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**DISCUSSION:**

**ISSUES ENCOUNTERED WHILE POPULATING THE CCLME ALIEN  
SPECIES DATABASE AND DECISION-MAKING**

**DECISIONS**

**WORKSHOP ON “THE CCLME ALIEN SPECIES DATABASE:  
QUALITY ASSURANCE AND DATA VISUALIZATION”**

Organized within the project

*Invasive alien species and other ocean stressors: Furthering the scientific knowledge and capacity basis  
in the Canary Current Large Marine Ecosystem*

**11 December 2023 – On-line**

# Alien species database for the CCLME – Data Model

## Terms - Database fields (page 1)



Suggested terms	Some clarifications
<b>Database ID</b>	Number given within the database to facilitate exchanges within experts engaged in the database and the assessment
<b>scientificName</b>	Scientific name of the species
<b>scientificNameID</b>	Worms identifier
<b>higherClassification</b>	Taxa
<b>taxonRank</b>	The taxonomic rank of the most specific name in the scientificName.
<b>kingdom</b>	The full scientific name of the kingdom in which the taxon is classified.
<b>phylum</b>	The full scientific name of the phylum or division in which the taxon is classified.
<b>class</b>	The full scientific name of the class in which the taxon is classified.
<b>order</b>	The full scientific name of the order in which the taxon is classified.
<b>family</b>	The full scientific name of the family in which the taxon is classified.
<b>organismQuantity</b>	A number or enumeration value for the quantity of organisms
<b>organismQuantityType</b>	The type of quantification system used for the quantity of organisms
<b>establishmentMeans</b>	Introduced to a given place and time through the direct or indirect activity of modern humans; e.g native, introduced, etc.
<b>degreeOfEstablishment</b>	The degree to which an Organism survives, reproduces, and expands its range at the given place and time; e.g. native, invasive, etc. <a href="https://www.highcharts.com/products/highcharts/">https://www.highcharts.com/products/highcharts/</a>
<b>habitat</b>	A category or description of the habitat in which the Event occurred, e.g. estuarine, marine; and coral reef, rocky reef, sand, etc.
<b>Impact</b>	It could be either positive or negative, e.g. economic, ecologic, ecosystem services, etc. Free text.
<b>Impact Classification</b>	If deleterious impact, to be described using: (i) Environmental Impact Classification for Alien Taxa, e.g. Cryptogenic (CG), Data Deficient (DD), Minimal Concern (MC), Minor (MN), Moderate (MO), Major (MR), Massive (MV), No Alien Population (NA), Not Evaluated (NE); or (ii) Socio-Economic Impact Classification of Alien Taxa (SEICAT) according to observed changes in people's activities, e.g. Minimal concern (MC), Minor (MN), Moderate (MO), Major (MR), Massive (MV), Data deficient (DD).

