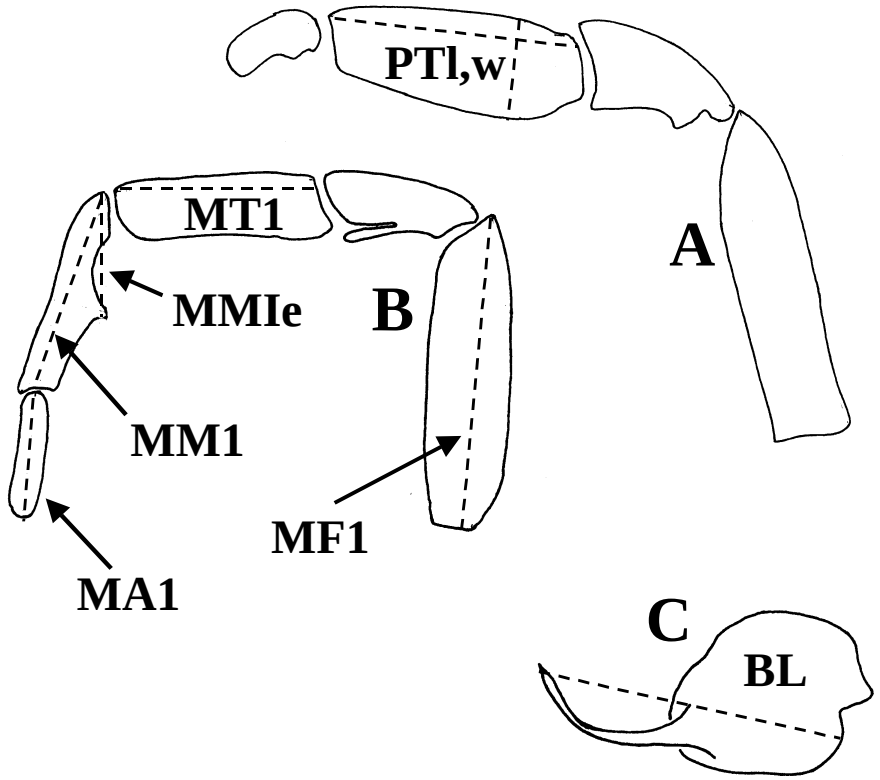


Figure 1. Quantitative measurements of male leg articles and palpal bulb. A. Left pedipalp in retrolateral view. B. Left metatarsus I in retrolateral view. C. Palpal bulb in ventral view.

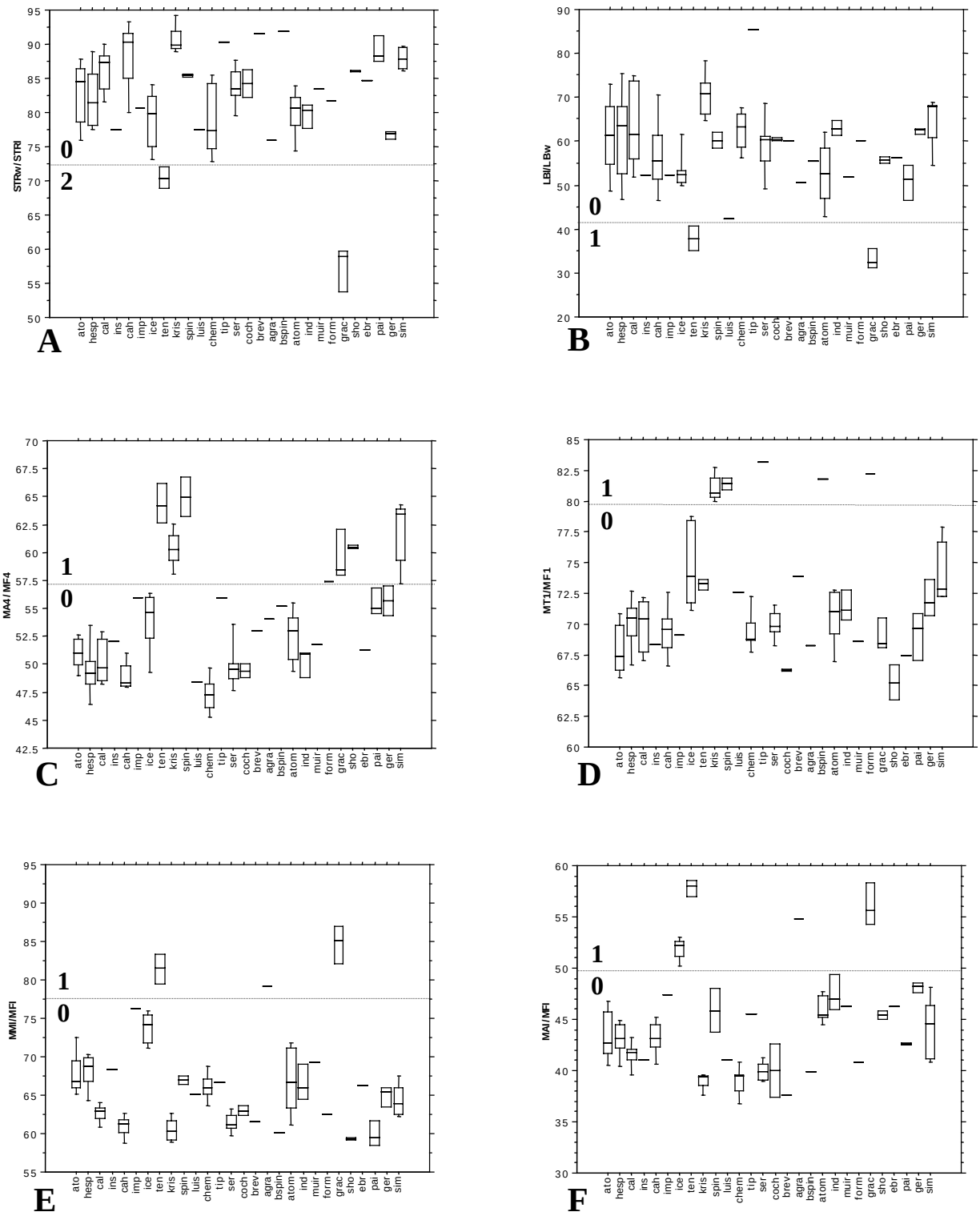


Figure 2. Quantitative values used in phylogenetic analysis, states are indicated above and below dotted line. A. Sternal shape (STRw/STRl). B. Labium shape (LBlw/LBLl). C. Tarsus IV length (MA4/MF4). D. Tibia I length (MT1/MF1). E. Metatarsus I length (MM1/MF1). F. Tarsus I length (MA1/MF1). Legend: ato = atomarius, atom = atomus, imp = improbulus, ins = insulanus, ice = icenoglei, ebr = ebriosus, muir = muiri, hes = hesperus, cah = cahuillus, luis = luiseni, ser = serranos, cal = calientus, chem = chemehuevi, sho = shoshonei, pai = paiutei tip = tipai, coch = cochesensis, ind = indegina, ger = gertschi, kris = kristenae, for = fornax, sim = simus, spin = spinaserratus, brev = brevifolius, bspin = brevispinus, agra = agracilapandus, ten = tenuis, grac = gracilapandus.

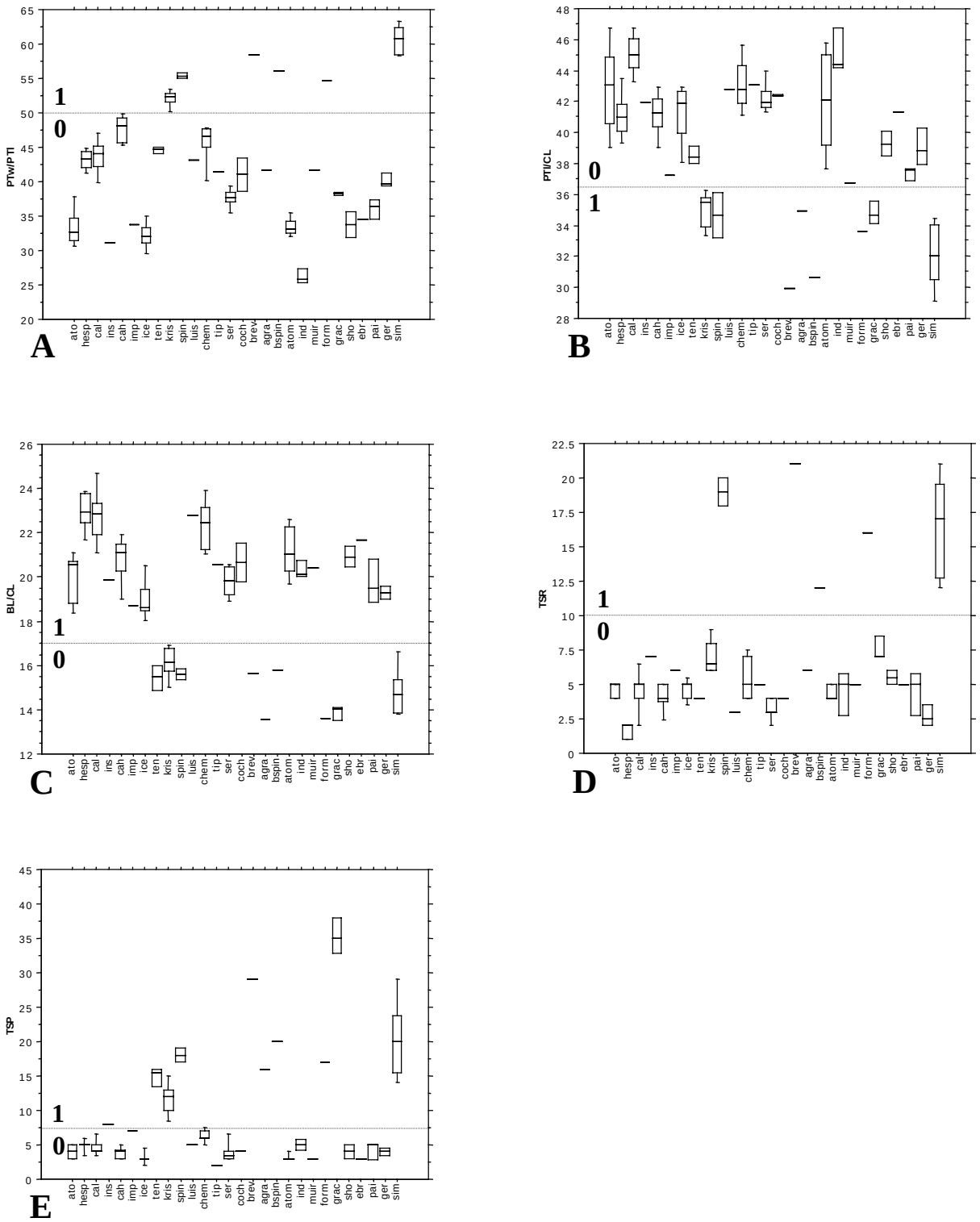


Figure 3. Quantitative values for secondary sexual and genitalic characters used in phylogenetic analysis, states are indicated above and below dotted line. A. Palpal tibia width (PTw/PTl). B. Palpal tibia length (PTl/CL). C. Palpal bulb length (BL/CL). D. Number of retrolateral tibia I spines (TSR). E. Number of prolateral tibia I spines (TSP). Legend same as in Figure 2.

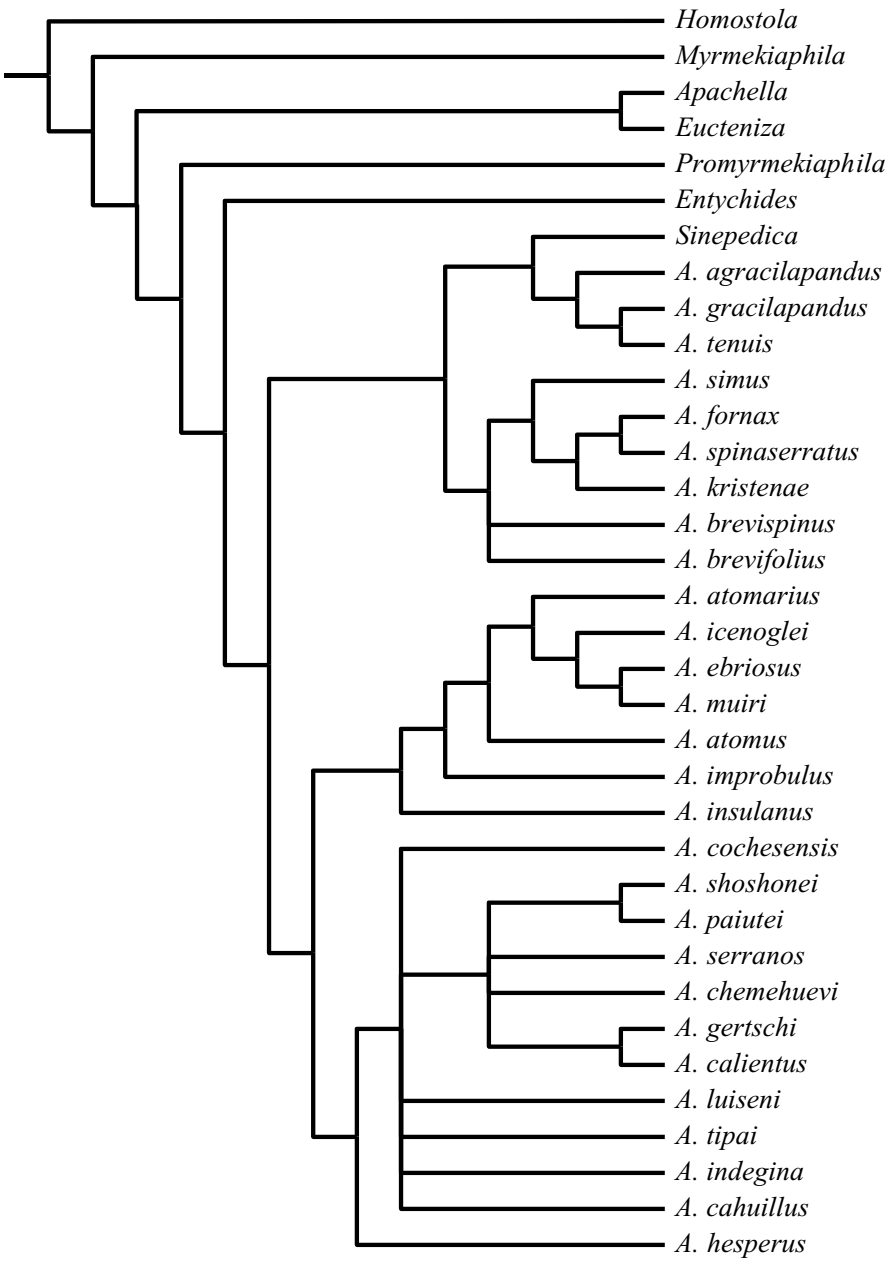


Figure 4. Strict consensus of 76 equally parsimonious trees with characters weighted equally (212 steps, CI = 0.38, RI = 0.72, RC = 0.28).

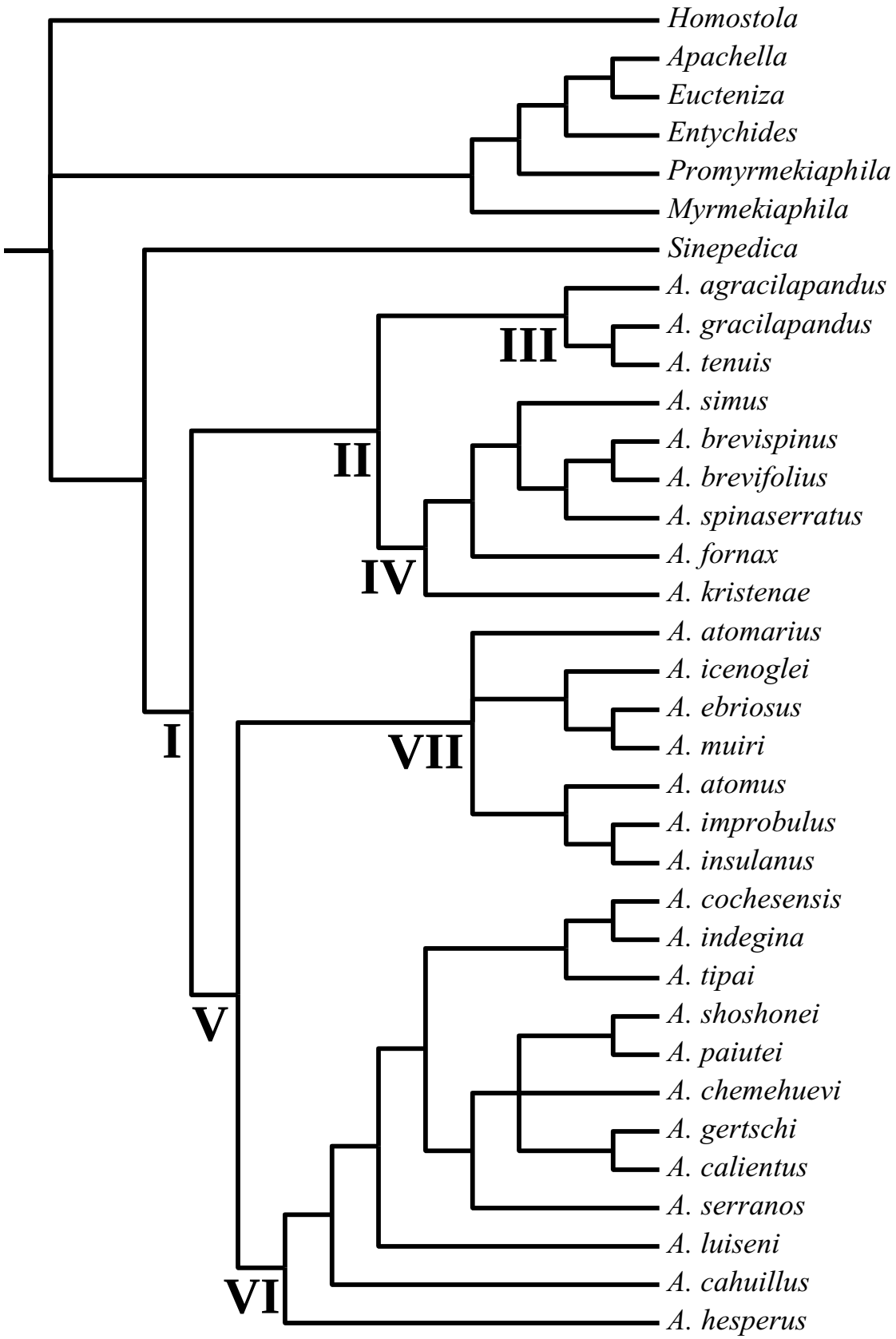


Figure 5. Strict consensus of nine equally parsimonious trees using implied weights (k = 2, 216 steps, CI = 0.38, RI = 0.71, RC = 0.29).

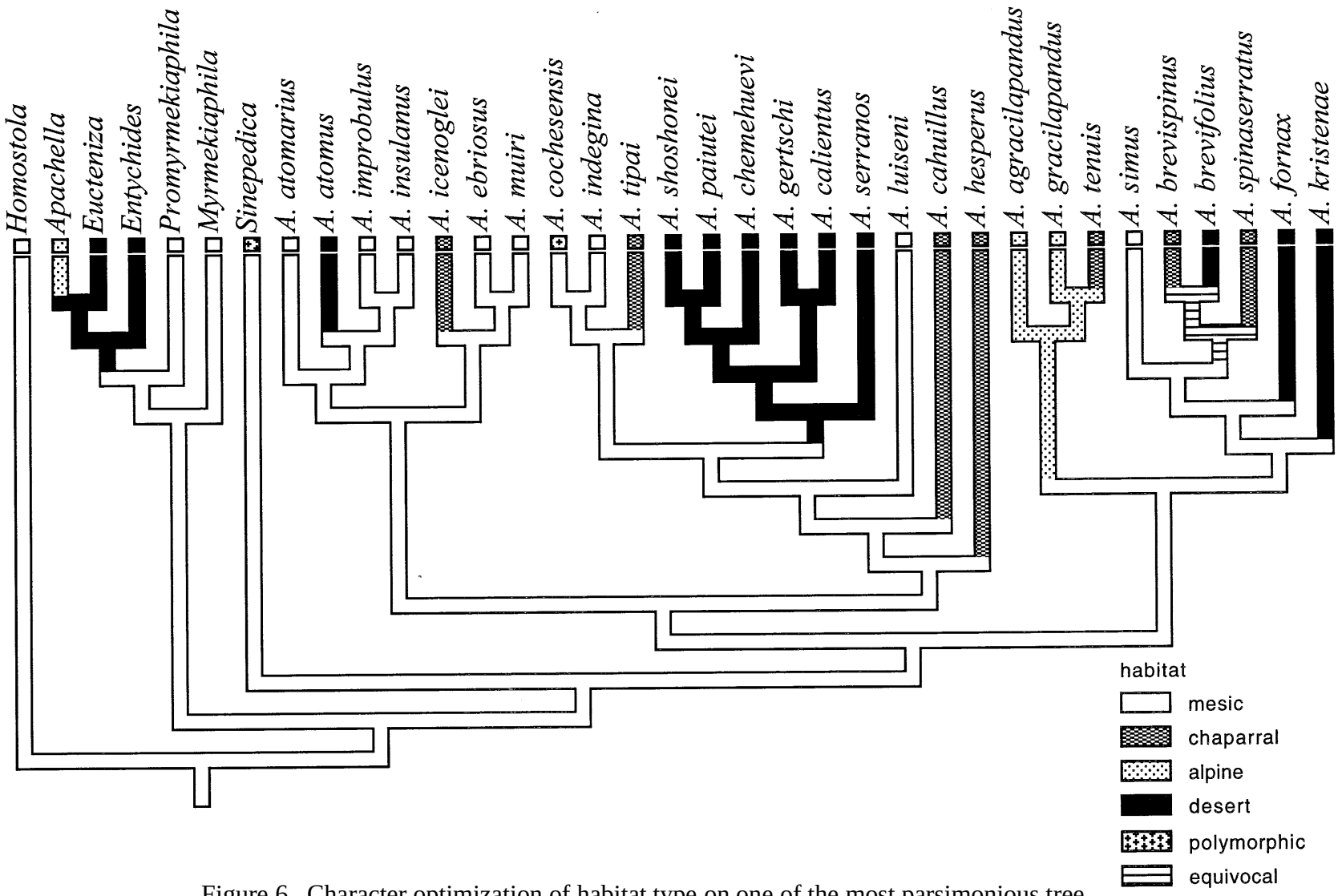


Figure 6. Character optimization of habitat type on one of the most parsimonious tree topologies based on implied weights.

