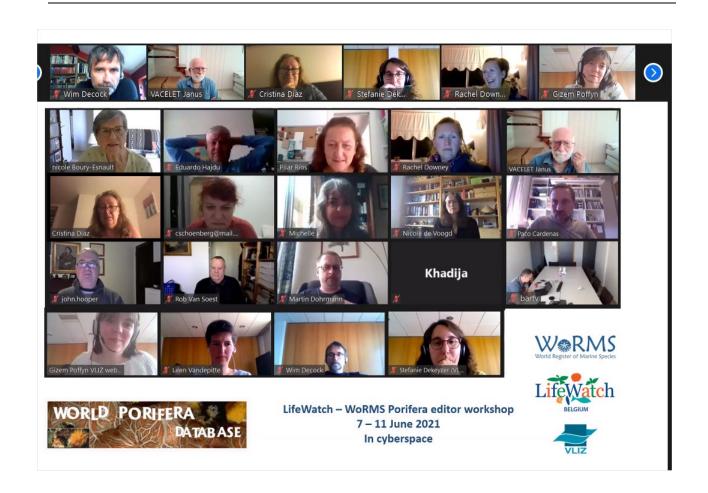




LifeWatch-WoRMS Porifera Editor Workshop Report

Date: 7-11 June 2021

Venue: Online - Zoom



Attendees

Van Soest, Rob – Naturalis Biodiversity Center, The Netherlands, Porifera (general list editor)

Boury-Esnault, Nicole* - Station Marine d'Endoume, Aix Marseille Université, France, Porifera (Homoscleromorpha, Keratosa, Polymastiida, Verongimorpha, Mediterranean fauna).

Cárdenas Paco – Uppsala University, Sweden, Porifera (Tetractinellida)

De Voogd, Nicole – Naturalis Biodiversity Center, The Netherlands, Porifera (Haplosclerida; deputy general editor & Thematic editor for Indo-West Pacific fauna)

Díaz, Maria-Cristina - Harbor Branch Oceanographic Institute, USA, Porifera (Thematic editor: Caribbean fauna)

Dohrmann, Martin - Ludwig-Maximilians-University Munich, Germany, Porifera (Hexactinellida)

Downey, Rachel - Australian National University, Australia, Porifera (Antarctic)

Hajdu, Eduardo – Museu Nacional of the Universidade Federal do Rio de Janeiro, Brazil, Porifera (Biemnida, Desmacellida, Poecilosclerida, South American fauna)

Hooper, John N.A. – Queensland Museum, Australia, Porifera (Poecilosclerida, Australian fauna)

Klautau, Michelle* - Universidade Federal do Rio de Janeiro, Brazil, Porifera (Calcarea)

Ríos, Pilar* - Centro Oceanográfico de Gijón and Universidad de Alcalá de Henares, Spain, Porifera (Poecilosclerida & thematic editor for Iberian and Northwest African regions)

Schönberg, Christine - National Sun Yat-sen University, Taiwan, Porifera (Clionaida, Siphonodictyon, Thoosidae)

Vacelet, Jean - Station Marine d'Endoume, Aix Marseille Université, France, Porifera (Cladorhizidae, carnivorous sponges)

*Reporters

DMT: 5 members

Poffym, Gizem; Vandepitte, Leen; Dekeyzer, Stefanie; Decock, Wim; Vanhoome, Bart



Apologies: Not able to participate

Alvarez, Belinda - University of Western Australia, Australia, Porifera (Axinellida, Bubarida, Scopalinida, Suberitida)

Carballo, José Luis - Universidad Nacional Autónoma de México, Mexico, Porifera (Thematic editor: East Pacific)

Kelly, Michelle - National Centre for Aquatic Biodiversity and Biosecurity, National Institute of Water and Atmospheric Research, New Zealand, Porifera (Thematic editor: New Zealand fauna)

Manconi, Renata - Sassari University, Italy, Porifera (Spongillida, freshwater sponges)

Morrow, Christine - Queen's University Marine Laboratory, Northern Ireland, UK, Porifera (Thematic editor: North Atlantic fauna)

Pisera, Andrzej B. - Polish Academy of Sciences, Poland, Porifera (desma-bearing and coralline sponges)

Rützler, Klaus - Smithsonian Institution, National Museum of Natural History, USA, Porifera (Spirophorina)

In conclusion, 13 out of the 20 editors participated in the workshop

TEAM PICTURE



Introduction

The World Porifera Database (WPD), the Database of all Recent sponges ever described, is part of the World Register of Marine Species (WoRMS), a global initiative that aims to register all the species of marine organisms.

