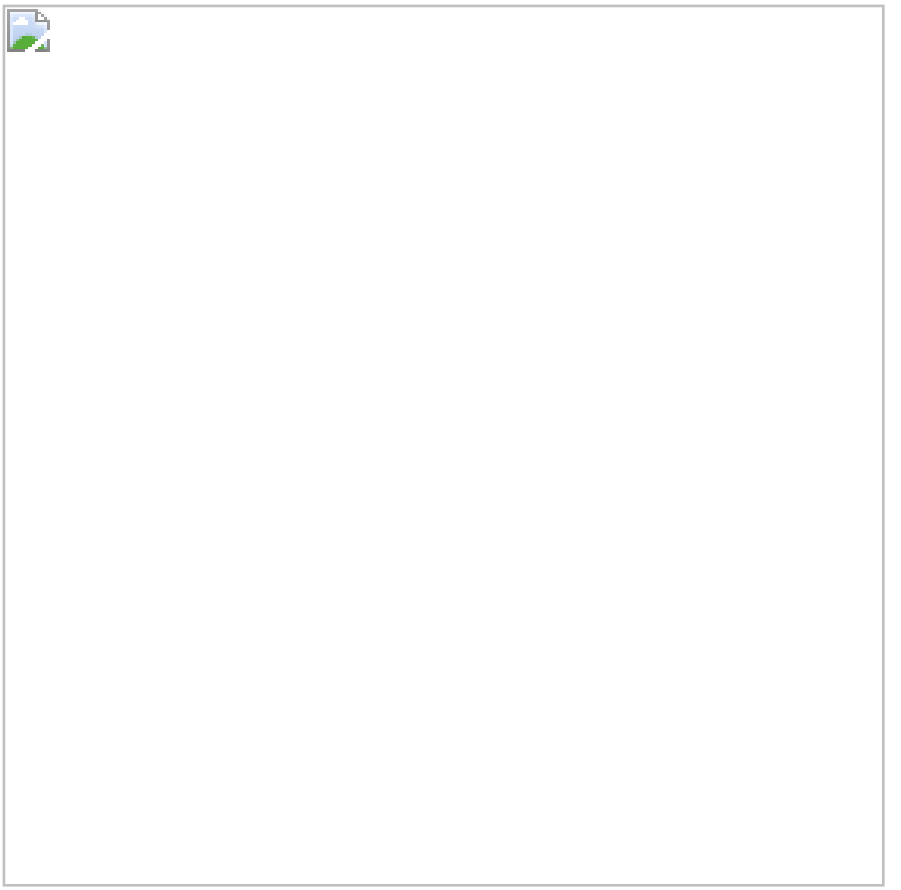

Review of North American Chlamydatus Curtis Species, with New Synonymy and the Description of Two New Species (Heteroptera: Miridae: Phylinae)

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Review of North American *Chlamydatus* Curtis Species, with New Synonymy and the Description of Two New Species (Heteroptera: Miridae: Phylinae)

RANDALL T. SCHUH[1] AND MICHAEL D. SCHWARTZ[2]

ABSTRACT

The species of *Chlamydatus* Curtis occurring in North America are reviewed. *Chlamydatus californicus* and *Chlamydatus keltoni* are described as new. The following synonymies are proposed: *Chlamydatus arcuatus* Knight and *Chlamydatus auratus* Kelton = *Chlamydatus pulicarius* (Fallén); *Chlamydatus knighti* Kelton = *Chlamydatus schuhi* Knight; and, *Chlamydatus fulvipes* Knight = *Chlamydatus pullus* (Reuter). Revised diagnoses, digital habitus illustrations, illustrations of male genitalia and legs, scanning micrographs of diagnostic features, and new distributional records are provided. A new key to the North American species is offered to facilitate identification.

INTRODUCTION

Kelton's (1965) revision of *Chlamydatus* Curtis for North America provided an excellent outline for the fauna. His was one of the first papers on North American Phylinae to illustrate the male genitalia for all species, allowing for some of the most useful comparisons of species concepts up to that time. He also included much new distributional information.

Kelton's paper had two weaknesses. First

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Fig. 1. Habitus views of *Chlamydatus* spp.: *C. artemisiae–C. opacus*. See appendix 1 for localities.

