

A NEW SPECIES OF DRIED BANANA LEAF SPIDER,
NEOBRETTUS WANLESS 1984 (ARANEAE: SALTICIDAE)
FROM THE AGRICULTURAL LOWLANDS OF MT.
BANAHAW, QUEZON PROVINCE, PHILIPPINES

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ABSTRACT

Neobrettus nangalisagus, a new species of small and squat pluridentate jumping spider from the agricultural lowlands of Mt. Banahaw, Luzon Island, Philippines is described and illustrated. The genus is a new Philippine record and the taxon *N. nangalisagus* represents the third species in the world. Biological notes on its behavior, prey and preferred habitat are provided. The proposed common name for the new species is dried banana leaf spider.

Key words: Salticidae, *Neobrettus nangalisagus* n. sp., pluridentate, dried banana leaf spider, prey, behavior

INTRODUCTION

Neobrettus is one of the six new genera of jumping spiders erected by Wanless (1984) in the review of the subfamily Spartaestinae. The type species is *Cyrba tibialis* Proszynski 1978 based on a single male specimen from Phuntsholing, Bhutan. It is a small pluridentate jumping spider possessing a squat and hairy body; long and erect abdominal hairs; thick mat of long, black and white hairs in the dorsal and ventral sides of femur I and tibia I; tibia and cymbium of male's pedipalp with complex interlocking mechanism and female epigyne with pear-shaped spermathecae, small posterolateral copulatory openings and two coiled ducts. *Neobrettus* has a restricted distribution in the Oriental Region. Only two species, namely, *N. tibialis* (Proszynski) from Bhutan and Malaysia and *N. phui* Zabka, 1985 from Vietnam have been reported. By chance, a female specimen belonging to the genus *Neobrettus* was collected from a beating tray after jarring agricultural crops like coffee, guava and banana planted under coconut trees in the southern slopes of Mt. Banahaw, Dolores, Quezon Province in September 1999. Subsequent field trips in the area from December 21, 1999 to January 31, 2000 produced 142 specimens comprising of 41 males, 66 females and 35 spiderlings. About 91% of the collections came from senescing and drying banana leaves facing the cool windward side of the mountain at 638 meters above sea level (m.a.s.l.). It is also in Caliraya, Laguna Province, 32 km NE of Mt. Banahaw at 300 m.a.s.l., where 76 specimens with 21 males, 32 fe-

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males and 23 spiderlings were found exclusively on dried banana leaves exposed to open air and cold breeze of the lake. Adults of both sexes were found feeding on thrips, *Elixothrips* sp. (Thysanoptera: Thripidae) and on adults of two undetermined psocopterans (Psocoptera: Caeciliidae) based on field observation. This paper describes this small but very unique *Neobrettus* spider, the first in the Philippines and only the third species in the world.

All measurements are in mm and the type specimens are deposited in the Taxonomy Laboratory, Entomology and Plant Pathology Division, International Rice Research Institute, Los Baños, Laguna, Philippines. Abbreviations: AbL=abdominal length; AbW=abdominal width; AbH=abdominal height; ALE=anterior lateral eye; AME=anterior median eye; CL=carapace length; CW=carapace width; CH=carapace height; ChL=chelicera length; ChW=chelicera width; EH=epigynum height; EW=epigynum width; Fe=femur; M1=petal-like structural organ of the distal haematodocha; M2=small lobe or membranous patch in the distal haematodocha; Met=metatarsus; MPW=median plate width; OFL=ocular field length; Pat=patella; PE=posterior eyes; PEM=posterior epigynal margin; RTA=retrolateral tibial apophysis; Tib=tibia; T1 to T3=teeth 1, teeth 2 and teeth 3; VTA=ventral tibial apophysis; WOF=width of ocular field 1, 2, and 3. Leg spine notation followed Ono (1988).