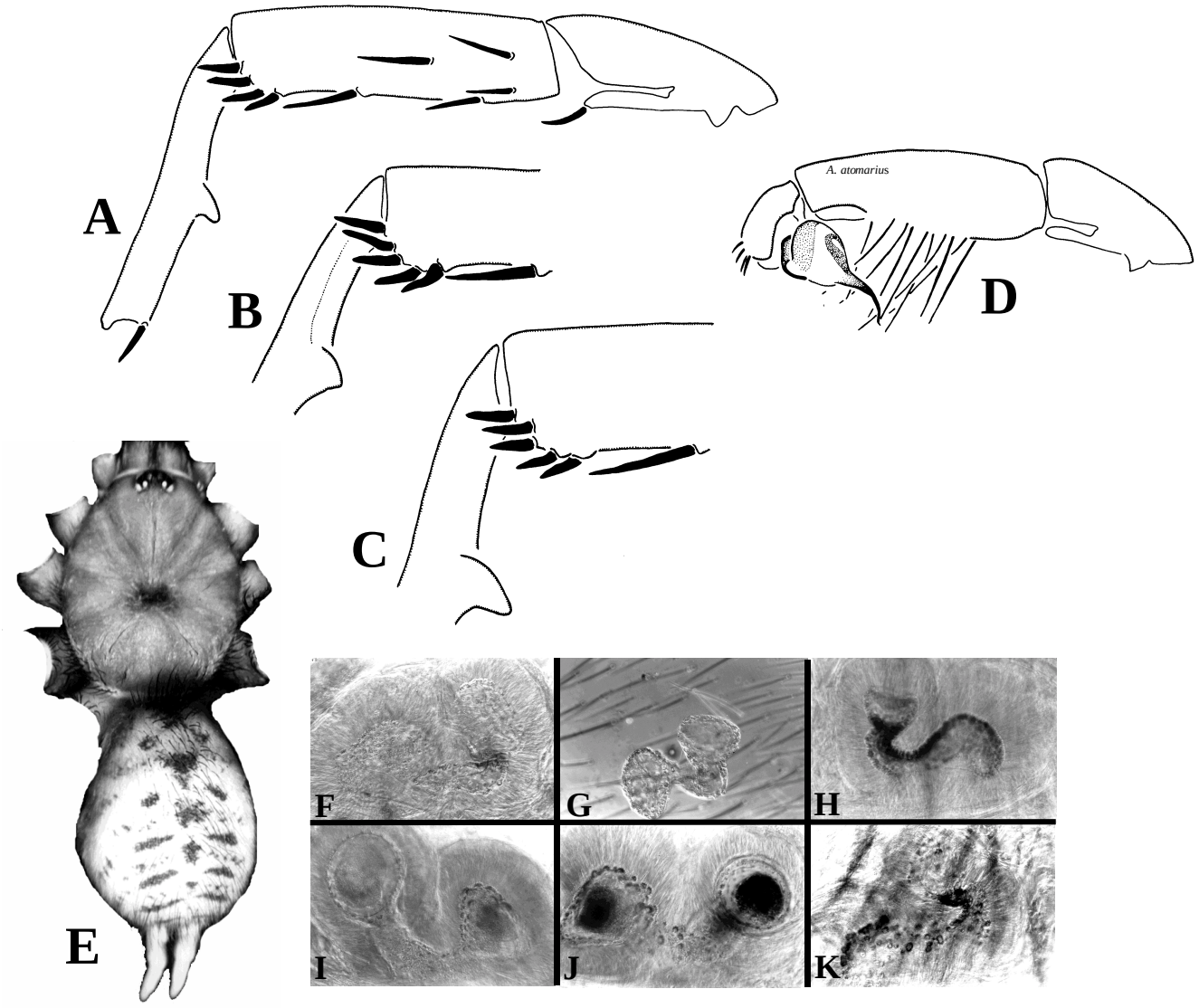


Figure 7. *Aptostichus atomarius* Simon. A. Male leg I retrolateral view, Los Angeles Co., Baldwin Hills. B. Male distal tibia and proximal metatarsus I in retrolateral view, San Luis Obispo Co., San Luis Obispo. C. same as B, Los Angeles Co., Eaton Canyon Park. D. Pedipalp in retrolateral view, Los Angeles Co., Baldwin Hills. E. Female from Los Angeles Co., Eaton Canyon Park. F - K. Spermathecae. F. holotype; G. Monterey Co., Carmel Drive Sand Dunes; H. right lobe, Santa Barbara Co., Santa Barbara Island; I, J. Monterey Co., Asilomar State Beach (I shows right lobe); K. Monterey Co., Pacific Grove.

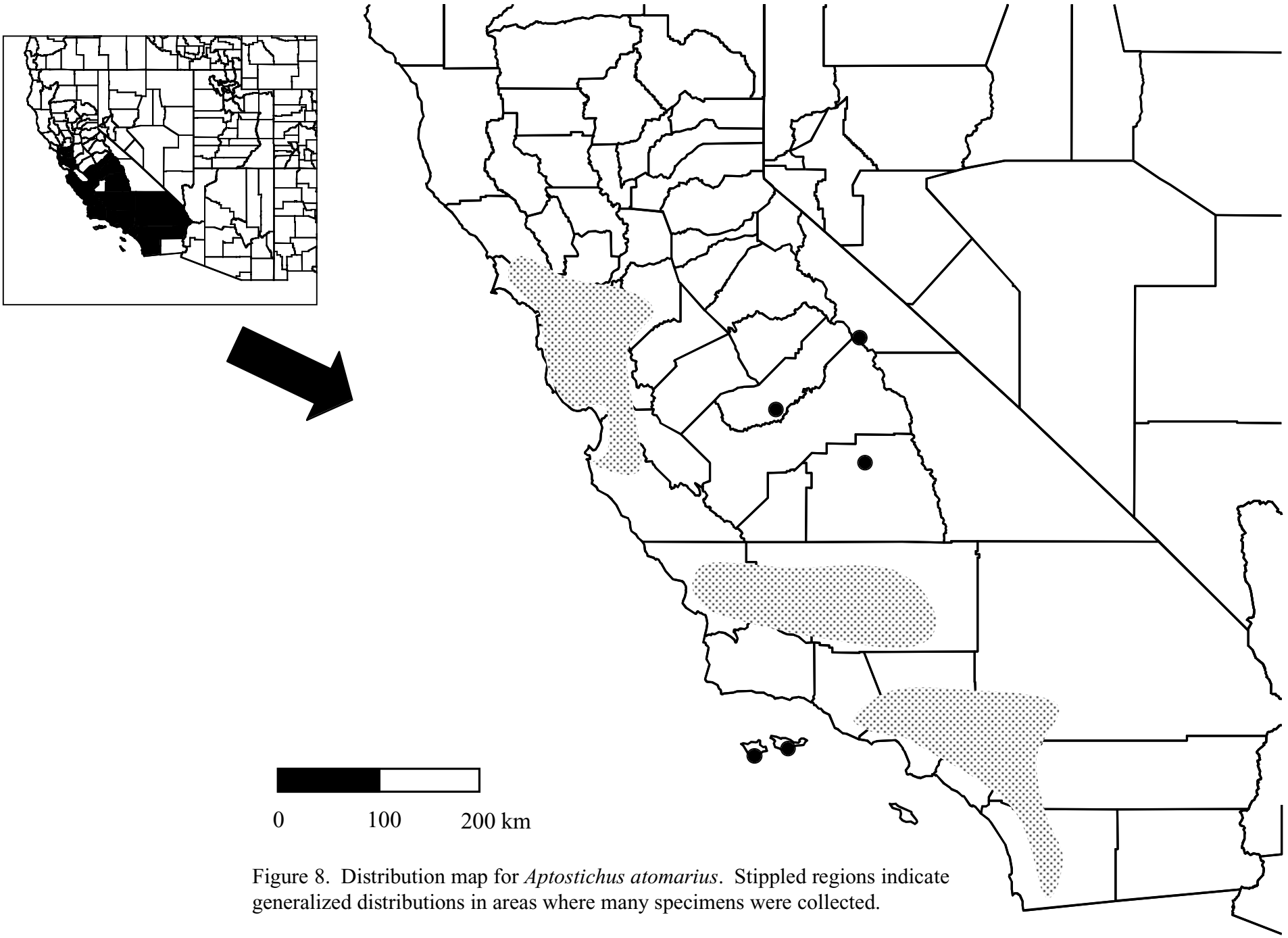


Figure 8. Distribution map for *Aptostichus atomarius*. Stippled regions indicate generalized distributions in areas where many specimens were collected.

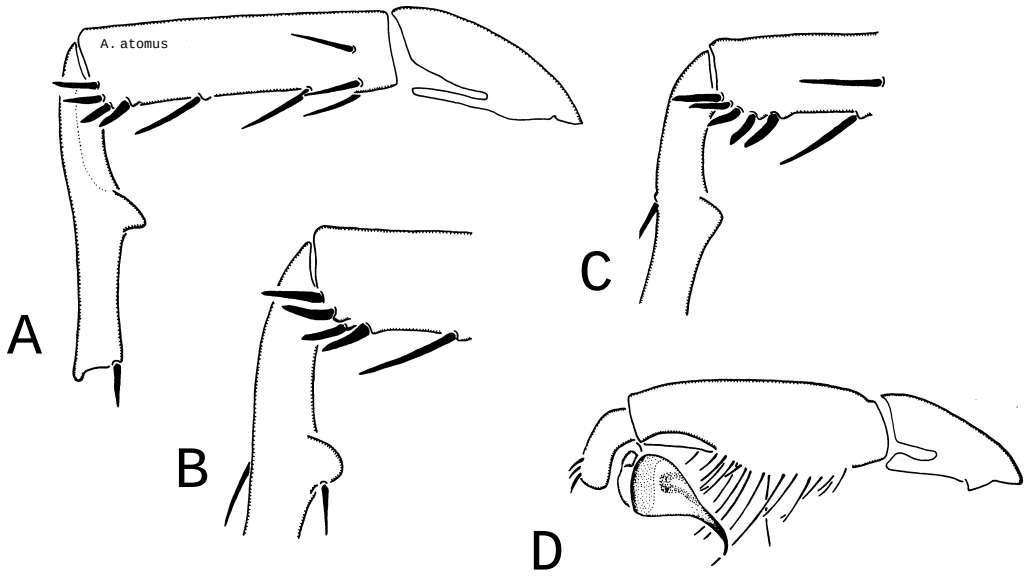


Figure 9. *Aptostichus atomus* new species, from the type locality. A. Male leg I, retrolateral view, holotype. B - C. Variation in male leg I TSRd spination. D. Pedipalp, retrolateral view, holotype.

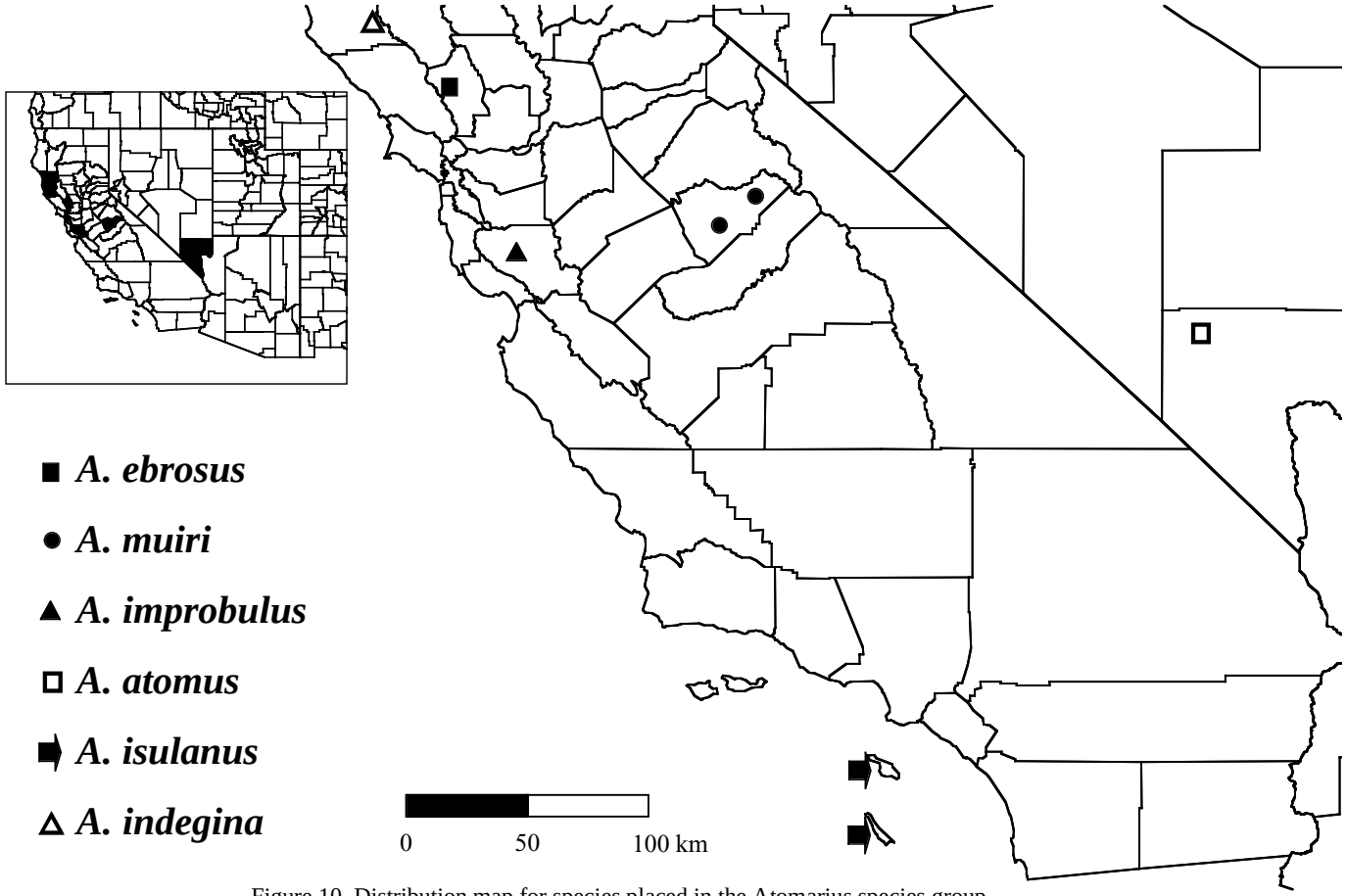


Figure 10. Distribution map for species placed in the Atomarius species group.

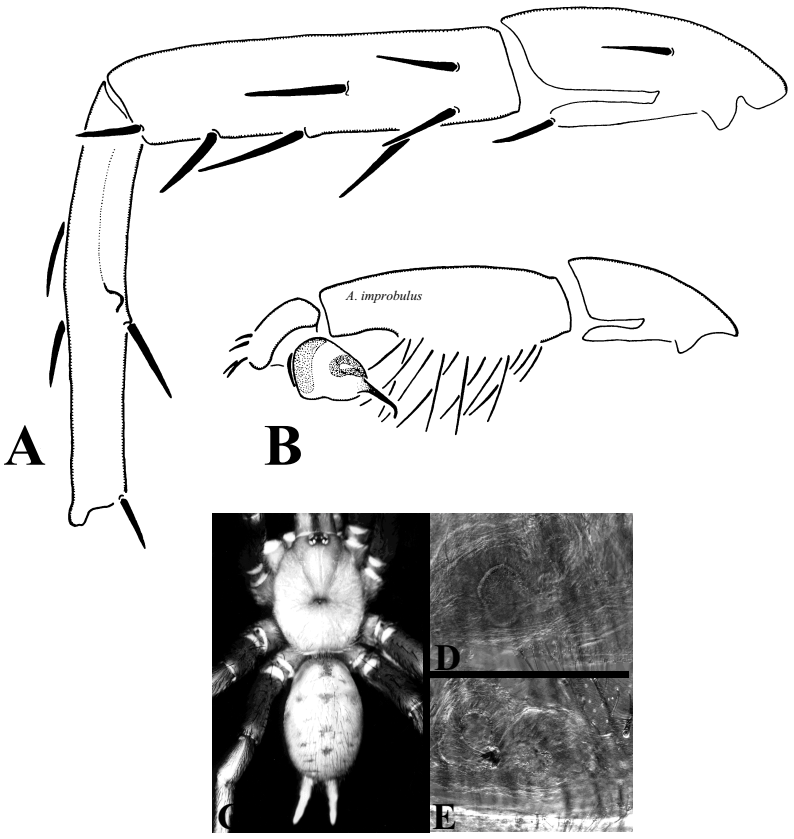


Figure 11. *Aptostichus improbulus* new species. A - C. Male holotype. A. Leg I in retrolateral view. B. Pedipalp in retrolateral view. C. Dorsal view. D - E. Spermathecae. D. Paratype. E. From type locality.

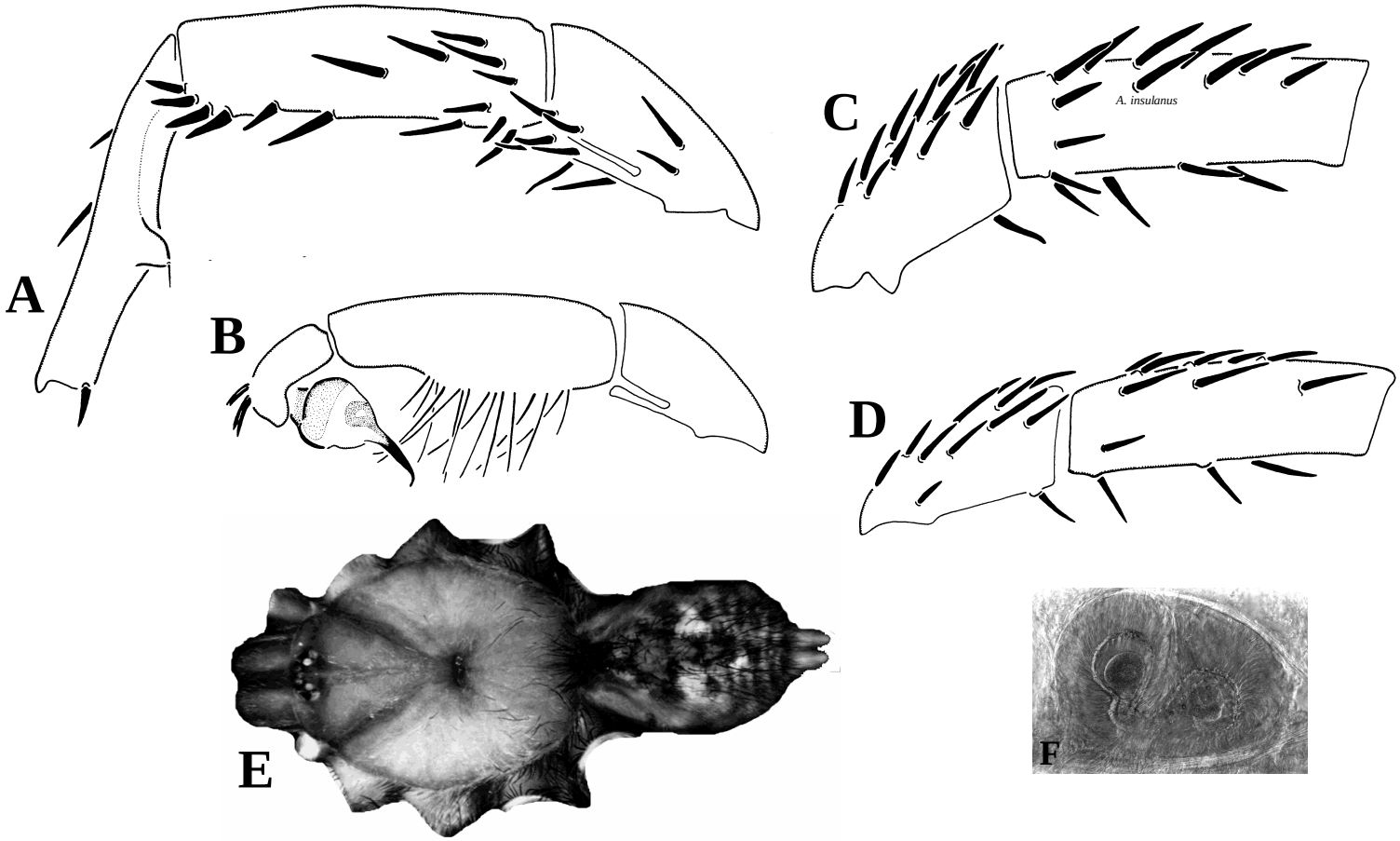


Figure 12. *Aptostichus insulanus* new species. A - C. Male holotype. A. Leg I in retrolateral view. B. Pedipalp in retrolateral view. C. Leg I patella and tibia in prolateral view. D. Leg I patella and tibia in prolateral view, male paratype. E. Right spermathecal lobe, female paratype.

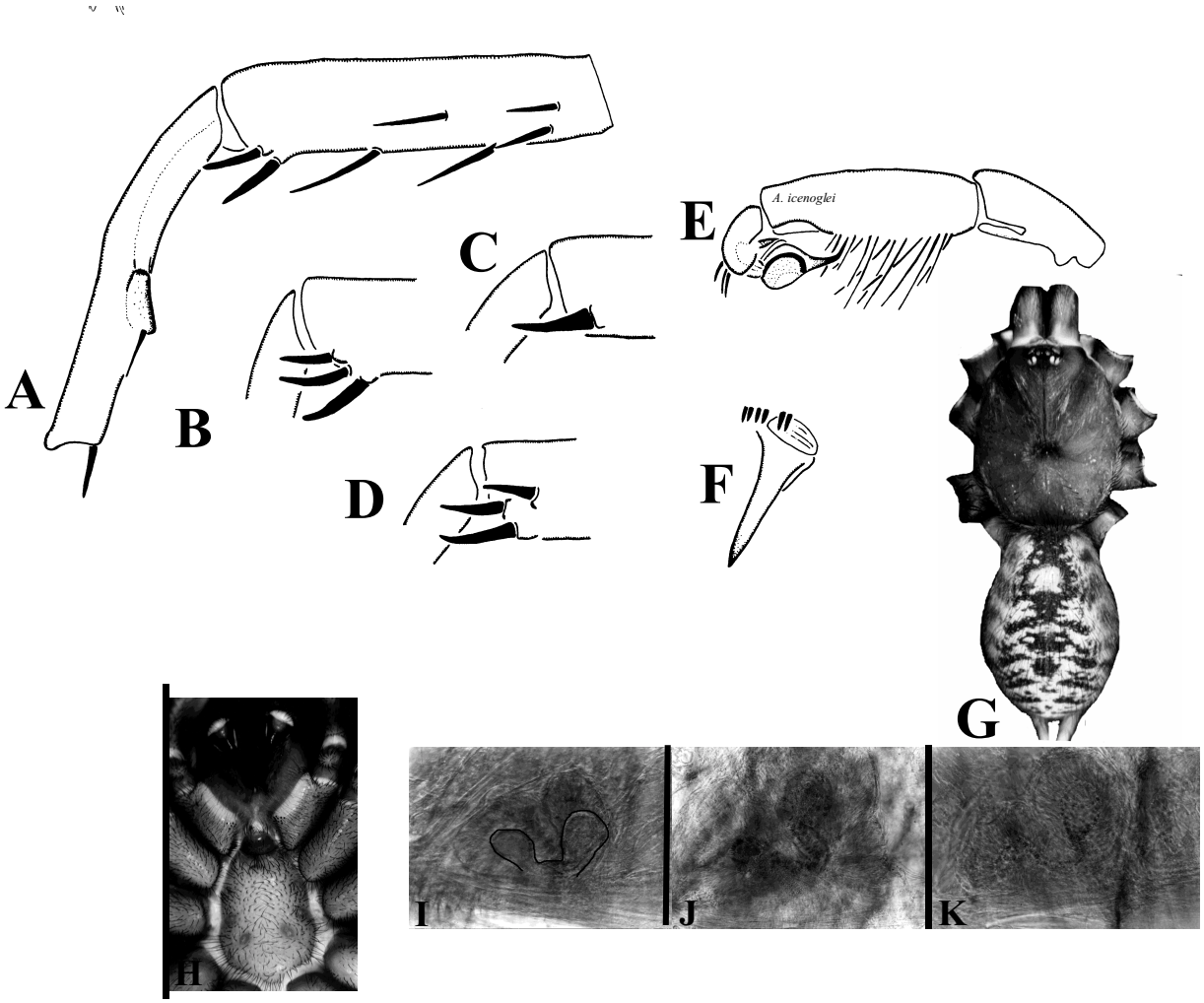


Figure 13. *Aptostichus icenoglei* new species. A - I. Specimens from Riverside Co., Winchester. A. Male leg I in retrolateral view, holotype. B - D. Male leg I, distal tibia and proximal metatarsus in retrolateral view. E. Pedipalp in retrolateral view, holotype. F. Cheliceral fang and rastellum, female paratype. G. Male holotype, dorsal view. H. Female paratype, sternum. I - K. Spermathecae. I. Female paratype, outline digitally enhanced. J - K. From Riverside Co., West of Mountain Center.