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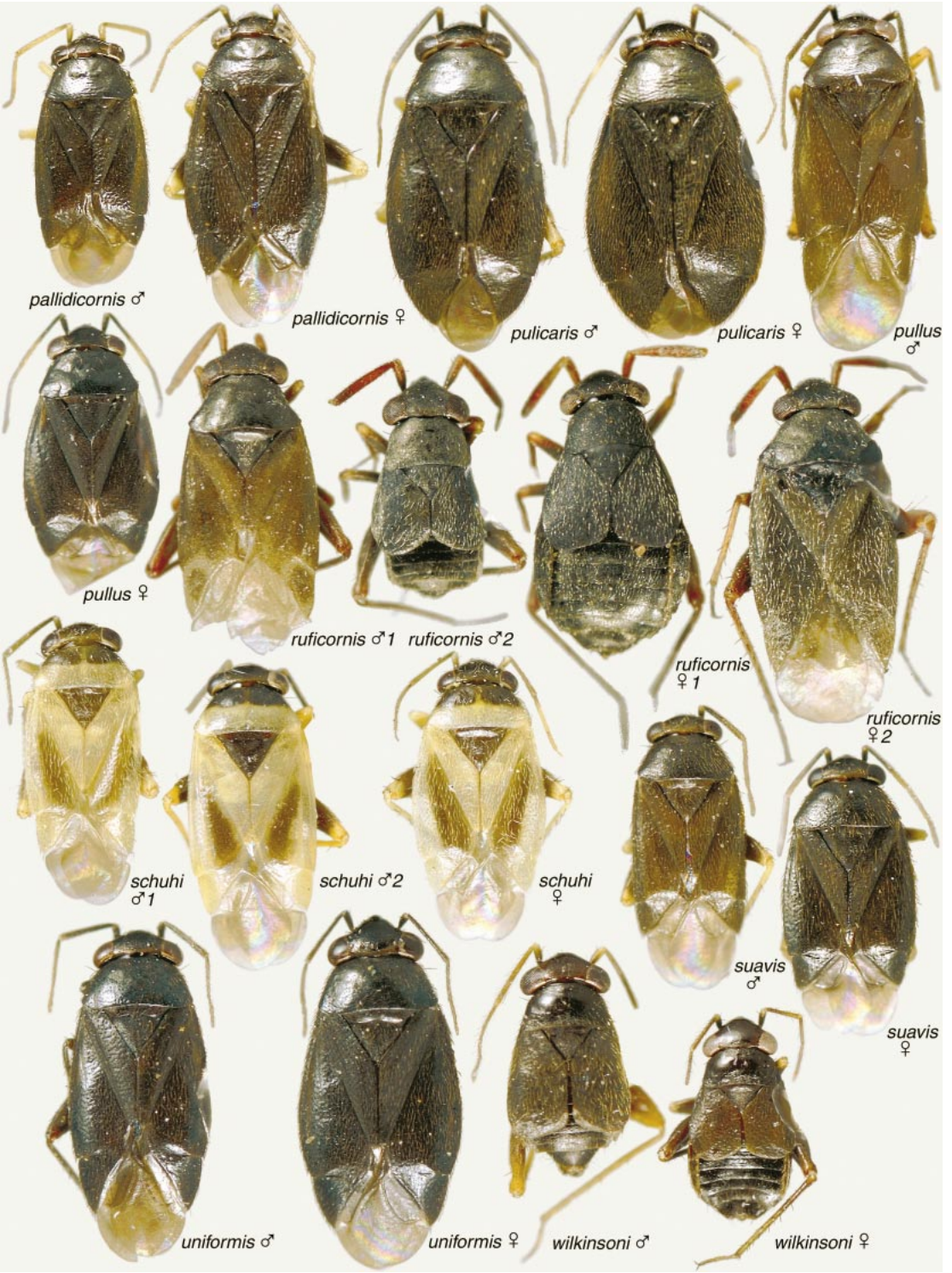

Fig. 2. Habitus views of *Chlamydatus* spp.: *C. pallidicornis–C. wilkinsoni*. See appendix 1 for localities.

