



Diagnosability without gatekeeping in taxonomy: on the ‘Kaiserian shortfall’

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Deprá (2025) raises an important and timely concern regarding the accumulation of formally available zoological names that lack workable diagnoses, a phenomenon he terms “the Kaiserian shortfall”. Few practicing taxonomists would dispute that poorly diagnosed taxa impose substantial costs on systematic research, contributing to instability, redundancy, and the repeated re-examination of material that should already be taxonomically resolved. On this central point, there is a broad agreement: taxa that cannot be reliably recognized undermine the scientific and practical goals of taxonomy (Winston 1999).

Where I diverge from Deprá is not in the recognition of the problem, but in the interpretation of its causes and the remedies proposed. Deprá attributes the Kaiserian shortfall primarily to the *International Code of Zoological Nomenclature* (Anonymous 1999) regulating nomenclature without regulating taxonomy itself, and he argues that this gap should be closed by expanding the *Code*’s authority to include journal approval, mandatory peer review, language restrictions, and enhanced powers to invalidate works deemed unscientific. Regardless of whether this is well-intentioned, these proposals risk conflating nomenclatural governance with scientific adjudication and will introduce new sources of instability without addressing the core issue.

The central problem highlighted by the Kaiserian shortfall is not the absence of editorial gatekeeping, but the persistence of taxonomic hypotheses that are insufficiently diagnosable. A diagnosis is not merely descriptive; it is a predictive statement that allows independent researchers to determine whether new material belongs to a given taxon (Queiroz 2007). Diagnoses that rely on poorly defined characters, inadequate comparative context, or observations drawn from a single specimen without an assessment of variation, fail to generate testable predictions. Such taxa are not simply inconvenient; they are scientifically incomplete.

Crucially, the operational adequacy of a diagnosis cannot be reliably assessed at the moment of publication. Even rigorous peer review cannot guarantee that a diagnosis will remain applicable across broader geographic, ontogenic or ecological sampling (Wüster *et al.* 2021). Conversely, diagnoses that initially appear marginal may later prove robust as additional data become available (Knowlton 2000; Hutchings & Kupriyanova 2018). The polychaete *Capitella capitata* (Fabricius, 1780) which was originally described with a weak diagnosis is an excellent example (Grassle & Grassle 1976; Blake 2009). For this reason, attempts to regulate taxonomic quality at the point of publication risk mistaking editorial certification for scientific validation. Deprá invokes the centralized model of prokaryote systematics as evidence that stronger pre-publication control can function in practice. In bacteriology, however, nomenclatural centralization is inseparable from a culture-based framework in which type strains, genomic diagnosability, and standardized comparative datasets are prerequisites for naming (Parker *et al.* 2019). Zoological taxonomy operates under fundamentally different

constraints, relying on preserved specimens, heterogenous character systems, and often incomplete material, particularly for marine invertebrates, parasites, fossils and cryptic taxa. In this context, transferring a microbial model of centralized validation to zoology risks addressing administrative form rather than the epistemic problem of diagnosability itself.

Taxonomy, which is more or less synonymous with systematics, is like any other hypothesis-driven science. It advances through proposal, testing, correction and revision. Weak hypotheses are an inevitable part of this process. The question is not how to prevent them from being proposed, but how to ensure that they are exposed to scrutiny and does not persist unchallenged. In practice, taxonomy already possesses a powerful mechanism for this: community uptake (Wüster *et al.* 2021). Taxon names that are operationally useful tend to be adopted, cited, and incorporated into subsequent revisions and applied research. Those that are not tend to be ignored, repeatedly reinterpreted, or eventually synonymized. This process is imperfect and often slow, but it is cumulative and self-correcting.

From this perspective, the Kaiserian shortfall reflects a temporal lag between the proposal of weak taxonomic hypotheses and their eventual resolution, rather than a fundamental failure of nomenclatural regulation. Attempts to eliminate this lag through centralized control, such as restricting nomenclatural acts to approved journals or mandating publication in a single language, risk introducing bias, geographic exclusion and disciplinary capture. Decisions about which journals, languages or diagnostic standards are acceptable are not value-neutral and may disproportionately disadvantage researchers working in regions where taxonomic knowledge gaps are greatest. This is not an argument for complacency toward poor taxonomy. On the contrary, it places responsibility squarely on taxonomists, editors and reviewers to emphasize diagnosability, explicit comparison and falsifiability as professional norms. However, these norms are best enforced through scientific discourse, revisionary work and collective practice, rather than through an authoritarian framework where the scope of the *Code* is expanded for adjudication of scientific adequacy.

In conclusion, the danger posed by the Kaiserian shortfall is real, but so too is the danger of addressing it by transforming nomenclatural governance into a surrogate for scientific judgment. Taxonomy cannot be stabilized by regulating who may speak, where they may publish, or in which language they may do so. It is stabilized when taxonomic hypotheses are stated clearly enough to be tested, challenged, and, when necessary, discarded. Any solution that bypasses this process risks replacing one source of instability with another.

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