



# CWP GIS Task group

## Review of progress & recommendations proposal

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**Background**

**Activity summary**

**GIS data survey – summary & outputs**

**Activity 1 (Spatial grid systems)**

**Activity 2 (GIS data and metadata standards)**

**Activity 3 (GIS datasets of interest)**

**Tentative (draft) structuring of Handbook GIS section**



- **Background**

Activities & discussions primarily based on the content & recommendations of the [\*Handbook on GIS Matter\*](#) concept note circulated at last CWP 25 Plenary session.

- **Objective**

To expand and develop a GIS section of the CWP Handbook

- **Three main working areas**

- *Activity 1 – Spatial gridded systems for fishery data reporting*
- *Activity 2 – Strengthening promotion and implementation of geographic information standards & best practices*
- *Activity 3 – Establish a list of GIS datasets and layers relevant for fishery*



- **CWP members involved**

- Group members (as listed in the ToRs)  
FAO, GFCM, ICES, IOTC, NACA, (SEAFO)
- Participation of FAO, GFCM, ICES, IOTC
- Additional information collected from CWP ad-hoc Reference Harmonization Task Group members: ICCAT, CCSBT

- **Working group activities**

- No e-meeting with all members, exchanges done on individual basis
- Presentation at web call of ad-hoc reference harmonization task group
- GIS data survey prepared by FAO and shared to group members
- Information shared with/from the ad-hoc reference harmonization task group
- Additional information collected by FAO through the Research Data Alliance (RDA) Fishery Data Interoperability (FDI) working group

- **Working document** available at [http://www.fao.org/fi/static-media/MeetingDocuments/cwp/cwp\\_IS\\_2017/7e.pdf](http://www.fao.org/fi/static-media/MeetingDocuments/cwp/cwp_IS_2017/7e.pdf)



- **Objective**

To collect material from CWP members on the three main working areas and trigger discussions for recommendation proposals

- **Participating members:** FAO, GFCM, IOTC, ICES + ICCAT

- **Survey template** (see working report – annex)

- Scope: survey filled by members for each dataset (or database)
- Geo-referencing characteristics
  - **Spatial Reference System**
  - **Geographic classification system** type & characteristics
    - Coordinates / Grid (extent, shape, resolution) / Areas
  - **Grid coding system** (if any)
  - GIS reference datasets & geo-referenced data access (if any)
    - **Data** access through web, formats & standards used
    - **Metadata** availability, formats & standards used

- Outputs available [here](#)

- **Survey outputs (1)**

- **Spatial Reference System:** World Geodetic System (WGS84, EPSG:4326)
- **Geographic classification systems** used
  - **Grid classification** (reporting) **systems**
    - Global extent: square shape, main resolutions: 1deg, 5deg
      - Use by t-RFMOs and FAO
      - Among t-RFMOs, only IOTC is using CWP areal **grid coding system**
    - Regional extent:  
*ICES statistical rectangles, GFCM grid system*
      - Compatible with CWP areal **grid coding system**
      - But custom coding system used
  - **Area classification systems**
    - FAO major fishing areas
    - Regional statistical areas  
*ICES fishing areas* (breakdown of FAO major fishing areas)  
*GFCM Statistical Areas* (GSAs)

- **Survey outputs (2)**

- GIS reference datasets & geo-referenced data

- Data Access

- Web access: available for GFCM, ICES, FAO. Planned by ICCAT, IOTC
- GIS data **formats**
  - Not always used, e.g. PDF format only
  - ESRI Shapefile (proprietary format) used + OGC formats
- GIS data **services**: Only FAO & ICES with standard OGC data services

- **Metadata** availability

- Note: this survey section was generally not filled, and not well understood, highlighting the need to define well **GIS metadata**.
- GIS metadata **formats**
- Only ICES and FAO are providing metadata resources using standard ISO 19115/19139 (approved OGC standard)
- GIS metadata **services**  
Only ICES and FAO with standard OGC metadata services

## Activity 1 – Spatial gridded systems for fishery data reporting

### Outputs

- **Draft Set of key definitions**
  - **Grid classification** (reporting) **system** and its characteristics: extent/scale, grid unit/cell shape, resolution
  - **Grid coding system**
  - **Data exchange format** (with broader scope than grid)

**System defined by a regular geo-referenced grid characterized by (i) a maximum geographic extent or scale (global, regional, local), (ii) a grid unit/cell shape (e.g. square, rectangle), (iii) a grid resolution (e.g. 1 x 1deg, 5 x 5 deg).** In practice, such system may be used for on-board data collection and underlying data aggregation, specifically for Tuna RFMOs.

**Logic associated to a grid classification system that allows converting a pair of geographic coordinates (Longitude / Latitude) into a string-based code, and vice-versa. In the computing field, coding will mean both *encoding* and *decoding*.** Examples: Areal grid system (CWP), C-square. For certain grid resolution, these two coding systems correspond to two different mechanisms to encode/decode for a same *Grid classification system*.

