The nomenclatural status of the two “spiny-wristed” fiddler crabs: *Uca spinicarpa* Rathbun, 1900, and *U. hesperiae* Crane, 1975 (Crustacea: Brachyura: Ocypodidae)

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Abstract

A secondary homonymy is documented for *Gelasimus [= Uca] tetragonon var. spinicarpa* Kossmann, 1877 (a species from the Red Sea), and *Uca spinicarpa* Rathbun, 1900 (a species from the Gulf of Mexico). Although Kossmann’s usage of the nomen *spinicarpa* has chronological priority, a reversal of precedence is required by Article 23.9 of the Code since Kossmann’s use has not been applied as a valid name since the original publication in 1877, while Rathbun’s use of the name has been applied over 50 times in the last half century. The species Kossmann was most likely referring to is today known as *Uca hesperiae* Crane, 1975, a name which may be retained in light of the reversal of precedence.

Key words: *Uca vocans* complex, fiddler crabs, taxonomy, Kossmann

Introduction

The spiny-wristed fiddler crab, *Uca spinicarpa* Rathbun, 1900, is endemic to the Gulf of Mexico (Hopkins & Thurman 2010). The name was first introduced by Rathbun as part of a taxonomic key for North American grapsoid crabs, with characters derived from a specimen collected at Galveston, Texas. It was first fully described in her monograph on the grapsoid crabs of America (Rathbun 1918). There has rarely been any confusion or disagreement over the status of this species, and although Crane (1975) treated it as a subspecies of the closely allied *U. speciosa* (Ives, 1891), it has since been restored to specific status (Salmon et al. 1979; Barnwell & Thurman 1984). The type specimen is no longer extant, but Bezerra & Coelho (2010) recently redescribed this species in some detail. No other names have been applied to this species, and as its identity is clear, there is no reason at this time for a neotype designation.

Major revisions by Bott (1973) and Crane (1975) resulted in different phylogenetic groupings of *Uca* species, with each author using a different suite of generic (Bott) or subgeneric (Crane) names. Rosenberg (2001) supported recognition of most of Crane’s subgenera, although with many of Bott’s names having priority. Beinlich & von Hagen (2006) proposed a revised system of classification, recognizing some superspecific taxa and synonymizing others, and this was used as a basis for the slightly modified synthesis used by Ng et al. (2008). According to this system the Atlantic species *Uca speciosa* (Ives, 1891) and *Uca spinicarpa* Rathbun, 1900, are both in the subgenus *Leptuca*.

The western calling fiddler crab, *Uca hesperiae* Crane, 1975, is the westernmost of the *Uca vocans* species-complex (sensu Crane 1975), viz. *U. borealis* Crane, 1975, *U. dampieri* Crane, 1975, *U. hesperiae* Crane, 1975, *U. neocultrimana* Bott, 1973, *U. vocans* (Linnaeus, 1758), *U. vomeris* McNeill, 1920, and the recently described *U. jocelynae* Shih, Naruse & Ng, 2010. These species are currently placed in the subgenus *Gelasimus* (see Ng et al., 2008). Crane originally treated all of these as subspecies of *U. vocans*, but they have subsequently been given full species status (Rosenberg 2001; Beinlich & von Hagen 2006; Ng et al. 2008). With the exception of *U. hesperiae*, all are found predominantly in and around the western Pacific Ocean, with only *U. vocans* extending into the eastern part of the Indian Ocean. *Uca hesperiae* is found throughout the Indian Ocean, ranging from eastern South
Africa and Madagascar, along the east African coast, through India, to as far east as the western Malay peninsula where it overlaps with U. vocans (Crane, 1975). Prior to Crane, what is now U. hesperiae had been recorded as either U. vocans (Linnaeus, 1758), U. marionis (Desmarest, 1825), U. cultrimana (Adams & White, 1848) or U. nitida (Dana, 1851). Uca marionis and U. cultrimana are now regarded as junior synonyms of U. vocans sensu stricto, while U. nitida is a junior homonym of the fossil Gelasmus nitidus Desmarest, 1822.