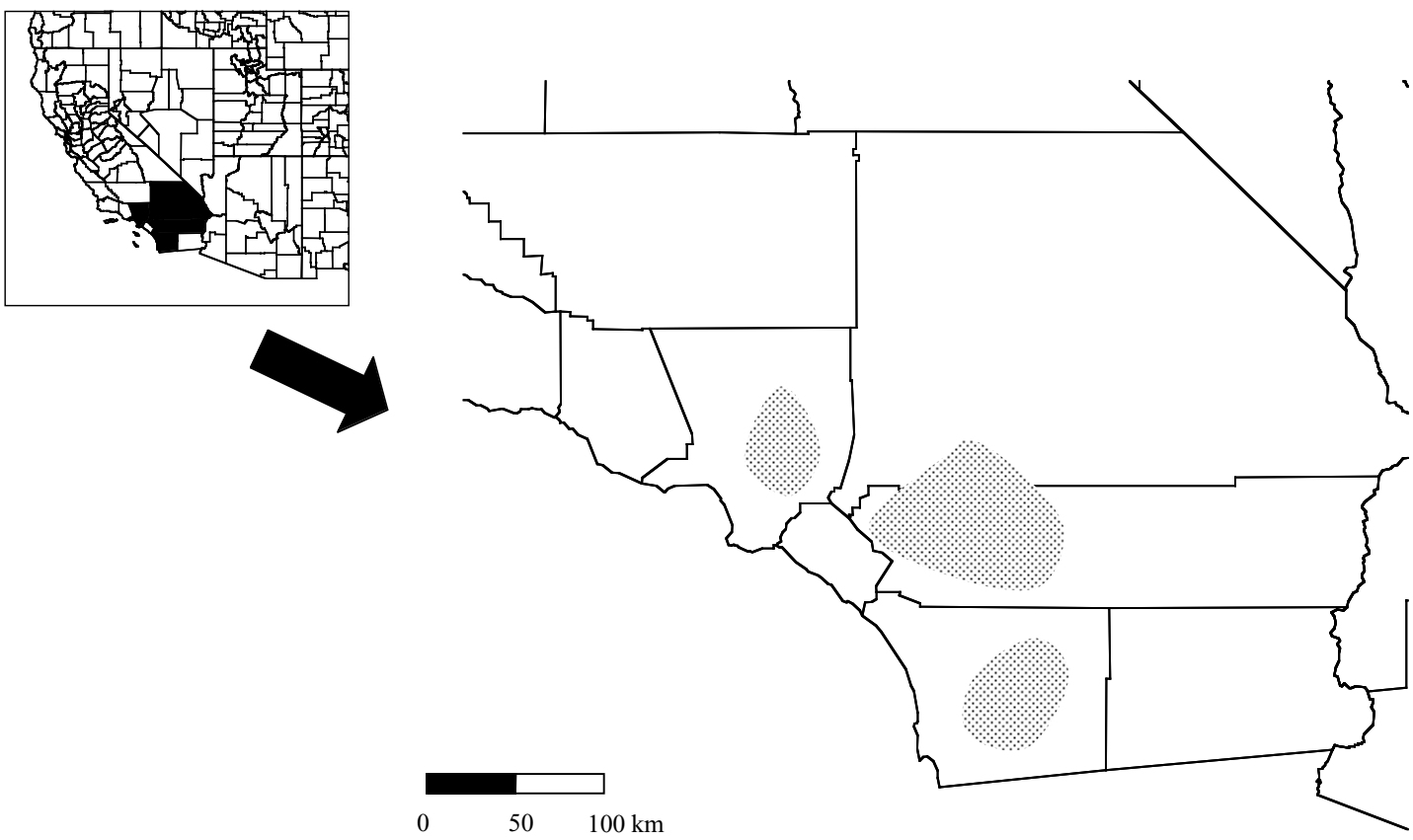


Figure 14. Distribution map for *Aptostichus icenoglei*. Stippled regions indicate generalized distributions in areas where many specimens were collected.

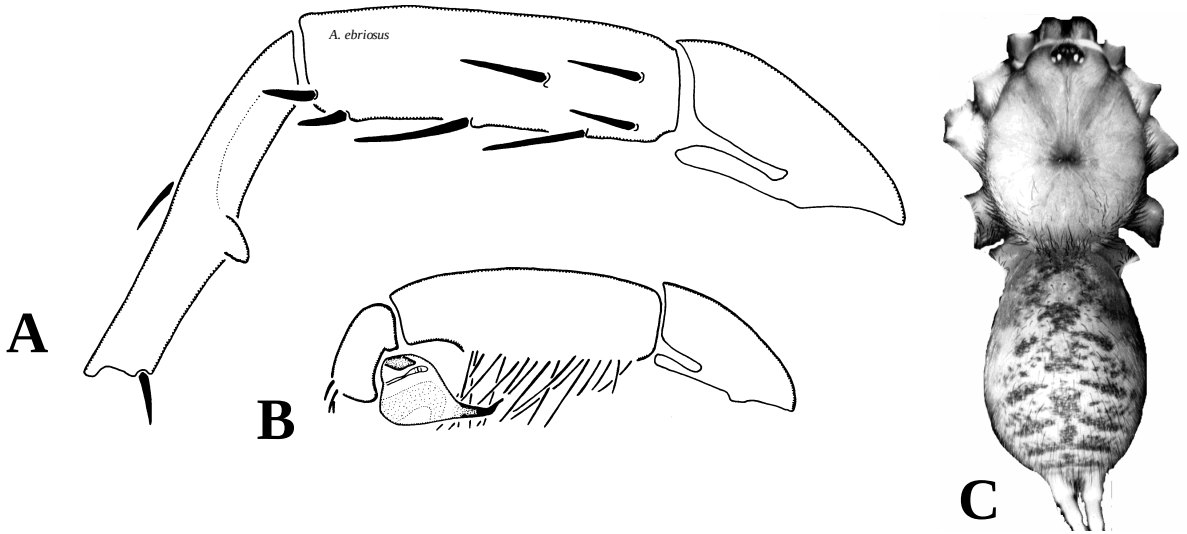


Figure 15. *Aptostichus ebriosus* male holotype. A. Male leg I, retrolateral view. B. Pedipalp, retrolateral view. C. Dorsal view.

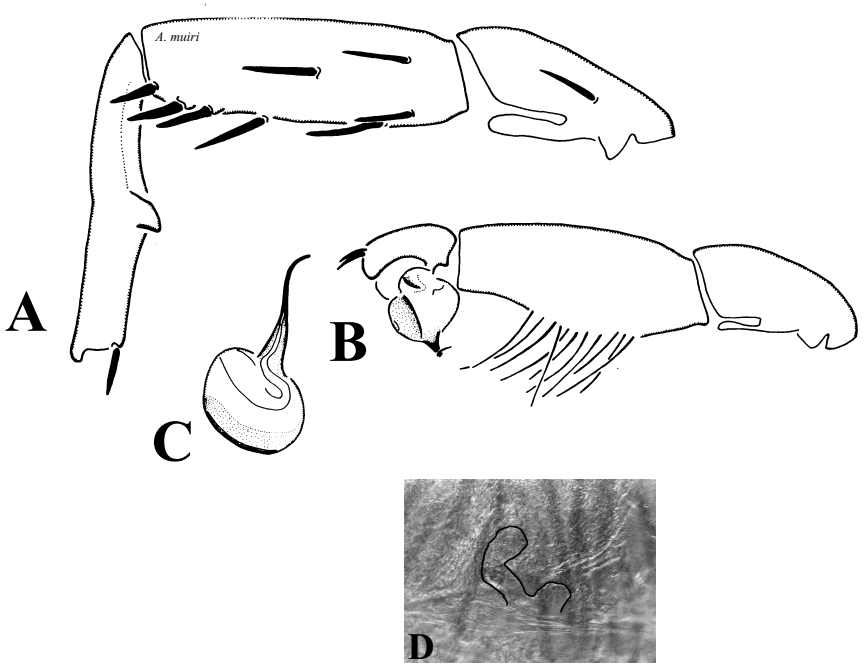


Figure 16. *Aptostichus muiri* male holotype and female paratype. A. Male leg I, retrolateral view. B. Pedipalp, retrolateral view. C. Palpal bulb, ventral view. D. Right spermathecal bulb, digitally enhanced outline.

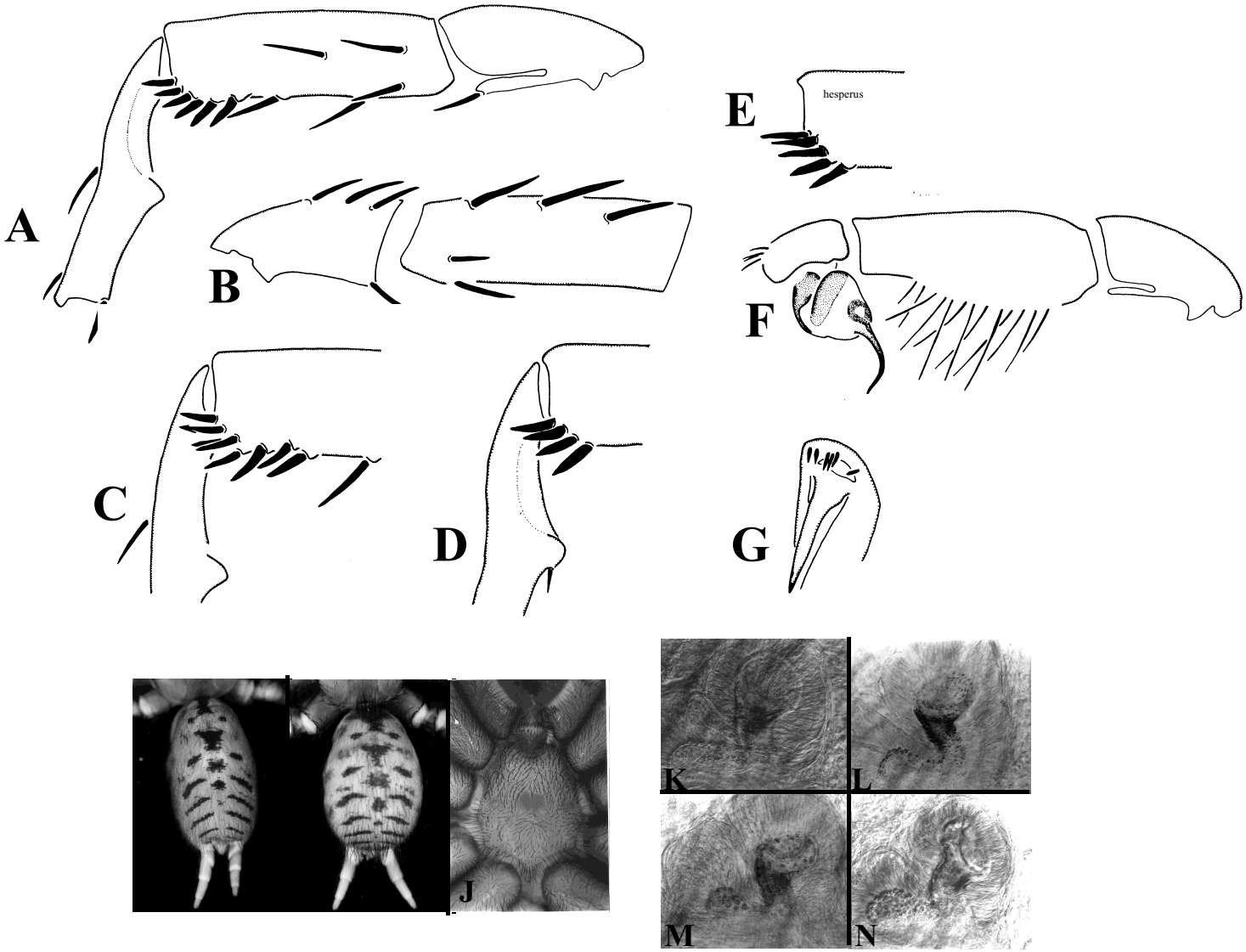


Figure 17. *Aptostichus hesperus* (Chamberlin). A, B. Male leg I prolateral and retrolateral view, from Riverside Co., Winchester. C - E. Male leg I, tibia and metatarsus. C. San Bernardino Co.; Yucaipa; D. Winchester; E. Riverside Co., University of California Riverside (UCR) Campus. F. Pedipalp, UCR. G. Female rastellum, shows prolaterally offset rastellar spine. H - J. Specimens from Winchester. H. male abdomen; I. female abdomen; J. female sternum, shows contiguous posterior sigilla. K - N. Spermathecal bulb. K. 1 mile north of Riverside; L, M. Winchester; N. UCR.

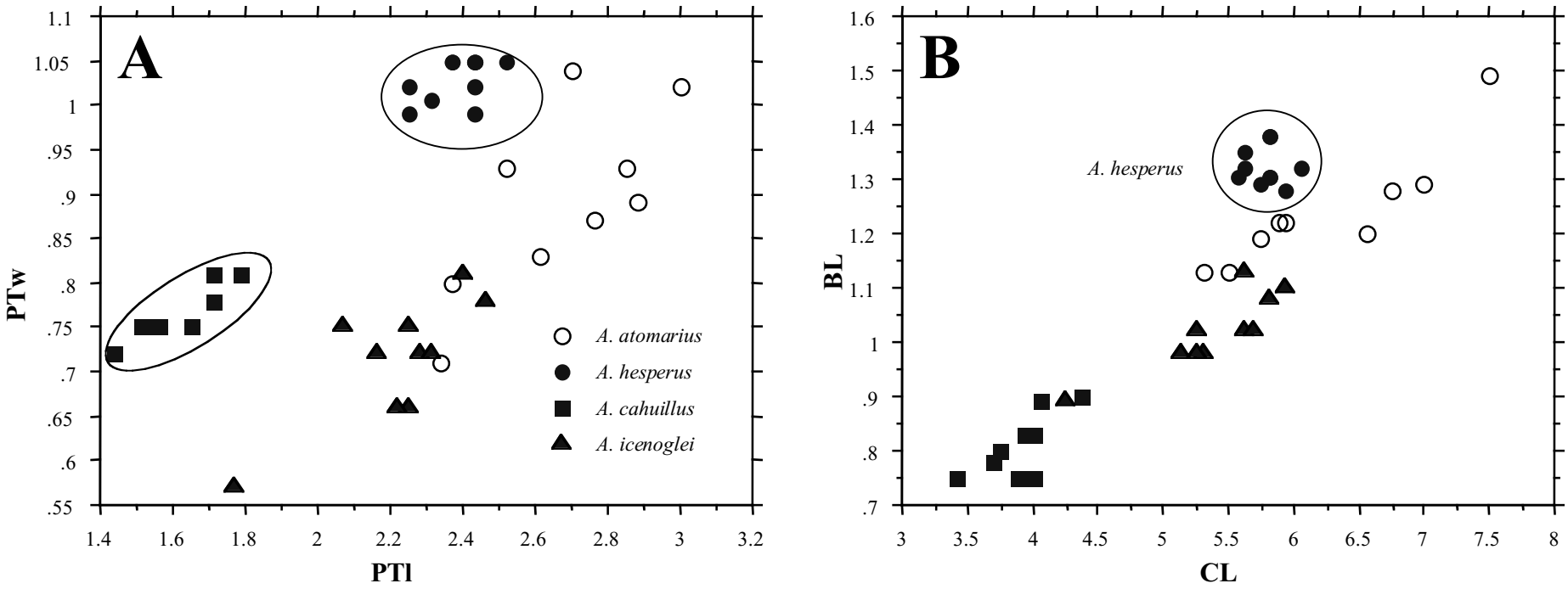


Figure 18. Scattergrams of characters that help distinguish the symaptric species *A. atomarius, A. icengolei, A. hesperus* and *A. cahuillus*. A. PTl plotted against PTw. B. CL plotted against BL.

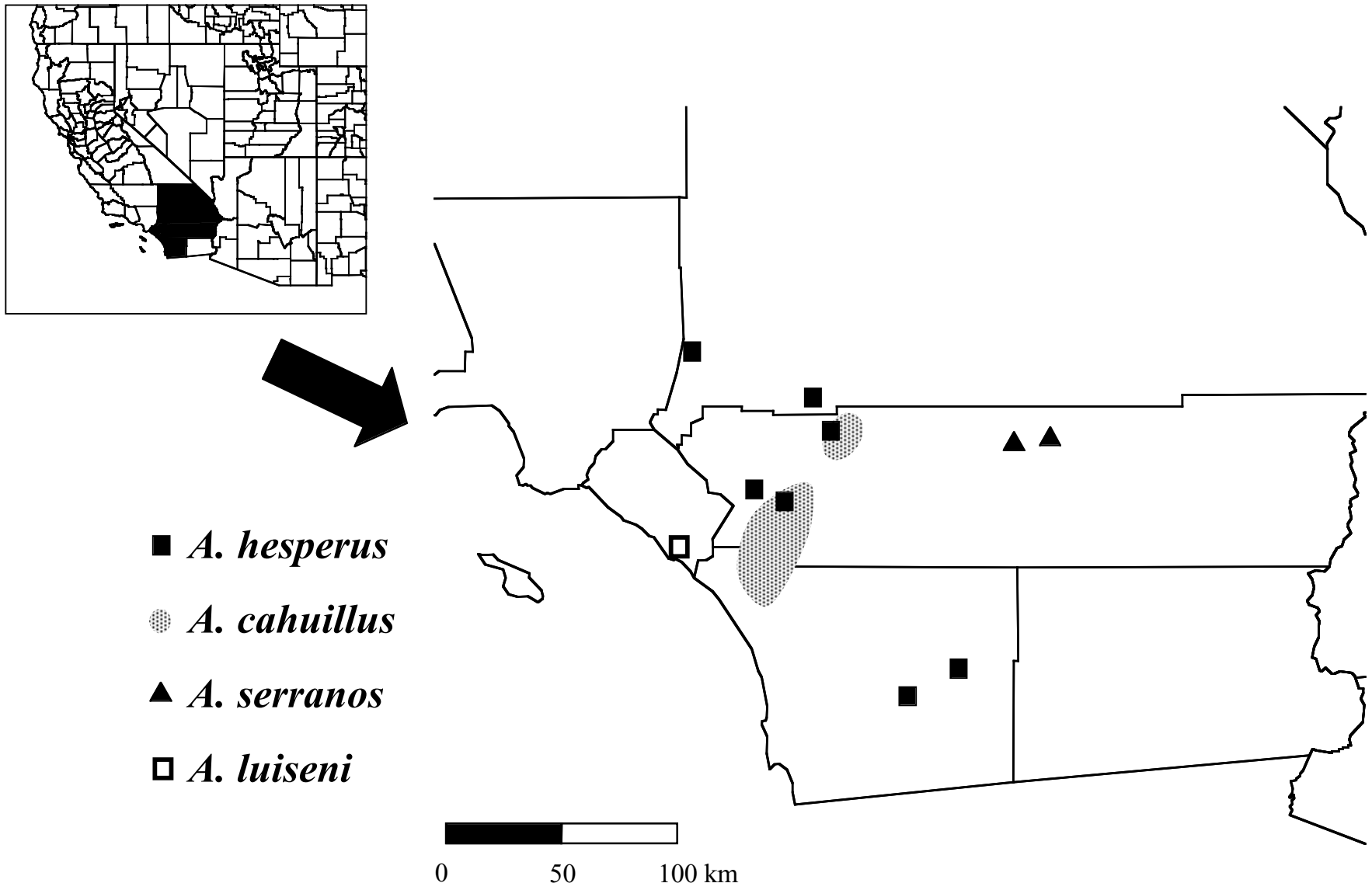


Figure 19. Distribution map for the Hesperus species group species *A. hesperus*, *A. cahuillus, A. serranos,* and *A. luiseni*.

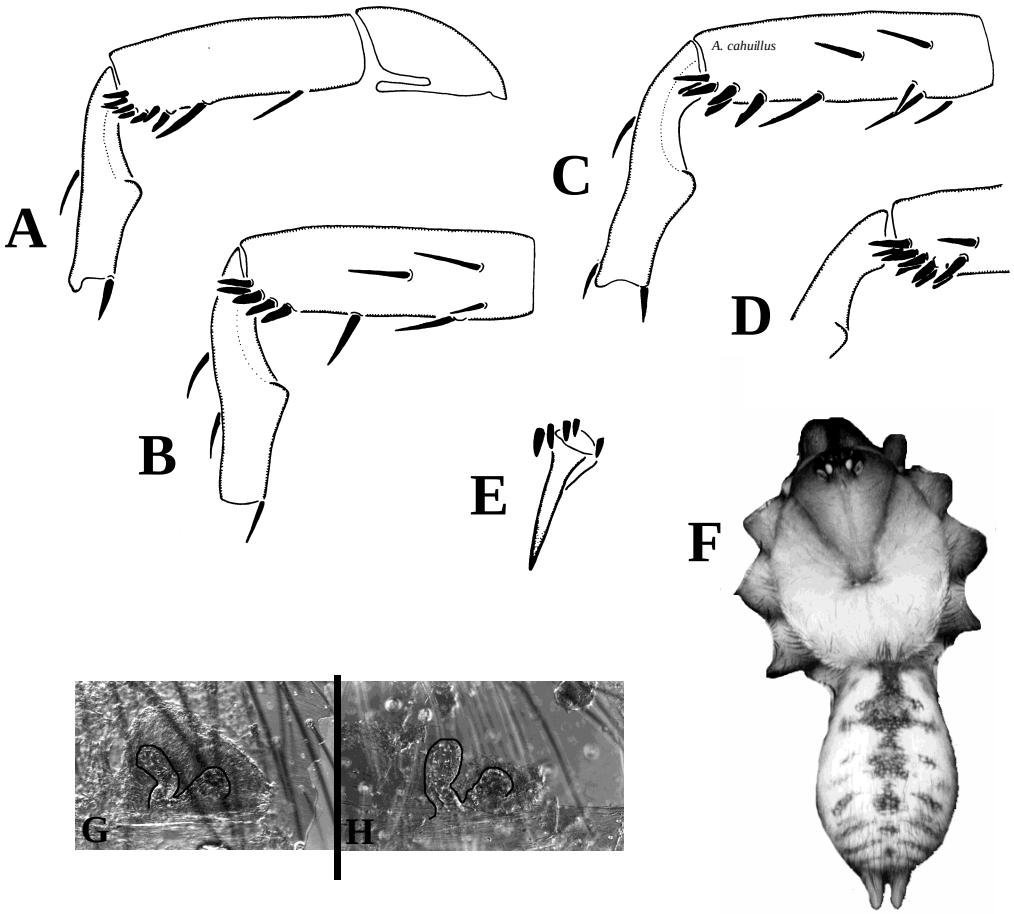


Figure 20. *Aptostichus cahuillus* new species. A - D. Tibia and metatarsus of male leg I, retrolateral view. A. San Bernardino Co., Alta Loma; B. Male holotype from Riverside Co., Winchester; C. Winchester; D. Winchester. E. Rastellum, female paratype. F. Male holotype. G, H. Spermathecal bulbs, both digitally enhanced. G. Paratype. H. Winchester.

