World Database of Free-Living Marine Nematodes Editor Workshop

Ghent University – Marine Biology Research Group – Ghent, Belgium
05 - 07 September 2018

Email to contact all Nemys editors: **nemys@marinespecies.org**

Report

Attendants

Editors: Tania Nara Bezerra, Ann Vanreusel, Mike Hodda, Zeng Zhao, Ursula Eisendle-Flöckner, Oleksandr Holovachov, Virág Venekey, Nic Smol, Wilfrida Decraemer, Dmitry Miljutin, Vadim Mokievsky

Excused: Daniel Leduc, Jyotsna Sharma, Reyes Peña Santiago, Alexei Tchesunov

WoRMS Data Management Team (DMT): Bart Vanhoorne, Wim Decock, Thomas Lanssens, Ricardo Simões

Excused: Leen Vandepitte

The first Nemys Editors Workshop in February 2015 result in a considerable improvement of the database and in 2016 during the Meiofauna Conference in Crete, where some of the editors were present, some issues were also discussed. These possibilities of having the editors working alongside provide an efficient work in a shorter time. We definitely need to have these workshops periodically.

The objectives of this workshop were: (i) to evaluate the work that has been done over the past three years and the maintenance of the database, (ii) to welcome the editors of terrestrial and fresh water nematodes, set clear goals, assign tasks and initiate the practical work related to new initiatives and (iii) to outline practices for outreach and scientific output for Nemys (e.g. scientific papers, presentations of the progress, plans and results at an upcoming conference).

On the first day it was asked to have a rapporteur for each session in order to have it registered. The original minutes are on a separate document and were used to generate this report.

This report includes:

I. Nemys background and evolution

II. Editors team distribution

III. Flanders Marine Institute – VLIZ

IV. WoRMS background

V. WoRMS priorities – Decided by WoRMS Steering Committee (June 2015)

VI. Discussions

VII. Hands on

VIII. New tasks distribution

IX. Concrete actions - Priorities

I. Nemys background and evolution

- 80's – Nematode identification = difficult task (no internet, access to articles not always unchallenging)
- Nic Smol, working in the Marine Biology research group, started a compilation of dedicated information on paper - copies of parts of taxonomical literature – "Nematotheek"
- 1998 – the need of a digital compilation required attention
- 1999 – a generic system for storage of relevant information on "species": Nemys is built by Tim Deprez to host Nematodes, Mysida, Amphibians and Pepperonia
- 2004 – very intensive scanning work by Gustavo Fonseca and Tania Nara Bezerra
- Yearly updates with work of MarBiol' nematologists – "Nemys Task Force"
- 2009 – System crashed
- 2010 – Software was "hacked" and Nemys had to go offline (UGent) – lot of information was lost (PDF's, methods, images, distribution…)
- 2013 – October – November: Jan Vanaverbeke had first discussions over the possibility to transfer Nemys to Aphia database at VLIZ
- 2014 – Januari – Februari: begin of transfer: Nemys database moved to VLIZ
- 2014 – March – August: transfer of all Nemys data to Aphia + quality control
- 2014 – September – December: development of interface, similar to 'old' Nemys interface; implementation of identification keys; set-up of login system to allow access to all publications; communication on Nemys transfer; building a Nemys editor network + first thoughts about the first workshop
- 2015 – 24th-26th February: First Nemys editors workshop in Oostende
- 2015 – November: Katja Guilini became chief editor, replacing Jan Vanaverbeke
- 2016 – July: During the Meiofauna Conference in Crete an informal reunion with the editors gave the opportunity to discuss some issues
- 2018 – January: Katja Guilini passed on her chief editor responsibilities to Ann Vanreusel and Tania Nara Bezerra
- 2018 – 05th-07th September: Second Nemys editors workshop in Ghent

II. Editors team distribution – February 2018

- Belgium 4 (Ann Vanreusel, Tania Nara Bezerra, Nic Smol, Wilfrida Decraemer)
- Sweden 1 (Oleksandr Holovachov)
- Austria 1 (Ursula Eisendle-Flöckner)
- German 1 (Dmitry Miljutin)
- Spain 1 (Reyes Peña Santiago)
- USA 1 (Jyotsna Sharma)
- Brazil 1 (Virág Venekey)
- Russia 2 (Vadim Mokievsky, Alexei Tchesunov)
- Australia 1 (Mike Hodda)
- New Zealand 2 (Daniel Leduc, Zeng Zhao)

Information taken from Tania's presentation. Full presentation available in PDF.