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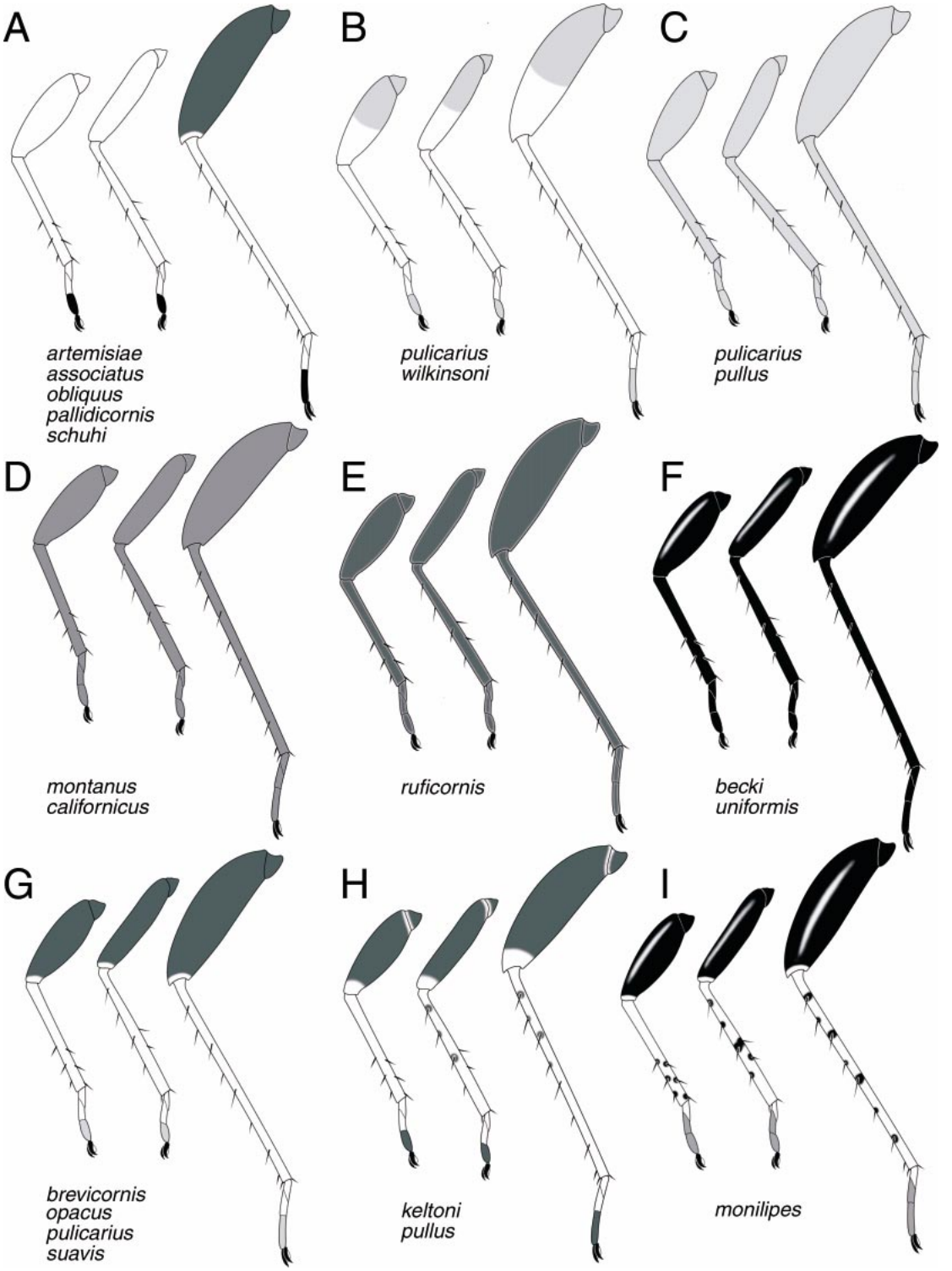

Fig. 3. Coloration patterns on legs of *Chlamydatus* spp.