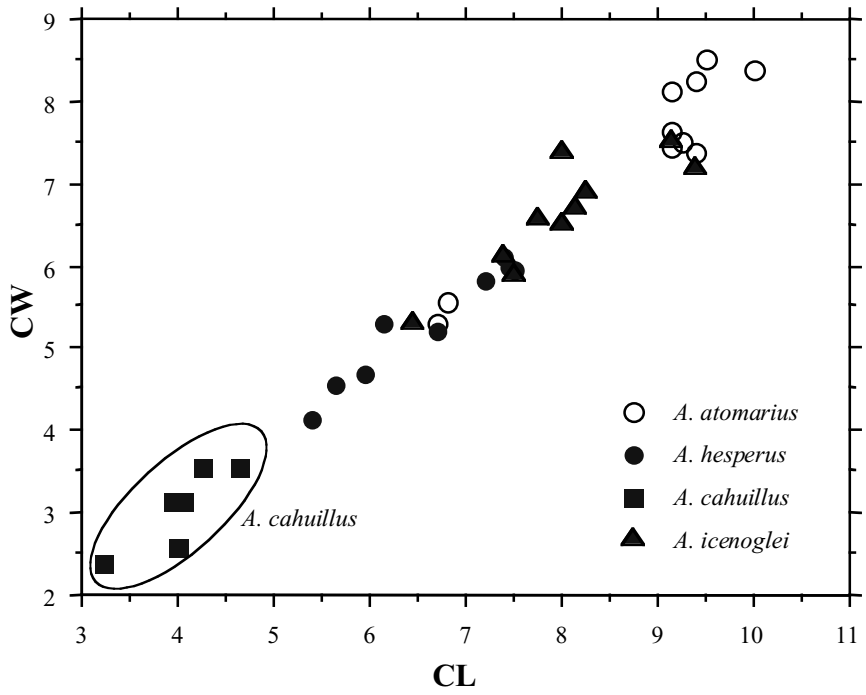


Figure 21. Scattergram of CL plotted against CW that helps to distinguish the symaptric species *A. atomarius, A. icengolei, A. hesperus* and *A. cahuillus*.

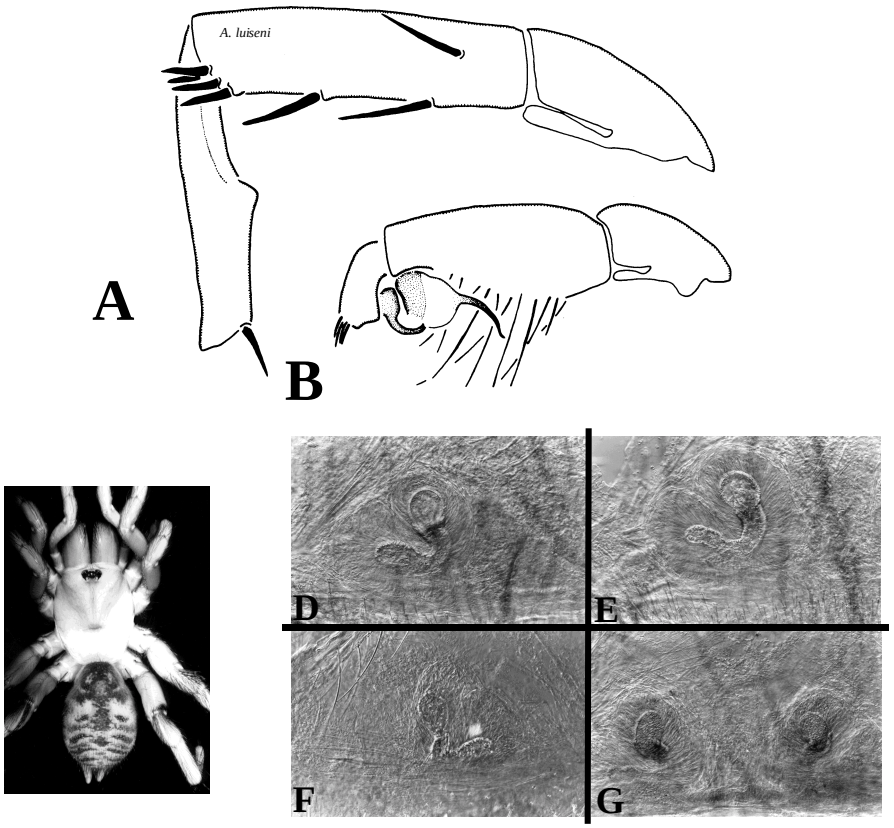


Figure 22. *Aptostichus luiseni* new species. A, B. Male holotype. A. Leg I, retrolateral view; B. Pedipalp, retrolateral view. C, D. Female paratype; C. Dorsal view; D. Spermathecal bulb. E - G. Spermathecal bulbs of additional specimens from the type locality (F is the right bulb, G illustrates both bulbs).

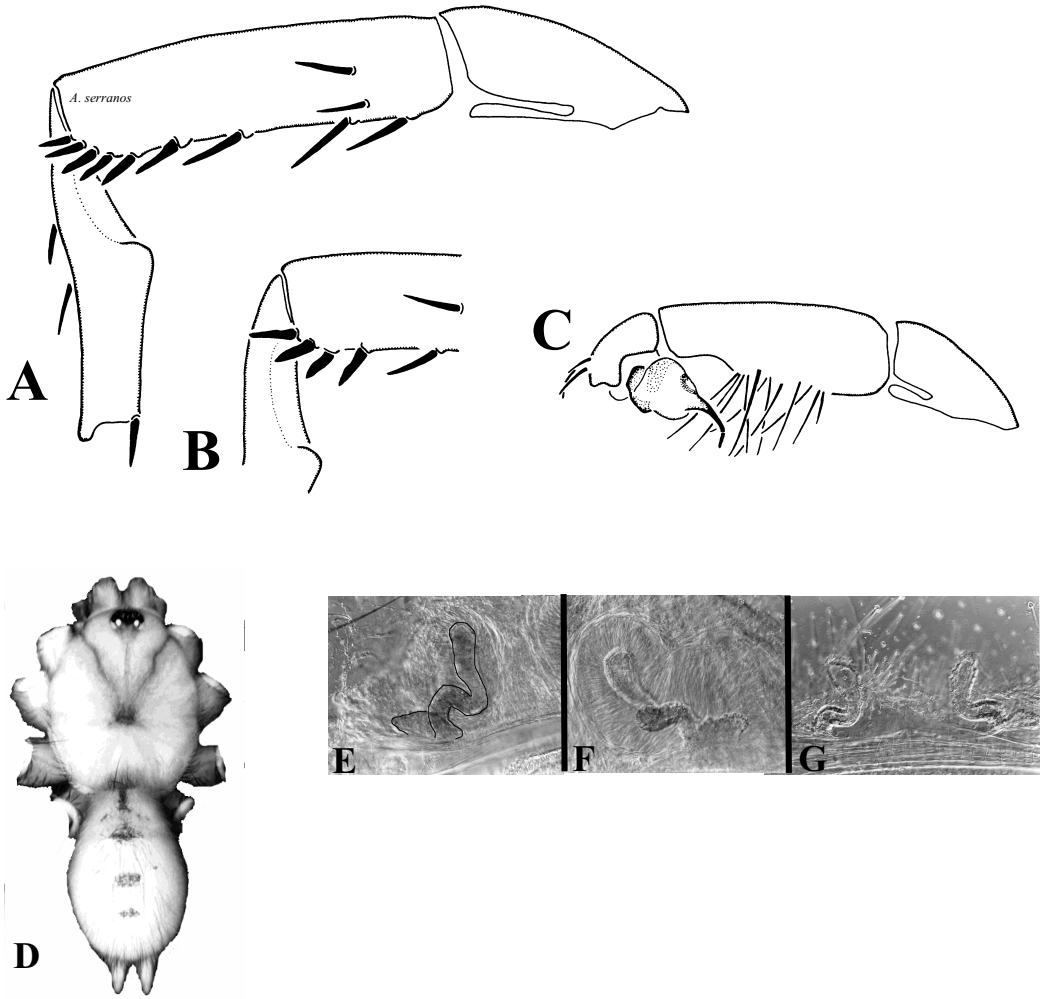


Figure 23. *Aptostichus serranos* new species. A, C, D. Male holotype. A. Leg I, retrolateral view. B. Tibia and metatarsus I retrolateral view, from type locality. C. Pedipalp, retrolateral view. D. Dorsal view. E - G. Spermathecal bulbs. E. Female paratype, digitally enhanced; F. Right bulb, from type locality. G. Both bulbs, from type locality.

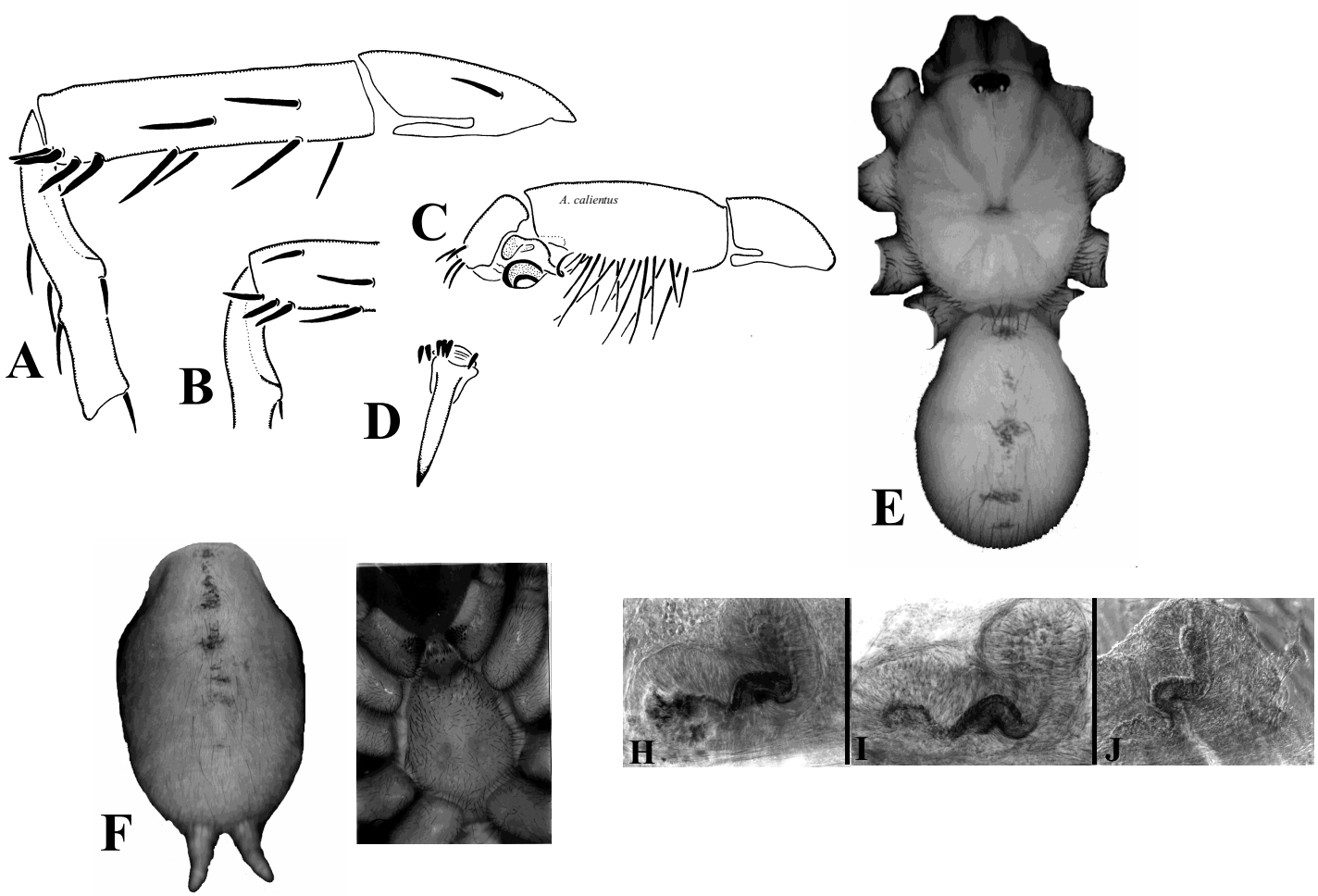


Figure 24. *Aptostichus calientus* new species. A. Male leg I, retrolateral view, holotype. B. Tibia and metatarsus I, retrolateral view, from type locality. C. Pedipalp, retrolateral view, holotype. D. Rastellum, female paratype. E. Dorsal view, holotype. F. Abdomen, female paratype. G. Sternum, female paratype. H - J. Spermathecal bulb. H. paratype. I, J. Additional bulbs from type locality.

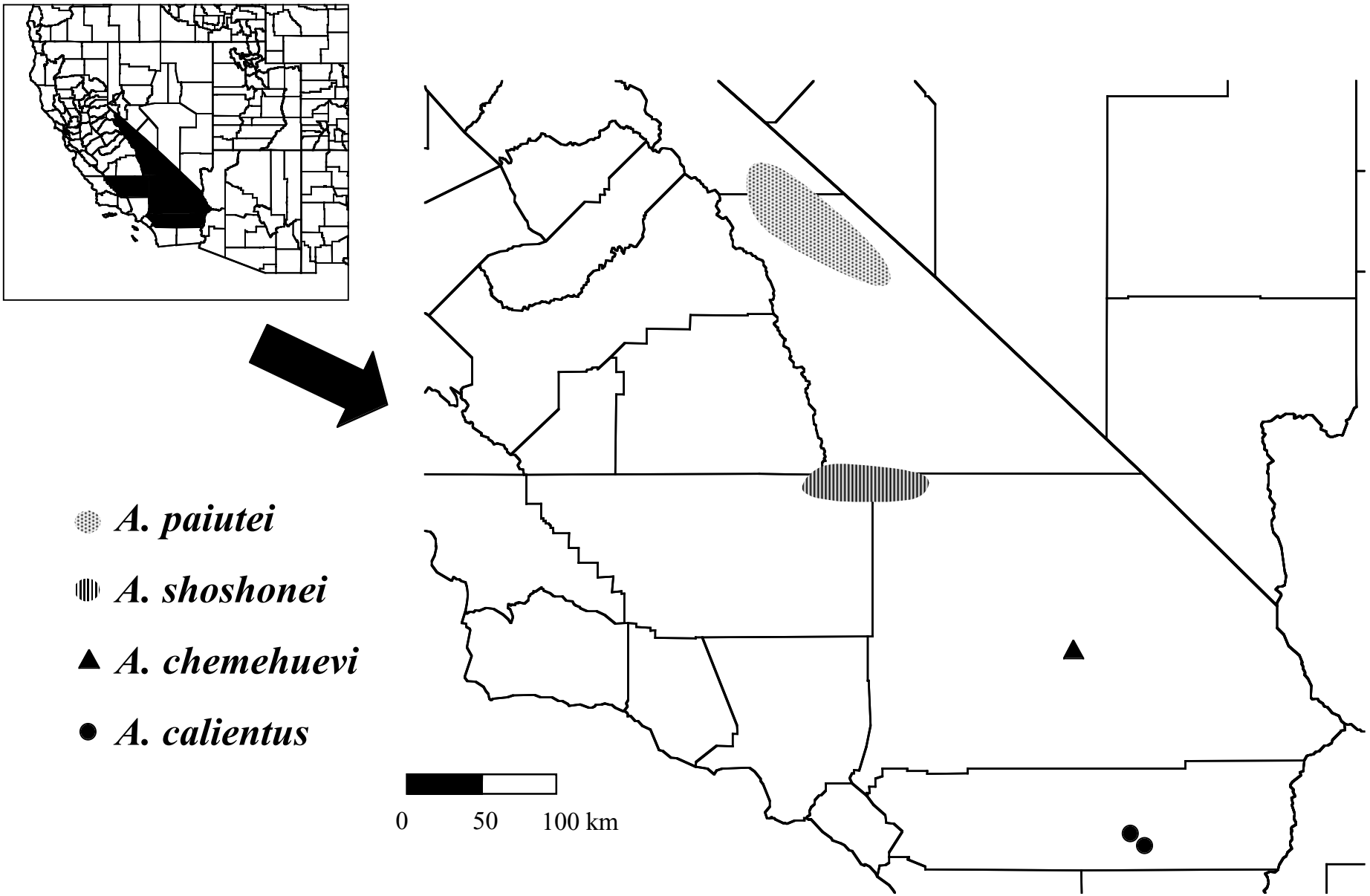


Figure 25. Distribution map for the Hesperus species group species *A. pauitei*, *A. shoshonei, A. chemehuevi,* and *A. calientus*.

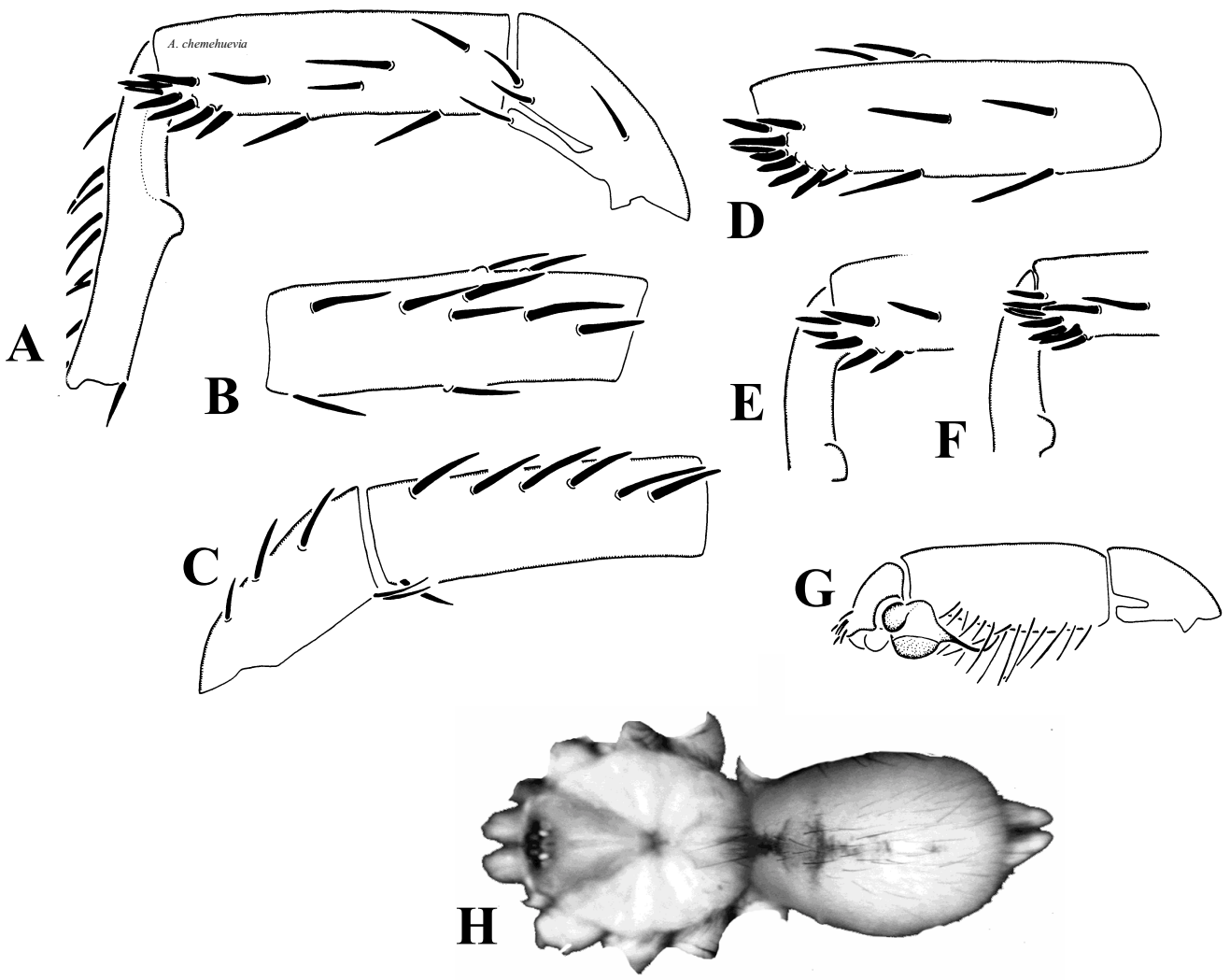


Figure 26. *Aptostichus chemehuevi* new species. A. Male leg I, retrolateral view, holotype. B. Male tibia I, prolateral view, from type locality. C. Male tibia and patella I, prolateral view, holotype. D. Male tibia I, retrolateral view, from type locality. E, F. TSRd spination, specimens from type locality. G. Pedipalp, retrolateral view, holotype. H. Dorsal view, holotype.

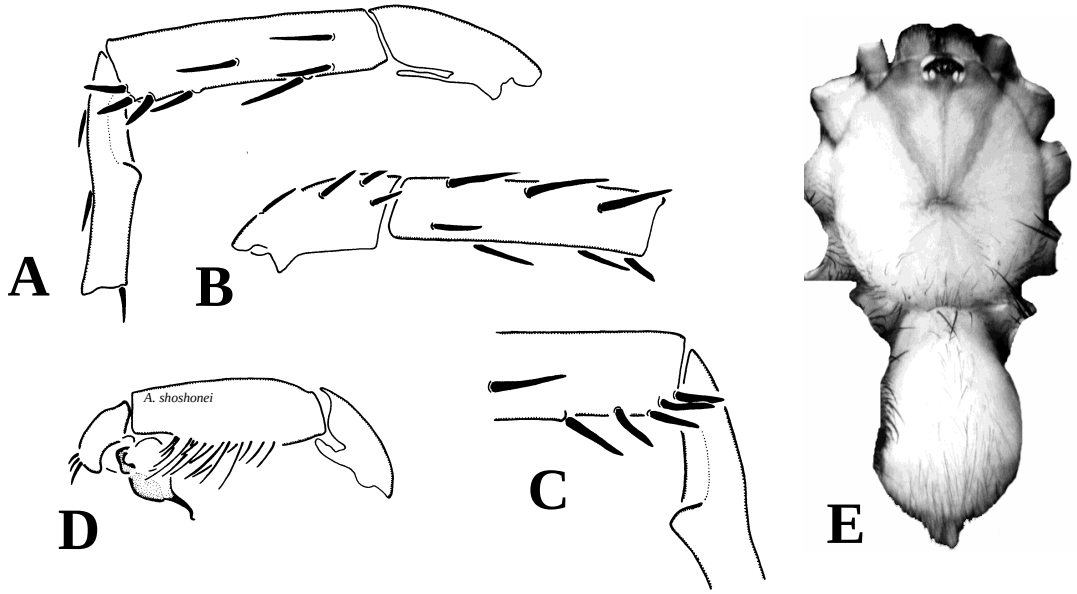


Figure 27. *Aptostichus shoshonei* new species. A - C. Male leg I. A. Holotype, retrolateral view. B. Holotype, prolateral view. C. TSRd spination, paratype. D. Pedipalp, retrolateral view, holotype. E. Dorsal view, holotype.