III. Flanders Marine Institute - VLIZ

Autonomous institute - non-profit organisation under Belgian law, established in 1999.

- Strategic objectives:
    - Initiate, support, promote and implement innovative and multidisciplinary marine research for the benefit of, in collaboration with or to Flemish and international marine research groups
    - Promote the national and international image of Flemish marine research
    - Serve as a national and international point of contact in the field of marine research
    - Promote ocean literacy in Flanders and marine research visibility among the general public
    - Provide tailored scientific data, information, knowledge and insights to the Flemish marine research community, the blue economy and policymakers with regard to marine matters

IV. WoRMS background

- 2004: MarBEF EU FP6 => creation of online ERMS
- 2007: further development to World Register

An explanation on the functioning of Aphia-WoRMS structure and website was given, also describing the data flow among international databases in the LifeWatch taxonomic backbone framework.

WoRMS aims to provide the most authoritative list of names of all marine species globally, ever published

V. WoRMS priorities – Decided by WoRMS Steering Committee (June 2015)

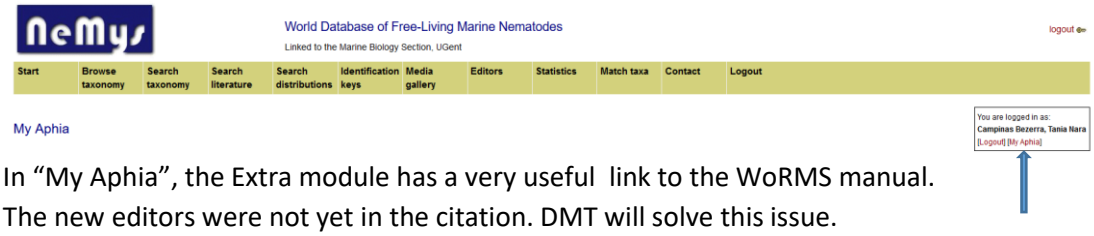
- Have at least 1 active editor per taxonomic group (cfr. Bacteria, Protozoa)
- Mark (accepted) species as "checked by editor"
- Document basionym (original name)

- Forward-looking: make this information mandatory
- Backward-looking: priority to make this complete
- Complete missing authorships
- Document original description of each (accepted) species
- Complete the environment flags
- Forward-looking: make this information mandatory (implemented)
- Backward-looking: priority to make this complete (98% complete for acc. species)
- Document higher classification according to:
- Internationally accepted standards (editor input)
- Management classification for CoL (Ruggiero et al. 2015), where there is no editor available
- Document type localities
- Document type species

Information taken from Thomas' presentation. Full presentation available in PDF.

VI. Discussions – There are many topics but, please, read all of them carefully they are all important!

- Always work in Nemys portal. Since Nemys has its own context, working in Nemys will be automatically shown in WoRMS while the other way around is not straightforward.
- In case you forgot your password, use the "lost password button" to ask for a new one.
- Uploading of original names is very time consuming. Solution: Provide original species lists to WoRMS DMT to be introduced in bulk.
- Consulting "My Aphia" we can find and be directed immediately to many different module options.



- In "My Aphia", the Extra module has a very useful link to the WoRMS manual.
- The new editors were not yet in the citation. DMT will solve this issue.
- When adding a new source, the first step is check if it is already in the database by searching on author name and year of publication, with % in between name and year. "author%2018". Special characters will be recognized. This step will avoid the double/triple entries we find sometimes.
- In case of duplicates, we can ask for deletion. Since we are not allowed to delete it, a window will pop up where we can enter our demand for deletion. DMT decides which reference is the best, keeping the most complete and merging the information.
- Only papers published before 1923 are copyright safe.
- Geographical distribution hierarchy shows inconsistences. According to DMT this issue is being tackled by a special working group and it is a work in progress.
- When searching for authors we can find a long list of homonyms if we don't limit our search to nematodes BUT limiting our search, there is a risk of missing articles in case they are not linked to any nematode species yet.
- A possibility of having nematodes as a default keyword when looking for literature was asked but this can increase the risk of having duplicates.

