

**PROGOMPHUS AMARILLUS SPEC. NOV.
FROM EASTERN MEXICO
(ANISOPTERA: GOMPHIDAE)**

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The new sp. (holotype ♂, allotype ♀: Ciudad Valles, State of San Luis Potosi, 27-VI-1990; deposited in UNAM, Mexico) is described and illustrated. It is unique in the genus by possessing a thick comblike set of black, stout, sharp setae on the apex of each paraproct. The nearest relative appears to be *P. mexicanus* Belle, from which both sexes can be further distinguished by the interrupted 1st lateral thoracic stripe and yellow cercal tips; also, ♂ with venter of cerci yellow on apical half and inferior appendages with low supero-external tooth and no sharp teeth on bifid apex; ♀ U-shaped notch of vulvar lamina as wide as lateral arm.

INTRODUCTION

BELLE (1973) treated 53 species of *Progomphus* as valid in his revision of the genus; 9 species have been described since, bringing the total to 62 (see ST. QUENTIN, 1974; BELLE, 1975, 1980, 1983, 1984, 1990, 1991; KNOPF & TENNESSEN, 1980; DE MARMELS, 1983). BELLE (1991) synonymized *P. williamsi* Needham with *P. clendoni* Calvert. The discovery of the new species described in this paper brings the current total again to 62.

The new species was discovered in east-central Mexico in the state of San Luis Potosi. Ten species of *Progomphus* are now known to occur in Mexico. Both sexes possess a midventral process on abdominal segment 1, placing the species in the subgenus *Neaprogomphus* Carle. The male and female specimens collected were the only individuals seen.

The improbability of finding additional specimens in the near future and the hope that the data presented here will aid taxonomic study and stimulate further collecting have prompted this publication. Much remains to be learned concerning the systematics of *Progomphus* in Mexico.

PROGOMPHUS AMARILLUS SPEC. NOV.

Figures 1-11

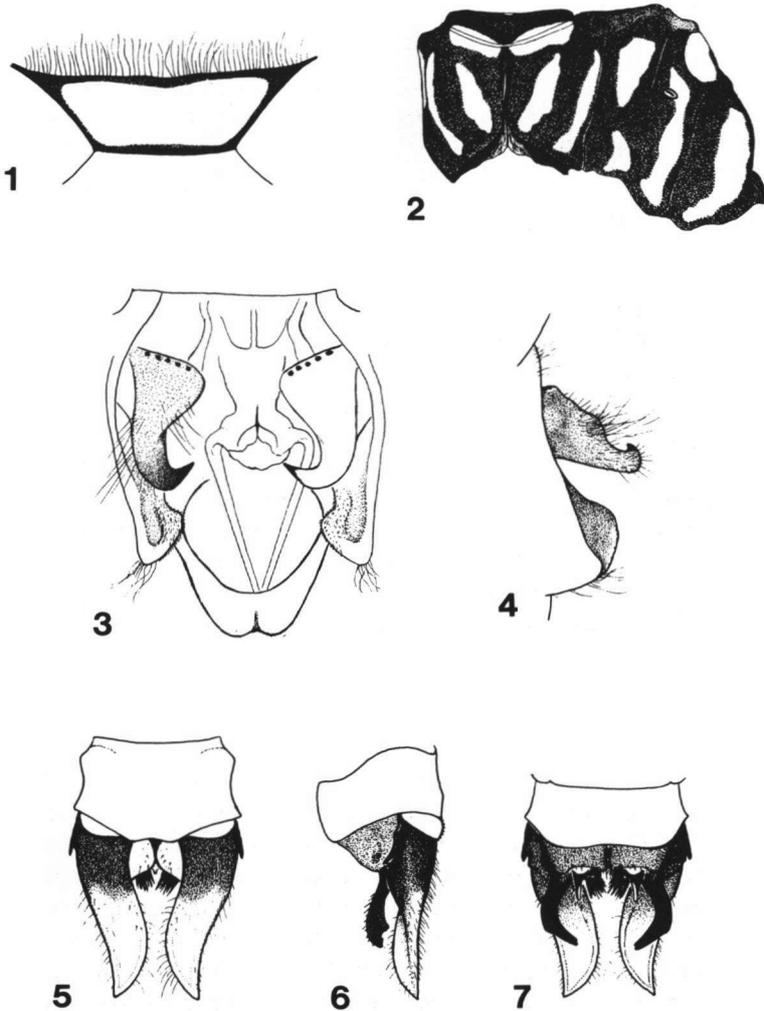
Material. — **Holotype** ♂: MEXICO, State of San Luis Potosi, sulfur laden stream near Hotel Taninul, Ciudad Valles, 27-VI-1990, K.J. Tennessen leg. To be deposited in Collection Universidad Nacional Autonoma de Mexico, Mexico D. F. — **Allotype** ♀: same data. Preserved with acetone and stored dry in cellophane envelopes.