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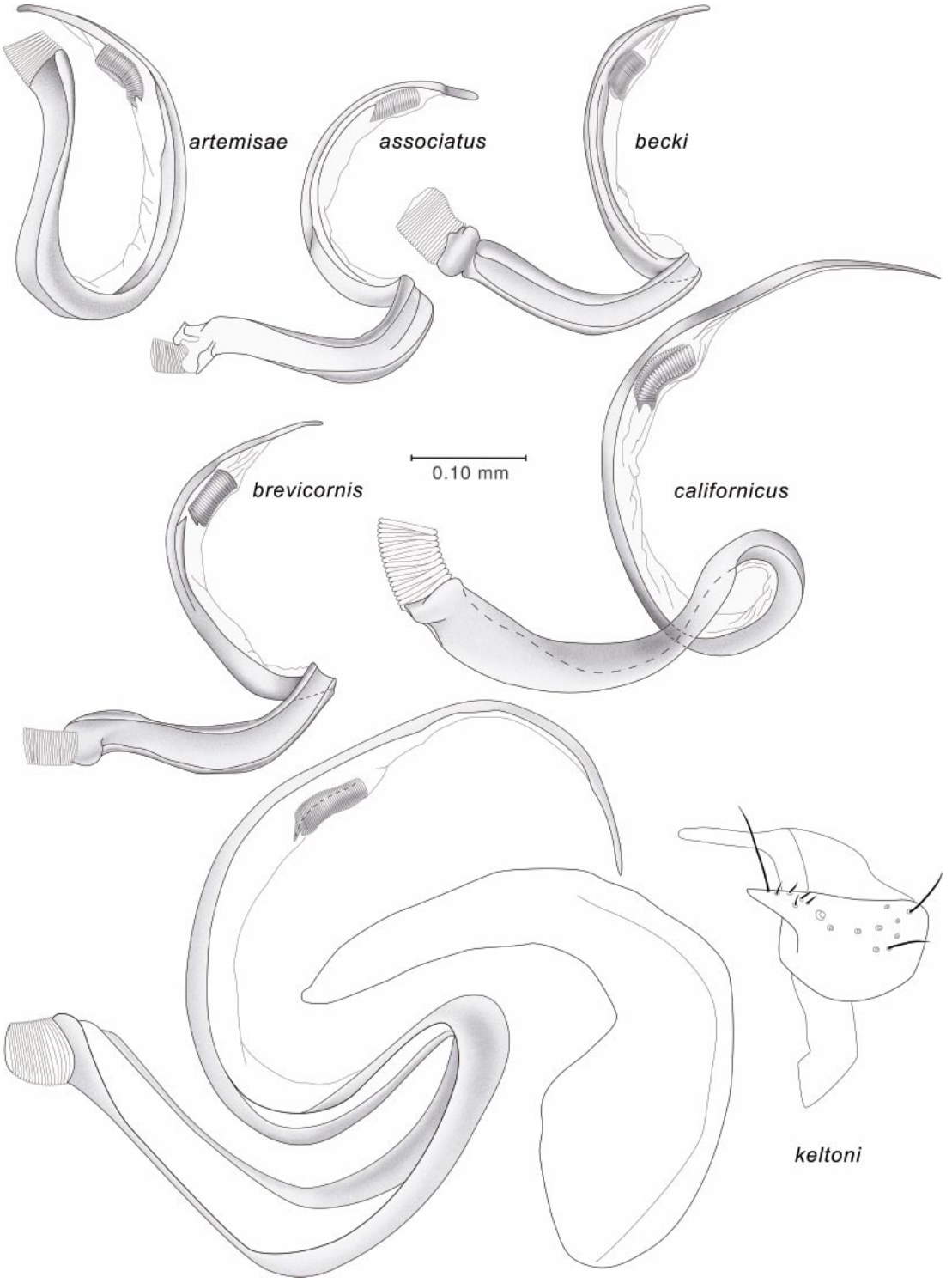

Fig. 4. Male genitalia of *Chlamydatus* spp.: *C. artemisiae–C. keltoni*. See appendix 1 for localities.

