and or opportunistic may present as subclinical or clinical with a net result in decrease of production. Aquatic diseases may at first be seen as massive mortalities and this is an indication on the efficiency of the production process. The negative impact on the environment and the potential of dissemination of the pathogens within and across the ecosystems, be it regional, national or international cannot be underestimated. The costs of disease diagnosis and control are therefore significant considering that both infectious and non-infectious aquatic diseases may have the same impact. Another growing area of concern in aquaculture is the use of antimicrobials and resultant residues in the products.

These residues are however not limited to antimicrobials but to other toxic chemicals in the environment. All these have an impact on the quality of the products derived from aquaculture and production of poor quality products leads to loss of markets and jobs due to lack of consumer confidence.

Diseases outbreaks due to growing international trade is increasing. Although local pathogens combined with other factors such as poor husbandry and inadequate water quality are the most common causes of disease outbreaks in aquaculture, the introduction of ‘exotic’ pathogens through international trade in live aquatic animals and their products continues to be a major reason for new epizootics. Some examples of international spread of aquatic animal diseases include white spot disease in shrimp that spread to 22 countries via international trade in post-larvae and possibly products. Other diseases include:

Table 1. Examples of aquatic diseases spread through international trade

Disease/ Syndrome	Region/country of origin	Region/country of spread	Route/ medium of spread
Taura syndrome	Americas	Asia	live shrimp trade
<i>Gyrodactylus salaris</i>	Sweden	Norway	via live juvenile salmon for stock enhancement
Sleeping disease of trout	?	UK	imported trout fillets
Epizootic haematopoietic necrosis virus	Germany	Finland	live farmed sheatfish (<i>Silurus glanis</i>) imports
Spring viraemia of carp		Switzerland, USA, Denmark	koi carp imports
Koi herpes virus disease			international koi carp trade
Infectious salmon anaemia	Norway	Chile	trade in eggs?

Thus, the introduction of ‘exotic’ pathogens into a country can and does occur through importation of live aquaculture animals and/or their products but endemic pathogens and unregulated internal transfers of live aquatic animals, combined with other factors such as inadequate farm-level biosecurity, poor husbandry, inappropriate feed, poor water quality, etc., are more common causes of outbreaks and spread of diseases in a country’s aquaculture industry.



Aquaculture ponds in the Philippines © images Philippines

Therefore, national and farm-level biosecurity precautions are essential adjuncts to any international biosecurity measures. Thus, to prevent disease incursion, outbreaks and spread, biosecurity measures are needed at all levels - farm, national and international. Without effective implementation of such biosecurity measures, the occurrence, trans-boundary spread and serious economic impact of diseases in aquatic animals will continue. The main aim of OIE is to ensure the sanitary safety of international trade in live animals and their products. This is achieved by providing guidelines on the health measures to be used by the competent authorities of importing and exporting countries to prevent the transfer of agents pathogenic for aquatic animals, while avoiding unjustified trade barriers. Therefore development of the OIE standards for aquatic animals is the role of the *Aquatic Animal Health Standards Commission* to facilitate trade within agreed standards.

THE FISHERIES AND AQUACULTURE SECTOR IN AFRICA

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The Fisheries and Aquaculture Department of the Food and Agriculture Organization of the United Nations (FAO) is currently undertaking regional reviews on aquaculture development as preparatory work for the Global Conference on Aquaculture 2010 to be held in September 2010 in Phuket, Thailand. The presentation, based on a draft document - Regional Review of Aquaculture Development in Africa – contains important information about the region such as general characteristics of the sector in terms of resources, services and technologies; aquaculture and the environment; external pressures on the sector; governance; and the role of shared information. Salient issues related to important regional developments affecting aquaculture, species, top producers and other aspects related to aquatic animal health were also presented.

A number of important developments in the region favoured the growth of the aquaculture sector in Africa. These include: (i) international awareness and interest in aquaculture spawned by the *New Partnership for Africa's Development (NEPAD) Fish for All* Summit in 2005; (ii) African Head of States at the Abuja, Nigeria Summit on Food Security in 2006 agreed to promote and protect fisheries and aquaculture as strategic commodity alongside rice, maize and other strategic products and committed themselves towards attaining continental self-reliance on fish by 2015; (iii) FAO's *Special Programme for Aquaculture Development in Africa (SPADA)*, NEPAD's *Action Plan for the Development of African Fisheries and Aquaculture*; the WorldFish Center's enhanced presence in the continent are expected to contribute to the foreseen rapid expansion of the sector in the next decade; (iv) dynamic producer associations/organizations in several countries and the establishment of the regional networks, e.g. *Aquaculture Network for Africa (ANAF)*, SARNISSA, theme-specific networks are contributing to information flow, better exchange of experience, catalytic role in aquaculture development; (v) several governments are adopting fiscal policies not specific to aquaculture but with spill-over effects on the sector and as reflected in the growing public support for aquaculture in regions and countries such as East Africa - Uganda, Madagascar, and Mozambique.

The role of aquaculture as a major contributor to livelihood is recognized in Egypt, Nigeria, Uganda, Madagascar, Mozambique. Regional trends in aquaculture have seen the following developments: (i) prawn farms in Madagascar intensifying production techniques; (ii) Madagascar and Mozambique operators are ensuring at the same time strict environmental controls; (iii) Mozambique has undertaken a large scale mangrove rehabilitation programme for those areas where water supply canals had been built through mangrove swamps - initiative is paid for by the industry and overseen by the relevant authorities; (iv) possibilities for prawn farming have been identified in Nigeria and Kenya; (v) expansion of cage culture in lakes and reservoirs (Nigeria, Ghana, Cote d'Ivoire, Cameroon, Uganda, Zambia, Malawi, Kenya, Madagascar); (vi) Malawi and Zambia have zoned areas for lacustrine cage culture; (vii) Further research on the production of tilapia in cages and in enclosures have been undertaken in Ghana and Egypt respectively; (viii) cultured-based fisheries especially in Uganda where over 400 tonnes of total production is from this technology; (ix) progress is also being made with regard to capture-based fisheries in Nigeria and Madagascar, as well as other countries; with lack of seed for stocking as a major constraint.

Salient issues include the following: (i) production concentrated in a few countries with bulk of production from commercial farms; (ii) persistent emphasis by several countries in promoting aquaculture with a social objective; (iii) limited managerial and technical expertise; (iv) inappropriate policies; and (v) insufficient inputs such as credits, as well as seed and feeds in both quantity and quality. Successful aquaculture developments are seen in Egypt, the second largest producer of tilapia in the world next to China and also the world's top producer of mullet; black tiger shrimp (*Penaeus monodon*) farming in Madagascar; and *Eucaema* seaweed in Tanzania.



Africa's aquaculture production (%) by aquatic environment (in volume) © FAO (2007)

One of the most successful aquaculture venture in the region is that of the cage culture initiative in Lake Kariba, Zimbabwe by Lake Harvest (Pty) Ltd established in 1997. It is the single largest aquaculture business currently operating in the region. It consist of a 10-hectare pond-based hatchery unit which supplies seed to six cage sites each with 14 cages with 800 tonnes/year production capacity. Tilapia (*Oreochromis niloticus*) are grown up to 750 g and processed in an EU-standard plant with a production capacity of 15 tonnes of whole fish/day. The market is in Europe but local and sub-regional consumers are also targeted.

Concerning markets, the following progress are seen: (i) emerging intra- and inter-regional trade; (ii) processed catfish from Uganda is exported to Congo, Kenya, and Sudan; as well as to the EU; (iii) seaweed market in Tanzania is monopolized by a few international buyers who export to their mother companies in the United States, France, Denmark and Spain for processing; (iv) principal mariculture products (shrimps, abalone and seaweeds) are high value commodities for which demand is not high in the region and hence are exported; (v) Tunisia, Morocco and Libya are also involved in fish exports mainly to European countries; (vi) Namibia is reported to export oysters and seaweed, and 700 tonnes of oysters were exported in 2007; (vii) value of marine products exported comprises 95 % of the total mariculture revenue of the target countries (Madagascar, Mozambique, South Africa and Tanzania) and 33 % of the total value of aquaculture products of the region; (viii) a significant development in the region is the enthusiasm to culture catfish in many countries both for domestic markets and for exports.

Food safety and aquatic animal health are areas least developed in the region. Several countries have in place *Standard Sanitary Operation Process* (SSOP) and HACCP programmes developed in the framework of capture fisheries and very few countries have aquaculture specific facilities. Some countries are working to meet EU regulations on safety and quality control, which will be essential for their emerging export sector. Major exporting countries (Mozambique, Madagascar and South Africa) as well as a number of other countries are also aware that biosecurity and aquatic animal health management are critical and essential requirement for the sustainability of their industry. They are taking steps to address the issue. Interest in risk analysis has been increased in several countries.

The presentation was concluded with the following key points: (i) demand for aquaculture products in Africa is high and the potential for further growth of the industry in the continent is promising; this will require that countries have as their overarching objective to promote aquaculture as a viable wealth creating undertaking, whether the product has a social or commercial objective; increased growth could be realized through improvements in technologies and resource use, integration of aquaculture with other farming activities accompanied with appropriate policies and strategies in marketing and trade. Specifically, countries wishing to be involved in export trade should endeavour to develop appropriate strategies in relation to globalization in parallel with the technical development of the sector; emerging small-scale producers wishing to enter export trade should link into the market chain of the established commercial fish farming and/or fisheries sector; countries through appropriate policies should facilitate efforts to improve biosecurity and aquatic animal health management as this could be critical and constitute an important requirement for the sector development and sustainability; zoning of aquaculture areas, clustering of producers, as well as creating viable organizations for the key aspects of the industry are important considerations.

INTERNATIONAL INITIATIVES : IUU FISHING

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Illegal Unreported and Unregulated (IUU) fishing is a severe global problem and one of the main obstructions to the achievement of sustainable fisheries. Estimated with a financial value in the range of EUR 7.2 to 14.4 billion per year, IUU fishing represents a major loss of revenue, jobs and livelihood in developing countries where dependency on fisheries is high. IUU fishing respects neither national boundaries nor international attempts to manage high seas resources. It thrives where governance is weak and where countries struggle to meet their international responsibilities. The presentation will explain what IUU fishing is and look at the most common IUU fishing practises in Africa as well as why developing countries are targeted by IUU fishing operators.

There are in particular two new initiatives that will contribute to reduce IUU fishing if implemented adequately and are of importance to Africa:

- The EU IUU Regulations "*Council Regulation (EC) No 1005/2008 of 29 September 2008 establishing a Community System to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated fishing*" that came into force on the 1st of January 2010 and is a trade based mechanism that is built around flag state responsibilities; and
- The "*Agreement on Port State Measures to Prevent, Deter and Eliminate IUU Fishing*" (known as the PSMA), which became open for signature in late 2009 and will enter into force once 25 countries have ratified it. This Agreement is based on building the port states' ability to deny entry into port or to allow entry followed by a fishery inspection, for any foreign vessels entering their port; it includes legal process to follow if vessels are identified as IUU vessels.

The presentation will provide an overview of these Agreements and although both initiatives are expected to improve the IUU fishing situation many issues remains to be resolved. The presentation will highlight some of the challenges with implementation these initiatives and also consider areas where regional or continental cooperation and communication may benefit the process and outcomes.

A brief consideration of the links and conflicts between the realities of the EU regulations on health and hygiene (Council Regulation (EC) No 853 and 853/2004) and the EU IUU regulation will be given to highlight the links between IUU fishing and aquatic animal health. Options for improving this situation through better cooperation between government authorities responsible for the implementation of related legislation (such as sanitary and phyto-sanitary conditions, safety requirements, labour affairs and fisheries management) will be presented.

Finally, the *Stop Illegal Fishing* Programme (SIF) as a working group for the NEPAD driven *Partnership for African Fisheries* (PAF) will be briefly presented as a regional initiative aiming at strengthening African policy to combat IUU fishing as part of a continental reform strategy for fisheries .

INTERNATIONAL STAKEHOLDERS : FAO

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The *Food and Agriculture Organization of the United Nations* (FAO) is an international stakeholder on aquatic biosecurity and aquatic animal health management. The history, mandate, structure and finance of FAO are presented. An intergovernmental organization founded in 1945, FAO's mandates are to achieve food security; raise the levels of nutrition; increase agricultural productivity and improve the lives of rural populations and contribute to the growth of the world economy. FAO leads international efforts to defeat hunger; acts as a neutral forum where developed /developing member nations meet as equals to negotiate agreements and debate policy; a source of knowledge and information; helps developing countries and countries in transition modernize and improve agriculture, forestry and fisheries practices and ensure good nutrition for all. It has focused special attention on developing rural areas, home to 70 % of the world's poor and hungry people. FAO has 191 Member Nations plus one Member Organization, the European Community and one Associate Member, The Faroe Islands; members are sub-divided into seven geographic regions for Council election purposes.

In terms of structure, FAO is governed by the Conference of Member Nations, meets every 2 years to review the implementation of the Programme of Work and Budget (PWB) and approve the next biennium PWB. The Conference elects a Council of 49 Member Nations to act as an interim governing body. Members serve 3-year, rotating terms. The Conference also elects the Director-General to head the agency. The current Director-General, Dr Jacques Diouf, of Senegal, began a six-year term in January 1994, was re-elected to a second term which began in January 2000, and a third term beginning on January 2006. FAO has 8 departments: Agriculture and Consumer Protection; Economic and Social Development; Fisheries and Aquaculture; Forestry; Human, Financial and Physical Resources; Knowledge and Communication; Natural Resources Management and Environment; and Technical Cooperation.

The regular *Programme of Work and Budget* (PWB) is funded by members, through contributions set at the FAO Conference; total budget for biennium 2008-2009 is EUR 588.63 million. Regular programme covers core technical work, cooperation and partnerships including the Technical Cooperation Programme, information and general policy, direction and administration. In 2007, EUR 376.3 million were spent for 1615 active field programme projects, 520 were emergency operations amounting to EUR 189.4 million across all funding sources and accounting for 49.5 % of total delivery. The technical cooperation field programme amounted to EUR 161.4 million, of which FAO contributed 10.7 % with the remainder coming from outside sources: (i) trust funds (72.0 %); (ii) unilateral trust funds (15.9 %); and (iii) United Nations Development Programme (1.4 %). FAO employs more than 3 600 staff members - about 1 600 professional and 2 000 general service staff - and currently maintains 5 regional offices, 9 subregional offices, 5 liaison offices and 74 fully-fledged country offices (excluding those hosted in Regional and Subregional Offices), in addition to its headquarters in Rome.

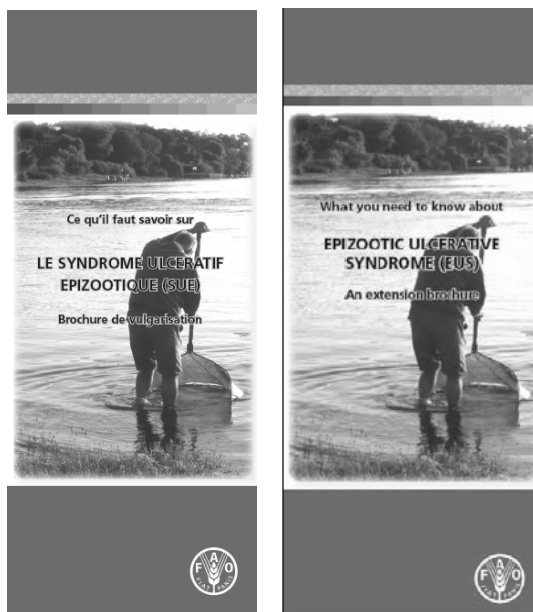
The Fisheries and Aquaculture Department (FI) is responsible for carrying out the work on aquatic biosecurity and aquatic animal health management; it works closely with other departments such as the Agriculture and Consumer Protection and the Technical Cooperation in implementing different programmes relevant to biosecurity and aquatic animal health.

FI has a statutory body called the Committee on Fisheries (COFI) which serves as the highest policy governing body on fisheries and aquaculture. COFI has two sub-committees, the Sub-Committee on Fish Trade (COFI SCT) and the Sub-Committee on Aquaculture (COFI SCA). Recently, there has been increasing attention to the subject of aquatic biosecurity and aquatic animal health management.

The 4th session of COFI SCA (Chile, October 2008) emphasized the need for a regional approach concerning disease outbreaks and the need to establish an aquatic biosecurity framework and requested FAO to provide technical assistance through a regional technical cooperation under the umbrella of SPADA. The 28th session of COFI (Italy, March 2009) under Global Policy and Regulatory Matters for the Attention of the Conference, considered as a priority the establishment of a regional programme towards improving aquatic biosecurity in southern Africa. The 12th session of COFI SCT (Argentina, April 2010) highlighted the crucial role of fish disease management in sustainable aquaculture development. The 5th session of COFI SCA (Thailand, September 2010) includes Aquatic Biosecurity as an agenda item. The session will also finalise the Aquaculture Certification Guidelines which includes animal health and welfare as one of substantive criteria.

FAO's technical assistance to Member States covers national and regional Technical Cooperation Programmes (TCP); normative work, funded through Regular Programme and other extra-budgetary funding sources, involved in developing global guidelines, conducting expert workshops, training courses, developing national policies/strategies, etc. Examples of TCPs include: TCP/MAL/3201 (D) Identification of capacity building needs of the Malaysian fish inspection system to meet international market requirements; TCP/BiH/3101 Strengthening Capacity on Aquaculture Health Management; TCP/LAT/3001 (A) Improving aquatic animal health and quality and safety of aquatic products; TCP/BZE/3003 (A) Strengthening the Biosecurity Framework.

Examples of regional TCPs include those implemented in Asia-Pacific with NACA/OIE/AAHRI and 21 governments (1999-2001) which developed regional technical guidelines on health management with implementation procedures and diagnostic guide; provided assistance to development of national strategies on aquatic animal health; established surveillance and quarterly disease reporting and an internet-based aquatic animal pathogen and quarantine information system (AAPQIS); in Latin America with 14 governments (2002-2003) on health management in shrimp culture; in Africa, on a regional aquatic biosecurity project (2007-2010) which confirmed the incursion of EUS in the region, implemented a targeted EUS surveillance, provided basic training on EUS diagnosis, introduced a training course on risk analysis; in the Western Balkan region, a regional TCP (2010 proposal stage) which will address capacity building on specific themes (risk analysis, aquatic epidemiology, diagnostics, emergency preparedness/contingency planning, aquaculture development and promotion), review national legislation to support compliance with international standards (WTO-SPS Agreement, OIE, EU), establish a regional disease surveillance programme (regional scope based on international standards), and promote communication and networking mechanisms for aquaculture development. FAO was involved in a number of emergency disease investigation such as koi herpesvirus in Indonesia (2004), epizootic ulcerative syndrome in Asia (1990s) and epizootic ulcerative syndrome in Africa (2007), shrimp diseases (various years in various countries), molluscan diseases (3-phase programme which started with pearl oyster mortalities in the Philippines).



Information brochure on EUS (in English), translated in French with OIE support © FAO (2009)

FAO partners with many international organizations such as OIE, WHO, EU, WFC, WTO; regional intergovernmental organizations such as NACA, SEAFDEC, APEC, ASEAN, SPC; professional societies such as the FHS/AFS, JSFP, EAFF, ISAAE; universities and research/training institutes (e.g. AAHRI-Thailand, CEFAS-UK, Stirling University, EU Community Reference Laboratories). FAO is also an observer member of OIE's AAHSC for 15 years now; member of NACA's Regional Advisory Group on Aquatic Animal Health. Specific examples of cooperative work include: with Namibia's government and OIE on a Scoping Meeting of Fisheries and Veterinary Authorities (2008); with Indonesia's MMAF: Disease emergency preparedness (2004); with the US Department of State/NACA: Invasive alien species and associated trans-boundary pathogens (2004); with OIE/DFO Canada: Surveillance and zoning for aquatic animal diseases (2002); with APEC/NACA/DoF Thailand/Mexico: Risk analysis for aquatic animal movement (2002); with APEC/Mexico: Development of harmonized standards on aquatic animal health management (2000); with ACIAR/NACA: DNA based molecular techniques for aquatic animal pathogens and diseases (1999); with AAHRI/OIE: Molluscan Health Management (1999-2005). FAO also initiated activities which established functional linkages between fisheries and veterinary authorities; capacity building on risk analysis in aquaculture production (7 risk sectors of pathogen, food safety, genetics, environment, ecological, social and financial risks); and support various conferences on aquatic animal health.

REGIONAL STAKEHOLDERS : AASA (SOUTHERN AFRICA)

Etienne Hinrichsen

Chairman
Aquaculture Association of Southern Africa
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Lynnwood Ridge, South Africa

The Aquaculture Association of Southern Africa or AASA was established in 1981 by producers, and was very much driven by research organisations until 2006, when it entered the “free market” environment, where product and project recognition are playing an increasingly important role. AASA now runs a permanent (small) office in Pretoria, but maintains a regional focus. Its newsletter now reaches over 3,000 direct recipients and its bi-annual conferences have grown from strength to strength.

The association is managed by a Management Committee, constituted at the Biannual Conference, consisting of a chairman, vice-chairman, a treasurer and members representing different sectors in the industry from different countries. Affiliations to AASA include the Abalone Farmers Association of SA, the Aquaculture Institute of South Africa, Catfish Producers, the Mussel & Oyster Forum, the Mpumalanga Trout Forum, the Western Cape Trout Farmers Association, the Limpopo Tilapia Producers Association, the Southern Tilapia Producers Association, the Western Cape Tilapia Growers Association and various country representatives. Benefits to members include effective representation of interests on national and international forums, the creation of a platform that can be used by any individual or corporation to interact with government and regional authorities, access to discussion groups, access to an *Aquaculture Services Directory*, discounted rates for the AASA Conference, full access to the website – www.aasa-aqua.co.za - and to the bi-monthly newsletter, e-mail notices on relevant issues and Facebook and Twitter messaging. At global level, AASA is recognised by the *World Aquaculture Society* (WAS) and plays a key role in the African Chapter of WAS.

In the AASA’s view, constraints to the aquaculture development in this part of Africa are fourfold :

- Logistics, skills, infrastructure,
- Species,
- The environment, and
- Lack of a facilitative environment,

most or all of which could be mitigated by *Cooperative Information Sharing*.

What underlies the need for *Cooperative Information Sharing* ? Poor access to accurate and aligned information, floods of irrelevant or locally inapplicable information, the “price” of information, the lack of alignment between information frameworks, the lack of sharing of knowledge, unaligned research and poorly communicated research. As a matter of example, in the Republic of South Africa multiple acts, multiple policies, multiple strategic plans (both national and provincial) and multiple programmes and development frameworks affect aquaculture. All have been created with good intentions but create a cauldron of non-aligned frameworks. A cooperative framework could ensure better sector development, alignment of African objectives, better avenues to attract investment and participation, the creation of an information doorway, elimination of duplicated efforts, the elimination of unacceptable “information costs” and would definitely lessen the expense and frequency of “*repetitive failure*”.

To enable this, various questions will have to be answered: can we approach SADC? What would be the role of the AASA ? Where do we get the funding? To commence, we need closer channels of communication between role-players.

REGIONAL STAKEHOLDERS : SARNISSA (AFRICA)

William Leschen

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Sustainable Aquaculture Research Networks in Sub Saharan Africa (SARNISSA) is a three year EC funded FP7 project which began in February 2008. It was set up in response to one of the key identified constraints to development of aquaculture in the continent over the last 30-40 years: i.e. lack of information available for the range of key stakeholders involved in the development of aquaculture. Its two main objectives are to improve access to new and existing aquaculture information in different formats and contacts across borders and key languages (English and French); whilst also encouraging communication and sharing of information between stakeholders with the aim of facilitating mutually beneficial new research and other collaborations, if possible leading to successful funding applications and new projects.

By May 2010 SARNISSA had over 1400 registered members from 44 African and 47 other international countries who are joined together by two lively, interactive English and French language African aquaculture e-mail discussion fora, and two regularly updated and informative websites (Wiki and Facebook) which contain a variety of information, contacts, publications, videos, media news, employment and funding opportunities, conferences and meetings. The main SARNISSA website now averages 2,700 visits per month with Nigeria, Cote D'Ivoire, Egypt and South Africa being the most regular African users.

In terms of publications SARNISSA has also commissioned 19 user friendly Case studies and 10 in country aquaculture reviews which are available to all SARNISSA members via the www.sarnissa.org website. In terms of existing publications SARNISSA members also have free access to the CABI online Aquaculture Compendium which has been updated throughout the project with new African related content.

