Food and Agriculture Organization of the United Nations

CWP

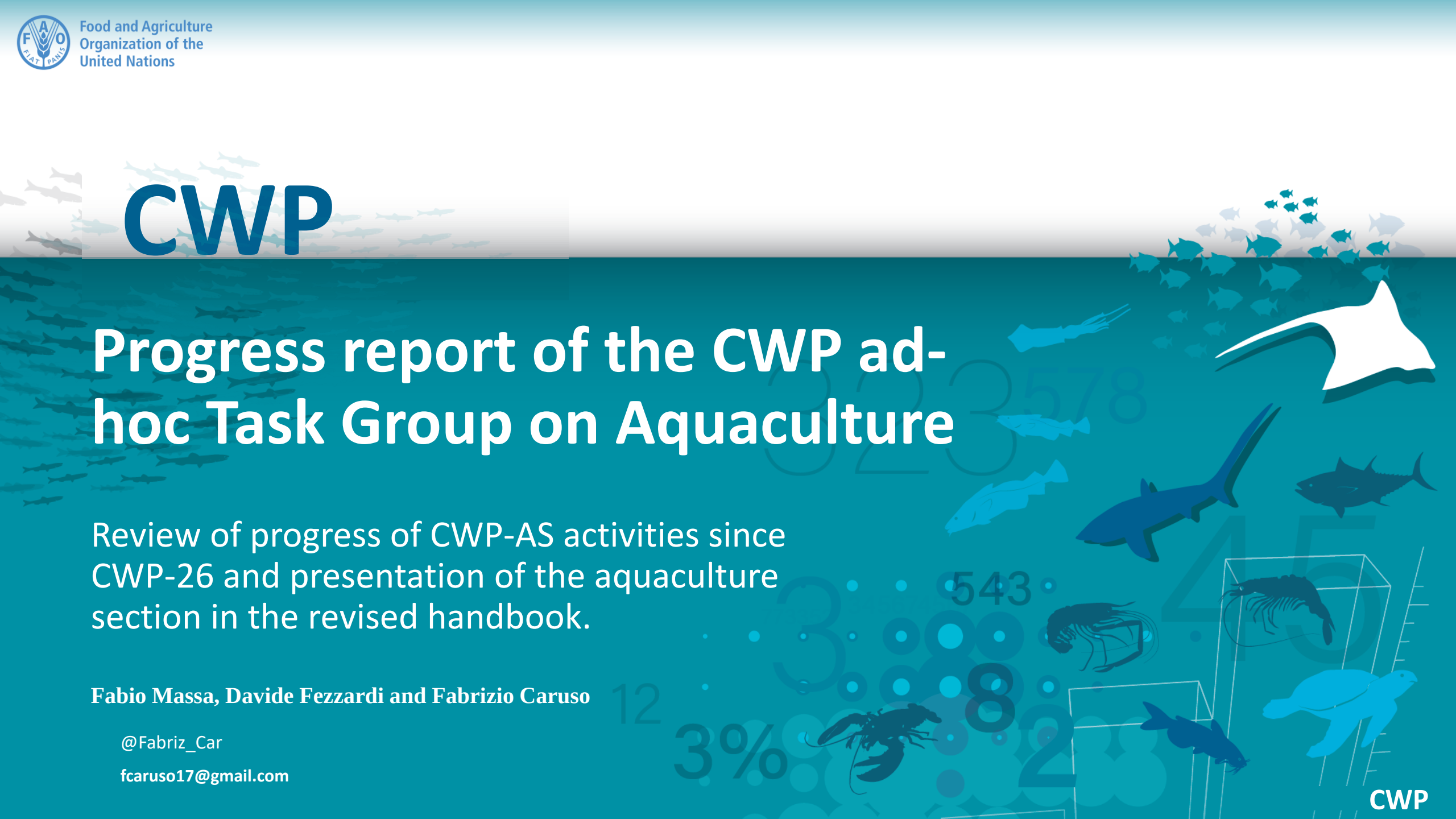
Progress report of the CWP ad-hoc Task Group on Aquaculture

Review of progress of CWP-AS activities since CWP-26 and presentation of the aquaculture section in the revised handbook.

Fabio Massa, Davide Fezzardi and Fabrizio Caruso

@Fabriz_Car

fcaruso17@gmail.com



CWP

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Presentation of the aquaculture section in the revised handbook

Major Activities Undertaken:

Structure of 2013 version

PREFACE

1. Definition and characteristics of aquaculture

2. Aquaculture living resources and their attributes

3. Addition and reduction of aquaculture fish resources

4. Socio-economic aspects of aquaculture

5. Other key factors affecting aquaculture production systems

6. Minimum reporting requirements for national statistics on aquaculture

7. Data collection and planning and implementing surveys

8. Common concepts and codes to be used

9. Bibliography

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

Reasons for revision of 2013 version:

- Too **general and focused on broad concepts** in aquaculture, it seems more a manual on aquaculture than a handbook on statistics
- Too **redundant,** same concepts spread along the whole document
- Information are **not always focused in the appropriate section**
- **Not practical** in statistical issues, lacks in **examples** and specific **recommendations**
- Lacking in **definitions** and guidance for statisticians
- Structure is **unclear** and **readability is low**
- Doesn't always apply to a **worldwide context**
- Needs **updated hyperlinks** and **references**

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

Objectives:

- Updated content

- Worldwide application

- Improved readibility

- Relevant hyperlinks and references

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

To improve readibility, in main paragraphs **«for statistical purposes» blue boxes**, highlighting specific guidance suggestions were added, some examples:

For statistical purposes the desired compilation level should consist in separate tables for each cultivated species for each individual farm and production system, thus allowing for full flexibility and utility at data analysis level. At the time of compilation into national and sub-national statistics, it may be necessary to convert estimates of the biomass into number and vice versa. It is strongly encouraged to collect conversion factors for this purpose.

For statistical purposes, the aquaculture production is attributed to the nations within whose territories including Exclusive Economic Zones where the farming facilities are located, regardless of the nationalities of owners of facilities.