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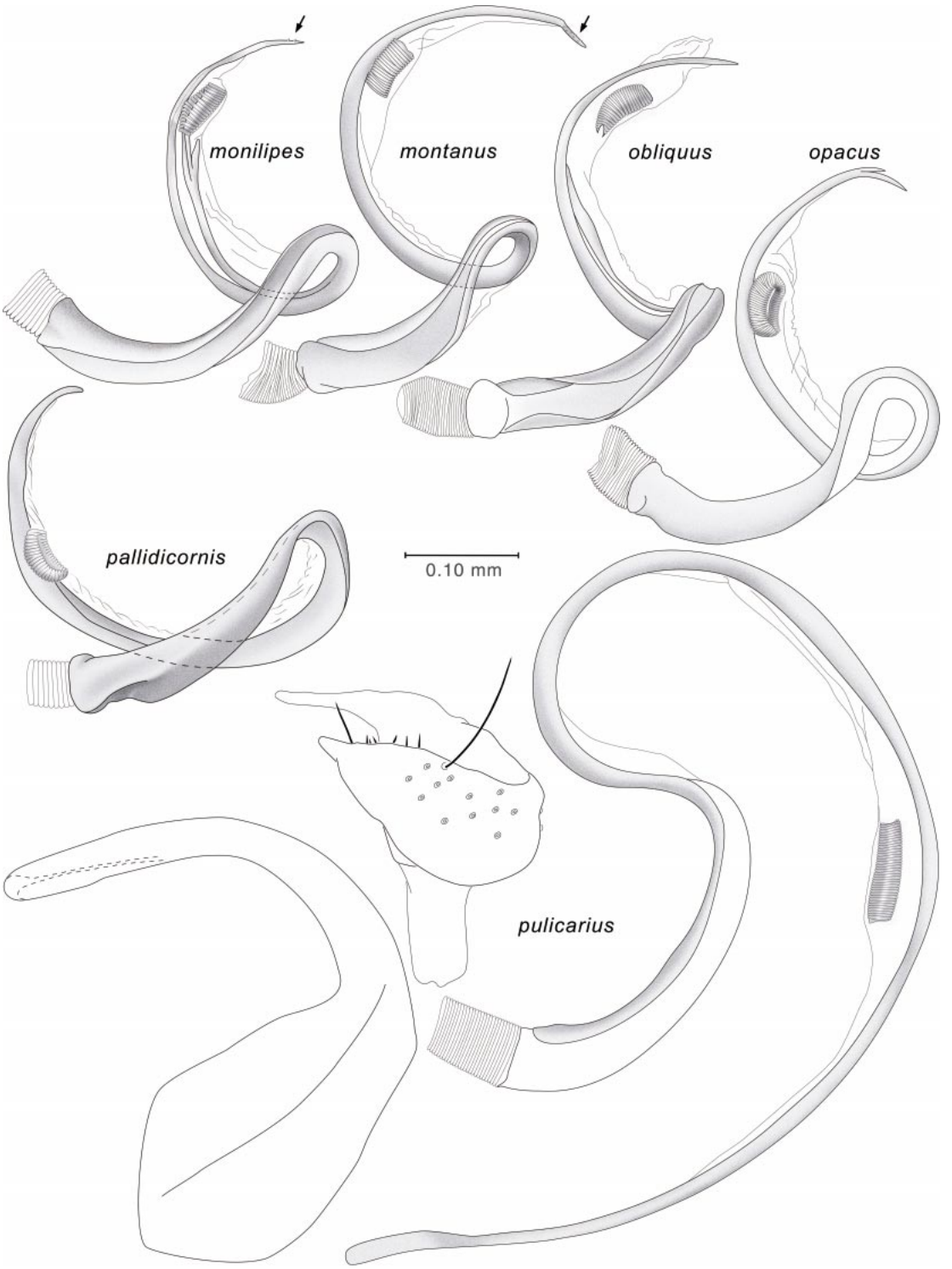

Fig. 5. Male genitalia of *Chlamydatus* spp.: *C. monilipes–C. pulicarius*. See appendix 1 for localities.

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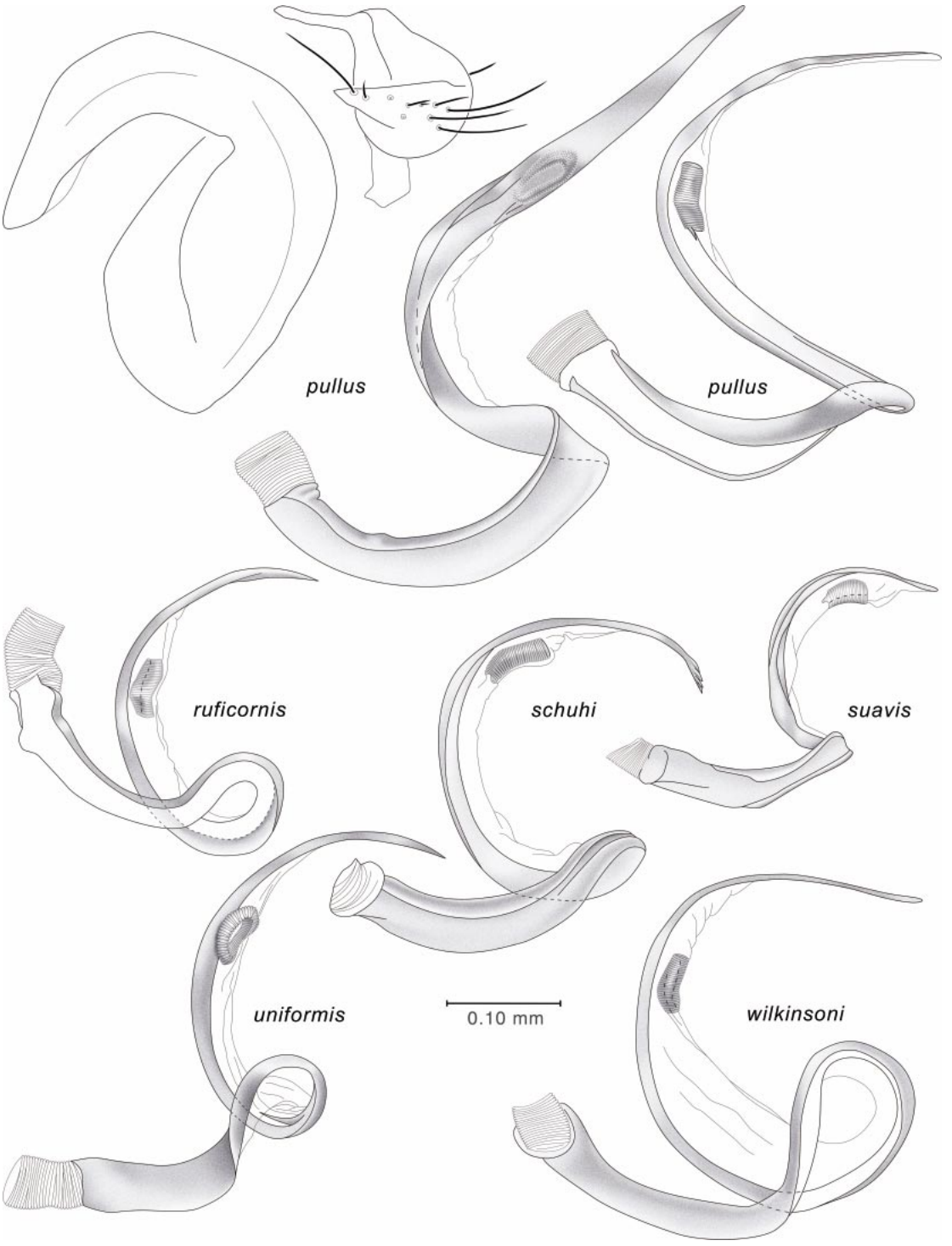