In terms of partners and infrastructure SARNISSA has three regional centres/partners for West, Southern and Eastern Africa, as well as CIRAD and *World Fish Center* who have extensive experience in African aquaculture development, CABI UK publishers, ETC Netherlands, Institute of Aquaculture University of Stirling UK, and the Asian Institute of Technology, Thailand.

The experience of setting up such a network has been constructive with already many positive outcomes in terms of making information available to a wide range of individuals from fish farmers, to students, researchers, markets sector, government, NGO's, whilst also increasing the contact, communication and collaboration between the government, research and commercial/private sectors and between the English speaking and Francophone countries. Despite initial concerns over limited internet access in African countries, through the increasing membership, and SARNISSA concentrating on the abilities, experience and capabilities of individuals rather than institutions, such a network has shown that it can be a very effective multi-disciplinary and social mechanism for African aquaculture development.

REGIONAL STAKEHOLDERS : NACA (ASIA & PACIFIC)

*Somkiat Kanchanakhan on behalf of Chadag V. Mohan**

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The *Network of Aquaculture Centres in Asia Pacific* (NACA), an intergovernmental organization of 21 governments in the Asia-Pacific, works on the principle of cooperation and collaboration with the intention of sharing regional resources amongst stakeholders within the network, which are governments, institutions and individuals. Addressing aquatic animal health is one of the key program areas of NACA, with the purpose of assisting member governments to “*reduce the risks of aquatic animal diseases impacting the livelihoods of aquaculture farmers, national economies, trade, environment, and human health*”. The program develops and implements national and regional projects and achieves the purpose through (a) Improving regional and international cooperation in aquatic animal health (b) Developing and implementing national strategies on aquatic animal health management (c) Improving surveillance, reporting and response to disease emergencies in the region (d) Harmonization of diagnostic procedures and approaches to risk assessment in the region and (e) Widespread promotion of better aquatic animal health management practices at the farm level (visit www.enaca.org/health for details).

Aquatic animal health is one of the major hurdles facing the aquaculture sector. The epidemic spread and devastating impacts of aquatic animal diseases such as epizootic ulcerative syndrome (EUS) and koi herpes virus disease (KHVD) in freshwater fish; viral nervous necrosis (VNN) in marine fish; white spot disease (WSD) and Taura syndrome (TS) in penaeid shrimps; white tail disease (WTD) in *Macrobrachium rosenbergii* and the emerging Infectious myonecrosis (IMN) in *Penaeus vannamei*; in Asia-Pacific have clearly demonstrated the vulnerability of aquaculture systems to infectious disease emergencies. The increasing globalization and trade volume of the aquaculture sector has created new mechanisms by which pathogens and diseases are introduced or spread to new areas. If nations have to address health issues effectively and support sustainable aquaculture development, what is needed is the development and implementation of effective national aquatic animal health strategies

Development and adoption of the FAO/NACA's Asia regional *technical guidelines* (TG) for responsible movement of live aquatic animals by 21 Asia-Pacific governments is a major outcome facilitated by NACA, between the years 1999-2001. Since then, the implementation of key elements of the TG has remained the focus of NACA's regional aquatic animal health programme. The framework provided by the Technical Guidelines is rather comprehensive and includes all major requirements for managing risks associated with the movement of live aquatic animals and trans-boundary pathogens.

A network of 21 National Coordinators has been guiding the process of development and implementation of national aquatic animal health strategies. The progress achieved in the implementation of various elements of the TG is summarized below.

Table 2. Status of implementation of FAO/NACA's Asia regional technical guidelines in Asia-Pacific Region

Elements in the Technical Guidelines	Progress Made (Number of Countries)		
	Good	Moderate	Low
Disease diagnosis	10	6	5
Health certification and quarantine measures	10	5	6
Disease zoning	3	3	15
Disease surveillance and reporting	8	8	5
Contingency planning	3	7	11
Import risk analysis	4	4	13
National strategies and policy frameworks	11	4	6

Countries in the region are at different stages of development of the national aquatic animal health strategies that contain the action plans of governments. Despite the considerable progress accomplished in the region, there are still areas that need to be seriously addressed. Good progress has been made in the areas of disease diagnosis, aquatic animal health certification and quarantine, disease surveillance and reporting and farm level health management. However, the progress in contingency planning, zoning and import risk analysis is rather limited.

Recognizing the importance of scientific risk analysis in minimizing the risk of introduction and spread of trans-boundary pathogens/diseases, an APEC Fisheries Working Group-funded project, *“Capacity and Awareness Building on IRA for Aquatic Animals”* was successfully implemented by NACA during 2002-2004 in partnership with several regional and international organizations. From a regional perspective it can be confidently said that governments have increased their investment for aquatic animal health management. The awareness and capacity of relevant stakeholders for IRA has progressed considerably over the past decade. There is increasing evidence of governments taking steps to build capacity of their staff to deal with aquatic animal diseases and meet international standards. The concept of import risk analysis (IRA) is being increasingly used by countries in the region to make key decisions on introductions of live aquatic animals (e.g. Thailand, India, Malaysia, Philippines).

AusAid, under the ASEAN-Australia Development Cooperation Program's *Regional Partnership Scheme* (AADCP-RPS) supported two aquatic animal health projects - (1) Strengthening Aquatic Animal Health Capacity and Biosecurity in ASEAN and (2) Operationalise Guidelines on Responsible Movement of Live Food Finfish in ASEAN. These Projects implemented between 2006 and 2008, directly supported capacity building, harmonization and trade facilitation within the ASEAN.



The 21 Member Countries of the NACA network in Asia and the Pacific.

The commitment of governments in the region to aquatic animal disease surveillance and disease reporting has improved significantly. The quarterly aquatic animal disease reporting system is a testimony to this progress. The QAAD reporting system in the Asia-Pacific region is being implemented as a joint activity between NACA, FAO and OIE Regional Representation (Tokyo) since the second quarter of 1998. To date, 45 QAAD reports have been published and widely disseminated. Twenty-one countries from the region participate in the reporting system. The QAAD list includes all diseases listed by OIE in the latest edition of the OIE *Aquatic Animal Health Code*, plus diseases of concern to the Asia-Pacific region.

The QAAD list is being revised annually by the NACA Regional *Advisory Group* (AG) on aquatic animal health. As a result of these revisions, the regional QAAD list, has contributed to listing of some serious emerging diseases from the region (e.g. Infection with koi herpes virus, abalone viral mortality, white tail disease in *Macrobrachium rosenbergii*, Infectious myonecrosis virus), many of which are presently listed by the OIE.

The information generated through the regional QAAD reporting system provides up-to-date information on important diseases in the Asia-Pacific region, serves as an early warning system for emerging diseases and is a valuable source of information to support risk analysis and management of transboundary pathogens. NACA is also working with OIE in establishing WAHIS Regional core for online reporting of diseases in the Asia Pacific region.

Another key element supporting the progress of aquatic animal health management in the region is the functioning of the Asia Regional *Advisory Group* (AG) on aquatic animal health. The 10 member high level group constituted by the Governing Council of NACA in 2001 in cooperation with OIE and FAO provides advice to NACA and Asian governments on aquatic animal health management. The AG meets on an annual basis to review the Asian disease situation, consider regional and international developments, develop and communicate specialist advice to governments on aquatic animal health management matters. NACA facilitates the implementation of the mandate of the AG and works closely with the OIE and FAO to promote the role of the region in influencing international standard setting and trade policies.

One way to support implementation of responsible health management is to effectively use the vast pool of technical expertise that is available in the region. In this direction, NACA has embarked on a new regional initiative – *identifying and establishing a three tier regional resource base* - to utilize the technical resources available in the region for the benefit of its member countries. This includes, *Regional Resource Experts* (RRE), *Regional Resource Centres* (RRC) and *Regional Reference Laboratories* (RRL) for diseases of regional concern (not listed by the OIE). The regional resource base is being increasingly used by stakeholders in member countries. The trained human capacity for disease diagnosis and laboratory facilities for working on some of the key diseases of concern to the region has increased substantially in the last decade. It is noteworthy to mention that some of the labs from the region are now recognized as OIE reference laboratories for some of the key diseases like EUS, WTD and WSD.

In addition to the above, specific project driven activities facilitated and/or coordinated by NACA have been contributing immensely to the strengthening of the regional health management and biosecurity through (a) capacity building (e.g. diagnostics, epidemiology, sampling, surveillance, risk analysis, contingency planning); (b) development of resource material (e.g. technical guidelines, manuals, diagnostic guides, field identification guides, disease cards, extension brochures, etc); (c) provision of technical assistance to individual countries (e.g. technical missions to assist in the development of national strategies); (d) development of standard operating procedures (e.g. SOPs for responsible movement of live food finfish within ASEAN); (e) harmonization (e.g. ACIAR supported PCR inter-calibration exercise in India, Indonesia and Vietnam); (f) development of diagnostics (e.g. ACIAR supported shrimp regional project) and (g) promoting adoption of better aquatic animal health management practices (e.g. shrimp better management practice (BMP) projects in India, Vietnam, Thailand and Indonesia).

In the region, there is increasing evidence of application of modern disease diagnostic methods for servicing the aquaculture sector. For example, the use of PCR technology to service the shrimp farming sector has progressed considerably in the region. Government and private PCR service providing labs in several countries (e.g. Thailand, India, Indonesia, Vietnam) of the region are screening samples of shrimp broodstock and seed (PL) in large numbers and enabling hatcheries and farmers to make science based decisions.

For example, the table below shows the number of samples screened by PCR for WSSV in the laboratories of Department of Fisheries, Government of Thailand between the years 2004 and 2008. Use of clean broodstock and seed appears to have contributed significantly to minimizing the impact of some of the serious shrimp viral pathogens in the region.

Table 3: Number of samples screened by PCR for WSSV in Thailand (2004-2008)

Year	Number of samples tested for WSSV
2004	14,129
2005	8,613
2006	7,380
2007	6,424
2008	3419

In recent years, epidemiological approaches have been increasingly used in the region to identify risk factors for key disease outbreaks and later develop interventions in the form of better management practices (BMPs). Application of BMPs in shrimp farming has helped the sector to minimize the impact of serious viral pathogens and has enabled farmers to live with the virus and sustain the production.

Through the implementation of the third (2001-2005) and fourth (2006-2010) five-year work programs, considerable progress has been made in the region. Considering that different countries have achieved different levels of progress, the regional aquatic animal health program of NACA is being further strengthened by focusing on implementation of practical aquatic animal health management strategies at farm/local/national/regional levels. Sharing of experiences and resources through regional and sub-regional co-operation is being promoted through working together on common problems. Country specific activities built around existing resources and facilities are being initiated to develop and implement simple and practical aquatic animal health management practices. New issues such as food safety, emerging diseases and continued introductions of exotics to the region, are being given special attention.

Networking, communication and project implementation coordinated by NACA in collaboration with partner organizations and donor agencies has been instrumental in facilitating flow of science and provision of technical assistance to relevant stakeholders in NACA member countries and supporting strengthening of aquatic animal health management and biosecurity in the region.

Judging by the progress made over the last decade, it can be confidently said that the region as a whole is now in a much better state of preparedness to deal with aquatic animal disease outbreaks and emergencies. However, the region can't be complacent, and should ensure strong national commitment and continuous awareness and capacity building at producer, disease support and decision making levels for effective implementation aquatic animal health management strategy and improve biosecurity.

REGIONAL STAKEHOLDERS : RHODES UNIVERSITY (TRAINING)

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As fisheries decline, governments are increasingly looking at aquaculture to become a lead source of fish products. Already aquaculture contributes up to half of all fish production, but with the recent increase in world food prices and fluidity of some regional economies, the urgency for aquaculture to increase production is apparent. In recent years, Africa has recognised its potential and role in aquaculture development (NEPAD fishery and aquaculture action plan), and there are now various thrusts to develop this sector.



Though Africa has been endowed with the natural resources for aquaculture development, there are still gaps in the technical capacity to develop this sector. One of these is the capacity to provide veterinary support and services to aquaculture. Without this essential service, the commercialisation of aquaculture will be hampered and the ability for fish products to be exported to certain markets would be curtailed. It is envisaged that state veterinarians could play an important role in supporting fish farmers, however as fish health and management is not adequately covered during their training, they are often not in a position to assist farmers.

Demonstrations for state veterinarians conducted at the Department of Ichthyology and Fisheries Science © Rhodes University.

To bridge this gap, Rhodes University and the South African *Department of Agriculture, Forestry and Fisheries* (DAFF) have collaborated and developed a course module to train state veterinarians in fish health and management. Already a group of 20 state veterinarians have been trained and the course was approved by the South African Veterinary Council. More courses to broaden the knowledge of state veterinarians are being planned. This collaboration is also being extended to capacitate veterinary para-professionals and technicians at state laboratories to develop the diagnostic capabilities. This collaboration between Rhodes University and the DAFF is being proposed as a model. Furthermore, this training course could be extended to other countries in the region.

HOST COUNTRY : AQUATIC ANIMAL HEALTH IN NAMIBIA

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Aquatic disease surveillance in Namibia is recent with much to be done before a comprehensive monitoring programme is established. Although the legal directives for monitoring of aquatic animal health are laid down in Namibia's recent aquaculture legislation, the driving forces to mobilize action have dually been the development of commercial mariculture along the west coast and the outbreak of Epizootic Ulcerative Syndrome EUS in the northern border river, the Zambezi. As an OIE-listed disease EUS presents a serious problem to all countries sharing the Zambezi. EUS in Namibia was not primarily associated with aquaculture activities, but recognized initially in wild river fish populations in 2006. Subsequent surveys carried out through a project jointly sponsored by the World Wildlife Fund WWF, the Namibian Nature Foundation NNF and the Ministry of Fisheries and Marine Resources MFMR, detected EUS in 22 riverine species. In 2008 EUS was detected in fish farms in the Kavango region, affecting three-spot tilapia: *Oreochromis andersonii*. Despite precautions in movements of equipment and biological material, together with pond treatment by liming, sporadic outbreaks of EUS continue in the fish farms next to the river. It is assumed that the disease was introduced to the fish farms via river water.

The legal regulatory framework for disease surveillance in Namibia is fortunately in place. The Ministry of Fisheries and Marine Resources' Aquaculture Act (2002), licensing regulations (2003) and import-export regulations (2010) clearly stipulate measures to address the health of aquatic animals and the aquatic environment. These include health certification for incoming or outgoing aquaculture organisms and commodities, restriction on introduction of foreign species, restriction on movement of farmed species, and testing for suspected disease. Once the Aquaculture Directorate was established within the Ministry in 2003, the MFMR assumed responsibility for aquatic animal disease, reporting directly to the Ministry responsible for animal health, the Ministry of Agriculture, Water and Forestry.

With regard to the marine environment, disease surveillance has included the testing of farmed oysters for OIE-listed diseases. No diseases have to date been found. All mariculture activities are focused on molluscan shellfish, so that finfish have not been investigated, even though incidences of disease in wild fish stocks have been found. It is desirable to establish a baseline disease profile of endemic shellfish and finfish species if possible, before the mariculture activities intensify.

Whilst there is intent and planning to develop basic aquatic surveillance capacity in Namibia, the limitations in staff and infrastructure are challenges. Within the Ministry's master-plan for aquaculture development is an aquatic animal health disease and quarantine unit, with modern, equipped laboratories, so that necessary precautions can be taken to minimize the introduction and spread of aquatic disease.

Session 3

Notification by Members to the OIE, WAHIS & WAHID

THE OIE LIST OF AQUATIC DISEASES, CRITERIA FOR INCLUSION

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A key purpose of listing a disease in the Aquatic Code is to ensure transparency of the aquatic animal health status world-wide, by obliging Member Countries and Territories to report its occurrence to OIE. The OIE collates and disseminates the information received in reports on the status of those listed diseases in Member Countries and Territories.

The list of diseases is presented in Chapter 1.3 of the Aquatic Code 2009 and this list is reviewed annually by the *Aquatic Animal Health Standards Commission* and recommendations for deletions and additions are proposed to OIE Member Countries and Territories. Notification and reporting requirements apply to all listed diseases and any new emerging diseases. The criteria for listing an aquatic animal disease are stipulated in Article 1.2.1 and that of listing an emerging aquatic animal disease in Article 1.2.2. The criteria is that the disease has been shown to cause significant production losses or the disease has been shown to or scientific evidence indicates that it is likely to negatively affect wild aquatic animal populations that are an asset worth protecting for economic or ecological reasons. If the agent is of public health concern then it requires listing as well. If the infectious aetiology of the disease is proven or an infectious agent is strongly associated with the disease, but the aetiology is not yet known and has potential for international spread, including via live animals, their products or contaminated materials, the disease offers itself for listing. If several countries or countries with zones may be declared free of the disease based on the general surveillance principles outlined in Chapter 1.4 of the Aquatic Code and a repeatable and robust means of detection/diagnosis exists, the disease offers itself for listing as well.

In conclusion, as per January 2011, there will be 26 aquatic animal diseases listed by OIE (2010) with modifications possible on annual basis. These modifications are approved at OIE General Session in May of each year and new disease listing enters into force on 1st January the following year. One of the critical responsibilities of the appointed national aquatic animal focal points is to take part in the commenting process for updating the OIE disease list.

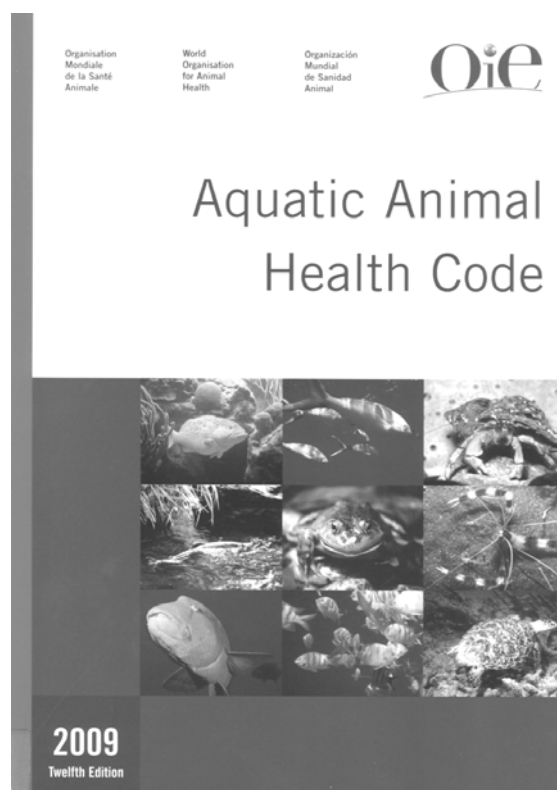


Table 4. Aquatic animal diseases listed by OIE (2010)

Diseases of fish	Diseases of molluscs	Diseases of crustaceans	Diseases of amphibians
Epizootic haematopoietic necrosis	Infection with <i>Bonamia ostreae</i>	Taura syndrome	Infection with <i>Bactrachochytrium dendrobatidis</i>
Infectious haematopoietic necrosis	Infection with <i>Bonamia exitiosa</i>	White spot disease	Infection with ranavirus
Spring viraemia of carp	Infection with <i>Marteilia refringens</i>	Yellowhead disease	
Viral haemorrhagic septicaemia	Infection with <i>Perkinsus marinus</i>	Infectious hypodermal and haematopoietic necrosis	
Infectious salmon anaemia	Infection with <i>Perkinsus olseni</i>	Crayfish plague (<i>Aphanomyces astaci</i>)	
Epizootic ulcerative syndrome	Infection with <i>Xenohalotis californiensis</i>	Infectious myonecrosis	
Gyrodactylosis (<i>Gyrodactylus salaris</i>)	Infection with abalone herpes-like virus	White tail disease	
Red sea bream iridoviral disease		Necrotising hepato-pancreatitis (<i>listed as per January 2011</i>)	
Koi herpesvirus disease			

REPORTING OBLIGATIONS BY MEMBERS TO THE OIE

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One of the OIE's main missions is to ensure the transparency of the world animal health situation. In this respect the OIE setup the *World Animal Health Information System* (WAHIS) based on the commitment of OIE Member Countries and Territories to notify cases of the main animal diseases detected in their territories, including zoonoses.

This mandate of the OIE is based on its Organic Statutes of the OIE (which are part of the agreement for the creation of the OIE signed in 1924) and on the OIE International Standards, updated on an annual basis by the OIE World Assembly of Delegates. In particular, Articles 4, 5 and 9 of the Organic Statutes clarify the requirements of the OIE to collect and disseminate information on the animal health situation while it requires OIE Members to send notification of these events to the OIE. Within the International Standards, Chapters 1.1 of both the *Terrestrial Animal Health Code* and the *Aquatic Animal Health Code* regulate the reporting requirements of the Information System.

An analogy between the OIE reporting system and the *World Health Organization* (WHO) exists; these systems complement each other given that they cover, respectively, animal health (including zoonoses) and human health.

The OIE legal requirements constitute, for both the OIE and its Members, a requirement to share the animal health information data to ensure the transparency of the animal health situation worldwide. Therefore, withholding facts on the incidence of diseases by the OIE - for whatever reasons - would constitute a violation of its Organic Statutes and, at the same time, the ratification of membership of the OIE gives Members obligations to provide information to the OIE that are international legally binding obligations.



**IMMEDIATE NOTIFICATIONS, SIX-MONTHLY REPORTS, ANNUAL REPORTS, WAHIS
EVOLUTION TOWARDS WAHIS 2.0 AND REGIONAL INFORMATION SYSTEMS : THE OIE
STRATEGY.**

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WAHIS is an internet-based computer system that processes data on animal diseases and then informs the international community, by means of “alert messages”, of relevant epidemiological events in OIE Members as well as on the animal health situation over time of more than 100 diseases. Access to this secure site is only available to authorised users, namely the OIE Delegates and their authorised representatives, which are generally the responsible of their epidemiological unit, who use WAHIS to notify the OIE on any relevant animal disease information. Whenever an important epidemiological event occurs (related to both terrestrial and aquatic animals), the Member must inform the OIE by sending an *Immediate Notification*, within 24 hours following the confirmation of the event, which includes the reason for the notification, the name of the disease, the affected species, the geographical area affected, the control measures applied and any laboratory tests carried out or in progress. To improve the scope and efficiency of the OIE's early warning system, the events related to aquatic animals of epidemiological significance that Members should immediately notify to the OIE Headquarters are the following:

- the first occurrence or the re-occurrence of an OIE-listed disease in a country or zone/compartment of the country previously considered to be free of the disease;
- any occurrence of an OIE-listed disease in a new host species;
- any occurrence of an OIE-listed disease caused by a new strain of the pathogen or in a new disease manifestation;
- any occurrence of an OIE-listed disease, if the disease has newly recognised zoonotic potential;
- any occurrence of an emerging disease or pathogenic agent if the event is of epidemiological significance to other countries.

Once they have been received, verified and validated by the OIE, the immediate notifications are published in the OIE's three official working languages (English, French and Spanish) and electronically distributed to the Delegates and through an open distribution list, named OIE-Info list. After having informed the OIE of a significant epidemiological event by means of an immediate notification report, the Member must send weekly *Follow-up Reports* so that the event can be monitored as it evolves. In all cases, the country must submit a *Final Report* to notify either that the event has been resolved or that the disease has become endemic. In the latter case, the country will continue to submit information in its *Six-Monthly Reports* if the disease is an OIE listed disease.

Six-Monthly Reports provide information on the presence or absence of OIE listed diseases and the prevention and control measures applied or to be when a disease has to be introduced in the country. For diseases reported as being present in a country during a given six-month period, the country in question must provide quantitative data on the number of outbreaks, susceptible animals, cases, deaths, animals destroyed and animals vaccinated. For diseases that are present and are notifiable, the OIE recommends that Members provide quantitative data by month and by first administrative division.

As a complement to WAHIS, the data and information provided by Members are accessible via the Web interface WAHID (*World Animal Health Information Database*) and can be accessed by the public through the OIE Web site (www.oie.int/wahid). This unique application improves the transparency, efficacy and rapidity of the dissemination of animal health information throughout the world, by giving everyone access to all the available information on animal diseases, including zoonoses, presented by country/territory, by region, by month, by six-month period or by year. This interface gives access to a range of other information, including data on animal populations at a national or regional level, epidemiological maps of significant events, world distribution maps of animal diseases and control methods applied by disease.

A new version of the system (WAHIS-2) will be launched soon bringing along significant improvements in the field of notification of diseases in wildlife and integrating the national wildlife focal points.

