PROCEEDINGS OF THE BIOLOGICAL SOCIETY OF WASHINGTON
120(2):159–166. 2007.

A new species of the crangonid shrimp genus *Philocheras* (Crustacea: Decapoda: Caridea) from the Philippines

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Abstract.—A new species of crangonid shrimp, *Philocheras magnioculus*, is described on the basis of a single female specimen from off the island of Panglao, southwest of Bohol, the Philippines. The presence of a sharp lateral tooth on the antennal scale links the new species to eight previously described species, but the structure of the rostrum, very large cornea, and poorly sculptured pleon immediately distinguish it from its relatives. The new species is the third *Philocheras* known from the Philippines.

Small sand shrimps of the crangonid genus *Philocheras* Stebbing, 1900 are often commonly found in benthic samples from shallow to upper bathyal waters. The genus contains more than 50 species, most of them distributed in temperate to tropical waters in the Indo-West Pacific and eastern Atlantic (Chace 1984), and discovery of new species is still continuing (e.g., De Grave 2000, Kim & Hayashi 2000, Komai 2001, 2004, 2006).

Examination of material collected during the recent "PANGLAO 2004" expedition in the Philippines revealed an undescribed species of *Philocheras*. Although only a single specimen is available, its characteristics are very distinctive and it clearly represents a new species. Two species of the genus were known heretofore from the Philippines (Chace 1984), and thus the new species is the third from the country.

The type specimen is deposited in the National Museum of the Philippines, Manila (NMCR). The abbreviation cl refers to the postorbital carapace length. For detailed observation of the surface structure on the integument, the specimens (including removed appendages) were stained with a solution of methylene blue.

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Taxonomy

Family Crangonidae
Genus *Philocheras* Stebbing, 1900
Philocheras magnioculus, new species
Figs. 1–3

Holotype.—Female cl 2.4 mm, "PANGLAO 2004" stn T34, between Libaong and Pamilacan, 9°31.3′N,123°51.4′E, 145–163 m, sand with echinoderms, beam trawl, 3 Jul 2004, NMCR.

Description.—Body somewhat depressed dorsoventrally, moderately stout; integument smooth.

Rostrum (Fig. 1A, B) narrow, 0.42 of carapace length, directed forward, slightly falling short of distal corneal margins, slightly depressed dorsoventrally; terminal margin concave in dorsal view, dorsodistal margin slightly upturned; dorsal surface shallowly channeled, with few long plumose setae distally; lateral margins unarmed, very slightly concave, without row of setae covering corneal

