منظمة الأغذية والزراعة للأمم المتحدة | 联合国粮食及农业组织 | Food and Agriculture Organization of the United Nations | Organisation des Nations Unies pour l'alimentation et l'agriculture | Organización de las Naciones Unidas para la Agricultura y la Alimentación

COORDINATING WORKING PARTY ON FISHERY STATISTICS

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Final draft of CWP Handbook of Fishery Statistical Standards, Aquaculture Component

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1. Progress of drafting Aquaculture Handbook

The need of global standard and guidance for aquaculture data collection and statistics has been continuously recognized as the high priority, including through the Strategy and Outline Plan for Improving Information on Status and Trends of Aquaculture (Strategy-STA), and a series of discussion at the FAO Committee on Fisheries (COFI) Sub-Committee on Aquaculture.

Correspondingly, the initial draft of Agriculture component of CWP Handbook on Fishery Statistics was developed by the Expert Workshop held in Halong City, Viet Nam, November 2009 that was participated with the five CWP member organizations (FAO, NACA, SEAFDEC, SPC and EuroStat) and additional 11 invited experts. The Workshop succeeded to finalize the draft except few points. Since unresolved issues were all related difference in views among experts from FAO, FAO was tasked to finalize those issues for final review of the Workshop participants.

The Aquaculture Specialized Group (CWP-AS) of CWP took over the task to finalize the draft, after its establishment at CWP 23rd session held in Hobart, Australia, 22-26 February 2010. The first CWP-AS meeting held in Phuket, Thailand, on October 2010, recognized no visible progress in resolving remaining issues and re-established work plan to finalize for adoption at the 2nd CWP-AS planned to be held in March 2012 in conjunction with COFI/SCA.

The zero draft was distributed in March 2012 to all member organizations and other CWP-AS experts for their review and feedback. The 2nd CWP-AS meeting that was postponed and held in

Rome, Italy, on July 2012, reviewed the zero draft and concluded further modifications and clarifications needed before sending it out to countries for their review and feedbacks. Then, the 2nd CWP-AS meeting agreed the time schedule with commitments of providing comments and feedbacks promptly.

Again there has been a delay for member organizations and experts in providing their feedbacks and comments. Also, many of inputs unfortunately did not provide specific alternative text and solutions. The Secretariat took a liberty of integrating the comments and feedbacks received and restructuring to simplify and improve a flow and distributed the second version of zero draft on October 2012. After that, SPC and Eurostat provided substantial comments, which were also incorporated as much as possible.

The third version of the zero draft was attached in the Appendix 1 of this document for the discussion at the 3rd CWP-AS meeting, to be held just prior to the CWP 24th session, in Rome during 5-8 February 2013. In order to facilitate the CWP-AS to finalize the draft within a limited time, this document also summarizes key remaining issues.

2. Remaining Issues to be resolved for Aquaculture Handbook

The rest of this document lists the remaining substantial issues to be resolved before finalizing the CWP Aquaculture Handbook. Each point contains extraction of the draft text in shade, points of discrepancies in views, and actions required by the meeting.

Definition of "Aquaculture" (1-1):

Here, the key important points are

1. Aquaculture include production of all aquatic organisms, regardless its taxonomic classifications (e.g. fish, molluscs, crustaceans, other invertebrate, reptiles, amphibians, mammals and algae who inhabited in or at water bodies) as well as regardless its final utilization (e.g. food, non-food such as pharmaceuticals and nutrition supplements, ornamental, seed, feeds, other industrial uses)
2. Definition of "aquaculture" includes two main criteria, i.e. i) intervention in the rearing process and ii) ownership of cultivated organisms.

[Points of discrepancies]

SPC considers this definition as confusing and proposed to define it for statistic purposes only as a completely arbitrary definition. The suggested new definition as follows:

*"The term "**aquaculture**" can be defined in terms of three vital elements needed to operate - (i) a right to harvest fish, (ii) a right to occupy space, and (iii) permission for any environmental impacts. Even so, marine property rights may be weak or completely unavailable. Some forms of aquaculture do not require anything in the way of property rights. Some forms of aquaculture are not even for profit, and fish are not "owned".*

*One good definition could be "**aquaculture is the right to establish a more exclusive type of fishery with fewer restrictions on catch**."*

The current definition and key characteristics were agreed at the Expert Workshop in Ha-long City in 2009 after quite substantive discussion. Introduction of new definition only applicable for aquaculture statistics purpose may cause additional confusion.

Several Members expressed the need of further explanation on the reasons why these two factors are the key in defining "aquaculture".