OIE strategy for regional information systems : WAHIS Regional Cores, the concept

The OIE has developed a strategy to accommodate the needs of OIE Members to meet their regional needs, and at the same time satisfy their obligations to notify diseases to the OIE, without unnecessary duplications. A concrete step forward is in place with the implementation of WAHIS Regional Cores which will be WAHIS components providing the required flexibility for regional animal health data management. There are mainly two pathways to follow:

1. for disease control purposes, the OIE offers the possibility for groups of members, and for priority endemic diseases covered by a regional control programme, to provide and share more information than the minimal information required by the OIE for these diseases (e.g. detailed data to be provided outbreak by outbreak even for endemic diseases, which is not requested by WAHIS). Non-confirmed information (rumours or suspicions of disease outbreaks) could be shared between participating Members and only confirmed information will be transferred to the OIE and, through the OIE, to the rest of the world. Such regional databases can be hosted free of charge by the OIE central servers. This could be a prerequisite for sustainability of the programme. Data collected at the regional level will remain private and is to be used for analysis by those who are working on the control programme.
2. If the data collected by the OIE as part of the six-monthly reporting procedure (including by monthly breakdown), is sufficient for a region, then an agreement could be signed between the regional organisation and the OIE. The OIE will provide data on the selected regional priority diseases for Members of the region that could be displayed on the regional web site or to produce different types of publications such a bulletin, etc. To give some examples, there are already agreements signed between the OIE and the *Organismo internacional regional de sanidad agropecuaria* (OIRSA), the *Secretariat of the Pacific Community* (SPC) and the *Network of Aquaculture Centres in Asia-Pacific* (NACA). The development of such Regional Cores has started and is being tested by the OIE.

COMPETENT AUTHORITIES : VETERINARY AND FISHERIES - CHALLENGES

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Windhoek, Namibia

According to the Terrestrial Code, a *Competent Authority* means the Veterinary Authority or other Governmental Authority of an OIE Member having the responsibility and competence for ensuring or supervising the implementation of animal health and welfare measures, international veterinary certification and other standards and recommendations in the Terrestrial Code in the whole territory.

The *Veterinary Authority*, still according to the Terrestrial Code, means the Governmental Authority of an OIE Member, comprising veterinarians, other professionals and para-professionals, having the responsibility and competence for ensuring or supervising the implementation of animal health and welfare measures, international veterinary certification and other standards and recommendations in the Terrestrial Code in the whole territory.

According to the Aquatic Code, *Competent Authority* means the Veterinary Services, or other Authority of a Member, having the responsibility and competence for ensuring or supervising the implementation of the aquatic animal health measures or other standards in the Aquatic Code, while *Veterinary Authority* is defined as : the Governmental Authority of an OIE Member, comprising veterinarians, other professionals and para-professionals, having the responsibility and competence for ensuring or supervising the implementation of aquatic animal health and welfare measures, international aquatic animal health certification and other standards and recommendations in the Aquatic Code in the whole territory.

Both the Terrestrial and the Aquatic Code stipulate that the obligations for reporting to the OIE rests with the Veterinary Authority. This represents a challenge because of the fact that :

- Veterinary schools in many countries do not provide for example adequate training in aquatic and wild life diseases (including farmed game: e.g. ostriches, crocodiles)
- Most Veterinary Services employ veterinarians who are usually only specialized in domestic animal health issues
- Capacity to train or recruit specialists trained in many different fields not possible due to resource limitations

Hence, a veterinary authority may not have the necessary competence on e.g. fish, wildlife diseases, bees, molluscs, entomology, ornithology and other biological sciences, but is still required to report to OIE on behalf of other competent authorities. The question must then be raised : how does one “competently” report on a subject matter one is not too familiar with?

Another challenge is the variety of information sources. Information reported to OIE comes from different organisations and ministries or agencies within the government: e.g. other ministries responsible for

- Fisheries: reporting fish diseases
- Environment, conservation: wildlife diseases
- Health : zoonotic diseases, food safety

As well as local authorities: in charge of local abattoirs, zoonoses

Again, the veterinary authority may not have the power/authority to ensure that reports are channelled to it from the different sources. This very much relies on the good will of colleagues- if any! More often than not, linkages between the veterinary authorities and all these organisations may be weak or none existent.

Possible solutions to overcome these challenges are (a) for OIE to widen the involvement of other competent authorities and to give them full participation in its activities; (b) for veterinary authorities to foster good working rapport and linkages with other competent authorities in the respective countries and (c) to legislate! Veterinary authorities are to be given the legal mandate to ensure compliance by competent authorities for reporting purposes.

In addition, there is a need for veterinary educational establishments (VEE) to widen their training for veterinary surgeons to cover e.g. fish, bees, etc. The same goes for continued professional development (CPD) schemes. Furthermore, veterinary services should consider employing specialists in different areas where feasible.

As a way forward, an assessment on how much information from each of the competent authorities does reach the veterinary authority for reporting purposes to the OIE may need to be undertaken, followed by an identification of the gaps and ways of tackling them. Thereafter clear guidelines on reporting within countries will have to be formulated and agreed amongst all stakeholders.

In conclusion, and to sum it up, reporting to the OIE is important to facilitate safe trade in animals and animal products. However, how sure are we that all the information required for reporting is reaching the OIE and if not, what can be done to ensure this happens?

**INCORPORATING FISHERIES DEPARTMENTS AND AQUATIC ANIMAL PRODUCERS INTO
NATIONAL INFORMATION COLLECTION AND MONITORING OF AQUATIC ANIMAL
HEALTH – PROVIDING INCENTIVES FOR A SUSTAINABLE SYSTEM**

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The current situation globally concerning the inter-exchange of knowledge, information and up to date data on aquatic animal health between international organisations, national, legislative government Fisheries Departments and private sector individuals involved in aquaculture and fisheries is considerably varied in scale and ultimately dependant on the funding and resources available within individual countries. Regulation, monitoring and control of aquatic animal health in northern America, most of Europe, and Australia is well documented and also through certain regional and international organisations such as OIE regulated to monitor and inform of disease outbreaks and movements of live animals trans-nationally and trans-continentially. Whereas in other continents such as Africa and many developing countries where, being objective and pragmatic, aquatic animal health is not a key priority within government budgets, regulation and information flows between key stakeholders is largely still absent.



Eye exophthalmia © William Leschen, Stirling Univ.

However in the African scenario this position is beginning to change as certain countries such as Egypt, Nigeria, Ghana and Uganda are beginning to develop and intensify their aquaculture production systems into fully fledged food production industries. This has resulted in the beginnings of both disease problems occurring in intensive systems, particularly the hatchery sector, as well as increasing (unregulated) movements of live fish between countries and water catchment areas. As such African planners, regulators, aquatic animal health specialists and producers, and pharmaceutical companies should be communicating and collaborating across languages and borders to begin to set up an affordable and realistic infrastructure for regulation, monitoring and information exchange across the continent.

This presentation discusses and addresses the issues above, proposing a template initially at individual country level which is based on the official registration of all producers and annual collection of standardised production data including live fish movements of/from individual fish/ shellfish producers. In order to ameliorate past experiences and challenges with collection of such data by government Fisheries Departments and the resulting questionable veracity of national statistics produced, a number of built in incentives to ensure compliance and veracity are put forward, including recognition and certification of producers, fingerling producers for advertising and marketing purposes. This standardised national template would be proposed to then be replicated in other surrounding countries. Previous one way information flows from farmer to regulator/researcher would be addressed by forming an: *online aquatic animal health network* including a regularly updated website and an aquatic animal health email discussion forum with participation from a wide range of stakeholders: fish/shellfish producers, researchers, government, veterinarians, commercial pharmaceutical companies etc.

For those without internet access they would receive regular quarterly posted newsletter bulletins. It is argued that at the beginnings of commercialisation of aquaculture across Africa for any national or regional aquatic animal health regulation and monitoring system to be successful and sustainable it has to be realistically and cost effectively standardised and integrated into each country's national government Fisheries/ Aquaculture Department infrastructure and has also to include the producers themselves as an integral component of the system. This template would initially be trialled and piloted in several specific countries over a two –three year period with lessons learnt and modifications made before rolling out on a more regional or sub-continental basis.

Session 4

The Aquatic Animal Health Code

THE OIE AQUATIC ANIMAL HEALTH CODE : WHAT TO KNOW AND WHERE TO LOOK FOR IT ?

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The aim of the *Aquatic Animal Health Code* (Aquatic Code) is to assure the sanitary safety of international trade in aquatic animals (amphibians, crustaceans, fish and molluscs) and their products. This is achieved through the detailing of health measures to be used by Competent Authorities of importing and exporting countries to avoid the transfer of agents pathogenic for aquatic animals and/or humans, while avoiding unjustified sanitary barriers.

Competent Authorities should bear in mind that the Aquatic Code is the primary reference for international trade in aquatic animals and their products and that these standards allow countries and territories that are Members of the *World Trade Organization* (WTO) to meet their relevant obligations under the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement).

The Aquatic Code is also an essential tool for supporting the mandate of the OIE in the area of improving aquatic animal health world wide through the application of the standards on aquatic animal disease surveillance and recommended control methods.

The Aquatic Code, is prepared by the OIE *Aquatic Animal Health Standards Commission* and formally adopted by the OIE Members, and contains recommendations designed to prevent the introduction of infections of aquatic animals into the importing country through trade in aquatic animals and animal products. The standards are developed using the principles of risk analysis, and they are subject to scientifically-based peer review by experts in OIE Members. The Aquatic Code was first published in 1995 and the current edition is available on the OIE web page (www.oie.int) in English, French and Spanish.

Sections 1 to 7 of the Aquatic Code contains 'horizontal' texts on: aquatic animal disease diagnosis, surveillance and notification; risk analysis; quality of Competent Authorities; disease prevention and control; trade measures, import/export procedures and health certification; veterinary public health; and welfare of farmed fish.

In Sections 8 to 11 of the Aquatic Code, OIE listed diseases are addressed in separate 'vertical' disease specific chapters. The health measures described in each disease specific chapter are designed to prevent the disease in question being introduced into an importing country, by taking into account the nature of the commodity and the aquatic animal health status of the exporting country. When correctly applied, the measures provide optimal health safeguards for trade.

ANIMAL PRODUCTION FOOD SAFETY

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The aim of the *Aquatic Animal Health Code* (Aquatic Code) is to assure the sanitary safety of international trade in aquatic animals (amphibians, crustaceans, fish and molluscs) and their products.

Under the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), the OIE is responsible for setting international standards in the domain of animal health, including zoonotic diseases, and the Codex Alimentarius Commission (Codex) in the domain of food safety. For food products of animal origin, hazards to human health may arise at the primary production phase or at any subsequent stage in the food production continuum. Since 2001, the OIE mandate has included setting standards for animal production food safety, to help prevent gaps, contradictions and duplications in international standards that cover the food production chain.

The OIE Working Group on Animal Production Food Safety (APFSWG) was established in 2002, to strengthen OIE's activities in the food safety area and further develop collaboration with the Codex. The APFSWG's role is to coordinate OIE activities related to animal production food safety and to advise the Director General and the relevant Specialist Commissions on issues in this area.

The mandate of the Terrestrial Animal Health Standards Commission has included food safety for some time and several relevant chapters have been developed for inclusion in the *Terrestrial Animal Health Code*.

While the Aquatic Code has traditionally addressed the OIE responsibilities for aquatic animal health, in 2009 the OIE World Assembly adopted an expanded mandate for the *Aquatic Animal Health Standards Commission* to include aquatic animal production food safety.

In line with this new mandate, the Commission reviewed the Aquatic Code Chapter 4.5. Control of Aquatic Animal Health Hazards in Aquatic Animal Feed to ensure it explicitly addressed aquatic animal production food safety. The amended text was proposed for adoption at the OIE General Session in May 2010.

A new Chapter 6.1. Introduction to the Recommendations for Controlling Antimicrobial Resistance was proposed for adoption at the OIE General Session in May 2010. The purpose of this new section is to provide guidance for Members to appropriately address the selection and dissemination of resistant micro-organisms and antimicrobial resistance determinants from the use of antimicrobial agents in aquatic animals. A new draft chapter 6.2 Responsible and Prudent Use of Antimicrobial Agents in Veterinary Medicine has been developed and circulated to Members' for comment.

SAFE COMMODITIES

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The aim of the *Aquatic Animal Health Code* (Aquatic Code) is to assure the sanitary safety of international trade in aquatic animals (amphibians, crustaceans, fish and molluscs) and their products. This is achieved through the detailing of health measures to be used by Competent Authorities of importing and exporting countries to avoid the transfer of agents pathogenic for aquatic animals and/or humans, while avoiding unjustified sanitary barriers.

The sanitary measures described in the aquatic animal disease specific chapters (Sections 8 to 11) of the Aquatic Code are designed to prevent the pathogenic agent in question being introduced into an importing country, by taking into account the nature of the imported commodity and the animal health status of the exporting country.

Each chapter addresses an OIE-listed disease and includes:

- a list of 'safe' commodities, i.e. those that are considered not to require any disease-specific measures, irrespective of the status of the exporting country for the disease;
- a list of 'safe' commodities that have been prepared and packaged for retail trade, i.e. those products that have been prepared and packaged for retail trade and do not require disease-specific measures, irrespective of the status of the exporting country for the disease;

Given the importance of 'safe' commodity based trade, the *Aquatic Animal Health Standards Commission* recommended that an ad hoc Group be convened to review the area of safe commodities in the Aquatic Code. This Group first met in 2007.

In 2009, a new Chapter 5.3. Criteria to Assess the Safety of Aquatic Animal Commodities was adopted. This chapter defines the criteria used to assess (i) the safety of aquatic commodities for any purpose from a country, zone or compartment not declared free of the 'specified disease'; and (ii) the safety of aquatic commodities for retail trade for human consumption from a country, zone or compartment not declared free of a 'specified disease'.

The ad hoc Group has been using these criteria to assess all the aquatic commodities currently listed as 'safe' in the Aquatic Code to see if they meet these criteria. So far listed 'safe' commodities have been assessed for Epizootic haematopoietic necrosis (EHN), Taura syndrome and Infection with *Bonamia ostreae* disease chapters. The amended commodity listings for these disease chapters were proposed for adoption at the OIE General Session in May 2010. The ad hoc Group will continue to undertake assessments of commodities listed for other disease chapters in the Aquatic Code.

WELFARE CHAPTERS

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The aim of the *Aquatic Animal Health Code* (Aquatic Code) is to assure the sanitary safety of international trade in aquatic animals (amphibians, crustaceans, fish and molluscs) and their products. This is achieved through the detailing of health measures to be used by Competent Authorities of importing and exporting countries to avoid the transfer of agents pathogenic for aquatic animals and/or humans, while avoiding unjustified sanitary barriers.

While the Aquatic Code has traditionally addressed the OIE responsibilities for aquatic animal health, in 2009 the OIE World Assembly adopted an expanded mandate for the *Aquatic Animal Health Standards Commission* to include aquatic animal welfare which has resulted in new chapters in the Aquatic Code that deal specifically with aquatic animal welfare.

A new Chapter 7.2. Introduction to Recommendations for the Welfare of Farmed Fish was adopted in 2008, which specifies the OIE work in aquatic animal welfare and the scientific basis for recommendations.

Recommendations for aquatic animal welfare only include welfare of farmed fish (excluding ornamental fish).

The first welfare specific chapter was adopted in 2009, Chapter 7.2. Welfare of Farmed Fish During Transport. This chapter provides information to minimise the effect of transport on the welfare of farmed fish and applies to transport of fish by air, by sea or on land within a country and between countries.

A new chapter 7.3. Welfare Aspects of Stunning and Killing of Farmed Fish for Human Consumption was proposed for adoption at the OIE General Session in May 2010. The recommendations apply to the stunning and killing of farmed fish species for human consumption and address the need to ensure the welfare of farmed fish during pre-slaughter and slaughter processes, until they are dead. As a general principle, fish should be stunned before killing and the stunning method should ensure immediate and irreversible loss of consciousness.

Another chapter currently under development, Chapter 7.4. entitled 'Humane Killing of Fish for Disease Control Purposes'. This chapter will specify measures applicable to the emergency killing of fish for disease control purposes not intended for human consumption.

The development of the aquatic animal welfare chapters has been harmonized with relevant chapters in the Terrestrial Code, where appropriate.

CASE STUDY 1 : WHITE SPOT DISEASE – A CASE STUDY FOR EXOTIC PATHOGENS AND CURRENT SIGNIFICANT ENDEMIC DISEASES IN EASTERN AFRICA

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Unlike the crustacean aquaculture industry in the rest of the world, which was mostly developed in the 70s, the African shrimp industry started in Madagascar in 1989 by an FAO project, followed by an industrial scale farm in 1992. An original semi-intensive rearing model was established for *Penaeus monodon* culture, through a mix of Latin American and Asian rearing techniques, and it was adapted to the local constraints or advantages such as respectively bad logistics, high energy costs, and high surfaces of land available and pristine environment. It allowed the production of premium products, still considered worldwide as the top quality. However, this “open” model is also considered as very fragile and highly sensitive to some extremely deleterious pathogens such as the following OIE reportable diseases presented in the Aquatic Code - WSD, YHD, TSD, NHP-BD and IMND - all of which were never reported so far in Southern Africa Sub-Region. The role of National Focal points for Aquatic Animals in the persistence of this OIE listed diseases free status, which is required for the survival of this particular shrimp industry - and future crustacean industries like crab or lobster cultures - will be stressed out, and recommendations will be made on how to implement a regional network aiming at this objective.

White Spot Disease will be presented as a case study for exotic diseases threatening the region. The nature of the disease will be defined, the etiological agent described, and its diffusion in Asia and Americas studied. The role of National Aquatic Animal Health Authorities involved in that pandemic infection will be commented. The current regulations in African countries regarding this disease and other exotic OIE listed agents will be described and analyzed.

Moreover, while the shrimp industry developed in Africa, some endemic local pathogens emerged progressively or were discovered through extensive epidemiological studies of wild crustacean fauna. Some of them were thoroughly described, and their economical importance for the crustacean aquaculture industry was evaluated. Two pathogens, the intracellular bacteria named “*Rickettsia Like Bacteria*” and the microsporidian parasite *Ameson michaelis* will be presented as cases studies for endemic pathogens of concern.

The potential role of National Focal Points for Aquatic Animals and regional sanitary regulations in the containment of both these endemic and exotic diseases will be detailed and suggestions will be made on a possible multi-stakeholder strategy to achieve this common goal.

CASE STUDY 2 : FRANCISELLA SPP – BACTERIAL PATHOGEN CAUSING MORTALITIES IN FARMED TILAPIA

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This paper presents a case study of mortalities which occurred in farmed tilapia in 2008 which resulted in the first recorded isolation and identification of the bacterial pathogen *Francisella spp* in aquatic animals in the UK.

A commercial tilapia recirculating water, raceway farm located in the north of England, producing market sized tilapia for local supermarket contracts began to experience mortalities in a new batch of fry (0.5-5g @ 20% total) which had been brought in from an air freighted overseas Asian supplier. Initial efforts to treat the remaining fish were attempted by the farmer however mortalities continued to increase and after one week mortalities spread to 20-50g fish within the same system. At this time the farmer contacted the government Fish Disease Inspectorate (CEFAS Weymouth) who took samples. Clinical disease signs included: External: behavioural intermediate flashing and lethargy, fungal patches, exophthalmia, pale gills, petechial hemorrhaging around pectoral fins; Internal: empty intestines, enlarged gall bladder, some enlarged granular spleens and enlarged kidneys. Samples were taken for bacteriology, parasitology and virology, also water quality. Initial results were negative for all, with water quality parameters being normal, however histology clearly showed lesions present in most tissues of fish sampled, with clear host response of granulomas especially in spleen and kidney tissues. Parasites and other pathologies were not seen. Secondary samples taken for molecular biology showed that products obtained from several fish, a 406 base nucleotide obtained with 100% nucleotide identity with a *Francisella* species, positive for *Francisella spp* previously described in tilapia from Taiwan and Central America. Definitive negative result for human pathogen *Francisella tularensis*.

Following identification of *Francisella* all fish on site were culled and removed, and the site and all equipment were disinfected under CEFAS supervision. Following disinfection raceways were left empty and dry for period of 6 weeks before being refilled and restocked with fingerlings from known UK supplier.

The case study goes on to discuss how intensification of tilapia production systems and transfer of juvenile stock from unknown sources which is increasingly occurring in a number of developing countries can significantly increase risk factors for disease and the associated serious financial consequences for tilapia producers. This has significant implications, and lessons learning for African tilapia culture in terms of regulation and monitoring of live fish movements as it begins to expand its fingerling production in order to develop a fully-fledged food production industry.

CASE STUDY 3 : EPIZOOTIC ULCERATIVE SYNDROME (EUS)

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Epizootic Ulcerative Syndrome (EUS) is an infection caused by an oomycete fungus known as *Aphanomyces invadans* which affects wild and farmed fresh water and estuarine finfish. Epizootic ulcerative syndrome outbreaks have been associated with mass mortality of various species during periods of low temperatures and after periods of heavy rainfall. The disease causes skin ulceration and death in fish populations. Furthermore the large skin ulcers render fish unmarketable.

The disease has swept across Japan, Australia, United States of America and many Asian countries. In 2006, the disease was documented in Southern Africa in the Chobe-Zambezi river system. This was the first confirmed outbreak on the African continent covering Botswana, Namibia and Zambia. In Botswana and Zambia, the disease was prevalent in wild fish, where as in Namibia cases have also been reported in fish farms.

Arrow indicates red hemorrhagic spots with localized swelling on the body surface © UNZA / Mudenda.



Comprehensive EUS surveys are being undertaken in both countries to determine the extent of the disease. So far about 25 species of fish have been documented to have been infected by EUS (Table 5). The cases are being confirmed by histological diagnosis and isolation of *Aphanomyces invadans* from internal tissues. *Aphanomyces invadans* hyphae are usually observed growing in skeletal muscle where they elicit lesions that progress from a mild chronic active dermatitis to a severe locally extensive necrotising granulomatous dermatitis with severe floccular degeneration.

In Zambia, most cases were being reported in the Zambezi river system where the initial outbreak occurred at the confluence of the Chobe and Zambezi Rivers near Sesheke district. In mid 2007, the disease spread upstream the Zambezi River in the Barotse plains. As of 2008 and 2009, the entire upper Zambezi River and some secondary channels were covered. Currently, the disease has now been reported in the Kafue river system where it poses a great challenge as a major drainage system of the Congo River basin in the north is under threat. Therefore, there is urgent need to investigate the disease in the Kafue River on how the disease entered the system so that necessary measures are put in place to avert the spread of the disease to other river systems in Zambia. Control of EUS in natural waters is probably impossible. In outbreaks occurring in small, closed water-bodies, liming water and improving water quality, together with removal of infected fish, is often effective in reducing mortalities and controlling the disease.

Table 5. Fish species infected by EUS in Chobe Zambezi River System

Fish species	Common name
1. <i>Barbus paludinosus</i>	Straightfin barb
2. <i>Serranochromis angusticeps</i>	Thinface largemouth
3. <i>Clarias gariepinus</i>	Sharptooth catfish
4. <i>Clarias ngamensis</i>	Blunttooth catfish
5. <i>Sargochromis carlottae</i>	Rainbow bream
6. <i>Tilapia sparmanii</i>	Banded tilapia
7. <i>Hydrocynus vittatus</i>	Tigerfish
8. <i>Pharyngochromis acuticeps</i>	Zambezi happy
9. <i>Hepsetus odoe</i>	African pike
10. <i>Labeo lunatus</i>	Upper-Zambezi labeo
11. <i>Oreochromis andersonii</i>	Threespot tilapia
12. <i>Barbus poechii</i>	Dashtail barb
13. <i>Schilbe intermedius</i>	Silver catfish
14. <i>Barbus unitaeniatus</i>	Longbeard barb
15. <i>Brycinus lateralis</i>	Striped robber
16. <i>Micralestes acutidens</i>	Silver robber
17. <i>Petrocephalus catostoma</i>	Northern churchill
18. <i>Marcusenius macrolepidotus</i>	Bulldog
19. <i>Labeo cylindricus</i>	Redeye labeo
20. <i>Tilapia rendalli</i>	Redbreast tilapia
21. <i>Oreochromis macrochir</i>	Greenhead tilapia
22. <i>Serranochromis robustus</i>	Nembwe
23. <i>Serranochromis macrocephalus</i>	Purpleface largemouth
24. <i>Sargochromis codringtonii</i>	Green bream
25. <i>Sargochromis giardi</i>	Pink bream

CASE STUDY 4 : KOI HERPES VIRUS

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For decades, ornamental fish have been shipped around the world relatively unhindered by disease control measures. The koi carp, an increasingly popular fish, was classified as an ornamental fish and hence circumvented stricter regulations governing the international movement of the edible variety of the same species. In 1998 a hitherto unknown disease broke out amongst koi almost simultaneously in many parts of the world, including South Africa. The disease ravaged valuable koi collections throughout South Africa as it did in many parts of the world and soon massive die-offs of both captive and wild food carp populations in many countries followed. The disease was subsequently identified as Koi herpes virus disease (KHV). Herpes viruses are not uncommon in the fish world. Most are host specific. Koi herpes virus has been designated cyprinid herpes virus 3 and is closely related to two previously known diseases: cyprinid herpes virus 1 (carp pox virus) and cyprinid herpes virus 2 (herpes viral haematopoietic necrosis of goldfish).