In December 2004, the first sponge data were entered by Rob van Soest and by the Data Management Team of the WoRMS. Since then, a group of volunteer taxonomic specialists joined the WPD and continued entering new data and improving the already existed ones.

Since the beginning, the Aphia Platform of WoRMS was continuously being improved. This means that the Editors have to constantly learn how to use the new tools and this is not always obvious. Consequently, some Editors frequently have problems with the general functioning of the WoRMS tools. Therefore, after all these years of the WPD, it is time for a meeting of all the Editors to standardize their actions, to learn together the new available tools and to improve the database.

This workshop was organized thanks to LifeWatch, the E-Science European Infrastructure for Biodiversity and Ecosystem Research. It is a distributed virtual laboratory, which is used for different aspects of biodiversity research. The Species Information Backbone of LifeWatch aims at bringing together taxonomic and species-related data and at filling the gaps in our knowledge. In addition, it gives support to taxonomic experts by providing them logistic and financial support for meetings and workshops related to expanding the content and enhancing the quality of taxonomic databases

Objectives

Outcomes and Goals

- 1) Among the priority gaps detected, some original combination names do not correspond to the names present in the original publications, and some taxa have not been "marked as original name". It is quite important to clean as soon as possible this first gap to obtain a clear taxonomic backbone.
- 2) Another important gap to fill up is **DISTRIBUTION**. The editors have to take into account the following points:

Distribution data entered in the database need to be linked to a primary source and not to the compilation of previous information coming from other sources. All distributions, which are not linked to a source, have to be deleted. A special attention has to be focused on the type-locality of every species.

Since van Soest et al. (2012), the MEOW system has been used for the sponge species distribution (Spalding et al., 2007). However, many Editors are not following this system because they do not know how to use it. Besides, they do not know the new Map Distribution Aphia tools, which is very helpful. Moreover, for the **deepsea distribution**, some editors follow the system proposed by Watling et al. (2013), but this system (named **GOODS**) is not known by most Editors. To "clean" the distribution already entered and to fill the gap for many taxa is another priority goal.

3) Few images were included in the WPD, although most sponge species could be illustrated by photos of living animals and by illustrations of the skeleton. It is the third important goal to reach during this workshop.

4) Sources are not always entered following the format required by WoRMS. The result is very often a mess to look after a reference, and there are many duplicates. To have access to most pdfs of all sources would be the Holy Grail!

The aims are:

- Teach the editors how to work with the online editing interface
- Focus on a number of gaps: original descriptions, distributions, images
- Quality control reference information
- Plan the future of the World Porifera Database

Activities

Participants watched before June 7th the videos prepared by the DMT: https://classroom.oceanteacher.org/course/view.php?id=702). These videos substituted the live talks and demonstrations and included: a general introduction to VLIZ (host institute of WoRMS), WoRMS itself, how WoRMS links to other initiatives, and the functionalities and tools of the database. Action points (AP) can be found throughout the report (in red) and are listed at the end.

Day 1: Monday June 11th 2021

Introduction of Leen Vandepitte for the practical access to the online materials and how to get in touch with DMT. A (virtual) round table was organized and all present editors made a short intervention.



General impressions of editors to the on-line training course.

Most of the editors are satisfied except for the quality of the registration which is not always audible. Some discussion about the chapter on Distribution. It is very complicated and does not correspond to the aim of the workshop of Porifera. See more discussion below.

