***Tetradesmus bajacalifornicus* L.A.Lewis & Flechtner, *sp. nov*. and *Tetradesmus deserticola* L.A.Lewis & Flechtner, *sp. nov.* (*Scenedesmaceae*, Chlorophyta)**

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Lewis & Flechtner (2004) proposed two new species of chlorophycean green algae "*Scenedesmus bajacalifornicus*" and "*Scenedesmus deserticola*" from material collected from desert soils. The description of these species conformed with the rules of the ICN (Shenzhen Code; Turland *et al.* 2018) including a Latin description, but their designation of living cultures as type specimens is not in accordance with Art. 8.4 (Turland *et al.* 2018) that "Type specimens of names of taxa must be preserved permanently and may not be living organisms or cultures." Thus, both were invalid designations at this time. Given the molecular phylogenetic separation of *Acutodesmus* from *Scenedesmus,* Hegewald, Bock & Krienitz (2013: 156) attempted at the same time to validate these two designations and to refer them to the genus *Acutodesmus* (Hegewald) P.M.Tsarenko, *nom. illeg.* In their attempted validation of the two names, they selected a "lectotype" contrary to Art. 9.1, which required the selection of a holotype for a new name and such a selection is not correctable under the current rules. The intended combinations "*Acutodesmus bajacalifornicus"* and "*Acutodesmus deserticola"* proposed by Hegewald, Bock & Krienitz (2013: 156) are also invalid as the supposed basionyms were invalid and the names were not separately typified. Moreover, Hegewald & al. (2013: 156) also did not validly publish "*Scenedesmus deserticola*" or "*Scenedesmus bajacalifornicus"* as they did not accept the names, treating them as a synonyms of *Acutodesmus deserticola* and *Acutodesmus bajacalifornicus* (Art. 36.1(b)). Art. 33.1 also specifies "… the name must always be explicitly accepted in the place of its valid publication.".

Wynne & Hallan (2015), while agreeing with the generic separateness of *Acutodesmus* species from *Scenedesmus*, concluded that the proposals of Hegewald *et al.* (2013) were not tenable as *Acutodesmus* was an illegitimate genus name as it included the type of the earlier genus name *Tetradesmus* G.M.Smith, 1913. We therefore here describe these species as species of *Tetradesmus*.

Tetradesmus bajacalifornicus L.A. Lewis & Flechtner, *sp. nov.*
Description: Colonies grown on agar mounded, grainy, moist; yellow to light green. Cells solitary. Cell shape variable; crescent- to lemon-shaped with pointed ends; less often oval to subspherical. Small protrusions typically evident at one or both cell poles. Crescent cells 3–7.5 µm wide by 4.5–15 µm long. Uninucleate. Single parietal chloroplast; scalloped edge. Spherical to oval naked pyrenoid. Slight yellow to light orange pigment in some cells. Two to eight autospores produced by longitudinal division. No motile stages or colony formation observed liquid culture. Supported as distinct based on molecular phylogenetic analysis of data from barcode markers, the plastid *rbc*L and *tuf*A, and nuclear ITS2 rDNA (Lewis & Flechtner, 2004; Hegewald *et al*., 2013; Scutio *et al.*, 2015), with GenBank accession numbers HQ246352, HQ246373, and AY510468 of strain LG2-FV16.
Figures: figs 1: B, 2: C, D of "*Scenedesmus bajacalifornicus*" in Lewis & Flechtner (2004)
Type locality: Collected 15 June 1998, from loosely packed decomposed granite sandy soil, 30.90°N latitude, 115.46°W longitude, 2100 m elevation, Sierra San Pedro Mártir of Baja California, Mexico.
Collector: W.H. Clark.
Holotype: permanent slide of strain LG2-VF16, deposited at George Safford Torrey Herbarium, University of Connecticut, Storrs, CT, U.S.A. (**CONN** 00226459).

Tetradesmus deserticola L.A.Lewis & Flechtner, *sp. nov.*
Description: Colonies grown on agar mounded, grainy, moist; yellow to olive when young, becoming bright orange to red with age. Cells solitary, variable in form. Cells crescent- to lemon-shaped with pointed ends when young, becoming oval to almost spherical with age. Small protrusions evident at poles in some cells. In liquid cultures, long thin extensions evident at each end of crescent cells. Crescent-shaped cells 3–8 µm wide by 4.5–16 µm long. Oval cells 7–21 µm wide by 8–24 µm long. Uninucleate. Chloroplast parietal with a single lobe. Clear pyrenoid with obvious starch hull. Granular cytoplasm. Orange to red oil droplets, sometimes copious, in aging cells. Two to eight autospores produced by longitudinal division. No motile stages or colony formation observed in liquid culture. Supported as distinct based on molecular phylogenetic analysis of data from barcode markers, the plastid *rbc*L and *tuf*A, and nuclear ITS2 rDNA (Lewis & Flechtner, 2004; Hegewald *et al.*, 2013; Scutio *et al.,* 2015) with GenBank accession numbers HQ246360, HQ246379, AY510471 from strain SNI-2.
Figures: figs 1: A, D, 2: A, B of "*Scenedesmus deserticola*" in Lewis & Flechtner (2004).
Type locality: Collected in July 1993, from desert soil surface, 33.2ºN latitude, 119.4ºW longitude, San Nicolas Island, Ventura County, California, USA.
Collector: J. Belnap.
Holotype: permanent slide of strain SNI-2 deposited at George Safford Torrey Herbarium, University of Connecticut, Storrs, CT, U.S.A. (**CONN** 00226458).
Note: "deserticola" (living in a desert) is a noun in apposition that retains its own gender (Art. 23.5).

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