[Actions needed by the Aquaculture Group]

- To finalize the definition of "aquaculture", including a decision whether the definition that was agreed at the Expert Workshop in Ha-long City in 2009 need be revised.

- To develop additional text to enhance the explanation of key factors to define "aquaculture", if the Group considers it necessary.

Definition of "Culture-based fisheries" (1-4):

Culture-based fisheries are activities aimed at supplementing or sustaining the recruitment of one or more aquatic species and raising the total production or the production of selected elements of a fishery beyond a level which is sustainable through natural processes. In this sense culture-based fisheries include enhancement measures which may take the form of introduction of new species, stocking in natural and artificial water bodies including rice fields, fertilization, environmental engineering including habitat improvements and modification of water bodies, altering species composition including elimination of undesirable species, or constituting an artificial fauna of selected species, and genetic modification of introduced species. It should be noted that those activities do not necessarily result in an increase of production of targeted segment.

[Points of discrepancies]

Current definition includes improvements and enhancements of biological and physical ambience into "culture-based fishery". Some members consider that "culture-based fishery" should restrict to apply only the cases where cultured seeds are used for enhancements.

This point should be also coordinated with Capture Fishery Group.

[Actions needed by the Aquaculture Group]

- To finalize the definition of "culture-based fishery" as the Group and to present at the CWP main session for consultation in broad context.

Table 1-1 (1-4):

PRODUCTION FROM	DESIGNATION	
	Aquaculture	Capture
Hatcheries	*	
Ponds	*	
Tanks	*	
Raceways	*	

Cages	*	
Pens	*	
Integrated culture production	*	
Private ponds	*	
Stocked lakes, reservoirs, barrages and rivers		
- with other enhancement (predator control and/or fertilization		*
- modification with “exploitation rights”		*
- no other intervention without “exploitation rights”		*
- quantities of released seeds	*	
Lakes, reservoirs and rivers without stocking		
- with enhancement (fertilization and/or predator control, habitat modification), with “exploitation rights”		*
Rice-fish culture	*	
Finfish and other animals harvested from brush parks:		
- managed over time and with other enhancement rights		*
- harvested on an install and harvest basis		*
Finfish and other animals harvested from fish aggregating devices and/or artificial reefs		*
Finfish and other animals harvested from aquaculture using wild captured seeds, including post larvae capture and culture (PCC):		
- quantities of wild seeds captured		*
- the remaining quantity of harvest	*	
Molluscs:		
- from managed grow-out site (e.g. poles, ropes, net bags)	*	
- from areas not managed but sown with cultured seeds	?	?
- subject to harvest with “exploitation rights”		*
- subject to open fisheries		*
Aquatic plants:		
- harvest of planted and suspended aquatic plants	*	
- from enhanced areas (implanting, predator control, and/or habitat modifications	?	?
- harvest of natural aquatic plants		*
Aquatic organisms caught in open waters		*

[Points of discrepancies]

There were several questions raised whether assigned designations are correct, especially related with production from stocked lakes, reservoirs, barrages and rivers. The Table was modified by the Secretariat, taking into accounts inputs provided from the members. However, this still needs further review whether examples are adequate and correctly reflect the principles defined by the Handbook.

This point should be also coordinated with Capture Fishery Group.

[Actions needed by the Aquaculture Group]

- To review and finalize the table as the Group, with special attention on adequateness and appropriateness of examples and to present at the CWP main session for consultation in broad context.

Classification of Farming Systems (2-3):

Ponds

Ponds are natural and/or artificial structures, on land, that are capable of retaining water for rearing of stock. Ponds often consist of some form of banks or dykes. Under this category ditches, flood plain depressions, derelict mining pools and similar structures are included. Pond culture is usually carried out in stagnant waters with periodic water exchange or water flushing is done through the pond inlets and outlets.

The measurement unit should refer to number of ponds, water surface area and water volume.

Tanks

Tanks are artificial units of structure capable of holding and interchanging water which are generally built above ground level and can be made of various materials (e.g. bricks, cement, concrete, fibreglass, plastics, wood, asbestos, metal, etc.), in various shapes and sizes. They are used in hatchery, nursery and grow-out operations.

The measurement unit should refer to surface area and water volume, and water turnover rate is important parameter to collect.

Pens

Pens refer to areas of a water body (e.g. in shallow lagoons, but also inland e.g. in lakes, reservoirs) that is fenced using structures (nets, wooden bamboo) fixed to the bottom permitting free water exchange. A pen generally encloses a large volume of water.

The measurement should refer to surface areas and information on setting environments (whether in flowing water, still water, or marine water) may be important.

