



CWP

Coordinating Working Party on Fishery Statistics

CWP ad-hoc Task Group on fishing effort concepts (TG-effort)

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- TG-Effort (ToR 3) Revisions and Further development of fishing effort measures
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emerging technologies

CWP Task Group TG-Effort: Objectives, tasks and timeframe

History: Identified as an activity at CWP 2019 (*Report of the twenty-sixth session of the Coordinating Working Party on Fishery Statistics. Rome, Italy, 15–18 May 2019.* FAO Fisheries and Aquaculture Report No. 1293. Rome, FAO. 51 pp. (also available at <http://www.fao.org/3/ca6684en/ca6684en.pdf>).

- CWP-26 established five ad-hoc task groups (TGs) to progress work during the 2019-2022 intersessional period (CWP, 2019). Membership is open to all CWP parties, and CWP-26 identified a lead organization for each TG to convene and lead that TG with support from the CWP Secretariat. Three of these TGs involve capture fisheries:
- **Fishing effort concepts (TG-effort)**
- Catch concepts (TG-catch)
- Reference harmonization standard (TG-RH2).

Objectives: TG-Effort

- Review, revise and where necessary further develop CWP fishing effort concepts and associated diagram(s) and definitions including measures of nominal and standard effort, and elaborate their use in informing STATLANT questionnaires
- Review, further develop and define standard measures of effort for the categories of fishing gear in ISSCFG (refer Appendixes 1 and 2), taking account of emerging remote-sensing technologies (refer below) and opportunities to develop new measures of effort.

TG-Effort work (organization/group roles)

TG Members

- Conveners: Ms. Nancie Cummings and Mr. David Ramm
- Membership: open to all CWP parties and those interested in this work are encouraged to actively contribute.
- At CWP-26, the following parties indicated initial interest in participating in the TG: GFCM ICCAT, ICES, IOTC, NAFO, SEAFDEC and FAO/WECAFC.

Member roles:

- TG members will decide on the detailed work plan and may propose revisions of the ToRs for approval by the Coordinator of the CWP Fisheries Subject Group and the CWP Secretariat.
- Each TG participant is encouraged to engage actively in the work of the TG, including by:
 - Attending all web calls and meetings
 - Sharing knowledge and practical examples to illustrate CWP needs
 - Reviewing working documents co-prepared by the TG.

TG-Effort Work Organization (Cont.)

- Agendas and meeting materials: prepared by Conveners in conjunction with CWP Secretariat, distributed 1 week prior to meeting
- Follow-up meetings considered
- Meeting minutes prepared by Conveners and distributed post meeting (within 10 days)
- Meeting environment and frequency (virtual/in-person as needed)
- Collaboration with other TGs as required and agreed by TG members

Proposed tasks, Terms of Reference, and timeframe for the work of TG-effort

TOR	Task	Timeframe	Completed
0.	Develop draft ToRs and work plan in consultation with TG Convener and circulate to members for validation. Call for TG participations and their contact details.	Feb 2021	21 April 2021
1.	Finalize ToRs and establish TG membership	March 2021	July 2021
2.	Review, revise and where necessary further develop the CWP fishing effort concepts and associated diagram(s) and definitions including measures of nominal and standard effort, and elaborate their use in informing STATLANT questionnaires	July/August 2021, 6- July joint meeting catch/effort TGs	Completed
3	Concurrently with 2, review, further develop and define standard measures of effort for the categories of fishing gear in ISSCFG, taking account of opportunities for new measures based on emerging technologies such as AIS, SAR and VIIRS, and artisanal fisheries	July/August 2021	Completed
4.	Circulate first draft of the revised fishing effort concepts and definitions	September 2021	Completed
5.	Consider further development to the fishing effort concepts	Prior to CWP Intersessional meeting (IS)	Ongoing
6.	Concurrently with 5, consider implications of the revised fishing effort concepts and definitions in the work of TG-catch and TG-RH2 and, if needed, convene a virtual joint-TG meeting	Prior to IS	TBD-at 28 th CWP IS Fisheries Subject meeting
7.	Present advanced version of revised fishing effort concepts and definitions at the CWP intersessional meeting (IS)	TBD-at 28 th CWP IS Fisheries Subject meeting	TBD-at 28 th CWP IS Fisheries Subject meeting
8.	Consider further developments including intersessional meeting feedback and enlarging the scope of contributions to other CWP parties	Post IS	
9.	Incorporate relevant outputs of TG-catch and TG-RH2	Post IS	
10.	Present final version of the revised fishing effort concepts, diagram(s) and definitions to CWP-27 for consideration and, if possible, adoption	By mid-2022	