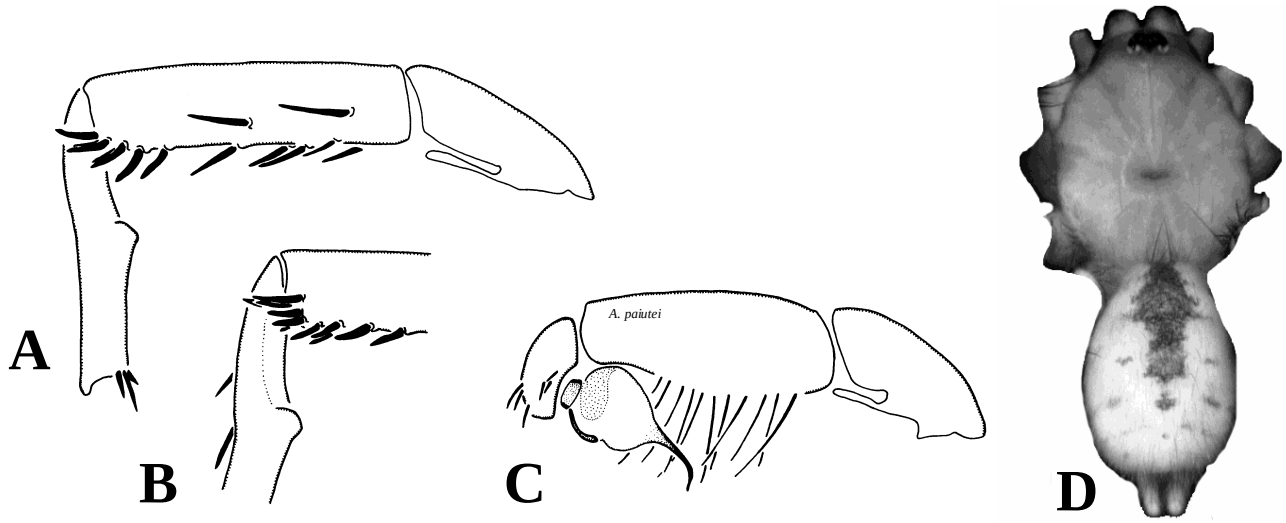


Figure 28. *Aptostichus paiutei* new species. A - B. Male leg I in retrolateral view. A. Holotype; B. Paratype. C. Pedipalp, in retrolateral view, holotype. D. dorsal view, holotype.

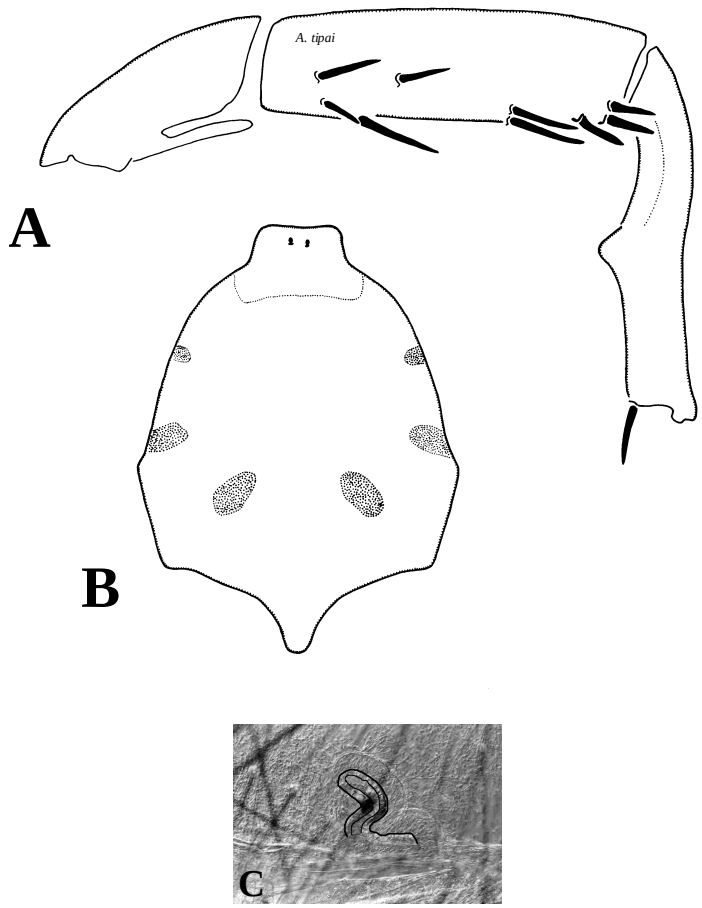


Figure 29. *Aptostichus tipai* new species. A. Male leg I, left leg in retrolateral view. B. Sternum of female paratype. C. Right spermathecal bulb, female paratype.

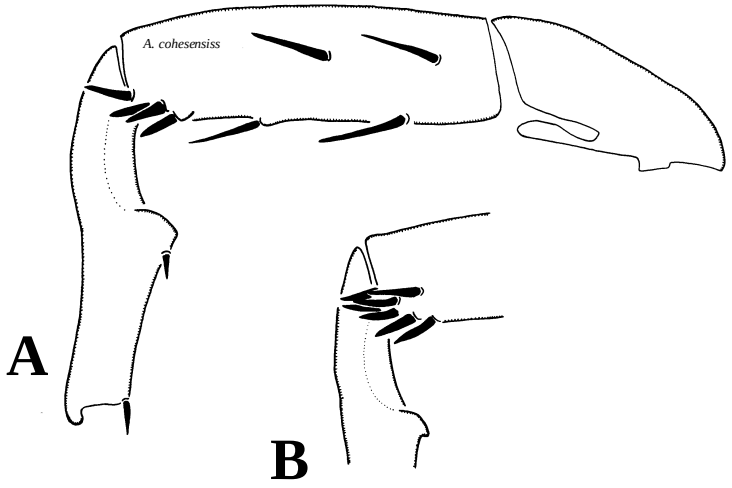


Figure 30. *Aptostichus cochesensis* new species. A, B. Male leg I. A. Holotype. B. Paratype.

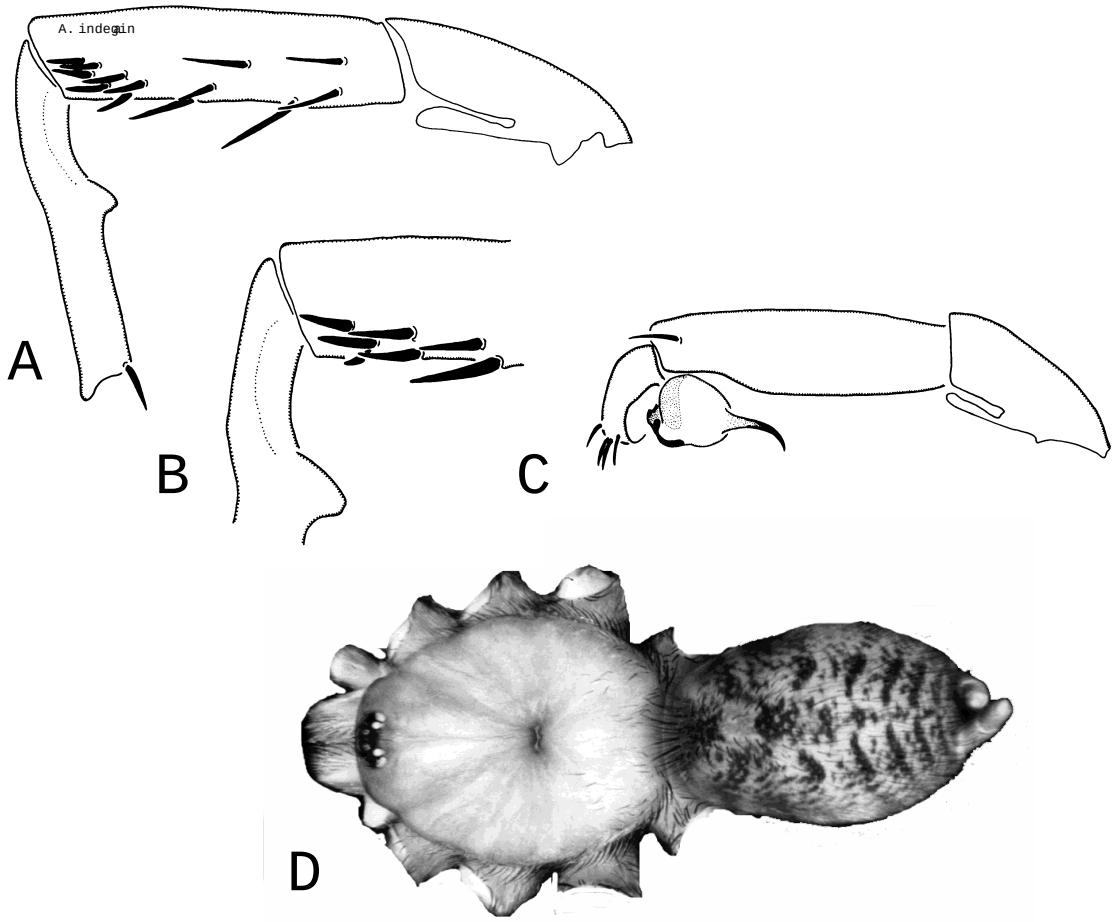


Figure 31. *Aptostichus indegina* new species. A. Male leg I, holotype. B. TSRd spination, male paratype. C. Pedipalp, illustrated without ventral spination, holotype. D. Dorsal view, male holotype.

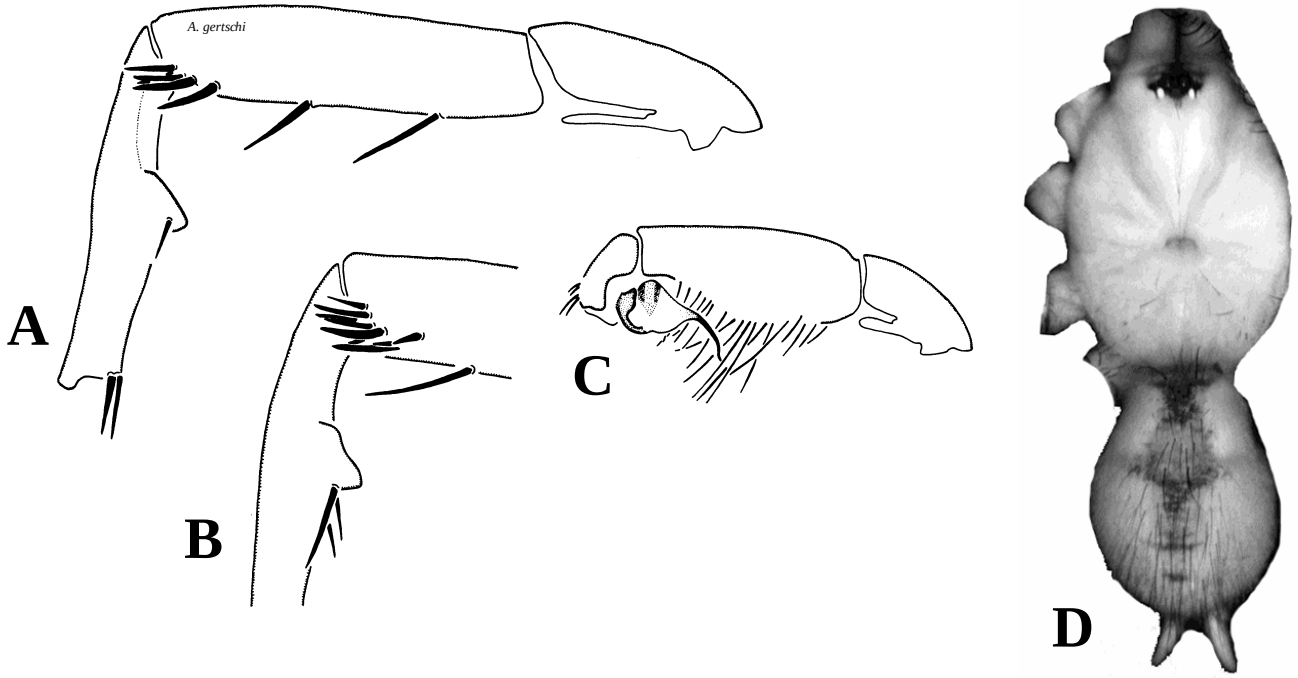


Figure 32. *Aptostichus gertschi* new species. A. Male leg I in retrolateral view, holotype. B. Male leg I in retrolateral view, paratype. C. Pedipalp in retrolateral view, holotype. D. Dorsal view, holotype.

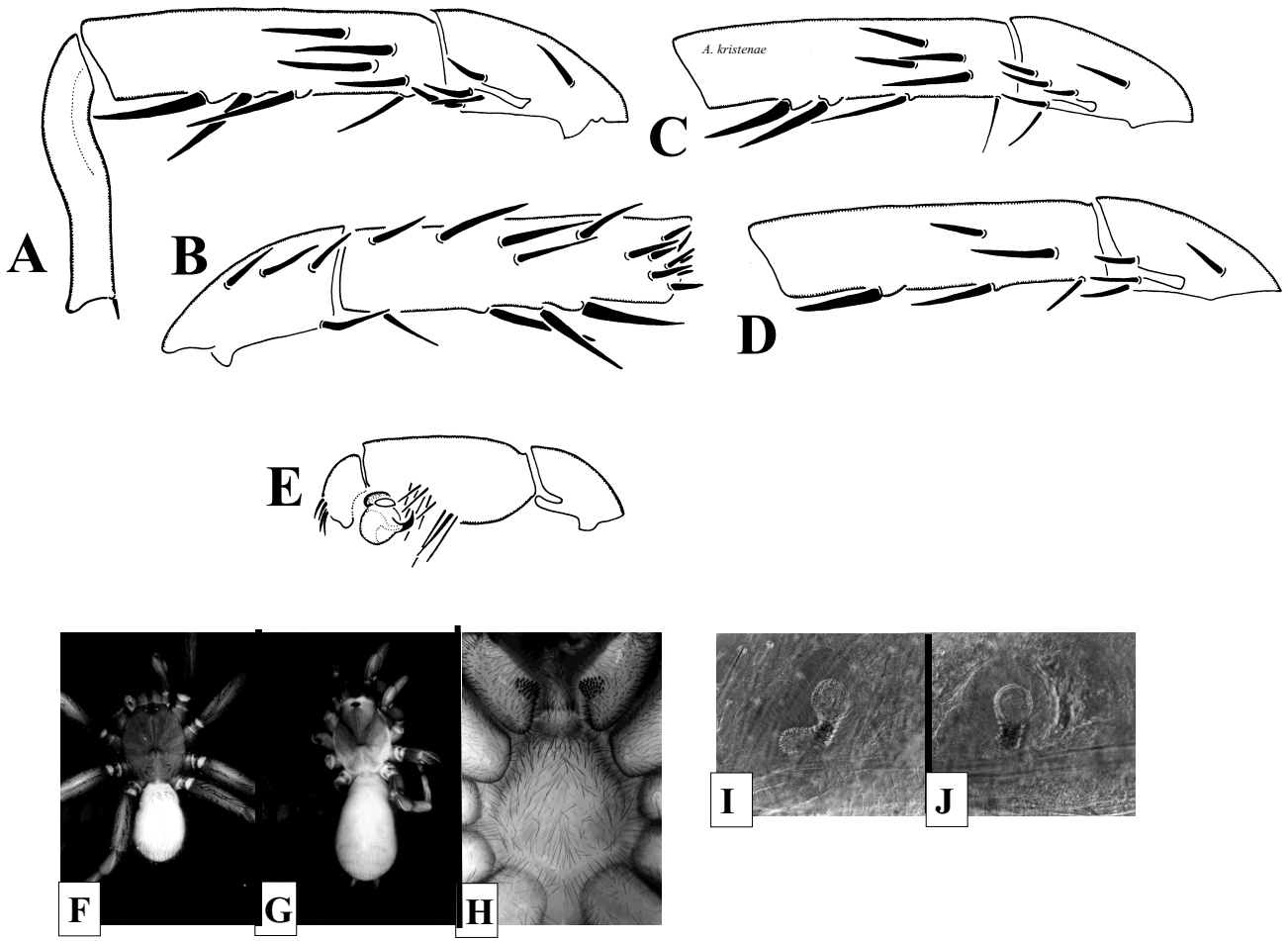


Figure 33. *Aptostichus kristenae* new species. A. Male leg I, retrolateral view, holotype. B. Patella and tibia I, prolateral view, holotype. C, D. Tibia and patella I, retrolateral view. C. From the type locality; D. From Inyo Co. locality. E. Pedipalp, retrolateral view, holotype. F. Dorsal view, holotype. G - I. Female paratype. G. Dorsal view; H. Sternum; I; Spermathecal bulb. J. Spermathecal bulb, additional specimen from type locality.

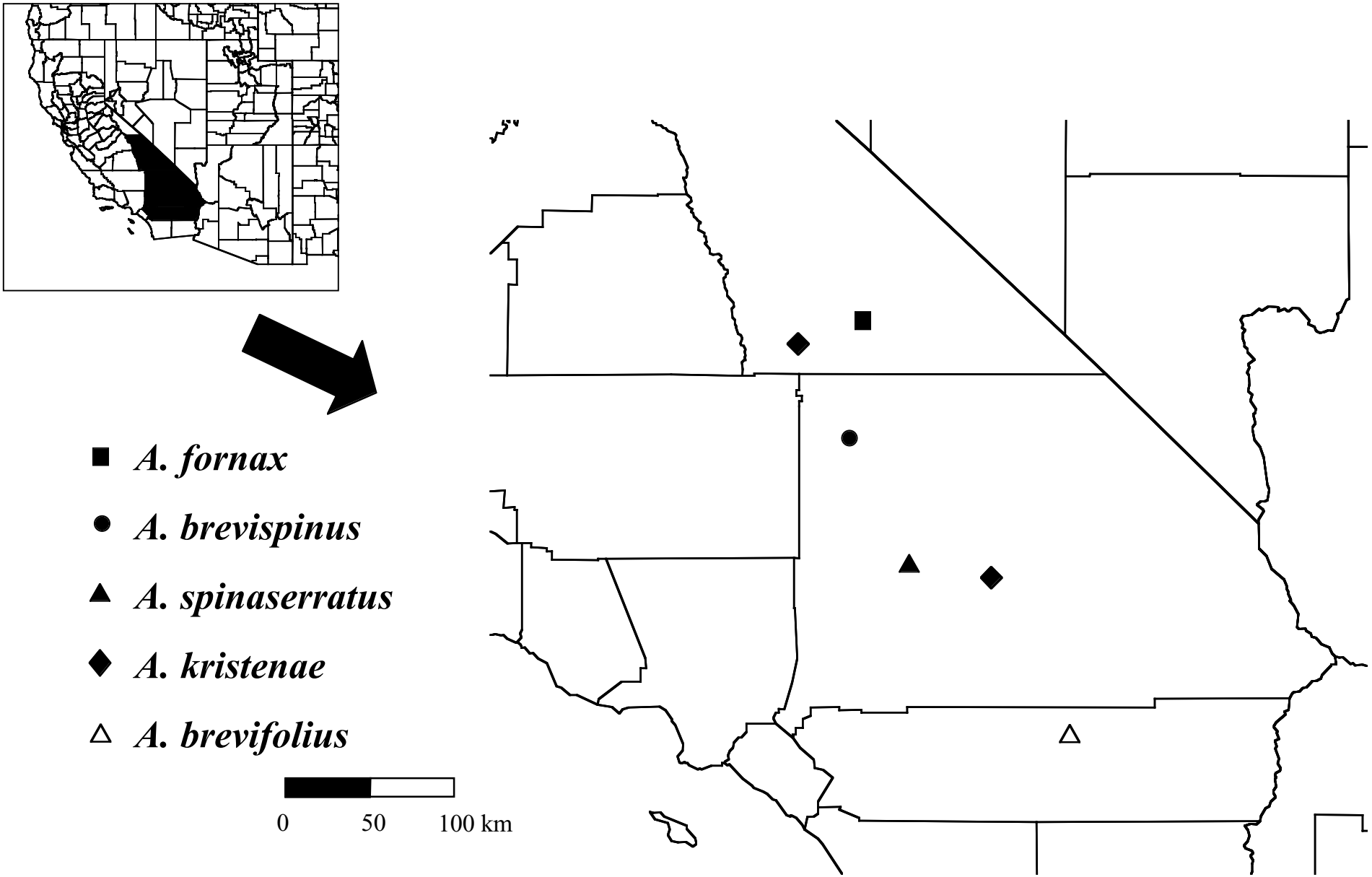
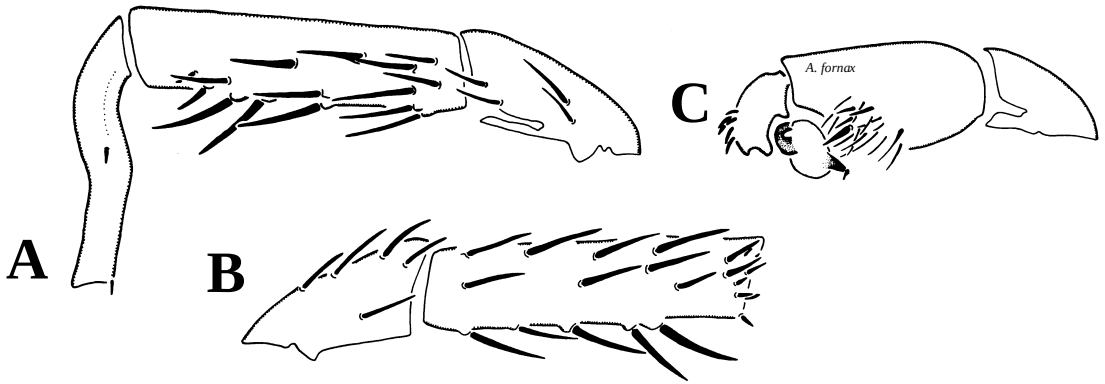


Figure 34. Distribution map for the Simus group species *A. fornax, A. brevispinus, A. spinaserratus, A. kristenae,* and *A. brevifolius*.



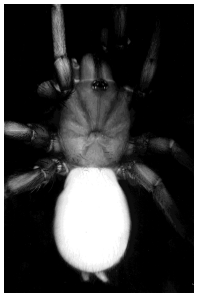


Figure 35. *Aptostichus fornax* new species. A - D. Male holotype. A. Leg I, retrolateral view; B. Leg I, prolateral view; C. Pedipalp, retrolateral view; D. Dorsal view.