Disease follows introduction of infected fish into naïve carp populations. The incubation period is 7 days or less, morbidity is high and onset of mortality is rapid. Mortality ranges from 80 to 100 % depending on temperature. Susceptibility and mortality are greatest between 22 and 27°C. All ages of fish are susceptible. There is no treatment for the disease, although raising water temperature to above 30°C may reduce mortality to below 50 %. Use of certain disinfectants with the fish in situ has been claimed to reduce transmission of the virus. It has recently been shown that another popular ornamental fish, the goldfish (*Carassius auratus*), may become infected with cyprinid herpes virus 3 without showing symptoms of disease and that such infected goldfish are able to transmit the disease to naïve koi or carp populations.

External signs in infected fish include hyperaemia and discolouration of the skin, fin erosion, and thickening of surface mucus. Loss of epidermis leaves affected fish with a sand paper like feel. The most characteristic sign is the mottled appearance of the gills, with visible white or brown streaks of dead gill tissue. Haemorrhages may be evident in the gills and eyes may be sunken. Changes in internal organs are inconsistent and non-specific. An increase in opportunistic parasitic and bacterial infections in KHV infected fish can be diagnostically misleading.

In South Africa, practical diagnostic confirmation is limited to histology and PCR (polymerase chain reaction) detection of viral DNA. As with other herpes viruses, an asymptomatic carrier state appears to exist and recrudescence may occur. PCR techniques in use in South Africa are unable to identify carrier fish. It is important to note that a negative PCR result from a healthy fish does not rule out KHV infection. Reliable tests for virus isolation and ELISA tests to identify antibodies to the disease have not yet been developed in South Africa.

Vaccinated fish continue to be imported into South Africa. These fish have been exposed to serially passaged virus. Observations indicate that virus from these fish may recrudesce resulting in outbreaks of disease. So-called 'KHV tested' fish are also being marketed in South Africa. This is a trade driven initiative whereby gill swabs from a small number of fish in a population have been sampled for PCR testing and where the tests have returned with a negative result. Without sound statistical basis, the trader extrapolates these results as being representative of the population. Such results are misleading. Infected fish held outside of the permissive temperature range for disease, as well as recovered fish are unlikely to reveal virus on PCR testing of gill swabs.

To ensure freedom from KHV, there is a strong case for eradication of known infected brood stock and compliance with strict bio-security and surveillance measures for the propagation of certified disease free fish. This offers new entrepreneurial opportunities and has resulted in at least one breeder in South Africa achieving export certification for the EU market.



Arrow indicating gill necrosis due to KHV © David Huchzermeyer.

KHV has now been included in the OIE *Aquatic Animal Health Code* and certain European Union countries have recently amended import requirements for Koi to include guarantees for freedom from KHV over and above those required for *spring viraemia of carp* (SVC). However, international movement of koi carp and goldfish continues largely unhampered in many parts of the world. Apart from losses caused to the koi industry, KHV has affected commercial food carp production in parts of Japan and South East Asia. In the UK, a mass die-off amongst fishery carp has been ascribed to KHV and in the Philippines KHV infection was recently detected in confiscated illegal koi imports. Superficially, the emergence of this disease may appear to impact only ornamental fish. Food carp, however, represent the world's largest sector of freshwater aquaculture and collapse of this fishery would have far reaching consequences for those communities dependant on this source of protein.

CASE STUDY 5 : ABALONE HERPES-LIKE VIRUS

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Abalone viral mortality or *abalone viral ganglioneuritis* refers to disease caused by herpes-like viruses in various species of abalone. Abalone viral mortality has occurred in cultured *Haliotis discus hannai* in northern China since the early 1990's. At the peak of the epidemic, losses of up to 90% of spat and 30% of older abalone were experienced, as well as mass mortalities of wild animals. The outbreak declined by around 1997, partly due to improved husbandry practices. Use of hybrids derived from *H. discus hannai* and *H. discus discus* seemed to provide added resistance. The major abalone species cultured in southern China is *H. diversicolor aquatilis*, previously *supertexta*. It originates from Taiwan. A major epidemic affected these animals in the late 1990's, causing up to 100% mortality on many affected farms in the southern provinces. The outbreak spread to Taiwan in 2003. At the time of the Fifth International Abalone Symposium, held in China later that year, it was reported that many farms in southern China and Taiwan were empty, due to failure of spat production and poor survival of stock. Viral particles were found in both the northern and southern outbreaks, but have not been completely characterised. Mortalities in farmed abalone in the Australian state of Victoria were first seen in late 2005. The affected species were *H. laevigata*, *H. ruber* and hybrids of the two. By the middle of 2006, two abalone farms and two cage culture operations had been destocked and the disease was spreading through the wild population. It is still doing so now. A herpes-like virus was identified as the aetiological agent. On farms, the virus caused up to 90% mortality in affected tanks.

The disease has had a significant financial impact on both the aquaculture and commercial fisheries sectors. Clinical signs are non specific, as tends to be the case with abalone diseases.



Curled foot, swollen mouth and prolapsed radula are indicative, but not specific for abalone viral mortality © Judith Handlinger, Animal Health Laboratory, DPIWE, Tasmania (Australia).

Histologically, severe inflammation associated with the nerve ganglia has been characteristic of the Asian and Australian outbreaks. It is not currently known whether the aetiological agents are the same, or similar, and what the relationships, if any, are between the outbreaks in Asia and Australia. However, a PCR developed in Australia was able to detect virus from the Taiwanese outbreak.

Session 5

Country perspectives:
implementation of
OIE standards in
Africa.

CAMEROON

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Yaounde, Cameroon

In Cameroun, inland waters represent a surface area of 35,000 km², or 7.4% of the national territory and is constituted of flood plains (86%), artificial lakes (4%), natural lakes or reservoirs (7%) and rivers (3%).

Industrial fisheries are practiced by trawlers and shrimpers, usually of Nigerian, Chinese or Greek origin, the number of which increased considerably during the last few years. While the evolution of captures remained commensurate with the growth of the fishing flotilla up to 1985, after this date, the captures per unit of effort (taking the number of fishing vessels as an indicator of the unit of gross effort) gradually but considerably deteriorated. Thus, in 2006, 51 fishing vessels brought in 3,502 tons of product, representing a reduction of more than 10% compared to the 3,919 tons brought in by 9 trawlers in 1961. The principal reasons for this tendency to shrink are linked to the deterioration of the resource, the emergence of direct and illicit export networks and an inadequate harvesting monitoring system which yields confusing and unreliable statistics.

Traditional fisheries are practiced in three distinct zones: the forest zone with its three basins (Nyong, Ntem and Sangha), the central zone with its Sanaga basin and three reservoirs (Bamendjin, Mapé and Mbakaou) and the northern zone with Lake Chad, the flood plains, and the reservoirs of Lagdo and Maga. This sector represents the main fisheries sector nationwide (in terms of employment, harvesting and contribution to the national economy). Surveys carried out in 1987 (MIDEPECAM) had listed 14,874 fishermen (women), including 14.8 % of Cameroonian nationality. Since absent fishermen had not been counted, the actual figure was estimated to be between 15,000 and 20,000 fishermen. A survey carried out in 1995 (DIPA/FAO) listed 24,136 fishermen, of which 17.2% were of Cameroonian nationality.

Currently there are approximately 5,000 fish farmers with 1 - 5 ponds each of 300- 400 m² distributed as:

- 3,000 in the Western and Northern West regions, farming approximating 60 ha;
- 1,500 in the South and, Central with more than 2,000 ponds, and
- 500 for the Coastal and Adamawa regions.

The process of progressive compliance with OIE standards is on track because Cameroon has already undergone the PVS evaluation and is now awaiting the gap-analysis. Legal texts for the implementation of OIE standards are being developed and there exists a programme to (re)equip and start-up a quality control laboratory in Douala along with several regional laboratories, as well as the implementation of the AFOP training scheme.

EGYPT

Abdelwahab Ahmed

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OIE
Department Manager of Wildlife,
Giza Zoo
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Aquaculture in Egypt is managed by the National Aquaculture Sector, Ministry of Agriculture and Land Reclamation. It is currently the largest single source of fish supply in Egypt accounting for almost 51% of the total fish production of the country with over 98 % produced from privately owned farms which are supervised by the General Organisation for Veterinary Services. The development and expansion of modern aquaculture began in Egypt two decades ago and has undergone rapid development over the last few years leading to a sharp increase in production. This sector is exhibiting the strongest growth of any fisheries related activity in the country.

Most aquaculture activities are located in the Nile Delta Region. The majority of farmed fish are either freshwater species or those that can grow in brackish water. The majority of fish farms in Egypt can be classified as semi-intensive brackish water pond farms. Intensive aquaculture, in earthen ponds and tanks, is now developing rapidly in response to the reduction in the total area available for aquaculture activity.

Egypt is considered the second biggest producer of tilapia after China (200,000 tons in 2009) and the largest global producer of mullet (family *Mugilidae*). Egypt also boasts a number of premises licensed to keep aquatic animals including dolphins and sea turtles for exhibition. The inspection and management of animals in these premises are under the supervision of the control General Organisation for Veterinary Services.



KENYA

Paul Gichohi Mbutia

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Kenya has a land area of 582,646 km². of which 11,227 km², is water and a coastline of 640 km on the Indian Ocean. Annual fish production, account for 4.3% of total agricultural production, earns EUR 64.2 million, employs 500, 000 directly and 1 million people benefit from it. The government has recognized the importance of the fish sector and provided funds for fish pond establishment through the economic stimulus in 2009/2010 year. Department of Veterinary Services (DVS) and Faculty of Veterinary Medicine have several laboratories that perform limited fish work. Veterinary training offers few hours on fish in current curriculum and many practicing veterinarians and veterinary paraprofessionals have little or no practical skills in fish diseases. There is clear intention to build capacity on Aquatic animal health, but resources are limited.

Fish diseases so far observed are non-notifiable and comprised of bacterial, parasitic, fungal, intoxications, pollution, nutritional and conditions associated with water quality. The reporting and emergency preparedness mechanisms of diseased fish need to be streamlined as they currently depend on the domestic livestock policies in place.

Kenya engages in import and export trade of commodities whose trade is regulated under the WTO Agreement of Sanitary and Phytosanitary Measures, guided by OIE, IPPC, Codex Alimentarius Commission standards and EAC harmonized sanitary standards among others. These include: 1) Fish and other aquatic animals. 2) Fertilized fish eggs and fish fries. 3) Fish food products, by-products and raw materials. The responsibility for control of animal health rests with the DVS which is responsible for the quality and safety of livestock and livestock products including fish. There are adequate and well implemented policies on livestock diseases that can control serious diseases within the country but not those related specifically to aquatic animal pathogens. Kenya currently has a separate Ministry of Fisheries Development which carries out sanitary inspection and certification in collaboration with the DVS.

Constraints and Challenges in complying with international standards (OIE, SPS)

A. Focal point

1) Inadequate funds. 2) Inadequate legislation and lack of an aquatic animal disease policy 3) Inadequate communication between the various competent authorities. 4) Poor aquatic animal disease reporting and diagnosis from the field. 5) Untrained field extension personnel who take inappropriate samples to laboratories resulting in poor diagnosis. 6) Inadequate information flow from the OIE.

Picture on previous page : heavy peritoneal Contracaecum spp. 3rd larvae infection in a catfish © Univ. of Nairobi.

B. Kenya

The constraints posed by inadequate SPS compliance have adverse implications for international trade in fish and fish related products. This has negative repercussions on the livelihoods of people dependent on fish production and trade. These include:

- Lack of Aquatic animal health policy and contingency plans;
- Insufficient funding of sub-sector;
- Inadequate institutional and human resource capacity;
- Difficulties in exporting under increasingly strict SPS measures;
- The high cost of conformity in production, certification and control;
- Low technical know-how in the private and public service sectors that certify and control compliance to SPS;
- Insufficient capacity to carry out risk analysis;
- Suboptimal representation and attendance in OIE/SPS standard setting committee meetings and;
- Inadequate capacity to enforce restriction on imports of aquatic animals and products.

Some of the recommendations that can be made include the development of plans for the phased implementation of measures to strengthen sanitary capacities and address domestic and export consumer market concerns. For this to be effective it has to be supported by well formulated aquatic animal health policies and legislation. A well developed policy framework will also enhance funding of aquatic animal health and production research. A human resource and institutional capacity building program will result in the efficient provision of adequate nation-wide services and, where appropriate, have regional coverage. Assistance is required to enable the country to participate actively in setting of internationally agreed standards. Implementation of a programme to develop self regulation of exporters, lobbying for harmonized testing and certification standards by importing countries and full transparency in tests used with adequate notification and application of SPS measures are other recommendations proposed.

MAURITANIA

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Focal point aquatic animal diseases

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Département d'inspection sanitaire

Nouadhibou, Mauritania

The richness of Mauritania's coastal zone and the diversity of its marine resources rests on more than 200 marketable species including approximately 70 species that are marketed primarily towards the Japanese, European and African markets. It is for all these reasons that a fisheries sector and marine economy development strategy is in force in Mauritania since 1998. In spite of its considerable importance for the national economy, the fisheries sector is confronted with many constraints amongst which are sanitary in nature. Hence, there is a need to develop national food safety policies, based on international standards, guidelines and recommendations, as adopted by the *Codex Alimentarius Committee*. In addition, for animal health, measures rest on the standards adopted by the *World Organisation for Animal Health* (OIE).

The fisheries sector in Mauritania has made great strides in applying sanitary and phytosanitary measures. Taking into account the importance of the EU markets for these fisheries products, standards and guidelines have been harmonised with EU regulations as far as production and marketing of fisheries products are concerned. Certain reviews were also adopted in line with the standards established by the *Codex Alimentarius*.

The absence of information on diseases does not necessarily indicate the absence of these diseases. It is therefore highly recommended that a national OIE-supported diseases surveillance programme be implemented, not only in marine fisheries, but also in inland fisheries, which represents an activity engaging a large population inside the country and is faced with numerous fresh-water fish diseases. Currently the aquaculture sector and in particular oyster farming, is being experimented in Levrier's Bay in Nouadhibou.

It is obligatory for Mauritania to make efforts to maintain and even to improve the level of conformity of its production tools and its products in order to maintain its position within the markets which have a tendency to become increasingly demanding with regard to quality and food safety of marine or fisheries products. With this in mind, the Competent Authority must pursue its endeavour to implement and sustain its sanitary inspection system for fisheries establishments and fisheries products.

The outlook for Mauritania therefore is to implement a sanitary surveillance plan for bivalvular molluscs and of the aquatic environment. This effective surveillance program should also be extended to sanitary inspections of factories, ships and of aquaculture and fisheries products.

NIGERIA

Ganiyat Asabi Modupeola Ogunnoiki

Focal point aquatic animal diseases
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The *World Organisation for Animal Health* (OIE) is the standard setting organization responsible for livestock and aquatic health programmes in the world. Nigeria being a Member of the organisation, it is under international obligation to submit a monthly report to the OIE on livestock and aquatic diseases using a standardized format. However under the *Aquatic schedule*, this role almost does not exist or has been grossly undermined. The following are some of the challenges to the implementation of OIE standards in Africa, with Nigeria as a case study.

The *Federal Department of Fisheries* has the singular power of controlling and monitoring all aquatic schedules in Nigeria, and has done so for more than 30 years. However, the *Fish Disease Control Branch* only came into existence 2 years ago. In the past veterinarians were not involved in any of their schedules until recently, despite the fact that the fisheries subsector has a clear definition of functions/schedules and that there is enough scope for all types of professionals to intervene. Ever since the inception of the aforementioned Branch, the Nigerian Government has tried to inject some funds for training of officers on fish diseases, their prevention, treatment and control.

Until of recent, the aquatic sector, and in particular the aquatic diseases sector, has long been a forgotten sector. As a result there are few qualified personnel who can actually precisely diagnose in the field, even before samples are brought to the laboratory for confirmatory diagnoses. Currently, the only fish disease diagnostic laboratory which has been equipped up to molecular biology level is a private laboratory. There is a need for high level funding for a reference fish disease diagnostic laboratory. At the *Federal Department of Fisheries* in Lagos, there is a site within existing premises for such a much-needed project but no funds have been made available yet. The public private partnership initiative which was to assist the Department with this project has been slow to launch. Farmers have in the past tried to support the private laboratory, but found it expensive, hence the absence of regular sample submission. As a result the true picture of fish disease in Nigeria is only vaguely understood. There is a need to continue to train the limited number of extension workers and aquatic veterinarians on fish diseases.

The function of OIE is not understood by many officers, particularly those outside the veterinary profession and it should be noted that the fisheries subsector is dominated by non – veterinarians; hence compliance in stipulated areas is limited. Given the lack of knowledge of the importance of disease reporting among the professionals and the entire populace, the relevance of current disease reporting is poor. Sometimes the knowledgeable officers are not in found in management position or do not occupy a strategic position where they can influence policies and make the necessary funds available. Some of the analytical methods described In OIE Aquatic Manual along with the chemicals mentioned have not been seen or used by some of our analysts. The few laboratories claiming to be fish diseases laboratories are running only simple parasitological and microbiological analysis.

UGANDA

Justus Rutaisire

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Head of Aquaculture Research,
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The most economically important aquatic animal in Uganda is finfish. Fish is an important commodity for local consumption and export. The fisheries sector accounts for 12% of the GDP with an estimated EUR 144.34 million from exports and EUR 216.51 million from fish products consumed locally and regionally. Fisheries management is under the *Ministry of Agriculture, Animal Industry and Fisheries*. Uganda is a member to the *World Organisation for Animal Health* and of the *World Trade Organization*. There are a number of legislations and statutory instruments for regulation and control of all fisheries and aquaculture activities including production, trade in fish and fish products.

Challenges

General lack of awareness and appreciation of the importance of Aquatic Animal Health

Fish has been harvested locally from natural water bodies for centuries with no apparent ill-health. It was generally perceived that fish does not have diseases of public health importance. Aquatic animal health was therefore of no national concern. This has led to the following:

Policy and Regulation

Although there are regulations in various acts, they are enforced for international export and for a few outstanding importations, but they largely remain on paper for most capture fisheries and aquaculture activities. Currently there is no specific policy of aquatic biosecurity in Uganda.

Surveillance and Monitoring

The *Department of Fisheries Resources* is required by law to conduct surveillance, monitor and keep a database on aquatic animal diseases incidences. However the department lacks capacity to effectively handle aquatic animal health issues. There is no aquatic animal health management plan.

Infrastructure and human capacity

Due to the general lack of awareness and appreciation of the economic importance of aquatic animal health, no training was undertaken at universities and tertiary institutions for aquatic animal health personnel. As a result the country does not have aquatic animal health epidemiological expertise that can be relied on for surveillance and control. There is some level of diagnostic capacity for livestock diseases such as the Faculty of Veterinary Medicine at Makerere University, Uganda Virus Institute and a few private laboratories; however these laboratories are not oriented to aquatic animal diseases and have not sourced specialised equipment and reagents.



Rural communities suffer from declining fish catches and increasingly turn to earthen pond based aquaculture © J. Rutaisire.

Suggested interventions

- Create national awareness on aquatic animal diseases.
- Create a national reference library on aquatic animal health
- Stream policy and regulatory framework for aquatic animal health according to the OIE Aquatic Code.
- Empower the Competent Authority by creation of a specialised Aquatic Animal Health Unit
- Train and create a critical mass of aquatic animal epidemiologists
- Establish a national aquatic animal health surveillance/control system
- Orient the existing laboratory facilities and build the capacity for diagnosis of aquatic animal diseases according to the OIE Aquatic Manual

Session 6

The OIE Manual of Diagnostic Tests for Aquatic Animals

THE OIE MANUAL OF DIAGNOSTIC TESTS FOR AQUATIC ANIMALS

Ricardo Enriquez

Vice-President
Aquatic Animal Health Standards Commission
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Universidad Austral de Chile
Valdivia, Chile

Reference to OIE international standards for aquatic animals can be accessed through the *Aquatic Animal Health Code* and the *Manual of Diagnostic Tests for Aquatic Animals* which are all available on-line at www.oie.int. Both publications cover amphibians, crustaceans, fish and molluscs. The purpose of the Aquatic Manual is to provide internationally agreed standardised approach to the diagnosis of OIE-listed diseases and to facilitate international trade in aquatic animals and their products by ensuring harmonisation of diagnostic testing, avoiding differences in interpretation of results and ensuring quality of diagnostic tests. The Aquatic Manual and Code are a set of international standards recognized by the *World Trade Organisation* (WTO).

The Aquatic Manual is a key and unique document describing diagnostic methods that can be applied to the OIE-listed diseases in aquatic animal health laboratories all over the world to improve aquatic animal health worldwide. The manual also describes diagnostic laboratory methods which are suitable for the detection of disease as part of a national aquatic animal health surveillance and or control programs, or as part of a programme to underpin claims of freedom from a specific disease. The other purpose of the manual is to assist with the development of surveillance methodologies for OIE listed aquatic diseases. Surveillance programmes, with support from the results provided by standardised laboratory methods performed with samples collected according to defined rules (Aquatic Code), aim to determine the health status for a country, zone or compartment for a specified disease.

The Aquatic Manual is intended for competent authorities in member countries and laboratories carrying out veterinary diagnostic tests and testing samples collected from surveillance programs. The Aquatic Manual is in two parts, part 1 covering general provisions and part 2 contains recommendations applicable to specific diseases of amphibians (which are in preparation), diseases of crustaceans, fish and molluscs. It should be noted however that a chapter on aquatic animal health surveillance (chapter 1.4.) is in the Aquatic Code and the guide for aquatic animal health surveillance in the 2009 edition has additional text on surveillance.

Organisation
Mondiale
de la Santé
Animale

World
Organisation
for Animal
Health

Organización
Mundial
de Sanidad
Animal

Oie

Manual

of Diagnostic Tests
for Aquatic Animals



Sixth edition
2009



DIAGNOSTIC SUPPORT PROVIDED BY THE OIE REFERENCE LABORATORIES

Roar Gudding

Deputy Director,
National Veterinary Institute,
Oslo, Norway

The OIE plays a central role in bio-security regarding terrestrial and aquatic animals. Bio-security, including prevention, control and eradication, must be based on scientific expertise. In order to fulfil this function OIE has established a network of institutions with science based competences in OIE listed diseases and in designated topics. The OIE Reference Laboratories and the OIE Collaborating Centres have become important tools as part of the OIE expertise for management of diseases worldwide.

The principal mandate of the Reference Laboratories is to function as centres of excellence for OIE listed diseases. They have a special responsibility for carrying out confirmatory tests for these diseases and report confirmed positive results to OIE. In order to fulfil their obligations the reference laboratories shall also develop and distribute new reagents and procedures which should be used in the diagnosis of the designated diseases. Furthermore, the OIE Reference Laboratories shall gather, process, analyse and disseminate epizootiological data relevant to their speciality.

The Collaborating Centres have science based expertise on topics which are important for bio-security, like epidemiology, risk assessment and animal welfare. Their mandate is also to develop new procedures which may facilitate surveillance and control of disease in terrestrial and aquatic animals.

The centres of excellence shall contribute to the production and dissemination of information in their sphere of competence. Research activities in the designated area are therefore expected as part of the activity. The scientific quality of the centres is ensured by the fact that the scientific production of the experts is a part of the assessment of the centres before they are approved. In addition to publications in journal and manuals, the centres of expertise are supposed to organize scientific meetings in their field on behalf of OIE.

The world wide emergence and recrudescence of animal diseases is a challenge which OIE has met by strengthening the activities of the centres in their role as national, regional and global networks of expertise. One way has been to promote *twinning* programmes whereby OIE centres on different continents are cooperating in scientific and technical activities.

