

Comment on *Spracklandus* Hoser, 2009 (Reptilia, Serpentes, ELAPIDAE): request for confirmation of the availability of the generic name and for the nomenclatural validation of the journal in which it was published

(Case 3601; see BZN 70: 234–237; 71: 30–38, 133–135, 181–182, 252–253)

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1. In Case 3601 Raymond Hoser has asked the Commission to validate for the purposes of nomenclature the name *Spracklandus* Hoser, 2009, and ‘the journal in which it was published,’ issue 7 of the *Australasian Journal of Herpetology* (AJH). We note that the entire run of AJH has been written, edited, and published solely by Hoser. Although his requests to the Commission were presented as narrow and, in his words, ‘routine matters,’ we are convinced that they represent an important tipping-point with broad implications of major concern for zoological taxonomy and nomenclature as a whole and, by extension, the greater scientific community. Since Hoser’s actions and works have failed to follow scientific best practices (e.g. Turtle Taxonomy Working Group, 2007, 2014; Kaiser et al., 2013; Kaiser, 2014) and both the Commission’s general Recommendations and Code of Ethics in Appendix A, the global herpetological community has widely rejected his taxonomic decisions and resultant nomenclature. This has unfortunately caused a confusing dual nomenclature to develop in the herpetological community, with most boycotting or ignoring Hoser’s 700+ new names coined in the AJH, while he and a few personal followers actively promote their usage. We believe that suppression of the name *Spracklandus*, and all issues of AJH, is the only effective way to bring this contentious and confusing issue to resolution. The plenary power available under Article 81.1 of the Code exist specifically to allow the Commission to make rulings in individual cases that disturb stability and cause confusion, whether the works are Code-compliant or not. We maintain that it is in the interest of nomenclatural stability, not only for herpetology, but for all of zoological taxonomy, that the plenary power be invoked to declare the works in AJH unavailable, regardless of any narrow interpretation of their technical Code-compliance. We present our arguments for rejection of the validity of AJH in the following commentary. In view of the wide-reaching implications of this case for all of zoology, and reflecting the deep and broad-based community concern over these issues, our contributing authors include 70 global scientific leaders and accomplished amateurs from a wide variety of zoological disciplines.

2. When it comes to identifying and naming taxa, herpetology has embraced the use of possibilities created by emerging technologies in desktop-publishing, open-source internet-based publishing, searchable online digital libraries and databases, and internet search engines (e.g. Chelonian Conservation and Biology, www.chelonian.org; Herpetological Conservation and Biology, www.herpconbio.org; Amphibian Species of the World, <http://research.amnh.org/herpetology/amphibia/index.html>; The Reptile Database, www.reptile-database.org; Turtle Taxonomy Working Group, www.iucn-tftsg.org/checklist). Along with this acceleration and expansion of scientific communication, the last 20 years have witnessed unprecedented increases in the knowledge of reptile phylogeny and species

diversity, triggered by the ever-increasing application of molecular data, new analytical tools and conceptual advances, with the resulting taxonomic adjustments affecting most groups. Unfortunately, these advances in online informatics and desktop publishing have also created easier mechanisms for some individuals to bypass scientific publishing conventions in order to create self-published, poorly justified, and questionable nomenclatural and taxonomic acts, without the quality control of peer-review and editorial oversight. Case 3601, concerning the validity of the name *Spracklandus* and issue 7 of AJH, the journal in which it was presented, illustrates the potential of technological progress and internet-based data-mining by some individuals to enable the rapid production and wide distribution of this type of work, and with it the accelerating threats of destabilization and confusion that nomenclatural and taxonomic systems are facing as a result. Although rogue taxonomic journals such as AJH have appeared in the past and continue to appear (see Raghavan et al., 2014), it is our contention that it is incumbent on the scientific community and the Commission (ICZN) to protect and defend the integrity of nomenclatural taxonomy and the scientific process, lest both science and the ICZN itself fall victim to the destabilizing impact to nomenclature and taxonomy of the kind generated by individuals such as the originator of Case 3601.

3. Poor quality output is unacceptable in all fields of science, but it is particularly deplorable in taxonomy because it creates persistent nomenclatural instability and confusion, debases proper taxonomic and nomenclatural work, and bypasses accepted and established community standards for scientific inquiry and process. Kaiser et al. (2013) appropriately criticized this type of output, but in response to Kaiser and co-authors, Hoser (2013b) disingenuously and abrasively attempted to justify his own work and defend his actions of naming un-named phylogenetic clades identified in the works of other authors, while at the same time engaging in extensive personal defamatory rhetoric (e.g. Hoser 2013b:12, 15). We fear that unless the Commission addresses this type of divisive approach to taxonomy and nomenclature, and its potential ramifications, by setting a clear precedent to stabilize herpetological nomenclature, comparable practices are likely to surface in other branches of zoological taxonomy. If left unaddressed or validated, further destabilization and confusion are likely to develop, and the ICZN would then find itself facing an onslaught of analogous problems.

4. Case 3601 attempts to confirm the availability of the name *Spracklandus* and validate for the purposes of nomenclature issue number 7 of AJH. By implication, this could be misconstrued as validating the entire run of AJH as an acceptable medium for nomenclatural acts, and with it the many names (currently over 700, at various taxonomic levels) that Hoser created in isolation from (and frequently in conflict with) the global herpetological community. In addition, it would implicitly validate what we consider to be Hoser's disregard for proper scientific conduct and process. While we understand that any vote by the Commission is intended to be narrow in its application (i.e. covering only the specifics of the individual case) and not precedent-setting, we are certain that, given his long and public history of self-promotion, Hoser will interpret a decision in his favor as precedent-setting and comport himself accordingly, including the likely possibility of hundreds more requests to the Commission for validation of his many names. It is for this reason that our comment deliberately reaches beyond the specifics of Case 3601: to pre-empt

claims about the relationship between the Commission and herpetological taxonomists that manipulate the intent of a decision on Case 3601 and do lasting damage to the Commission and its effectiveness in science.