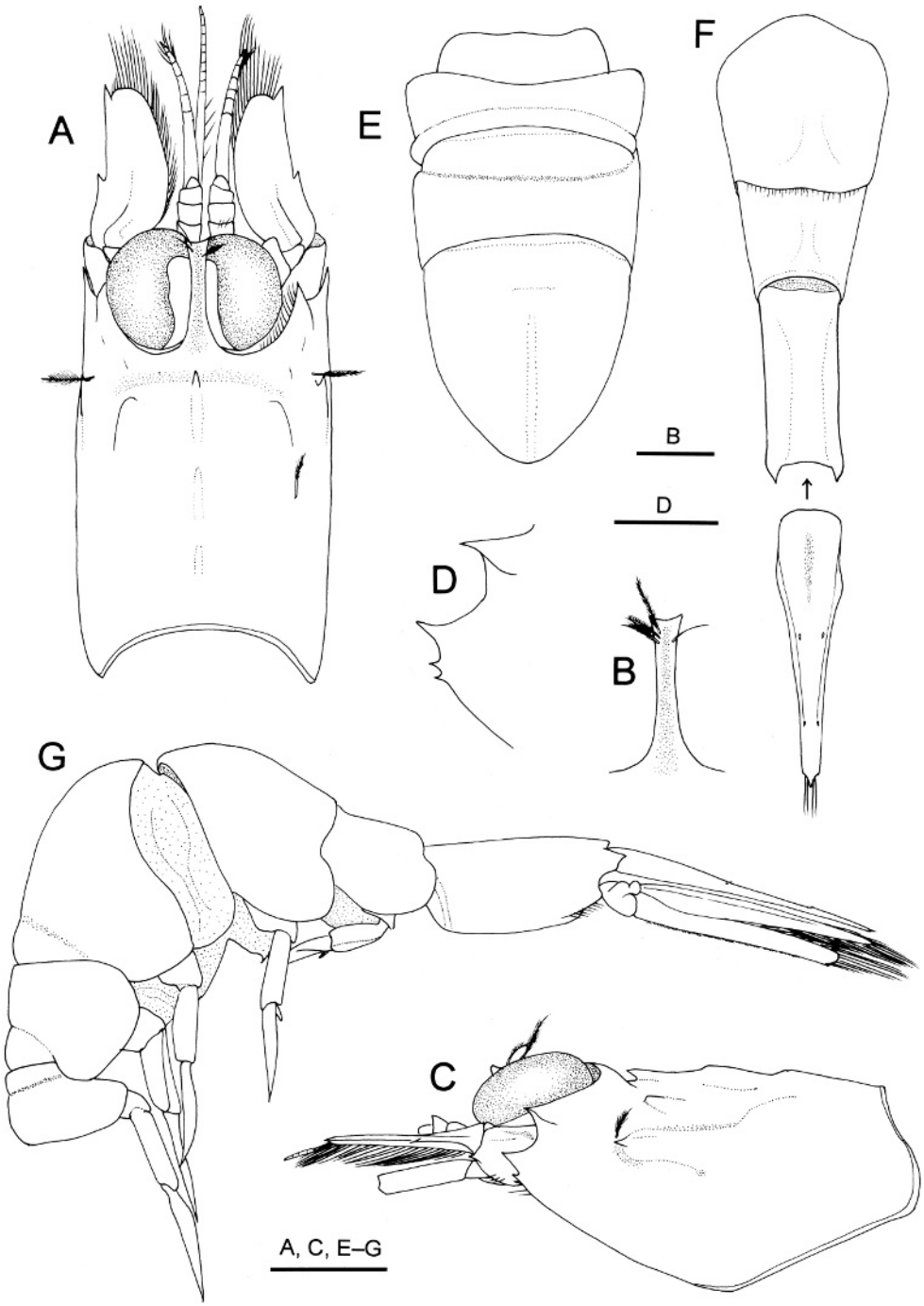

Fig. 1. *Philocheras magnioculus*, holotype female (cl 2.4 mm), Panglao, Philippines. A, carapace and cephalic appendages, dorsal view; B, rostrum, dorsal view; C, carapace and cephalic appendages, lateral view; D, anterolateral margin of carapace, lateral view, showing antennal, branchiostegal and pterygostomial teeth; E, first to third pleonal somites, dorsal view; F, fourth to sixth pleonal somites and telson, dorsal view; G, pleon, telson and appendages, lateral view (setae in pleopods omitted). Scale bars = 1 mm (A, C, E–G); 0.5 mm (B, D).