For statistical purposes since the area under culture can change considerably during the year, it is recommended to measure the areas at their final production phase.

For statistical purposes the breakdown in culture environments (freshwater, brackishwater and marine water) is not simple and it is often left to the subjective judgment of reporters. An interpretation for breaking down the salinity level is related to the percentage of dissolved salts over time: while in freshwater the salinity is constantly neglectable and in saltwater the level is always high and appreciable, water bodies where the salinity is under continuous periodic fluctuations due to the influx of freshwater or saltwater are considered brackishwater bodies.

For statistical purposes, the key elements defining aquaculture activities is that aquaculture includes the production of all aquatic organisms, regardless its taxonomic classifications and its final utilization in all those situations in which there is an artificial intervention in the rearing process and ownership of cultivated organisms.

Presentation of the aquaculture section in the revised handbook

From **PREFACE** (only)

To tailored introductory chapters

- **Preface →** introduction on CWP, mandate and ownership of the document
- NEW **Executive Summary of the Handbook →** a quick overview of each chapter
- NEW **Why Collecting Aquaculture Data →** explanation over the need of reliable and timely aquaculture data in the framework of the CCRF
- NEW **Handbook Preparation and Background →** milestones in the preparation of the handbook, including the hyperlinks to the relevant documents and decisions taken
- NEW **Nature and Scope →** overview on the handbook and its purposes
- NEW **Institutional Benchmarks →** institutional framework and principles of the Handbook

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

REVISED STRUCTURE :

1: Definitions and characteristic of Aquaculture → Terms and Definitions

2. Aquaculture Living Resources and their Attributes

3. Addition and reduction of aquaculture fish resources

4. Socio-economic aspects of aquaculture

5. Other key factors affecting aquaculture production systems

6. Minimum reporting requirements for national statistics on aquaculture

7. Data collection and planning and implementing surveys

8. Common concepts and codes to be used

9. Bibliography

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

Ch. 1: Terms and Definitions

2013 version

1-1. Definition of Aquaculture

1-2. Stages in Aquaculture

1-3. Classifications of aquaculture

1-3-1. Intensity of culture practices

1-3-2. ~~Scale of aquaculture operations~~

1-4. Interaction between aquaculture and capture fisheries

2021 revision

1-1. Definition of Aquaculture

1-2. Stages in Aquaculture

NEW 1-2-1. Aquaculture organisms life stages practical glossary

1-3. Classifications of aquaculture

1-3-1. Intensity of culture practices

1-4. Interaction between aquaculture and capture fisheries

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

Ch. 1: Terms and Definitions

"Definition and Characteristics of Aquaculture"
Was renamed and focused on definitions and glossary

1-1. Definition of Aquaculture

→ Introductory chapter focusing the relevance of the definitions used (FAO, ISIC Rev.4)

1-2. Stages in Aquaculture

→ examples provided making references to FAO factsheets on cultured aquatic species

NEW

1-2-1. Aquaculture organisms life stages practical glossary

→ glossary and definitions on life stages organized

1-3. Classifications of aquaculture

1-3-1. Intensity of culture practices

→ practical approach on interpretation on classifications and intensity

1-4. Interaction between aquaculture and capture fisheries

→ revised content, updated definitions and related bibliography

Content revised and updated, working hyperlinks provided

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Presentation of the aquaculture section in the revised handbook

Ch. 1: Terms and Definitions: 1-2-1. Aquaculture organisms life stages practical glossary

- **12 Nouns based on the vocabulary used in the Handbook**
- **Broad definition to avoid losing focus on statistics due to complex differentiations of larval stages of crustaceans, fish and molluscs**
- **Simple structure: noun (alphabetical order), definition and source(s)**
- **Room for improvements mainly regarding the macroalgae definitions**

Noun	Definition	Source
Adult	Any animal that has attained full growth or is sexually mature that is not precocious.	Anonymous (1998) AQUALEX. Multilingual glossary of aquaculture terms / Glossaire multilingue relatif aux termes utilisés en aquaculture. CD ROM, John Wiley & Sons Ltd. & Praxis Publ., UK.; Glossary of Aquaculture, FAO, 2008; FAO Fisheries and Aquaculture Department, FAO; Terminology (A9.3G)/CSCM, FAO, 2010

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

Ch. 1: Terms and Definitions: 1-2-1. Aquaculture organisms life stages practical glossary

Noun	Definition	Source
Adult	Any animal that has attained full growth or is sexually mature that is not precocious.	Anonymous (1998) AQUALEX. Multilingual glossary of aquaculture terms / Glossaire multilingue relatif aux termes utilisés en aquaculture. CD ROM, John Wiley & Sons Ltd. & Praxis Publ., UK.; Glossary of Aquaculture, FAO, 2008; FAO Fisheries and Aquaculture Department, FAO; Terminology (A9.3G)/CSCM, FAO, 2010
Broodstock	Specimen or species, either as eggs, juveniles, or adults, from which a first or subsequent generation may be produced in captivity, whether for growing as aquaculture or for release to the wild for stock enhancement. Sexually mature specimens of both sexes kept for the purpose of controlled reproduction (independent of whether a first or subsequent generation is produced) as well as younger specimens destined to be used for the same purpose	FAO Fisheries Department (2003) World Fisheries and Aquaculture Atlas. CD-ROM. Rome, FAO. 2nd ed.Anonymous (1998) AQUALEX. Multilingual glossary of aquaculture terms / Glossaire multilingue relatif aux termes utilisés en aquaculture. CD ROM, John Wiley & Sons Ltd. & Praxis Publ., UK.; Anonymous (1998) AQUALEX. Multilingual glossary of aquaculture terms / Glossaire multilingue relatif aux termes utilisés en aquaculture. CD ROM, John Wiley & Sons Ltd. & Praxis Publ., UK.; Glossary of Aquaculture, FAO, 2008; FAO Fisheries and Aquaculture Department, FAO; Terminology (A9.3G)/CSCM, FAO, 2010
Egg	The mature female germ cell	FAO Glossary National Sea Grant College Program (2003) Aquaculture Network Information Network Center (AquaNIC). Aquaculture course 448, glossary (5 pages). Online at (http://aquanic.org/courses/aq448/glossary.htm); Glossary of Aquaculture, FAO, 2008; FAO Fisheries and Aquaculture Department, FAO; Terminology (A9.3G)/CSCM, FAO, 2010
Eyed egg	Eggs in which the embryo has reached an advanced developmental stage, and where fully pigmented eyes can easily be seen. In the opaque salmonid eggs, this stage is resistant to mechanical shock; eggs are therefore commonly shipped upon reaching this stage	Anonymous (1998) AQUALEX. Multilingual glossary of aquaculture terms / Glossaire multilingue relatif aux termes utilisés en aquaculture. CD ROM, John Wiley & Sons Ltd. & Praxis Publ., UK. Glossary of Aquaculture, FAO, 2008; FAO Fisheries and Aquaculture Department, FAO; Terminology (A9.3G)/CSCM, FAO, 2010