**Digital format used for exchanging geo-referenced fishery data. A distinction can be made between the specific format of the spatial dimension (e.g. grid or area code string, pair of Longitude/Latitude coordinates as number of string e.g. Well-Known-Text string) and the fishery data exchange format.**



## Activity 1 – Spatial gridded systems for fishery data reporting

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- **Draft Set of key definitions**
  - **Grid classification** (reporting) **system**
  - **Grid coding system**
  - **Data exchange format** (with broader scope)
- **Adoption of current CWP areal grid coding system very limited**
  - Use by FAO Tuna Atlas. Among t-RFMOs , only IOTC is using it at various resolutions.
  - ICCAT mentions it in its maps information ([https://www.iccat.int/Data/ICCAT\\_maps.pdf](https://www.iccat.int/Data/ICCAT_maps.pdf)), but no evidence of grid codes in exchanged data
  - Use of coordinates: square center (IATTC), north-west corner (CCSBT), south-west corner (WCPFC)
  - Regional custom grid system used by ICES / GFCM

## Activity 1 – Spatial gridded systems for fishery data reporting

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### Recommendations proposal

- **Main recommendations**
  - Refine & Validate key definitions
  - Keep the CWP areal grid coding system as single areal grid system. No alternate grid coding system recommended (for now).
  - Encourage the use of CWP areal grid coding system when compatible grid classification systems are used
- **Handbook recommendations**
  - Include basic definitions in a CWP glossary
  - Create a GIS section dedicated to handle technical definitions, recommendations and **guidelines** for implementation
  - Move the CWP areal grid coding system methodology to this GIS section under a sub-section on **Grid coding systems**

## Activity 2 – Strengthening promotion and implementation of geographic information standards & best practices

### Outputs

- **Scope:** *fishery data* including *Fishery information & knowledge* (GIS references & derivate datasets), *Fishery dependent* or *independent data*
- **Need of key definitions** based on 6 levels of geo-referencing
  - 1- **Coordinate Reference Systems**
  - 2- **Use of geographic coordinates**
  - 3- **Geographic classification systems**, with distinction of 3 types: *locations, linear transects & areal classification systems* (grids or irregular areas)
  - 4- **Geographic coding systems**, with distinction of 2 types: *coding conventions* (for *locations, transects* and *irregular areas*) and *grid coding systems*
  - 5 - **Geographic (Meta)data formats**
  - 6 - **Geographic (Meta)data services**

### Recommendations proposal

- **Main recommendations**
  - Refine & Validate key definitions
  - Promote adoption of a single world coordinate reference system (WGS84) and its proper use in geo-referenced data
  - Adoption of key geographic classification systems (with possibly new areas breakdown) and CWP grid coding system
  - Promote adoption of existing GIS standards for (meta)data formats and services
  - Strengthen the collaboration with RDA Fishery Data Interoperability WG
- **Handbook recommendations**
  - Include basic definitions in a CWP glossary
  - GIS section with the 6 levels of geo-referencing, underlying recommendations and **guidelines** for implementation



## Activity 3 – Establish a list of GIS datasets and layers relevant for fishery

### Outputs

- Activity not yet discussed, although implicitly targeted in GIS data survey
- GIS catalogues are available for ICES and FAO, with the use of catalogue Service for the Web (CSW), by means of Geonetwork
- FAO proposal of GIS CWP catalogue
  - materialize such list as simple catalogue based on the CSW harvesting
  - Minimal effort for implementation
  - A first CWP catalogue content may cluster e.g. FAO Geonetwork, ICES Geonetwork, (RDA FDI Use Case geonetwork?)
  - Key Driver for promoting the iterative implementation of standard web-services in support of geo-referencing (Cf. Activity 2)

### Recommendations proposal

- **Main recommendations**
  - Encourage the adoption of standard metadata catalogues (Cf. Activity 2) by CWP members for their harvesting through a CWP-oriented catalogue.
- **Handbook recommendations**
  - GIS catalogue based on the Catalogue Service for the Web standard, harvesting CWP member's catalogues; and embedded in the GIS section



## Tentative (draft) structuring of CWP Handbook GIS section

### 1. Coordinate Reference Systems

### 2. Use of Geographic Coordinates

### 3. Geographic Classification Systems

#### 3.1 Main water bodies **from Section G – FISHING AREAS – GENERAL part 1**

#### 3.2 Types of geographic classification systems

##### 3.2.1 Irregular Area classification systems

##### 3.2.2 Grid classification (reporting) systems

##### 3.2.2 Others: Locations, Transects

#### 3.3 Main geographic classification systems

##### FAO Major Fishing areas for Statistical purpose **from Section H**

##### Breakdown of major fishing areas

### 4. Geographic Coding Systems

#### 4.1. Use of coding conventions – for locations/transects/irregular areas

#### 4.2. Grid coding systems – for regular grids **from Section G – FISHING AREAS – GENERAL part 2**

### 5. Geographic (meta)data formats

#### 5.1. Data formats

#### 5.2. Metadata formats

### 6. Geographic (meta)data services

#### 6.1. Data services

#### 6.2. Metadata services

### 7. GIS catalogue



**Thank you for your attention**