Fig. 6. Male genitalia of *Chlamydatus* spp.: *C. pullus–C. wilkinsoni*. See appendix 1 for localities.

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TABLE 1
Measurement of *Chlamydatus* Species

		Length				Width			
Species		Total Body	Cun-Clyp	Head	Pronotum	Head	Pronotum	InterOcDi	AntSeg2
artemisiae									
M (N = 4)	**Mean**	**2.37**	**1.62**	**0.15**	**0.39**	**0.69**	**0.85**	**0.35**	**0.56**
	SD	0.05	0.03	0.01	0.02	0.01	0.03	0.00	0.03
	Range	0.11	0.07	0.02	0.05	0.02	0.06	0.01	0.08
	Min	2.33	1.60	0.14	0.35	0.68	0.82	0.35	0.52
	Max	2.44	1.67	0.16	0.40	0.70	0.88	0.36	0.60
F (N = 2)	**Mean**	**2.34**	**1.70**	**0.19**	**0.42**	**0.70**	**0.88**	**0.37**	**0.46**
	SD	0.10	0.11	0.01	0.02	0.01	0.01	0.01	0.01
	Range	0.14	0.15	0.02	0.03	0.01	0.01	0.01	0.02
	Min	2.27	1.62	0.18	0.40	0.70	0.88	0.36	0.45
	Max	2.41	1.77	0.20	0.43	0.71	0.89	0.37	0.47
associates									
M (N = 4)	**Mean**	**2.59**	**1.78**	**0.16**	**0.40**	**0.68**	**0.87**	**0.34**	**0.75**
	SD	0.13	0.06	0.03	0.06	0.02	0.03	0.02	0.02
	Range	0.30	0.13	0.08	0.12	0.04	0.06	0.04	0.04
	Min	2.46	1.74	0.12	0.36	0.67	0.84	0.32	0.73
	Max	2.76	1.87	0.20	0.47	0.71	0.90	0.36	0.77
F (N = 5)	**Mean**	**2.56**	**1.80**	**0.16**	**0.39**	**0.70**	**0.91**	**0.36**	**0.63**
	SD	0.09	0.05	0.02	0.03	0.02	0.03	0.03	0.03
	Range	0.21	0.11	0.05	0.08	0.05	0.07	0.07	0.08
	Min	2.43	1.76	0.13	0.35	0.68	0.87	0.33	0.59
	Max	2.64	1.86	0.18	0.43	0.73	0.95	0.39	0.67
becki									
M (N = 2)	**Mean**	**2.22**	**1.45**	**0.14**	**0.35**	**0.63**	**0.81**	**0.33**	**0.48**
	SD	0.02	0.00	0.01	0.02	0.01	0.01	0.00	0.02
	Range	0.02	0.00	0.02	0.03	0.01	0.02	0.00	0.03
	Min	2.21	1.45	0.13	0.33	0.62	0.81	0.33	0.47
	Max	2.23	1.45	0.15	0.36	0.64	0.82	0.33	0.49
F (N = 4)	**Mean**	**2.19**	**1.54**	**0.17**	**0.37**	**0.68**	**0.82**	**0.35**	**0.41**
	SD	0.08	0.04	0.02	0.01	0.01	0.01	0.01	0.01
	Range	0.16	0.09	0.06	0.03	0.02	0.03	0.03	0.02
	Min	2.11	1.50	0.14	0.36	0.67	0.80	0.33	0.40
	Max	2.27	1.59	0.20	0.39	0.69	0.83	0.36	0.42
brevicornis									
M (N = 5)	**Mean**	**2.14**	**1.49**	**0.14**	**0.37**	**0.66**	**0.78**	**0.35**	**0.48**
	SD	0.07	0.04	0.02	0.04	0.02	0.04	0.01	0.03
	Range	0.20	0.12	0.04	0.09	0.04	0.09	0.02	0.08
	Min	2.02	1.44	0.12	0.34	0.64	0.73	0.34	0.43
	Max	2.22	1.56	0.16	0.43	0.68	0.82	0.36	0.51
F (N = 5)	**Mean**	**2.18**	**1.58**	**0.14**	**0.38**	**0.70**	**0.83**	**0.37**	**0.49**
	SD	0.11	0.12	0.05	0.04	0.03	0.06	0.01	0.04
	Range	0.27	0.27	0.10	0.10	0.08	0.15	0.03	0.09
	Min	2.09	1.50	0.09	0.34	0.66	0.79	0.36	0.44
	Max	2.36	1.77	0.19	0.44	0.75	0.94	0.38	0.53
californicus									
M (N = 2)	**Mean**	**1.77**	**1.60**	**0.27**	**0.40**	**0.76**	**0.72**	**0.37**	**0.73**
	SD	0.25	0.00	0.05	0.02	0.01	0.00	0.02	0.03
	Range	0.35	0.00	0.07	0.02	0.02	0.00	0.03	0.04
	Min	1.60	1.60	0.23	0.39	0.75	0.72	0.36	0.71
	Max	1.94	1.60	0.30	0.41	0.77	0.72	0.39	0.74