DESCRIPTION OF NEW SPECIES

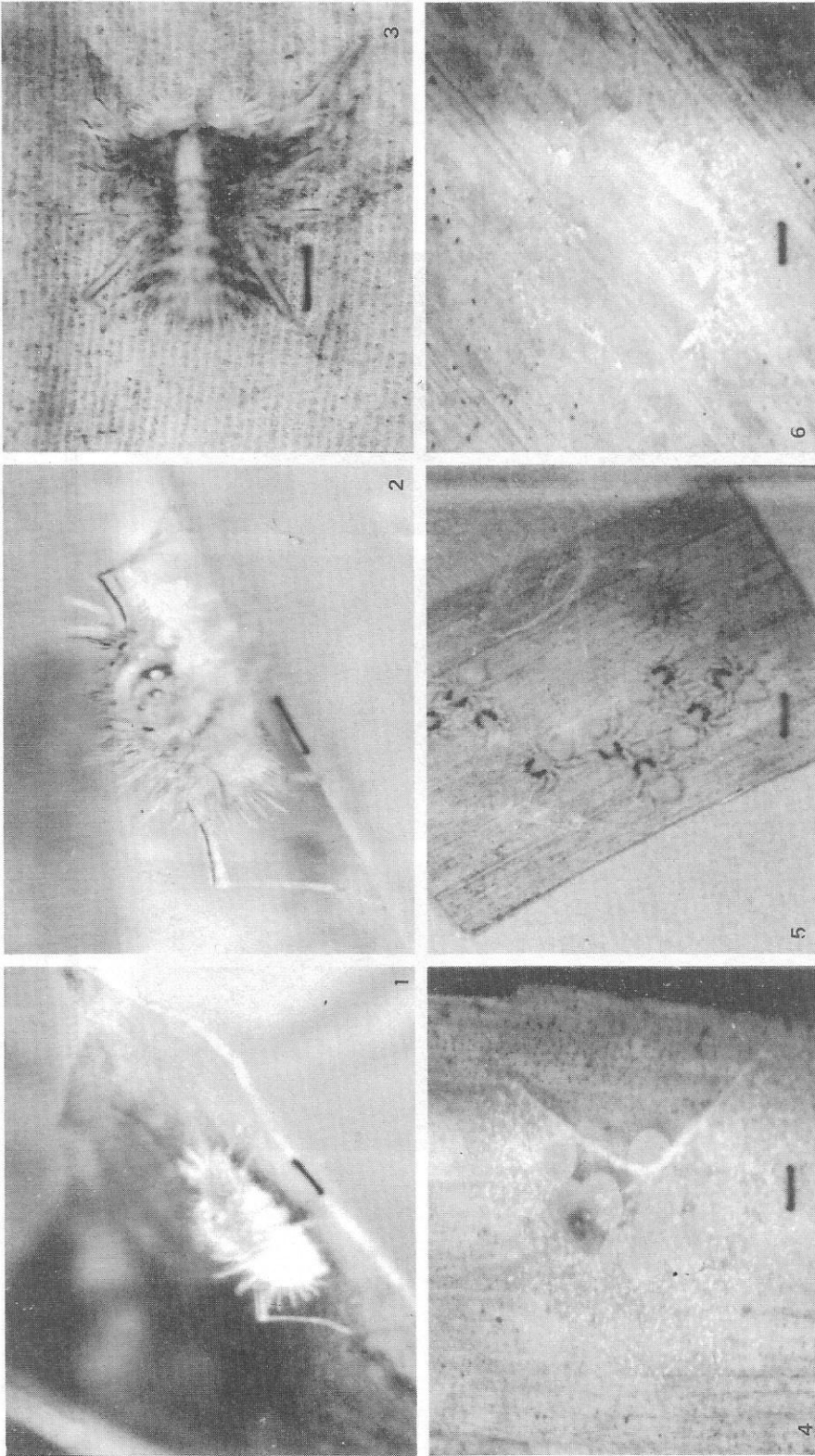
Neobrettus nangalisagus Barrion, new species

(Figs. 1-20)