5. Hoser's output threatens to undermine the entire Code-compliant system that underlies nomenclatural stability (Kaiser et al., 2013; Thomson, BZN 71: 133–135). Having already impugned the scientific reputation and credibility of individual taxonomists (e.g. Hoser, 2009, pp. 16–19; Hoser, 2013b pp. 12, 15) and undermined the taxonomic profession itself (by self-publishing in a journal with no evidence of independent peer review), Hoser has triggered unprecedented community reaction and rejection (Kaiser et al., 2013; Thomson, BZN 71: 133–135). The herpetological community has expressed, justified, and implemented its intent to reject usage of Hoser names (e.g. Bates et al., 2013; Measey, 2013; Reynolds et al., 2014), but Hoser has continued to promote his alternative nomenclature and promulgated ever more names, with more issues of the AJH introducing many more new names posted in August 2014. Recent pending ICZN applications regarding Hoser names (Cases 3647 and 3648) and his comments on Taxacom and the ICZN-list online discussion forum have also indicated that his application regarding *Spracklandus* will not be an isolated case.

6. One of the most difficult situations arising from this scenario is the emergence of mutually exclusive, conflicting dual nomenclatures. One is based on accepted scientific principles to ascertain that the production of peer-reviewed taxonomy and nomenclatural acts is based on rigorous and focused analysis and a shared Code of Ethics; this is the method widely supported by the global herpetological and other taxonomic communities. The other is produced in isolation and based largely on apparent misappropriation and misrepresentation of others' work, or occasionally on baseless conjecture, without any notable adherence to acceptable scientific rigor or ethical principles. The ICZN is already aware of specific examples (see Thomson, BZN 71: 133–135), including Hoser's recent pre-emptive but technically flawed attempt to name *Macrochelys* taxa under active study by others (Roman et al., 1999; Echelle et al., 2010; Hoser, 2013a; Turtle Taxonomy Working Group, 2014; Thomas et al., 2014), in egregious disregard of Appendix A:2 of the Code. Developments of the most recent past have shown that the herpetological community is determined to uphold a boycott of Hoser names, and at least the *African Journal of Herpetology* has published an editorial that formalizes this boycott (Measey, 2013). Without action by the ICZN in opposition to Case 3601, we fear that dual nomenclature will be a perpetual problem for herpetological taxonomy.

7. An example of developing dual nomenclature is Hoser's attempted resurrection of three rattlesnake genera (*Aechmophrys*, *Caudisona*, and *Uropsophus*) from the synonymy of *Crotalus*, along with the description of new genera and subgenera (Hoser, 2009; Wüster & Bérnills, 2011). No data were presented to support these proposed changes, and Zaher et al. (2009) recommended that they not be followed. Despite this, the Brazilian Society of Herpetology unfortunately adopted these changes in their annually updated checklist (Bérnills, 2010; also see Wüster & Bérnills, 2011), triggering a proliferation of dual nomenclature for this medically important group of venomous snakes. This example illustrates how the output from AJH can proliferate and the harm that can potentially result from this dual nomenclature. It should also be clear that it is impossible to determine what to do with the resurrected

names without addressing the new names that were coined at the same time. This is a nomenclatural issue, requiring a complete review of the entire group's nomenclature and its inherent taxonomy to determine how to proceed.

8. In our opinion, the issue at hand is not a narrow question of whether the names proposed in AJH may technically be nomenclaturally available, but how the broader scientific community, and the ICZN specifically, should best address this type of open, repetitive disregard of time-honored nomenclatural and taxonomic practice. A firm and unequivocal decision on this case by the ICZN is necessary to safeguard the scientific integrity and global perception of the closely intertwined fields of zoological taxonomy and nomenclature. Neither the global scientific community nor the ICZN itself should be held hostage now or in the future by individuals adept at web-based data-mining and self-promotion, who circumvent the spirit of the Code, minimally attempt to adhere only to the Code's narrowest technical premises, and pre-empt those who work in compliance with both the Code's Recommendations and its Code of Ethics.

9. Governmental agencies, inter-governmental conventions, NGOs, and the global scientific and conservation communities depend on and value credible scientific and taxonomic work by the herpetological and wider taxonomic communities. Important in this regard is the expectation of reasonable nomenclatural stability and a precautionary approach to recommended taxonomic and nomenclatural changes. A decision in support of Case 3601 would implicitly sustain a dual nomenclature for many taxonomic groups of reptiles, and likely facilitate future chaos for additional taxonomic groups. The confusion stemming from such a dual nomenclature would cause many problems, ranging from legislative difficulties (e.g. during the development and enforcement of species management and conservation strategies or for trade regulations and quotas), to confusion over the identification and management of venomous species in a medical context (Williams et al., 2006).

10. We are not advocating that the practice of zoological taxonomy be restricted to scientific professionals—we welcome and encourage taxonomic and nomenclatural contributions from serious amateurs, naturalists, and biodiversity enthusiasts, as many of us are. However, such work needs to be original, acceptably published, and Code-compliant (including both the general Recommendations and the Code of Ethics), with a justified scientific underpinning. Additionally, we advocate strongly for quality-controlled peer-reviewed publishing as the only appropriate 'best practice' for new taxonomy and nomenclature (Turtle Taxonomy Working Group, 2007, 2014; Kaiser et al., 2013; Kaiser, 2014).