TG- fishing effort (work plan continued)

- Historical concepts and definitions
- CWP use of fishing effort in STATLANT questionnaires
- Terminology
- Further development of fishing effort concepts
- Online briefing of 'google share doc' (July 2021 Joint Call TG-effort and Catch Concepts)
- Continued incorporation of comments from TG-catch and TG-effort post July 2021 online call briefing (via google online share and direct inputs to word document)
- Continuation of review of TG-effort work and presentation to CWP IS November 2021
- Follow up TG-effort work to incorporate CWP IS inputs and follow up online meeting with TG-catch and TG-reference harmonization

CWP historical fishing effort concepts and definitions

- CWP's historical development of fishing effort concepts was initiated in the 1960s when CWP developed a standardised reporting system for fishery statistics in the north Atlantic (STANA questionnaires).
- This system was further developed as the STATLANT questionnaires, and subsequently used globally as a reporting system for fishery statistics
- STATLANT questionnaires are dispatched by FAO on behalf of the regional fishery organizations to relevant national authorities
- Data from the questionnaires are compiled by FAO into global fishery statistics.
- While the initial focus of those CWP developments was industrial fisheries, CWP's work in capture fisheries statistics covers all fishery sectors (i.e. industrial, small-scale/artisanal, sport/recreational).



CWP use of fishing effort in STATLANT questionnaires

STATLANT questionnaires provide for the reporting of fishing effort at 3 levels* of precision:

- Category A: a detailed measure of effort by fishing gear category, e.g. number of hours fished or number of sets
- Category B: number of days fished, including days in which searching occurred but no fishing took place
- Category C: number of days on the fishing ground.

In 2018, the t-RFMO workshop proposed combining categories A+B+C

*There is a fourth category (D) which is specific to STATLANT B21 (a pro-rated measure of effort when data are incomplete).

Nominal and effective effort and application in STATLANT questionnaires

- Nominal fishing effort: a general measure of effort used to quantify the unadjusted, total effort units exerted on a stock in a given time period.
- Effective fishing effort: a measure of effort adjusted to some common standard before being aggregated across all classes or strata.
- Measures of nominal fishing effort are generally reported in STATLANT questionnaires.

TG-effort to advise on the use of nominal and effective measures in informing STATLANT questionnaires.

TG-effort review document: terminology

Term	Definition
Statistical concept ('what is it')	A <u>representation of a notion or entity based on a unique set of characteristics</u> which defines a statistical measure, dimension or domain, and which has been developed by CWP or recommended by CWP for use (from CWP revised Handbook)
Standard measure of fishing effort ('how much')	CWP agreed <u>measurement which quantifies the amount of fishing effort</u> exerted within a statistical concept
ISSCFG	The International Standard Statistical Classification of Fishing Gear (ISSCFG), adopted by CWP in 1980 and revised in 2016 (included in excel file TG-effort review of CWP fishing effort concepts.xlsx).



CWP historical fishing effort concepts and definitions

- Between 1972-1986, CWP developed statistical concepts and measures of fishing effort.
- Publication of a primary reference for the collection of logbook information including a list of standard effort measures by fishing gear (Pope, 1986).
- Standard effort measures were further developed and expanded (FAO, 1999; Halls et al., 2005) and the current list with definitions is provided in Appendix 1 (TG-effort review document).
- List is focused on the industrial fishery sector and may be further developed to include other sectors (i.e. small-scale, artisanal, recreational, sport), as well as all gear categories listed in the revised ISSCFG.
- Also, the t-RFMO workshop (2018) proposed developing standard measures by fishing gear and 'fishing mode'.