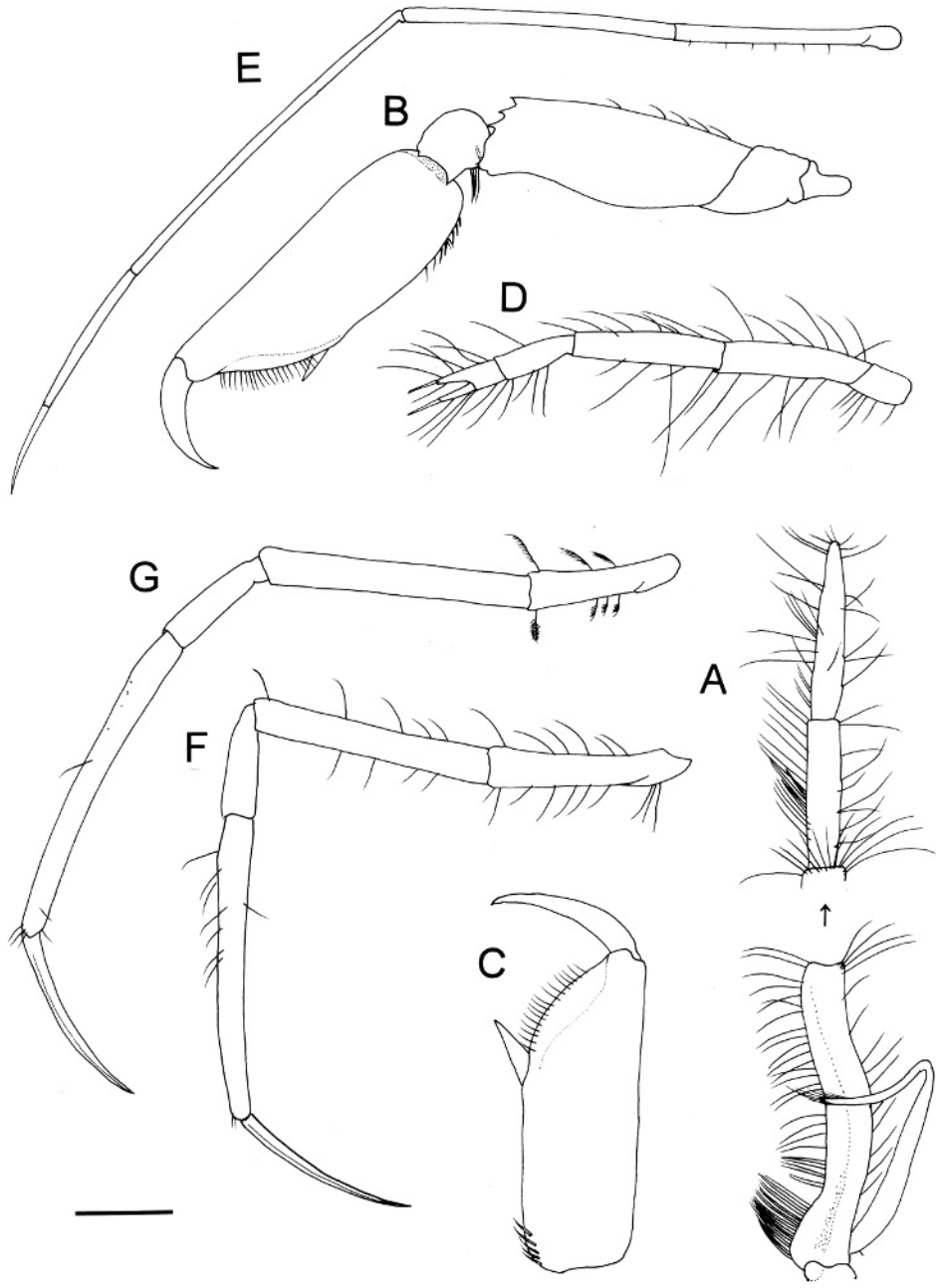

Fig. 2. *Philocheras magnioculus*, holotype female (cl 2.4 mm), Panglao, Philippines. A, right third maxilliped, dorsal view (coxae damaged); B, left first pereopod, lateral view; C, same, subchela, ventral view; D, left second pereopod, lateral view; E, left third pereopod, lateral view; F, left fourth pereopod, lateral view; G, left fifth pereopod, lateral view. Scale bar = 0.5 mm.

surface; ventral margin carinate medially. Carapace (Fig. 1A, C) 1.06 times longer than broad; surface with short sparse setae and few paired long plumose setae; shallow, broad transverse furrow posterior to rostral base; dorsal midline with sharp epigastric tooth arising at 0.13 of carapace length and 2 low lobes, not