- Could the linked taxa be limited to Nematoda after first entry? Better not. This would hide sources dealing with nematodes and other taxa.
- **Adding species tutorial:**

1. Search taxonomy: check if species exist in database via search; go to genus and "add child taxon". If unaccepted fill in the reason or reference. "Environmental flag" is mandatory. "Page" : the page(s) where the species is described; figures can be added in "Notes". "New combination reference" for changes in genus; "original description" only for original name.

Discussion about making "parasitic" mandatory: for many species there is no clear answer and what is important an easy input or an easy output?

2. Via My Aphia – Journal importer; only useful for Pensoft & Zoobank. Copy DOI, lookup – next and repeat this for each species

Changes to species can be done via "edit taxon"

"Specimens": add all details about the specimen, such as type locality, distribution (contact DMT if problems. "Verbatim/Geounit" here one can describe in words the locality

"Distribution": 3 ways

1. Add distribution: complete as much as possible, do not create coordinates if these are not mentioned in the paper

2. Add map distribution: layers: IHO = major seas, EEZ = exclusive economic zones, marine regions is best to be used as this is a combination of IHO + EEZ, TDWG = terrestrial

3. My Aphia - Rapid Distribution Entry –easy if many species in the same paper: tick "remember"

"Notes": any note in any language can be added.

"Attributes": from parent to child through classification; ex: parasitic is attributed to genus , but just one not; or feeding type.

"Vernaculars": for common names in any language

"Images": here one can upload images; a full yellow star = verified by a taxonomic editor, half yellow star = checked by thematic editor, empty yellow star = has not been verified

- The old images with the old logo of Marine Biology Research Group, sometimes interfere on the visualization of the image but to change it will not be an easy task. Since we are progressively working with the original articles, the original images are available to the users. If we add a new species, we need to add at least one image of it.
- Upload Subgenera must be followed but it is not priority of WoRMS. Priority of names and subgenera was discussed citing the Article 23.1 of ICZN.
- Inclusion of parasitic nematodes is supported by the editors team. This information is already available in WoRMS and can be displayed in Nemys if the helminth editor Dr. David Gibson agrees. This has been already asked, in the past, by the DMT without success and now another strategy was taken. Mike sent him a letter with a more personal approach, since they worked together. Below you have the email sent and you can find the letter as attachment, in the same email this report will be sent.

“Hello David,

I don't know if you remember me from when I worked in the NHM in the early 90's, but I am now writing regarding the parasitic nematode database in WoRMS. I have recently joined the Nematode section of the WoRMS consortium team (Nemys) and am now writing to you on behalf of them. As you may be aware, Nemys is the part of WoRMS concerned particularly with nematodes. Up to now, Nemys has focused on marine and brackish-water nematodes, but has recently expanded its remit to include freshwater, terrestrial and parasitic nematodes; that is, the entire phylum. Hence, I am writing to you now as the person responsible for the parasitic nematode section of the database. I am writing to you now to request your help in including this data in the Nemys section of the Worms database. I attach a formal letter requesting this.

Please let me know if you require any more information. I look forward to your reply.

Regards,
Mike”

- Classification used for parasites was discussed but since Nemys editors are not experts in animal parasitic nematodes we are open to suggestions. Classification of nematodes used in Nemys is dynamic and editors will consider all suggestions for improvements. It is necessary to investigate Manzanilla-Lopez key in recent book.
- Peer reviewed paper on Nemys needs to be planned for the nearest future. Biodiversity Data Journal and PLoS “collection” are suggested. Possible topics could be: an updated consensus classification of Nematoda to be used in Nemys; mine data in Nemys to show distribution of taxonomic studies in space and time; analyze transition of nematodes from marine to fresh-water environments and back. One of the editors needs to lead the preparation of the publication.
- Classification of waters according to the salinity – Commonly use the Venice System (1958) – Provided by Vadim. Will also be included in the attachments.
- **NeMys** name (Nematoda + Mysidacea) does not reflect the scope of the database anymore. Since most users do not know the meaning of the name, it has been published already for years and a search for a name that sounds good and it is not in use was not successful, the decision was to keep the name but remove the capital M. The “new” name is **Nemys**.
- As a consequence of the “new” name, some edits to the website are required as well a new logo. Marjolein Couvreur was contacted and agreed on designing a new logo. We need to meet her to show the old logo and tell her our expectations. If you have suggestions, they are welcome!
- Import of FADA database faced certain challenges, including absence of basyonyms for a number of species. Species names must be present in the database before any non-taxonomic information can be imported by the DMT.
- Correct spelling of names originally written in non-latin alphabet was discussed. Problems to consider include: (1) multiple versions of transliteration of the same Cyrillic name available in the literature (Filipjev and Tchesunov are the most common examples) – it was decided that these names should be used in the database in the same way as they were used in the original publication; (2) correct writing of oriental and African names is often a challenge, when it is not clear which word is a family name, of if the concept of family name can even be applied; (3) names of Vietnamese authors are a particular challenge – it was suggested to write them in full to avoid any confusion.
- It was suggested to start making a list of all known depositories of nematode type specimens and have it as a standalone web page on the NeMys web site. Alex suggested to obtain lists of