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Presentation of the aquaculture section in the revised handbook

Ch. 1: Terms and Definitions 1-2-1. Aquaculture organisms life stages practical glossary

Fry	A term used to describe a fish at the postlarval stage. All stages from hatchling to fingerling stage can potentially be covered by "fry".	Anonymous (1998) AQUALEX. Multilingual glossary of aquaculture terms / Glossaire multilingue relatif aux termes utilisés en aquaculture. CD ROM, John Wiley & Sons Ltd. & Praxis Publ., UK.; International Center for Aquaculture and Aquatic Environments (1990) Water harvesting and aquaculture for rural development manuals. General manuals (9 pamphlets), Fertilization manuals (3 pamphlets) and Tilapia manuals (8 pamphlets). Auburn, Alabama (USA), Auburn University, v.p.; Glossary of Aquaculture, FAO, 2008; FAO Fisheries and Aquaculture Department, FAO; Terminology (A9.3G)/CSCM, FAO, 2010
Juveniles	Young stage of animals, usually up to the time they first become sexually mature. For fish usually between the postlarval stages up to the time they first become sexually mature. They are generally hardy at this stage	O'sullivan, D., Hilder, M. & Rough, K. (comp.) (1996) A dictionary of aquaculture. A guide to commonly used words and terms. Aquaculture Sourcebook, (6):64p. Launceston, Tasmania, Univ. Tasmania Key Centre for Aquaculture/ Turtle Press Pty Ltd., 2nd. Ed.; Glossary of Aquaculture, FAO, 2008; FAO Fisheries and Aquaculture Department, FAO; Terminology (A9.3G)/CSCM, FAO, 2010
Larva (crustaceans)	The most widespread and typical larva to emerge from crustacean eggs is called a nauplius, which has a simple, unsegmented body and three pairs of appendages (antennules, antennae and mandibles) and a single, simple "naupliar" eye. Even when there are not nauplius (some groups omit it and emerge from the egg very similar to adults), other groups of crustaceans pass through similar stages. Depending on the groups, crustaceans will successively metamorphose into more complex larval forms which are normally characterized by different forms of locomotion.	EU Eurostat Aquaculture Handbook (2018 edition)
Larva (fish)	In a general sense, it is the individual which has not yet acquired either the morphology or the meristic characters of adults, presenting specialized larval structures. The term larvae can be applied also to the developmental stages comprised between those of yolk-sac larvae and postlarvae. An organism from the beginning of exogenous feeding to metamorphosis into juvenile. At the larval stage the animal differs greatly in appearance and behaviour from a juvenile or an adult.	GFCM Aquaculture Glossary, 2015; Terminology (A9.3)/CPAM, FAO, 2015. Anonymous (1998) AQUALEX. Multilingual glossary of aquaculture terms / Glossaire multilingue relatif aux termes utilisés en aquaculture. CD ROM, John Wiley & Sons Ltd. & Praxis Publ., UK.; Glossary of Aquaculture, FAO, 2008; FAO Fisheries and Aquaculture Department, FAO; Terminology (A9.3G)/CSCM, FAO, 2010
Larva (molluscs)	Once the eggs are hatched, many molluscs develop into free-swimming larvae. There can be either one or two larval stages (depending on the species): trocophore (free-swimming larvae with cilia) and veliger (second larval stage, with beginnings of foot, shell and mantle). Veligers can develop from earlier, free-swimming trocophores, or hatch directly from egg capsules having had the trocophore stage while still in the egg	EU Eurostat Aquaculture Handbook (2018 edition)

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

Ch. 1: Terms and Definitions 1-2-1. Aquaculture organisms life stages practical glossary