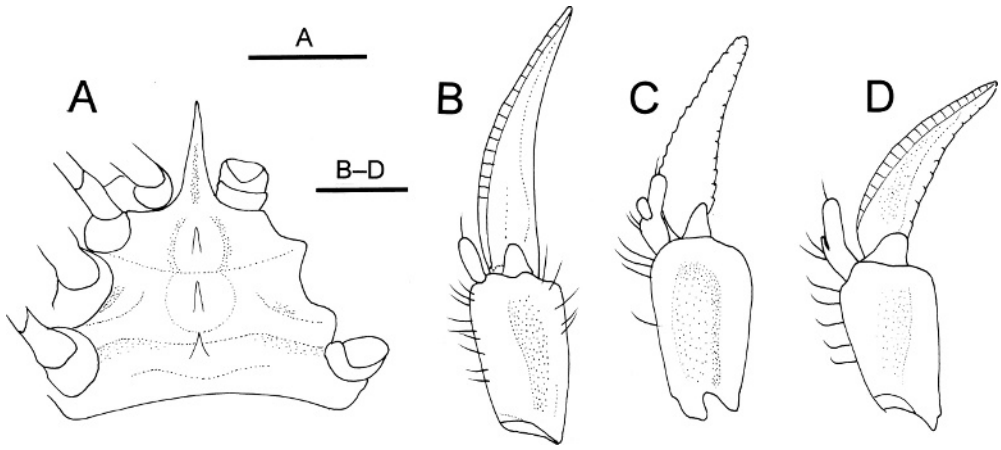

Fig. 3. *Philocheras magnioculus*, holotype female (cl 2.4 mm), Panglao, Philippines. A, thoracic sternum, ventral view; B, left first pleopod, ventral view (setae on exopod omitted); C, left second pleopod, ventral view; D, left third pleopod, ventral view. Scale bars = 0.5 mm.

carinate between epigastric tooth and 2 lobes; postorbital carina very low, obsolete, terminating anteriorly in broadly rounded lobe slightly posterior to level of epigastric tooth; hepatic tooth arising at same level of epigastric tooth, followed by low, obsolete ridge; branchial carina not evident; no other conspicuous teeth present on lateral surface; orbital margin concave, with row of setae laterally; orbital cleft absent; antennal tooth relatively large, acute, supported by short sharp carina (Fig. 1D); branchiostegal tooth moderately large, falling short of dorsodistal margin of antennal basicerite, without support of carina; pterygostomial angle with 2 small teeth (Fig. 1D).

Thoracic sternum (Fig. 3A) widened posteriorly, with long median spur on anterior margin of fifth sternite far overreaching coxae of second pereopods; each sternite of sixth to eighth thoracomeres with sharp median tooth; division of sternites indicated by transverse sulci; sternal surface smooth.

Third maxilliped with small arthrobranch above; pleurobranch present on each of fourth through eighth thoracic somites, ventral apices all directed posteriorly.

Pleon (Fig. 1E–G) without marked sculpture; surface naked. First and second somites without middorsal carina, third to fifth each with trace of middorsal carina. First somite with 1 shallow transverse sulcus. Posterodorsal margins of second and fifth somites without conspicuous notch; that of third somite strongly produced posteriorly; that of fourth somite faintly notched medially. Anterior margin of first somite unarmed laterally. Pleura of first to fifth somites rounded. Sixth somite 2.00 times longer than fifth somite and 1.90 times longer than high; middorsal carina broad, without trace of median groove; posterodorsal margin smooth; posterolateral process terminating in acute tooth; posteroventral angle blunt; ventral surface convex, without prominent rows of setae. Telson (Fig. 1F, G) moderately narrow, about 1.53 times longer than sixth somite, tapering posteriorly and terminating in small triangular tooth; dorsal surface with shallow median sulcus anteriorly, lateral margin with broad, low convexity subproximally and 2 pairs of small spines (anterior spines arising slightly anterior to mid-length of telson, posterior spines at about posterior 0.25 of telson); posteromedian tooth

flanked by 1 pair of small spines and 2 pairs of long setulose spiniform setae.

First to fifth pleonal sternites each with small median tooth becoming smaller toward posterior.

Cornea (Fig. 1A, C) very large (maximum width 0.43 of carapace length), well pigmented and distinctly faceted; eyestalk partially visible in dorsal view, without dorsal tubercle.

Antennular peduncle (Fig. 1A) reaching 0.40 of antennal scale. First segment longer than distal 2 segments combined, dorsal surface strongly excavate to accommodate eye; ventral margin forming sharply delineated, sinuous ridge; stylocerite broadly expanded, anterolateral angle weakly produced and subacutely pointed, posterolateral margin bluntly angular. Second segment wider than long, anterolateral angle not produced. Third segment as wide as second segment. Lateral flagellum moderately slender, overreaching distal margin of antennal scale by 0.30 length, composed of 7 articles (basal article occupying about half length). Mesial flagellum longer than lateral flagellum, composed of about 10 articles (basal article occupying about half length).

