

Activities report WoRMS data management team (DMT) 2013

Website:

- New web lay-out available
- Online manual for editors adapted accordingly

Steering Committee:

- Organisation of the elections of new members of the SC and the election of the Chair and Vice-chair.

WoRMS content:

- A book-chapter on **Kinorhyncha** has been published earlier this year, and the responsible WoRMS editor and author gave his OK to upload the taxonomic information. This led to an addition of 219 taxa to WoRMS. Reference: Neuhaus, B. (2013). Kinorhyncha (=Echinodera), in: Schimdt-Raes, A. (2013). Handbook of Zoology. Gastrotricha, Cycloneuralia and Gnathifera: 1. Nematomorpha, Priapulida, Kinorhyncha, Loricifera. Handbook of Zoology (2010),: pp. 181-348.
- In follow-up of the **AfReMaS** workshop of September 2012, several information sources were added to the African Register of Marine Species. This led to the addition of 1.007 new Kenyan species distribution records, 60 new species for the Kenyan marine waters, 1.221 new distributions for the other African regions, and all species and general distribution information from the Phytoplankton Database of Tunisia (almost 200 distribution records). In addition, screening the following two publications led to adding another 65 species and over 150 distribution records to AfReMaS: (1) Muñoz, Isabel; García-Isarch, Eva; Sobrino, Ignacio; Burgos, Candelaria; Funny, Rita; González-Porto, Marcos. (2012). Distribution, abundance and assemblages of decapod crustaceans in waters off Guinea-Bissau (north-west Africa). Journal of the Marine Biological Association of the United Kingdom, vol. 92 issue 3, p. 475-494 and (2) Langer, Martin R.; Thissen, Jens M.; Makled, Walid A.; Weinmann, Anna E. 2013. The foraminifera from the Bazaruto Archipelago (Mozambique). N. Jb. Geol. Palaont. Abh. 297/2, 155-170.
- Next to scientific names, WoRMS was also updated with **common names**, more specifically the common names of **Carnivora**. The responsible editors made an effort to add at least the English common name for each Carnivora species in WoRMS. WoRMS has also added almost 5.000 common names in English, Spanish and Hawaiian for **Crustacea, Pisces, Cnidaria and Ctenophora** species. These vernaculars were added on specific requests by users.
- Upon suggestion of the WoRMS **Foraminifera** editors, an effort was undertaken to upload the Foraminifera genera and their classification to WoRMS, based on the following books: (1) Loeblich, A.R., Tappan, H. 1988. Foraminiferal Genera and their Classification. Van Nostrand Reinhold Company, New York. 970pp, (2) Debenay, J-P. (2013). A guide to 1,000 Foraminifera from the Southwestern Pacific New Caledonia. IRD Editions. Publication Scientifique du Museum. CP41, 383 pp and (3) Hayward, B.W.; Tendal, O.S.; Carter, R.; Grenfell, H.R.; Morgans, H.E.G.; Scott, G.H.; Strong, C.P.; Hayward, J.J. (2012). Phylum Foraminifera: foraminifera, xenophyophores, in: Gordon, D.P. (Ed.) (2012). New Zealand inventory of biodiversity: 3. Kingdoms Bacteria, Protozoa, Chromista, Plantae, Fungi. pp. 242-287. From these books, almost

2.800 taxa were newly added to WoRMS and 105 taxa could be placed in synonymy with their accepted name. In addition, Foraminifera distributions were added and available images linked to the appropriate species pages. As the Foraminifera register is more and more updated with fossil taxa, the editors have decided to change the name from “World Register of Recent Foraminifera” to “World Register of Foraminifera”.