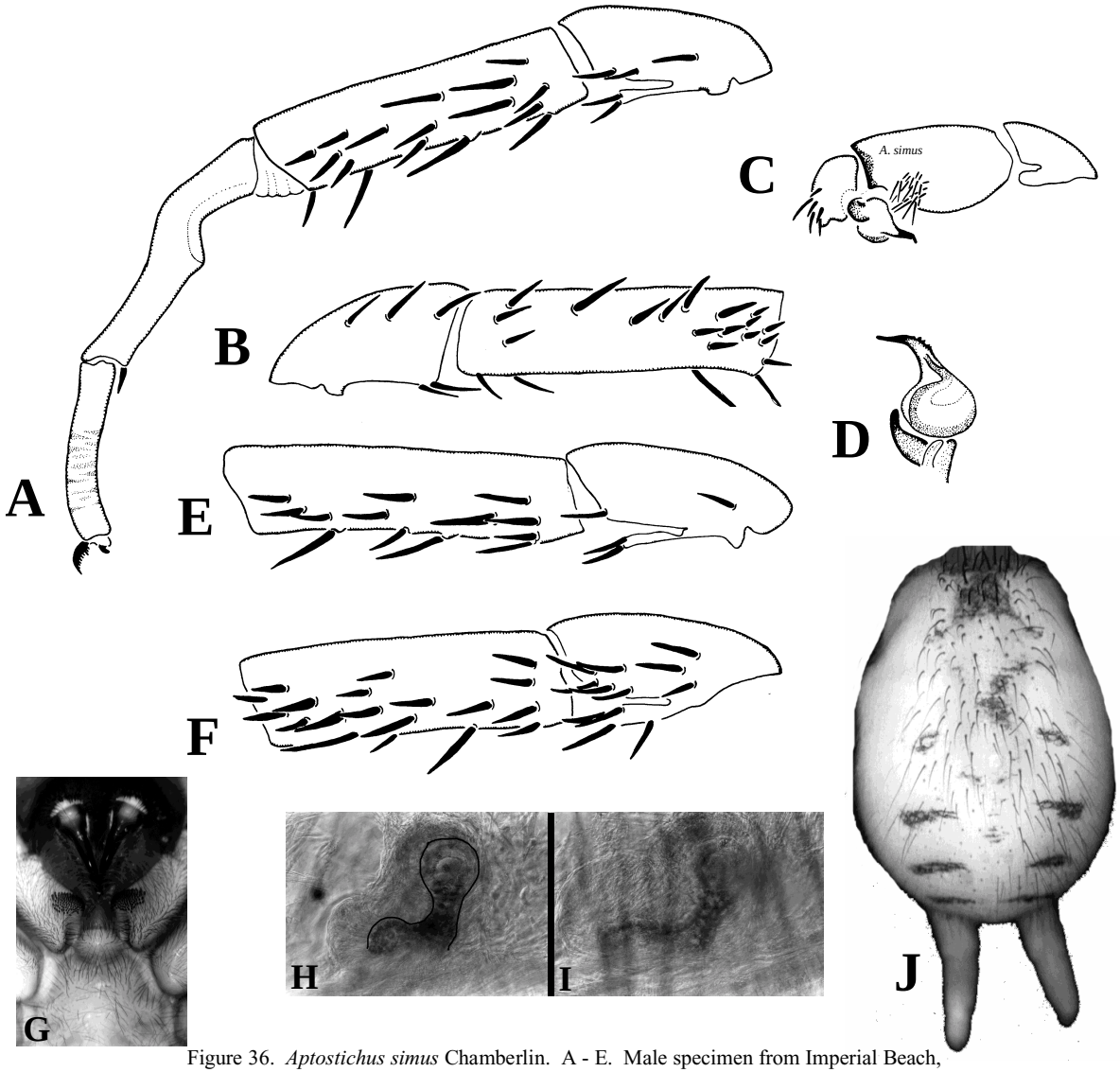


Figure 36. *Aptostichus simus* Chamberlin. A - E. Male specimen from Imperial Beach, San Diego County. A. Leg I, retrolateral view; B. Patella and tibia I, prolateral view; C. Pedipalp, retrolateral view; D. Palpal bulb, ventral view; E. Patella and tibia I, retrolateral view, different specimen. F. Patella and tibia I, retrolateral view, from Santa Barbara Co., Carpenteria State Beach. G. Female sternum, shows endites with unique cuspule pattern, from Ponto State Beach, San Diego County. H, I. Spermathecal bulbs. H. Ponto State Beach; I. Santa Rosa Island, Channel Islands National Park. J. Abdomen of female from Carpentaria State Beach.

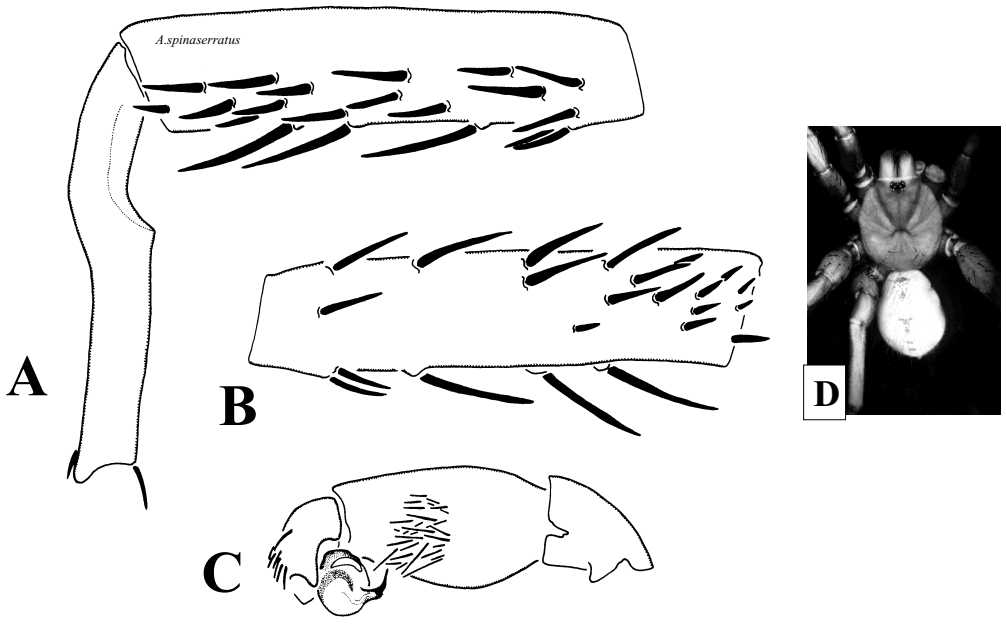


Figure 37. *Aptostichus spinaserratus* new species. A - D. Male holotype. A. Leg I, retrolateral view; B. Leg I tibia, prolateral view; C. Pedipalp, retrolateral view; D. Dorsal view.

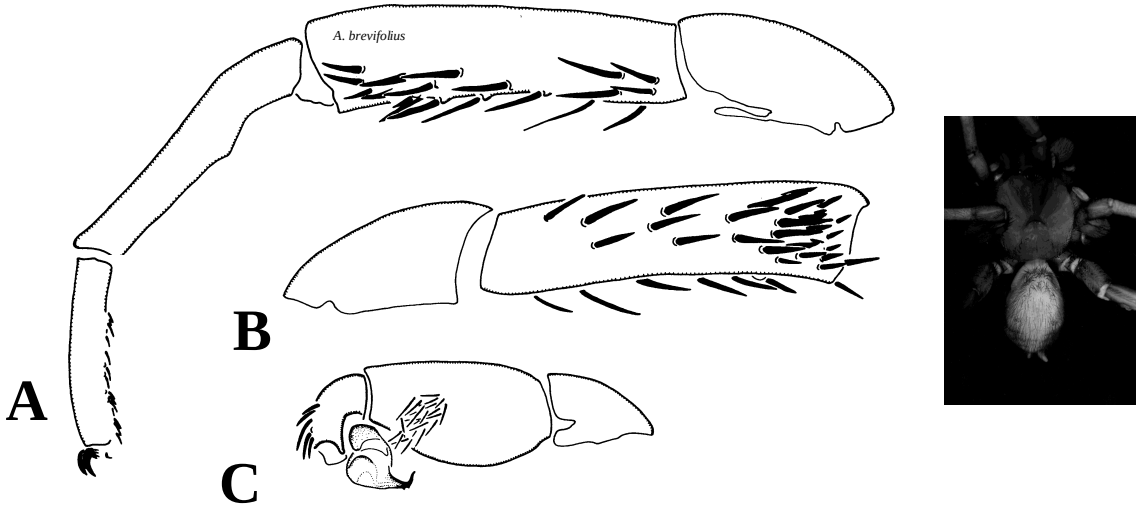


Figure 38. *Aptostichus brevifolius* new species. A - D. Male holotype. A. Leg I, retrolateral view; B. Tibia and patella I, prolateral view; C. Pedipalp, retrolateral view; D. Dorsal view.

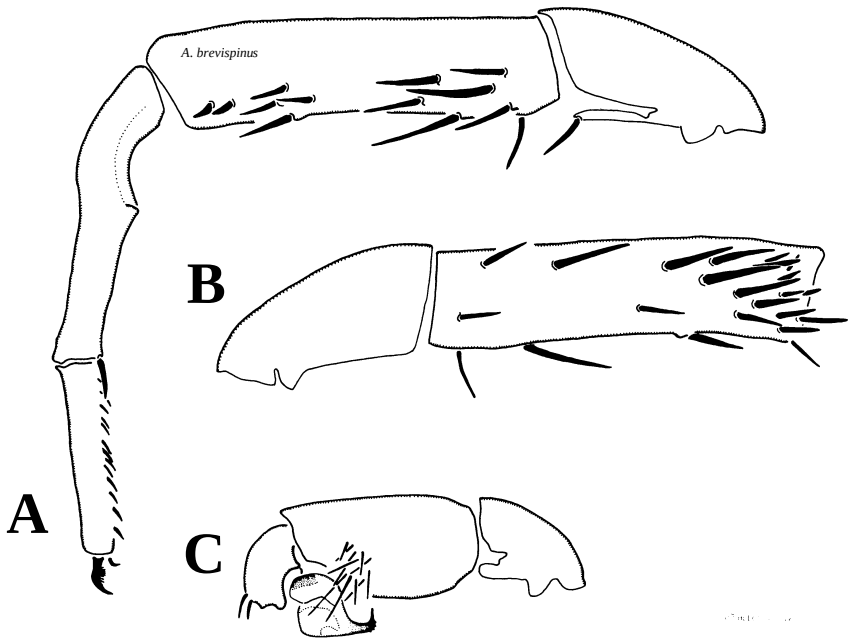


Figure 39. *Aptostichus brevispinus* new species. A - C. Male holotype. A. Leg I, retrolateral view; B. Tibia and patella I, prolateral view; C. Pedipalp, retrolateral view.

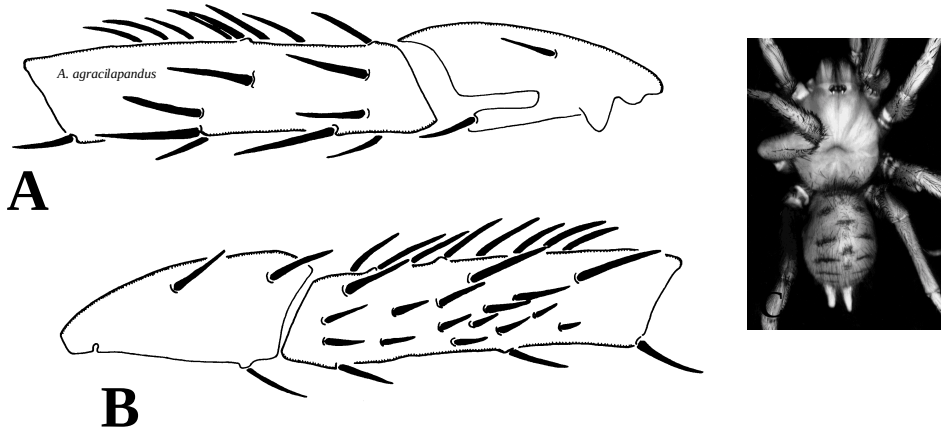


Figure 40. *Aptostichus agracilapandus* new species. A - C. Male holotype. A. Patella and tibia I, retrolateral view; B. Patella and tibia, prolateral view; C. Dorsal view.

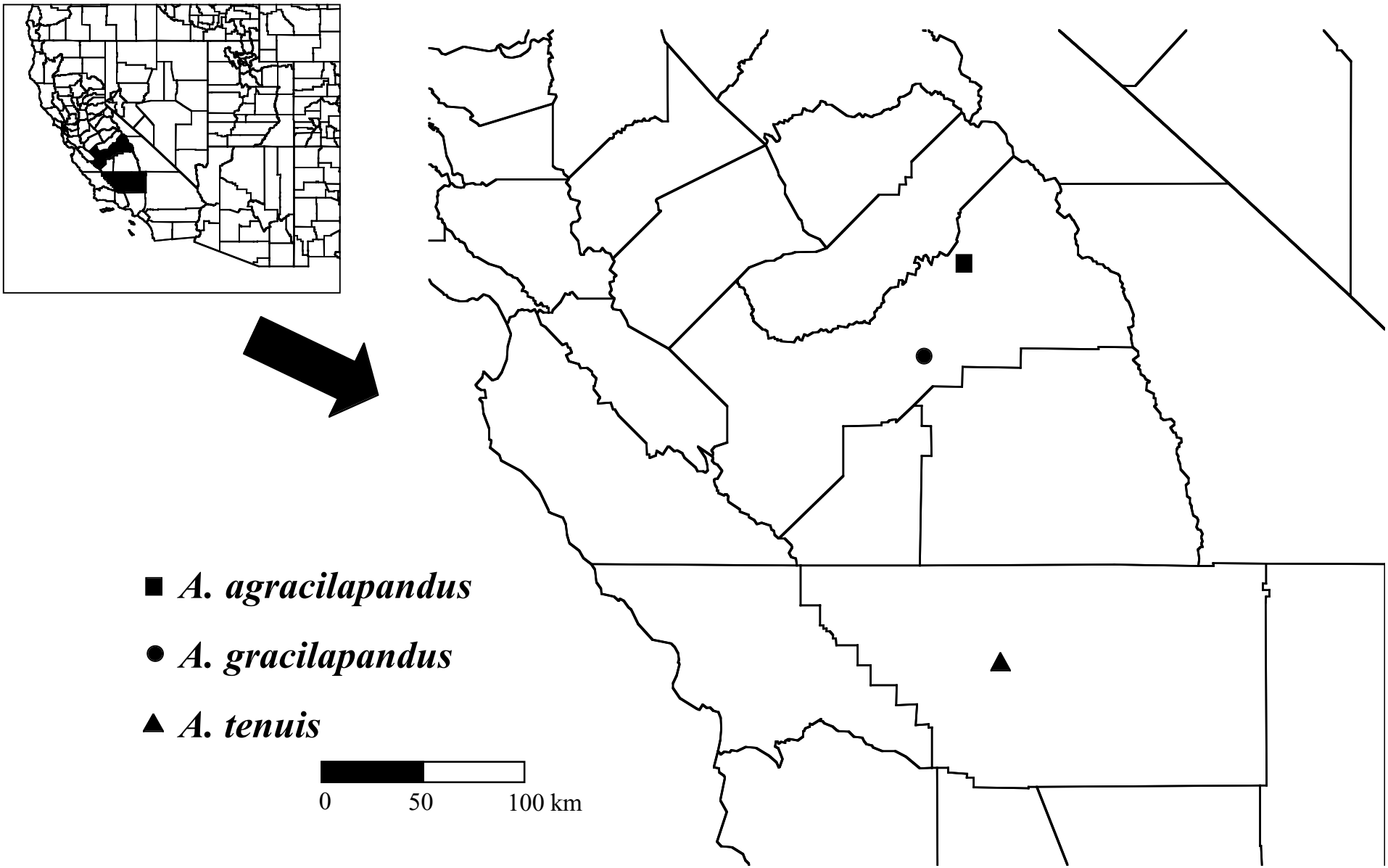


Figure 41. Distribution of all Pandus group species.

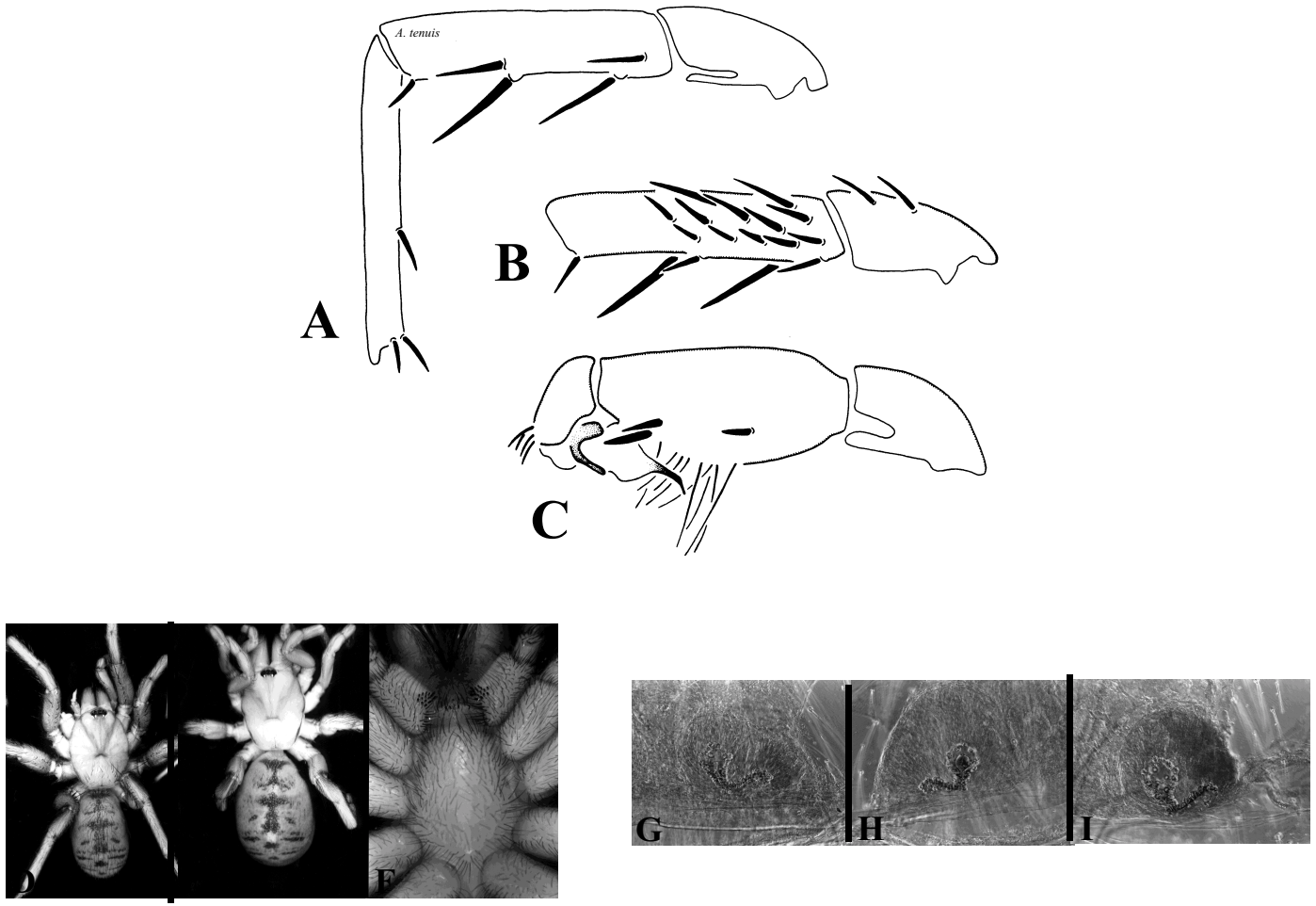


Figure 42. *Aptostichus tenuis* new species. A - D. Male holotype. A. Leg I, in retrolateral view; B. Patella and tibia I of right leg, in prolateral view; C. Pedipalp in retrolateral view; D. Dorsal view. E - G. Female paratype. E. Dorsal view; F. Sternum; G. Right spermathecal bulb. H, I. Left and right (respectively) spermathecal bulbs of additional specimens from type locality.

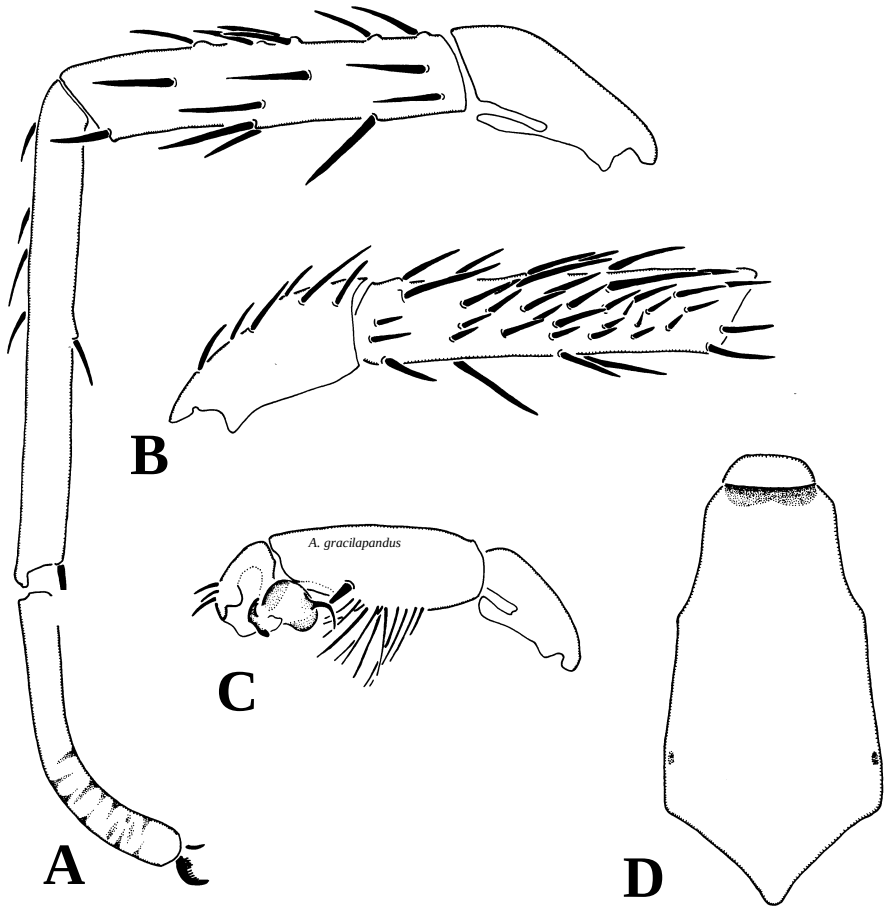


Figure 43. *Aptostichus gracilapandus*. A - D. Male paratype. A. Leg I, in retrolateral view; B; Patella and tibia I, in prolateral view; C. Pedipalp in retrolateral view; D. Sternum.

Table 1. Quantitative character values for adult male *Aptostichus* species. Range and mean ± 1 standard error is given. The value for new species' type specimen is given in brackets. Values for all ratios have been multiplied by 100. Character abbreviations are defined in the Materials and Methods section.