11. There are some similarities between the nomenclature presented in the AJH and that of Wells & Wellington (1983, 1985), the subject two decades ago of Case 2531 (BZN 44: 116–121) and several comments (e.g. BZN 45: 52–54, 145–153). This point has also been raised anecdotally on the ICZN online discussion forum and Taxacom, but we consider these cases to be dissimilar in important ways. The issues of concern in the Wells & Wellington papers were largely taxonomic and regionally focused (BZN 48: 337–338), whereas the issues with the AJH are primarily nomenclatural, ethical, and global. It has been argued in the past that the Wells & Wellington papers were also unethical and derived from substandard taxonomic practices (BZN 48: 337–338), but they were published prior to the existence of the Internet, and were not disseminated at the scale of AJH; nor did Wells & Wellington use their own self-edited

output as an opportunity to defame their critics in herpetology or professionals in other walks of life, as Hoser has done repeatedly, in breach of Appendix A:5 (e.g. Hoser, 2009, pp. 13, 16–19; Hoser, 2013b, pp. 12, 15), or to make political statements (e.g. Hoser, 2013a, p. 55) or to self-publicize business and other interests (e.g. Hoser, 2009, pp. 6, 9). In their ruling on Case 2531 the Commission concluded that the aim of that application would be best achieved by leaving the issue to taxonomic specialists to be settled through usage. In the present Case 3601, if the Commission were to consider the issue to be primarily taxonomic, this would have far-reaching destabilizing consequences for all of zoological nomenclature and taxonomy, consequences not readily resolved through usage.

12. Hoser's actions and abrasive comportment via AJH (citations in paragraph above) have created a highly contentious environment for zoological nomenclature and its intrinsic relationship to taxonomy. If the Commission upholds his request for validation of AJH issue 7, the greater scientific community and, importantly, future young scientists are likely to be misled into believing that output such as the AJH is an acceptable scientific medium for bringing knowledge to the public realm. Given also that Hoser's papers in AJH are, in our opinion, seriously flawed, unedited (evidenced by many uncorrected spelling errors), often potentially libellous and off-topic in content, and usually failing to present any measure of pertinent evidence to provide stability for the names they produce, their implicit endorsement by the Commission, if *Spracklandus* and AJH were to be validated, would in our opinion bring taxonomic science, zoological nomenclature, and the Code itself into unfortunate disrepute. Most herpetologists and many from other disciplines reject Hoser's output, as many have turned away from the ICZN online discussion forum, where Hoser has also been vocal and defamatory, including to ICZN Commissioners. In our opinion, this can in turn lead to an unwelcome erosion of the authority of the nomenclatural rules scientists have been following for over a century.

13. We believe Case 3601 represents a tipping-point in terms of where taxonomic science and its relationship with the Code might be headed. This relationship is currently being jeopardized by the actions of a single individual, which, if condoned or validated, are sure to further enable and facilitate others to follow. We therefore reiterate and support the proposal to suppress the entire run of AJH, as outlined in Proposals 9(1)b and 9(3) of Thomson (BZN 71: 134), inclusive of its most recent issues. Additionally, we urge that all scientists suspend the use of Hoser's nomenclature in order to avoid confusion. We contend that all taxa affected by new Hoser names contained in these issues of AJH be subject to prevailing usage under article 82.1 of the Code. Hence, no changes in order to use Hoser names should be formally made to their existing nomenclature while the Commission deliberates. This will prevent the names proposed in the AJH from coming into any further usage until such time that a Decision may be made. Should authors or editors feel a need to justify continued use of prevailing names for taxa affected by this proposal, they may cite Kaiser et al. (2013), Kaiser (2014), this comment, and Article 82.1 of the Code.

14. In summary, we contend that:

(1) the self-produced works by Raymond Hoser under the title of *Australasian Journal of Herpetology*, and the proliferation of names therein, are so contentious that they destabilize and cause confusion in the entire system of nomenclature, and undermine the scientific reputation and credibility of the discipline of taxonomy;

(2) the scope and reach of Hoser's nomenclatural output are made possible by relatively recent advances in internet communication, electronic publishing, and the use of social media, added to prior advances in desktop-publishing technologies. These tools are easily accessible across all biological fields, with concomitant risk of their deliberate misuse by some individuals. Thus, the nomenclatural issues we face in herpetology are already spreading and occurring in other branches of taxonomy and nomenclature. If left unchecked they will confound not merely nomenclatural stability in herpetology but taxonomic science as a whole;

(3) even though the Commission may be disinclined to rule on the basis of the recommended Code of Ethics contained in the Code, Hoser's demonstrated disregard for acceptable ethical practice is a key driver for many in both the herpetological community and other branches of zoology to categorically reject his writings and names, and support the retention of scientifically and ethically sound nomenclature. Without decisive pre-emptive action by the Commission, under Article 81.1 of the Code, the development of a dual system of nomenclature would appear inevitable, an outcome we regard as counter-productive in terms of Code-compliance.

15. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to declare the *Australasian Journal of Herpetology* (AJH) Volumes 1–24 unavailable for nomenclatural purposes; specifically pertaining to Case 3601, this would include issue 7 of AJH, thereby rendering the name *Spracklandus* unavailable;
- (2) to place on the Official Index of Rejected Works in Zoology issues 1–24 of the *Australasian Journal of Herpetology*, as ruled in (1) above;
- (3) to make a clear and decisive statement that the accepted scientific and ethical principles of zoological nomenclature, as recommended in the ICZN Code of Ethics, should be adhered to, and when evidence of failure to adhere to these principles leads to the matter being referred to the Commission for a decision, the Commission may apply and interpret the provisions of the Code of Ethics and determine whether it is appropriate to give a ruling.

These requests supersede those contained in three prior comments published by our co-authors (Thomson, BZN 71: 133; Wüster et al., BZN 71: 37–38; Kaiser, BZN 71: 30–35).