Discrepancies between Manual of Aphia and the present Aphia. For example, In Aphia Manual it is written that one of the choices of the use of a source is **MISAPPLICATION**. In the Aphia system nowadays, this option has disappeared. On the contrary, in the Aphia system one of the choices of the source use is "Original description (unavailable nomenclaturally)" appears without explanation and is not mentioned in the Aphia MANUAL! It would be important that the Manual be updated regularly.

DMT: Regular up-dating of the Manual

Since the beginning, the Aphia Platform of WoRMS is continuously being improved. This means that the Editors have to constantly learn how to use the new tools and this is not always obvious. Consequently, some Editors frequently have problems with the general functioning of the WoRMS tools. Therefore, after all these years of the WPD, it is time for a meeting of all the Editors to standardize their actions, to learn together the new available tools and to improve the database.

A very long discussion about images. See below

Day 2: Tuesday June 12th 2021 (the meeting was not registered because there was a problem in Oostende)

"Taxonomy day"

We had some practical exercises on-line. It was not easy, and we acknowledge all the editors who have accepted to do it. Cristina Diaz, Pilar Ríos, Nicole De Voogd, Martin Dohrman, Michelle Klautau.

1. add a new species, just the taxonomic part

Corticium Aphia ID131976 from Muricy et al 2021 Aphia ID 404620

for example, the new species furcatum.

• 2. "clean" Spongosorites annandalei APHIA ID165925.

The original source appears 3 times, there is a problem in the authority name.

This species was kept as an example for Wednesday for distribution

- 3. **Problem with the original name**: *Halichondria (Halichondria) cornuloides* Burton, 1954 Aphia ID 165811
- 4. Problem with the original name: Callyspongia (Callyspongia) densasclera Aphia ID 240547
- 5. **original name not given**: *Haliclona (Amphimedon)* Aphia ID 605442
- 6. original name not given Acanthascus (Rhabdocalyptus) Aphia ID 171972
- 7. two authorities for the same species: Leucosolenia fabricii

Schmidt, 1869 AphiaID 150246 Haeckel, 1870 AphiaID 192268

• 8. How to enter a specimen:

Example from the collection of Ferrer Hernández found in the Museo Marítimo del Cantábrico by Pilar Ríos: Holotype of *Plocamia erecta*

• 9. "cascade" problems. The original combination name (the basionym) and all the different synonyms have to be linked directly to the currently "accepted name"

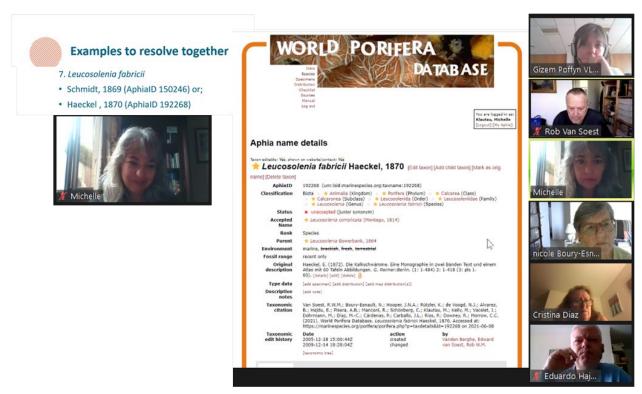
For example: Clathrina sagamiana (Hôzawa, 1929)

Original name Leucosolenia sagamiana Hôzawa, 1929

Accepted name Ernsta sagamiana (Hôzawa, 1929)

But not: Accepted name *Ernstia sagamiana* (Hôzawa, 1929) accepted as *Ernsta sagamiana* (Hözawa, 1829)

These different "problems" were resolved during this session.



All editors were asked to review if the original species names are in the WPD and remember to include the pages of the original description.

We decided to put species names with aff. or cf. always linked to the original name and then add as a note information about this dubious identification. We also decided to leave the distribution of these species with aff. or cf. as doubtful.

All editors were reminded of the need to provide information about the type specimens.