Kossmann (1877), in his work on Crustacea from the Red Sea, described two new varieties of fiddler crabs: Gelasmus [= Uca] annulipes var. albimana and Gelasmus tetragonon var. spinicarpa. Kossmann’s varieties were largely viewed as synonyms of the nominal species by other researchers around that time (e.g., De Man 1880; Kingsley 1880; Miers 1884, 1886). In her monograph on fiddler crabs, Crane (1975) treated Gelasmus annulipes var. albimana (Kossmann, 1877) as a junior synonym of U. annulipes (H. Milne Edwards, 1837), although Lewinsohn (1977) felt that U. albimana was morphologically distinct. Recent genetic and morphological work has given Uca albimana (Kossmann, 1877) full specific status (Shih et al. 2009; Naderloo et al. 2010).

As for Kossmann’s “var. spinicarpa”, Crane (1975: 80) said the following:

“Type Material of Gelasmus tetragonon var. spinicarpa Kossmann, 1877. Red Sea. In the Rijksmuseum van Natuurlijk Historie, Leiden, under cat. no. 1493, is a single male with the following label: “Uca tetragonon (Herbst) var. spinicarpus Kossm. Kossmann 1880. Roode Zee.” Measurements in mm: length 12; propodus 23. Examination shows this crab to be a young example of Uca vocans, leptochelous, with the claw probably regenerated. On the basis of this specimen, apparently identified by Kossmann and presented by him to the museum, the variety is here referred to the synonymy of U. vocans.”

Although Crane did not specifically assign Kossmann’s spinicarpa as a synonym of any particular one of her subspecies of U. vocans, nevertheless, based on her work it can only be U. vocans hesperiae. This is essentially the same conclusion of Lewinsohn (1977), Fransen et al. (1997) and Ng et al. (2008), all of whom suggest (either implicitly or explicitly) the likely synonymy of Gelasmus tetragonon var. spinicarpa (Kossmann, 1877) with Uca vocans hesperiae Crane, 1975. Although Rathbun (1897) had already recognized the nomenclatural priority of Uca over Gelasmus prior to her description of U. spinicarpa, her use of the specific name spinicarpa is a case of secondary homonymy because the original uses were with different generic group names (ICZN Articles 53.3, 57.3). If Crane’s own assessment of the specimen Gelasmus tetragonon var. spinicarpa (Kossmann, 1877) is correct, that name would be the senior subjective synonym for Uca vocans hesperiae Crane, 1975. Although U. spinicarpa Kossmann and U. cultrimana Rathbun are now attributed to different subgenera (the former to Gelasmus Latreille, 1817 and the latter to Leptuca Bott, 1973), this has no relevance to the homonymy (ICZN Article 57.4).

Thankfully for the sake of nomenclatural clarity, the lack of historical recognition for Gelasmus tetragonon var. spinicarpa (Kossmann, 1877) allows for a reversal of precedence. Following the International Code of Zoological Nomenclature, Article 23.9.1 states that “the prevailing usage must be maintained” when two conditions are met. First, “the senior synonym or homonym has not been used as a valid name after 1899,” and second, “the junior synonym or homonym has been used for a particular taxon, as its presumed valid name, in at least 25 works, published by at least 10 authors in the immediately preceding 50 years and encompassing a span of not less than 10 years.” As for the first condition, Gelasmus tetragonon var. spinicarpa (Kossmann, 1877) has only been mentioned in the literature five times since its original publication:

1. Crane (1975: 80), as already quoted above, regarded Gelasmus tetragonon var. spinicarpa (Kossmann, 1877) as a junior subjective synonym of Uca vocans (Linnaeus, 1758). Whether Crane was correct or not in her assessment, this does not represent a valid use of Gelasmus tetragonon var. spinicarpa Kossmann, 1877.

2. Lewinsohn (1977: 59), in treating Uca tetragonon (Herbst, 1790), lists Kossmann’s name in the synonymy of Uca tetragonon (Herbst, 1790) but clearly does not regard it as synonymous when he wrote “non Gelasmus tetragonon var. spinicarpa—Kossmann, 1877: 52. Nach Crane (1975: 80) U. vocans hesperiae juv.” This statement shows that Lewinsohn believed or suspected that Gelasmus tetragonon var. spinicarpa Kossmann, 1877, was conspecific and synonymous with Uca (Gelasmus) vocans hesperiae Crane, 1975. Despite the seniority of Kossmann’s name, Lewinsohn (1977: 45, 58) nevertheless used the name Uca vocans hesperiae Crane, 1975, in the rest of his paper. Precisely why he chose to use Crane’s junior name over Kossmann’s senior one is unknown, but whatever the reason, this does not constitute a valid use of Gelasmus tetragonon var. spinicarpa Kossmann, 1877.
(3) Yamaguchi (1994: 181), in his catalog of *Uca* specimens in the Leiden and British museums, listed the specimen studied by Crane from the Leiden museum (above) under the name *Uca vocans*: “1493 (♂ 1: R 1). Syntype of *Gelasimus tetragonon spinicarpa* Kossmann. Red Sea, 1880, R. Kossmann.” This is not a valid use of Kossmann’s name as he clearly treated it as a junior synonym of *Uca vocans*.