nematode type specimens deposited in such collections (if possible) and bulk import this data into NeMys after proofing and formatting. Alex obtained a dataset of types from UC Davis nematode collection formatted it; Bart checked the formatted file and confirmed that the bulk upload is possible, as long as all the names are already present in NeMys, and that the names in the dataset are basionyms.

- Gerlach's collection is in Japan (Shirayama?); Riemann's collection is in Germany (Pedro?).
- Bussau's slides are with Pedro Martinez. Dmitry worked previously with these slides and they are all relabeled. They are not deposited in a museum. Dmitry tried but the slides were not accepted. Alex is willing to have them deposited in the Swedish Museum of Natural History (NRM). It needs to be discussed with Pedro. Bussau's work is an issue, since he published some species even with another name. Those remain in the theses are considered *nomen nudum*, among other issues because they are not deposited in a museum.
- Adding information about the original descriptions/type locality – for this Gerlach & Riemann can be a starting point. We can always ask the community when we are in need of a particular reference.
- Keys on Nemys – The need of priority of adding keys was discussed. Links to written keys already included can stay. Use of DELTA identification keys could be an option.
- Media – Twitter – Alex has Twitter feed listing new nematode taxonomic acts. This is already incorporated into the Nemys page, on the right side of the start page.
- The start page is outdated! It was asked by the DMT to replace the news. We think that news can stay but needs to be updated. Anyway a new fresh face for the start page is needed.
- ICZN – Should be included? Only as a link.
- List of characters – A task for the future: there are a number of suggestions for characters to use in description of nematodes – e.g. e.g. Platt & Warwick, Coomans, Tchesunov, Siddiqi, etc. Nic Smol suggests to form a working group including Alex, Alexei, Tania, Zeng, Mike, Vadim, Virág – to provide a general list (not too specific) of characters used for a nematode description.
- A suggestion regarding classification of habitats was given by Vadim.
- Molecular information in descriptions – Not recommended because it is too restrictive. If one have few specimens, cannot afford to destroy specimens to get DNA.
- Spp incertae sedis situation– Nic Smol's suggestion: accept as valid, then add note that "incertae sedis" according to…

VII. Hands on

- During the "hands on" session a list of missing authorities in Nemys was checked. This work is not yet finished. Here is a link to the online Excel file. Feel free to work on it. To avoid double work, **please remember to mark the names you have fixed already!**

https://docs.google.com/spreadsheets/d/1G9QJxutG3OHmOlbPr5ECK5CaXOM02Hppx6ZXAOBxHSo/edit#gid=1393666994

- With the help of the editors, especially Mike, the poster to be presented during the ESN Conference 2018 9-13th September was edited and got a more efficient layout. Poster in attachment.

VIII. New tasks distribution

- The groups were redistributed, including the editors who were not able to join the workshop and the new ones.