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TABLE 1
(*Continued*)

Species		Length				Width			
		Total Body	Cun-Clyp	Head	Pronotum	Head	Pronotum	InterOcDi	AntSeg2
californicus (continued)									
F (N = 5)	**Mean**	**2.67**	**1.81**	**0.29**	**0.41**	**0.82**	**0.80**	**0.38**	**0.72**
	SD	0.08	0.05	0.03	0.01	0.02	0.04	0.01	0.02
	Range	0.21	0.11	0.07	0.03	0.04	0.12	0.03	0.05
	Min	2.57	1.76	0.26	0.39	0.80	0.73	0.36	0.70
	Max	2.77	1.87	0.33	0.43	0.84	0.85	0.40	0.75
keltoni									
M (N = 5)	**Mean**	**2.41**	**1.70**	**0.18**	**0.38**	**0.70**	**0.85**	**0.35**	**0.56**
	SD	0.13	0.07	0.02	0.02	0.03	0.03	0.01	0.03
	Range	0.32	0.16	0.04	0.05	0.08	0.08	0.04	0.07
	Min	2.29	1.63	0.16	0.36	0.65	0.79	0.33	0.53
	Max	2.61	1.79	0.20	0.41	0.73	0.87	0.37	0.59
F (N = 5)	**Mean**	**2.21**	**1.69**	**0.22**	**0.39**	**0.70**	**0.80**	**0.37**	**0.51**
	SD	0.18	0.14	0.02	0.02	0.03	0.05	0.01	0.03
	Range	0.41	0.27	0.05	0.07	0.07	0.12	0.03	0.09
	Min	2.04	1.58	0.19	0.36	0.67	0.73	0.35	0.48
	Max	2.45	1.85	0.24	0.43	0.74	0.85	0.38	0.57
monilipes									
M (N = 5)	**Mean**	**2.34**	**1.57**	**0.17**	**0.37**	**0.71**	**0.83**	**0.39**	**0.53**
	SD	0.17	0.09	0.03	0.02	0.03	0.05	0.02	0.06
	Range	0.42	0.24	0.07	0.04	0.09	0.12	0.06	0.16
	Min	2.17	1.46	0.14	0.34	0.67	0.76	0.36	0.47
	Max	2.60	1.70	0.21	0.39	0.76	0.88	0.43	0.63
F (N = 5)	**Mean**	**2.26**	**1.61**	**0.18**	**0.36**	**0.72**	**0.85**	**0.40**	**0.49**
	SD	0.22	0.16	0.01	0.02	0.05	0.07	0.02	0.06
	Range	0.52	0.36	0.01	0.07	0.10	0.17	0.04	0.15
	Min	2.00	1.44	0.17	0.33	0.68	0.76	0.38	0.43
	Max	2.52	1.79	0.19	0.39	0.78	0.93	0.42	0.58
montanus									
M (N = 5)	**Mean**	**2.31**	**1.62**	**0.19**	**0.38**	**0.65**	**0.82**	**0.35**	**0.53**
	SD	0.10	0.05	0.03	0.02	0.01	0.03	0.01	0.02
	Range	0.23	0.12	0.09	0.05	0.02	0.08	0.03	0.05
	Min	2.22	1.55	0.14	0.35	0.64	0.79	0.34	0.49
	Max	2.46	1.67	0.22	0.41	0.66	0.87	0.37	0.54
F (N = 4)	**Mean**	**2.35**	**1.69**	**0.21**	**0.38**	**0.69**	**0.84**	**0.37**	**0.49**
	SD	0.09	0.06	0.02	0.00	0.04	0.02	0.01	0.02
	Range	0.20	0.14	0.04	0.01	0.10	0.04	0.02	0.04
	Min	2.27	1.61	0.20	0.38	0.65	0.82	0.35	0.48
	Max	2.47	1.76	0.24	0.39	0.75	0.85	0.38	0.52
obliquus									
M (N = 5)	**Mean**	**2.88**	**1.98**	**0.19**	**0.43**	**0.74**	**0.91**	**0.36**	**0.75**
	SD	0.09	0.07	0.02	0.02	0.03	0.04	0.01	0.04
	Range	0.21	0.15	0.06	0.05	0.07	0.11	0.02	0.09
	Min	2.78	1.90	0.17	0.40	0.69	0.85	0.35	0.70
	Max	2.98	2.06	0.23	0.45	0.77	0.96	0.37	0.80
F (N = 5)	**Mean**	**2.87**	**2.06**	**0.22**	**0.44**	**0.78**	**1.03**	**0.39**	**0.67**
	SD	0.13	0.08	0.03	0.04	0.02	0.13	0.02	0.02
	Range	0.35	0.20	0.08	0.09	0.04	0.31	0.05	0.04
	Min	2.65	1.95	0.18	0.40	0.76	0.96	0.37	0.66
	Max	3.00	2.15	0.26	0.48	0.80	1.27	0.42	0.70