Cages

Cages refer to open or covered enclosed structured with net, mesh or any porous material which allows natural water interchange. These structures may be floating, suspended, or fixed to the substrate but still permitting free water interchange. Cages are either supported by frameworks made of metal, plastic, bamboo or wood, or are suspended by stakes at its four concerns in open water bodies or in ponds. Cages use both for seed and grow-out production.

The measurement unit should refer to surface area and volume, and information on setting environments (whether in flowing water, still water, or marine water) may be important.

Raceways

Raceways are long and narrow rectangular tanks usually constructed with bricks and concrete and artificial material above ground, that permits a rapid flow of water. To water turnover rate is generally in excess of 20 changes per day.

The measurement unit should refer to surface area and water turnover rate is important parameter to collect.

Enclosures

Enclosures refer to natural water areas (e.g. natural bay), where the shoreline forms all but one side, confined by a net mesh and other barriers allowing free water interchange and distinguished by the fact that enclosures occupy the full water column between substrate and surface.

The measurement unit should refer to surface areas and information on setting environments (whether in flowing water, still water, or marine water) may be important.

Lakes, Reservoirs, Dams

Lakes, reservoirs and flood plains where stocking of aquatic animals are conducted on the regular basis, the stocked animals are confined in the stocked water bodies with management interventions; the products are harvested exclusively within the people with entitled ownership of the stocked material. Stocked material should compose the significant proportion of the total fish production from the water body.

The measurement unit is the water surface area.

Flood plains

Barrages

Barrages are semi-permanent or seasonal enclosures formed by impervious man-made barriers and appropriate natural features.

The measurement unit should refer to surface areas and information on setting environments (whether in flowing water, still water, or marine water) may be important.

Irrigation systems (channels and ditches)

Irrigation channels and ditches refers to water bodies that are used for fish aquaculture but their primary function was for converting water for irrigation purpose such as channels and ditches excavated or constructed with concrete in the ground.

The measurement unit should refer to surface area.

Rice-fish paddies

Rice-fish paddies refer to paddy fields used for culture of fish and other aquatic animals, including both concurrent culture of aquatic animals with rice plantation and seasonal rotation of fish and rice crop farming in the same paddy field.

The measurement unit should refer to surface area.

Suspended/hanging systems

Suspended/hanging systems are floating structures as rafts built of wood, bamboo and long lines with seaweed nets or hanging lantern nets, growth ropes, pearl nets, net bags or trays, normally equipped with floats and safely anchored in a sheltered coastal area. This system may be used for the suspended culture of seaweed, molluscs and other animals such as sea cucumbers.

The measurement unit should refer to the number of farming structures, surface areas and length of lines or ropes.

Off-bottom systems

Off-bottom systems are structures like trestles and long lines installed on stakes impaled in the seabed or inter-tidal zone. Culture nets, lantern nets, growth ropes, pearl nets, net bags or trays are usually used in these structures to farm seaweed and molluscs.

The measurement unit should refer to the number of farming structures, surface areas and the length of lines or ropes.

On-bottom systems

On-bottom systems refer to the farming of molluscs such as clams and oysters, and sea weeds, and holothurians directly seeded on muddy or sandy areas in the inter-tidal zone or on the seabed.

The measurement unit should refer to farming surface area.

Suspended/hanging systems

Suspended/hanging systems are floating structures as rafts built of wood, bamboo and long lines with seaweed nets or hanging lantern nets, growth ropes, pearl nets, net bags or trays, normally equipped with floats and safely anchored in a sheltered coastal area. This system may be used for the suspended culture of seaweed, molluscs and other animals such as sea cucumbers.

The measurement unit should refer to the number of farming structures, surface areas and length of lines or ropes.

Off-bottom systems

Off-bottom systems are structures like trestles and long lines installed on stakes impaled in the seabed or inter-tidal zone. Culture nets, lantern nets, growth ropes, pearl nets, net bags or trays are usually used in these structures to farm seaweed and molluscs.

The measurement unit should refer to the number of farming structures, surface areas and the length of lines or ropes.

[Points of discrepancies]

Currently 14 categories were defined as farming systems and minimum data reporting in Section 6 requests for countries to collect and report statistics in separation by farming systems. To make the minimum data reporting in Section 6 more feasible and realistic, it is essential to further aggregate categories, at most up to five with less ambiguity between classifications, for statistical purpose.

As a standard measurement of facility, the Eurostat strongly insists to utilize volume in addition to area, whereas the area was accepted after long discussion among the Group.