Postlarva	Stage occurring after the larval stage, resembling the juvenile but still lacking certain characteristics.	Adapted from: Anonymous (1998) AQUALEX. Multilingual glossary of aquaculture terms / Glossaire multilingue relatif aux termes utilisés en aquaculture. CD ROM, John Wiley & Sons Ltd. & Praxis Publ., UK.; International Center for Aquaculture and Aquatic Environments (1990) Water harvesting and aquaculture for rural development manuals. General manuals (9 pamphlets), Fertilization manuals (3 pamphlets) and Tilapia manuals (8 pamphlets). Auburn, Alabama (USA), Auburn University, v.p.; Bondad-Reantaso, M.G., McGladdery, S.E., East, I. & Subasinghe, R.P. (2001) Asia diagnostic guide to aquatic animal diseases. FAO Fisheries Technical Paper, (402/2): 237p.; Glossary of Aquaculture, FAO, 2008; FAO Fisheries and Aquaculture Department, FAO; Terminology (A9.3G)/CSCM, FAO, 2010
Seed	For statistical purposes taken to mean eggs, spawn, offspring, progeny or brood of the aquatic organism (including aquatic plants) being cultured. At this infantile stage, seed may also be referred to or known as fry, larvae, postlarvae, spat, and fingerlings. They may originate from two principal sources: from captive breeding programmes or caught from the wild.	Rana, K.J. (1997) Guidelines on the collection of structural aquaculture statistics. Supplement to the Programme for the World Census of Agriculture 2000. FAO Statistical Development Ser. (5b): 56p. Rome, FAO. Glossary of Aquaculture, FAO, 2008; FAO Fisheries and Aquaculture Department, FAO; FTG/CSCM, FAO, 2010; Terminology (A9.3G)/CSGM, FAO, 2018
Spat	Fertilized shellfish larvae, e.g. of oysters or mussels. Spat commence life as free-swimming individuals in the plankton (the veliger stage), then settle onto suitable substrates (a spatfall). The term is also used to indicate shellfish larvae that have attached to some hard object.	FAO Fisheries Department (2003) World Fisheries and Aquaculture Atlas. CD-ROM. Rome, FAO. 2nd ed.; Anonymous (1998) AQUALEX. Multilingual glossary of aquaculture terms / Glossaire multilingue relatif aux termes utilisés en aquaculture. CD ROM, John Wiley & Sons Ltd. & Praxis Publ., UK.; Glossary of Aquaculture, FAO, 2008; FAO Fisheries and Aquaculture Department, FAO; Terminology (A9.3G)/CSCM, FAO, 2010

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

REVISED STRUCTURE :

1: Definitions and characteristic of Aquaculture → Terms and Definitions

2. Aquaculture Living Resources and their Attributes → Accounting and Codes for Aquatic Productions

3. Addition and reduction of aquaculture fish resources

4. Socio-economic aspects of aquaculture

5. Other key factors affecting aquaculture production systems

6. Minimum reporting requirements for national statistics on aquaculture

7. Data collection and planning and implementing surveys

8. ~~Common concepts and codes to be used~~

9. Bibliography

The previous chapter 8 «Common concepts and codes to be used" was advanced in the handbook and aggregated to chapter 2.

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

"AQUACULTURE LIVING RESOURCES AND THEIR ATTRIBUTES"
Was renamed, restructured to be attributes and codes focused

- **Ch. 2: Accounting and codes for aquatic productions**

2-1. General concepts and administrative information
- **2-1-1. The Monitoring unit**
- **2-1-2. Aquaculture production**

→ **focused chapter on statistic unit, tentative definition**

2-2. Harmonized codes for aquatic productions

→ **Attributes and codes gathered in a sole section**
- **2-2-1. Identifiers for aquatic animals and plants**
- **2-2-2. Ownership and nationality of production**
- **2-2-3. Culture environments**
- **2-2-4. Location of production**
- **2-2-5. Time unit**
- **2-2-6. Currencies and funds**
- **2-2-7. Fishery Commodities Classification**
- **2-2-8. Converting product weight to live weight in aquatic productions**

NEW

2-3. Farming systems and culture methods
- **2-3-1. Classification of farming systems**
- **2-3-2. Measuring units for farming systems**

Content revised and updated, working hyperlinks provided

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

Ch. 2: Accounting and codes for aquatic productions

Attributes and codes relevant to aquaculture production were gathered here to be found easily by readers

2-2. Harmonized codes for aquatic productions

- **2-2-1. Identifiers for aquatic animals and plants** → The 26th CWP session proposal for an updated **ISSCAAP** classification Included
- **2-2-2. Ownership and nationality of production** → Countries or area by **name and by ISO 2-alpha code**
- **2-2-3. Culture environments** → Breakdown of **waterbody salinity**, approaches and interpretation
- **2-2-4. Location of production** → **FAO Major Areas for Statistical Purposes**
- **2-2-5. Time unit** → **ISO 8601 Date and time format**
- **2-2-6. Currencies and funds** → **ISO 4217** + annexes: FAO currencies by country and country code
- **2-2-7. Fishery Commodities Classification** → Annex: FAO International Standard Statistical Classification of **Fishery Commodities**
- **2-2-8. Converting product weight to live weight in aquatic productions** → Annex: Indicative **factors for converting product weight to live weight**

Content revised and updated, working hyperlinks provided

Presentation of the aquaculture section in the revised handbook

Ch. 2: Accounting and codes for aquatic productions

2-3-1. Classification of farming systems

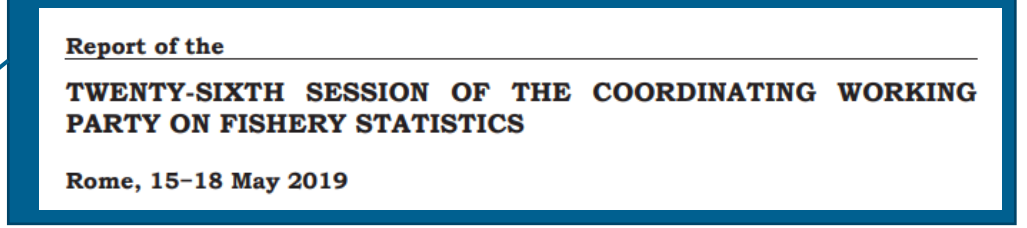
For statistical purpose, the 2013 version of the HB presented this classification:

1. Ponds
2. Cages, raceways, tanks, enclosures, pens
3. Lake, reservoirs, dams, barrages, flood plains, irrigation systems
4. Rice-fish paddies (rice fields used for aquaculture)
5. Suspended/hanging systems, on-bottom systems, off-bottom systems

Description and definitions didn't match
Very high level of aggregation

Drafted to the 15 categories proposal of 2019

To be updated to the 12 categories consolidated version of 2019 (Pres. 5.6.3) + new proposals