# Alien species database for the CCLME – Data Model

## Terms - Database fields (page 2)



### Suggested terms

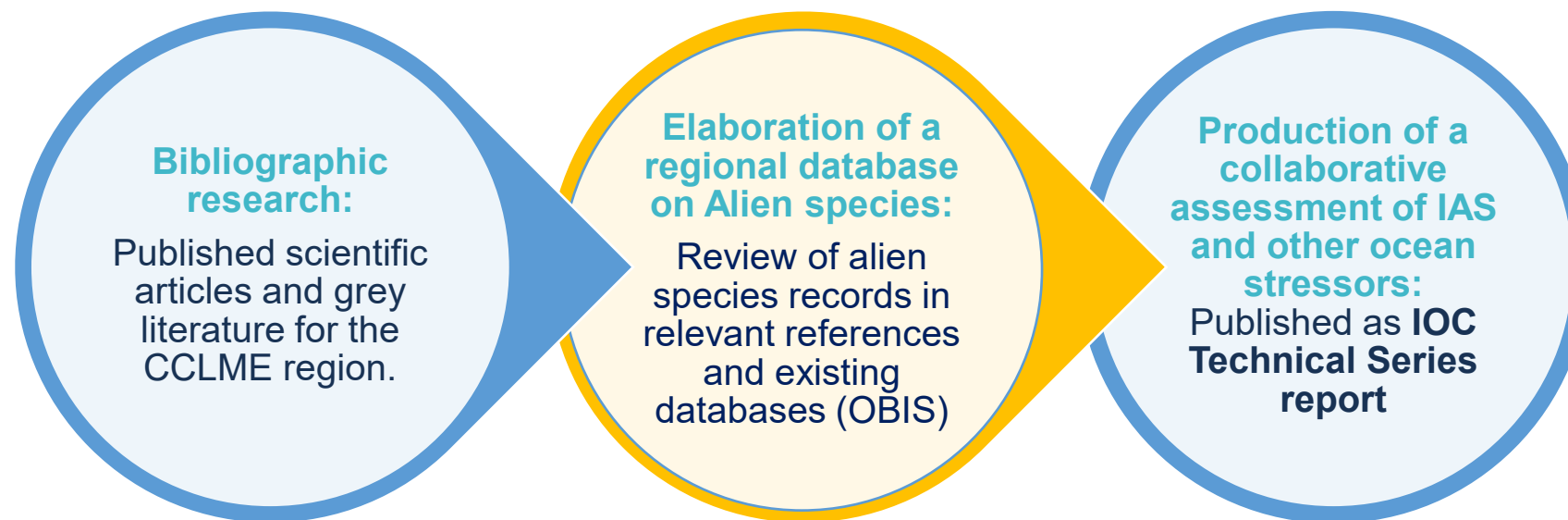
### Some clarifications

<b>pathway</b>	The process by which an Organism came to be in a given place at a given time; e.g. parasiteOnAnimals, ballastWater, hullFouling, etc.
<b>eventDate</b>	Date-time when the event was recorded; e.g. year-month-day, year-month, year, year/year, etc.
<b>associatedReferences</b>	A list of identifiers of literature associated with the Occurrence; e.g. bibliographic citation
<b>decimalLongitude</b>	The geographic longitude in decimal degrees
<b>decimalLatitude</b>	The geographic latitude in decimal degrees
<b>minimumDepthInMeters</b>	The lesser depth of a range of depth below the local surface, in meters.
<b>maximumDepthInMeters</b>	The greater depth of a range of depth below the local surface, in meters.
<b>verbatimDepth</b>	The original description of the depth below the local surface; e.g. 100-200 m
<b>coordinateUncertaintyInMeters</b>	The horizontal distance (in m) from from the given decimalLatitude and decimalLongitude describing the smallest circle containing the whole of the Location
<b>country</b>	The name of the country in which the Location occurs.
<b>islandGroup</b>	The name of the island group in which the Location occurs. Proposed in what regards the Canary Islands, as it is the only Spanish region for which data will be gathered
<b>georeferenceRemarks</b>	Comments about the spatial description determination, explaining assumptions made, i.e. in case the exact geographical location is not provided in the article, and we use an approximate point (e.g. a geographical position within a port)
<b>occurrenceRemarks</b>	Comments or notes about the Occurrence; i.e. additional information deemed important, such as as associated environmental condition (salinity, temperature, and its intensity)
<b>Criteria</b>	Criteria (to be agreed) met
<b>Presence in the analysis</b>	Species validated considered in the assessment (1) or not (0)

# Discussion

## Starting point

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### Registers are extracted from publications (articles and grey literature)

- In principle, the database should not include registers from **personal communications** and **unpublished materials** (**need to review some registers**)
- Shall we include registers extracted from **books of abstracts** and **news**?
- ❑ **Only to be included once published: scientific journals or conference communications (registers in books of abstracts)**

# Discussion

## Starting point

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### Registers are extracted from publications (articles and grey literature)

- In principle, the database should not include registers from **personal communications** and **unpublished materials** (need to review some registers)

### ❑ Case of Citizen Science: To be included if the data is ratified by an expert

- Observadores del Mar (Spain): Registers already included in the CCLME Alien Species Database populated by the IEO as sightings are validated by an expert.
- Red PROMAR (Canary Islands, Spain)

# Discussion

## scientificName

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- Case of data provided by the IEO:

Some registers were not included in the CCLME Alien Species Database as they have already been withdrawn from the IEO database.