Some pointed that there are the definitions of culture production units and that the system could also be defined based on the nature of water quality management and aeration (e.g. a recirculation system; pens in closed waters or open waters; ponds with no water exchange, seasonally flooded, or pumped daily etc).

Some pointed out that "Raceway" is a special form of "Tanks". Question was raised that "Suspended/hanging systems" is a part of "Off-bottom systems" and should be combined together.

There is no text for "Flood plains".

[Actions needed by the Aquaculture Group]

- To review and finalize the list of Farming Systems, taking into account the points identified above.

- To establish the aggregated classifications of farming systems for statistical purpose.

Other key factors affecting aquaculture production systems (5):

[Points of discrepancies]

Many members offered additional key factors to be included, including aeration, land, waste water treatments, other chemicals such as such as limes, antiseptics, pro and prebiotics, antiparasitic products. On the other hand, it was pointed out that none of data in this section was included minimum data reporting in the Section 6. This section was developed in an attempt to cover a broad prospect of data needs, while it has does not provide fundermental principles and guidance for setting globally comparable aquaculture statistics.

The Secretariat seeks the opinion of Aquaculture Group whether this version of Handbook should include this section. It should be noted that the Handbook would require continuous review and update after the first release. Including further enhancement of the Section into the next round of intersessional work plan could be another option.

[Actions needed by the Aquaculture Group]

- To decide whether this section to be included in the Aquaculture Handbook at this moment.

Minimum reporting requirement for national statistics on aquaculture (6):

Category	Reference	Criteria	Unit
Aquaculture outputs	3-1-1	Food products	Quantity in live weight equivalent, and farm-gate value stratified by species, environment, farming system, and destination
	3-1-2	Non-food products	Quantity of products either in number or product weight, and farm-gate value, stratified by commodity, species, environment, farming system, and destination
	3-1-3	Seed products	Quantity in number and farm-gate value stratified by species, environment, farming system, and destination
	3-1-3	Broodstock	Quantity in number and biomass, farm-gate

			value stratified by species, environment, farming system, and destination
Aquaculture inputs	3-2	Seed	Quantity in number and value of seeds, stratified by species, numbers and origins.
Employment	4-1		Number of employment engaged in aquaculture sector, by genders and classifications whether full-time, part-time, or occasional
Structure of framing operation	4-2		Number of production units registered and/or licensed, number of hatcheries and number of grow-out facilities, and if possible, number of households involved, stratified by type of facilities and water environments.

[Points of discrepancies]

The Secretariat would like to ask the Aquaculture Group to make the final review whether the requirement is feasible and adequate to monitor at least for essential component of aquaculture sector. The list of items that were agreed as statistics to collect in the Pacific Island countries at the time of Regional Workshop held in October 2012 is attached in appendix ** for your information.

[Actions needed by the Aquaculture Group]

- To review and confirm that the list covers minimum essential items as national aquaculture statistics.

Appendix 2. Minimum data agreed to collect at the Regional Meeting on Aquatic Animal Health, Species Introductions and Aquaculture Statistics Collection and Dissemination, held in Fiji, October, 2012

Hatchery/ Seeds
Number of seeds produced for farming by species
Number of seeds used for stocking by species
Number of seeds exported by species
Number of seeds imported/ translocated by species
Number of wild-caught seeds used for aquaculture by species
Grow-out
Quantity of food production by species, environment and types of facilities
Quantity of ornamental production by species, environment and types of facilities
Grow-out for re-stocking
Conversion between different measuring units
Stocking density; number of organisms farmed under unit of surface area/ volume
Broodstock
Quantity of brood stock kept at farms by species, environment and types of facilities
Animal health
Diseases detected by species, environments and types of facilities
Number of organisms lost by disease by species, environment and disease
Chemical/ drugs imported by commodities
Chemical/ drugs used at farms by commodities
Economic
Farm-gate unit price by species
Quantity and value of import of fish and fishery products by commodities and counter-countries
Quantity and value of export of fish and fishery products by commodities and counter-countries
Consumer market price by commodities (incl. Species), live/dead
Quantity traded at local market by commodities (incl. Species)
Quantity exchanged among local community
Quantity lost by natural hazards
Economic damage in facilities caused by natural hazards
Private investments to aquaculture
Subsidy/ governmental support to aquaculture
Contribution
Number of farms by type of facilities
Number of hatcheries

Number of households engaged in aquaculture
Number of people engaged in aquaculture by gender
Annual consumption of fish in country separated by farmed/ wild and marine/ freshwater or main species groups
Annual consumption of farmed fish in country