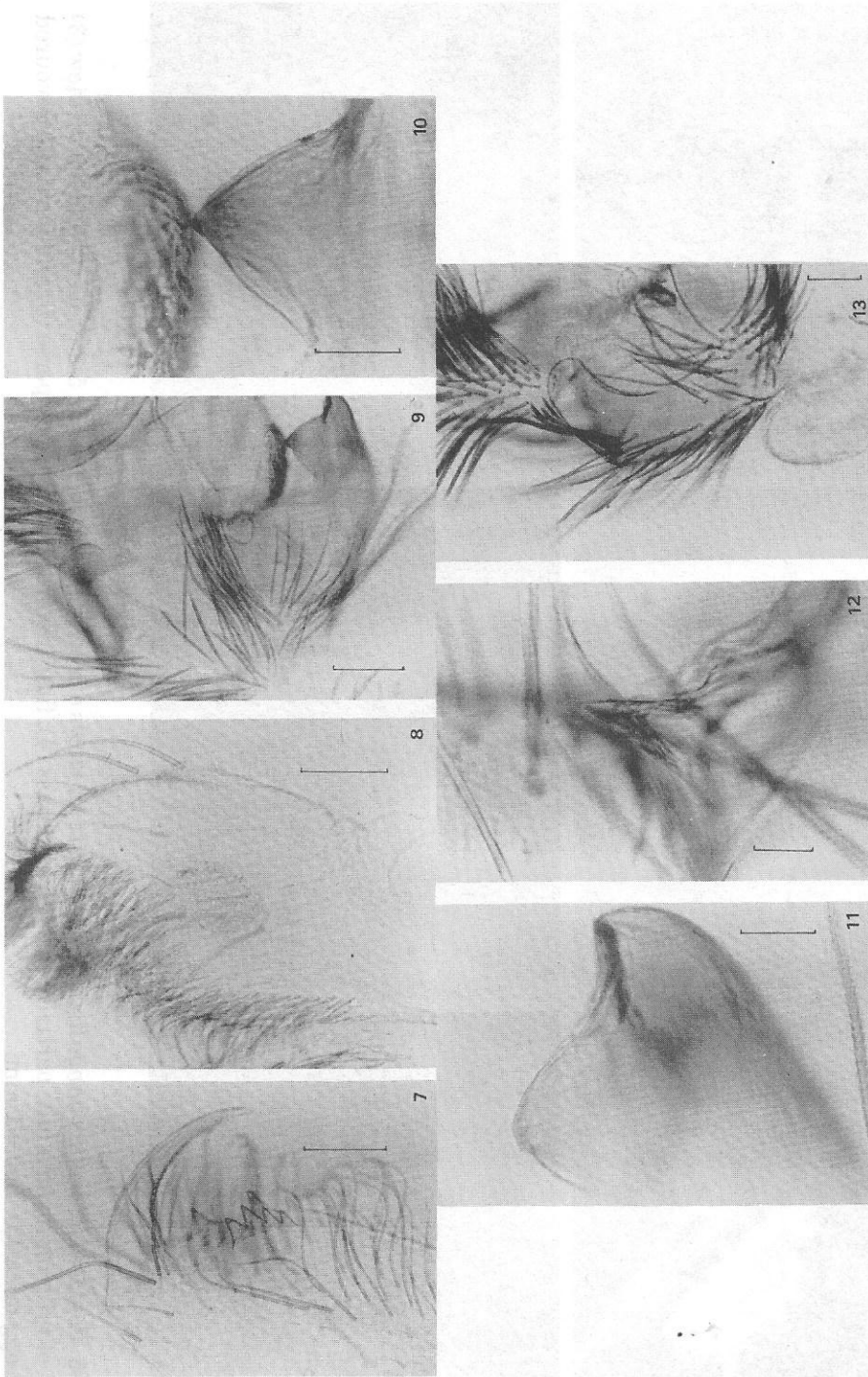
Diagnosis. *N. nangalisagus*, a small pluridentate salticid is easily distinguished from its two congeners (*N. tibialis* (Proszynski) and *N. phui* Wanless) by the broadly grayish brown U-band in the carapace extended to the anterolaterals of the abdomen; inner ventrobasal one-third of chelicera bears more than 30 short spines arranged in 4-5 transverse rows; short and sickle-shaped fang with 24 tooth keels in the inner margin; spination: male femur I d 1-1-3, tib I 1-2-1, met I d 0-1-0 v 0-2-2 r 1-1-1; female tib I and met I with 4 ventral spines each, met I p 1-1-1 r 1-1-1; RTA's inner flange sharply pointed with roughly inclined lateral edge; VTA prominently angled midlaterally with a broadly rounded anterior end; knoblike intermediate apophysis with rough anterior margins; long embolus arises at 9 o'clock; pale white to transparent M1 serrate laterally; PEM of female truncate with concave lateral flanges; two pear-shaped spermathecae connected to each other in the inner side triangular in form and ducts anterior of spermathecae with 2 spiral loops.

