



International Committee on Systematics of Prokaryotes

Accumulated Minutes of the online email discussion on “Proposals to address the way the *Cyanobacteria* should be treated under the International Code of Nomenclature of Prokaryotes.”

Background information

To be open for discussion in the period November 1, 2020 – January 31, 2021, with replies from the authors of the proposals to be received in the period February 1 – March 31, 2021; the ICSP ballot will open on April 1, ending no later than June 30, 2021.

Background information:

1. *Cyanobacteria* are prokaryotes but their nomenclature is traditionally regulated by the rules of the International Code of Botanical Nomenclature (ICBN)/International Code of Nomenclature for algae, fungi, and plants (ICN).
2. In 1978, Stanier *et al.* proposed that the nomenclature of the *Cyanobacteria* should be governed by the provisions of the International Code of Nomenclature of Bacteria (ICNB), today the International Code of Nomenclature of Prokaryotes (ICNP).

Stanier *et al.* Proposal to place the nomenclature of the cyanobacteria (blue-green algae) under the rules of the International Code of Nomenclature of bacteria. *Int J Syst Bacteriol* 1978;28:335–336.

3. This proposal led to long discussions by the ICSB/ICSP, its Subcommittee on the taxonomy of phototrophic bacteria, and different *ad hoc* committees. The history of these discussions was summarized by Oren and Ventura (2017) and full information can be found in the references cited therein.

Oren A, Ventura S. The current status of cyanobacterial nomenclature under the “prokaryotic” and the “botanical” code. *Antonie van Leeuwenhoek* 2017;110:1257–1269.

4. Prior to 2000, there was no explicit statement in the ICNB to show that the nomenclature of the *Cyanobacteria* was covered by its Rules. The older version of General Consideration 5 reads: “This *Code of Nomenclature of Bacteria* applies to all bacteria. The nomenclature of certain other microbial groups is provided for by other Codes: fungi and algae by the Botanical Code, ...”

Tindall (1999) proposed adding the following note: ‘The term “bacteria” covers those organisms variously recognized as prokaryotes, Bacteria, Archaea, Eubacteria and Archaeobacteria. Due consideration has been given to including cyanobacteria, which are traditionally covered by the International Code of Botanical Nomenclature, and has been discussed elsewhere’. However, during their meetings in Sydney in 2000, the JC and the ICSB changed this note to read: “Prokaryotes” covers those organisms that are variously recognized as e.g. Schizomycetes, Bacteria, Eubacteria, Archaeobacteria, Archaeobacteria, Archaea, Schizophycetes, Cyanophyceae and Cyanobacteria.” This is the current wording of the *Note to General Consideration 5* in the ICNP (2008 Revision; Parker *et al.* 2019).

Tindall BJ. Proposals to update and make changes to the Bacteriological Code. *Int J Syst Bacteriol* 1999;49:1309-1312.

De Vos P, Trüper HG. Judicial Commission of the International Committee on Systematic Bacteriology. IXth International (IUMS) Congress of Bacteriology and Applied Microbiology. Minutes of the meetings, 14, 15 and 18 August 1999, Sydney, Australia. *Int J Syst Evol*

International Committee on Systematics of Prokaryotes

Microbiol;2000:2239–2244.

5. A few relevant aspects in which the ICNP and the ICN differ:

- (1) The nature of the type material permitted – live cultures (ICNP) or dead or preserved type material (ICN).
 - (2) Dating of priority of names: 1980 for the ICNP; 1753, 1886 or 1892 for different groups of cyanobacteria/cyanophyta for the ICN.
 - (3) The version of Principle 2 of the ICNP adopted in Sydney in 1999, as stated in the current ICNP (2008 revision), highlights that the nomenclature of prokaryotes is **not** independent of botanical nomenclature. Thus, generic names in use under the ICN cannot be used for new generic names under the ICNP and a genus name with a botanical type species cannot be used to describe new species under the ICNP.
6. The number of names of cyanobacterial taxa that have standing under the ICNP is currently very small: the family *Prochlorotrichaceae* and the genera *Halospirulina*, *Planktotricoides*, *Prochlorothrix* and *Rubidibacter*, each with a single species.
7. Three alternative proposals to solve the issue of the cyanobacteria under the ICNP were published in the IJSEM between 2014 and 2020; none of these proposals was yet discussed by the ICSP. These proposals are now open for discussion, and according to the statutes of the ICSP, a decision must be finalized no later than the end of June 2021.