OIE has now more than 200 Reference Laboratories and Collaborating Centres throughout the world. Approximately 25% of the Reference Laboratories cover diseases in aquatic animals. Only three of the nearly 40 Centres are specialized in fish. However, several Collaborating Centres cover a broader mandate and several of them also include aquatic animals.

Most of the Reference Laboratories and Collaborating Centres are located in Europe and North America. The OIE is seeking to promote a mechanism whereby new centres can be established in new regions. With the growing worldwide significance of aquaculture in food security, new centres dealing with diseases and topics in aquatic animals are also encouraged.

AQUATIC ANIMAL HEALTH SURVEILLANCE

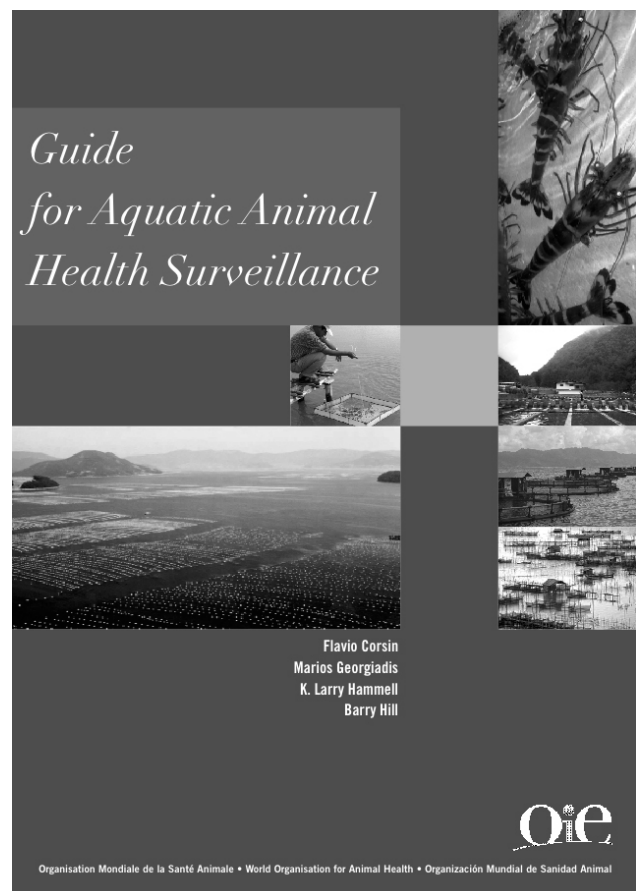
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Surveillance activities are carried out to demonstrate either absence or presence of (a) disease(s) for notification or otherwise according to OIE standards as stipulated in the Aquatic Code in chapter 1.4. Surveillance is also critical in determining the occurrence and distribution of endemic disease to assist in decision making on prevention and or control programmes. Surveillance information is also required by trading partners for risk assessment.

The Aquatic Code, chapter 1.4 contains adopted pathways to demonstrate and maintain disease free status of given populations and specific requirements for more complex non-survey data sources. An OIE publication on guidelines for Aquatic Animal Diseases Surveillance (2009) is available with details of general principles and standard procedures and it is a “*must read*” for all persons working in aquatic health both in the public and private sectors.

In future specific-disease surveillance guidelines will be developed to cater for individual OIE listed diseases of aquatic animals.



FISH VACCINATION : PRESENT STATUS AND FUTURE CHALLENGES

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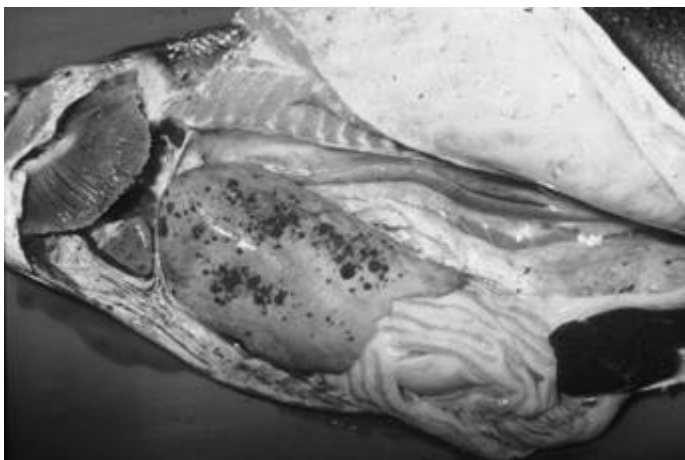
Vaccination has become established during the last ten to twenty years in many countries as an important method for prevention of infectious diseases in farmed fish, both salmonid species and different salt water and fresh water species. Bacterial infections caused by fish pathogens like *Vibrio*, *Aeromonas*, *Pasteurella*, *Edwardsiella* and *Streptococcus* are effectively controlled by vaccination. Vaccines against virus infections, like *infectious pancreatic necrosis* (IPN), *infectious salmon anaemia* (ISA) and *infectious hematopoietic necrosis* (IHN) have also been applied in commercial fish farming. However, protective immunity against viruses and intracellular bacteria like *Piscirickettsia* and *Francisella* is more difficult to obtain. So far there are no vaccines against fungi causing disease in fish.

Most commercial vaccines are inactivated products administered by injection or immersion. Protective immunity against *Vibrio*-bacteria can be achieved by immersion of the fish in a solution with inactivated bacteria for a short time. Immersion can be used for fish at a size of less than 5g.

Some pathogens, like *Aeromonas*, require addition of adjuvants in order to elicit protection and these vaccines must be injected. Fish should be 30 to 50 g when vaccinated by injection. An important side-effect associated with injectable vaccines is local reactions in the peritoneal cavity. Protection against some fish pathogens requires humoral as well as cellular immunity. This can be achieved by using live, attenuated vaccines. Enteric septicaemia in channel catfish caused by *Edwardsiella ictaluri* can be prevented using a live vaccine.

Stimulation of immunity by oral administration has several advantages. However, inclusion of antigens in the feed has so far not been successful as practical method for immunization of fish. The overall positive effect of vaccination of farmed fish is reduced mortality. However, for the future of the fish farming industry it is also important that vaccination contributes to a sustainable biological production with negligible use of antibiotics or chemical compounds.

There are recent developments in immunoprophylaxis of fish with concurrent challenges which should be addressed by the research community in the future. These include oral vaccination, the use of live vaccines and DNA-vaccines.



*Vaccination of atlantic salmon and rainbow trout has proven successful against vibriosis (*Vibrio anguillarum*), cold water vibriosis (*Vibrio salmonicida*, pictured) and furunculosis (*Aeromonas salmonicida*) prior to sea transfer with an injectable adjuvanted vaccine © Tore Håstein, Norwegian Veterinary Institute*

WORK OF THE OIE AQUATIC ANIMAL HEALTH STANDARDS COMMISSION

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The OIE's involvement in aquatic animal health has evolved over the years since 1960 when a Fish Diseases Commission was created as a result of the increasing awareness of the importance of international trade in fish and fish products as well as other aquatic animals. In 1988, the scope of the Commission was extended to include diseases of molluscs and crustaceans and in 2007 diseases of amphibians were included. In 2003 the Commission was renamed to *Aquatic Animal Health Standards Commission* (AAHSC). The Commission members are presented on the right.

The duties of the AAHSC are to propose appropriate methods for surveillance, diagnosis and disease prevention and control for safe trade and international movement of aquatic animals and their products with reference to the diseases listed in the Aquatic Code. The Commission also oversees production of the Aquatic Code and the Aquatic Manual and promotes its distribution and use amongst the Veterinary and other Competent Authorities.

The Commission further identifies issues that require in-depth review and propose the composition and terms of reference of experts and Ad hoc Groups on special issues as they arise. The AAHSC is facilitated by a worldwide network of OIE Reference Laboratories and Collaborating Centers in the field of aquatic animals. Of late the Commission's mandate has been expanded to include aquatic animal production food safety and aquatic animal welfare and works very closely with other international and regional agencies like FAO, NACA etc.

Main annual activities for the AAHSC include scheduled and ad hoc meetings, maintaining and updating the commission's website, consideration for appointment of new candidates for OIE Reference Laboratories and Collaborating Centers, and last but not least provision of inputs into the OIE PVS tool and its possible application in the evaluation of national *Aquatic Animal Health Services*.



Barry Hill, President



Ricardo Enriquez, Vice President



Franck Berthe, Secretary General



Olga Haenen, Member



Huang Jie, Member



Victor Manuel Vidal, Member

Session 7

Trade and certification

TRADE AND THE SPS AGREEMENT

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Since the end of World War II, international trade has been used as a critical tool by many countries to expand their economy and support their economic development. Globalisation is revolutionising international trade, in particular that of animal and animal products, which promises benefits towards the improvement of countries' and peoples' economies. During the 1990s, the international community made significant progress towards greater fairness and transparency in the conduct of international trade in a way that minimised unjustified impediments, while ensuring the protection of public, animal and plant health.

Historically, the *General agreement on tariffs and trade* (GATT) had been working on the reduction and elimination of tariffs and subsidies in international trade. During the Uruguay Round of the 1980s and early 1990s, the GATT turned its attention to agriculture and particularly the sanitary aspects of agricultural trade. One of the most significant outcomes of the Uruguay Round was the transformation of the GATT into the *World Trade Organization* (WTO), and the signing in 1994 of the *Agreement on the application of sanitary and phytosanitary measures* (SPS Agreement, copied on page 128). This Agreement sets out the legal framework for safe international trade regarding public health, and animal and plant health. Its underlying objective is to ensure that governments do not use food safety and animal and plant health requirements as unjustified trade barriers to protect their domestic agricultural industries from import competition.



The SPS Agreement ensures that governments can give health protection priority over trade in that they have the sovereign right to impose restrictions on imports when these are necessary to protect human, animal or plant health from certain risks. However, governments need to be able to demonstrate that the trade restriction is indeed necessary to protect health; that is, that there is scientific evidence of non-acceptable health risks in the absence of protective measure(s). Where there is not sufficient scientific evidence to demonstrate a health risk, a government can nonetheless take a precautionary approach and provisionally impose a measure. In these cases, further scientific evidence must be sought to enable the provisional measure to be reviewed within a reasonable period of time. The SPS Agreement does not apply to all human health risks, only those from unsafe food or beverages, or those arising from diseases carried by animals or

plants. The SPS Agreement also applies to the protection of animal health from contaminated feed, or from pests and diseases, and to protection of plant health from pests and diseases. Finally, measures to protect a country from damage by the spread of pests are covered in the SPS Agreement.

As the WTO is not a technical organisation, it recognises and relies on three standard-setting organisations. For the purposes of animal health and zoonoses, it recognises the standards, guidelines and recommendations the *World Organisation for Animal Health* (OIE) as an appropriate basis for a country's sanitary measures. For food safety, it recognises the standards, guidelines and recommendations of the *Codex Alimentarius*; and, for plant health, those developed under the auspices of the Secretariat of the *International Plant Protection Convention* (IPPC). Therefore, the WTO SPS Agreement has conferred new responsibility on these three international organizations by encouraging WTO members to harmonise their sanitary and phytosanitary measures with standards, guidelines and recommendations produced by those organizations.

RIGHTS AND OBLIGATIONS OF OIE MEMBER COUNTRIES

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The rights and the obligations of OIE member countries with reference to external trade must be based on the OIE standards for safe trade and to avoid unjustified trade barriers in compliance with the WTO SPS Agreement. These standards are contained in the OIE Codes for Terrestrial and Aquatic animals and in the respective manuals on Diagnostic Tests and Vaccines. Decisions on risk management associated with trade in animals and animal products must also be based on these Codes.

Obligations of importing countries

Importing countries should consider the exporting country's sanitary status, in relation to the animals or animal products to be traded. Relevant information can be obtained from the WAHIS/WAHID database on the OIE Web site. It is useful for OIE member countries to compare sanitary situations between the importing and the exporting country based on the reports available from the OIE. The importing country has the right to choose its *appropriate level of protection* (ALOP) for animal, plant and human health.

The importing country should not impose measures in relation to diseases or pathogens that are not listed by the OIE, unless there is a significant risk on the basis of an import risk analysis conducted according to Section 2 of the TAHC (2010). The importing country should not impose sanitary measures for diseases or pathogens that occur in its territory which are not the subject of official controls.

Importing countries should also publish a list of their border zoosanitary check points for imported animals and or animal products. This helps to promote trade since it provides information that helps exporting countries to make arrangements for importation to take place effectively and efficiently.

Obligations of exporting countries

Exporting countries should provide the necessary sanitary information, stipulated of the OIE Codes, at the request of the importing country: This includes:-

- Animal health situation and the national animal health information systems;
- Occurrence of notifiable diseases;
- Ability to apply measures to control and prevent the relevant OIE-listed diseases;
- Quality and the governance of the National Animal Health Services and the authority which they exercise their legal mandates; and
- Provision of technical information, particularly on tests and vaccines applied in all or part of the country.

For trade in animals and some animal products, it is usual for a public veterinarian (or a private veterinarian holding an appropriate sanitary mandate) to inspect the consignment prior to export. Veterinary health certificates have to be issued according to the arrangements agreed between the respective animal health authorities of the exporting and importing country, preferably using the models published in the OIE Codes.

The exporting country should supply information on the exported animals or animal products, as may be requested by the importing country, including:

- Date and port of entry into the importing country;
- Animal species and numbers involved;
- Quantities in case of products; and
- Means of transport.

Animal Health Authorities of exporting countries should also have official *standard operating procedures* (SOPs) for certification by registered veterinarians. Exchange of this information helps to assure safe trade.

Governance and credibility of animal health services

Standards on *Performance of Veterinary Services* (PVS) as contained in the Section 3 of the TAHC 2010 are important elements in assuring safe trade. Not only must the NVS be capable of promptly and efficiently detecting and managing OIE listed diseases, including zoonoses but also they must provide effective sanitary guarantees through veterinary health certification.

Maintenance of confidence between trading partners largely relies on performance and credibility of their respective NVS.

For this reason, the OIE has developed the OIE PVS Tool whose legal basis is enshrined in CAP 3.1 and 3.2 of the TAHC. The OIE PVS Tool can be used to evaluate the quality and governance of NVS, to assess their compliance to OIE international standards and if deemed necessary, (as it is always the case for most of the African countries), to establish priorities for investment to strengthen their resources. OIE member countries strongly support OIE's work on the PVS evaluations and this mechanism has so far been very successful and especially so in Africa. Efforts are underway to establish a similar Tool for the evaluation of National *Aquatic Animal Health Services* based on the same principles.

Other concepts such as the use of zoning, compartmentalization and equivalence mechanisms as provided for in the OIE Codes can facilitate decision making on safe trade. These concepts are currently applicable for terrestrial animals (CAP 4.3 and 4.4 and CAP 5.3) but should equally be applicable to aquatic species.

In addition, the OIE provides guidance on how to conduct import – export risk analysis in Section 2 of the Code details of which are contained in two volumes of OIE Handbook on Risk Analysis for Animals and Animal Products.

OIE Dispute mediation

OIE has an informal mediation procedure for resolving trade disputes between OIE member countries which is different and independent from the *World Trade Organization* (WTO) procedures for resolving trade disputes. The OIE's mediation procedure provides OIE member countries a voluntary procedure for seeking to resolve their differences by using an approach that is based on OIE's standards for safe trade in animals and animal products.

The OIE procedure does not aim to find fault; but rather, to find a mutually agreed compromise that will allow trade to be established (or re-established), preferably on the basis of compliance with OIE standards. The OIE mechanism is considered more cost effective but any solution proposed is not legally binding on any of the parties unless so agreed by the parties from the beginning of the process.

Conclusions

By adopting OIE standards as the basis for sanitary measures, OIE member countries are assured of a guaranteed safe trade in animals and animal products. Where there is no relevant international standard or where trading partners require a higher level of safety, science based risk analysis following OIE standards should be undertaken. The use of concepts such as equivalence, zoning and compartmentalization, according to OIE standards, can help to facilitate safe trade.

Where OIE standards are not respected and differences arise, OIE member countries are advised to consider using the OIE informal mediation mechanism.

Confidence in the quality of animal health services is critical for both internal and external trade. Good governance, ensuring transparency in disease reporting, efficiency in disease management and reliability in veterinary health certification are key to providing the confidence and assurances to trading partners.

DEVISING IMPORT HEALTH MEASURES

Gillian Mylrea

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This paper provides guidance to OIE Members on the use of the animal health information in the OIE *World Animal Health Information Database* (WAHID) and the recommendations in the *Aquatic Animal Health Code* (Aquatic Code), to devise import health measures for aquatic animal commodities. The import health measures aim to minimise the risks to aquatic animals and public health associated with trade in such commodities.

The *World Trade Organization* (WTO) *Agreement on the Application of Sanitary and Phytosanitary Measures* (SPS Agreement, copied on page 128) strongly encourages WTO Members to base their import health measures on OIE international standards such as the Aquatic Code.

In determining import health measures, WAHID information can be very useful as the database (<http://www.oie.int/wahis/public.php?page=home>) contains a comprehensive range of information on OIE-listed diseases for a specific OIE Member, a region or a group of selected Members. For each OIE-listed disease, the database indicates whether a specified disease has been reported as present or absent from the Member. Members that claim freedom from a specified disease are also listed. It should be noted claims made by a Member with regard to freedom from a disease are not verified by the OIE but are published for the information of Members. The Member making a claim of freedom for a disease must be able to satisfy the concerns of trading partners and demonstrate that it meets the Aquatic Code recommendations for freedom.

The first step in determining import health measures is to perform a 'hazard identification' which is the process of identifying the hazards (pathogens) that could be introduced into the importing country through the commodity. The data in WAHID can be used to list all the hazards of concern, through a comparison of the disease statuses of the importing and exporting countries.

A list of potential pathogens of concern may thus be drawn up. This list will then need to be further refined by taking into account the Aquatic Code recommendations for diseases associated with the commodity.

The sanitary measures described in the disease specific chapters (Sections 8 to 11) of the Aquatic Code include:

- a list of 'safe' commodities, i.e. those that are considered not to require any disease-specific measures, irrespective of the status of the exporting country for the disease;
- a list of 'safe' commodities products that have been prepared and packaged for retail trade;
- recommended health measures to be applied to commonly traded commodities, taking into account the likelihood of the pathogen being transmitted through that commodity and the disease status of the exporting country.

Import health measures should be based on the recommendations specified in the Aquatic Code. Where there is no recommendation for a particular commodity in the Aquatic Code, it means that OIE experts have not yet developed relevant health measures. In this case, a Member should base its import health measures for the commodity on a scientific risk analysis.

An international aquatic animal health certificate should then be drawn up based on the model health certificates presented in Chapter 5.10 of the Aquatic Code.

In summary:

- identify the commodity to be imported and perform a ‘hazard identification’;
- use the data in WAHID to identify all the pathogens which may be of concern, through a comparison of the disease statuses of the importing and exporting countries;
- list the pathogens against which the importing country is justified in taking measures for that commodity, taking into account the country's obligations and the data available;
- list the health measures recommended for each of these pathogens by referring to the articles in the Aquatic Code relevant to the commodity;
- list when relevant the additional health measures to be imposed by the importing country as a result of the risk analysis; and
- use the model certificates presented in Chapter 5.10. of the Aquatic Code as templates, with the contents of the certificate being adapted to the commodity as required.

COUNTRY:		
Part I: Details of dispatched consignment	1.1. Consignor Name:	1.2. Certificate reference number:
	Address:	1.3. Competent Authority:
	1.4. Consignee Name:	
	Address:	
	1.5. Country of origin: ISO code*	1.6. Zone or compartment of origin**:
	1.7. Country of destination: ISO code*	1.8. Zone or compartment of destination**:
	1.9. Place of origin Name:	
	Address:	
	1.10. Place of shipment:	1.11. Date of departure:
	1.12. Means of transport:	1.13. Expected border post:
	Aeroplane <input type="checkbox"/> Ship <input type="checkbox"/> Railway wagon <input type="checkbox"/>	1.14. CITES permit No(s) **:
	Road vehicle <input type="checkbox"/> Other <input type="checkbox"/>	
	1.15. Description of commodity:	1.16. Commodity code (ISO code):
	Identification:	1.17. Total quantity/weight:
1.18. Temperature of product:	1.19. Total number of packages:	
Ambient <input type="checkbox"/> Chilled <input type="checkbox"/> Frozen <input type="checkbox"/>		
1.20. Identification of container/seal number:	1.21. Type of packaging:	
1.22. Commodities intended for use as:		
Human consumption <input type="checkbox"/>	Aquatic animal feed <input type="checkbox"/>	
Further processing <input type="checkbox"/>	Other technical use <input type="checkbox"/>	
Other <input type="checkbox"/>	Technical use in live aquatic animals <input type="checkbox"/>	
If other, specify:	If technical use, specify:	
1.23.		
1.24. Identification of commodities:		
Amphibian <input type="checkbox"/>	Crustacean <input type="checkbox"/> Fish <input type="checkbox"/> Mollusc <input type="checkbox"/>	
Wild stock <input type="checkbox"/>	Cultured stock <input type="checkbox"/>	
Species (Scientific name)	Approval number of establishments	
	Lot ID/date code	

* Optional
** If referenced in Part II.

Model health certificate for international trade in live aquatic animals © OIE (2009)

CERTIFICATION OF AQUATIC PRODUCTS

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International awareness of socio-economic and food safety aspects has impacted increasingly on aquaculture products. Certification is required not only for the importation of live fish, their gametes and fertilized ova for farming, but also for live fish and their products for human consumption. Recent introductions of *koi herpes virus* (KHV) and *epizootic ulcerative syndrome* (EUS) into the southern African region have emphasized the risks inherent in trans-boundary movement of fish.

In the case of South Africa trout farmers started exporting certified disease-free trout ova to European countries and elsewhere during the late 1980's. Exports have exceeded 40 million eyed ova per annum. Each year a significant number of eyed salmonid ova are imported into South Africa from Northern Hemisphere countries with the same level of certification as that provided by South Africa. Currently, certified disease-free live koi (*Cyprinus carpio*) are also exported from South Africa to the *European Union* (EU). However, large numbers of koi are still imported into South Africa from various countries with minimal certification and in many cases, a dubious health status. Rapid expansion of aquaculture into new and unique areas requires adaptation of the traditional legislation. Large numbers of farmed live abalone are now exported to countries in the Far East. Lucrative markets in the EU require stricter compliance with food safety guarantees, and without an acceptable shellfish sanitation program remain inaccessible.

For regional aquaculture to compete in international markets, exporting countries must be in a position to meet certification requirements as laid down by importing countries. The burden of proof lies with the exporting country and guarantees guarding against the introduction of unwanted diseases and assurances that aquaculture products are safe for human consumption have become essential. For this purpose, it is imperative for the importing country to recognize the authorized competent authority of the exporting country. This necessitates competency in the required certification procedures and availability of diagnostic and surveillance capacity in the exporting country. The specialized knowledge and experience in the case of aquatic animal diseases may not be available within the competent authority. Private specialists in these fields need to be identified and co-opted by the competent authority to assist with performing these tasks.

Designated competent authorities must further verify compliance with feed and food law, animal health and welfare rules, veterinary drug usage and residue testing of the fish and aquaculture products to be exported. The degree of reciprocity and harmonization of legislation between countries trading with each other determines the levels of guarantees required for exports. Climate and geographic barriers may limit a specific risk associated with export from a country. The most favourable zone is one covering an entire country, whereas the lowest level of zoning or compartmentalization reflects only the bio-security status of a farm or facility registered for export.

For trade with the EU, various EU Directives provide guidelines that may be adopted by our region if local aquaculture products are to become accepted internationally. The *World Trade Organization* (WTO) *Agreement on the Application of Sanitary and Phytosanitary Measures* (SPS Agreement) provides the framework for safe international trade in animals and animal products without unjustified trade restrictions. International animal health standards are set by the *World Organization for Animal Health* (OIE). Relevant certification standards for freedom from disease are based on the *Aquatic Animal Health Code* and the *Manual of Diagnostic Tests for Aquatic Animals*. The *Codex Alimentarius* provides international food safety standards. To meet these standards, regional countries must develop the required legislation to cover fish and public health, farm to fork food safety guarantees as well as develop the required service provision in diagnostic, surveillance and residue testing.

TRACEABILITY OF AQUATIC PRODUCTS

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INFOSA is part of the FISHINFONETWORK with other 7 organisations around the world, and provides information about the fish-related markets and operations in collaboration with 15 countries from the SADC region.

When we speak about “conditions for export (export requirements)” in countries such as Namibia this basically means meeting the “import requirements” from the countries that want to buy the food products from Namibia.