Description:

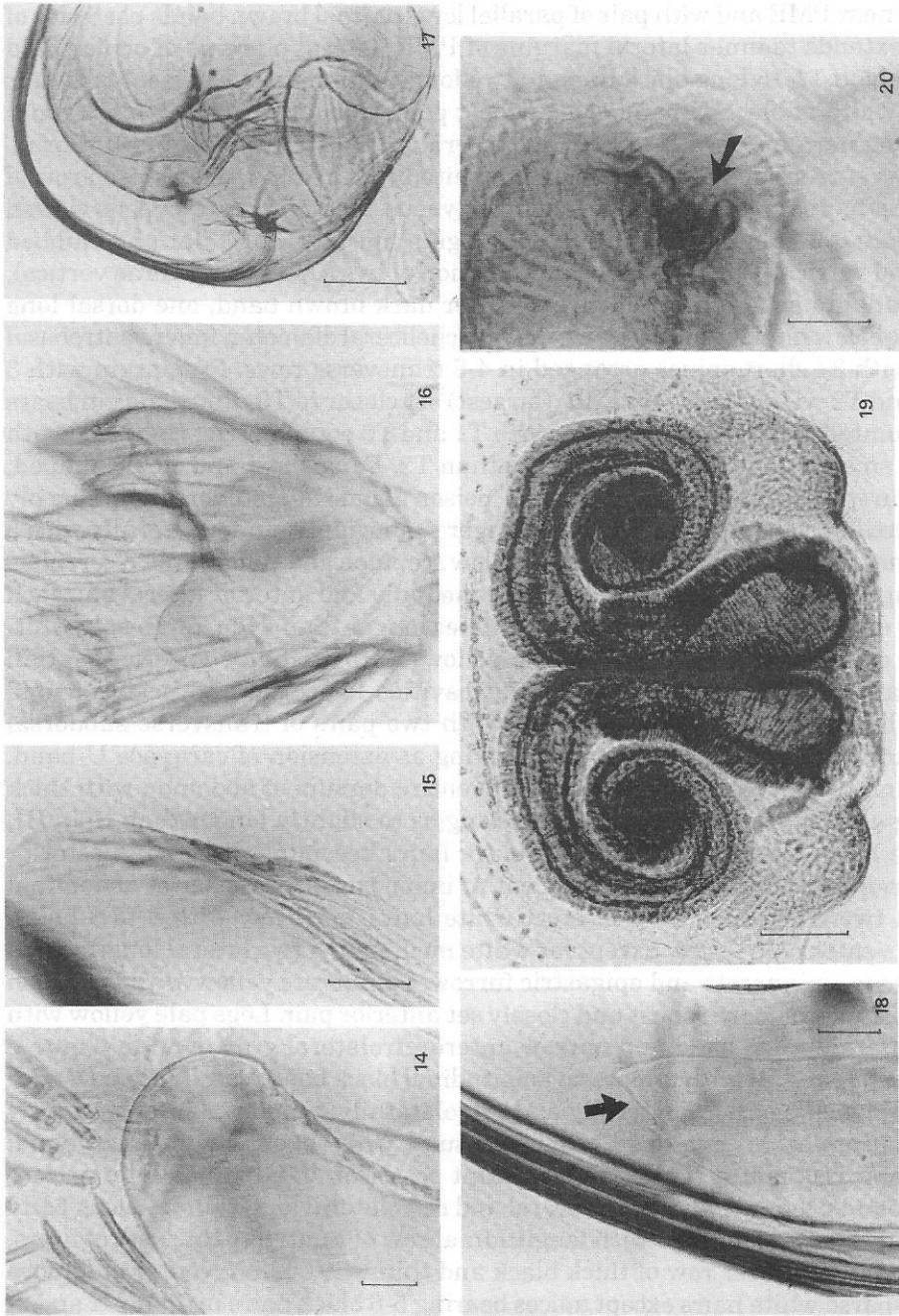
Male: (n=10). Total length excluding chelicera 3.54-3.64 (\bar{x} = 3.57±0.03); ChL 0.50-0.56 (\bar{x} = 0.54±0.02), ChW 0.25-0.32 (\bar{x} = 0.31±0.02); CL 1.66-1.95 (\bar{x} = 1.81± 0.07); CW 1.40-1.50 (\bar{x} = 1.45±0.04); CH 1.00-1.10 (\bar{x} = 1.05±0.04); AbL 1.60-1.98 (\bar{x} = 1.76±0.09); AbW 1.05-1.45 (\bar{x} = 1.37±0.11); AbH 0.75-1.25 (\bar{x} = 1.03±0.13). Eye diameter: AME 0.41-0.43 (\bar{x} = 0.42±0.01); ALE 0.20-0.21 (\bar{x} = 0.20±0.004); PLE 0.20- 0.21 (\bar{x} = 0.20±0.004); PME 0.13-0.15 (\bar{x} = 0.15±0.01); Eye separations: AME-AME 0.03-0.04 (\bar{x} = 0.03±0.004); AME-ALE 0.04-0.10 (\bar{x} = 0.05±0.02); PME-PME 0.82-0.93 (\bar{x} = 0.85±0.04); PLE-PLE 0.95-1.03 (\bar{x} = 0.99±0.02); ALE-PME 0.24-0.28 (\bar{x} = 0.26±0.01); PME-PLE 0.23-0.30 (\bar{x} = 0.29±0.02); OFL 0.88-0.93 (\bar{x} = 0.89±0.03); WOF I 1.20-1.33 (\bar{x} = 1.27±0.03); WOF II 1.05-1.13 (\bar{x} = 1.08±0.03); WOF III 1.25-1.33 (\bar{x} = 1.30±0.03). Clypeus height one-third AME diameter. Ratios: CH/CW 0.72; AME/ChL 0.77; CW/WOF III 1.12; Fe I/WOF III 0.90; Fe III/WOF III 0.73; Tib I/WOF III 0.68; Fe IV/ FE III 1.29; Tar I/Met I 0.49.