PROPOSAL NO. 1

Oren and Garrity (2014) proposed restoring the text of the Note to General Consideration 5 to a version resembling the one originally proposed by Tindall in 1999. This means that nomenclature of the cyanobacteria will be regulated by the ICN as in the past. The names mentioned above (section 6) will remain validly published under the ICNP and they also have standing in the botanical nomenclature based on Article 45.1 of the ICN (see below for Proposal no. 3). The proposed version of the Note to General Consideration 5 is as follows:

Note. 'Prokaryotes' covers those organisms that are variously recognized as e.g. Schizomycetes, Bacteria, Eubacteria, Archaeobacteria, Archaeobacteria and Archaea. This Code does not cover the nomenclature of the Cyanobacteria/Cyanophyceae/Cyanophyta, which traditionally is covered by the International Code of Botanical Nomenclature/International Code of Nomenclature for algae, fungi, and plants. However, names of cyanobacterial genera and species validly published in the past under the provisions of the ICNP will retain standing in the nomenclature.

Oren A, Garrity GM. Proposal to change General Consideration 5 and Principle 2 of the International Code of Nomenclature of Prokaryotes. *Int J Syst Evol Microbiol* 2014;64:309–310.

This proposal was discussed by the ICSP Subcommittee on the taxonomy of phototrophic bacteria and met with considerable opposition.

Imhoff JF. International Committee on Systematics of Prokaryotes. Subcommittee on the taxonomy of phototrophic bacteria. Minutes of the closed online meeting, 10–30 June 2014. *Int J Syst Evol Microbiol*;2014:3910–3912.

PROPOSAL NO. 2

The proposal by Pinevich (2015) to consistently apply the ICNP to names of the *Cyanobacteria* by changing the text of Principle 2 of the ICNP is directly opposed to Proposal 1.

International Committee on Systematics of Prokaryotes

The nomenclature of prokaryotes is not independent of zoological nomenclature, as well as nomenclature of algae, fungi and plants. The only exception applies to names of the oxygenic photosynthetic bacteria (cyanobacteria) validly published, as names of algae, under the International Code of Botanical Nomenclature/International Code of Nomenclature for algae, fungi and plants.

Supplementary note: 'independent' means that the same name may be validly used for a taxon of bacteria as well as a taxon of algae, fungi, plants and animals.

If this proposal were to be accepted by the ICSP, further modifications of the code will be necessary, as the proposal does not address aspects such as of priority of names and the treatment of homonyms under the two codes. The term 'valid use' of names is not found in the ICNP.

Pinevich AV. Proposal to consistently apply the International Code of Nomenclature of Prokaryotes (ICNP) to names of the oxygenic photosynthetic bacteria (cyanobacteria), including those validly published under the International Code of Botanical Nomenclature (ICBN)/International Code of Nomenclature for algae, fungi and plants (ICN), and proposal to change Principle 2 of the ICNP. *Int J Syst Evol Microbiol* 2015;65:1070–1074.

PROPOSAL NO. 3

In this new proposal (Oren, 2020), reciprocation of Article 45.1 of the ICN (previously Article 45.4 of the ICBN) will enable the valid publication under the ICNP of names of *Cyanobacteria* previously validly published under the ICN/ICBN. In the ICN, this Article reads as follows: 'If a taxon originally assigned to a group not covered by this Code is treated as belonging to the algae or fungi, any of its names need satisfy only the requirements of the relevant other Code that the author was using for status equivalent to valid publication under this Code (...). The Code used by the author is determined through internal evidence, irrespective of any claim by the author as to the group of organisms to which the taxon is assigned. ...'

Based on reciprocation of this Article of the ICN, Proposal no. 3 includes the following emendations of the ICNP (new text highlighted):

General consideration 5

This *Code of Nomenclature of Prokaryotes* applies to all Prokaryotes. The nomenclature of eukaryotic microbial groups is provided for by other Codes: fungi and algae by the International Code of Nomenclature for algae, fungi, and plants; protozoa by the International Code of Zoological Nomenclature. The nomenclature of viruses is provided for by the International Code of Virus Classification and Nomenclature (see Appendix 1).

Note. 'Prokaryotes' covers those organisms that are variously recognized as e.g. *Schizomycetes*, *Bacteria*, *Eubacteria*, *Archaeobacteria*, *Archaea*, *Schizophycetes*, *Cyanophyceae* and *Cyanobacteria*.