Etymology. — Amarillo, meaning yellow in Spanish, referring to the extensive bright yellow markings of the male and especially the female.

MALE (holotype) — **Head.** — Antennae brown; labrum pale green with light brown basal median spot widened basally; anteclypeus pale green, postclypeus brown except pale green laterally; antefrons brown on ventral half, pale green above; postfrons (vertex) pale green anteriorly, dark brown basally; postocellar ridge slightly concave, with lateral protuberances yellowish brown; occiput greenish-yellow dorsally; occipital ridge brown, very slightly sinuate medially in anterior view (Fig. 1); rear of head dark brown with a round yellow median spot below occipital ridge; compound eyes dark gray in life.

Thorax. — Middle lobe of prothorax greenish-yellow with dark brown median furrow; hind lobe black with numerous erect, long pale setae. Pterothorax (Fig. 2) dark brown with greenish-yellow stripes; middorsal carina yellow, antealar crest black; first pale antehumeral stripe not connected with pale stripes on collar; second pale antehumeral stripe nearly full-length (3.7 mm), but isolated from other pale stripes; first lateral stripe interrupted at middle; second and third lateral stripes complete; metkatepisternum pale; sternum grayish-brown. Wings hyaline, no brown in extreme base; anterior edge of costa yellow; fore wings with 16 (left) or 17 (right) antenodal crossveins, 8 (l) or 9 (r) postnodals; hind wings with 11 (l) or 12 (r) antenodals, 10 postnodals; basal subcostal crossvein present in all wings; triangles 3-celled in fore wings, 2-celled in hind wings; subtriangles 2-celled; pterostigma surmounting 6 cells, except 5½ in left fore wing. Legs: hind femora dark brown with black spurs; tibiae blackish-brown, tarsi and claws black; hind tibia ¾ length of hind femur.

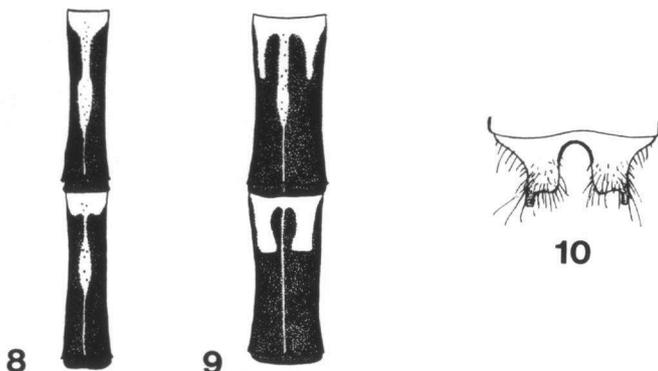
Abdomen. — Segments 1-7 brown with greenish-yellow markings as follows: median and lower sides of segments 1 and 2, auricles plus rectangular area dorsal and ventral to auricles, base of segment 3, extending posteriorly on median and lateroventral area, base of segments 4-7, extending posteriorly on median to sharply pointed apex (Fig. 8); basal yellow mark largest on segment 7; segment 7 also with a lateroventral yellow triangle at half-length. Segments 8-10 dark brown dorsally, yellowish-brown laterally. Posterior hamules stout, with 5 black, low basoventral tubercles, greenish-brown basally, light brown apically, hook black at apex (Figs 3, 4). Cerci dark brown in basal third, pale yellow beyond (Fig. 5); basolateral tooth stout, 0.15 mm long, set off from 8 smaller teeth on ventral carina by a deep notch (Figs 6, 11); tips of cerci yellow. Lobes of epiproct



Figs 1-7. *Progomphus amarillus* sp. n.: (1) occiput of male, frontal view; - (2) male thoracic pattern; - (3) posterior hamules, ventral view; - (4) posterior hamule, lateral view; - (5) male cerci, dorsal view; - (6) male appendages, lateral view; - (7) male appendages, ventral view.

(inferior appendages) in ventral view curved inward (Fig. 7), tips bifid without sharp teeth, supero-external tooth low, rounded (Fig. 11). Paraprocts with an apical lobe bearing numerous long, black, very stout, sharp setae directed postero-medially (Figs. 5, 7).

Measurements (mm). - Total length (incl. cerci) 54.0, abdomen 41.0, hind wing 29.5, pterostigma of fore wing 4.2, hind femur 5.0.



Figs 8-10. *Progomphus amarillus* sp. n.: (8) male abdominal segments 5 & 6, dorsal view; — (9) female, same; — (10) vulvar lamina, ventral view.