Antenna (Fig. 1A, C) with stout basicerite bearing small ventrolateral tooth. Carpocerite moderately stout, overreaching midlength of antennal scale. Antennal scale narrowed distally; dorsal surface naked, with distinct median ridge; lateral margin armed with conspicuous tooth arising at about 0.4 length, margin proximal to lateral tooth slightly sinuous, margin distal to lateral tooth nearly straight; distolateral tooth moderately slender, distinctly overreaching rounded distal margin of lamella. Flagellum broken off.

Mouthparts not dissected. Second maxilliped with endopod composed of 6 segments with basis and ischium fused; epipod subrectangular, podobranch multilamellate. Third maxilliped (Fig. 2A) consisting of 4 segments, flattened dorsoventrally, overreaching distal margin of antennal scale (except for distolateral tooth) by 0.20 length of ultimate segment; ultimate segment slightly longer than carpus (= penultimate segment), moderately narrow (5.60 times longer than wide), tapering distally, mesial margin with long setae and few long spines; carpus with short to long setae on dorsal surface and lateral margin, mesial margin with numerous transverse tracts of dense, stiff setae; antepenultimate segment (merus, ischium and basis fused segment) somewhat sinuous in dorsal view, setose on margins, setae on dorsolateral distal angle particularly elongate; ventral surface distally with cluster of 3 or 4 spinules; coxa stout, with rounded lateral process and small setose protuberance on mesial surface; exopod reaching beyond midlength of antepenultimate segment, somewhat tapering distally, bearing well-developed flagellum.

First pereopod (Fig. 2B, C) stout, slightly overreaching distal margin of antennal scale; palm moderately stout, 2.80 times longer than wide, mesial surface with cluster of stiff setae proximally; cutting edge strongly oblique, with submarginal row of short setae dorsally and ventrally; pollex basally articulated, straight, moderately long; dactylus weakly curved, about half length of palm; carpus short, with small ventrodistal tooth on lateral margin and cluster of stiff setae on mesial surface; merus strongly compressed laterally, with small dorsodistal tooth, distolateral margin with 2 teeth, ventral margin weakly sinuous, unarmed. Second pereopod (Fig. 2D) overreaching distal margin of carpus of anteriorly extended first pereopod, chelate; dactylus about 1.20 length of palm, with long unguis being subequal to dactylus; chela slightly shorter than carpus (except for terminal unguis of fingers), with rows of long setae on dorsal and ventral margins; pollex with long

unguis subequal in length to that of dactylus; carpus shorter than merus, with long setae on each dorsal and ventral margins; merus and ischium with row of long plumose setae on dorsal and ventral margins; ischium subequal in length to merus. Third pereopod (Fig. 2E) very slender, reaching distal margin of antennal scale by tip of carpus; dactylus 0.60 length of propodus, terminating in acute tip; carpus elongate, longer than distal two segments combined or than merus; merus slightly longer than ischium; ischium with row of setae on ventral margin. Fourth pereopod (Fig. 2F) moderately slender, overreaching distal margin of antennal scale by length of dactylus; dactylus about 0.60 length of propodus, slender, weakly curved, slightly flattened dorsoventrally, terminating in thin unguis; ventral surface of dactylus medially ridged on proximal half; propodus with sparse setae on dorsal surface; carpus 0.36 length of propodus; merus and ischium with sparse setae on dorsal and ventral surfaces, merus about 1.40 times longer than ischium and about 7.0 times longer than high. Fifth pereopod (Fig. 2G) similar to fourth pereopod, but slightly shorter and less setose; dactylus 0.60 length of propodus.

Pleopods (Fig. 3B–D) each with stout protopod somewhat widened distally. Endopod of first pleopod (Fig. 3B) very small, elongate oval in shape, with 1 long spiniform seta distally. Endopod of second pleopod (Fig. 3C) very short, about 0.30 length of exopod, only with short terminal seta; appendix interna very short, stout, apparently lacking cincinnuli. Endopods of third to fifth pleopods very short, non-setose, each with rudimentary appendix interna (Fig. 3D).