(4) Fransen *et al.* (1997: 152), in their catalog of Leiden types, list under the name *Uca vocans hesperiae* Crane, 1975, an extant syntype of *Gelasimus tetragonon* var. *spinicarpa* Kossmann, 1877, under its synonymy. Regarding this specimen they also state:

> “Lewinsohn, 1977b: 58, 59, mentioned the specimen in the synonymy of *Uca tetragonon* as belonging to *Uca vocans hesperiae* Crane, 1975, probably because *U. vocans hesperiae* is the only subspecies of *Uca vocans* that has been reported from the Red Sea. If Crane is right, and if the two other syntypes of *U. tetragonon spinicarpa* also are *Uca vocans hesperiae*, the species group name *hesperiae* Crane, 1975, falls as a junior synonym of *spinicarpa* Kossmann, 1877.”

What is most important in this statement is the uncertainty of the authors. With two of the three syntype specimens unexamined, the synonymy of *Gelasimus tetragonon* var. *spinicarpa* Kossmann, 1877, and *Uca vocans hesperiae* Crane, 1975, is left as an open question, and their caveat about whether or not “Crane is right” means that this paper also cannot be regarded as a valid use of the name *Gelasimus tetragonon* var. *spinicarpa* Kossmann, 1877.

(5) Ng *et al.* (2008: 240) directly list *Gelasimus tetragonon* var. *spinicarpa* Kossmann, 1877, as a junior subjective synonym of *Uca (Gelasimus) tetragonon* (Herbst, 1790). This is clearly not using Kossmann’s taxon as a valid name.

Thus, of the only five direct mentions of Kossmann’s name since 1899 (in fact, the only direct mentions since the original publication in 1877), not one uses *Gelasimus tetragonon* var. *spinicarpa* Kossmann, 1877, as a valid name, despite hints of its potential seniority over *Uca vocans hesperiae* Crane, 1975.

As for the second requirement of Article 23.9, the Appendix contains a list of over 50 publications between 1964 and 2013, from well over 10 authors, which refer to *Uca spinicarpa* Rathbun, 1900 (sometimes without specific authority, but always clearly with the intended usage toward the species from the Gulf of Mexico).

With both requirements of Article 23.9 met, the Code requires a reversal of priority, with *Uca spinicarpa* Rathbun, 1900, a *nomen protectum*, and *Gelasimus tetragonon* var. *spinicarpa* Kossmann, 1877, a *nomen oblitum*. Because the species have been considered congeneric since 1899, the requirement for replacement of the junior homonym to be referred to the Commission (ICZN Article 23.9.5) does not apply.

This action retains the prevailing usage of *Uca (Leptuca) spinicarpa* Rathbun, 1900, for the species from the Gulf of Mexico, and removes the availability of *Gelasimus tetragonon* var. *spinicarpa* Kossmann, 1877, for future use. Should *Gelasimus tetragonon* var. *spinicarpa* Kossmann, 1877, be proven to be a synonym of *Uca (Gelasimus) hesperiae* Crane, 1975, (as is currently suspected), the principle of priority would no longer apply, and Crane’s name would still be maintained for the species from the Indian Ocean and Red Sea.

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References


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APPENDIX. Publications using *Uca spinicarpa* Rathbun, 1900 (or an unambiguous derivative), in the last 50 years (1964 through 2013)


NOMENCLATURAL STATUS OF *UCA SPINICARPA* AND *U. HESPERIAE*
http://dx.doi.org/10.2307/1548080

http://dx.doi.org/10.1163/156854087x00664

http://dx.doi.org/10.1016/s1095-6433(97)00424-8


http://dx.doi.org/10.1046/j.1439-0485.2002.02785.x

http://dx.doi.org/10.1016/s0022-0981(03)00138-2


http://dx.doi.org/10.1080/09291010412331313232


http://dx.doi.org/10.1017/s1755267212000942

http://dx.doi.org/10.1163/15685403-0003164


http://dx.doi.org/10.1163/156854001505523