List of Families - marine, brackish and occasionally brackish	Editor
Order Benthimermithida Tchesunov, 1995	Dmitri
Family Benthimermithidae Petter, 1980,	Dmitri
Order Rhaptothyreida Tchesunov, 1995	Dmitri
Family Rhaptothyreidae Hope et Murphy, 1969	Dmitri
Order Enoplida Filipjev, 1929	Nic, Jyotsna
Family Andrassyidae Tchesunov & Gagarin, 1999	Nic, Jyotsna
Suborder Enoplina Chitwood & Chitwood, 1937	
Superfamily Enoploidae Dujardin, 1845	Vadim
Family Enoplidae Dujardin, 1845	Nic, Jyotsna, Vadim
Family Thoracostomopsidae Filipjev, 1927	Nic, Jyotsna, Vadim
Family Phanodermatidae Filipjev, 1927	Nic, Jyotsna, Vadim
Family Anticomidae Filipjev, 1918	Nic, Jyotsna, Vadim
Family Anoplostomatidae Gerlach & Riemann, 1974	Nic, Jyotsna, Vadim
Suborder Oncholaimina De Ley & Blaxter, 2002	Nic
Superfamily Oncholaimoidea Filipjev, 1916	Nic
Family Oncholaimidae Filipjev, 1916	Nic
Family Thalassogeneridae Orton Williams & Jairajpuri, 1984	Nic
Family Enchelidiidae Filipjev, 1918	Nic
Suborder Ironina Siddiqi, 1983	
Superfamily Ironoidea de Man, 1876	
Family Ironidae de Man, 1876	Vadim/Ursula
Family Leptosomatidae Filipjev, 1916	Vadim
Family Oxystominidae Chitwood, 1935	Nic
Suborder Trefusiina	Daniel
Suborder Tripyloidina De Coninck, 1965	Jyotsna
Superfamily Tripyloidoidea Filipjev, 1928	Jyotsna
Family Tripyloididae Filipjev, 1928	Jyotsna
Suborder Alaimina	Ursula
Superfamily Alaimoidea Micoletzky, 1922	Ursula
Family Alaimidae Micoletzky, 1922	Ursula
Superfamily Campydoroidea Jairajpuri, 1976	Ursula
Family Campydoridae (Thorne, 1935) Clark, 1961 freshwater	Ursula
Order Triplonchida Cobb, 1919	Alex/Zeng
Tobrilidae De Coninck, 1965	Zeng
Tripylidae de Man, 1876	Zeng
Onchulidae Andr a ssy, 1963	Mike
Prismatolaimidae Micoletzky, 1922	Ursula
Bastianiidae De Coninck, 1965	Ursula
Odontolaimidae Gerlach & Riemann, 1974	Ursula
Triodontolaimidae De Coninck, 1965	Nic
Rhabdodemaniidae Filipjev, 1934 – marine	Nic
Pandolaimidae Belogurov, 1980 – marine	Nic
Diphterophoridae Micoletzky, 1922 – soil and freshwater	Mike
Trichodoridae Thorne, 1935	Frieda

Order Dorylaimida Pearse, 1942	Reyes
Suborder Nygolaimina Ahmad & Jairajpuri, 1979	Reyes
Family Aetholaimidae Jairajpuri, 1965	Reyes
Family Nygellidae Andrassy, 1958	Reyes
Family Nygolaimellidae Clark, 1961	Reyes
Family Nygolaimidae Thorne, 1935	Reyes
Suborder Dorylaimina Pearse, 1936	Reyes
Family Actinolaimidae Thorne, 1939	Reyes
Family Aporcelaimidae Heyns, 1965	Reyes
Family Aulolaimoididae Jairajpuri,1964	Reyes
Family Belondiridae Thorne, 1939	Reyes
Family Dorylaimidae de Man, 1876 – partly marine	Reyes
Family Leptonchidae Thorne, 1935	Reyes
Family Longidoridae Thorne, 1935	Reyes
Family Mydonomidae Thorne, 1964	Reyes
Family Nordiidae Jairajpuri & Siddiqi, 1964	Reyes
Family Qudsianematidae Jairajpuri, 1965	Reyes
Family Thornenematidae Siddiqi, 1969	Reyes
Family Thorniidae De Coninck, 1965	Reyes
Family Tylencholaimellidae Jairajpuri, 1964	Reyes
Family Tylencholaimidae Filipjev, 1934	Reyes
Order Mononchida Jairajpuri, 1969	Ursula
Family Cryptonchidae Chitwood, 1937	Ursula
Family Bathyodontidae Clark, 1961	Ursula
Suborder Mononchina Kirjanova & Krall, 1969	Ursula
Family Anatonchidae Jairajpuri, 1969	Ursula
Family Cobbonchidae Jairajpuri, 1969	Ursula
Family Iotonchidae Jairajpuri, 1969	Ursula
Family Mononchidae Filipjev, 1934 – may occur in brackish waters	Ursula
Family Mylonchulidae Jairajpuri, 1969	Ursula
Order Mermithida	
Order Marimermithida Rubtzov 1980, emend. Tchesunov 1995	Dimitri
Marimermithidae Rubtzov & Platonova, 1974	Dimitri
Order Desmoscolecida Filipjev, 1929	Frieda
Superfamily Desmoscolecoidea Shipley, 1896	Frieda
Family Desmoscolecidae Shipley, 1896	Frieda
Family Meyliidae De Coninck, 1965	Frieda
Family Eophasmidae Poinar, 2011	Frieda
Order Chromadorida Chitwood, 1933	
Family Chromadoridae Filipjev, 1917	Virág
Family Cyatholaimidae Filipjev, 1918	Dmitri
Family Achromadoridae Gerlach & Riemann, 1973	Ursula
Family Ethmolaimidae Filipjev & Schuurmans Stekhoven, 1941	Vadim/Ursula
Family Neotonchidae Wieser & Hopper, 1966	Alexei
Family Selachinematidae Cobb, 1915	Daniel
Order Desmodorida De Coninck, 1965	
Superfamily Desmodoroidea Filipjev, 1922	