Additional references

- Bates, M.F., Tolley, K.A., Edwards, S., David, Z., da Silva, J.M. & Branch, W.R.** 2013. A molecular phylogeny of the African plated lizards, genus *Gerrhosaurus* Wiegmann, 1828 (Squamata: Gerrhosauridae), with the description of two new genera. *Zootaxa*, **3750**: 465–493.
- Bérnils, R.S.** 2010. Brazilian reptiles – list of species. *Sociedade Brasileira de Herpetologia*. Available online at <http://www.sberpetologia.org.br> (Accessed: 23/09/2014).
- Echelle, A.A., Hackler, J.C., Lack, J.B., Ballard, S.R., Roman, J., Fox, S.F., Leslie, D.M., Jr. & Van Den Bussche, R.A.** 2010. Conservation genetics of the alligator snapping turtle: cytonuclear evidence of range-wide bottleneck effects and unusually pronounced geographic structure. *Conservation Genetics*, **11**:1375–1387.
- Hoser, R.T.** 2009. A reclassification of the rattlesnakes; species formerly exclusively referred to the genera *Crotalus* and *Sistrurus*. *Australasian Journal of Herpetology*, **6**: 1–21.
- Hoser, R.T.** 2013a. An updated taxonomy of the living Alligator Snapping Turtles (*Macrochelys* Gray, 1856), with descriptions of a new tribe, new species and new subspecies. *Australasian Journal of Herpetology*, **16**: 53–63.

- Hoser, R.T.** 2013b. The science of herpetology is built on evidence, ethics, quality publications and strict compliance with the rules of nomenclature. *Australasian Journal of Herpetology*, **18**: 2–79.
- Kaiser, H.** 2014. Best practices in herpetological taxonomy: errata and addenda. *Herpetological Review*, **45**: 257–268.
- Kaiser, H., Crother, B.I., Kelly, C.M.R., Luiselli, L., O’Shea, M., Ota, H., Passos, P., Schleip, W.D. & Wüster, W.** 2013. Best practices: In the 21st Century, taxonomic decisions in herpetology are acceptable only when supported by a body of evidence and published via peer-review. *Herpetological Review*, **44**: 8–23.
- Measey, J.** 2013. Taxonomic publishing, vandalism and best practice: African Journal of Herpetology makes changes that will safeguard authors. *African Herp News*, **60**: 2–4.
- Raghavan, R., Dahanukar, N., Knight, J.D.M., Bijukumar, A., Katwate, U., Krishnakumar, K., Ali, A. & Philip, S.** 2014. Predatory journals and Indian ichthyology. *Current Science*, **107**: 740–742.
- Reynolds, G.R., Niemiller, M.L. & Revell, L.J.** 2014. Toward a Tree-of-Life for the boas and pythons: multilocus species-level phylogeny with unprecedented taxon sampling. *Molecular Phylogenetics and Evolution*, **71**: 201–213.
- Roman, J., Santhuff, S.D., Moler, P.E. & Bowen, B.W.** 1999. Population structure and cryptic evolutionary units in the alligator snapping turtle. *Conservation Biology*, **13**(1): 135–142.
- Thomas, T.M., Granatosky, M.C., Bourque, J.R., Krysko, K.L., Moler, P.E., Gamble, T., Suarez, E., Leone, E., Enge, K.M. & Roman, J.** 2014. Taxonomic assessment of Alligator Snapping Turtles (Chelydridae: *Macrochelys*), with the description of two new species from the southeastern United States. *Zootaxa*, **3786**(2): 141–165.
- Turtle Taxonomy Working Group [Bickham, J.W., Parham, J.F., Philippen, H.-D., Rhodin, A.G.J., Shaffer, H.B., Spinks, P.Q. & van Dijk, P.P.]**. 2007. Turtle taxonomy: methodology, recommendations, and guidelines. In Shaffer, H.B., FitzSimmons, N.N., Georges, A. & Rhodin, A.G.J. (Eds.), *Defining Turtle Diversity: Proceedings of a Workshop on Genetics, Ethics, and Taxonomy of Freshwater Turtles and Tortoises*. *Chelonian Research Monographs*, **4**: 73–84.
- Turtle Taxonomy Working Group [van Dijk, P.P., Iverson, J.B., Rhodin, A.G.J., Shaffer, H.B. & Bour, R.]**. 2014. Turtles of the world, 7th edition: annotated checklist of taxonomy, synonymy, distribution with maps, and conservation status. In: Rhodin, A.G.J., Pritchard, P.C.H., van Dijk, P.P., Saumure, R.A., Buhlmann, K.A., Iverson, J.B. & Mittermeier, R.A. (Eds.). *Conservation Biology of Freshwater Turtles and Tortoises: A Compilation Project of the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group*. *Chelonian Research Monographs*, **5**(7): 000.329–479.
- Wells, R.W. & Wellington, C.R.** 1983. A synopsis of the Class Reptilia in Australia. *Australian Journal of Herpetology*, **1**(3–4): 73–129.
- Wells, R.W. & Wellington, C.R.** 1985. A classification of the Amphibia and Reptilia of Australia. *Australian Journal of Herpetology, Supplemental Series*, **1**: 1–64.
- Williams, D., Wüster, W. & Fry, B.G.** 2006. The good, the bad and the ugly: Australian snake taxonomists and a history of the taxonomy of Australia’s venomous snakes. *Toxicon*, **48**: 919–930.
- Wüster, W. & Bérnils, R.S.** 2011. On the generic classification of the rattlesnakes, with special reference to the Neotropical *Crotalus durissus* complex (Squamata: Viperidae). *Zoologia*, **28**(4): 417–419.
- Zaher, H., Grazziotin, F.G., Cadle, J.E., Murphy, R.W., Moura-Leite, J.C. & Bonatto, S.L.** 2009. Molecular phylogeny of the advanced snakes (Serpentes, Caenophidia) with an emphasis on South American xenodontines: a revised classification and descriptions of new taxa. *Papéis Avulsos de Zoologia*, **49**: 115–153.