FEMALE (allotype). — **H e a d.** — Color pattern similar to ♂, except brown areas slightly paler; compound eyes in life darker gray than in male.

T h o r a x. — Color pattern similar to ♂ except as follows: brown color slightly paler; first lateral stripe not as widely interrupted; antealar crest partly yellow; sternum yellow. Anterior edge of costa less yellow than in male, in hind wings yellow only near nodus; fore wings with 16 (left) or 15 (right) antenodal crossveins, 8 (l) or 9 (r) postnodals; hind wings with 11 antenodals, 9 postnodals. Pterostigma surmounting $5\frac{1}{2}$ to $6\frac{1}{2}$ cells.

A b d o m e n. — Yellow markings more extensive than in ♂; narrow yellow dorsal stripes full length on segments 2-7, but extremely narrow on segments 6 and 7; elongate basolateral yellow spots join basally to form U-shaped spots $\frac{1}{3}$ length of respective segment (Fig. 9); pale spots on segment 7 yellowish-orange; segment 7 with midlateral yellowish-orange spot; lateral and ventral aspects of terga of segments 1-7 completely yellow; segment 8 mostly brown, dark dorsally, lighter brown laterally with a small yellow triangular spot ventrolaterally; segment 9 dark brown dorsally, light brown laterally; segment 10 light brown, with small black denticles dorsal to bases of cerci; cerci 1.65 mm long, yellow except small pale brown area medially at base, tips yellow. Sternites 2-7 dark brown, 8-10 lighter brown. Vulvar lamina U-shaped (Fig. 10), slightly more than $\frac{1}{3}$ length of ninth sternum, about $\frac{1}{6}$ length of eighth sternum.

M e a s u r e m e n t s (mm). — Total length 51.0, abdomen 38.0, hind wing 31.0, pterostigma of fore wing 4.7, hind femur 5.0.

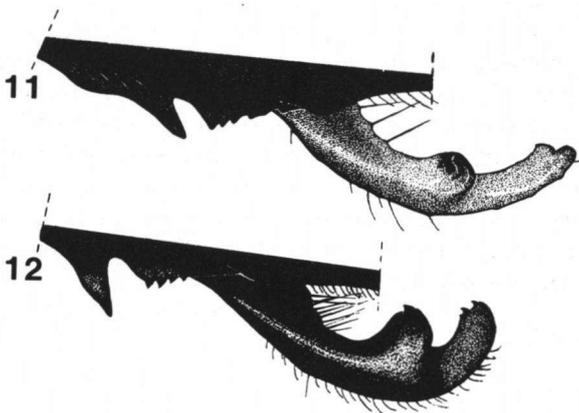
COMPARISON WITH *P. MEXICANUS* BELLE

In BELLE's key (1973), the new species keys to *P. mexicanus* Belle. The two species can be distinguished by several color pattern and morphological characters.

Males: 1st pale antehumeral stripe of thorax not connected with pale area of collar in *amarillus*, connected in *mexicanus*; 1st lateral stripe interrupted in *amarillus*, complete in *mexicanus*; dorsal yellow spot on abdominal segment 7 barely more than half segment length and posterior portion only $\frac{1}{5}$ segment width in *amarillus*, compared to $\frac{2}{3}$ segment length and nearly as wide as segment in *mexicanus*; hamules shorter and apical hook larger and more recurved in *amarillus*; dorsal and ventral surfaces of cerci dark brown only in basal third in *amarillus* versus dark brown in basal half dorsally and entire length ventrally in *mexicanus*; inferior appendages light brown, supero-external tooth low, tips without distinct teeth in *amarillus* (Fig. 11), compared to mostly black, with large supero-external tooth and 2 apical stout sharp teeth in *mexicanus* (Fig. 12); apical "comb" of black, sharp, stout setae on paraprocts of *amarillus*, versus pale, widely-spaced, thin setae in *mexicanus*. The apical black setal comb on the paraproct of *amarillus* apparently is unique within the genus.

Females: 1st pale antehumeral and 1st pale lateral stripes differ as in males; U-shaped notch of vulvar lamina as wide as lateral arm in *amarillus*, narrower than arm in *mexicanus*. Tips of cerci in both sexes yellow in *amarillus*, black in *mexicanus*. Also, the contrast between the brown and yellow markings is greater in *amarillus* than in *mexicanus*.

The only other gomphid collected at the type locality was *Aphylla angustifolia* Garrison. A single male of *Progomphus clendoni* was collected at a site farther North, Cascadas Micos.



Figs 11-12. Lateral view of lower, basal portion of male cercus and epiproct: (11) *P. amarillus* sp. n.; - (12) *P. mexicanus*.

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