Report of the

TWENTY-SIXTH SESSION OF THE COORDINATING WORKING PARTY ON FISHERY STATISTICS

Rome, 15–18 May 2019

Description + Exhaustive list of examples + graphics to be included

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

Ch. 2: Accounting and codes for aquatic productions

2-3-2. Measuring units for farming

Farming system categories	Quantity (n°)	Water surface area (Ha; m^2)	Water volume (m^3)	Water turnover (m^3 d-1)	Other
1. Earthen ponds	*	*	*		
2. Tanks and raceways	*	*	*	*	
3. Man-made and semi man-made water bodies		*			Information on setting environments
4. Lakes, coastal lagoons and other natural water bodies		*			
5. Cages	*	*	*		Information on setting environments
6. Pens and enclosures	*	*			Information on setting environments
7. Close containment systems	NA	NA	NA	NA	
8. Fish rearing vessels	NA	NA	NA	NA	
9. RAS (recirculation aquaculture systems)	*		*	*	
10. Aquaponics system	*		*	*	
11. Rice-Fish culture and integration with another aquatic crop plantation		*			
12. Culture methods for shelled molluscs	*	*			Length of lines or ropes
13. Culture methods for seaweeds (marine macroalgae)	*	*			Length of lines or ropes
14. Culture methods for microalgae, including cyanobacteria	*	*	*	*	
15. Other culture methods	NA	NA	NA	NA	NA

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

REVISED STRUCTURE :

1: Definitions and characteristic of Aquaculture

2. Aquaculture Living Resources and their Attributes

3. Addition and reduction of aquaculture fish resources → Accounting Aquaculture Productions

4. Socio-economic aspects of aquaculture

5. Other key factors affecting aquaculture production systems

6. Minimum reporting requirements for national statistics on aquaculture

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9. Bibliography

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

Ch. 3: Accounting aquaculture productions

"addition and reduction of aquaculture fish resources"
Was renamed and including all information on accounting spread over the document

3-1. Account table for aquaculture → **Account table separated in a chapter for better readability**

3-2. Inputs to aquaculture stock

3-3. Aquaculture output products
- **3-3-1. Output products for food**
- **3-3-2. Output products for non-food use**
- **3-3-3. Output for farms and stock enhancement**

3-4. Stock of aquaculture fish resources

3-5. Losses of aquaculture fish resources and farming facilities

→ **All information spread over the document was gathered in the section to avoid redundancy**

Content revised and updated, working hyperlinks provided

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

Ch. 3: Accounting aquaculture productions

3-1. Account table for aquaculture

- Previously this section was included in chapter 2, then it was revised and moved to this renamed section
- The detailing of inputs, outputs, losses and stock can be found in the same section
- The explanation of the SEEA approach on the basis of this accounting is detailed along with the table

		Cultivated resources – inventories	Cultivated resources – fixed assets
Opening stock			
Overall opening stock		[Quantity of resources at the beginning of a time period] [tonnes/numbers]	[Quantity of resources at the beginning of a time period] [tonnes/numbers]
Additions to stock			
	Entry to stock	[Introduction from other monitoring unit(s)]	[Introduction from other monitoring unit(s)]
	Growth in stock	[Overall growth in quantity during a time period]	[Overall growth in quantity during a time period]
	Reclassifications (from natural aquatic to cultivated resources)	[Introduction from wild]	[Introduction from wild]
Total additions		[tonnes/numbers]	[tonnes/numbers]
Reductions in stock			
	Gross harvest	[Quantity harvested during a time period]	Not applicable
	Catastrophic losses and uncompensated seizure	[Loss in quantity due to extreme events, diseases and farming failures]	[Loss in quantity due to extreme events, diseases and farming failures]
	Reclassifications (from cultivated to natural aquatic resources)	[Released seed for stocking, escapement etc]	[Export of breeding stock to other monitoring unit(s)]
Total reductions		[tonnes/numbers]	[tonnes/numbers]
Closing stock of aquatic resources		[Opening stock] + [total additions] – [total reductions]	[Opening stock] + [total additions] – [total reductions]

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

Ch. 3: Accounting aquaculture productions

3-2. Inputs to aquaculture stock

3-3. Aquaculture output products
- **3-3-1. Output products for food**
- **3-3-2. Output products for non-food use**
- **3-3-3. Output for farms and stock enhancement**

3-4. Stock of aquaculture fish resources

3-5. Losses of aquaculture fish resources and farming facilities

- **This section was revised in order to be applicable to a wider array of aquaculture practices**
- **The market for adults specimens for final grow out and not for broodstock purposes was added (stockers organisms)**

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

REVISED STRUCTURE :

1: Definitions and characteristic of Aquaculture → 1. Terms and Definitions

2. Aquaculture Living Resources and their Attributes → 2. Accounting and Codes for Aquatic Productions

3. Addition and reduction of aquaculture fish resources → 3. Accounting Aquaculture Productions

4. Socio-economic aspects of aquaculture → Socio-economic aspects of aquaculture

5. Other key factors affecting aquaculture production systems

6. Minimum reporting requirements for national statistics on aquaculture

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Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook

4: Socio-Economic Aspects of Aquaculture

4-1. Aquaculture socio-economic core variables

- **4-1-1. The gross value of production**
- **4-1-2. Employment**

NEW

4-2. Additional variables in the aquaculture socio-economic dimension

- **4-2-1. Employment**
- **4-2-2. Value of production**

4-3. Structure of farming operations

Section updated to the work presented :

CWP-IS/2019/1

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 | Продовольственная и сельскохозяйственная организация Объединенных Наций | Organización de las Naciones Unidas para la Alimentación y la Agricultura | منظمة الأغذية والزراعة للأمم المتحدة

COORDINATING WORKING PARTY ON FISHERY STATISTICS

Twenty-sixth Session

Sixth Meeting of the Aquaculture Subject Group and Twenty-seventh Meeting of the Fisheries Subject Group