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1. In Case 3601 Raymond Hoser has asked the Commission to validate for the purposes of nomenclature the name *Spracklandus* Hoser, 2009, and ‘the journal in which it was published,’ issue 7 of the *Australasian Journal of Herpetology* (AJH). We note that the entire run of AJH has been written, edited, and published solely by Hoser. Although his requests to the Commission were presented as narrow and, in his words, ‘routine matters,’ we are convinced that they represent an important tipping-point with broad implications of major concern for zoological taxonomy and nomenclature as a whole and, by extension, the greater scientific community. Since Hoser’s actions and works have failed to follow scientific best practices (e.g. Turtle Taxonomy Working Group, 2007, 2014; Kaiser et al., 2013; Kaiser, 2014) and both the Commission’s general Recommendations and Code of Ethics in Appendix A, the global herpetological community has widely rejected his taxonomic decisions and resultant nomenclature. This has unfortunately caused a confusing dual nomenclature to develop in the herpetological community, with most boycotting or ignoring Hoser’s 700+ new names coined in the AJH, while he and a few personal followers actively promote their usage. We believe that suppression of the name *Spracklandus*, and all issues of AJH, is the only effective way to bring this contentious and confusing issue to resolution. The plenary power available under Article 81.1 of the Code exist specifically to allow the Commission to make rulings in individual cases that disturb stability and cause confusion, whether the works are Code-compliant or not. We maintain that it is in the interest of nomenclatural stability, not only for herpetology, but for all of zoological taxonomy, that the plenary power be invoked to declare the works in AJH unavailable, regardless of any narrow interpretation of their technical Code-compliance. We present our arguments for rejection of the validity of AJH in the following commentary. In view of the wide-reaching implications of this case for all of zoology, and reflecting the deep and broad-based community concern over these issues, our contributing authors include 70 global scientific leaders and accomplished amateurs from a wide variety of zoological disciplines.

2. When it comes to identifying and naming taxa, herpetology has embraced the use of possibilities created by emerging technologies in desktop-publishing, open-source internet-based publishing, searchable online digital libraries and databases, and internet search engines (e.g. Chelonian Conservation and Biology, www.chelonian.org; Herpetological Conservation and Biology, www.herpconbio.org; Amphibian Species of the World, <http://research.amnh.org/herpetology/amphibia/index.html>; The Reptile Database, www.reptile-database.org; Turtle Taxonomy Working Group, www.iucn-tftsg.org/checklist). Along with this acceleration and expansion of scientific communication, the last 20 years have witnessed unprecedented increases in the knowledge of reptile phylogeny and species

diversity, triggered by the ever-increasing application of molecular data, new analytical tools and conceptual advances, with the resulting taxonomic adjustments affecting most groups. Unfortunately, these advances in online informatics and desktop publishing have also created easier mechanisms for some individuals to bypass scientific publishing conventions in order to create self-published, poorly justified, and questionable nomenclatural and taxonomic acts, without the quality control of peer-review and editorial oversight. Case 3601, concerning the validity of the name *Spracklandus* and issue 7 of AJH, the journal in which it was presented, illustrates the potential of technological progress and internet-based data-mining by some individuals to enable the rapid production and wide distribution of this type of work, and with it the accelerating threats of destabilization and confusion that nomenclatural and taxonomic systems are facing as a result. Although rogue taxonomic journals such as AJH have appeared in the past and continue to appear (see Raghavan et al., 2014), it is our contention that it is incumbent on the scientific community and the Commission (ICZN) to protect and defend the integrity of nomenclatural taxonomy and the scientific process, lest both science and the ICZN itself fall victim to the destabilizing impact to nomenclature and taxonomy of the kind generated by individuals such as the originator of Case 3601.

3. Poor quality output is unacceptable in all fields of science, but it is particularly deplorable in taxonomy because it creates persistent nomenclatural instability and confusion, debases proper taxonomic and nomenclatural work, and bypasses accepted and established community standards for scientific inquiry and process. Kaiser et al. (2013) appropriately criticized this type of output, but in response to Kaiser and co-authors, Hoser (2013b) disingenuously and abrasively attempted to justify his own work and defend his actions of naming un-named phylogenetic clades identified in the works of other authors, while at the same time engaging in extensive personal defamatory rhetoric (e.g. Hoser 2013b:12, 15). We fear that unless the Commission addresses this type of divisive approach to taxonomy and nomenclature, and its potential ramifications, by setting a clear precedent to stabilize herpetological nomenclature, comparable practices are likely to surface in other branches of zoological taxonomy. If left unaddressed or validated, further destabilization and confusion are likely to develop, and the ICZN would then find itself facing an onslaught of analogous problems.

4. Case 3601 attempts to confirm the availability of the name *Spracklandus* and validate for the purposes of nomenclature issue number 7 of AJH. By implication, this could be misconstrued as validating the entire run of AJH as an acceptable medium for nomenclatural acts, and with it the many names (currently over 700, at various taxonomic levels) that Hoser created in isolation from (and frequently in conflict with) the global herpetological community. In addition, it would implicitly validate what we consider to be Hoser's disregard for proper scientific conduct and process. While we understand that any vote by the Commission is intended to be narrow in its application (i.e. covering only the specifics of the individual case) and not precedent-setting, we are certain that, given his long and public history of self-promotion, Hoser will interpret a decision in his favor as precedent-setting and comport himself accordingly, including the likely possibility of hundreds more requests to the Commission for validation of his many names. It is for this reason that our comment deliberately reaches beyond the specifics of Case 3601: to pre-empt

claims about the relationship between the Commission and herpetological taxonomists that manipulate the intent of a decision on Case 3601 and do lasting damage to the Commission and its effectiveness in science.

