

## ESSAY

# *Sander* Oken 1817 (Percidae) is the Valid Generic Name for Walleye, Sauger, and European Pikeperches: A Response to Bruner (2021)

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The correct generic name for Walleye, Sauger, and three species of Eurasian pikeperch has been a point of contention since 1903. Rafinesque proposed *Stizostedion* (as a subgenus of *Perca* Linnaeus 1758) in 1820, a name used by most American ichthyologists throughout the 19th century. Gill (1903) revealed that *Sander* Oken 1817 (type species *Perca lucioperca*) predates *Stizostedion* and should replace it. Gill's paper was either ignored or dismissed (e.g., Collette 1963) until Bogutskaya and Naseka (1997) and Kottelat (1997) resurrected *Sander*. The Committee on Names of Fishes, a joint committee of the American Fisheries Society and American Society of Ichthyologists and Herpetologists, examined the issue and recommended, on the strength of Gill's finding, that *Sander* should replace *Stizostedion* (Nelson et al. 2003). This change, a significant one considering the commercial importance of Walleye and Sauger, was formally adopted in the sixth (Nelson et al. 2004) and seventh (Page et al. 2013) editions of *Common and Scientific Names of Fishes from the United States, Canada, and Mexico*. In 2011, Bruner rejected *Sander* in favor of *Stizostedion* on the grounds that Gill incorrectly treated Oken's use of the Latvian common name *Sander* for *Perca lucioperca* as a properly erected new generic name for the species. Bruner (2021) expanded on this argument, adding that Oken did not latinize *Sander* (e.g., *Sandrus*) nor differentiate the genus and designate a type species, all required actions, Bruner implies, for making a genus-level name available.

Our reading of Oken 1817 indicates that *Sander* is an acceptably formed and published scientific name consistent with standards predating the International Commission of Zoological Nomenclature (ICZN). Bruner's arguments suffer in that they apply modern-day nomenclatural guidelines to a taxon proposed in the early days of binominal zoological nomenclature, decades before the publication of the first edition of the ICZN code in 1905.

Bruner's claim that Oken presented *Sander* as a common, vernacular, or barbaric name rather than a scientific name is rejected by a closer examination of Oken's text. In his publication, Oken offered Latin or latinized equivalents of 35 genus-level names first given as French vernaculars in Cuvier's *Le Règne Animal* (1816). "Les Sandres" became *Sander*, "Les Congres" became *Conger*, "Les Bagre" became *Bagre*, etc. Oken's intentions are reflected in the publication's typography, in which the headings of the text columns are displayed in an old-fashioned calligraphic-style German font (now known as Fraktur), and the proposed names are set in a modern-style

roman font (Figure 1; italics for genus and specific names were not yet a zoological nomenclatural convention). By changing the font, Oken clearly distinguished these names, including *Sander*, as scientific rather than vernacular names.

Bruner's claim that *Sander* is unavailable because it is not a properly latinized common name can also be rejected. Bruner (2021) quotes the fourth edition of the ICZN Code (ICZN 2000), specifically Recommendation 11A: "An unmodified vernacular word should not be used as a scientific name. Appropriate latinization is the preferred means of formation of names from vernacular words." This recommendation is not in earlier editions of the Code and certainly does not apply to names proposed in 1817. Furthermore, the recommendation is just that, a recommendation, not a rule (note use of the qualifiers "should not" and "preferred"). Zoological nomenclature has countless examples of un-latinized vernacular names that serve as scientific names (e.g., *Alligator*, *Gorilla*, and *Philander opossum*). There are many such names among fishes, too many to list here, including those of Pacific salmon (e.g., *Oncorhynchus keta*, *O. kisutch*, *O. tshawytscha*), derived from vernacular names used in the Kamchatka Peninsula in the 16th century. What's more, at least one other generic name dating to Oken 1817 would be deemed unavailable according to Bruner's criteria, that of the African catfish genus *Schilbe*, based on a local name for *Schilbe mystus* along the Nile River.

Bruner (2021) further claims that Oken was "not erecting a new genus for *Perca lucioperca*" when he listed *Sander* as the equivalent of "Les Sandres." Oken "did not designate a type species. He did not illustrate *Sander*, and he never provided a description. [Therefore] *Sander* cannot be considered the senior synonym for Walleye, Sauger, and Eurasian pikeperch." While these criteria (with the exception of an illustration) are all required for proposing new taxa today (except for replacement names), they are not requirements for names that entered the literature in the early days of Linnaean binominal nomenclature. According to Article 12.2 of the fourth edition of the ICZN Code (ICZN 2000), names published before 1931 can be accompanied by an indication instead of a description, an indication being a reference to a previously published description, or even just an illustration. In the case of *Sander*, Oken clearly indicated that Cuvier presented the rationale for "Les Sandres" representing a distinct genus-level clade. While Oken did not formally "erect" or propose the genus, he was the first to give it a Latin name, for which he is now considered the "author" of the genus. Many currently valid names dating