Figures 1-6. Female *Neobrettus nangalisagus* sp. n., lateral views of newly emerged (1) and 5-day old (2) and dorsal view (3) of fully matured adult; partially covered egg mass (4); first instars starting to disperse (5) and partially devoured egg mass (6). Bar = 1 mm.



Figures 7-13. Male *Neobrettus nangalisagus* sp. n., chelicera showing teeth pattern (7); maxilla (8); palp's tibia and part of cymbium (9); inner RTA directed to posterior bulge of cymbium (10); apex of RTA (11); inner flange of RTA (12) and VTA (13). Bar = 0.08mm in 7 & 8; 0.01mm in 9; 0.02mm in 10, 11 & 12 and 0.06 mm in 13



Figures 14-20. Male *Neobrettus nangalisagus* sp. n., apex of VTA (14); inner slope of VTA (15); dorsal view of palp's tibia (16); tegulum showing base of embolus and sperm duct (17); M1 of distal haematodocha (18); and female's epigynum (19) and copulatory opening (20). Bar = 0.02 mm in 14 & 20, 0.03 mm in 15 & 18, 0.07 mm in 16 & 17 and 0.08 mm in 20.

Carapace pale yellow with broadly inverted U-shaped black band running from entire clypeus, anterior eye row, PME, PLE, posterior end of thorax and terminated at anterolaterals of abdominal dorsum. Ocular field bears knoblike chalk white band constricted near PME and with pair of parallel longitudinal brown bands posterior of AME that extends to inner lateral margins of PME, lateral margins of ocular field lined with about 12-15 long black hairs in two longitudinal rows, longest black hair two-thirds width of black U-band at its widest point. Moderately thick black hairs present along margins of ALE to PLE and lateral and posterior margins of thorax. Eye margins surrounded by short creeping white hairs in PE, longer hairs around AME, longest hairs run between AME and midclypeus. Median area of clypeus viewed dorsally bears 5-6 long hairs with tips converging apically and 3 flat and clubbed hairs aligned vertically towards posterior junction of two AMEs. Chelicerae vertical, almost parallel to each other, yellow except for dark brown band, one dorsal long hair present below midlength as long as one-half cheliceral diameter, inner ventrobasal one-third with 34 short spines arranged in 4-5 transverse rows. Promargin with 3 teeth, T1 and T2 widely separated, T2 (largest) set closer to T3. Retromargin bears 4 acutely pointed teeth in left chelicera with T1 and T2 equal in size, right side with 5 teeth, T1 smallest and T3 slightly larger than T2. Fang short and sickle-shaped, inner margin with 24 tooth keels, opening of poison gland subapicodorsal, tip sharply pointed. Maxillae yellow with gray tinge, longer than wide, rounded laterally with 3 long marginal hairs, dense mat of whitish yellow scopulae and yellow brown serrulae. Labium longer than wide, yellow tinged gray medially and anterior lateral end each with 3 long dark brown setae. Sternum 1.4 times longer than wide, uniformly whitish yellow, covered with relatively dense yellow hairs medially, anterior margin truncate, lateral margins rounded without cavities for coxae and posterior end rounded. Abdomen ovoid, yellowish white with two pairs of transverse subdorsal grayish black bands along anterior half serving as extension of carapace U-band, anterior band twice wider than second band, entire dorsum of abdomen with thick mat of long erect black hairs, each hair as long as to slightly longer than tibia III, short white