5. Hoser's output threatens to undermine the entire Code-compliant system that underlies nomenclatural stability (Kaiser et al., 2013; Thomson, BZN 71: 133–135). Having already impugned the scientific reputation and credibility of individual taxonomists (e.g. Hoser, 2009, pp. 16–19; Hoser, 2013b pp. 12, 15) and undermined the taxonomic profession itself (by self-publishing in a journal with no evidence of independent peer review), Hoser has triggered unprecedented community reaction and rejection (Kaiser et al., 2013; Thomson, BZN 71: 133–135). The herpetological community has expressed, justified, and implemented its intent to reject usage of Hoser names (e.g. Bates et al., 2013; Measey, 2013; Reynolds et al., 2014), but Hoser has continued to promote his alternative nomenclature and promulgated ever more names, with more issues of the AJH introducing many more new names posted in August 2014. Recent pending ICZN applications regarding Hoser names (Cases 3647 and 3648) and his comments on Taxacom and the ICZN-list online discussion forum have also indicated that his application regarding *Spracklandus* will not be an isolated case.

6. One of the most difficult situations arising from this scenario is the emergence of mutually exclusive, conflicting dual nomenclatures. One is based on accepted scientific principles to ascertain that the production of peer-reviewed taxonomy and nomenclatural acts is based on rigorous and focused analysis and a shared Code of Ethics; this is the method widely supported by the global herpetological and other taxonomic communities. The other is produced in isolation and based largely on apparent misappropriation and misrepresentation of others' work, or occasionally on baseless conjecture, without any notable adherence to acceptable scientific rigor or ethical principles. The ICZN is already aware of specific examples (see Thomson, BZN 71: 133–135), including Hoser's recent pre-emptive but technically flawed attempt to name *Macrochelys* taxa under active study by others (Roman et al., 1999; Echelle et al., 2010; Hoser, 2013a; Turtle Taxonomy Working Group, 2014; Thomas et al., 2014), in egregious disregard of Appendix A:2 of the Code. Developments of the most recent past have shown that the herpetological community is determined to uphold a boycott of Hoser names, and at least the *African Journal of Herpetology* has published an editorial that formalizes this boycott (Measey, 2013). Without action by the ICZN in opposition to Case 3601, we fear that dual nomenclature will be a perpetual problem for herpetological taxonomy.

7. An example of developing dual nomenclature is Hoser's attempted resurrection of three rattlesnake genera (*Aechmophrys*, *Caudisona*, and *Uropsophus*) from the synonymy of *Crotalus*, along with the description of new genera and subgenera (Hoser, 2009; Wüster & Bérnils, 2011). No data were presented to support these proposed changes, and Zaher et al. (2009) recommended that they not be followed. Despite this, the Brazilian Society of Herpetology unfortunately adopted these changes in their annually updated checklist (Bérnils, 2010; also see Wüster & Bérnils, 2011), triggering a proliferation of dual nomenclature for this medically important group of venomous snakes. This example illustrates how the output from AJH can proliferate and the harm that can potentially result from this dual nomenclature. It should also be clear that it is impossible to determine what to do with the resurrected

names without addressing the new names that were coined at the same time. This is a nomenclatural issue, requiring a complete review of the entire group's nomenclature and its inherent taxonomy to determine how to proceed.

8. In our opinion, the issue at hand is not a narrow question of whether the names proposed in AJH may technically be nomenclaturally available, but how the broader scientific community, and the ICZN specifically, should best address this type of open, repetitive disregard of time-honored nomenclatural and taxonomic practice. A firm and unequivocal decision on this case by the ICZN is necessary to safeguard the scientific integrity and global perception of the closely intertwined fields of zoological taxonomy and nomenclature. Neither the global scientific community nor the ICZN itself should be held hostage now or in the future by individuals adept at web-based data-mining and self-promotion, who circumvent the spirit of the Code, minimally attempt to adhere only to the Code's narrowest technical premises, and pre-empt those who work in compliance with both the Code's Recommendations and its Code of Ethics.

9. Governmental agencies, inter-governmental conventions, NGOs, and the global scientific and conservation communities depend on and value credible scientific and taxonomic work by the herpetological and wider taxonomic communities. Important in this regard is the expectation of reasonable nomenclatural stability and a precautionary approach to recommended taxonomic and nomenclatural changes. A decision in support of Case 3601 would implicitly sustain a dual nomenclature for many taxonomic groups of reptiles, and likely facilitate future chaos for additional taxonomic groups. The confusion stemming from such a dual nomenclature would cause many problems, ranging from legislative difficulties (e.g. during the development and enforcement of species management and conservation strategies or for trade regulations and quotas), to confusion over the identification and management of venomous species in a medical context (Williams et al., 2006).

10. We are not advocating that the practice of zoological taxonomy be restricted to scientific professionals—we welcome and encourage taxonomic and nomenclatural contributions from serious amateurs, naturalists, and biodiversity enthusiasts, as many of us are. However, such work needs to be original, acceptably published, and Code-compliant (including both the general Recommendations and the Code of Ethics), with a justified scientific underpinning. Additionally, we advocate strongly for quality-controlled peer-reviewed publishing as the only appropriate 'best practice' for new taxonomy and nomenclature (Turtle Taxonomy Working Group, 2007, 2014; Kaiser et al., 2013; Kaiser, 2014).