For Namibia, food exports may lead to higher revenue and poverty reduction, but could also lead to increased problems due to the need to increase regulations and requirements on domestic markets. These new complexities have created problems for many exporters in many countries, but are particularly difficult for developing nations to deal with.

Also, if Namibia wishes to focus its exports on regional trade within the SADC region it would face numerous challenges as this regional market is currently underdeveloped. We estimate that only some 170,000 tons of fisheries products were exported within the region, which represents only about 6 % of the 2.77 million tons produced annually. However, this estimate could certainly be wrong, for it is extremely difficult to monitor this intra-regional, often informal, trade.



For example one of the “export requirements” is the traceability system implemented in the fish industry. This requirement is very important because despite establishing Competent Authorities for food safety and approval of new legislation and regulations, problems persist, possibly with the exception of aquaculture products. Traceability is about keeping track of the product from “the farm up to the fork of the consumer”.

This presentation demonstrates a “simple traceability system” for training - of - trainers (ToT) purposes, with examples of theatrical dramaturgy that can be used for training of illiterate people from aquaculture farms.

PRACTICE OF IMPORT REQUIREMENTS INTO THE EUROPEAN UNION

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European Union (EU) legislation in the aquaculture sector lays down detailed animal health conditions that apply to imports of live aquaculture animals and products thereof from third countries. The legislation of the EU in this field is fully harmonised which means that the requirements on import from third countries are the same in all Member States. Below is a list of the animal health import legislation:

- Council Directive 2006/88/EC on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals (amended by Directive 2008/53/EC)
- Commission Regulation (EC) No 1251/2008 implementing Council Directive 2006/88/EC as regards conditions and certification requirements for the placing on the market and the import into the Community of aquaculture animals and products thereof and laying down a list of vector species, which is amended by Regulation (EC) No 719/2009 and Regulation (EU) No 346/2010
- Commission Regulation (EC) No 1250/2008 amending Regulation (EC) No 2074/2005 as regards certification requirements for import of fishery products, live bivalve mollusc, echinoderms, tunicates and marine gastropods intended for human consumption
- Commission Decision 2008/946/EC implementing Council Directive 2006/88/EC as regards requirements for quarantine of aquaculture animals

The EU takes particular care to ensure that this legislation is fully compliant with its international obligations and in particular with the requirements of the *Sanitary and Phytosanitary Agreement* of the *World Trade Organization* based on OIE standards.

This legislation imposes a series of animal health and supervisory requirements designed to ensure that imported aquaculture animals and products thereof meet standards at least equivalent to those required for production in, and trade between EU Member States.

Further information on the EU aquatic animal health legislation can be found on the following web page:

http://ec.europa.eu/food/animal/liveanimals/aquaculture/index_en.htm

Session 8

Conclusions

OUTCOMES OF THE WORKING GROUP SESSIONS AND CONCLUSIONS

The working groups were requested to answer these two questions:

1. How do you implement the *Terms of Reference (ToR)* for aquatic animal focal points? Refer to each of the tasks in the ToR for the national aquatic animal focal points and discuss how you implement each of these points and the challenges that you face.
2. What is at least one thing you are going to implement with respect to your task as the aquatic animal focal point on your return home?

Detailed tasks of the national focal point for aquatic animals are:

1. to establish a network of aquatic animal health experts within his/her country or to communicate with the existing network;
2. to establish and maintain a dialogue with the Competent Authority for aquatic animal health in his/her country, and to facilitate cooperation and communication among several authorities where responsibility is shared;
3. under the authority of the OIE Delegate of his country, to support the optimal collection and submission of aquatic animal disease information to the OIE through WAHIS (immediate notifications and follow-up reports, six-monthly reports, and annual questionnaires) to enable the OIE Delegate to more efficiently manage his OIE Member obligations;
4. to act as a contact point with the OIE Animal Health Information Department on matters related to information on aquatic animals including aquatic animal diseases;
5. to receive from the OIE Central Bureau copies of the reports of the *Aquatic Animal Health Standards Commission* and other relevant reports, and conduct the in-country consultation process with recognised aquatic animal health experts on draft texts of standards proposed in those reports; and
6. to prepare comments for the Delegate on relevant meeting reports reflecting the scientific view and position of the individual OIE Member Country or Territory and/or the region, including comments on the proposals for new or revised OIE standards related to aquatic animals.



Working group "at work"

Three groups were formed (2 anglophone and 1 francophone) to discuss the *Terms of Reference* for the OIE national focal points on aquatic animal diseases, items 1 – 6 and in summary they agreed in general terms on what needs to be implemented on their part and the challenges they are likely to encounter.

1. The national focal points agreed to on their return back home to request their respective OIE Delegates to convene a meeting of all the 6 OIE National Focal Points in their respective countries to know each other and share their work plans as far as OIE issues are concerned. The group also agreed to convene a meeting (with the help of the OIE Delegate) of all relevant persons and institutions to discuss issues at stake in relation to aquatic animal health
2. In terms of maintaining dialogue with the Competent Authorities, the groups agreed that as national focal points on aquatic animal health they will establish contacts with the national SPS coordination committees in their countries to make sure that aquatic health issues are mainstreamed into the implementation of the WTO SPS agreement and other regional trade arrangements.
3. On the issue of reporting through WAHIS, the group members agreed that they will advise higher national authorities in their respective countries i.e. the Directors of Veterinary Services and Fisheries to consider establishing a *National Aquatic Animal Diseases Surveillance System* as a priority in order to be able to capture information required.
4. They also agreed to link up with the national epidemiology units within the Veterinary Administration to be able to catch up with the procedures and mechanisms for regular reporting to the OIE through their respective OIE Delegates.
5. The National Focal Points further agreed to acquaint themselves with the calendar of activities of the OIE *Aquatic Commission* and any relevant *ad hoc* groups and remind their respective OIE Delegates to share with them documents circulated for comments.
6. They declared their willingness to do all in their powers to provide comments through their respective OIE Delegates as long as the necessary documentation was made available to them well in advance. The group members were of the opinion that the national focal points should receive copies of the documentation sent out to the OIE Delegates, directly from the OIE head office.

The major challenge identified by the groups in terms of implementing functions indicated above was lack of operational budget. The focal points were optimistic that the OIE PVS evaluations applied to *Aquatic Animal Health Services* (AAHS) and subsequent gap-analyses will go a long way to address critical constraints not only the funding but also infrastructure and governance issues.

As for the one task focal points were committed to undertake after the training seminar, the following were amongst those listed:

- Establish what is on the ground and formalise a *National Network on Aquatic Health*, starting with registration of aquatic farms and introduction of a good communication strategy.
- Strengthen and advise streamlining working relationship between the Veterinary Services, Fisheries Department and other Competent Authorities at national level mandated to certify the health of aquatic animals and aquatic products for trade purposes.
- Establish a national aquatic health surveillance system with laboratory diagnostic back-up on the basis of which disease prevention and control measures will be enacted.
- Create a conducive environment for the private sector to lead aquaculture development and mobilisation of resources from international collaborating partners such as OIE, FAO and the donor community to promote aquaculture health.
- The group agreed that each one will prepare a *Back to Office Report* (BTOR) to inform the OIE Delegate of the benefits acquired from attending the training seminar. The group concluded by agreeing to the principle that*if it's not recorded, it wasn't done....*

Testimony

« ...Sir,

I wanted to thank you for the welcome extended to me and the time allocated to me during the Regional Training Seminar for national OIE Focal Points for aquatic animals in Swakopmund (Namibia), 15 – 19 June 2010.

This first experience will be very important for my career and the tasks to which you have associated me genuinely enabled me to consolidate my existing knowledge and to develop new ones.

Please accept, Sir, my most respectful regards,

Dr Mohamed Abderrahmane Ould Abdelkader

*Veterinary Officer
Office National d'Inspection Sanitaire des Produits de la Pêche et de l'Aquaculture (ONISPA)
Nouadhibou, Mauritania... »*

[translated from French]

Annexes

SEMINAR PROGRAMME



Tuesday 15 June 2010

14:00 - 17:00 *Registration*

Opening session

17:00 - 18:30 Inauguration and Opening

19:00 – 21:00 Welcoming reception hosted by the Government of Namibia



Wednesday 16 June 2010

Session 1 : *Structure and operation of the OIE*

08:30 – 09:00	General presentation of the OIE	Faouzi Kechrid
09:00 – 09:30	Rights and responsibilities of OIE Delegates and focal points	Antonio Petrini
09:30 – 10:00	Good governance and the evaluation of Veterinary Services (OIE-PVS tool / PVS gap analysis) : the AQUA-PVS	P. Bastiaensen & Gillian Mylrea
10:00 – 10:30	Morning break – Coffee/Tea	

Session 2 : *Overview of the production sectors, regional and international stakeholders*

10:30 – 10:50	Why is aquaculture and aquatic animal health so important?	Ricardo Enriquez
10:50 – 11:10	The fisheries and aquaculture sector : Africa	Melba Reantaso
11:10 – 11:30	International initiatives : IUU fishing	Per-Erik Bergh
11:30 – 11:50	International stakeholders : FAO	Melba Reantaso
11:50 – 13:00	Regional stakeholders : AASA (Southern Africa)	Etienne Hinrichsen
	Regional stakeholders : SARNISSA (Sub-Saharan Africa)	William Leschen
	Regional stakeholders : NACA (Asia and the Pacific)	Somkiat Kanchanakhan
	Regional stakeholders : Rhodes University (training)	Qurban Rouhani
	Host country : aquatic animal health in Namibia	Bronwen Currie
	Discussion and closing remarks by the chair	
13:00 – 14:00	Lunch	

Session 3 : Notification by Members to the OIE, WAHIS & WAHID (part 1)

14:00 - 14:40	The OIE list of aquatic diseases, criteria for inclusion	Ricardo Enriquez
14:40 – 15:00	Reporting obligations by Members to the OIE	Karim Ben Jebara
15:00 – 15:20	Competent authorities - veterinary vs fisheries : challenges	Albertina Shilongo
15:20 – 15:40	Incorporating Fisheries Departments and aquatic animal producers into national information collection and monitoring of aquatic animal health. Providing incentives for a sustainable system	William Leschen
15:40 – 16:00	Discussion and closing remarks by the chair	
16:00 – 16:20	Afternoon break – Coffee/Tea	

Session 4 : The OIE Aquatic Animal Health Code : horizontal chapters

16:20 – 16:40	The OIE Aquatic Animal Health Code : what to know and where to look for it ?	Gillian Mylrea
16:40 – 17:00	Animal production food safety	Gillian Mylrea
17:00 – 17:20	Safe commodities	Gillian Mylrea
17:20 – 17:40	Welfare chapters	Gillian Mylrea
17:40 – 18:00	Discussion and closing remarks by the chair	



Thursday 17 June 2010

Session 5 : Country perspectives : implementation of OIE standards in Africa

08:30 – 10:30	Country perspectives (10 minute presentations) selection : national focal points	
	Cameroon	Mauritania
	Egypt	Nigeria
	Kenya	Uganda
10:30 – 11:00	Morning break – Coffee/Tea	

Session 3 (cont'd) : Notification to by Members to the OIE, WAHIS & WAHID (part 2)

11:00 – 12:00 Immediate notifications, six-monthly reports, annual reports,
WAHIS evolution towards WAHIS 2 and regional information
systems : the OIE strategy Karim Ben Jebara

Session 4 (cont'd) : The OIE Aquatic Animal Health Code : disease specific chapters

12:00 – 12:30 Case study 1 : White Spot Disease - a case study for exotic pathogens
and current significant endemic diseases in Eastern Africa Marc Le Groumellec

12:30 – 13:00 Case study 2 : *Francisella* spp : bacterial pathogen causing
mortalities in farmed tilapia. William Leschen

13:00 – 14:00 Lunch

14:00 – 14:30 Case study 3 : Epizootic Ulcerative Syndrome (EUS) Bernard Mudenda

14:30 – 15:00 Case study 4 : Koi herpes virus David Huchzermeyer

15:00 – 15:30 Case study 5 : Abalone herpes-like virus Anna Mouton

15:30 – 16:00 Afternoon Break Tea/Coffee

Session 6 : The OIE Manual of Diagnostic Tests for Aquatic Animals

16:00 – 16:20 The OIE Manual of Diagnostic Tests for Aquatic Animals :
what to know and where to look for it ? Ricardo Enriquez

16:20 – 16:40 Diagnostic support provided by the OIE Reference Laboratories
and Collaborating Centres to OIE Member Countries (twinning) Roar Gudding

16:40 – 17:00 Aquatic Animal Health Surveillance Ricardo Enriquez

17:00 – 17:20 Fish vaccination – present status and future challenges. Roar Gudding

17:20 – 17:40 Future work of the OIE Aquatic Animal Health
Standards Commission Ricardo Enriquez

17:40 – 18:00 Discussion and closing remarks by the chair



Friday 18 June 2010

Excursion : Field visits

08:30 – 13:00 Oyster farm
Shellfish hatchery
Processing plant (export) Coordinated by Bronwen Currie

13:00 – 14:00 Lunch

Session 7 : *Trade and certification*

14:00 – 14:20	Trade and the SPS Agreement (WTO)	Antonio Petrini
14:20 – 14:40	Rights and obligations of OIE Member Countries	Bonaventure Mtei
14:40 – 15:00	Devising Import health measures	Gillian Mylrea
15:00 – 15:20	Certification of aquatic products	David Huchzermeyer
15:20 – 15:40	Practice of export requirements from Namibia	Ekkehard Klingelhoefter
15:40 – 16:00	Practice of import requirements into the EU	Sigrid Cabot
16:00 – 16:30	Afternoon Break Tea/Coffee	
16:30 – 16:50	OIE Aquatic Animal Health Commission website : demonstration	Ricardo Enriquez
16:50 – 17:20	Discussion and closing remarks by the chair	



Saturday 19 June 2010

Session 8 : *Working group session*

08:30 – 09:00	Arrangements for working groups	Gillian Mylrea
09:00 – 10:00	Working Group Session: 4 groups - Strategies for implementation of OIE standards – activities of focal points	
10:00 – 10:30	Working Group reports	Rapporteurs
10:30 – 11:00	Conclusions of the meeting	
11:00 – 11:30	Morning Break Tea/Coffee	
11:30 – 11:50	Presentation of the BTSF programme and training impact assessment	Sigrid Cabot & P. Bastiaensen

Closing session

11:50 – 12:30	Closing ceremony	Clepas Bamhare Abdoulaye Niang
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GLOSSARY OF TERMS¹

Aquaculture means the farming of aquatic animals with some sort of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc.

Aquaculture establishment means an establishment in which fish, molluscs or crustaceans for breeding, stocking or marketing are raised or kept.

Aquatic animal health status means the status of a country, zone or compartment with respect to an aquatic animal disease, according to the criteria listed in the relevant chapter of the Aquatic Code dealing with the disease.

Aquatic animal products means non-viable aquatic animals and products from aquatic animals.

Aquatic animals means all life stages (including eggs and gametes) of fish, molluscs, crustaceans and amphibians originating from aquaculture establishments or removed from the wild, for farming purposes, for release into the environment, for human consumption or for ornamental purposes.

Aquatic Code means the OIE Aquatic Animal Health Code.

Aquatic Manual means the OIE Manual of Diagnostic Tests for Aquatic Animals.

Basic biosecurity conditions means a set of conditions applying to a particular disease, and a particular zone or country, required to ensure adequate disease security, such as:

- the disease, including suspicion of the disease, is compulsorily notifiable to the Competent Authority; and
- an early detection system is in place within the zone or country; and
- import requirements to prevent the introduction of disease into the country or zone, as outlined in the Aquatic Code, are in place.

Bias means a tendency of an estimate to differ in a non-random fashion from the true value of a population parameter.

Biological products means:

- biological reagents for use in the diagnosis of certain diseases;
- sera for use in the prevention and treatment of certain diseases;
- inactivated or modified vaccines for use in preventive vaccination against certain diseases;
- genetic material of infectious agents;
- endocrine tissues from fish or used in fish.

Biosecurity plan means a plan that identifies significant potential pathways for the introduction and spread of disease in a zone or compartment, and describes the measures which are being, or will be, applied to mitigate the risks to introduce and spread disease, taking into consideration the recommendations in the Aquatic Code. The plan should also describe how these measures are audited, with respect to both their implementation and their targeting, to ensure that the risks are regularly re-assessed and the measures adjusted accordingly.

Buffer zone means a zone established to protect the health status of aquatic animals in a free country or free zone, from those in a country or zone of a different aquatic animal health status, using measures based on the epidemiology of the disease under consideration to prevent spread of the disease agent into a free country or free zone.

Case means an individual aquatic animal infected by a pathogenic agent, with or without clinical signs.

Case definition is a set of criteria used to distinguish a case animal or an epidemiological unit from a non-case.

Certifying official means a person authorised by the Competent Authority to sign health certificates for aquatic animals.

¹ Based on the 2009 version of the OIE Aquatic Code, except where between brackets.

Commodity means aquatic animals, aquatic animal products, biological products and pathological material.

Compartment means one or more aquaculture establishments under a common biosecurity management system containing an aquatic animal population with a distinct health status with respect to a specific disease or diseases for which required surveillance and control measures are applied and basic biosecurity conditions are met for the purpose of international trade. Such compartments must be clearly documented by the Competent Authority(ies).

Competent Authority means the Veterinary Services, or other Authority of a Member, having the responsibility and competence for ensuring or supervising the implementation of the aquatic animal health measures or other standards in the Aquatic Code.

Container means a transport appliance:

- of a permanent type and sufficiently strong to enable repeated use;
- specially constructed to facilitate transport of aquatic animals or aquatic animal products by one or several means of transport;
- provided with fittings that make it easy to manipulate, particularly for trans-shipment from one kind of transport vehicle to another;
- constructed in a watertight way, easy to load and unload and capable of being cleansed and disinfected;
- ensuring safe and optimal transport of aquatic animals.

Contingency plan means a documented work plan designed to ensure that all needed actions, requirements and resources are provided in order to eradicate or bring under control outbreaks of specified diseases of aquatic animals.

Diagnosis means determination of the nature of a disease.

Disease means clinical or non clinical infection with one or more of the aetiological agents of the diseases referred to in the Aquatic Code.

Disease agent means an organism that causes or contributes to the development of a disease referred to in the Aquatic Code.

Disinfectants means chemical compounds capable of destroying pathogenic microorganisms or inhibiting their growth or survival ability.

Disinfection means the application, after thorough cleansing, of procedures intended to destroy the infectious or parasitic agents of diseases of aquatic animals, including zoonoses; this applies to aquaculture establishments (i.e. hatcheries, fish farms, oyster farms, shrimp farms, nurseries, etc.), vehicles, and different equipment/objects that may have been directly or indirectly contaminated.

Early detection system means an efficient system for ensuring the rapid recognition of signs that are suspicious of a listed disease, or an emerging disease situation, or unexplained mortality, in aquatic animals in an aquaculture establishment or in the wild, and the rapid communication of the event to the Competent Authority, with the aim of activating diagnostic investigation with minimal delay. Such a system will include the following characteristics:

- broad awareness, e.g. among the personnel employed at aquaculture establishments or involved in processing, of the characteristic signs of the listed diseases and emerging diseases;
- veterinarians or aquatic animal health specialists trained in recognising and reporting suspicious disease occurrence;
- ability of the Competent Authority to undertake rapid and effective disease investigation;
- access by the Competent Authority to laboratories with the facilities for diagnosing and differentiating listed diseases and emerging diseases.

Egg means a viable fertilised ovum of an aquatic animal. 'Green eggs' means newly fertilised ova of fish. 'Eyed eggs' means eggs of fish where the eyes of the embryo are visible and that the eggs may be transported.

Emerging disease means a newly recognised serious disease, the cause of which may or may not yet be established, that has the potential to be spread within and between populations, for example by way of trade in aquatic animals and/or aquatic animal products.

Epidemiological unit means a group of animals that share approximately the same risk of exposure to a disease agent with a defined location. This may be because they share a common aquatic environment (e.g. fish in a pond, caged fish in a lake), or because management practices make it likely that a disease agent in one group of animals would quickly spread to other animals (e.g. all the ponds on a farm, all the ponds in a village system).

Eviscerated fish means fish from which internal organs, excluding the brain and gills, have been removed.

Exporting country means a country from which aquatic animals or aquatic animal products, biological products or pathological material are sent to a destination in another country.

Fallowing means, for disease management purposes, an operation where an aquaculture establishment is emptied of aquatic animals susceptible to a disease of concern or known to be capable of transferring the disease agent, and, where feasible, of the carrying water. For aquatic animals of unknown susceptibility and those agreed not to be capable of acting as carriers of a disease of concern, decisions on fallowing should be based on a risk assessment.

Feed means any material (single or multiple), whether processed, semi-processed or raw that is intended to be fed directly to aquatic animals.

Feed additives means any ingredient intentionally added in micro-amounts not normally consumed as feed by itself, whether or not it has nutritional value, which affects the characteristics of feed or animal products. Micro-organisms, enzymes, acidity regulators, trace elements, vitamins, substances used to attract aquatic animals to feed and promote feed intake, pigments, synthetic binders, synthetic amino acids, antioxidants and other products fall within the scope of this definition, depending on the purpose of use and method of administration. This excludes veterinary drugs.

Feed ingredient means a component, part or constituent of any combination or mixture making up a feed, including feed additives, whether or not it has a nutritional value in the animal's diet. Ingredients may be of terrestrial or aquatic, plant or animal origin and may be organic or inorganic substances.

[**Flashing**] [means fish rubbing themselves on objects in the water. By doing so they turn on their sides causing light to be reflected off the light parts of their body. Hence the term flashing. Usually this is indicative of a parasite induced skin irritation]

Free compartment means a compartment that fulfils the requirements for self-declaration of freedom from disease with respect to the disease(s) under consideration, according to the relevant chapter(s) in the Aquatic Code.

Free country means a country that fulfils the requirements for self-declaration of freedom from disease with respect to the disease(s) under consideration according to the relevant chapter(s) in the Aquatic Code.

Free zone means a zone that fulfils the requirements for self-declaration of freedom from disease with respect to the disease(s) under consideration according to the relevant chapter(s) in the Aquatic Code.

Frontier post means any international airport or any port, railway station or road post open to international trade.

Gametes means the sperm or unfertilised eggs of aquatic animals that are held or transported separately prior to fertilisation.

Hazard means any pathogen that could produce adverse consequences on the importation of a commodity.

Hazard identification means the process of identifying the pathogenic agents that could potentially be introduced in the commodity considered for importation.

Importing country means a country that is the final destination to which aquatic animals, aquatic animal products, biological products or pathological material are sent.

Incidence means the number of new outbreaks of disease within a specified period of time in a defined aquatic animal population.

Infected zone means a zone in which a disease has been diagnosed. The infected zone must be clearly defined by the Competent Authority(ies) concerned and may be separated from the rest of the country by a buffer zone.

Infection means the presence of a multiplying or otherwise developing or latent disease agent in a host. This term is understood to include infestation where the disease agent is a parasite in or on a host.

Infective period means the longest period during which an affected aquatic animal can be a source of infection.

International aquatic animal health certificate

means a certificate issued by a member of the personnel of the Competent Authority of the exporting country, certifying the state of health of the aquatic animals, and a declaration that the aquatic animals originate from a source subjected to official health surveillance according to the procedures described in the Aquatic Manual.

International trade means import, export or transit of aquatic animals, aquatic animal products, biological products and pathological material.

Live feed means live farmed or wild caught animals and algae used as feed for aquatic animals. Live feed is often fed to aquatic animal species at an early life-stage and to aquatic animal species that have been cultured for a relatively short time.

Meal means a product derived from an aquatic animal that has been ground and heat processed to reduce the moisture content to less than 10%.

Notification means the procedure by which:

- the Veterinary Authority informs the Central Bureau,
- the Central Bureau informs Veterinary Authorities of Members

of the confirmation of a disease outbreak, according to the provisions of Section 1. of the Aquatic Code.

OIE-listed diseases means diseases that are referred to in Chapter 1.3. of the Aquatic Code. (Synonym: diseases listed by the OIE.)

Outbreak means an occurrence of one or more cases in an epidemiological unit.

Pathological material means tissues, organs, fluids, etc., from aquatic animals, or strains of infectious organisms (which could be identified as an isolate or biovar) to be sent to an aquatic animal disease laboratory or to a reference laboratory recognised by the OIE, the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO), the European Union (EU), etc.

Personnel of the Competent Authority means any competent personnel working within the body of, or designated by, the Competent Authority.

Prevalence means the total number of infected aquatic animals expressed as a percentage of the total number of aquatic animals in a given aquatic animal population at one specific time.