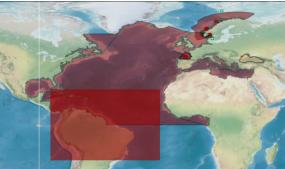
Day 3: Wednesday June 13th 2021

"Distribution day"

Course Material:

This part of the course is confused especially the "gazetteer" and does not correspond to the needs of the editors of WPD. We do not understand the utility to enter as "geographic unit" a type-locality. For example, which is the usefulness to have as geographic unit **Oostende** if you do not know that it is a **North Sea** locality. As underlined by Rob Van Soest the module "Distribution" of WoRMS is more and more extensive and confuse. It seems that the discussion about standardization is not yet resolved in the different groups of WoRMS editors.





As Example: map for the crustacean *Hemimysis speluncola*, which has been recorded for the time being only in caves of the Western Mediterranean. Or *Hemimysis abyssicola* from NorthEast Atlantic (Norwegian EEZ).

The WPD Editors decided since 2012 to standardize the distribution. See the "Editor Guideline of Rob Van Soest". The results are more informative maps.

Entering data and solving doubts: distributions

Distribution data entered in the database need to be linked to a **primary source**, and not to the compilation of previous information coming from other sources. All distributions not linked to a source have to be deleted as well as those linked to a secondary or a tertiary source. A special attention has to be focused on the type-locality of every species. In the infancy of WPD the source for distribution was "Systema Porifera". This source is NOT a primary source FOR DISTRIBUTION and has to be always deleted.

Standardization of the distribution in WPD: The distribution as underlined before, follow (1) the MEOW-system of Spalding et al. 2007, which divides the shallow world seas into 232 MEOW Ecoregions until 200 m depth; (2) The GOODS-system below 800 m. The division of the oceans is

taken from GOODS (Global Open Ocean and Deep Sea), see Watling et al. 2013. (3) the EEZ-system, developed by VLIZ itself. This will allow retrieval of sponges reported from the Exclusive Economic Zone of each country in the world.

In the system of Spalding et al 2007:

Marine Realms are divided in

Marine Provinces divided in

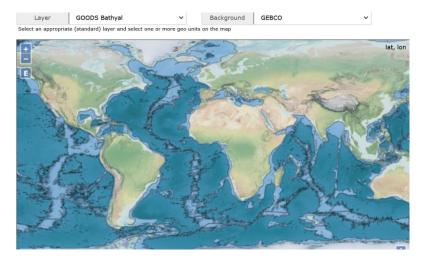
Marine Ecoregions

For the time being, it is not possible to obtain the checklist of species present in a Province or a Realm directly. You need to make a search for all Ecoregions of a given Province, or Realm. For example, as underlined by Cristina Diaz it is not possible to obtain a checklist of all species described in the Caribbean Province with one search only.

The DMT (Leen) suggested that it could be possible to resolve this problem, which will help considerably the users and be able to obtain all species in a Province or a Realm.

In the module distribution the different geographic units are presented by alphabetical order. As for the checklist it would be more appropriate to have the list of geographic units presented by Marine Provinces.

The Add Map distribution module allows choice of GOODS Bathyal and GOODS Abyssal provinces (very much appreciated) but the outlines of the provinces are not very distinct, and in some areas appear to differ from the outlines provided in Watling et al (2013). Can this be improved by providing a Google Earth kmz file as it is available for MEOWs and EEZs?



The DMT will resolve this problem as soon as possible. (Bart)

Type locality.

It was noted to the DMT that when we enter a distribution using only the specimens, this distribution does not appear in the checklist. Contrary to what is said in the course material, as well as in the Manual and as already highlighted by Rob Van Soest previously, type-locality has to be entered with the

holotype (red dot on the map) **AND** also via "add distribution", with the "type-locality" box ticked (blue dot on the map); precise or verbatim locality can also be given as a note. **This is mandatory to obtain a complete checklist of all species present in a given area**. This was also pointed out by the MolluscaBase editor workshop in February 2020.