11. There are some similarities between the nomenclature presented in the AJH and that of Wells & Wellington (1983, 1985), the subject two decades ago of Case 2531 (BZN 44: 116–121) and several comments (e.g. BZN 45: 52–54, 145–153). This point has also been raised anecdotally on the ICZN online discussion forum and Taxacom, but we consider these cases to be dissimilar in important ways. The issues of concern in the Wells & Wellington papers were largely taxonomic and regionally focused (BZN 48: 337–338), whereas the issues with the AJH are primarily nomenclatural, ethical, and global. It has been argued in the past that the Wells & Wellington papers were also unethical and derived from substandard taxonomic practices (BZN 48: 337–338), but they were published prior to the existence of the Internet, and were not disseminated at the scale of AJH; nor did Wells & Wellington use their own self-edited

output as an opportunity to defame their critics in herpetology or professionals in other walks of life, as Hoser has done repeatedly, in breach of Appendix A:5 (e.g. Hoser, 2009, pp. 13, 16–19; Hoser, 2013b, pp. 12, 15), or to make political statements (e.g. Hoser, 2013a, p. 55) or to self-publicize business and other interests (e.g. Hoser, 2009, pp. 6, 9). In their ruling on Case 2531 the Commission concluded that the aim of that application would be best achieved by leaving the issue to taxonomic specialists to be settled through usage. In the present Case 3601, if the Commission were to consider the issue to be primarily taxonomic, this would have far-reaching destabilizing consequences for all of zoological nomenclature and taxonomy, consequences not readily resolved through usage.

12. Hoser's actions and abrasive comportment via AJH (citations in paragraph above) have created a highly contentious environment for zoological nomenclature and its intrinsic relationship to taxonomy. If the Commission upholds his request for validation of AJH issue 7, the greater scientific community and, importantly, future young scientists are likely to be misled into believing that output such as the AJH is an acceptable scientific medium for bringing knowledge to the public realm. Given also that Hoser's papers in AJH are, in our opinion, seriously flawed, unedited (evidenced by many uncorrected spelling errors), often potentially libellous and off-topic in content, and usually failing to present any measure of pertinent evidence to provide stability for the names they produce, their implicit endorsement by the Commission, if *Spracklandus* and AJH were to be validated, would in our opinion bring taxonomic science, zoological nomenclature, and the Code itself into unfortunate disrepute. Most herpetologists and many from other disciplines reject Hoser's output, as many have turned away from the ICZN online discussion forum, where Hoser has also been vocal and defamatory, including to ICZN Commissioners. In our opinion, this can in turn lead to an unwelcome erosion of the authority of the nomenclatural rules scientists have been following for over a century.

13. We believe Case 3601 represents a tipping-point in terms of where taxonomic science and its relationship with the Code might be headed. This relationship is currently being jeopardized by the actions of a single individual, which, if condoned or validated, are sure to further enable and facilitate others to follow. We therefore reiterate and support the proposal to suppress the entire run of AJH, as outlined in Proposals 9(1)b and 9(3) of Thomson (BZN 71: 134), inclusive of its most recent issues. Additionally, we urge that all scientists suspend the use of Hoser's nomenclature in order to avoid confusion. We contend that all taxa affected by new Hoser names contained in these issues of AJH be subject to prevailing usage under article 82.1 of the Code. Hence, no changes in order to use Hoser names should be formally made to their existing nomenclature while the Commission deliberates. This will prevent the names proposed in the AJH from coming into any further usage until such time that a Decision may be made. Should authors or editors feel a need to justify continued use of prevailing names for taxa affected by this proposal, they may cite Kaiser et al. (2013), Kaiser (2014), this comment, and Article 82.1 of the Code.

14. In summary, we contend that:

(1) the self-produced works by Raymond Hoser under the title of *Australasian Journal of Herpetology*, and the proliferation of names therein, are so contentious that they destabilize and cause confusion in the entire system of nomenclature, and undermine the scientific reputation and credibility of the discipline of taxonomy;

(2) the scope and reach of Hoser's nomenclatural output are made possible by relatively recent advances in internet communication, electronic publishing, and the use of social media, added to prior advances in desktop-publishing technologies. These tools are easily accessible across all biological fields, with concomitant risk of their deliberate misuse by some individuals. Thus, the nomenclatural issues we face in herpetology are already spreading and occurring in other branches of taxonomy and nomenclature. If left unchecked they will confound not merely nomenclatural stability in herpetology but taxonomic science as a whole;

(3) even though the Commission may be disinclined to rule on the basis of the recommended Code of Ethics contained in the Code, Hoser's demonstrated disregard for acceptable ethical practice is a key driver for many in both the herpetological community and other branches of zoology to categorically reject his writings and names, and support the retention of scientifically and ethically sound nomenclature. Without decisive pre-emptive action by the Commission, under Article 81.1 of the Code, the development of a dual system of nomenclature would appear inevitable, an outcome we regard as counter-productive in terms of Code-compliance.

15. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to declare the *Australasian Journal of Herpetology* (AJH) Volumes 1–24 unavailable for nomenclatural purposes; specifically pertaining to Case 3601, this would include issue 7 of AJH, thereby rendering the name *Spracklandus* unavailable;
- (2) to place on the Official Index of Rejected Works in Zoology issues 1–24 of the *Australasian Journal of Herpetology*, as ruled in (1) above;
- (3) to make a clear and decisive statement that the accepted scientific and ethical principles of zoological nomenclature, as recommended in the ICZN Code of Ethics, should be adhered to, and when evidence of failure to adhere to these principles leads to the matter being referred to the Commission for a decision, the Commission may apply and interpret the provisions of the Code of Ethics and determine whether it is appropriate to give a ruling.

These requests supersede those contained in three prior comments published by our co-authors (Thomson, BZN 71: 133; Wüster et al., BZN 71: 37–38; Kaiser, BZN 71: 30–35).