This decision is related to taxonomic changes since the publication of the first register. e.g. According to the pictures provided in the article, species identification was wrong, leading to the identification of a native species as an exotic one.

Do you agree with the approach?

- Yes, to be deleted is already known as mistaken – this is a dynamic process!**
- Possibility to keep track of those publications to mark them in our list of references, to avoid making the effort again**

# Discussion

## scientificNameID

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### Some clarifications for future work:

This field has been filled in different ways by the experts that have contributed to the CCLME Alien Species database (**need to review**)

scientificNameID: Worms identifier ([https://dwc.tdwg.org/list/#dwc\\_scientificNameID](https://dwc.tdwg.org/list/#dwc_scientificNameID)).

**Example of the valid way:** <urn:lsid:marinespecies.org:taxname:564660>

# Discussion

## Bryozoa

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- Some species in the list might be **cosmopolitan**.

Suggestions on how to proceed to address this question are welcome.

- Identify the species, check, and delete from the database if appropriate.**



# Discussion

## subclass



- What do you think about including the taxon **subclass** be included in the Template? For some species taxonomic descriptions, such as for corals, this taxonomic level is relevant. So far, this information has been added to 18 registers in the database.  
Note: subclass does not appear in the Darwin Core List of Terms

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<b>kingdom</b>	The full scientific name of the kingdom in which the taxon is classified.
<b>phylum</b>	The full scientific name of the phylum or division in which the taxon is classified.
<b>class</b>	The full scientific name of the class in which the taxon is classified.
<b>subclass</b>	The full scientific name of the subclass in which the taxon is classified.
<b>order</b>	The full scientific name of the order in which the taxon is classified.
<b>family</b>	The full scientific name of the family in which the taxon is classified.

- Add the Term to the CCLME Alien Species database and fill in it for corals. No need to make an effort for other taxonomic groups.**

# Discussion order



- Important to note: Current changes on order for fish

## Suggested to use WoRMS

Suggested terms	Some clarifications
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<b>subclass</b>	The full scientific name of the subclass in which the taxon is classified.
<b>order</b>	The full scientific name of the order in which the taxon is classified.
<b>family</b>	The full scientific name of the family in which the taxon is classified.

# Discussion

## establishmentMeans

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## Registers are extracted from publications

- In principle, the database is to be filled with the information as it provided in the article.

Example: A species considered alien in an article published in 2010, is now considered as invasive.

Do you agree indicating the register in the database as alien?

**If published, last status should be indicated.**

**Add a comment in occurrenceRemarks (previous status and latest reference for the change in the bibliography)**

# Discussion

## establishmentMeans



- In the case of Cabo Verde, many species are described as **cryptogenic**, should these species be included in the list?

[https://dwc.tdwg.org/list/#dwc\\_establishmentMeans](https://dwc.tdwg.org/list/#dwc_establishmentMeans)

establishmentMeans = uncertain?

Impact Classification: Environmental Impact Classification for Alien taxa → Cryptogenic (CG)

- It is agreed to not include in the CCLME Alien Species database and wait until the species is ratified as alien
- Possibility to keep track of those publications/registers

# Discussion

## Impact and Impact Classification



### Suggested terms

### Some clarifications

### Database ID

Number given within the database to facilitate exchanges within experts engaged in the database and the assessment

### Impact

It could be either positive or negative, e.g. economic, ecologic, ecosystem services, etc. Free text.

### Impact Classification

If deleterious impact, to be described using: (i) Environmental Impact Classification for Alien Taxa, e.g. Cryptogenic (CG), Data Deficient (DD), Minimal Concern (MC), Minor (MN), Moderate (MO), Major (MR), Massive (MV), No Alien Population (NA), Not Evaluated (NE); or (ii) Socio-Economic Impact Classification of Alien Taxa (SEICAT) according to observed changes in people's activities, e.g. Minimal concern (MC), Minor (MN), Moderate (MO), Major (MR), Massive (MV), Data deficient (DD).