If a taxon originally assigned to the *Cyanophyceae/Cyanobacteria* was named under the provisions of the International Code of Nomenclature for algae, fungi, and plants, any of its names need satisfy only the requirements of that Code for status equivalent to valid publication under this Code.

Note that this the first time that special arrangements are proposed in the ICNP to regulate the nomenclature of a specific group of prokaryotes; this in contrast to the ICN, which includes

International Committee on Systematics of Prokaryotes

numerous special provisions for different groups of plants.

Rule 18a – *Type of a Species or Subspecies*

The following paragraph must be added:

(3) For species (or subspecies) of *Cyanobacteria* described under the provisions of the International Code of Nomenclature for algae, fungi, and plants, the type designated under that Code is also recognized as the type under the International Code of Nomenclature of Prokaryotes. In cases of homonymy where a name of a cyanobacterial taxon was published under both codes, the oldest name has priority.

Example: *Prochlorococcus* Chisholm *et al.* 1992 and not *Prochlorococcus* Chisholm *et al.* 2001).

Rule 24a

...

Priority of publication dates from 1 January 1980. On that date all names published prior to 1 January 1980 and included in the Approved Lists of Bacterial Names are treated for all nomenclatural purposes as though they had been validly published for the first time on that date, the existing types being retained (but see Rule 24b).

For names of *Cyanobacteria* validly published under the provisions of the International Code of Nomenclature for algae, fungi, and plants, priority of publication is determined by Article 13.1 of that Code.

Rule 30

For the name of a species to be validly published, it must conform with the following conditions.

...

(4) Names of taxa of *Cyanobacteria* validly published in conformity with the Rules of the International Code of Nomenclature for algae, fungi, and plants are also validly published in conformity with the Rules of this Code (see General Consideration 5).

Oren A. Three alternative proposals to emend the Rules of the International Code of Nomenclature of Prokaryotes to resolve the status of the *Cyanobacteria* in the prokaryotic nomenclature. *Int. J. Syst. Evol. Microbiol.* 2020;70:4406–4408.

Prepared by Aharon Oren
October 2020

International Committee on Systematics of Prokaryotes

11 November 2020

Fabiano Thompson (Federal University of Rio de Janeiro, Rio de Janeiro, Brazil) posted:

We have been working on the taxonomy of cyanobacteria; some recent manuscripts are attached. We opt to name species of cyanos as a prokaryotic organism. In addition to nomenclature, another serious problem with the taxonomy of cyanobacteria is related to species descriptions with no mandatory requirement of genome sequence. Lack of genome sequence is very serious and several specialized journals devoted to systematics overlook this problem.

Attachments were:

- Thompson C et al. (2020). Biological reality denied in marine picocyanobacteria? *Frontiers* (in press).
- Salazar VW et al. (2020). A new genomic taxonomy system for the *Synechococcus* collective. *Environ. Microbiol.* <https://doi.org/10.1111/1462-2920.15173>.
- Thompson C et al. (2020). Microbial Genomic Taxonomy. *Trends in the Systematics of Bacteria and Fungi* (eds. P. Bridge, D. Smith and E. Stackebrandt), in press.
- Tschoeke D et al. (2020). Unlocking the Genomic Taxonomy of the *Prochlorococcus* Collective. *Microbial Ecology* 80:546–558.
- Walter JM et al. (2020). Ecogenomics of the Marine Benthic Filamentous Cyanobacterium *Adonisia*. *Microbial Ecology* 80:249–265.
- Walter JM et al. (2017). Ecogenomics and Taxonomy of Cyanobacteria Phylum. *Frontiers in Microbiology* 8:2132. doi: 10.3389/fmicb.2017.02132.

11 November 2020

Brian J. Tindall (Braunschweig, Germany) posted:

This take me back to the original text I wrote in 1999. The question is not whether these organisms are prokaryotes, but under which Code should they be dealt with. There are those who also dislike the term prokaryote. The major issue relates to a long tradition of naming these organisms under the ICN, but without the corresponding infrastructure under the ICNP.

Neither the ICN nor the ICNP deal with which methods are to be used in the classification of organisms and while the inclusion of genome sequences may be prudent there is certainly not a mandatory requirement under either Code.

17 November 2020

Ramon Rosselló-Móra (IMEDEA, Universitat de les Illes Balears, Spain) posted:

I favour the proposal of Oren (2020) because it is a good compromise to solve the nomenclatural problems of the cyanobacteria. I think that this will help in the harmonization of the future taxonomic criteria for this group of prokaryotes representing a minor, but relevant bacterial sub-branch. Smoothing instead of deepening discrepancies is always a win. Glad that Aharon brought up this last proposal.