Additional references

- Bates, M.F., Tolley, K.A., Edwards, S., David, Z., da Silva, J.M. & Branch, W.R.** 2013. A molecular phylogeny of the African plated lizards, genus *Gerrhosaurus* Wiegmann, 1828 (Squamata: Gerrhosauridae), with the description of two new genera. *Zootaxa*, **3750**: 465–493.
- Bérnils, R.S.** 2010. Brazilian reptiles – list of species. *Sociedade Brasileira de Herpetologia*. Available online at <http://www.sberpetologia.org.br> (Accessed: 23/09/2014).
- Echelle, A.A., Hackler, J.C., Lack, J.B., Ballard, S.R., Roman, J., Fox, S.F., Leslie, D.M., Jr. & Van Den Bussche, R.A.** 2010. Conservation genetics of the alligator snapping turtle: cytonuclear evidence of range-wide bottleneck effects and unusually pronounced geographic structure. *Conservation Genetics*, **11**:1375–1387.
- Hoser, R.T.** 2009. A reclassification of the rattlesnakes; species formerly exclusively referred to the genera *Crotalus* and *Sistrurus*. *Australasian Journal of Herpetology*, **6**: 1–21.
- Hoser, R.T.** 2013a. An updated taxonomy of the living Alligator Snapping Turtles (*Macrochelys* Gray, 1856), with descriptions of a new tribe, new species and new subspecies. *Australasian Journal of Herpetology*, **16**: 53–63.

- Hoser, R.T.** 2013b. The science of herpetology is built on evidence, ethics, quality publications and strict compliance with the rules of nomenclature. *Australasian Journal of Herpetology*, **18**: 2–79.
- Kaiser, H.** 2014. Best practices in herpetological taxonomy: errata and addenda. *Herpetological Review*, **45**: 257–268.
- Kaiser, H., Crother, B.I., Kelly, C.M.R., Luiselli, L., O’Shea, M., Ota, H., Passos, P., Schleip, W.D. & Wüster, W.** 2013. Best practices: In the 21st Century, taxonomic decisions in herpetology are acceptable only when supported by a body of evidence and published via peer-review. *Herpetological Review*, **44**: 8–23.
- Measey, J.** 2013. Taxonomic publishing, vandalism and best practice: African Journal of Herpetology makes changes that will safeguard authors. *African Herp News*, **60**: 2–4.
- Raghavan, R., Dahanukar, N., Knight, J.D.M., Bijukumar, A., Katwate, U., Krishnakumar, K., Ali, A. & Philip, S.** 2014. Predatory journals and Indian ichthyology. *Current Science*, **107**: 740–742.
- Reynolds, G.R., Niemiller, M.L. & Revell, L.J.** 2014. Toward a Tree-of-Life for the boas and pythons: multilocus species-level phylogeny with unprecedented taxon sampling. *Molecular Phylogenetics and Evolution*, **71**: 201–213.
- Roman, J., Santhuff, S.D., Moler, P.E. & Bowen, B.W.** 1999. Population structure and cryptic evolutionary units in the alligator snapping turtle. *Conservation Biology*, **13**(1): 135–142.
- Thomas, T.M., Granatosky, M.C., Bourque, J.R., Krysko, K.L., Moler, P.E., Gamble, T., Suarez, E., Leone, E., Enge, K.M. & Roman, J.** 2014. Taxonomic assessment of Alligator Snapping Turtles (Chelydridae: *Macrochelys*), with the description of two new species from the southeastern United States. *Zootaxa*, **3786**(2): 141–165.
- Turtle Taxonomy Working Group [Bickham, J.W., Parham, J.F., Philippen, H.-D., Rhodin, A.G.J., Shaffer, H.B., Spinks, P.Q. & van Dijk, P.P.].** 2007. Turtle taxonomy: methodology, recommendations, and guidelines. In Shaffer, H.B., FitzSimmons, N.N., Georges, A. & Rhodin, A.G.J. (Eds.), *Defining Turtle Diversity: Proceedings of a Workshop on Genetics, Ethics, and Taxonomy of Freshwater Turtles and Tortoises*. *Chelonian Research Monographs*, **4**: 73–84.
- Turtle Taxonomy Working Group [van Dijk, P.P., Iverson, J.B., Rhodin, A.G.J., Shaffer, H.B. & Bour, R.].** 2014. Turtles of the world, 7th edition: annotated checklist of taxonomy, synonymy, distribution with maps, and conservation status. In: Rhodin, A.G.J., Pritchard, P.C.H., van Dijk, P.P., Saumure, R.A., Buhlmann, K.A., Iverson, J.B. & Mittermeier, R.A. (Eds.), *Conservation Biology of Freshwater Turtles and Tortoises: A Compilation Project of the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group*. *Chelonian Research Monographs*, **5**(7): 000.329–479.
- Wells, R.W. & Wellington, C.R.** 1983. A synopsis of the Class Reptilia in Australia. *Australian Journal of Herpetology*, **1**(3–4): 73–129.
- Wells, R.W. & Wellington, C.R.** 1985. A classification of the Amphibia and Reptilia of Australia. *Australian Journal of Herpetology, Supplemental Series*, **1**: 1–64.
- Williams, D., Wüster, W. & Fry, B.G.** 2006. The good, the bad and the ugly: Australian snake taxonomists and a history of the taxonomy of Australia’s venomous snakes. *Toxicon*, **48**: 919–930.
- Wüster, W. & Bérnills, R.S.** 2011. On the generic classification of the rattlesnakes, with special reference to the Neotropical *Crotalus durissus* complex (Squamata: Viperidae). *Zoologia*, **28**(4): 417–419.
- Zaher, H., Grazziotin, F.G., Cadle, J.E., Murphy, R.W., Moura-Leite, J.C. & Bonatto, S.L.** 2009. Molecular phylogeny of the advanced snakes (Serpentes, Caenophidia) with an emphasis on South American xenodontines: a revised classification and descriptions of new taxa. *Papéis Avulsos de Zoologia*, **49**: 115–153.