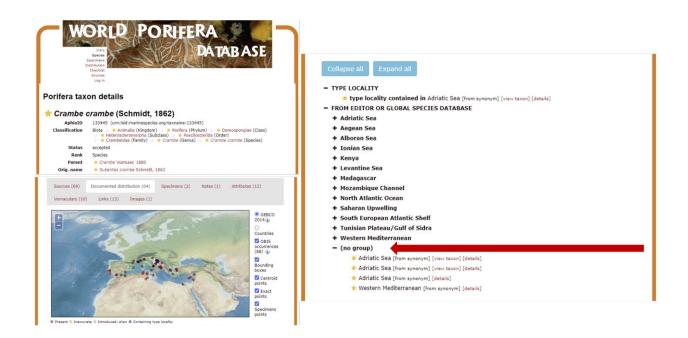
Geographic coordinates

Since several years WPD has focused on geographic coordinates of species localities. Very often the geographic coordinates are given in the source. However, in old papers very often we have only the name of the locality. In this case, the Editors of WPD preferred to give the approximate coordinates of this locality than to give a large geographic unit. For example, the geographic coordinates of Venice in the works of Schmidt looks better than Adriatic Sea.

There was a large discussion with the DMT (Bart) about these approximate coordinates. However, all editors of WPD preferred to continue using "approximate" coordinates, informing as a note that they are approximate, when the coordinates are not given in the source.

No group Problem submitted many years ago!

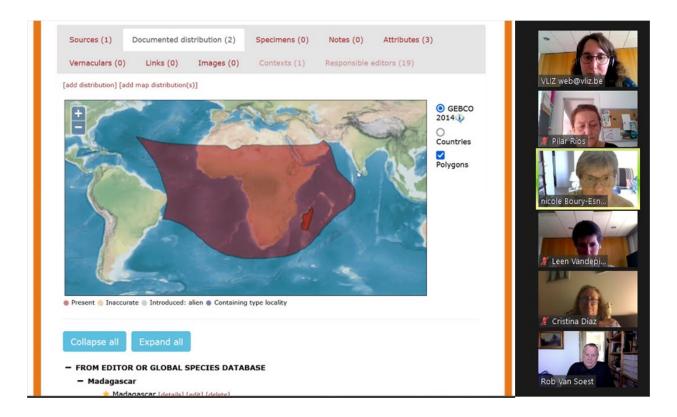
At the end of the field Distribution, a strange category "no group" appears which contains geographic unit clearly identified and checked by an editor



Appears to be a bug and Bart said he will resolve it soon.

Distribution for freshwater sponges.

Two possibilities: the TDWG system & the FADA system: **FADA system**: example *Corvospongilla lemuriensis*



The DMT recommends to use TDWG system for freshwater entries into the Aphia database.

It is decided not to use FADA Faunistic Regions, but to use instead TDWG, as already done by the MolluscaBase.

Documentation distribution for higher taxa

It was required to be able to obtain the distribution at the level of a genus automatically, from the data entered at species level of the genus

"Images"

A recommendation of the WoRMS **Steering Committee** is to have at least one image identified by an editor for every species. Caution has to be taken by images not checked by an editor.

Published images need the permission of the copyright holder.

Images can be directly linked to the paper where they were published. It does not need to be directly linked to basionym.

A huge effort has to be made by all editors to provide good pictures of well-identified species, as well as pictures of the skeleton.

Everybody can enter an image. However, this image has to be checked by an editor, who can ask to delete it. For example, it is asked to delete images of stamps with "Porifera".

The DMT will see the possibility of the editor be able to change a full star back to an empty one, when an image has not been checked by an editor.

Action to be done by DMT – remove stamp images from WPD.

(dis-)agreement in gender:

ICZN art. 31.2 (and 34.5) stipulates that the gender of genera and species must agree if the species name is a Latinized **adjective.** The Best Practice Guide of WoRMS recommends to correct the names that violate these articles, but only for accepted species.

Incorrect grammatical agreement of specific epithet. Enter the original name with wrong gender ending, also enter name with corrected gender ending. Link the former to the latter. See Horton et al. 2017. For both entries, a Nomenclatorial Note should be made to explain the new name. This **mandatory** correction equally applies to original combinations and subsequent combinations as a result of genus name change.