Although not to be discussed here, but brought up by my colleagues, I also favor the use of prokaryotes to embrace Archaea and Bacteria, as well as I believe that the future of taxonomic descriptions (and probably the nature of type material as in the Zoological Code) will be absolutely linked to the deposit of adequate genome sequences.

30 December 2020

International Committee on Systematics of Prokaryotes

Vicki Chalker (Public Health England, UK) posted:

I agree option 3 is practical.

I would suggest a slight amendment highlighted in green to rule 24a text to improve clarity from this:

Rule 24a

...

Priority of publication dates from 1 January 1980. On that date all names published prior to 1 January 1980 and included in the Approved Lists of Bacterial Names are treated for all nomenclatural purposes as though they had been validly published for the first time on that date, the existing types being retained (but see Rule 24b).

For names of Cyanobacteria validly published under the provisions of the International Code of Nomenclature for algae, fungi, and plants, priority of publication is determined by Article 13.1 of that Code.

To this

Rule 24a

...

Priority of publication dates from 1 January 1980. On that date all names published prior to 1 January 1980 and included in the Approved Lists of Bacterial Names are treated for all nomenclatural purposes as though they had been validly published for the first time on that date, the existing types being retained (but see Rule 24b).

For names of Cyanobacteria validly published (from date xxxx – xxxx with link to those of relevance) under the provisions of the International Code of Nomenclature for algae, fungi, and plants, priority of publication is determined by Article 13.1 of that Code.

04 January 2021

Brian J. Tindall (Braunschweig, Germany) posted:

One of the interesting issues with the ICNP and the ICN is that they have a common history. Prior to the 1930s prokaryotes (bacteria) were treated under the botanical code. The 1935 (Cambridge) version of the International Code of Botanical Nomenclature serving as the basis for much of the wording of the 1948 version of the International Code of Nomenclature of Bacteria. Unfortunately, what has now become the ICN (botanical nomenclature) and the ICNP (prokaryote nomenclature) have diverged in such a fashion that it is questionable that the two are 100% compatible, making any form of reciprocal action potentially problematic.

Options 1 and 2 are essentially versions of an unsatisfactory status quo, while option 3 looks attractive, but may fail in the detail.

Article 13.1 (of the ICN) deals with the "limitation of the principle of priority, while Article 11 deals with the general issue of priority, including Article 11.10. "The principle of priority does not apply above the rank of family."

Similarly not even names at the rank of family have to be formed from the name of a genus. Thus, Cyanophyceae may be used instead of an, in the future validly published name Cyanobacteriia. It is also not clear whether there are other synonyms that may be applicable to the cyanophytes/cyanobacteria/blue green algae.

International Committee on Systematics of Prokaryotes

In the case of *Rhodococcus*, we have *Rhodococcus* Zopf 1891 (bacterium) vs *Rhodococcus* Hansgirg 1884 (algae, possibly a cyanobacterium): <https://doi.org/10.1099/ijs.0.060624-0>

The issue of when the names Prochloron, Prochloron didemni, Prochlorales or Prochlorales were validly published makes interesting reading and points to problems interpreting both Codes and the tangle one can get into: <https://doi.org/10.2307/1222542>

What do we do with names that are conserved or rejected under the ICN (which of course does not affect the valid publication of any names involved)? We also have validly published names under the ICN that are long accepted as synonyms, but serve as bas(i)onyms. It is unclear whether there are any comprehensive lists of names of cyanobacteria/cyanophytes (at all ranks).

The ICN and ICNP differ in the fact that the ICN accepts names of infra-subspecific taxa as validly published, the ICNP does not.

This brings me to "names at different ranks" (ICN vs "change in rank" (ICNP), where proposed changes to rule 50a and 50b not only fundamentally misinterpret the background in the ICNP, but also add incompatibility between the two codes: <https://doi.org/10.1099/ijsem.0.002958>

There are also differences in the nomenclatural types between the ICN and ICNP. In essence the nomenclatural type under the ICN is normally a specimen or a description (irrespective of rank), although typification only applies to names of higher taxa that are formed from a genus name. This is distinctly different to the ICNP where all names are linked to nomenclatural types. *{Editorial note see correction to this paragraph posted 25/01/21 below}*

What do you do with names validly published under the ICN that do not conform with the wording of the ICNP i.e. would be illegitimate under that code?