Thinking in the presentation of data in the CCLME Eco-GIS Viewer, as a tool aimed at making meaningful data analysis:

- Do you think that it would be useful to include Impact and Impact Classification to the **Advanced search** options? **No strong opinions**
- If so, would it be useful to split Impact Classification column in two columns?
  - Environmental Impact Classification
  - Socio-economic Impact Classification



# Discussion

## eventDate

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### Some clarifications for future work:

- If the date is missing, leave blank. The publication date should be evident from the associatedReferences, if not a comment could be added in occurrenceRemarks.
- <1986. This is not a valid example → leave blank

[https://dwc.tdwg.org/list/#dwc\\_eventDate](https://dwc.tdwg.org/list/#dwc_eventDate)

→ There is a need to review several registers



# Discussion

## eventDate

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- Data representation in the CCLME Eco-GIS Viewer:

An additional column shall be added to have the possibility to filter data by **Year**.

eventDate can be presented as a period, e.g. 2004/2006.

Provided that it is important to know the year of the first record to implement management measures, do you agree in using the first year of the period?

- Yes, add a new column to help in data representation in the CCLME Eco-GIS Viewer, and use the first year in case of a period.**

# Discussion

## eventDate

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- Should **old sightings for species which were not seen again** be included in the CCLME Alien Species Database and, if so, what **article date** or **sample date** should be the threshold?

Example: *Primeros registros de invertebrados marinos para las Islas Canarias y de Cabo Verde IV* (Moro et al., 2020)

[https://www.researchgate.net/publication/349311802\\_Primeros\\_registros\\_de\\_invertebrados\\_marinos\\_para\\_las\\_islas\\_canarias\\_y\\_de\\_Cabo\\_Verde\\_IV](https://www.researchgate.net/publication/349311802_Primeros_registros_de_invertebrados_marinos_para_las_islas_canarias_y_de_Cabo_Verde_IV)

The article mentions the species *Cassiopea andromeda* which was found in Sal (Cabo Verde) in 1775.

- Not to be included as to be considered as native or cryptogenic**
- Need to define a limit in what regards sample date (if appropriate), i.e. 1970. Check dates of existing registers**





# Discussion

## decimalLongitude and decimalLatitude

- Registers in a specific port, village, island.

It was suggested to indicate an **approximate point** and provide clarifications under georeferenceRemarks.

Shall we select one approximate point for each and use the same in all registers?

Or better use random points so that we can see **all the registers presented in the map?**

Examples in **georeferenceRemarks**:

Canary Islands

Gran Canaria

Tenerife

Port of Las Palmas

...

- ❑ It is agreed to use random points so that all registers are presented in the map. Check with data representation experts about the interest of using c-squares



# Discussion

## decimalLongitude and decimalLatitude

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- An article refers to species occurrence in two islands. Proposal to include it as two separate registers.

e.g. González Lorenzo, 2008. *Argyrosomus regius* in Tenerife and Gran Canaria islands (Spain).

- It is suggested to check case by case, looking at the dates (same date in the two places, or different dates)



# Discussion

## verbatimDepth

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- Some clarifications for future work:

Example of depth: “0-40 m” should be added as `minimumDepthInMeters` (0) and `maximumDepthInMeters` (40). `verbatimDepth` could be added as well but this is mostly important when there is interpretation (for example fathoms to meters), so not really necessary here.

**Need to review existing registers**



# Discussion

## Coordinate Uncertainty In Meters

- Case of data provided by the IEO:

In the IEO database, there is one column with the “Accuracy”, that ranges from 1 to 5 (from more accurate to less accurate)

Blank: The exact coordinates are indicated

1: Around 100 meters (port, beach)

...

5: Large region (as a sea)

What are your views?

**Shall we keep or better leave blank? Discuss bilaterally with contributor**

### Equivalence applied:

1 → 100 m

2 → 1000 m

3 → 10000 m

4 → 100000 m

5 → 1000000 m

## FURTHER SUGGESTIONS:

- Filtering for a period (not only one year)
- Filtering by area. e.g. EZZ
- Adding the number of records displayed. e.g. legend
- Adding the ports and ports names as separate static layers
- Further prospect the proposal to add the name/affiliation/contact of the person entering the record (focal point)





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**THANK YOU** 