Species	N	CL	CW	STRl	STRw	MF1	MT1	MM1	MA1	MM1e
A. atomarius	9	5.3–7.5	4.3-6.2	3.0-4.2	2.4-3.3	5.1-6.4	3.3-4.3	3.4-4.6	2.1-2.9	1.9-2.6
		6.2±0.7	5.1±0.6	3.4±0.4	2.8±0.3	5.7±0.5	3.9±0.4	3.9±0.5	2.5±0.3	2.3±0.3
A. atomus	10	4.1-5.8	3.3-5.0	2.2-3.5	1.8-2.6	4.1-5.9	2.9-4.1	2.5-4.1	1.9-2.7	1.4-2.1
		4.8±0.6	4.0±0.6	2.7±0.5	2.2±0.3	4.9±0.7	3.4±0.4	3.3±0.6	2.2±0.3	1.8±0.4
		[4.9]	[4.1]	[2.9]	[2.3]	[5.2]	[3.6]	[3.7]	[2.5]	[2.1]
A. improbulus	1	5.9	4.6	3.1	2.5	5.3	3.6	4.0	2.5	2.0
A. insulanus	1	6.4	5.4	3.6	2.8	5.9	4.1	4.1	2.4	2.3
A. icenoglei	10	4.3-5.9	3.3-5.0	2.5-3.3	2.2-2.7	4.3-5.8	3.4-4.6	3.2-4.4	2.3-3.1	2.1-2.8
		5.4±0.5	4.4±0.5	3.0±0.2	2.4±0.2	5.3±0.4	3.9±0.3	3.9±0.3	2.7±0.2	2.4±0.2
		[5.9]	[5.0]	[3.3]	[2.7]	[5.8]	[4.3]	[4.4]	[3.0]	[2.8]
A. ebriosus	1	5.8	4.7	3.2	2.7	5.2	3.5	3.4	2.4	2.1
A. muiri	1	5.9	4.9	3.1	2.6	5.2	3.6	3.6	2.4	2.1
A. hesperus	10	5.6–6.1	4.4-4.9	3.0-3.6	2.5-2.8	4.8-5.6	3.5-3.9	3.3-3.8	2.1-2.4	1.9-2.2
		5.8±0.2	4.6±0.1	3.2±0..2	2.7±0.1	5.2±0.2	3.7±0.2	3.6±0.2	2.3±0.1	2.0±0.1
A. cahuillus	9	3.4-4.4	2.8-3.6	1.9-2.5	1.7-2.1	3.2-4.1	2.2-2.9	1.9-2.4	1.3-1.7	1.1-1.4
		3.9±0.3	3.1±0.2	2.1±0.2	1.8±0.1	3.6±0.3	2.5±0.2	2.2±0.2	1.6±0.1	1.3±0.1
		[3.9]	[3.0]	[2.2]	[1.7]	[3.4]	[2.4]	[2.2]	[1.5]	[1.3]
A. luiseni	1	4.6	3.7	2.7	2.1	4.3	3.1	2.8	1.8	1.7
A. serranos	10	4.4-5.0	3.5-4.1	2.4-2.9	2.0-2.4	4.5-5.1	3.2-3.6	2.7-3.2	1.8-2.1	1.5-1.8
		4.8±0.2	3.9±0.2	2.6±0.1	2.2±0.1	4.8±0.2	3.4±0.1	2.9±0.2	1.9±0.1	1.6±0.1
		[5.0]	[4.1]	[2.8]	[2.4]	[5.0]	[3.5]	[3.1]	[2.0]	[1.7]
A. calientus	10	3.9-5.0	3.2-4.3	2.2-2.9	1.8-2.6	4.2-5.4	2.8-3.7	2.6-3.4	1.7-2.2	1.3-1.7
		4.6±0.4	3.8±0.4	2.5±0.3	2.2±0.2	4.8±0.4	3.3±0.3	3.0±0.3	2.0±0.1	1.5±0.1
		[4.4]	[3.6]	[2.4]	[2.1]	[4.6]	[3.3]	[2.9]	[2.0]	[1.5]
A. chemehuevi	10	4.1-5.6	3.4-4.8	2.5-3.1	1.8-2.5	4.2-5.4	2.8-3.8	2.8-3.5	1.7-2.1	1.5-1.9
		4.8±0.4	4.0±0.4	2.7±0.2	2.1±0.2	4.8±0.4	3.3±0.3	3.1±0.2	1.9±0.2	1.7±0.1
		[5.3]	[4.3]	[3.1]	[2.4]	[5.0]	[3.4]	[3.3]	[2.0]	[1.7]
A. shoshonei	2	3.5-4.9	3.0-4.3	2.0-2.6	1.7-2.2	3.6-5.0	2.4-3.2	2.1-3.0	1.7-2.3	1.1-1.5
		[3.5]	[3.0]	[2.0]	[1.7]	[3.6]	[2.4]	[2.1]	[1.7]	[1.1]
A. paiutei	3	4.3-4.5	3.5-3.8	2.3	2.0-2.1	4.3-4.6	2.9-3.3	2.6-2.9	1.8-2.0	1.4-1.6
		4.4±0.1	3.6±0.1	2.3±0.02	2.1±0.1	4.4±0.1	3.1±0.2	2.7±0.2	1.9±0.1	1.5±0.1
		[4.3]	[3.5]	[2.3]	[2.0]	[4.3]	[3.0]	[2.6]	[1.8]	[1.4]
A. tipai	1	5.5	4.6	3.4	3.1	4.9	4.1	3.3	2.2	1.8
A. cochesensis	2	4.9-5.3	4.1-4.6	2.7-2.9	2.2-2.5	4.8-5.0	3.2-3.3	3.0-3.2	1.8-2.1	1.7
		[5.3]	[4.6]	[2.9]	[2.5]	[5.0]	[3.3]	[3.2]	[2.1]	[1.7]
A. indegina	3	6.3-6.6	5.1-5.3	3.4-3.6	2.7-2.8	5.6-6.3	4.1-4.4	3.9-4.0	2.8-2.9	2.0-2.1
		6.4±0.2	5.2±0.1	3.4±0.1	2.7±0.03	6.0±0.3	4.3±0.1	4.0±0.04	2.8±0.02	2.0±0.1
		[6.3]	[5.3]	[3.4]	[2.7]	[5.6]	[4.1]	[3.9]	[2.8]	[2.0]
A. gertschi	4	5.0-5.4	3.8-4.1	2.7-3.1	2.1-2.4	4.9-5.3	3.4-3.8	3.1-3.5	2.3-2.6	1.8-2.0
		5.2±0.2	3.9±0.2	2.9±0.2	2.2±0.1	5.0±0.2	3.6±0.2	3.2±0.2	2.4±0.1	1.8±0.1
		[5.1]	[3.8]	[2.7]	[2.1]	[4.9]	[3.5]	[3.2]	[2.4]	[1.8]
A. kristenae	10	3.8-4.7	3.1-4.0	1.8-2.4	1.7-2.1	3.8-4.3	3.1-3.4	2.3-2.6	1.5-1.7	1.2-1.4
		4.1±0.3	3.3±0.3	2.0±0.2	1.8±0.1	3.9±0.2	3.2±0.1	2.4±0.1	1.5±0.1	1.3±0.05
		[4.2]	[3.4]	[2.0]	[1.9]	[4.1]	[3.4]	[2.4]	[1.5]	[1.3]
A. fornax	1	5.0	4.1	2.8	2.3	4.6	3.8	2.9	1.9	1.6
A. simus	5	4.9-6.2	4.3-5.2	2.8-3.3	2.4-2.9	5.0-5.2	3.7-4.1	3.1-3.5	2.1-2.4	1.5-1.9
		5.6±0.5	4.8±0.4	3.0±0.2	2.6±0.2	5.1±0.1	3.8±0.1	3.3±0.1	2.3±0.2	1.7±0.2
A. spinaserratus	2	4.9-5.3	4.1-4.6	2.6-2.9	2.3-2.5	4.8-5.6	3.9-4.5	3.2-3.8	2.3-2.4	1.5-1.7
		[5.3]	[4.6]	[2.9]	[2.5]	[5.6]	[4.5]	[3.8]	[2.4]	[1.7]
A. brevifolius	1	5.3	4.4	2.9	2.6	5.6	4.1	3.4	2.1	1.5
A. brevispinus	1	4.3	3.5	2.2	2.0	4.4	3.6	2.7	1.8	1.3
A. gracilapandus	1	5.8	4.6	3.1	2.4	5.1	3.5	4.1	2.8	0.0
A. tenuis	4	3.9-4.6	2.9-3.7	2.2-2.5	1.5-1.9	3.5-4.0	2.6-2.9	2.9-3.4	2.0-2.3	0.0
		4.2±0.3	3.3±.3.0	2.4±0.1	1.7±0.1	3.7±0.2	2.7±0.2	3.0±0.2	2.2±0.1	
		[4.3]	[3.3]	[2.4]	[1.7]	[3.8]	[2.8]	[3.0]	[2.2]	
A. agracilapandus	3	5.6-5.8	4.1-4.4	3.5-3.8	1.9-2.3	4.9-5.1	3.4-3.6	4.0-4.4	2.7-3.0	0.0
		5.7±0.1	4.3±0.2	3.7±0.2	2.1±0.2	5.0±0.1	3.5±0.1	4.2±0.2	2.8±0.2	
		[5.6]	[4.1]	[3.7]	[1.9]	[5.0]	[3.6]	[4.4]	[2.7]	

Table 1a. Adult males continued.

Species	PTl	PTw	BL	MF4	MT4	TSRd	TSP	TSR
A. atomarius	2.3-3.0	0.7-1.0	1.1-1.5	5.0-6.3	2.5-3.2	4.0-6.0	3.0-5.0	4.0-5.0
	2.7±0.2	0.9±0.1	1.2±0.1	5.7±0.5	2.9±0.3	5.0±0.7	4.1±0.9	4.7±0.5
A. atomus	1.6-2.6	0.5-0.9	0.8-1.3	3.8-5.9	2.1-2.9	3.0-5.0	3.0-4.0	4.0-5.0
	2.0±0.4	0.7±0.1	1.0±0.2	4.6±0.7	2.4±0.3	4.1±0.6	3.2±0.4	4.3±0.5
	[2.2]	[0.8]	[1.1]	[5.1]	[2.6]	[4.0]	[3.0]	[4.0]
A. improbulus	2.2	0.7	1.1	5.3	2.9	1.0	7.0	6.0
A. insulanus	2.7	0.8	1.3	5.9	3.1	5.0	8.0	7.0
A. icenoglei	1.8-2.5	0.6-0.8	0.9-1.1	4.3-6.1	2.4-3.4	2.0-3.0	2.0-5.0	3.0-6.0
	2.2±0.2	0.7±0.1	1.0±0.1	5.4±0.5	2.9±0.3	2.4±0.5	3.1±0.9	4.6±0.8
	[2.5]	[0.8]	[1.1]	[6.1]	[3.4]	[2.0]	[3.0]	[5.0]
A. ebriosus	2.4	0.8	1.3	5.3	2.7	2.0	3.0	5.0
A. muiri	2.2	0.9	1.2	5.6	2.9	3.0	3.0	5.0
A. hesperus	2.3-2.5	1.0-1.1	1.2-1.4	4.9-5.6	2.2-2.9	4.0-6.0	3.0-6.0	1.0-2.0
	2.4±0.1	1.0±0.03	1.3±0.05	5.3±0.2	2.6±0.2	5.0±0.8	4.9±0.9	1.7±0.5
A. cahuillus	1.4-1.8	0.7-0.8	0.8-0.9	3.0-3.8	1.5-1.8	5.0-9.0	3.0-5.0	2.0-5.0
	1.6±0.1	0.8±0.03	0.8±0.1	3.4±0.3	1.7±0.1	6.2±1.4	3.8±0.8	4.1±1.1
	[1.5]	[0.8]	[0.8]	[3.3]	[1.7]	[9.0]	[4.0]	[4.0]
A. luiseni	2.0	0.8	1.0	4.1	2.0	4.0	5.0	3.0
A. serranos	1.9-2.1	0.7-0.8	0.9-1.0	4.1-4.9	2.1-2.4	4.0-6.0	3.0-8.0	2.0-4.0
	2.0±0.1	0.8±0.03	0.9±0.04	4.6±0.2	2.3±0.1	4.7±0.8	4.0±1.6	3.2±0.8
	[2.1]	[0.8]	[1.0]	[4.9]	[2.4]	[6.0]	[5.0]	[4.0]
A. calientus	1.8-2.3	0.8-1.0	1.0-1.1	3.8-4.8	1.9-2.3	3.0-5.0	3.0-7.0	2.0-7.0
	2.0±0.2	0.9±0.1	1.0±0.1	4.3±0.4	2.1±0.2	4.0±0.7	4.5±1.2	4.5±1.6
	[1.9]	[0.8]	[1.0]	[4.1]	[2.1]	[4.0]	[4.0]	[2.0]
A. chemehuevi	1.9-2.4	0.8-1.1	1.0-1.2	4.0-4.9	1.9-2.3	6.0-9.0	5.0-8.0	4.0-8.0
	2.1±0.1	0.9±0.1	1.1±0.1	4.5±0.3	2.1±0.1	7.7±1.3	6.2±0.9	5.4±1.5
	[2.2]	[1.0]	[1.1]	[4.9]	[2.3]	[7.0]	[6.0]	[6.0]
A. shoshonei	1.4-2.0	0.5-0.6	0.8-1.0	3.5-4.8	2.1-2.9	3.0	3.0-5.0	5.0-6.0
	[1.4]	[0.5]	[0.8]	[3.5]	[2.1]		[5.0]	[5.0]
A. paiutei	1.6-1.7	0.6	0.8-0.9	4.1-4.3	2.3-2.4	6.0-11.0	2.0-5.0	2.0-6.0
	1.6±0.02	0.6±0.03	0.9±0.1	4.2±0.1	2.3±0.1	8.0±2.6	4.0±1.7	4.3±2.1
	[1.6]	[0.6]	[0.8]	[4.1]	[2.3]	[7.0]	[5.0]	[5.0]
A. tipai	2.4	1.0	1.1	4.8	2.7	3.0	2.0	5.0
A. cochesensis	2.1-2.3	0.9	1.1	4.4-4.9	2.2-2.4	4.0-7.0	4.0	4.0
	[2.3]	[0.9]	[1.1]	[4.9]	[2.4]	[4.0]		
A. indegina	2.8-3.0	0.8	1.3	6.1-6.6	3.1-3.3	7.0-8.0	4.0-6.0	2.0-6.0
	2.9±0.1	0.8±0.01	1.3±0.04	6.4±0.3	3.2±0.1	7.3±0.6	5.0±1.0	4.3±2.1
	[2.8]	[0.8]	[1.3]	[6.1]	[3.1]	[7.0]	[5.0]	[6.0]
A. gertschi	2.0-2.1	0.8-0.9	1.0	4.7-5.1	2.6-2.8	4.0-8.0	3.0-5.0	2.0-4.0
	2.0±0.1	0.8±0.05	1.0±.0.03	4.8±0.2	2.7±0.1	5.5±1.7	4.0±0.8	2.8±1.0
	[2.0]	[0.8]	[1.0]	[4.8]	[2.7]	[5.0]	[3.0]	[2.0]
A. kristenae	1.3-1.6	0.7-0.8	0.6-0.7	3.3-3.8	1.9-2.4	0.0	8.0-16.0	6.0-10.0
	1.4±0.1	0.7±0.05	0.7±0.03	3.4±0.2	2.1±0.1		11.9±2.4	7.0±1.3
	[1.5]	[0.8]	[0.4]	[3.5]	[2.2]		[14.0]	[8.0]
A. fornax	1.7	0.9	0.7	4.3	2.4	0.0	17.0	16.0
A. simus	1.7-2.0	1.0-1.1	0.8-0.9	4.8-5.3	2.7-3.4	0.0	14.0-29.0	12.0-21.0
	1.8±0.1	1.0±0.05	0.8±0.02	5.0±0.2	3.1±0.3		20.2±5.8	16.4±3.8
A. spinaserratus	1.6-1.9	0.9-1.1	0.8	4.7-5.4	3.1-3.4	0.0	17.0-19.0	18.0-20.0
	[1.9]	[1.1]	[0.8]	[5.4]	[3.4]		[19.0]	[20.0]
A. brevifolius	1.6	0.9	0.8	5.4	2.9	0.0	29.0	21.0
A. brevispinus	1.3	0.7	0.7	4.3	2.4	0.0	20.0	12.0
A. agracilapandus	2.0	0.7-0.8	0.8	5.1-5.4	3.0-3.4	1.0	32.0-39.0	7.0-9.0
	2.0±0.5	0.8±0.02	0.8±0.03	5.3±0.2	3.1±0.3		35.3±3.5	7.7±1.2
	[2.0]	[0.8]	[0.8]	[5.2]	[3.0]		[35.0]	[7.0]
A. tenuis	1.5-1.8	0.7-0.8	0.6-0.7	3.6-4.2	2.4-2.6	1.0	12.0-16.0	4.0
	1.6±0.1	0.7±0.04	0.7±0.03	3.9±0.2	2.5±0.1		14.8±1.9	
	[1.7]	[0.7]	[0.7]	[3.9]	[2.6]		[15.0]	
A. gracilapandus	2.0	0.8	0.8	5.4	2.9	1.0	16.0	6.0

Table 1b. Adult males continued.

Species	MT1/MF1	MMI/MFI	MAI/MFI	MMIe/ MMI	MA4/MF4	STRw/ STRl	PTw/PTl	PTl/CL	BL/CL
A. atomarius	65.4-70.9	65.1-73.7	40.5-47.0	54.7-62.2	48.7-52.6	74.5-88.1	30.3-41.3	38.4-46.5	18.3-21.
	68.0±2.1	68.0±2.9	43.5±2.5	59.0±2.8	51.0±1.4	82.4±4.7	33.7±3.6	42.6±2.5	19.9±1.
A. atomus	65.3-72.8	60.6-71.8	44.5-48.0	51.2-57.7	49.0-55.9	72.0-84.2	31.6-35.7	37.3-46.2	19.3-22.
	70.6±2.4	66.8±4.4	45.9±1.3	53.7±2.2	52.6±2.3	79.8±3.6	33.5±1.33	42.0±3.5	21.1±1.
	[68.6]	[71.1]	[47.4]	[57.7]	[50.6]	[78.1]	[34.2]	[44.3]	[22.3]
A. improbulus	69.1	76.2	47.4	49.5	56.0	80.6	33.8	37.2	18.7
A. insulanus	68.4	68.4	41.1	56.2	52.0	77.5	31.1	41.9	19.9
A. icenoglei	70.9-79.1	70.8-75.9	49.7-53.4	56.0-68.5	46.4-56.5	73.0-84.0	29.3-36.2	36.4-42.9	17.9-20.
	74.5±3.1	73.6±1.9	51.8±1.1	63.0±3.3	53.7±3.1	79.1±4.2	32.2±2.0	41.2±2.0	19.0±0.
	[74.2]	[75.4]	[51.1]	[62.8]	[55.1]	[84.0]	[31.7]	[41.4]	[18.5]
A. ebriosus	67.4	66.3	46.2	60.2	51.2	84.8	34.6	41.3	21.7
A. muiri	68.6	69.4	46.2	58.3	51.8	83.5	41.7	36.7	20.4
A. hesperus	65.9-72.7	62.0-70.4	40.4-45.1	53.0-59.5	44.9-54.2	77.2-92.0	40.7-45.3	38.7-43.7	20.2-24.
	70.0±2.2	68.0±2.5	43.0±1.6	56.4±1.8	49.5±2.6	82.3±4.8	43.2±1.4	41.2±1.5	22.8±1.
A. cahuillus	65.7-73.5	58.1-63.2	40.0-45.5	56.0-62.0	47.9-51.0	79.7-93.8	45.3-50.0	39.0-43.4	18.8-21.
	69.4±2.2	60.9±1.5	43.2±1.7	58.2±1.8	49.0±1.2	88.4±5.1	47.6±1.8	41.2±1.5	20.8±1.
	[70.2]	[63.2]	[43.9]	[58.3]	[50.9]	[80.6]	[49.5]	[39.0]	[19.3]
A. luiseni	72.6	65.2	41.1	58.8	48.4	77.5	43.1	42.8	22.8
A. serranos	67.2-72.2	58.8-63.8	38.9-41.4	52.6-58.0	46.7-54.5	78.2-89.3	35.2-39.7	41.3-44.7	18.6-20.
	69.9±1.3	61.3±1.3	39.9±0.9	55.6±1.7	50.0±2.2	83.7±3.0	37.6±1.4	42.3±1.0	19.8±0.
	[70.0]	[62.4]	[39.0]	[52.9]	[50.0]	[86.0]	[37.7]	[41.4]	[19.2]
A. calientus	67.0-72.4	60.6-64.4	39.0-43.4	49.0-55.3	48.0-53.3	79.6-90.6	39.1-47.8	42.9-46.8	20.4-24.
	70.0±2.1	62.7±1.1	41.5±1.3	51.5±2.0	50.2±1.9	86.3±3.2	43.7±2.6	45.0±1.3	22.8±1.3
	[71.3]	[63.2]	[43.4]	[53.1]	[52.5]	[87.5]	[39.1]	[43.8]	[23.1]
A. chemehuevi	67.1-73.1	63.0-70.4	36.0-40.9	50.5-56.3	44.8-50.0	71.1-86.5	35.7-47.8	40.7-46.6	20.9-24.
	69.5±1.7	66.1±2.0	39.0±1.5	53.0±1.7	47.4±1.6	78.6±5.1	45.5±3.6	43.1±1.7	22.3±1.
	[68.8]	[65.4]	[39.6]	[50.5]	[46.1]	[77.5]	[47.2]	[40.7]	[21.2]
A. shoshonei	63.8-66.7	59.2-59.4	45.0-45.8	51.5-53.5	60.3-60.6	85.9-86.2	31.8-35.6	38.5-40.1	20.4-21.
	65.2±2.0	59.3±0.2	45.4±0.6	52.5±1.4	[60.3]	86.0±0.2	33.7±2.6	39.3±1.1	20.9±0.
	[66.7]	[59.2]	[45.8]	[53.5]		[86.2]	[35.6]	[38.5]	[21.4]
A. paiutei	66.2-71.2	58.1-62.5	42.5-42.8	52.7-58.1	54.4-57.4	87.2-92.2	33.9-37.6	36.7-37.7	18.7-21.
	69.0±2.6	60.0±2.3	42.6±0.2	55.2±2.7	55.6±1.6	89.2±2.6	36.0±1.9	37.3±0.6	19.8±1.
	[69.6]	[59.4]	[42.5]	[52.7]	[55.0]	[88.3]	[36.4]	[37.6]	[19.5]
A. tipai	83.2	66.6	45.5	55.4	55.9	90.4	41.4	43.1	20.5
A. cochesensis	66.2-66.3	62.3-63.6	37.4-42.6	54.7-55.0	48.8-50.0	82.2-86.3	38.7-43.5	42.4	19.8-21.
	[66.2]	[63.6]	[42.6]	[54.7]	[48.8]	[86.3]	[38.7]	[42.4]	[19.8]
A. indegina	70.1-73.4	64.0-70.0	45.6-50.1	49.5-52.5	48.1-51.1	76.7-81.3	25.3-27.9	44.2-47.5	20.0-21.
	71.5±1.7	66.7±3.0	47.6±2.3	50.5±1.7	50.0±1.7	79.4±2.4	26.3±1.4	45.3±1.9	20.4±0.
	[73.4]	[70.0]	[50.1]	[49.5]	[51.1]	[80.4]	[27.9]	[44.2]	[21.0]
A. gertschi	70.5-74.7	61.9-66.3	47.3-48.6	56.0-57.8	53.9-57.4	75.5-77.3	39.4-42.6	37.9-40.9	18.7-19.
	72.2±1.9	64.7±1.9	48.1±0.6	56.5±0.9	55.7±1.6	76.6±0.77	40.4±1.5	39.1±1.4	19.3±0.
	[70.9]	[65.0]	[48.6]	[56.1]	[56.6]	[76.9]	[39.5]	[38.0]	[18.7]
A. kristenae	79.5-83.3	58.8-63.0	36.9-39.6	50.0-56.3	58.0-62.6	88.6-95.7	50.0-54.2	32.9-36.5	14.5-17.
	81.1±1.1	60.5±1.5	39.0±0.8	53.4±2.0	60.3±1.6	90.7±2.1	52.1±1.2	34.9±1.2	16.1±0.
	[83.3]	[59.1]	[36.9]	[55.0]	[62.6]	[92.6]	[52.0]	[36.935.8]	[16.2]
A. fornax	82.2	62.5	40.8	54.7	57.4	81.7	54.8	33.6	13.6
A. simus	72.3-77.9	62.3-67.5	40.8-48.2	47.1-56.1	57.2-64.3	86.0-89.6	58.3-63.3	29.1-34.5	13.8-16.
	74.3±2.6	64.3±2.2	44.1±3.1	51.6±3.9	61.7±3.0	87.9±1.6	60.6±2.2	32.1±2.2	14.8±1.
A. spinaserratus	80.9-81.9	66.3-67.4	43.7-48.0	44.0-47.0	63.2-66.7	85.2-85.6	54.9-55.7	33.2-36.2	15.4-15.
	[80.9]	[67.4]	[43.7]	[44.0]	[63.2]	[85.6]	[55.7]	[36.2]	[15.8]
A. brevifolius	73.9	61.5	37.6	43.6	53.0	91.6	58.5	29.9	15.6
A. brevispinus	81.8	60.1	39.9	48.3	55.2	91.9	56.1	30.6	15.8
A. gracilapandus	68.0-71.2	81.0-87.6	53.8-59.3	0.0	57.8-63.2	52.0-59.8	37.9-38.5	33.9-35.9	13.3-14.
	69.2±1.7	84.6±3.4	56.3±2.8		59.8±3.0	57.0±4.3	38.2±0.3	34.8±1.0	13.8±0.
	[71.2]	[87.6]	[53.8]		[57.8]	[52.0]	[38.5]	[34.6]	[13.3]
A. tenuis	72.5-73.8	78.0-84.5	56.2-58.9	0.0	62.5-66.8	67.6-73.8	43.8-45.3	37.9-39.4	14.7-16.
	73.2±0.6	81.4±2.7	57.8±1.1		64.4±2.1	70.5±2.6	44.6±0.7	38.6±0.7	15.4±0.
	[73.8]	[78.0]	[58.3]		[66.8]	[70.4]	[44.8]	[38.8]	[16.0]
A. gracilapandus	68.2	79.1	54.8	0.0	54.0	76.0	41.8	35.0	13.6

Table 1c. Adult males continued.