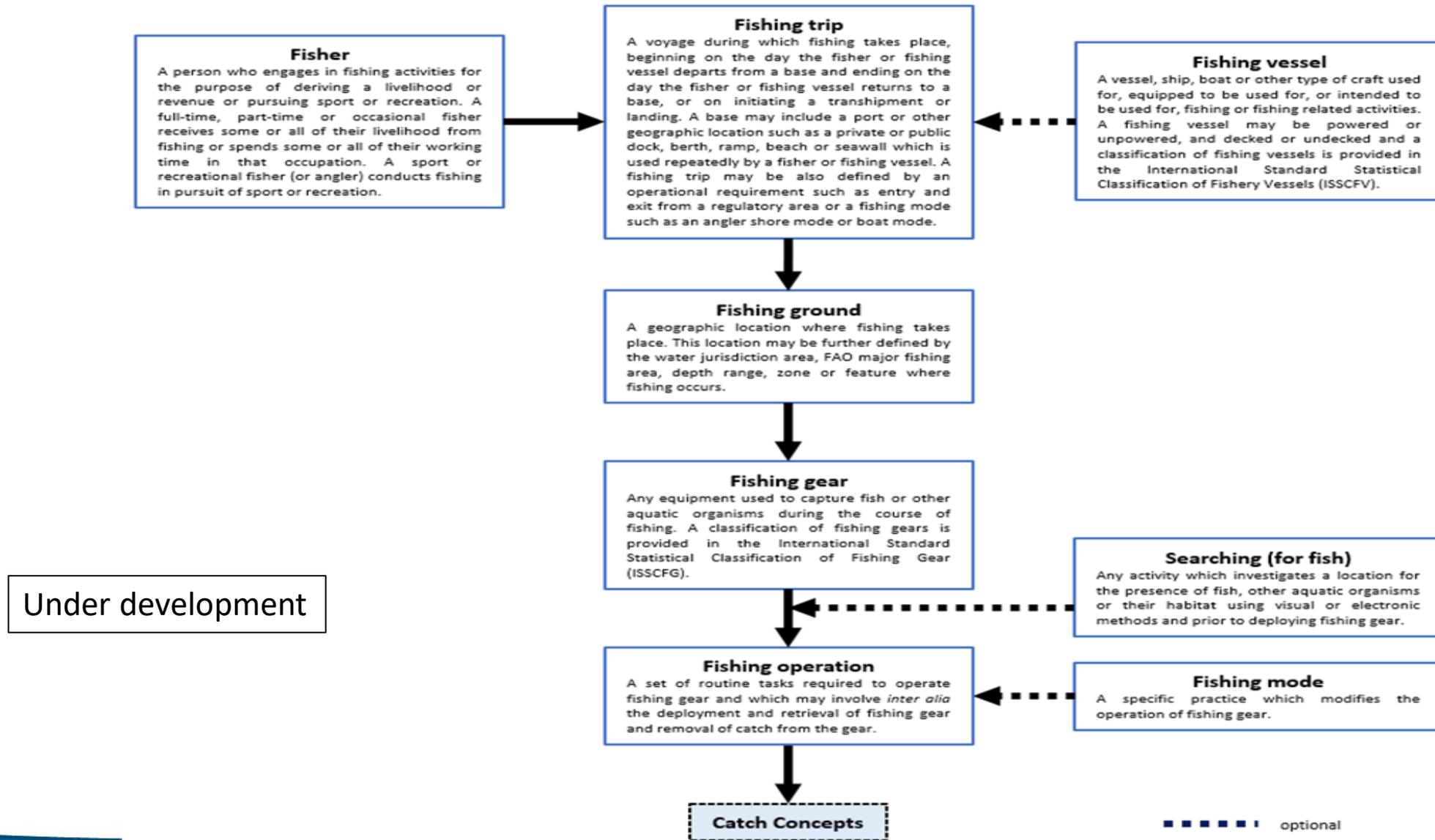
Development of fishing effort concepts (ToR 2)

Concept	Proposed revised definition
Fisher	A person who engages in fishing activities for the purpose of deriving a livelihood or revenue or pursuing sport or recreation. A full-time, part-time or occasional fisher receives some or all of their livelihood from fishing or spends some or all of their working time in that occupation. A sport or recreational fisher (or angler) conducts fishing in pursuit of sport or recreation.
Fishing vessel	A vessel, ship, boat or other type of craft used for, equipped to be used for, or intended to be used for, fishing or fishing related activities. A fishing vessel may be powered or unpowered, and decked or undecked and a classification of fishing vessels is provided in the International Standard Statistical Classification of Fishery Vessels (ISSCFV).
Fishing ground	A geographic location where fishing takes place. This location may be further defined by the water jurisdiction area, FAO major fishing area, depth range, zone or feature where fishing occurs.
Fishing trip	A voyage during which fishing takes place, beginning on the day the fisher or fishing vessel departs from a base and ending on the day the fisher or fishing vessel returns to a base, or on initiating a transshipment or landing. A base may include a port or other geographic location such as a private or public dock, berth, ramp, beach or seawall which is used repeatedly by a fisher or fishing vessel. A fishing trip may be also defined by an operational requirement such as entry and exit from a regulatory area or a fishing mode such as an angler shore mode or boat mode.