- As the taxonomic backbone takes great interest in making **links** between the different existing (taxonomic) data systems, WoRMS has taken an effort in adding and updating its links with several databases. WoRMS has updated its links to the following systems: (1) **GenBank**: there are now 61.901 deep links between NCBI taxonomy and WoRMS, (2) **FishBase**: now 47.513 deep links between WoRMS and FishBase and (3) **IUCN Red List of Threatened Species**: now 19.444 deep links. In addition, 3.488 new deep links to **Dyntaxa**, the Swedish Taxonomic Database were added to WoRMS. Furthermore, early 2013, the **Sea Slug Forum** went offline. WoRMS rescued 1.419 deep links through archive.org and made sure the information from the Sea Slug Forum was not lost.
- The collaboration between **Catalogue of Life (CoL)** and WoRMS has led to an additional 10 global species lists being added to CoL, including the synchronization of the WoRMS Mollusca with CoL and thus adding more than 35.000 verified species to CoL. The new groups are: Cestoda, Chaetognatha, Gastrotricha, Gnathostomulida, Mollusca, Monogenea, Myxozoa, Placozoa, Priapulida and Trematoda. All of these replace the previously available lists from the UNESCO Register of Marine Organisms (URMO), which was outdated.
- Over 3.200 **images** were added through (semi-)automated processes. The majority of these images (2.907) concern Mollusca type specimens and come from the Type Collection of the Natural History Museum of Paris (MNHN). This greatly contributes to the image section of WoRMS, as these images can undoubtedly be seen as correct.
- The **Porifera** Tree of Life has synchronized its taxonomy with the World Porifera Database, one of the global species databases within WoRMS.
- The **WoRMS web service** (AphiaNameService) has been published on the Biodiversity Catalogue, which provides a curated catalogue of Biodiversity Web Services and which is part of the Biodiversity Virtual e-Laboratory (BioVeL).
- For the **Nematoda**, 1.896 taxa have been linked to the reference of their original description. Where possible, the original publication was added to WoRMS. For 2.443 species, the missing authority and year of publication have been added.
- An update was done on the **Holothuroidea**, leading to 974 changes and additions to the group.
- Several families within the **Crinoidea** were added to WoRMS. It concerned recent families, still missing from WoRMS. In total, 219 changes and additions were made and the update is still ongoing.
- One of the WoRMS **Echinodermata** editors has taken the initiative to make all the abstracts and publications of meetings and congresses related to this taxonomic group accessible through one single webpage: the “echinoderm files” (<http://www.marinespecies.org/echinodermfiles/>). The DMT has provided technical support to make this possible.
- A large number of new editors (\pm 30) have been mobilized to work on the World Amphipod Database during 2013. As support to this newly established editor network, the DMT has screened

about 250 **Amphipoda** publications and has added the relevant information (new species, distribution, specimen information ...) to WoRMS. This DMT action has helped the Amphipoda editors in diminishing their back-log and giving them the opportunity to immediately focus on the taxonomic issues at hand and follow up on the most recent taxonomic developments.

- With help of the responsible editor, the DMT has updated the **Dicyemida** in WoRMS. The majority of the original descriptions of this group was provided by the editor. The DMT has systematically screened these publications and added the relevant information to WoRMS.
- The **Swedish regional species register** has been made available through WoRMS.
- Within the **Isopoda**, 4 groups have been updated by the editorial board in WoRMS, reflecting 2012 taxonomic changes. This information has been synchronized with the World List of Marine, Freshwater and Terrestrial Isopod Crustaceans, hosted at the Smithsonian National Museum of Natural History (USA).
- The **New Zealand Organism Register** has provided its list of marine species to WoRMS, so it could be incorporated as a Regional Species List, containing both recent and fossil taxa. During 2013, the received list was matched against the available WoRMS species and taxonomic editors were contacted for species where no match could be found. It is planned to create a separate web entry for this regional registry and to have a team of regional editors to maintain the list. The DMT is now awaiting instructions from the New-Zealand people.
- For the **Bryozoa**, a check has been done on the accepted names that had not yet been verified by the expert in WoRMS. A comparison was made with the authoritative source list of Bryozoa.net and the necessary adaptations were made. Doubtful cases were cleared out in collaboration with the expert.
- Within the **Ciliophora**, the responsible editor has brought us into contact with Helmut Berger, taxonomic expert for the **Hypotrichia**. Although Dr. Berger has declined editor-ship for this group within WoRMS, he has pointed us to several sources which can help us in filling the gap for this specific group. The DMT is currently processing these sources.
- In collaboration with **FishBase**, the status and authority information of the FishBase genera was checked against the Catalogue of Fishes and updated in both FishBase and WoRMS. Fishbase and WoRMS are investigating the options to further improve the taxonomic synchronisation between these two databases.
- Data synchronization between **AlgaeBase** and WoRMS is an ongoing task.
- **Contacting the less active and non-active editors** and encourage them to become more involved again. This action had a varying success: some editors took up the task to validate the remaining non-validated taxa within their group (=the core business of WoRMS). Other editors have promised to take action, but have not yet done so.