If one were to implement cross code valid publication it might be more appropriate to treat the "same name" published under different codes as being isonyms, which be more appropriate than treating the same name with the same nomenclatural type as homonyms (that would contradict the definition of homonym anyway): <https://doi.org/10.1099/ijsem.0.004268>; see also: <https://doi.org/10.1099/ijsem.0.003239>

One can of course ignore these differences and bend the rules, since it is unlikely that anyone will notice.

25 January 2021

Brian J. Tindall (Braunschweig, Germany) posted:

Following up on what I wrote previously:

1) text in a previous e-mail should be corrected to:

"There are also differences in the nomenclatural types between the ICN and ICNP. In essence the nomenclatural type under the ICN is normally a specimen or an illustration (irrespective of rank), although typification only applies to names of higher taxa that are formed from a genus name. This is distinctly different to the ICNP where all names are linked to nomenclatural types."

2) Phylogenomic analysis of *Anabaenopsis elenkinii* (Nostocales, Cyanobacteria)

<https://doi.org/10.1099/ijsem.0.004648>

"The saline-alkaline lakes (soda lakes) are the habitat of the haloalkaliphilic cyanobacterium *Anabaenopsis elenkinii*, the type species of this genus."

International Committee on Systematics of Prokaryotes

Since these names appear to have been validly published under the ICNafp. Publications appearing in the current botanical literature confirm that:

a) there are no type species

b) nomenclatural types are linked to names of taxa

ie the nomenclatural type of the name *Anabaenopsis* is a specimen or illustration.

3) don't we already have the phylum name Cyanophyta under the ICNafp?

27 January 2021

Johannes Imhoff (Helmholtz-Zentrum für Ozeanforschung Kiel, Germany) posted:

There is [no]* doubt that only proposal No. 3 can provide a step forward for the problems with the cyanobacteria.

The cyanobacteria anyhow need special treatments within the ICNP, because some of rules made for other bacteria cannot or only with great difficulties be applied for cyanobacteria.

It would be a great relief for many scientists working on systematics of cyanobacteria to see these changes in action and to finish a standstill of several decades in this issue.

Thinking on next steps, it would be desirable to have in due time an approved list of cyanobacteria (more than 40 years after such a list for all other bacteria) prepared by a group of the most competent people in the field.

Hopefully, these few points are helpful for your further actions.

**{Editorial note: typographical correction confirmed by Prof Imhoff}*

27 January 2021

John Stoltz (Duquesne University, USA) posted:

The link for the first paper is broken (and "O" instead of a "0"). The correct link is: <https://doi.org/10.1099/ijms.0.059568-0>

The third paper is not open access. Would it be possible to get access?

29 January 2021

Maria Chuvochina (University of Queensland, Australia) posted:

Sorry for the late words on this and while in favour of the recent proposal by Aharon (<https://www.microbiologyresearch.org/content/journal/ijsem/10.1099/ijsem.0.004268>), I also have some concerns about the nomenclature types. Specifically, what can we do with types established for names validly published under the ICN without living cultures? Can we propose neotypes for such names under the ICNP or both? Will the ex-type cultures be considered as types for nomenclature purposes under the ICNP?..

I agree with Prof. Imhoff that an Approved List of cyanobacterial names will be a well desirable outcome to move forward...

In brief: I strongly support inclusion of cyanobacteria under the provision of ICNP.

International Committee on Systematics of Prokaryotes

30 January 2021

Aharon Oren (Hebrew University of Jerusalem, Israel) posted:

Based on my recent proposal ("Proposal no. 3"), **ALL** names validly published under the ICN automatically are considered validly published under the rules of the ICNP (reciprocating Article 45.1 of the ICN). There will be no need for "Approved Lists". <http://www.cyanodb.cz/> has good information about the status of the botanical names.

30 January 2021

Brian J. Tindall (Braunschweig, Germany) posted:

(in response to Imhoff)

Point 1) bearing in mind some significant differences between the two Codes.

Point 2) Since the Codes primarily deal with names (at defined ranks) and nomenclatural types it is unclear which rules are meant under the term "special treatment". If there need to be changes to the rules these must be proposed accordingly.

Point 4) The issue of adding names of cyanobacteria to the Approved Lists (with a proposal to delay the publication of the Approved Lists (1980) by 5 years was made in 1978.

(in response to Chuvochina)

Don't forget epitypes and lectotypes.

30 January 2021

Seán Turner (NIH National Center for Biotechnology Information, USA) posted:

Re: "<http://www.cyanodb.cz/> has good information about the status of the botanical names."