Protopod of uropod (Fig. 1G) stout, posterolateral projection blunt terminally. Endopod of uropod (Fig. 1G) narrow, slightly longer than exopod, overreaching posterior tip of telson, tapering distally; exopod (Fig. 1G) falling short of tip of telson, lateral margin nearly straight, terminating in tiny tooth not reaching broadly rounded posterior margin.

Coloration.—Not known.

Distribution.—So far only known from the type locality in the Philippines, at depths between 145–163 m.

Etymology.—From the Latin *magnus* (meaning big) and *oculus* (meaning eye), in reference to the very large cornea of the new species; a noun in apposition.

Remarks.—The presence of a sharp lateral tooth on the antennal scale links *Philocheras magnioculus* to eight previously described species of the genus, namely *P. angustirostris* (de Man, 1918), *P. brucei* Komai, 2004, *P. incisus* (Kemp, 1916), *P. kempi* (de Man, 1918), *P. parasculptus* Burukovsky, 1991, *P. sculptus* (Bell, 1847), *P. triangulus* Komai, 2006 and *P. vanderbilti* (Boone, 1935). The structure of the rostrum links *P. magnioculus* to *P. angustirostris*. In both species, the rostrum is narrow, and slightly broadened distally; the terminal margin is concave. The rostral structure is quite different in the other species. *Philocheras brucei* and *P. kempi* have similarly narrow rostra as *P. magnioculus*, but it tapers distally to a blunt apex in *P. brucei* or deeply cleft with a narrow median incision in *P. kempi* (Komai 2004, de Man 1920). In *P. incisus*, *P. parasculptus* and *P. sculptus*, the rostrum is much broader and shorter than in *P. magnioculus*; the terminal margin is deeply concave with distinctly produced lateral angles (see Kemp 1916, Boone 1935, Fujino & Miyake 1970, Crosnier & Forest 1973, Burukovsky 1991). The rostrum of *P. triangulus* is triangular (Komai 2006). *Philocheras magnioculus* is readily distinguished from *P. angustirostris* by the absence of sharp lateral carinae on the carapace. In *P. angustirostris*, there are five sharp lateral carinae on the carapace, of which the postorbital, hepatic and lower branchial carinae terminate anteriorly in sharp teeth (de Man 1920). In *P.*

magnioculus, a hepatic tooth is present, but without support of a sharp carina; the postorbital carina is represented by a low, broad elevation.

Furthermore, *P. magnioculus* is distinctive in the very large cornea and the poorly sculptured pleon. The maximum width of the cornea exceeds 0.40 of the carapace length in *P. magnioculus*, rather than less than 0.30 in the other species. All pleonal somites of *P. magnioculus* are devoid of a conspicuous middorsal carina, although a trace of elevation is visible on the third to fifth somites; there are no marked depressions or grooves, except for a shallow transverse sulcus on the first somite. In the other species, the pleon is provided with a distinct middorsal carina at least on the third somite. In all but *P. vanderbilti*, the pleon is fairly sculptured with shallow depressions and/or transverse grooves.

Chace (1984) recorded *Philocheras incisus* (Kemp, 1916) and *P. japonicus* (Doflein, 1902) from the Philippines, and thus *P. magnioculus* is the third species of the genus from the region. As the Philippines is generally believed to have an extremely high diversity of marine organisms, future surveys may discover more species of this genus in this region.

Acknowledgments

The ''PANGLAO 2004'' Marine Biodiversity Project was a collaboration between Muséum national d'Histoire naturelle, Paris (Principal Investigator, Dr. Philippe Bouchet) and University of San Carlos, Cebu City (Principal Investigator, Dr. Danilo Largo). The ''PANGLAO 2004'' was supported by the Total Foundation for Biodiversity and the Sea, the French Ministry of Foreign Affairs, and the ASEAN Regional Center for Biodiversity Conservation (ARCBC). The Philippines Bureau of Fisheries and Aquatic Resources (BFAR) is acknowledged for issuing a research permit on the material collected by the ''PANGLAO 2004.'' This work is supported by research grants from the National Science Council, Taiwan, R.O.C. and the Center for Marine Bioscience and Biotechnology of the National Taiwan Ocean University.

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Associate Editor: Christopher B. Boyko