"original description (not available nomenclaturally)". This "new" problem was found during the preparation of the meeting. The problem was a confusion in WoRMS between availability and validity of a name in case of Homonymy. The changes have been made automatically and introduced a mess in the cases of Homonymy. Philippe Bouchet (expert of ICZN) had clearly explained that this was a mistake.

There was a lot of discussion about this point during the sessions. It would be very important, in the future that the DMT discusses with the editors before making this kind of changes. This would avoid huge problems, some of them discovered just by chance.

The DMT has resolved the problem immediately before the end of the course. Thanks Bart.

Day 4: Thursday June 14th 2021

Entering data and solving doubts: miscellaneous

Vernacular names:

WPD Editors decided this is **not** a priority. However, we also decided as mandatory to always give the source when a vernacular name is added for a species.

Attributes

There was a long discussion about attributes.

How to add it: as a note or through "add attributes".

Example: how to add "oviparous" or "viviparous". In attributes, we can find these two attributes below "direct development". However, "Development" could be "direct" in most of the vertebrates, with the exceptions of Amphibians or "indirect" in all Invertebrates (with rare exceptions) and Amphibians.

See the differences between direct and indirect development: https://www.toppr.com/ask/question/differentiate-between-direct-and-indirect-development/.

Differentiate between direct and indirect development.

Direct development

In this type of development, embryo develops into a mature individual without involving a larval stage.

Metamorphosis is absent.

It is seen in fishes, reptiles, birds, mammals.

Indirect development

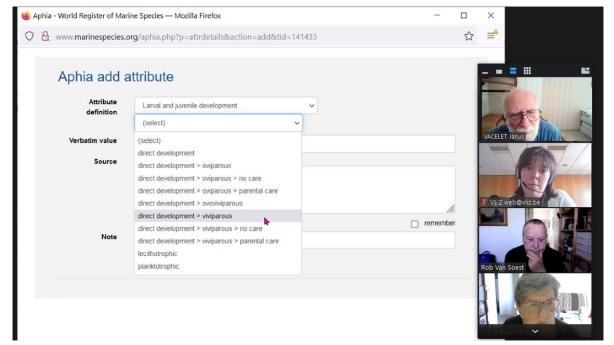
It this type of development, a sexuallyimmature larval stage is present.

Metamorphosis is present. It involves development of larva into an adult.

It is seen in invertebrates and amphibians.

We can understand that the way to give information could differ from authors, but in this case, the problem is that the information *Direct development: oviparous or viviparous* IS **WRONG for most of the species found in WoRMS. It could be applied only to fishes.** The main problem for these attributes is that the source is Wikipedia, which is not always the best resource and which is not frequently checked by experts.

Most of the Porifera has indirect development, which is absent from Attributes



What seems absolutely necessary is to have a special meeting on these attributes, perhaps with editors of Bryozoans, Ascidians, Cnidaria etc. As far as we can see, most of the attributes seems to come from vertebrates or algae!!

Many other attributes have been mentioned: Examples of attributes we should include: DNA link to GenBank or Barcode of Sponges, and also for genomics, transcriptomics, natural products,

chemical compounds; information about reproduction (Aphia add attributes \rightarrow juvenile development \rightarrow viviparity x oviparity, lecithotrophic etc. Other attributes, sciaphilous x photophilous, hermaphrodite x gonochoristic etc.). It seems that this is a huge task for the next years!

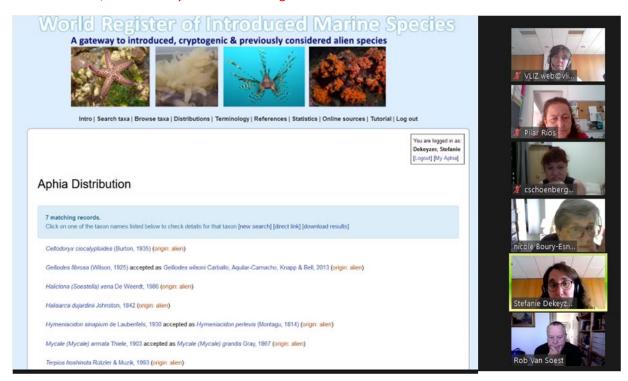
When adding a note to a species, the note does not appear for all combination names. The same when for "Context" Porifera for example. We need to click for all combination names

DMT will investigate the problem, but does not want an automatization.