hairs interspersed between black hairs becoming denser in posterior half. Posterior end of cardiac area adjacent to inner posterior corner of abdominal bands with two transverse rows of erect white hairs, each row with 6 to 8 hairs. Abdominal venter pale yellow except for white median and two lateral longitudinal bands between spinnerets and epigastric furrow. Spinnerets yellow with brownish yellow apical ends of more robust and closely set anterior pair. Legs pale yellow with broad prolateral brown band and narrow anteroretrolateral gray band in femur I; patella-tibia I, II and III with prolateral longitudinal black band; patella-tibia IV with longitudinal black bands prolaterally and retrolaterally; patella-tibia I-IV slightly bowed; basal prolateral one-third of metatarsus I with black longitudinal band; prolateral apices of femur II and III with faint posterior and distinct anterior concave black bands; femur IV with prolateral and retrolateral longitudinal black band distally; middorsum of femur I with longitudinal row of relatively thick set of hairs, venter with much denser row of thick black and thin white hairs; venter of femora II-IV with sparse white hairs except apices bearing 5-6 black hairs in femur II and 2-3 each in femur III and IV; patella I with 2 short and 3 long black hairs middorsally and 2-3 long white hairs apicodorsally; tibia I bears 5-6 long white hairs in dorsobasal one-third, venter with longitudinal row of dominantly white hairs distally and about 10-15 black hairs proximally, dorsobasal area of tibia II with one short and a long

white hairs, venter with thinner white hairs than in tibia III and IV. Leg formula 4123. Spination in leg I: femur d 1-1-3; patella p 0-1-0, r 0-1-0; tibia d 0-1-0 v 1-2-1, p 0-1-0 r 0-0-0; metatarsus d 0-1-0, v 0-2-2, p 0-1-1, r 1-1-1. Palp dark brown except yellow apex of cymbium and grayish yellow femur and patella; dorsum of femur with longitudinal row of black hairs, middle hairs thicker than those on both ends, venter with short, white curved hairs basally and 5-6 thick hairs towards distal end; patella subglobular with anterior protrusion seen laterally; tibia prominently wider than long, viewed dorsally, median interlocking process slightly truncated apically, broad RTA dark reddish brown with moderately pointed tip, RTA with two processes apically in ventral view and yellow sharply pointed inner flange, lateral edge of flange rough and inclined; intermediate apophysis pale yellow to white, small and knoblike with rough anterior margins; cymbium with scopulae apically, sub-posteroventrally and retrolaterally; cymbial process opposite RTA bulging with prominently rough distal edge, basolateral edge truncate opposite VTA, subproximal median end of cymbium bears 10-15 plumose hairs, each hair with enlarged leaflike lateral growths; embolus long and slenderly flat forming concave loop subapically, arising at 9 o'clock; sperm duct reddish brown emanating from center of tegulum, traversing midanterior margin in clockwise direction with midposterior and lateral loops before reaching base of embolus; M1 whitish and leaflike with 2-3 serrations laterally, apical end sharply pointed; M3 pale transparent white, apical end wide with at least 4 serrations; tegulum subglobular, strongly rounded poste-ro-ventrally and relatively flat except slightly indented midhalf.