Probability sampling means a sampling strategy in which every unit has a known non-zero probability of inclusion in the sample.

Quarantine means maintaining a group of aquatic animals in isolation with no direct or indirect contact with other aquatic animals, in order to undergo observation for a specified length of time and, if appropriate, testing and treatment, including proper treatment of the effluent waters.

[**Raceway**] [means an elongated fish pond, usually made of concrete and often with several in parallel and in series. It is a fast flowing system where ideally the entire cross section of water is flowing through the system evenly. Like this it becomes a self cleaning system. Mainly used for trout and salmon farming]

Risk means the likelihood of the occurrence and the likely magnitude of the biological and economic consequences of an adverse event or effect to animal or human health.

Risk analysis means the complete process composed of hazard identification, risk assessment, risk management and risk communication.

Risk assessment means the evaluation of the likelihood and the biological and economic consequences of entry, establishment and spread of a hazard within the territory of an importing country.

Risk communication is the interactive exchange of information and opinions throughout the risk analysis process concerning risk, risk-related factors and risk perceptions among risk assessors, risk managers, risk communicators, the general public and other interested parties.

Risk management means the process of identifying, selecting and implementing measures that can be applied to reduce the level of risk.

Sanitary measure means a measure, such as those described in various Chapters of the Aquatic Code, destined to protect aquatic animal or human health or life within the territory of the OIE Member from risks arising from the entry, establishment and/or spread of a hazard.

Self-declaration of freedom from disease means declaration by the Competent Authority of the country concerned that the country, zone or compartment is free from a listed disease based on implementation of the provisions of the Aquatic Code and the Aquatic Manual. The country may wish to transmit this information to the OIE Central Bureau, which may publish the information.

Sensitivity means the proportion of true positive tests given in a diagnostic test, i.e. the number of true positive results divided by the number of true positive and false negative results.

Slaughtering means the killing and bleeding of fish.

Specificity means the probability that absence of infection will be correctly identified by a diagnostic test, i.e. the number of true negative results divided by the number of true negative and false positive results.

Stamping-out policy means the carrying out under the authority of the Competent Authority, on confirmation of a disease, of preventive aquatic animal health measures, consisting of killing the aquatic animals that are affected, those suspected of being affected in the population and those in other populations that have been exposed to infection by direct or indirect contact of a kind likely to cause the transmission of the disease agent. All these aquatic animals, vaccinated or unvaccinated, on an infected site should be killed and the carcasses destroyed by burning or burial, or by any other method that will eliminate the spread of infection through the carcasses or products of the aquatic animals destroyed.

This policy should be accompanied by cleansing and disinfection procedures as defined in the Aquatic Code. Following should be for an appropriate period determined by risk assessment.

Study population means the population from which surveillance data are derived. This may be the same as the target population or a subset of it.

Subpopulation means a distinct part of a population identifiable according to specific common aquatic animal health characteristics.

Surveillance means a systematic series of investigations of a given population of aquatic animals to detect the occurrence of disease for control purposes, and which may involve testing samples of a population.

Susceptible species means a species of aquatic animal in which infection has been demonstrated by natural cases or by experimental exposures to the disease agent that mimics the natural pathways for infection. Each disease chapter in the Aquatic Manual contains a list of currently known susceptible species.

Target population means, for the purposes of demonstrating freedom from infection, the population of interest, usually made up of all aquatic animals of species susceptible to a specified disease agent in a defined country, zone or aquaculture establishment.

Targeted surveillance means surveillance targeted at a specific disease or infection.

Territory means land and water under jurisdiction of a country.

Transit country means a country through which aquatic animals, aquatic animal products, biological products or pathological material destined for an importing country, are transported or in which a stopover is made at a frontier post.

Unit means individually identifiable elements. This is a generic concept used to describe, for example, the members of a population, or the elements selected when sampling. In these contexts, examples of units include individual animals, ponds, nets, cages, farms, villages, districts, etc.

Vehicle means any method of transport by land, air or water.

Veterinarian means a person registered or licensed by the relevant veterinary statutory body of a country to practise veterinary medicine/science in that country.

Veterinary Authority means the Governmental Authority of an OIE Member, comprising veterinarians, other professionals and para-professionals, having the responsibility and competence for ensuring or supervising the implementation of aquatic animal health and welfare measures, international aquatic animal health certification and other standards and recommendations in the Aquatic Code in the whole territory.

Veterinary Services means the Veterinary Administration, all the Veterinary Authorities, and all persons authorised, registered or licensed by the veterinary statutory body.

Veterinary statutory body means an autonomous authority regulating veterinarians and veterinary para-professionals.

Water catchment means an area or basin of land bounded by natural features such as hills or mountains, into which all run-off water flows.

Zone means a portion of one or more countries comprising:

- an entire water catchment from the source of a waterway to the estuary or lake, or
- more than one water catchment, or
- part of a water catchment from the source of a waterway to a barrier that prevents the introduction of a specific disease or diseases, or
- part of a coastal area with a precise geographical delimitation, or
- an estuary with a precise geographical delimitation,

that consists of a contiguous hydrological system with a distinct health status with respect to a specific disease or diseases. The zones must be clearly documented (e.g. by a map or other precise locators such as GPS coordinates) by the Competent Authority(ies).

Some terms that are not used in the Aquatic Code but that appear in the Aquatic Manual, are defined below:

Confidence In the context of demonstrating freedom from infection (in which the null hypothesis is that infection is present), the confidence is the probability that a surveillance system or combination of surveillance systems would detect the presence of infection if the population were infected. The confidence depends on the design prevalence, or the assumed level of infection in an infected population. Confidence therefore refers to our confidence in the ability of a surveillance system to detect disease, and is equal to the sensitivity of the system. This is distinct from (but may be used to calculate) the probability that a given population is free from infection, based on the results of one or more surveillance systems.

Fry Newly hatched fish larvae.

Surveillance system A method of surveillance that generates a source of information on the animal health status of populations.

Test A procedure used to classify a unit as either positive or negative with respect to an infection or disease. Tests may be classified as:

- a) diagnostic, when applied to clinically diseased individuals;
- b) screening, when applied to apparently healthy individuals; or
- c) confirmatory, when applied to confirm the result of a previous test.

Test system A combination of multiple tests and rules of interpretation that are used for the same purpose as a test.

SCIENTIFIC AND COMMON NAMES OF AQUATIC SPECIES

Fish species	Common name
1. <i>Barbus paludinosus</i>	Straightfin barb
2. <i>Serranochromis angusticeps</i>	Thinface largemouth
3. <i>Clarias gariepinus</i>	Sharptooth catfish
4. <i>Clarias ngamensis</i>	Blunntooth catfish
5. <i>Sargochromis carlottae</i>	Rainbow bream
6. <i>Tilapia sparmanii</i>	Banded tilapia
7. <i>Hydrocynus vittatus</i>	Tigerfish
8. <i>Pharyngochromis acuticeps</i>	Zambezi happy
9. <i>Hepsetus odoe</i>	African pike
10. <i>Labeo lunatus</i>	Upper-Zambezi labeo
11. <i>Oreochromis andersonii</i>	Threespot tilapia
12. <i>Barbus poechii</i>	Dashtail barb
13. <i>Schilbe intermedius</i>	Silver catfish
14. <i>Barbus unitaeniatus</i>	Longbeard barb
15. <i>Brycinus lateralis</i>	Striped robber
16. <i>Micralestes acutidens</i>	Silver robber
17. <i>Petrocephalus catostoma</i>	Northern churchill
18. <i>Marcusenius macrolepidotus</i>	Bulldog
19. <i>Labeo cylindricus</i>	Redeye labeo
20. <i>Tilapia rendalli</i>	Redbreast tilapia
21. <i>Oreochromis macrochir</i>	Greenhead tilapia
22. <i>Serranochromis robustus</i>	Nembwe
23. <i>Serranochromis macrocephalus</i>	Purpleface largemouth
24. <i>Sargochromis codringtonii</i>	Green bream
25. <i>Sargochromis giardi</i>	Pink bream
26. <i>Mugilidae spp</i>	Mulletts

Mollusc species

1. *Haliotis discus hannai* Abalone
2. *Haliotis discus discus* Abalone
3. *Haliotis diversicolor* Abalone
4. *Haliotis laevigata* Greenlip abalone
5. *Haliotis ruber* Blacklip abalone
6. *Haliotis midae* South African abalone

Crustacean species

1. *Penaeus monodon* Giant (black) tiger prawn, jumbo tiger prawn
2. *Macrobrachium rosenbergii* Giant river or freshwater prawn
3. *Litopenaeus* (or *Penaeus*) *vannamei* Pacific white shrimp

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Group photo of participants and trainers in the courtyard of the Swakopmund Hotel.

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BETTER TRAINING FOR SAFER FOOD (BTSF)

The *Health and Consumer Directorate General* of the European Commission (DG SANCO) organises training for developing country participants under the *Better Training for Safer Food* programme (BTSF). The training covers food and feed law, animal health and welfare rules and plant health rules.

The general aims of the third country part of BTSF are to ensure fair trade with third and particularly developing countries, to help third countries to better understand and meet EU standards, which in turn will reduce rejections at the EU borders. Furthermore, better food safety controls give third country consumers better food safety and EU consumers access to a more diverse product range.

Under the BTSF a training programme of EUR 10 million for the period 2008/2010 is dedicated to Africa. Half of these training activities are organised by the OIE. Only in 2010 approximately 60 events are planned with around 3000 participants.

The BTSF Africa programme is aimed at strengthening the capacity of public and private sectors in the veterinary and plant health field, to support food security through technical and policy advice on animal health, food safety and quality, to contribute to reducing food-borne diseases and to support the competitiveness of the agro-food sector and contribute to rural development and employment in Africa.

Specific topics in relation to animal health organised together with OIE are:

- Evaluation of performance of Veterinary Services
- Improvement of national / regional legal framework on animal health
- Laboratory capacity (twinning)
- Training of CVOs and national focal points.

SEMINAR BACKGROUND AND OBJECTIVES

In line with the OIE's overall mandates, this training seminar provided OIE subject matter focal points on aquatic animal diseases with the necessary information, updates and skills to better assume their responsibilities and obligations as advisors to the OIE Delegates in their respective countries.

TERMS OF REFERENCE OF OIE FOCAL POINTS FOR AQUATIC ANIMALS

During the 76th General Session in May 2008 the importance of the focal point for information on animal diseases was re-iterated. It was also resolved that OIE Delegates should to nominate additional focal points for wildlife diseases, veterinary biological and products, animal production food safety, animal welfare and aquatic animals diseases. As detailed in the final report of the 76th OIE General Session in May 2008, the responsibilities of the focal points are under the authority of the OIE Delegate. Any information transmitted to the OIE from the different focal points needs to be transmitted under the designated authority of the OIE Delegate. This practice would equally apply, if focal points are located in other Departments or Ministries not under jurisdiction of the Veterinary Authority, since from a legal perspective, the OIE considers the official OIE Delegate to be the animal health representative of the country.

Detailed tasks of the national focal point for aquatic animals are:

1. to establish a network of aquatic animal health experts within his/her country or to communicate with the existing network;
2. to establish and maintain a dialogue with the Competent Authority for aquatic animal health in his/her country, and to facilitate cooperation and communication among several authorities where responsibility is shared;
3. under the authority of the OIE Delegate of his country, to support the optimal collection and submission of aquatic animal disease information to the OIE through WAHIS (immediate notifications and follow-up reports, six-monthly reports, and annual questionnaires) to enable the OIE Delegate to more efficiently manage his OIE Member obligations;
4. to act as a contact point with the OIE Animal Health Information Department on matters related to information on aquatic animals including aquatic animal diseases;
5. to receive from the OIE Central Bureau copies of the reports of the *Aquatic Animal Health Standards Commission* and other relevant reports, and conduct the in-country consultation process with recognised aquatic animal health experts on draft texts of standards proposed in those reports; and
6. to prepare comments for the Delegate on relevant meeting reports reflecting the scientific view and position of the individual OIE Member Country or Territory and/or the region, including comments on the proposals for new or revised OIE standards related to aquatic animals.

More information : http://www.rr-africa.oie.int/en/RC/en_focal_points.html

EPIZOOTIC ULCERATIVE SYNDROME IN AFRICA : A BRIEF HISTORY



Picture courtesy of David Huchzermeyer

In March 2007, Botswana declared to the OIE that *Haemorrhagic septicaemia* (ulcer disease) had been found in dead and diseased fish in the Chobe river (northern Botswana, close to the border with Zambia). Subsequent investigations led to the conclusion that the ulcers had been mis-diagnosed and that the disease responsible for the condition in fish was actually *Epizootic ulcerative syndrome* (EUS), a disease never reported in Africa before; this finding was communicated to the OIE in June 2007. The initial discovery sparked regional and international interest against the backdrop of considerable damages recorded in capture fisheries and aquaculture businesses in Asia and the Pacific in the seventies. A repetition of such scenario in Africa, it was felt, could have devastating effects for both subsistence capture and farm fisheries, as well as for the still developing and fragile commercial aquaculture sector. Following a request from several member countries, the FAO quickly approved a regional TCP, aimed at circumscribing the extent of the problem in the Chobe river and adjoining Zambezi river basin. The FAO/TCP/RAF/3111 Emergency Assistance to Combat Epizootic Ulcerative Syndrome in the Chobe-Zambesi River System covered 7 countries bordering this river system : Angola, Botswana, Malawi, Mozambique, Namibia, Zambia, and Zimbabwe). Surveillance and diagnostics of the disease led to further discoveries in the territorial waters of Zambia (Zambezi), which had in fact already encountered suspect cases in Sesheke district as early as 2006. In Namibia meanwhile, along the Zambezi-river portion in the Caprivi stip, the Integrated Management of the Zambezi/Chobe River System Fishery Resource Project investigated sores in 108 fish (out of 70,000 fish collected and analysed) and found EUS prevalences ranging from 0.04 to 0.3% (between February 2007 and February 2008). Through the management of this epizootic, it became rapidly evident that in most countries, basic tools for the monitoring and control of aquatic animal diseases of fresh and brackish water fish species in general was lacking in almost all aspects : field surveillance, diagnostics, legislation, communication, reporting and bio-security to name but a few.



Picture courtesy of Bernard Hang'ombe Mudenda

Towards the end of the emergency-interventions of the TCP, both FAO and OIE started looking at more structural means to enhance overall technical capability and capacity in the region on aquatic animal diseases in general, and inland fisheries and aquaculture in particular. In April 2008, FAO organised a regional workshop (under the FAO/TCP/RAF/3111) in Lilongwe, Malawi, targeting the countries of the Chobe – Zambesi riverine system (but also including Uganda, Tanzania and Kenya).

The workshop on the *Development of an Aquatic Biosecurity Framework for Southern Africa* led to recommendations regarding the designation by governments of FAO focal points, similar to those appointed for the OIE, the design of a follow-up project aimed at aquatic biosecurity capacity building, the possible role of the UNZA (Lusaka) as a regional reference laboratory, and the modelling of risk assessment for imports of live aquatic animals in Southern Africa. In June 2008, OIE organised a regional seminar (under the OIE Sub-Regional Representation for Southern Africa's portfolio) in Maputo, Mozambique, targeting the member countries of the SADC, the Southern African Development Community. The seminar on OIE International standards : a lever for growth in the aquaculture and fisheries sector in Southern Africa examined the sector from a broader perspective, but using the EUS episode as a starting point.

The recommendations of both regional workshops/seminars not only stressed the need for capacity building in the sub-region, but also identified clear areas of intervention.

In addition, the OIE observed that there are generally speaking hardly any reports coming in on aquatic animal diseases. While the latter might be due to lack of information and knowledge on aquatic diseases, it has also been pointed out that numerous stakeholders in the reporting process are unaware of the requirements of WAHIS in regard of aquatic animal diseases, in particular when the appointed focal points are not from the veterinary administration (e.g. Ministry or Department of Fisheries) and are generally not familiar with the OIE and the WAHIS system. Hence, an OIE regional joint training course on WAHIS and WAHID implementation for aquatic animal health focal points (basic course, dedicated to aquatic diseases) took place at the Centre for Ticks and Tick-Borne Diseases (AU) in Lilongwe, Malawi from April 21 – 22nd, 2009. As a result of all these initiatives, OIE and FAO decided to join efforts and organise a High Level Scoping Meeting of Regional Fisheries and Veterinary Authorities aimed at developing an Aquatic Biosecurity Framework for Southern Africa. This meeting of senior officials took place in Windhoek, Namibia on October 13 and 14th, 2009. The final declaration stated, amongst other things, that : *"...the Windhoek participants have prepared a framework for action; now political will and resources are necessary for implementation. The participants agreed that the primary responsibility for actions to address this emerging disease rests with the governments of the region. However, FAO, in partnership with OIE, the Regional Animal Health Centers in Africa, and other agencies such as the World Fish Center and the National Veterinary Institute of Norway will be requested to support a regional cooperative programme to assist in implementing the regional aquatic bio-security programme, and take preventive measures to reduce risks to fisheries, aquaculture and livelihoods from further spread of this fish disease to other river systems in Africa..."*



OIE REGIONAL SEMINAR

“OIE international standards, a lever for growth in the fisheries and aquaculture sector in Southern Africa”

RECOMMENDATIONS (June 2008)

Considering

- OIE’s mandate and responsibilities to promote aquatic animal health; and
- the international resolve and numerous instruments on fisheries and aquaculture in relation to food security, trade, environmental concerns, income generation and achievement of the Millennium Development Goals; and
- the potential benefits from sustainable fisheries and aquaculture and the opportunities to meet increasing demand for food from fish and other aquatic animals, as well as the enhancement of natural resources; and
- the need to improve skills, knowledge and information exchange on aquatic animal diseases in the OIE Members in the SADC region; and
- the crucial role played by veterinary and other aquatic animal health professionals in the development and sustainability of the fisheries and aquaculture sector in the OIE Members in the SADC region; and
- the need for harmonised development of the fisheries and aquaculture sector across the SADC region, both at private and public levels; and
- the international obligations of the countries in the region as Members of both the OIE and the World Trade Organisation (WTO); and
- the recent epizootic ulcerative syndrome (EUS) outbreak in the Chobe-Zambezi river catchment and the questions it raises with regard to preparedness and disease intelligence at national and regional levels;

the OIE seminar on International Standards : a lever for growth in the fisheries and aquaculture sector in Southern Africa, recommends:

- To the OIE Members in southern Africa :
 1. To ensure that OIE Delegates appoint the aquatic animal health focal points and that these appointees be officially communicated and regularly updated to the OIE Central Bureau.
 2. To provide national focal points with adequate resources in order to fulfil their terms of reference.
 3. To ensure that the OIE Delegates provide the nominated national OIE focal points with the reports from the *Aquatic Animal Health Standards Commission* and that the focal points coordinate the in-country consultation to provide a consolidated national response for submission to the OIE through the OIE Delegate and hence take an active part in the OIE standard setting process.
 4. To ensure that national OIE focal points assist the OIE Delegate so as to comply with reporting requirements to the OIE through the WAHIS reporting system.
 5. To encourage twinning between national diagnostic laboratories and with OIE Reference Laboratories. To encourage similar agreements with OIE Collaborating Centers.
 6. To encourage the inclusion of aquatic animal health issues into the veterinary, fisheries and aquaculture curricula and provide opportunities for continuous education.

7. To promote dialogue between veterinary authorities or other relevant competent authorities, as well as the private sector, to identify their respective roles and responsibilities in aquatic animal health matters.

8. To review the national legislative framework for allowing the development of the fisheries and aquaculture sector.

9. To prioritise aquatic animal diseases of concern and fast track implementation of surveillance programmes in line with art. 13.9 of the SADC Protocol on Fisheries (2001) and OIE guidelines. To enhance cross-border cooperation between competent authorities to control aquatic animal diseases.

- To the OIE Central Bureau and the Sub-Regional Representation for Southern Africa

10. To facilitate OIE Members in the surveillance and notification of aquatic animal diseases by supporting training on the use of WAHIS.

11. To coordinate and support the establishment of a regional aquatic animal health network for fisheries and aquaculture in southern Africa in close collaboration with relevant bodies at national, regional and international level.

12. To promote the inclusion of aquatic animal health training into the ongoing process of harmonisation of the veterinary curriculum.

Endorsed by all participants on June 12th, 2008 in Maputo, Mozambique



Download the full report here :

<http://www.rr-africa.oie.int/docspdf/en/2008/OIE-AAH-Maputo-June2008.pdf>

(3.3 Mb)

SEMINAR OBJECTIVES

The main purpose of the training seminar was to increase understanding by non-veterinarians (several OIE focal points are based in other Competent Authorities such as in Fisheries Departments, in research centres or Universities) of the OIE's roles and mandates and the relationships between veterinary and fisheries officials. There was ample opportunity for both categories of focal points (veterinary and fisheries) to exchange views and (country) experiences.

In addition, it was expected that the training would improve technical inputs of African OIE Member countries into the standard setting processes on aquatic animal diseases (fish, molluscs, crustaceans and amphibians) and improve diagnostic capacity and therefore reporting on aquatic animal diseases to the OIE, through the WAHIS system.

Indirectly the purpose was also to extend hands-on experience acquired in Southern and Eastern Africa through the EUS outbreaks to other parts of Africa, as a means to revive interest of the veterinary authorities in aquatic animal diseases and increase technical capacity where it isn't available or too weakly developed to ensure appropriate bio-security, in particular of inland fisheries and aquaculture. Marine fisheries issues were touched upon where appropriate.

As a side objective, the meeting of staff from the candidate-for-twinning laboratory at UNZA in Lusaka with the parent OIE Reference Laboratory in Bangkok, along with relevant OIE staff and commission members, would hopefully have fast-tracked the establishment of a twinning agreement on the diagnosis of EUS in Africa. In addition, other opportunities / topics for twinning were discussed with the various stakeholders present (e.g. white spot disease, *Streptococcus* spp in Tilapia and Clarias).

It was expected that at the end of the training workshop, the participants:

- should be aware of their country's stakes, in relation to OIE and WTO principles and procedures;
- should know about the rights and obligations of OIE Member countries;
- should know how to apply the WTO-SPS Agreement with focus on international trade of aquatic animals and products;
- should be aware of the necessity to notify without delay significant epidemiology events of OIE-listed animal disease;
- should be fully conversant with the mandates, vision, missions and operation of the OIE;
- should be familiar with the various information resources available on the OIE websites (international and continental) and other websites and networks where fish health discussions and contacts can be made;
- should be conscious of the importance of the veterinary authorities in aquatic animal diseases.

All OIE Member and non-Member countries in Africa were invited to attend the seminar (53). Out of these 36 countries attended the meeting, while 2 country-representatives failed to make it to Swakopmund because of visa restrictions and travel constraints (C.A.R. and Benin). The countries that attended were the following. *Please refer to the map on the next page.*

Map of OIE Member States in attendance :



WTO AGREEMENT ON THE APPLICATION OF SANITARY AND PHYTOSANITARY MEASURES

Members,

Reaffirming that no Member should be prevented from adopting or enforcing measures necessary to protect human, animal or plant life or health, subject to the requirement that these measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between Members where the same conditions prevail or a disguised restriction on international trade;

Desiring to improve the human health, animal health and phytosanitary situation in all Members;

Noting that sanitary and phytosanitary measures are often applied on the basis of bilateral agreements or protocols;

Desiring the establishment of a multilateral framework of rules and disciplines to guide the development, adoption and enforcement of sanitary and phytosanitary measures in order to minimize their negative effects on trade;

Recognizing the important contribution that international standards, guidelines and recommendations can make in this regard;

Desiring to further the use of harmonized sanitary and phytosanitary measures between Members, on the basis of international standards, guidelines and recommendations developed by the relevant international organizations, including the Codex Alimentarius Commission, the International Office of Epizootics, and the relevant international and regional organizations operating within the framework of the International Plant Protection Convention, without requiring Members to change their appropriate level of protection of human, animal or plant life or health;

Recognizing that developing country Members may encounter special difficulties in complying with the sanitary or phytosanitary measures of importing Members, and as a consequence in access to markets, and also in the formulation and application of sanitary or phytosanitary measures in their own territories, and desiring to assist them in their endeavours in this regard;

Desiring therefore to elaborate rules for the application of the provisions of GATT 1994 which relate to the use of sanitary or phytosanitary measures, in particular the provisions of Article XX(b) ;

Hereby agree as follows:

Article 1

General Provisions

1. This Agreement applies to all sanitary and phytosanitary measures which may, directly or indirectly, affect international trade. Such measures shall be developed and applied in accordance with the provisions of this Agreement.
2. For the purposes of this Agreement, the definitions provided in Annex A shall apply.
3. The annexes are an integral part of this Agreement.
4. Nothing in this Agreement shall affect the rights of Members under the Agreement on Technical Barriers to Trade with respect to measures not within the scope of this Agreement.