How to present the sources for a given species?

The DMT will sort the list of "sources" in alphabetical or chronological order. Some editors will prefer chronological order, which better reflect the History, or Alphabetical order

Problem between WPD and WRIMS. No one is responsible for checking the introduced species of Porifera in WRIMS (Thematic Editor). Therefore, the so-called introduced species could be misidentification. WRIMS used a system of geographic units different from that used in WPD and this provoked a mess. A volunteer for sponges is required to discuss with the editors of WRIMS. If nobody else volunteers, Nicole Boury-Esnault is willing to take this on.



Fossils

In Mollusca there is already information about fossils. If we find a volunteer Editor, we could also have it for Porifera.

Which kind of references could we put in WoRMS?

All references have to be checked carefully to be sure that the writing from different languages is correct, full names of the journal, correct year, volume and pages and try to always add the pdf. German, Spanish, Italian, French, Portuguese etc. Editors, please check carefully the references of your own language. And follow always the format of WoRMS.

The DMT said that we can put general articles in the WPD, not just articles on taxonomy.

We should inform the DMT if an article is open access.

Christine Schönberg asked if it was possible to include in the WPD information about the spongologists. The DMT said that this is not possible, but that it is possible to include a paragraph about this database on the spongologists on the WPD introduction page (or other page) and then a link to the database.

It is proposed by Rob Van Soest that all editors should be Taxonomist Editors. Leen Vandepitte clearly explained the difference between taxonomist editors & thematic editors. The solution is that all thematic editors could become also taxonomist editors.

Relationships with users

Is WoRMS dedicated to scientists (even if specialists on different phyla) or to any kind of "users".

We have to keep in mind that we are working for users. A user can be a scientific specialist or non-specialist of Porifera, a student who begins to work on sponges, a data manager of environment who want to know which species are present in a given area, etc. How can we evaluate the needs of these different user types?

As shown by Leen the user groups are Science, Policy, Industry & Civil Society.

Day 5: Friday June 15th 2021

The Future of WPD

DMT proposed to create a Porifera mailing list, including all current Porifera editors: porifera@marinespecies.org

Priorities: cleaning data (remove repetitions); add depth, especially in deep sea data (GOODS); to use MEOWS and GOODS for species distribution. Many works of Koltun, Vosmaer, de Laubenfels etc have not been checked recently. Some areas need special attention: among them Pacific as well as Arctic (Rachel Downey is volunteer). **It would be IMPORTANT that editors work regularly for WPD**. If some editors cannot do it, they are kindly requested to inform the general list Editor (Rob Van Soest) to allow a dynamic renewal of Editors.

Succession of Rob Van Soest: Rob said he's considering quitting being the editor at large, but will remain editor. We have to see who will replace Rob. Rob has accepted to stay general list Editor until the end of the year.

Immediately after the meeting, Leen Vandepitte has sent to all editors of WPD a letter that summarizes perfectly what has been discussed about the future of WPD and the succession of Rob Van Soest:

"Dear Porifera editors,

On the last day of the online LifeWatch-WoRMS Training Course and editor Workshop of 7-11 June 2021, which most of you attended, the future of the WPD was discussed, as well as the composition and tasks of the editor group. One of the conclusions drawn by the group was that the editor group needed **to be more dynamic** and more task-oriented. These forthcoming changes will have to be given substance by new leadership and possibly a reshuffle of the composition of the editors.

Rob van Soest, who has been chief editor since 2004 has announced he will step down as chief editor, although he will remain part of the group of editors for the next few years. The WoRMS Data Management Team is thus seeking a new chief editor, and we are asking candidates for this position among the editor group to come forward if she or he is interested to replace Rob.