Length of leg and palp segments in male [upper] and female [lower] (mean \pm SE):

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	1.03 - 1.29	0.43 - 0.62	0.73 - 0.95	0.90 - 1.05	0.40 - 0.53	3.49 - 4.43
	(1.17\pm0.08)	(0.58\pm0.05)	(0.88\pm0.06)	(1.00\pm0.04)	(0.49\pm0.03)	(4.12\pm0.24)
	1.20 - 1.38	0.58 - 0.70	0.90 - 1.00	0.95 - 1.08	0.43 - 0.53	4.18 - 4.53
	(1.33\pm0.06)	(0.63\pm0.03)	(0.97\pm0.03)	(1.01\pm0.03)	(0.47\pm0.03)	(4.40\pm0.09)
2	0.98 - 1.10	0.45 - 0.50	0.68 - 0.75	0.90 - 1.03	0.43 - 0.53	3.54 - 3.83
	(1.04\pm0.05)	(0.48\pm0.01)	(0.72\pm0.02)	(0.99\pm0.03)	(0.48\pm0.02)	(3.68\pm0.10)
	1.03 - 1.13	0.55 - 0.60	0.75 - 0.83	0.98 - 1.05	0.41 - 0.52	3.88 - 4.02
	(1.10\pm0.03)	(0.56\pm0.02)	(0.79\pm0.02)	(1.03\pm0.02)	(0.48\pm0.02)	(3.96\pm0.05)
3	0.88 - 0.98	0.35 - 0.45	0.60 - 0.69	0.88 - 1.00	0.45 - 0.49	3.24 - 3.54
	(0.95\pm0.04)	(0.43\pm0.03)	(0.63\pm0.03)	(0.97\pm0.04)	(0.46\pm0.01)	(3.43\pm0.09)
	0.98 - 1.05	0.40 - 0.50	0.64 - 0.72	0.98 - 1.08	0.45 - 0.49	3.67 - 3.77
	(1.02\pm0.02)	(0.46\pm0.03)	(0.70\pm0.02)	(1.06\pm0.03)	(0.47\pm0.01)	(3.70\pm0.07)
4	1.05 - 1.28	0.40 - 0.50	0.93 - 1.03	1.45 - 1.65	0.54 - 0.61	4.45 - 4.91
	(1.23\pm0.07)	(0.47\pm0.03)	(0.99\pm0.03)	(1.54\pm0.06)	(0.56\pm0.03)	(4.79\pm0.12)
	1.25 - 1.44	0.42 - 0.53	1.03 - 1.09	1.60 - 1.73	0.58 - 0.61	5.02 - 5.30
	(1.38\pm0.05)	(0.50\pm0.03)	(1.05\pm0.02)	(1.68\pm0.04)	(0.60\pm0.01)	(5.20\pm0.09)
Palp	0.55 - 0.65	0.25 - 0.33	0.28 - 0.35	-	0.78 - 0.98	1.96 - 2.28
	(0.61\pm0.03)	(0.29\pm0.03)	(0.32\pm0.02)		(0.92\pm0.06)	(2.14\pm0.09)
	0.63 - 0.65	0.26 - 0.34	0.38 - 0.45		0.64 - 0.72	2.04 - 2.14
	(0.64\pm0.01)	(0.31\pm0.02)	(0.44\pm0.02)		(0.70\pm0.03)	(2.09\pm0.02)