WoRMS technical developments:

- Implementation of the **new web lay-out**, including the addition of quality indicators (checked: verified by taxonomic editor; trusted: edited by a thematic editor; unreviewed: has not been verified by a taxonomic editor). Information is now also grouped per quality indicator, allowing a visual distinction between the editor-validated and other information. To allow this, new user types were added. In addition, a level of priority has been added to the source-types: only sources with taxonomic relevance are shown directly online, other sources are hidden behind a [more sources] button. Sources are now also linked to a session, making it possible to trace when and by whom a source has been added or changed within the database.
- Implementation of new **citation**, with option to switch between the short version (WoRMS editorial board) and the full version which lists all the names of the involved editors. This has been made dynamic: updates in the editor list and the Steering Committee will automatically be reflected in the citation.
- In follow-up of the launching of the new web lay-out, the received feedback was evaluated and implemented where relevant. This includes e.g. the way **distributions** are shown online: to make the list of distributions more structured, WoRMS now shows a level of hierarchy in the listed distribution records.
- The **editor search interface** has been expanded: editors can now also specifically search for unaccepted taxa or filter on a specific unaccepted reason.
- To comply with the conditions of Mike Guiry for the use of **Algaebase** data, the Algaebase attribution has been modified in WoRMS. The algal data from Algaebase are also excluded from the WoRMS downloads.
- Implementation of the **'fossil range' attribute**, upon request of editors. This includes the correct representation of the different stratigraphic zones and programming the way these should be shown online.
- **Web service**: extend the AphiaRecord Object to contain habitat flags, modified and match type. The taxamtach V2 algorithm of Tony Rees was implemented (*matchAphiaRecordsByNames*). And 3 new functions were added: *getAphiaRecordsByDate()*, *getAphiaRecordByExtID()*, *getExtIDbyAphiaID()*
- **Continuous technical support** to the many users of WoRMS through info@marinespecies.org. This support includes fixing minor bugs brought to our attention, help in modifying specific scripts for R which link to the WoRMS database, help in setting up the possibility for batch uploads of information (e.g. images) ...
- The XML service that was in place for data exchange with the Encyclopedia of Life (EoL) has recently been replaced by a **DarwinCore-Archive export**.
- Synchronisation of the WoRMS **editor mailing list** with the editor-database (holding the access rights of each individual editor). A script has been written to regularly synchronise both lists: invalid email addresses will quickly be replaced, and new editors are automatically added to the mailing list.

- All **contexts** in WoRMS now have an appropriate metadata record in IMIS (<http://www.marinespecies.org/imis.php?module=dataset&dasid=1447>), this metadata is used to generate proper metadata files when exporting data (i.e. Dwc-A, ...)
- The **search function** is now extended to use the Taxamatch V2 algorithm (from Tony Rees) when no exact match was found. At the same time, the GNA NameParser (<https://github.com/GlobalNamesArchitecture/biodiversity>) is also used to parse the components of a scientific name (Genus, species, authority), improving the search results.

Actions financially supported by LifeWatch, as part of improving the LifeWatch taxonomic backbone

Within WoRMS, a number of taxonomic groups were earlier identified as being incomplete. Special attention is being paid to these groups and – in collaboration with the responsible taxonomic editors through LifeWatch data grants – we are undertaking efforts to start **filling the taxonomic gaps**. These groups concern Monogenea, Mollusca, Digenea, Ostracoda, Fish, Ophiuroidea and Thecostraca. The work on the **Monogenea** is completed and the action led to the addition of 216 new genera, 966 new species and 332 updates. For **Digenea**, already 5.300 additions and changes have been made. The group is still under revision by the taxonomic expert, and more changes/additions are to be expected. For the **Thecostraca** (Thoracica), 1.419 changes or additions have been carried out, strongly improving the content and quality for this group in WoRMS. Within the **Ophiuroidea**, 473 updates and additions have been made, mostly related to fossil taxa. The work for the other groups (Ostracoda and Fish) is still ongoing; no updates have yet been made available online.

The World Register of Marine Species now (end 2013) contains **more than 221.000 accepted species** names, of which 94% has been checked by taxonomic editors.

Given an estimated 230.000 accepted described marine species, there is still about 9.000 more species to go, plus the yearly increment of about 2.000 newly described species.