4. Further development of fishing effort concepts (Continued)

Concept	Proposed revised definition
Fishing gear	Any equipment used to capture fish or other aquatic organisms during the course of fishing. A classification of fishing gears is provided in the International Standard Statistical Classification of Fishing Gear (ISSCFG).
Searching (for fish)	Any activity which investigates a location for the presence of fish, other aquatic organisms or their habitat using visual or electronic methods or remote technology and prior to deploying fishing gear.
Fishing operation	A set of routine tasks required to operate fishing gear and which may involve <i>inter alia</i> the deployment and retrieval of fishing gear and removal of catch from the gear.
Fishing mode	A specific practice which modifies the operation of fishing gear such as the deployment of purse seines on schools of fish associated with floating objects.

Figure 1: Diagrammatic presentation of fishing effort concepts with definitions and relationships. The catch concepts are being reviewed by TG-catch and the original catch concepts diagram and definitions are published in the CWP Handbook. Note that the term ‘fish’ in these diagrams is used in a general fishery context (i.e. fish and other aquatic organisms).



Why: Need to characterize capture fisheries from global/regional view, utilizing a common set of regional/inter-regional standards which apply internationally recognized definitions, classifications and codes.

Recognizing multiple levels of needs:

- maintain continuity and consistency in the reporting of effort statistics
- ensure comprehensive coverage of fishing effort across all capture fishery sectors, fishing gears and fishing modes
- facilitate the integration of any new concepts and measures with current and established reporting practices.

How:

- Review current state of reporting of fishing effort to international organizations by national statistical offices, as developed by CWP
- Identify refinements in the context of:
 - national/regional offices, artisanal fisheries
 - revisions of CWP definitions of fishing effort such as those used by t-RFMOs
 - new technologies

Development of fishing effort measures

- A draft composite list of standard measures of fishing effort by ISSCFG gear category and proposed fishing modes (Appendix 3 of TG-effort review document), based on the work of CWP (FAO, 1977), FAO (1999) and Halls et al. (2005), and the t-RFMO proposal (2018).
- The levels of priority for collecting these measures are indicated.
- There are also proposed measures of effort for sport and recreational fishing which may be included in the list as a combination of an ISSCFG gear category and specified fishing mode ... for further consideration by TG-effort.
- Generalised definitions for the standard measures of fishing effort are proposed in the TG-effort review document.

Development of fishing effort measures

Appendix 3: Composite table of standard measures of fishing effort by ISSCFG gear categories and fishing mode

Gear category (ISSCFG, 2016)	Fishing mode	Effort measure descriptor				
		Priority 1 (Recommended)	Priority 2	Priority 3	Priority 4	Priority 5
SURROUNDING NETS		Number of sets	Number of hours fished	Number of days on ground	Number of days absent from port	Number of trips
Purse seines	Free-school/un associated	Number of sets	Number of days fished	Number of hours fished		
Purse seines	Associated	Number of sets or Number of hours since last fishing this FAD (Halls et al 2005)	Number of days fished	Number of hours fished		
Purse seines		Number of days fished	Number of sets	Number of hours fished		
Surrounding nets without purse lines		Number of sets	Number of days fished	Number of days on ground		
Surrounding nets (nei)		Number of days fished	Number of sets	Number of days on ground		

Development of new fishing effort measures in context of: emerging technologies

Emerging technologies such as satellite-based Automatic Identification System (AIS), Synthetic Aperture Radar systems (SAR) and Visible Infrared Imaging Radiometer Suite (VIIRS) may provide opportunities *inter alia* to:

- Validate or provide more informed measures of effort
- Provide new technologies for use in monitoring illegal, unregulated and unreported (IUU) fishing activities
- Support the development and application of new measures of effort which may be integrated with existing measures defined by CWP.

Agenda item timeframe for work of TG- effort

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Where we are now
(timewise)



TG-effort further considerations (intersession to CWP-27):

- Combining STATLANT's 3 levels of precision (categories A+B+C)?
- Further consider use of nominal and effective measures in informing STATLANT questionnaires
- Refine fishing effort concepts and definitions
- Complete work on fishing effort measures, definitions and levels of priority across ISSCFG categories
- Consider new effort measures based on emerging technologies



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

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