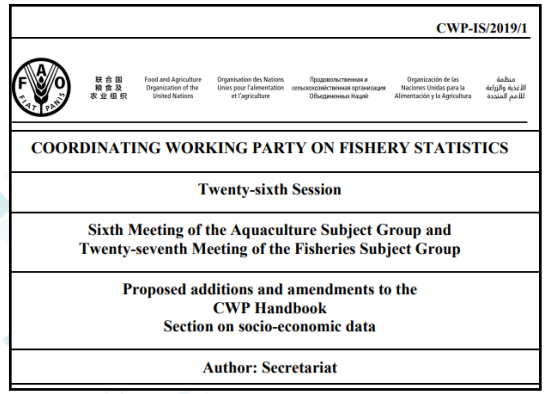
Proposed additions and amendments to the CWP Handbook Section on socio-economic data

Author: Secretariat

Content revised and updated, working hyperlinks provided

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook



CWP-IS/2019/1

COORDINATING WORKING PARTY ON FISHERY STATISTICS

Twenty-sixth Session

Sixth Meeting of the Aquaculture Subject Group and Twenty-seventh Meeting of the Fisheries Subject Group

Proposed additions and amendments to the CWP Handbook Section on socio-economic data

Author: Secretariat

Ch. 4: Socio-Economic Aspects of Aquaculture **Employment**

2013 version

- Full-time farmers
- Part-time farmers
- Occasional farmers

or

- Employee
- Own-account worker
- Contributing family worker
- Others

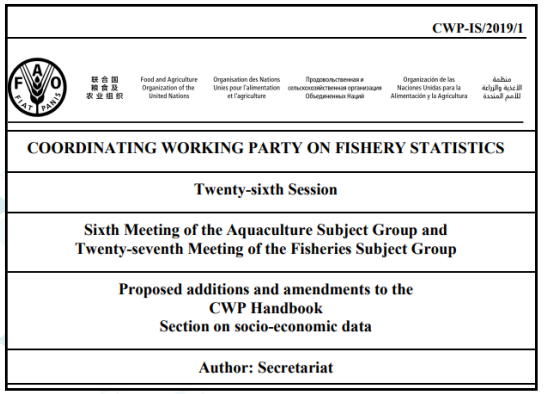
International Standard Classification of Occupation

MAJOR GROUP	**1**	**Managers**
SUB-MAJOR GROUP	13	Production and Specialized Services Managers
Minor Group	131	Production Managers in Agriculture, Forestry and Fisheries
	1312	Aquaculture and Fisheries Production Managers
MAJOR GROUP	**6**	**SKILLED AGRICULTURAL AND FISHERY WORKERS**
SUB-MAJOR GROUP	62	Market-oriented Skilled Forestry, Fishery and Hunting Workers
Minor Group	622	Fishery Workers, Hunters and Trappers
	6221	Aquaculture Workers
MAJOR GROUP	**9**	**Elementary occupations**
SUB-MAJOR GROUP	92	Agricultural, Forestry and Fishery Labourers
Minor Group	921	Agricultural, Fishery and Related Labourers
	9216	Fishery and Aquaculture Labourers

FTE (full-time equivalent concept included) + additional variables (age, nationality, education (Unesco classification, average wage)

Food and Agriculture Organization of the United Nations

Presentation of the aquaculture section in the revised handbook



CWP-IS/2019/1

COORDINATING WORKING PARTY ON FISHERY STATISTICS

Twenty-sixth Session

Sixth Meeting of the Aquaculture Subject Group and
Twenty-seventh Meeting of the Fisheries Subject Group

Proposed additions and amendments to the
CWP Handbook
Section on socio-economic data

Author: Secretariat

Ch. 4: Socio-Economic Aspects of Aquaculture **Employment**

2013 version

No economic data indicated other than “investments”

2019 Revision

<u>Gross value of productions</u>

Additional variables:
- Total revenue
- Total costs
- Capital value
- Remuneration

Investment is mentioned but doesn’t hold a specific section

Presentation of the aquaculture section in the revised handbook

REVISED STRUCTURE :

1: Definitions and characteristic of Aquaculture → 1.Terms and Definitions

2. Aquaculture Living Resources and their Attributes →2. Accounting and Codes for Aquatic Productions

3. Addition and reduction of aquaculture fish resources →3. Accounting Aquaculture Productions

4. Socio-economic aspects of aquaculture →4. Socio-economic aspects of aquaculture

5. Other key factors affecting aquaculture production systems

6. Minimum reporting requirements for national statistics on aquaculture →5. Moved to chapter 5, before the "other key factors"

7. Data collection and planning and implementing surveys

8. Common concepts and codes to be used

9. Bibliography

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Ch. 5: Minimum Reporting Requirements For National Statistics On Aquaculture

5.1 Aquaculture Questionnaire and Database Suggestions

NEW

To address the needs for examples and summarize what proposed:

PROPOSALS TABLE FOR DATA COLLECTION

1. **Administrative data and farming structure**
2. **Farming system data**
3. **Detailed account table for the aquaculture production**
4. **Socio-economic data table**

TO BE REFINED

At the moment the tables are structured on the basis of the concepts provided in the chapters of the Aquaculture section

Content revised and updated, working hyperlinks provided

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Ch. 5: Minimum Reporting Requirements for National Statistics on Aquaculture

NEW

5.1 Aquaculture Questionnaire and Database Suggestions

1. Administrative data and farming structure

n°	Type of data	Data required
0	Time of the data collection	DD-MM-YYYY
1	Producer name or identifier	Noun
2	Producer typology	Noun
3	Address	Noun
4	Households involved	Number
5	Ownership and nationality of production	Code
6	Number of production units registered and/or licensed	Number
7	Number of Hatcheries	Number
8	Number of Grow-out facilities	Number
9	Number of facilities with hatchery and grow-out activities combined	Number

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5.1 Aquaculture Questionnaire and Database Suggestions 2. Farming system data