Female: (n=10). Total length excluding chelicera 3.65-4.10 (\bar{x} = 3.80±0.14); ChL 0.60-0.68 (\bar{x} = 0.62±0.02); ChW 0.33-0.40 (\bar{x} = 0.36±0.02); CL 1.78-2.12 (\bar{x} = 1.94± 0.10); CW 1.45-1.55 (\bar{x} = 1.51±0.03); CH 1.00-1.20 (\bar{x} = 1.10±0.06); AbL 1.50-2.20 (\bar{x} = 1.86±0.20); AbW 1.25-1.65 (\bar{x} = 1.52±0.11); AbH 1.00-1.35 (\bar{x} = 1.15±0.09). Eye diameter: AME 0.43-0.45 (\bar{x} = 0.44±0.01); ALE 0.21-0.23 (\bar{x} = 0.22±0.01); PLE 0.23 (\bar{x} = 0.23±0.00); PME 0.14-0.16 (\bar{x} = 0.15±0.01). Eye separation: AME-AME 0.02-0.03 (\bar{x} = 0.03±0.01); AME-ALE 0.05-0.10 (\bar{x} = 0.09±0.02); PME-PME 0.88-0.98 (\bar{x} = 0.90± 0.03); PLE-PLE 1.08-1.20 (\bar{x} = 1.12±0.04); ALE-PME 0.26-0.29 (\bar{x} = 0.27±0.01); PME-PLE 0.28-0.32 (\bar{x} = 0.30±0.01); OFL 0.85-1.05 (\bar{x} = 0.94±0.05); WOF I 1.28-1.38 (\bar{x} = 1.33 ± 0.03); WOF II 1.13-1.26 (\bar{x} = 1.18±0.05); WOF III 1.35-1.48 (\bar{x} = 1.38±0.03). Clypeus height narrow, about one-third AME diameter. Ratios: CH/CW 0.73; CW/WOF III 1.09; Fe I/WOF III 0.99; Fe III/WOF III 0.75; Tib I/WOF III 0.70; Tib III/Tib IV 0.66; Pat III/Tib III 0.66. Carapace similar to male except more robust. Eyes and cephalothoracic U-band fringed with relatively more whitish hairs. Clypeus light brown with fine white hairs, median area bears three long flat and clubbed hairs. Chilum distinctly grey with white anterior margins and transversely rectangular. Chelicerae as in male except for longer hairs close to base of fangs promarginally. Retromargin with 4-5 teeth and promargin with 3 teeth. Maxillae and labium pale yellow brown with sparse brown hairs. Sternum shield-shaped, uniformly yellow covered with short whitish yellow hairs. Abdomen as in male except for paler gray anterolateral bands, brown ventral epigynal plate and pale whitish yellow spinnerets. Leg coloration and hair pattern as in male, distal retrolaterals of femur I with dark reddish brown band. Leg formula 4123. Spination in leg I: femur d 1-1-3; patella p 0-1-0, r 0-1-0; tibia v 0-2-2, p 1-0-1; metatarsus v 0-2-2, p 1-1-1, r 1-1-1. Palp long with brown to black femoral hairs and shiny white long hairs in tibia and tarsus, tarsal claw with 10 teeth. Epigynum prominently large, two pear-shaped spermathecae visible with inner sides connected to each other, posterior epigynal margin (PEM) truncate with concave lateral flanges; copulatory openings very small located at posterolateral edge of each spermathecae; ducts anterior of spermathecae with two spiral loops, basal junction rough with peg-like structures. Ratio of EH/EW 0.68, EW/MPW 1.16 and distance between copulatory openings 0.16-0.20 (\bar{x} = 0.18±0.01).

Types. HOLOTYPE: M, Philippines: Luzon I., Quezon Province, Mt. Banahaw, Dolores-Sta. Lucia Area, 21.xii.1999, A.T.Barrion, on dried banana leaf. PARATYPES: 1 F, same locality as holotype, 17.ix.99, E. R. Rico, on beating tray after jarring guava, coffee and banana plants; 21 M, 50 F and 32 immatures, same locality and habitat as holotype, 11.i.2000, A.T.Barrion; 3 M and 6 F, same locality as holotype, 17.i.2000, A.T.Barrion, on *Ficus* sp. leaves; 5M, 10F and 2 immatures, Laguna Prov., Caliraya, 23.ii.2000, A.T.Barrion, E. Rico & R. Abuyo, on dried banana leaf; 3M and 1F, same locality and habitat, 17.iv.2000, A.T.Barrion and R. Abuyo.

Etymology. The name *nangalisagus* is latinized from the Tagalog word '*nangalisag*,' in reference to the erection of body hairs when a person gets frightened and alludes to the thick mat of long dorsal hairs..

Biological notes. Majority of collected specimens were taken from senescing to dried banana leaves. Female *N. nangalisagus* sp. n. guards well its eggs covered by a thin white silk. Individual egg mass is 7-9 mm long and 5.5-8 mm wide and contains 8-12 eggs. Eggs hatched in 6-10 days but the spiderlings get out of the cocoon only after 4-7 days. In the presence of prey and without prey, females regularly ate their eggs.

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