Article 2

Basic Rights and Obligations

1. Members have the right to take sanitary and phytosanitary measures necessary for the protection of human, animal or plant life or health, provided that such measures are not inconsistent with the provisions of this Agreement.
2. Members shall ensure that any sanitary or phytosanitary measure is applied only to the extent necessary to protect human, animal or plant life or health, is based on scientific principles and is not maintained without sufficient scientific evidence, except as provided for in paragraph 7 of Article 5.

3. Members shall ensure that their sanitary and phytosanitary measures do not arbitrarily or unjustifiably discriminate between Members where identical or similar conditions prevail, including between their own territory and that of other Members. Sanitary and phytosanitary measures shall not be applied in a manner which would constitute a disguised restriction on international trade.

4. Sanitary or phytosanitary measures which conform to the relevant provisions of this Agreement shall be presumed to be in accordance with the obligations of the Members under the provisions of GATT 1994 which relate to the use of sanitary or phytosanitary measures, in particular the provisions of Article XX(b).²

Article 3

Harmonization

1. To harmonize sanitary and phytosanitary measures on as wide a basis as possible, Members shall base their sanitary or phytosanitary measures on international standards, guidelines or recommendations, where they exist, except as otherwise provided for in this Agreement, and in particular in paragraph 3.

2. Sanitary or phytosanitary measures which conform to international standards, guidelines or recommendations shall be deemed to be necessary to protect human, animal or plant life or health, and presumed to be consistent with the relevant provisions of this Agreement and of GATT 1994.

3. Members may introduce or maintain sanitary or phytosanitary measures which result in a higher level of sanitary or phytosanitary protection than would be achieved by measures based on the relevant international standards, guidelines or recommendations, if there is a scientific justification, or as a consequence of the level of sanitary or phytosanitary protection a Member determines to be appropriate in accordance with the relevant provisions of paragraphs 1 through 8 of Article 5.³ Notwithstanding the above, all measures which result in a level of sanitary or phytosanitary protection different from that which would be achieved by measures based on international standards, guidelines or recommendations shall not be inconsistent with any other provision of this Agreement.

4. Members shall play a full part, within the limits of their resources, in the relevant international organizations and their subsidiary bodies, in particular the Codex Alimentarius Commission, the International Office of Epizootics, and the international and regional organizations operating within the framework of the International Plant Protection Convention, to promote within these organizations the development and periodic review of standards, guidelines and recommendations with respect to all aspects of sanitary and phytosanitary measures.

5. The Committee on Sanitary and Phytosanitary Measures provided for in paragraphs 1 and 4 of Article 12 (referred to in this Agreement as the "Committee") shall develop a procedure to monitor the process of international harmonization and coordinate efforts in this regard with the relevant international organizations.

Article 4

Equivalence

1. Members shall accept the sanitary or phytosanitary measures of other Members as equivalent, even if these measures differ from their own or from those used by other Members trading in the same product, if the exporting Member objectively demonstrates to the importing Member that its measures achieve the importing Member's appropriate level of sanitary or phytosanitary protection. For this purpose, reasonable access shall be given, upon request, to the importing Member for inspection, testing and other relevant procedures.

2. Members shall, upon request, enter into consultations with the aim of achieving bilateral and multilateral agreements on recognition of the equivalence of specified sanitary or phytosanitary measures.

² In this Agreement, reference to Article XX(b) includes also the chapeau of that Article.

³ For the purposes of paragraph 3 of Article 3, there is a scientific justification if, on the basis of an examination and evaluation of available scientific information in conformity with the relevant provisions of this Agreement, a Member determines that the relevant international standards, guidelines or recommendations are not sufficient to achieve its appropriate level of sanitary or phytosanitary protection.

Article 5

Assessment of Risk and Determination of the Appropriate Level of Sanitary or Phytosanitary Protection

1. Members shall ensure that their sanitary or phytosanitary measures are based on an assessment, as appropriate to the circumstances, of the risks to human, animal or plant life or health, taking into account risk assessment techniques developed by the relevant international organizations.
2. In the assessment of risks, Members shall take into account available scientific evidence; relevant processes and production methods; relevant inspection, sampling and testing methods; prevalence of specific diseases or pests; existence of pest- or disease-free areas; relevant ecological and environmental conditions; and quarantine or other treatment.
3. In assessing the risk to animal or plant life or health and determining the measure to be applied for achieving the appropriate level of sanitary or phytosanitary protection from such risk, Members shall take into account as relevant economic factors: the potential damage in terms of loss of production or sales in the event of the entry, establishment or spread of a pest or disease; the costs of control or eradication in the territory of the importing Member; and the relative cost-effectiveness of alternative approaches to limiting risks.
4. Members should, when determining the appropriate level of sanitary or phytosanitary protection, take into account the objective of minimizing negative trade effects.
5. With the objective of achieving consistency in the application of the concept of appropriate level of sanitary or phytosanitary protection against risks to human life or health, or to animal and plant life or health, each Member shall avoid arbitrary or unjustifiable distinctions in the levels it considers to be appropriate in different situations, if such distinctions result in discrimination or a disguised restriction on international trade. Members shall cooperate in the Committee, in accordance with paragraphs 1, 2 and 3 of Article 12, to develop guidelines to further the practical implementation of this provision. In developing the guidelines, the Committee shall take into account all relevant factors, including the exceptional character of human health risks to which people voluntarily expose themselves.
6. Without prejudice to paragraph 2 of Article 3, when establishing or maintaining sanitary or phytosanitary measures to achieve the appropriate level of sanitary or phytosanitary protection, Members shall ensure that such measures are not more trade-restrictive than required to achieve their appropriate level of sanitary or phytosanitary protection, taking into account technical and economic feasibility.
7. In cases where relevant scientific evidence is insufficient, a Member may provisionally adopt sanitary or phytosanitary measures on the basis of available pertinent information, including that from the relevant international organizations as well as from sanitary or phytosanitary measures applied by other Members. In such circumstances, Members shall seek to obtain the additional information necessary for a more objective assessment of risk and review the sanitary or phytosanitary measure accordingly within a reasonable period of time.
8. When a Member has reason to believe that a specific sanitary or phytosanitary measure introduced or maintained by another Member is constraining, or has the potential to constrain, its exports and the measure is not based on the relevant international standards, guidelines or recommendations, or such standards, guidelines or recommendations do not exist, an explanation of the reasons for such sanitary or phytosanitary measure may be requested and shall be provided by the Member maintaining the measure.

Article 6

Adaptation to Regional Conditions, Including Pest- or Disease-Free Areas and Areas of Low Pest or Disease Prevalence

1. Members shall ensure that their sanitary or phytosanitary measures are adapted to the sanitary or phytosanitary characteristics of the area - whether all of a country, part of a country, or all or parts of several countries - from which the product originated and to which the product is destined. In assessing the sanitary or

⁴ For purposes of paragraph 6 of Article 5, a measure is not more trade-restrictive than required unless there is another measure, reasonably available taking into account technical and economic feasibility, that achieves the appropriate level of sanitary or phytosanitary protection and is significantly less restrictive to trade.

phytosanitary characteristics of a region, Members shall take into account, inter alia, the level of prevalence of specific diseases or pests, the existence of eradication or control programmes, and appropriate criteria or guidelines which may be developed by the relevant international organizations.

2. Members shall, in particular, recognize the concepts of pest- or disease-free areas and areas of low pest or disease prevalence. Determination of such areas shall be based on factors such as geography, ecosystems, epidemiological surveillance, and the effectiveness of sanitary or phytosanitary controls.

3. Exporting Members claiming that areas within their territories are pest- or disease-free areas or areas of low pest or disease prevalence shall provide the necessary evidence thereof in order to objectively demonstrate to the importing Member that such areas are, and are likely to remain, pest- or disease-free areas or areas of low pest or disease prevalence, respectively. For this purpose, reasonable access shall be given, upon request, to the importing Member for inspection, testing and other relevant procedures.

Article 7

Transparency

Members shall notify changes in their sanitary or phytosanitary measures and shall provide information on their sanitary or phytosanitary measures in accordance with the provisions of Annex B.

Article 8

Control, Inspection and Approval Procedures

Members shall observe the provisions of Annex C in the operation of control, inspection and approval procedures, including national systems for approving the use of additives or for establishing tolerances for contaminants in foods, beverages or feedstuffs, and otherwise ensure that their procedures are not inconsistent with the provisions of this Agreement.

Article 9

Technical Assistance

1. Members agree to facilitate the provision of technical assistance to other Members, especially developing country Members, either bilaterally or through the appropriate international organizations. Such assistance may be, inter alia, in the areas of processing technologies, research and infrastructure, including in the establishment of national regulatory bodies, and may take the form of advice, credits, donations and grants, including for the purpose of seeking technical expertise, training and equipment to allow such countries to adjust to, and comply with, sanitary or phytosanitary measures necessary to achieve the appropriate level of sanitary or phytosanitary protection in their export markets.

2. Where substantial investments are required in order for an exporting developing country Member to fulfil the sanitary or phytosanitary requirements of an importing Member, the latter shall consider providing such technical assistance as will permit the developing country Member to maintain and expand its market access opportunities for the product involved.

Article 10

Special and Differential Treatment

1. In the preparation and application of sanitary or phytosanitary measures, Members shall take account of the special needs of developing country Members, and in particular of the least-developed country Members.

2. Where the appropriate level of sanitary or phytosanitary protection allows scope for the phased introduction of new sanitary or phytosanitary measures, longer time-frames for compliance should be accorded on products of interest to developing country Members so as to maintain opportunities for their exports.

3. With a view to ensuring that developing country Members are able to comply with the provisions of this Agreement, the Committee is enabled to grant to such countries, upon request, specified, time-limited exceptions in whole or in part from obligations under this Agreement, taking into account their financial, trade and development needs.

4. Members should encourage and facilitate the active participation of developing country Members in the relevant international organizations.

Article 11

Consultations and Dispute Settlement

1. The provisions of Articles XXII and XXIII of GATT 1994 as elaborated and applied by the Dispute Settlement Understanding shall apply to consultations and the settlement of disputes under this Agreement, except as otherwise specifically provided herein.

2. In a dispute under this Agreement involving scientific or technical issues, a panel should seek advice from experts chosen by the panel in consultation with the parties to the dispute. To this end, the panel may, when it deems it appropriate, establish an advisory technical experts group, or consult the relevant international organizations, at the request of either party to the dispute or on its own initiative.

3. Nothing in this Agreement shall impair the rights of Members under other international agreements, including the right to resort to the good offices or dispute settlement mechanisms of other international organizations or established under any international agreement.

Article 12

Administration

1. A Committee on Sanitary and Phytosanitary Measures is hereby established to provide a regular forum for consultations. It shall carry out the functions necessary to implement the provisions of this Agreement and the furtherance of its objectives, in particular with respect to harmonization. The Committee shall reach its decisions by consensus.

2. The Committee shall encourage and facilitate ad hoc consultations or negotiations among Members on specific sanitary or phytosanitary issues. The Committee shall encourage the use of international standards, guidelines or recommendations by all Members and, in this regard, shall sponsor technical consultation and study with the objective of increasing coordination and integration between international and national systems and approaches for approving the use of food additives or for establishing tolerances for contaminants in foods, beverages or feedstuffs.

3. The Committee shall maintain close contact with the relevant international organizations in the field of sanitary and phytosanitary protection, especially with the Codex Alimentarius Commission, the International Office of Epizootics, and the Secretariat of the International Plant Protection Convention, with the objective of securing the best available scientific and technical advice for the administration of this Agreement and in order to ensure that unnecessary duplication of effort is avoided.

4. The Committee shall develop a procedure to monitor the process of international harmonization and the use of international standards, guidelines or recommendations. For this purpose, the Committee should, in conjunction with the relevant international organizations, establish a list of international standards, guidelines or recommendations relating to sanitary or phytosanitary measures which the Committee determines to have a major trade impact. The list should include an indication by Members of those international standards, guidelines or recommendations which they apply as conditions for import or on the basis of which imported products conforming to these standards can enjoy access to their markets. For those cases in which a Member does not apply an international standard, guideline or recommendation as a condition for import, the Member should provide an indication of the reason therefor, and, in particular, whether it considers that the standard is not stringent enough to provide the appropriate level of sanitary or phytosanitary protection. If a Member revises its position, following its indication of the use of a standard, guideline or recommendation as a condition for import, it should provide an explanation for its change and so inform the Secretariat as well as the relevant international organizations, unless such notification and explanation is given according to the procedures of Annex B.

5. In order to avoid unnecessary duplication, the Committee may decide, as appropriate, to use the information generated by the procedures, particularly for notification, which are in operation in the relevant international organizations.

6. The Committee may, on the basis of an initiative from one of the Members, through appropriate channels invite the relevant international organizations or their subsidiary bodies to examine specific matters with respect to a particular standard, guideline or recommendation, including the basis of explanations for non-use given according to paragraph 4.

7. The Committee shall review the operation and implementation of this Agreement three years after the date of entry into force of the WTO Agreement, and thereafter as the need arises. Where appropriate, the Committee may submit to the Council for Trade in Goods proposals to amend the text of this Agreement having regard, inter alia, to the experience gained in its implementation.

Article 13

Implementation

Members are fully responsible under this Agreement for the observance of all obligations set forth herein. Members shall formulate and implement positive measures and mechanisms in support of the observance of the provisions of this Agreement by other than central government bodies. Members shall take such reasonable measures as may be available to them to ensure that non-governmental entities within their territories, as well as regional bodies in which relevant entities within their territories are members, comply with the relevant provisions of this Agreement. In addition, Members shall not take measures which have the effect of, directly or indirectly, requiring or encouraging such regional or non-governmental entities, or local governmental bodies, to act in a manner inconsistent with the provisions of this Agreement. Members shall ensure that they rely on the services of non-governmental entities for implementing sanitary or phytosanitary measures only if these entities comply with the provisions of this Agreement.

Article 14

Final Provisions

The least-developed country Members may delay application of the provisions of this Agreement for a period of five years following the date of entry into force of the WTO Agreement with respect to their sanitary or phytosanitary measures affecting importation or imported products. Other developing country Members may delay application of the provisions of this Agreement, other than paragraph 8 of Article 5 and Article 7, for two years following the date of entry into force of the WTO Agreement with respect to their existing sanitary or phytosanitary measures affecting importation or imported products, where such application is prevented by a lack of technical expertise, technical infrastructure or resources.

ANNEX A

DEFINITIONS

1. Sanitary or phytosanitary measure - Any measure applied:
 - (a) to protect animal or plant life or health within the territory of the Member from risks arising from the entry, establishment or spread of pests, diseases, disease-carrying organisms or disease-causing organisms;
 - (b) to protect human or animal life or health within the territory of the Member from risks arising from additives, contaminants, toxins or disease-causing organisms in foods, beverages or feedstuffs;
 - (c) to protect human life or health within the territory of the Member from risks arising from diseases carried by animals, plants or products thereof, or from the entry, establishment or spread of pests; or
 - (d) to prevent or limit other damage within the territory of the Member from the entry, establishment or spread of pests.

Sanitary or phytosanitary measures include all relevant laws, decrees, regulations, requirements and procedures including, inter alia, end product criteria; processes and production methods; testing, inspection, certification and approval procedures; quarantine treatments including relevant requirements associated with the transport of animals or plants, or with the materials necessary for their survival during transport; provisions on relevant statistical methods, sampling procedures and methods of risk assessment; and packaging and labelling requirements directly related to food safety.

2. Harmonization - The establishment, recognition and application of common sanitary and phytosanitary measures by different Members.

3. International standards, guidelines and recommendations

- (a) for food safety, the standards, guidelines and recommendations established by the Codex Alimentarius Commission relating to food additives, veterinary drug and pesticide residues, contaminants, methods of analysis and sampling, and codes and guidelines of hygienic practice;
- (b) for animal health and zoonoses, the standards, guidelines and recommendations developed under the auspices of the International Office of Epizootics;
- (c) for plant health, the international standards, guidelines and recommendations developed under the auspices of the Secretariat of the International Plant Protection Convention in cooperation with regional organizations operating within the framework of the International Plant Protection Convention; and
- (d) for matters not covered by the above organizations, appropriate standards, guidelines and recommendations promulgated by other relevant international organizations open for membership to all Members, as identified by the Committee.

4. Risk assessment - The evaluation of the likelihood of entry, establishment or spread of a pest or disease within the territory of an importing Member according to the sanitary or phytosanitary measures which might be applied, and of the associated potential biological and economic consequences; or the evaluation of the potential for adverse effects on human or animal health arising from the presence of additives, contaminants, toxins or disease-causing organisms in food, beverages or feedstuffs.

5. Appropriate level of sanitary or phytosanitary protection - The level of protection deemed appropriate by the Member establishing a sanitary or phytosanitary measure to protect human, animal or plant life or health within its territory.

NOTE: Many Members otherwise refer to this concept as the "acceptable level of risk".

⁵ For the purpose of these definitions, "animal" includes fish and wild fauna; "plant" includes forests and wild flora; "pests" include weeds; and "contaminants" include pesticide and veterinary drug residues and extraneous matter.

6. Pest- or disease-free area - An area, whether all of a country, part of a country, or all or parts of several countries, as identified by the competent authorities, in which a specific pest or disease does not occur.

NOTE: A pest- or disease-free area may surround, be surrounded by, or be adjacent to an area - whether within part of a country or in a geographic region which includes parts of or all of several countries -in which a specific pest or disease is known to occur but is subject to regional control measures such as the establishment of protection, surveillance and buffer zones which will confine or eradicate the pest or disease in question.

7. Area of low pest or disease prevalence - An area, whether all of a country, part of a country, or all or parts of several countries, as identified by the competent authorities, in which a specific pest or disease occurs at low levels and which is subject to effective surveillance, control or eradication measures.

ANNEX B

TRANSPARENCY OF SANITARY AND PHYTOSANITARY REGULATIONS

Publication of regulations

1. Members shall ensure that all sanitary and phytosanitary regulations⁶ which have been adopted are published promptly in such a manner as to enable interested Members to become acquainted with them.
2. Except in urgent circumstances, Members shall allow a reasonable interval between the publication of a sanitary or phytosanitary regulation and its entry into force in order to allow time for producers in exporting Members, and particularly in developing country Members, to adapt their products and methods of production to the requirements of the importing Member.

Enquiry points

3. Each Member shall ensure that one enquiry point exists which is responsible for the provision of answers to all reasonable questions from interested Members as well as for the provision of relevant documents regarding:
 - (a) any sanitary or phytosanitary regulations adopted or proposed within its territory;
 - (b) any control and inspection procedures, production and quarantine treatment, pesticide tolerance and food additive approval procedures, which are operated within its territory;
 - (c) risk assessment procedures, factors taken into consideration, as well as the determination of the appropriate level of sanitary or phytosanitary protection;
 - (d) the membership and participation of the Member, or of relevant bodies within its territory, in international and regional sanitary and phytosanitary organizations and systems, as well as in bilateral and multilateral agreements and arrangements within the scope of this Agreement, and the texts of such agreements and arrangements.
4. Members shall ensure that where copies of documents are requested by interested Members, they are supplied at the same price (if any), apart from the cost of delivery, as to the nationals⁷ of the Member concerned.

Notification procedures

5. Whenever an international standard, guideline or recommendation does not exist or the content of a proposed sanitary or phytosanitary regulation is not substantially the same as the content of an international standard, guideline or recommendation, and if the regulation may have a significant effect on trade of other Members, Members shall:
 - (a) publish a notice at an early stage in such a manner as to enable interested Members to become acquainted with the proposal to introduce a particular regulation;
 - (b) notify other Members, through the Secretariat, of the products to be covered by the regulation together with a brief indication of the objective and rationale of the proposed regulation. Such notifications shall take place at an early stage, when amendments can still be introduced and comments taken into account;
 - (c) provide upon request to other Members copies of the proposed regulation and, whenever possible, identify the parts which in substance deviate from international standards, guidelines or recommendations;
 - (d) without discrimination, allow reasonable time for other Members to make comments in writing, discuss these comments upon request, and take the comments and the results of the discussions into account.

⁶ Sanitary and phytosanitary measures such as laws, decrees or ordinances which are applicable generally.

⁷ When "nationals" are referred to in this Agreement, the term shall be deemed, in the case of a separate customs territory Member of the WTO, to mean persons, natural or legal, who are domiciled or who have a real and effective industrial or commercial establishment in that customs territory.

6. However, where urgent problems of health protection arise or threaten to arise for a Member, that Member may omit such of the steps enumerated in paragraph 5 of this Annex as it finds necessary, provided that the Member:

- (a) immediately notifies other Members, through the Secretariat, of the particular regulation and the products covered, with a brief indication of the objective and the rationale of the regulation, including the nature of the urgent problem(s);
- (b) provides, upon request, copies of the regulation to other Members;
- (c) allows other Members to make comments in writing, discusses these comments upon request, and takes the comments and the results of the discussions into account.

7. Notifications to the Secretariat shall be in English, French or Spanish.

8. Developed country Members shall, if requested by other Members, provide copies of the documents or, in case of voluminous documents, summaries of the documents covered by a specific notification in English, French or Spanish.

9. The Secretariat shall promptly circulate copies of the notification to all Members and interested international organizations and draw the attention of developing country Members to any notifications relating to products of particular interest to them.

10. Members shall designate a single central government authority as responsible for the implementation, on the national level, of the provisions concerning notification procedures according to paragraphs 5, 6, 7 and 8 of this Annex.

General reservations

11. Nothing in this Agreement shall be construed as requiring:

- (a) the provision of particulars or copies of drafts or the publication of texts other than in the language of the Member except as stated in paragraph 8 of this Annex; or
- (b) Members to disclose confidential information which would impede enforcement of sanitary or phytosanitary legislation or which would prejudice the legitimate commercial interests of particular enterprises.

ANNEX C

CONTROL, INSPECTION AND APPROVAL PROCEDURES

1. Members shall ensure, with respect to any procedure to check and ensure the fulfilment of sanitary or phytosanitary measures, that:

(a) such procedures are undertaken and completed without undue delay and in no less favourable manner for imported products than for like domestic products;

(b) the standard processing period of each procedure is published or that the anticipated processing period is communicated to the applicant upon request; when receiving an application, the competent body promptly examines the completeness of the documentation and informs the applicant in a precise and complete manner of all deficiencies; the competent body transmits as soon as possible the results of the procedure in a precise and complete manner to the applicant so that corrective action may be taken if necessary; even when the application has deficiencies, the competent body proceeds as far as practicable with the procedure if the applicant so requests; and that upon request, the applicant is informed of the stage of the procedure, with any delay being explained;

(c) information requirements are limited to what is necessary for appropriate control, inspection and approval procedures, including for approval of the use of additives or for the establishment of tolerances for contaminants in food, beverages or feedstuffs;

(d) the confidentiality of information about imported products arising from or supplied in connection with control, inspection and approval is respected in a way no less favourable than for domestic products and in such a manner that legitimate commercial interests are protected;

(e) any requirements for control, inspection and approval of individual specimens of a product are limited to what is reasonable and necessary;

(f) any fees imposed for the procedures on imported products are equitable in relation to any fees charged on like domestic products or products originating in any other Member and should be no higher than the actual cost of the service;

(g) the same criteria should be used in the siting of facilities used in the procedures and the selection of samples of imported products as for domestic products so as to minimize the inconvenience to applicants, importers, exporters or their agents;

(h) whenever specifications of a product are changed subsequent to its control and inspection in light of the applicable regulations, the procedure for the modified product is limited to what is necessary to determine whether adequate confidence exists that the product still meets the regulations concerned; and

(i) a procedure exists to review complaints concerning the operation of such procedures and to take corrective action when a complaint is justified.

Where an importing Member operates a system for the approval of the use of food additives or for the establishment of tolerances for contaminants in food, beverages or feedstuffs which prohibits or restricts access to its domestic markets for products based on the absence of an approval, the importing Member shall consider the use of a relevant international standard as the basis for access until a final determination is made.

2. Where a sanitary or phytosanitary measure specifies control at the level of production, the Member in whose territory the production takes place shall provide the necessary assistance to facilitate such control and the work of the controlling authorities.

3. Nothing in this Agreement shall prevent Members from carrying out reasonable inspection within their own territories.

⁸ Control, inspection and approval procedures include, *inter alia*, procedures for sampling, testing and certification.



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