Species	LBl	LBw	LBl/LBw
A. atomarius	0.4-0.7	0.8-1.0	30.6-75.9
	0.5±0.1	0.9±0.1	54.3±15.4
A. atomus	0.3-0.5	0.5-1.0	40.5-63.9
	0.4±0.01	0.7 ±0.1	52.5±7.3
	[0.4]	[0.8]	[48.7]
A. improbulus	0.4	0.8	52.4
A. insulanus	0.5	0.9	52.2
A. icenoglei	0.3-0.5	0.6-0.9	50.0-64.6
	0.4±0.1	0.8±0.1	53.5±4.6
	[0.5]	[0.9]	[50.0]
A. ebriosus	0.5	0.8	56.3
A. muiri	0.4	0.8	51.9
A. hesperus	0.4-0.7	0.8-1.0	46.7-75.9
	0.5±0.1	0.9±0.05	61.7±10.5
A. cahuillus	0.3-0.4	0.6-0.7	44.1-73.3
	0.4±0.05	0.6±0.04	56.8±8.8
	[0.4]	[0.6]	[66.7]
A. luiseni	0.3	0.7	42.3
A. serranos	0.3-0.5	0.7-0.8	44.0-70.4
	0.4±0.05	0.7±0.04	59.1±7.2
	[0.5]	[0.7]	[70.4]
A. calientus	0.4-0.6	0.6-0.8	51.4-75.0
	0.5±0.1	0.7-0.06	63.9±9.3
	[0.5]	[0.7]	[73.6]
A. chemehuevi	0.4-0.6	0.7-0.8	54.2-69.1
	0.5±0.04	0.7±0.05	62.6±4.4
	[0.4]	[0.8]	[58.7]
A. shoshonei	0.3-0.4	0.6-0.7	55.0-56.5
	[0.3]	[0.6]	55.8±1.1
			[55.0]
A. paiutei	0.4	0.6-0.8	44.9-55.6
		0.7±0.08	50.6±5.4
		[0.7]	[51.5]
A. tipai	0.4	0.5	85.4
A. cochesensis	0.5	0.7-0.8	60.0-60.8
		[0.8]	[60.0]
A. indegina	0.5-0.6	0.8-0.9	60.7-65.2
	0.6±0.05	0.9±0.04	62.9±2.3
	[0.5]	[0.8]	[60.7]
A. gertschi	0.5	0.7-0.8	60.8-63.1
	0.5±0.04	0.8±0.06	62.2±1.0
	[0.5]	[0.7]	[60.1]
A. kristenae	0.4	0.5-0.6	63.3-79.2
	0.4±0.02	0.6±0.04	71.0±5.0
	[0.4]	[0.6]	[73.3]
A. fornax	0.5	0.8	60.0
A. simus	0.5-0.6	0.8-0.9	54.5-68.9
	0.5±0.07	0.8±0.05	64.4±6.0
A. spinaserratus	0.4-0.5	0.7-0.8	58.4-62.0
	[0.5]	[0.8]	[58.4]
A. brevifolius	0.5	0.8	60.0
A. brevispinus	0.4	0.7	55.4
A. agracilapandus	0.2-0.3	0.7-0.8	30.7-36.5
	0.2±0.02	0.7±0.02	33.2±3.0
	[0.2]	[0.7]	[32.4]
A. tenuis	0.2-0.3	0.5-0.7	33.9-42.6
	0.2±0.04	0.6±0.1	38.0±3.7
	[0.2]	[0.6]	[33.9]
A. graciliapandus	0.4	0.7	50.7

Table 2. Quantitative character values for adult female *Aptostichus* species. Range and mean ± 1 standard error is given. The value for new species' type specimen is given in brackets. Values for all ratios have been multiplied by 100. Character abbreviations are defined in the Materials and Methods section.

Species	N	CL	CW	STRl	STRw	LBl	LBw	LBc	EDc
A. atomarius	10	6.7-10.0	5.3-8.5	3.7-5.8	3.1-5.0	0.6-1.0	1.1-1.7	4.0-10.0	6.0-80.0
		8.8±1.1	7.4±1.1	5.1±0.8	4.3±0.6	0.8±0.1	1.4±0.2	5.6±1.8	45.8±26.2
A. improbulus	5	5.7-6.6	4.3-5.2	3.1-3.8	2.6-2.9	0.5-0.6	0.9-1.0	8.0-15.0	15.0-25.0
		6.2±0.4	4.8±0.4	3.4±0.3	2.8±0.2	0.6±0.04	0.9±0.06	11.6±2.5	20.8±4.6
		[6.4]	[4.9]	[3.4]	[2.9]	[0.5]	[1.0]	[15.0]	[22.0]
A. insulanus	1	7.4	6.5	4.5	3.9	0.8	1.3	6.0	48.0
A. icenoglei	10	6.4-9.4	5.3-7.5	4.1-5.3	3.2-4.3	0.5-1.0	1.0-1.5	0.0-6.0	12.0-20.0
		8.0±0.8	6.6±0.7	4.7±0.3	3.7±0.3	0.8±0.1	1.2±0.1	1.7±1.9	16.3±2.9
		[7.8]	[6.6]	[4.7]	[3.5]	[0.8]	[1.3]	[1.0]	[12.0]
A. muiri	1	5.1	4.3	3.0	2.5	0.5	0.9	3.0	18.0
A. hesperus	9	5.4-7.5	4.1-6.1	3.3-5.1	2.5-3.7	0.5-0.8	0.9-1.4	0.0-3.0	7.0-40.0
		6.6±0.8	5.3±0.7	4.1±0.6	3.3±0.5	0.6±0.1	1.1±0.2	1.6±1.1	23.1±10.0
A. cahuillus	6	3.2-4.6	2.4-3.5	1.7-2.7	1.4-2.1	0.3-0.5	0.6-0.8	2.0-9.0	10.0-20.0
		4.0±0.5	3.1±0.5	2.3±0.4	1.9±0.3	0.4±0.1	0.7±0.09	4.5±2.4	15.2±3.9
		[3.2]	[2.4]	[1.7]	[1.4]	[0.3]	[0.6]	[3.0]	[10.0]
A. luiseni	4	4.3-5.3	3.5-4.3	2.7-3.2	2.0-2.7	0.5-0.6	0.8-1.0	2.0-7.0	17.0-33.0
		5.0±0.4	4.0±0.4	3.0±0.2	2.4±0.3	0.5±0.1	0.9±0.08	4.5±2.4	25.3±6.9
		[5.1]	[4.2]	[3.2]	[2.7]	[0.5]	[1.0]	[7.0]	[33.0]
A. serranos	3	3.8-4.5	2.9-3.8	2.4-2.7	1.8-2.4	0.4-0.5	0.8-1.0	1.0-4.0	15.0-21.0
		4.2±0.4	3.4±0.5	2.6±0.2	2.1±0.3	0.5±0.04	0.9±0.1	2.7±1.5	18.7±3.2
		[3.8]	[2.9]	[2.4]	[1.8]	[0.5]	[0.8]	[1.0]	[15.0]
A. calientus	10	5.0-6.7	3.9-6.0	3.0-4.3	2.5-3.7	0.6-0.8	1.0-1.4	2.0-5.0	30.0-64.0
		5.9±0.6	4.9±0.6	3.6±0.5	3.1±0.4	0.7±0.1	1.1±0.1	2.8±1.0	47.6±10.4
		[6.2]	[4.9]	[3.8]	[3.1]	[0.7]	[1.2]	[3.0]	[55.0]
A. tipai	2	5.1-6.6	4.4-5.3	3.3-4.1	2.9-3.5	0.4-0.5	0.9-1.1	2.0-5.0	19.0-32.0
		[5.1]	[4.4]	[3.3]	[2.9]	[0.4]	[0.9]	[2.0]	[19.0]
A. kristenae	2	3.7-4.0	3.0-3.1	1.9-2.0	1.7-1.9	0.4-0.4	0.6-0.7	0.0	45.0-65.0
		[3.7]	[3.1]	[1.9]	[1.7]	[0.4]	[0.6]		[45.0]
A. simus	32	4.8-8.8	3.7-7.1	2.6-4.9	2.3-4.3	0.6-1.0	0.8-1.6	0.0-1.0	200.0
		6.9±1.2	5.7±0.8	3.9±0.6	3.4±0.5	0.8±0.1	1.2±0.2	0.03±0.2	
A. tenuis	4	4.3-4.6	3.3-3.6	2.7-2.9	1.9-2.0	0.3-0.4	0.8-1.1	2.0-4.0	11.0-27.0
		4.4±0.2	3.4±0.1	2.8±0.1	1.9±0.1	0.3±0.03	0.9±0.2	3.3±1.0	19.0±7.0
		[4.6]	[3.6]	[2.7]	[1.9]	[0.3]	[0.8]	[3.0]	[27.0]

Table 2a. Adult females continued.

Species	RST	ANTd	PTLs	TBs	LBw/ LBl	STRw/ STRl	LG1	CL/ANTd	SIG/ STRw
A. atomarius	5.0-6.0	6.0-8.0	10.0-20.0	3.0-7.0	150.7-206.0	79.9-94.9	14.3-22.6	111.5-135.7	12.1-36.2
	5.3±0.5	7.3±0.8	15.7±3.6	5.4±1.4	174.3±17.0	85.7±4.1	19.9±3.0	121.1±9.3	24.3±6.5
A. improbulus	5.0	6.0-7.0	9.0-12.0	3.0-4.0	147.5-190.6	78.4-85.0	13.0-15.4	91.1-110.5	32.3-37.4
		6.2±0.4	10.8±1.3	3.6±0.5	165.7±19.0	82.6±2.6	14.0±1.0	101.0±8.1	35.0±1.9
		[6.0]	[12.0]	[3.0]	[190.6]	[85.0]	[14.3]	[106.7]	[36.1]
A. insulanus	5.0	8.0	9.0	3.0	159.5	87.6	17.8	92.4	24.1
A. icenoglei	5.0-7.0	6.0-7.0	8.0-14.0	2.0-5.0	128.6-186.8	70.9-83.3	15.1-19.3	107.3-156.3	26.0-37.6
	5.5±0.7	6.1±0.3	11.2±1.6	2.5±1.0	157.5±19.7	78.6±4.1	17.3±1.3	131.3±14.7	32.1±4.0
	[6.0]	[6.0]	[8.0]	[2.0]	[167.9]	[74.8]	[17.4]	[129.2]	[32.2]
A. muiri	6	6	11	3	161.1	84.8	11.8	109.3	36.5
A. hesperus	6.0	6.0-7.0	7.0-11.0	3.0-5.0	150.0-197.8	72.8-87.3	12.0-17.1	84.8-107.1	0.0-5.6
		6.7±0.5	10.2±1.4	3.8±0.8	180.4±14.9	80.7±5.0	15.0±1.8	98.6±8.0	2.30±2.32
A. cahuillus	4.0-5.0	4.0-6.0	8.0-15.0	2.0-4.0	151.1-211.1	73.0-85.1	6.6-10.6	66.7-92.6	30.0-48.6
	4.8±0.4	5.2±0.8	10.5±2.4	3.0±0.6	175.1±21.9	81.3±4.3	8.9±1.4	78.5±10.0	43.0±7.1
	[5.0]	[4.0]	[9.0]	[4.0]	[211.1]	[83.8]	[6.6]	[80.3]	[48.6]
A. luiseni	4.0-5.0	5.0-6.0	9.0-15.0	2.0-5.0	163.3-204.3	74.4-86.7	9.1-11.9	85.5-87.5	27.4-45.8
	4.5±0.6	5.8±0.5	11.3±2.9	3.3±1.3	180.1±18.5	80.7±5.4	10.7±1.2	86.2±0.9	34.2±10.1
	[5.0]	[6.0]	[15.0]	[3.0]	[204.3]	[86.7]	[10.8]	[85.5]	[27.5]
A. serranos	5.0-6.0	5.0-6.0	8.0-10.0	2.0-3.0	166.7-228.6	75.0-87.8	8.5-10.5	63.5-90.0	23.3-26.6
	5.7-0.6	5.7±0.6	9.0±1.0	2.7±0.6	189.1±34.3	81.8±6.4	9.8±1.2	75.5±13.4	25.0±2.3
	[6.0]	[6.0]	[10.0]	[2.0]	[166.7]	[75.0]	[8.5]	[63.5]	[23.3]
A. calientus	6.0	6.0-7.0	7.0-11.0	3.0-5.0	140.0-187.5	81.1-91.6	12.2-17.1	75.9-109.3	11.0-20.4
		6.5±0.5	8.7±1.6	4.1±0.9	161.9±17.1	85.9±3.3	14.4±1.7	90.8±12.3	15.7±3.4
		[7.0]	[7.0]	[4.0]	[172.1]	[83.5]	[14.3]	[88.4]	[16.0]
A. tipai	6.0	5.0	11.0-13.0	3.0-4.0	219.5-223.4	85.0-89.0	11.7-14.5	102.6	29.6-53.0
			[11.0]	[3.0]	]219.5]	[89.0]	[11.7]		[29.6]
A. kristenae	8.0	4.0	17.0	6.0	163.2	90.6-92.5	9.0	96.1	30.1-40.8
						[90.6]		[92.3]	[40.8]
A. simus	9.0-15.0	4.0-5.0	15.0-29.0	2.0-8.0	125.0-160.7	81.2-95.2	19.5	105.0-218.8	11.4-28.3
	11.9±1.5	4.2±0.4	20.8±3.9	5.7±1.8	144.5±9.4	87.7±4.0		164.7±25.9	20.9±4.7
A. tenuis	4.0-5.0	5.0-6.0	7.0-12.0	2.0	251.5-297.4	66.7-71.9	8.6-9.6	76.0-91.2	64.1-131.3
	4.5±0.6	5.3±0.5	9.3±2.1		265.0±21.7	69.3±2.4	9.2±0.4	85.0±6.5	97.7±47.5
	[4.0]	[6.0]	[7.0]		[256.7]	[68.1]	[9.1]	[76.0]	-

Table 3. Morphological character data matrix for *Aptostichus* and its outgroups.

	10	**20**	**30**	**40**	**50**	**60**	**70**	
TAXA	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	12
Root								
Homostola	0010112010	0011000112	1100000000	0000011001	1100100000	0000000100	0000210000	00
Outgroups								
Apachella	0001000010	0100000010	1000000000	0000011010	0011110000	0000000100	0000200010	00
Promyrmekiaphila	0110002000	0101000010	1001000000	0000010011	0110102011	0100000100	0000210010	00
Entychides	0111001000	0101000010	1010000000	0000010110	0110102011	0000000100	0000200010	00
Myrmekiaphila	0010002000	0011000110	1001000000	0000001011	0010100000	1110000000	1000210000	00
Eucteniza	0001002000	0100000110	1110100000	0001010110	0110110000	0100000000	0000200000	00
Sinepedica	1110010010	0000000110	1010010111	0011101011	1110100000	0100100000	0000200110	00
Aptostichus								
A. atomarius	1200010010	0011000011	1010010101	0100011011	1110103011	0100100111	0012010011	00
A. atomus	1110010010	0011000011	1010010011	01000110??	?110103011	0000110111	00120100??	??
A. improbulus	1210011010	0011000011	1010000001	0100011011	1110103111	0000110111	0012010011	00
A. insulanus	0210010010	0011000011	1010000000	0100011011	1110102011	0000110111	0012020011	00
A.. icenoglei	1210010010	0001001011	1010010101	0101111011	1110101111	0100100111	0012010011	00
A. ebriosus	1110010010	0001101011	1010010001	01000110??	?110103011	0100100111	00120100??	??
A. muiri	1110010010	0001101011	1010010001	0100011011	1110103011	0100100111	0112010011	00
A. hesperus	1110011010	1011000111	1010000000	0100001011	1110102011	0100100111	0012010010	00
A. cahuillus	1110010011	1011001011	1010000000	0100001011	1110102011	0100100111	0011110011	01
A. luiseni	1110011011	1011000011	1010000000	0100011011	1110102011	0100100111	0012110010	01
A. serranos	1110010011	1011000001	0010000000	0100011011	1110102011	0100100111	0012010010	11
A. calientus	1110011010	1011000101	0010000001	0100001011	1110102111	0100100111	0012110010	11
A. chemehuevi	1110011010	1011000001	0010000000	01000110??	?110102011	0100101111	00121200??	??
A. shoshonei	1110011010	1011001001	0010000001	01000110??	?110102011	0100100111	01120100??	??
A. paiutei	1110010010	1011001001	0010000000	01000110??	?110102011	0100100111	01121100??	??
A, tipai	1110010111	1011000011	1010000000	0100011011	1110102011	0100100111	0011110010	11
A. cochesensis	1110010010	1011000011	1010000000	01000110??	?110102111	0100100111	00111100??	??
A. indegina	1210010010	0001000011	1010000000	01000110??	?110102011	0100101111	01111100??	??
A. gertschi	1110010010	0011000001	0010000000	11000010??	?110101111	0100100111	00121100??	??
A. kristenae	1010110010	0000000011	0010111011	0110001011	1001100011	0011010011	1000200110	00
A. fornax	1110111010	0000000010	0010111111	01100010??	?001000101	0011000011	10002011??	??
A. simus	1010111010	0000000011	0010111111	0100001011	1001100001	1011000011	1000201110	00
A. spinaserratus	1110111010	0000000011	0010111011	11100010??	?001100101	1011000011	10002011??	??
A. brevifolius	1000011010	0000000011	0010011011	11000010??	?001100001	1011000011	10002011??	??
A. brevispinus	1010011010	0000000011	0010010001	11100010??	?001100001	1011001011	10002011??	??
A. agracilapandus	1110011010	0011001011	1010011111	01011010??	?100000000	0000100011	00002001??	??
A. tenuis	1210011211	0011011011	1010110001	0101101011	0110000100	0000110011	0000200110	01
A. gracilapandus	1110011210	0011011011	1010111111	01011010??	?100000100	0000110011	00002001??	??

Table 4. List of unambiguous characters state changes and branch support for the major nodes of the preferred tree topology based on implied weighting (Fig. 5).

Node	**Branch support: Bootstrap/Decay**	**Characters and state changes**
Node **I** *Aptostichus*	**54/25.56**	**18**:1→0; **20**: 0→1; **32**: 0→1; **59**:0→1; **60**: 0→1
Node **II**	**61/9.44**	**27**: 0→1; **43**: 1→0; **52**: 1→0
Node **III** *Pandus* group	**82/18.44**	**17**: 0→1; **34**: 0→1; **35**: 0→1; **45**: 0→1
Node **IV** *Simus* group	**100/67.4**	**5**: 0→1; **13**: 1→0; **14**: 1→0; **21**: 1→0; **33**: 0→1; **42**: 1→0; **44**: 0→1; **53**: 0→1; **54**: 0→1; **55**: 1→0; **61**: 0→1
Node **V**	**88/28.85**	**49**: 0→1; **63**: 0→1; **64**: 0→1; **65**: 2→0
Node **VI** *Hesperus* group	**57/8.85**	**11**: 0→1; **26**: 1→0; **30**: 1→0
Node **VII** *Atomarius* group	**<50/7.02**	**36**: 0→1; **70**: 0→1;

Table 5. Statistics for each morphological character based on the preferred tree topology using implied weights.

Characters	Steps	CI	RI	RC	Weight
General Morphology					
Character 1	7	0.5	0.833	0.417	0.75
Character 2	14	0.182	0.25	0.045	0.25
Character 3	4	0.333	0.333	0.111	0.6
Character 4	3	1	1	1	1
Character 5	5	0.333	0.5	0.167	0.6
Character 6	5	1	1	1	1
Character 7	19	0.182	0.471	0.086	0.25
Character 8	3	1	1	1	1
Character 9	4	0.5	0.667	0.333	0.75
Character 10	5	0.25	0.25	0.062	0.5
Character 11	10	0.333	0.778	0.259	0.6
Character 12	4	1	1	1	1
Character 13	15	0.2	0.714	0.143	0.429
Character 14	9	0.333	0.75	0.25	0.6
Character 15	2	1	1	1	1
Character 16	2	1	1	1	1
Character 17	9	0.25	0.625	0.156	0.5
Character 18	6	0.2	0.2	0.04	0.429
Character 19	6	1	1	1	1
Character 20	8	0.667	0.833	0.556	0.75
Character 21	12	0.5	0.909	0.455	0.75
Character 22	2	0.5	0	0	0.75
Character 23	4	0.333	0.333	0.111	0.6
Character 24	2	0.5	0	0	0.75
Male Leg and Microstuctural					
Character 25	7	0.25	0.5	0.125	0.5
Character 26	15	0.333	0.857	0.286	0.6
Character 27	7	0.333	0.667	0.222	0.6
Character 28	7	0.143	0	0	0.333
Character 29	9	0.2	0.5	0.1	0.429
Character 30	17	0.2	0.75	0.15	0.429
Character 31	4	0.5	0.667	0.333	0.75
Character 32	7	1	1	1	1
Character 33	5	0.25	0.25	0.062	0.5
Character 34	6	0.25	0.4	0.1	0.5
Character 35	5	0.333	0.5	0.167	0.6
Character 36	15	0.2	0.714	0.143	0.429
Character 37	3	0.5	0.5	0.25	0.75
Character 38	2	0.5	0	0	0.75
Female Leg and Microstuctural					
Character 39	1	1	0	0	1
Character 40	3	1	1	1	1
Character 41	6	0.5	0.8	0.4	0.75

Table 5a. Character statistics cont.

Secondary Sexual and Genitalic Characters					
Character 42	8	0.333	0.714	0.238	0.6
Character 43	9	0.333	0.75	0.25	0.6
Character 44	7	0.5	0.833	0.417	0.75
Character 45	4	0.5	0.667	0.333	0.75
Character 46	2	1	1	1	1
Character 47	21	0.429	0.778	0.333	0.429
Character 48	9	0.143	0.25	0.036	0.333
Character 49	13	0.25	0.75	0.188	0.5
Character 50	8	0.25	0.571	0.143	0.5
Character 51	5	0.5	0.75	0.375	0.75
Character 52	15	0.2	0.714	0.143	0.429
Character 53	7	0.5	0.833	0.417	0.75
Character 54	6	1	1	1	1
Character 55	12	0.5	0.909	0.455	0.75
Character 56	6	0.333	0.6	0.2	0.6
Character 57	3	0.333	0	0	0.6
Character 58	12	0.25	0.727	0.182	0.5
Character 59	7	1	1	1	1
Character 60	7	1	1	1	1
Character 61	7	0.5	0.833	0.417	0.75
Character 62	4	0.333	0.333	0.111	0.6
Character 63	16	1	1	1	1
Character 64	19	0.667	0.941	0.627	0.75
Character 65	19	0.5	0.882	0.441	0.6
Character 66	15	0.4	0.769	0.308	0.5
Character 67	5	1	1	1	1
Character 68	10	0.5	0.889	0.444	0.75
Character 69	3	0.333	0	0	0.6
Character 70	6	0.5	0.8	0.4	0.75
Character 71	3	1	1	1	1
Character 72	6	0.5	0.8	0.4	0.75