N°	Type of data			Data required
10	Name or identifier of farming facility			Noun
11	Location of production			Code
12	Type of facility	1	Hatchery	Noun
		2	Grow-out	
		3	Hatchery and grow-out combined	
13	Culture environment	1	Mariculture	Noun
		2	Brackishwater Culture	
		3	Freshwater Culture	
14	Intensity of culture	1	Extensive	Noun
		2	Semi-intensive	
		3	Intensive	
15	Farming system	1	Earthen ponds	Noun
		2	Tanks and raceways	
		3	Man-made and semi man-made water bodies	
		4	Lakes, lagoons and other natural water bodies	
		5	Cages	
		6	Pens and enclosures	
		7	Close containment systems	
		8	Fish rearing vessels	
		9	RAS (recirculation aquaculture systems)	
		10	Aquaponics system	
		11	Rice-Fish culture and integration with another aquatic crop plantation	
		12	Culture methods for shelled molluscs	
		13	Culture methods for seaweeds (marine macroalgae)	
		14	Culture methods for microalgae, including cyanobacteria	
		15	Other culture methods	
16	Dimension(s) of the productive site			Number
17	Number of species farmed			Number

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5.1 Aquaculture Questionnaire and Database Suggestions

3. Detailed account table for the aquaculture production (1)

N°	Type of data											Data required
18	Identifier for farmed species											Code
19	Opening stock	1	Inventories opening stock									Number/Biomass - ex-gate value
		2	Fixed assets - opening stock									Number/Biomass - ex-gate value
20	Entry to stock	1	Entry to stock - Inventories - Broodstock	1	from the wild							Number/Biomass - purchase value
				2	from other aquaculture facilities	1	Domestic Market	1	Non genetically modified			Number/Biomass - purchase value
								2	Genetically modified			Number/Biomass - purchase value
						2	Imported	1	Non genetically modified			Number/Biomass - purchase value
								2	Genetically modified			Number/Biomass - purchase value
		2	Inputs - Fixed assets – Seeds - Larvae	1	from the wild							Number/Biomass - purchase value
				2	from other aquaculture facilities	1	Domestic Market	1	Non genetically modified			Number/Biomass - purchase value
								2	Genetically modified			Number/Biomass - purchase value
						2	Imported	1	Non genetically modified			Number/Biomass - purchase value
								2	Genetically modified			Number/Biomass - purchase value
		3	Inputs - Fixed assets – Juveniles and Adults for grow out	1	from the wild							Number/Biomass - purchase value
				2	from other aquaculture facilities	1	Domestic Market	1	Non genetically modified			Number/Biomass - purchase value
								2	Genetically modified			Number/Biomass - purchase value
						2	Imported	1	Non genetically modified			Number/Biomass - purchase value
								2	Genetically modified			Number/Biomass - purchase value

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5.1 Aquaculture Questionnaire and Database Suggestions

3. Detailed account table for the aquaculture production (2)

21	Reductions to stock	1	Output for food	1	Egg	1	Local market						Number/Biomass - ex-gate value
						2	International market						Number/Biomass - ex-gate value
								1	Destination country				Code
				2	Larvae	1	Local market						Number/Biomass - ex-gate value
						2	International market						Number/Biomass - ex-gate value
										1	Destination country		Code
				3	Juveniles	1	Local market						Number/Biomass - ex-gate value
						2	International market						Number/Biomass - ex-gate value
										1	Destination country		Code
				4	Adults	1	Local market						Number/Biomass - ex-gate value
						2	International market						Number/Biomass - ex-gate value
										1	Destination country		Code
		2	Output for non-food use	1	Ornamental (or aquaria) organisms	1	Eggs			1	Local market		Number/Biomass - ex-gate value
										2	International market		Number/Biomass - ex-gate value
											1	Destination country	Code
						2	Larvae			1	Local market		Number/Biomass - ex-gate value
										2	International market		Number/Biomass - ex-gate value
											1	Destination country	Code
						3	Juveniles			1	Local market		Number/Biomass - ex-gate value
										2	International market		Number/Biomass - ex-gate value
											1	Destination country	Code
						4	Adults			1	Local market		Number/Biomass - ex-gate value
										2	International market		Number/Biomass - ex-gate value
												Destination country	Code
				2	Raw materials for jewelry, apparel, handicraft etc.	1	Eggs			1	Local market		Number/Biomass - ex-gate value
										2	International market		Number/Biomass - ex-gate value
											1	Destination country	Code
						2	Larvae			1	Local market		Number/Biomass - ex-gate value
										2	International market		Number/Biomass - ex-gate value
											1	Destination country	Code
						3	Juveniles			1	Local market		Number/Biomass - ex-gate value
										2	International market		Number/Biomass - ex-gate value
											1	Destination country	Code
						4	Adults			1	Local market		Number/Biomass - ex-gate value
										2	International market		Number/Biomass - ex-gate value
											1	Destination country	Code

Presentation of the aquaculture section in the revised handbook

5.1 Aquaculture Questionnaire and Database Suggestions

3. Detailed account table for the aquaculture production (3)

				3	Industrial use	1	Eggs	1	Local market		Number/Biomass - ex-gate value
								2	International market		Number/Biomass - ex-gate value
									1	Destination country	Code
						2	Larvae	1	Local market		Number/Biomass - ex-gate value
								2	International market		Number/Biomass - ex-gate value
									1	Destination country	Code
						3	Juveniles	1	Local market		Number/Biomass - ex-gate value
								2	International market		Number/Biomass - ex-gate value
									1	Destination country	Code
						4	Adults	1	Local market		Number/Biomass - ex-gate value
								2	International market		Number/Biomass - ex-gate value
									1	Destination country	Code
				4	Others	1	Eggs	1	Local market		Number/Biomass - ex-gate value
								2	International market		Number/Biomass - ex-gate value
									1	Destination country	Code
						2	Larvae	1	Local market		Number/Biomass - ex-gate value
								2	International market		Number/Biomass - ex-gate value
									1	Destination country	Code
						3	Juveniles	1	Local market		Number/Biomass - ex-gate value
								2	International market		Number/Biomass - ex-gate value
									1	Destination country	Code
						4	Adults	1	Local market		Number/Biomass - ex-gate value
								2	International market		Number/Biomass - ex-gate value
									1	Destination country	Code

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5.1 Aquaculture Questionnaire and Database Suggestions