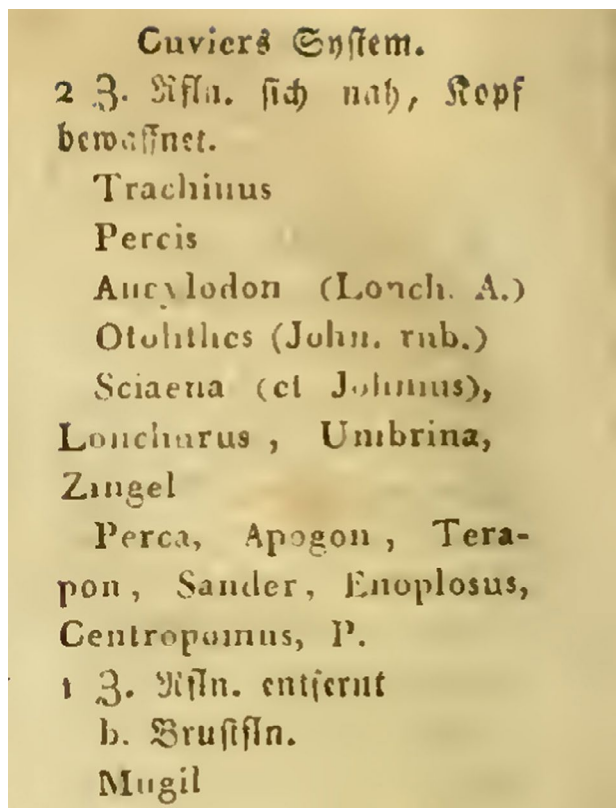


Figure 1. Detail of Oken 1817 where *Sander* is mentioned (fifth line from bottom), showing typographical differences between text column headings (old-fashioned calligraphic-style German font now known as Fraktur) and proposed names (modern-style roman font).

prior to 1931, first mentioned in checklists without any distinguishing characters or designated types, fall into this category, including other fish genera dating to Oken 1817: *Atropus*, *Brosme*, *Cirrhinus*, *Diagramma*, *Lota*, *Piabucus*, *Plectropomus*, *Polyprion*, *Priacanthus*, *Pterois*, *Raniceps*, *Schilbe*, *Stellifer*, and *Triacanthus*.

An additional detail noted by Bruner (2021) warrants comment. Bruner mentions that the Cuvier species Oken referred to—*Perca lucio perca*—is an “illegal trinomial.” We suspect that Cuvier’s spelling of the name, referring to “*lucio-perca*” of Bloch (1783), is simply a typographical error in which Cuvier or the typesetter erroneously left out the hyphen. Bloch himself followed the original description of Linnaeus (1758), where, due to the narrow column for the species name, Linnaeus had to divide the name as “*Lucio-perca*.” Cuvier’s spelling of “*lucio perca*” has no nomenclatural relevance whatsoever.

One could argue that Nelson et al. (2003) should not have recommended that *Sander*, a long-forgotten name, replace *Stizostedion*, which had been in use for 183 years. They wrote:

Although the International Commission on Zoological Nomenclature could have been petitioned to conserve *Stizostedion*, other references to *Sander* in the European literature (Bogutskaya et al. 2001) suggest to us that it is now too late to petition and we thus employ the generic name *Sander*.


Since the Names of Fishes Committee’s acceptance of *Sander*, that name has been used in almost every academic and popular publication, American and European, ever since, including ichthyology textbooks (e.g., Helfman et al. 2009), phylogenetic studies (Smith and Mendelson 2011), distributional studies (Ribeiro et al. 2009), conservation “red lists” (Freyhof and Kottelat 2008; Baer et al. 2014), museum checklists (Więcaszek and Piasecki 2020), ichthyofaunal surveys (Hanel and Andreska 2015; Kelleci et al. 2021), aquaculture studies (Javid Rahmdel and Falahatkar 2021), and books on the fishes of Europe (Kottelat and Freyhof 2007), Germany (Fricke 2014; Thiel and Thiel 2015), France (Keith et al. 2011), Britain (Everard 2020), North America (Page and Burr 2011), British Columbia (McPhail 2007), Ontario (Holm and Mandrak 2010), Manitoba (Stewart and Watkinson 2004), Arctic Canada (Coad and Reist 2018), Vermont (Langdon and Ferguson 2006), Pennsylvania (Stauffer and Criswell 2016), Ohio (Rice and Zimmerman 2019), Indiana (Simon 2011), Minnesota (Dickson 2008), Kansas (Kansas Fishes Committee 2014), Nebraska (Hrabik et al. 2015), Alabama (Boschung and Mayden 2004), South Carolina (Rohde et al. 2009), Florida (Robins et al. 2018), Idaho (Sigler and Zaroban 2018), the Rockies (Sullivan and Propst 2009), and the American Southwest (Minckley and Marsh 2009). Indeed, few works have chosen to use *Stizostedion* since 2003. These exceptions include books on the fishes of Oklahoma (Miller and Robison 2004) and Arkansas (Robison and Buchanan 2020), and the fifth edition of *Fishes of the World* (Nelson and Grande 2016). The latter two references cite Bruner (2011) in selecting *Stizostedion* over *Sander*. While Bruner (2021) cites Haponski and Stepien (2013) in choosing *Stizostedion* over *Sander*, this is incorrect; Haponski and Stepien mention the nomenclatural debate as part of the background of their paper and cite Bruner (2011), but continue to use *Sander*. Overall, support for the use of *Stizostedion* is lacking in the scientific community and the use of *Sander* is well accepted.

The Principal of Priority matters and *Sander*—imperfectly proposed by today’s ICZN-codified standards—is the correct choice as a generic name for Walleye, Sauger, and European pikeperches. *Sander* has been widely accepted and used since 2003 with few detractors. A reversion back to *Stizostedion* (and amending adjectival specific epithets to agree in gender, e.g., *vitreus* to *vitreum*) would create more of the nomenclatural instability and confusion that Bruner (2021) and ourselves seek to avoid.

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