Family Desmodoridae Filipjev, 1922	Vadim/Daniel
Family Draconematidae Filipjev, 1918	Frieda
Family Epsilonematidae Steiner, 1927	Frieda
Superfamily Microlaimoidea Micoletzky, 1922	Dmitri
Family Microlaimidae Micoletzky, 1922	Dmitri
Family Aponchiidae Gerlach, 1963	Dmitri
Family Monoposthiidae Filipjev, 1934	Dmitri
Family Richtersiidae Kreis, 1929	Dmitri
Order Monhysterida Filipjev, 1929	
Superfamily Siphonolaimoidea Filipjev, 1918	
Family Fusivermidae Tchesunov, 1996	Tania
Family Siphonolaimidae Filipjev, 1918	Tania
Family Linhomoidae Filipjev, 1922	Tania
Superfamily Sphaerolaimoidea Filipjev, 1918	
Family Sphaerolaimidae Filipjev, 1918	Virág
Family Xyalidae Chitwood, 1951	Virág
Superfamily Monhysteroidea Filipjev, 1929	
Family Monhysteridae De Man, 1876	Virág
Order Araeolaimida De Coninck & Schuurmans Stekhoven, 1933	
Family Axonolaimidae Filipjev, 1918	Tania
Family Bodonematidae Jensen, 1979	Tania
Family Comesomatidae Filipjev, 1918	Daniel
Family Coninckiidae Lorenzen, 1981	Tania
Family Diplopeltidae Filipjev, 1918	Daniel
Order Plectida Gadea, 1973	Alexander
Suborder Plectina	Alex
Family Ochridiidae Andrassy, 1976	Alex
Family Leptolaimidae Orley, 1880	Alex
Family Aphanolaimidae Chitwood, 1936	Alex
Family Camacolaimidae Micoletzky, 1924	Alex
Family Rhadinematidae Lorenzen, 1981	Alex
Family Chronogastridae Gagarin 1975	Alex
Family Plectidae Orley 1880 - brackish	Alex
Family Metateratocephalidae Eroshenko, 1973	Alex
Suborder Ceramonematina	Alex
Family Ceramonematidae Cobb, 1933	Alex
Family Diplopeltoididae Tchesunov, 1990	Alex
Family Tarvaiidae Lorenzen, 1981	Alex
Family Tubolaimoididae Lorenzen, 1981	Alex
Family incertae sedis	Alex
Paramicrolaimidae Lorenzen, 1981	Alex
Aegialoalaimidae Lorenzen, 1981	Alex
Haliplectidae Chitwood, 1951	Alex
Aulolaimidae Jairajpuri & Hopper, 1968	
Order Tylenchida	
Order Rhabditida	
Suborder Tylenchina	
Infraorder Cephalobomorpha	Alex

Infraorder Drilonematomorpha	Alex
Infraorder Panagrolaimorpha	Alex
Infraorder Tylenchomorpha	Mike/Zeng

- Looking at the table, some of the classification need to be redone in Nemys: e.g. Rhabditida and Tylenchida.
- Alexei Tchesunov will be assigned to solve taxonomical issues.
- As agreed during the previous workshop in 2015, we all have our main working group but in case we come into something that must be changed from another group and we have that information, we can do it (upload of new sp., literature, absence of information on type species distribution).

IX. Concrete actions - Priorities

- To finish the list of missing authorities;
- To complete information on Type material and distribution for the groups of the tasks list;
- Uploading of new taxa, especially for the new editors.