3. Detailed account table for the aquaculture production (4)

3	Output for farms and stock enhancement	1	Released to the wild			Number/Biomass - ex-gate value
				1	Location of release	Code
		2	Released to a controlled environment for recreational purposes			Number/Biomass - ex-gate value
				1	Location of release	Code
		3	Destined for domestic aquatic practices			Number/Biomass - ex-gate value
		4	Exported			Number/Biomass - ex-gate value
				1	Destination country	Code
4	Catastrophic losses and uncompensated seizure	1	Loss of cultured organisms due to diseases			Number/Biomass - ex-gate value
		2	Loss of cultured organisms due to natural disasters and other environmental impact			Number/Biomass - ex-gate value
		3	Loss of culturing facilities/equipments due to natural disasters and other environmental impacts			Number - ex-gate value

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5.1 Aquaculture Questionnaire and Database Suggestions

4. Socio-economic data table

N°	Type of data					Data required
22	Gross value of production					Ex-gate values aggregated
23	Employment	1	1312 - Aquaculture and fisheries production managers	1	Male	Number
				2	Female	Number
		2	6221 - Aquaculture workers	1	Male	Number
				2	Female	Number
		3	9216 - Fishery and Aquaculture Labourers	1	Male	Number
				2	Female	Number

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REVISED STRUCTURE :

1: Definitions and characteristic of Aquaculture → 1.Terms and Definitions

2. Aquaculture Living Resources and their Attributes →2. Accounting and Codes for Aquatic Productions

3. Addition and reduction of aquaculture fish resources →3. Accounting Aquaculture Productions

4. Socio-economic aspects of aquaculture →4. Socio-economic aspects of aquaculture

5. **Other key factors affecting aquaculture production systems →6. Beyond minimum requirements**

6. Minimum reporting requirements for national statistics on aquaculture →5. Minimum reporting requirements for national statistics on aquaculture

7. Data collection and planning and implementing surveys

8. Common concepts and codes to be used

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Ch. 6: Beyond Minimum Requirements

"Other key factors affecting aquaculture production systems"
Was renamed, it was too generic, contestualized in the workflow of data collection

2013 version:

5-1. Water, sources and quality characteristics

5-2. Feeds and Fertilizers

5-3. Antibacterials

5-4. Energy

2021 revision

6-1. Climate Change **TO BE DEFINED** NEW

6-2. Water, sources and quality characteristics

6-2. Feeds and Fertilizers

6-3. Veterinary drugs in aquaculture

6-4. Energy

6-5. Land use Moved from ch. 7

6-6. Use of spatial information technology Moved from ch. 7

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Ch. 6: Beyond Minimum Requirements

6-1. Climate Change	TO BE DEFINED	NEW — Added on the basis of experts recommendation, to be drafted
6-2. Water, sources and quality characteristics		Integrated on the basis of experts recommendation
6-2. Feeds and Fertilizers		The list of feeds and fertilizers was reorganized, content is unchanged, a proposal table was included
6-3. Veterinary drugs in aquaculture		Renamed to include other potentially abused drugs, AMR references added
6-4. Energy		Updated and revised, a more practical approach and suggestions are delivered
6-5. Land use		Revised and Moved from ch. 7
6-6. Use of spatial information technology		Revised and Moved from ch. 7

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Ch. 7: Data Collection and Planning and Implementing Surveys

2013 version	2021 revision
7-1. Global Strategy of Improving Agricultural and Rural Statistics	7-1. Global Strategy of Improving Agricultural and Rural Statistics
7-2. Coordination with agriculture and population census	7-2. Coordination with agriculture and population census
7-3. Use of spatial information technology — Moved to ch. 6	
7-4. Administrative data — Included in ch. 6	

Content revised and updated, working hyperlinks provided

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Presentation of the aquaculture section in the revised handbook

Ch. 7: Data Collection and Planning and Implementing Surveys

7-1. Global Strategy of Improving Agricultural and Rural Statistics

7-2. Coordination with agriculture and population census

- Focused the chapter on the WCA approach on structuring and planning censuses
- Shortened so to fit the style and context of the Handbook
- Revised to not overlap word-to-word with the WCA chapter on aquaculture

Content revised and updated, working hyperlinks provided

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REVISED STRUCTURE :

- 1: Terms and Definitions — Renamed and focused on definitions and glossary
- 2: Accounting and Codes for Aquatic Productions — Renamed – attributes and codes focused
- 3: Accounting Aquaculture Productions — Renamed – gathering all information on accounting
- 4: Socio-Economic Aspects of Aquaculture — Name maintained – Updated content
- 5: Minimum Reporting Requirements — Name maintained – Updated content
- 6: Beyond Minimum Requirements — Renamed – too generic in the first place
- 7: Data Collection and Planning and Implementing Surveys — Name maintained – Updated content

8→7

The previous chapter 8 «Common concepts and codes to be used" was advanced in the handbook and aggregated to chapter 2.

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REVISED STRUCTURE :

- 1: Terms and Definitions
- 2: Accounting and Codes for Aquatic Productions
- 3: Accounting Aquaculture Productions
- 4: Socio-Economic Aspects of Aquaculture
- 5: Minimum Reporting Requirements
- 6: Beyond Minimum Requirements
- 7: Data Collection and Planning and Implementing Surveys

Structured to be adaptable: Can either work in the CWP webpage and as a stand-alone publication

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NEXT STEPS

- *Consider further developments including intersessional meeting feedback*
- *Incorporate relevant outputs of other TGs including on reference harmonization (TG-RH2)*
- *Enlarging the scope of contributions to other CWP parties*
- ***Further refinements of chapters of the HB***
  - **Chapter 5.1 on Aquaculture Questionnaire and Database suggestions**
  - **Chapter 6.1 on Climate change**
- *Final version of the revised aquaculture components of the Handbook to CWP-27*

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Thank you ▪ Merci
Благодарю ▪ ¡Muchas gracias!
謝謝 ▪ شكرا

Fabio Massa, Davide Fezzardi and Fabrizio Caruso

CWP