The preferred candidate should be thoroughly familiar with editing the Aphia Database, have ample experience in sponge taxonomy including the rules of nomenclature, have the possibility to allocate sufficient time, and be prepared to guide and allocate tasks to the sponge editor team, and also with the WoRMS Steering Committee and the Data Management Team at VLIZ. Depending on the outcome, we may need to consult you at a later date in order to establish whether the preferred candidate has sufficient support among the editors.

This is also a good moment in time to examine the composition of the editor group as a whole in view of the future activities proposed in the WPD editor group. For that reason, we ask you to communicate to us whether you are still motivated to continue contributing as a WPD editor, or prefer to 'retire'. In the latter case, if you have suggestions for a replacement editor, we would very much like to hear this.

All communication on this can be sent directly to info@marinespecies.org, with "World Porifera Database – future" in the subject line. We'd like to ask you to express your interest for the chief editor position no later than **July 15**th, as well as your plans and intentions to stay involved as Porifera editor or possible suggestions for additional editor(s).

We're looking forward to hearing from you! Please don't hesitate to get in touch if you would have any questions.

Best wishes, Leen On behalf of the Data Management Team

Leen VandepitteWoRMS data management team"

Outcome

The Workshop levelled all editors in using the basic WoRMS tools. We have standardized how we will enter sponge data and organize the next steps we will take in the WPD. The success of this ZOOM meeting is clearly linked to the professionalism of all the DMT

Action points

DMT: Regular up-dating of the Manual

All editors were asked to review if the original species names are in the WPD and remember to include the pages of the original description.

All editors were reminded of the need to provide information about the type specimens if they are available.

All editors have to add species identified as aff. or cf. in the original names. It is important to inform that the distribution of these dubious identifications is also dubious.

DMT (Leen) Possibility to obtain all the species present in a Province or a Realm in One Search (MEOWs).

DMT: Providing a Google Earth kmz file for GOODS as done for MEOWs as soon as possible. (Bart)

Editors: It is decided not to use FADA Faunistic Regions and Use TDWG as done by the MolluscaBase.

DMT: Distribution "No Group" problem, appears to be a bug and Bart will resolve it soon.

DMT: remove original description (not available nomenclaturally) for homonyms. The DMT has resolved the problem immediately before the end of the course. Thanks Bart.

DMT: Attributes. What seems absolutely necessary is to have a special meeting on these attributes perhaps with editors of Bryozoans, Ascidians, Cnidaria etc. As far as we can see, most of the attributes seems to come from vertebrates or algae and cannot be applied to most of the Invertebrates!!

DMT: solve the problem of incomplete distribution when using only specimens for the checklist.

DMT: See the possibility of the editor being able to change a full star back to an empty one.

DMT: Sort the list of "sources" in alphabetical or chronological order.

DMT: When adding a note to a species, the note does not appear for all combination names. The same when for "Context" Porifera for example. We need to click for all combination names. DMT will investigate the problem, but do not want an automatization.

Editors: Control of sponge data in WRIMS: If nobody else NBE is volunteer

All the editors: Clean data (remove repetitions); add depth, especially in deep sea data (GOODS); to use MEOWS and GOODS for distribution; use primary sources; add images.

All the editors: Choose a new general editor to replace Rob van Soest. And answer the letter of Leen Vandepitte.

DMT: Porifera mailing list, including all current Porifera editors: porifera@marinespecies.org.

DMT-All Editors: We are going to organize remote meetings every 3 or 4 months to discuss our next steps and focus.

DMT: Before the end of the year, organization of a meeting for the succession of Rob Van Soest.

Acknowledgments

The organization of this workshop and the support of the WoRMS Data Management Team (DMT) are supported by LifeWatch Belgium, part of the E-Science European LifeWatch Infrastructure for Biodiversity and Ecosystem Research.

We are grateful to the LifeWatch program for providing (financial) support and also to the WoRMS Data Management Team at Flanders Marine Institute (VLIZ) for making the arrangements which allowed the workshop to happen. The valuable contribution by participants is also very much appreciated. And thanks to Rob Van Soest who has revised this report.