As does the more general site Algaebase:

<https://www.algaebase.org/>

31 January 2021

Brian J. Tindall (Braunschweig, Germany) posted:

From <https://doi.org/10.1099/ijsem.0.004268> (IJSEM 2020; 70)(the text being discussed)

"Rule 18a – Type of a Species or Subspecies

The following paragraph must be added:

(3) In cases of homonymy where a name of a cyanobacterial taxon was published under both codes, the oldest name has priority.

Example: *Prochlorococcus* Chisholm et al. 1992 and not *Prochlorococcus* Chisholm et al. 2001)."

If these names refer to the same nomenclatural type then they are not homonyms. Later homonyms are always illegitimate and must be dealt with under both the ICN and ICNP.

Homonym = same name, different nomenclatural types

International Committee on Systematics of Prokaryotes

They are isonyms = same name, same nomenclatural type. This is part of the ICN, but not the ICNP, and must await the treatment of:

Introducing the concept of the isonym into the International Code of Nomenclature of Prokaryotes. (IJSEM 2019; 69:1515–1518)

<https://doi.org/10.1099/ijsem.0.003239>

Same applies to the example in an earlier paragraph citing treatment of homonyms under the two codes “e.g. Prochloron Lewin 1977 – Prochloron Florenzano et al. 1986” as homonyms, but see my earlier e-mail on that topic, where the issue is who validly published what, when and under which Code)

It also highlights some fundamental misunderstandings with regards homonyms, what they are and how to deal with them.

Redefining homonyms under Rule 51b (4) of the International Code of Nomenclature of Prokaryotes. (IJSEM 2016)

<https://doi.org/10.1099/ijsem.0.001536>

31 January 2021

Brian J. Tindall (Braunschweig, Germany) posted:

Seán Turner has also provided links to the two databases. Since one of the issues is an "Approved Lists" ie a list of names where the publication of the lists is approved, but not the names on it of the "Approved Lists of Bacterial Names", these databases are more like Index Bergeyana - all names..

The object of the Approved Lists being to reduce the number of names that were in circulation to those that one could with a reasonable degree of certainty link to a nomenclatural type and a description. It effectively removed something like 26,000 names and also removed long lists of synonyms or potential synonyms that had not been used for decades. If one rules that all names of cyanobacteria validly published under the ICN are validly published under the ICNP one also has to take into account that the lists may not be comprehensive, as could be the case with Index Bergeyana. We know names were missed on the Approved Lists.

We would have, for example the names:

Anabaena spiroides var. *minima* f. *compacta* Nygaard 1949 (validly published, ICN)

Anabaena compacta (Nygaard 1949) Hickel, 1985 (validly published, ICN)

Dolichospermum compactum (Nygaard 1949) Wacklin, Hoffmann et Komárek 2009 (validly published, ICN)

The first listed name being the basonym of the other two (that are new combinations of the first) and the final epithet is from the infrasubspecific epithet *compacta*. All are homotypic synonyms. We would have species epithets based on the names of varieties and forms, that we otherwise did away with 40 years ago. One can still propose them under the ICN, but not under the ICNP.

If only *Anabaena compacta* and *Dolichospermum compactum* are validly published under the ICNP, then you have

Anabaena compacta Hickel, 1985 (validly published, ICNP)

Dolichospermum compactum (Hickel, 1985) Wacklin, Hoffmann et Komárek 2009 (validly published, ICNP)

Issues such as bas(i)onyms and priority would be affected differently under the two Codes. If all

International Committee on Systematics of Prokaryotes

names are validly published then we have the names of varieties and forms in again via the back door and of course starting dates of 1753 (algae), with the exception of 1888 (Nostocaceae heterocysteeae) and 1892 (Nostocaceae homocysteeae).

This is like the parallel world of plant pathogenic pathovars - that works well for plant pathologists, but does not collide with the ICNP..

Holotypes that are dead preserved specimens or illustrations remain the nomenclatural types under both Codes, if you have different nomenclatural types you have parallel systems.

One should be aware of all the consequences and the devil lies in the detail. Misunderstandings arose in 1999 that took about 15 years to clear up.

31 January 2021

Maria Chuvochina (University of Queensland, Australia) posted:

I would pay careful attention to the issues raised...

We don't want to bring more confusion into the system. Can we add a sentence of extype cultures from holotypes to serve as types under ICNP?..

'Holotypes that are dead preserved specimens or illustrations remain the nomenclatural types under both Codes, if you have different nomenclatural types you have parallel systems.'