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TABLE 1
(*Continued*)

		Length				Width			
Species		Total Body	Cun-Clyp	Head	Pronotum	Head	Pronotum	InterOcDi	AntSeg2
pallidicornis									
M (N = 5)	**Mean**	**2.45**	**1.71**	**0.15**	**0.39**	**0.70**	**0.82**	**0.36**	**0.59**
	SD	0.11	0.08	0.02	0.01	0.01	0.01	0.01	0.02
	Range	0.28	0.22	0.06	0.03	0.03	0.04	0.02	0.05
	Min	2.27	1.60	0.13	0.37	0.68	0.80	0.35	0.56
	Max	2.54	1.83	0.19	0.40	0.71	0.84	0.37	0.61
F (N = 5)	**Mean**	**2.47**	**1.81**	**0.18**	**0.40**	**0.72**	**0.86**	**0.37**	**0.58**
	SD	0.09	0.08	0.02	0.02	0.01	0.05	0.01	0.05
	Range	0.23	0.16	0.07	0.05	0.03	0.11	0.03	0.11
	Min	2.38	1.73	0.16	0.38	0.70	0.81	0.36	0.53
	Max	2.61	1.89	0.22	0.43	0.74	0.91	0.39	0.64
pulicarius									
M (N = 5)	**Mean**	**2.83**	**2.08**	**0.18**	**0.45**	**0.80**	**0.92**	**0.38**	**0.72**
	SD	0.24	0.12	0.03	0.02	0.06	0.17	0.11	0.04
	Range	0.58	0.27	0.06	0.04	0.16	0.40	0.26	0.08
	Min	2.51	1.92	0.16	0.43	0.68	0.63	0.18	0.67
	Max	3.09	2.19	0.22	0.48	0.84	1.03	0.45	0.75
F (N = 5)	**Mean**	**2.62**	**2.04**	**0.20**	**0.45**	**0.81**	**0.99**	**0.42**	**0.69**
	SD	0.22	0.21	0.03	0.04	0.06	0.07	0.03	0.05
	Range	0.56	0.51	0.07	0.13	0.14	0.17	0.09	0.10
	Min	2.37	1.76	0.17	0.40	0.72	0.88	0.36	0.62
	Max	2.93	2.27	0.24	0.52	0.86	1.05	0.45	0.72
pullus									
M (N = 2)	**Mean**	**2.41**	**1.80**	**0.22**	**0.43**	**0.71**	**0.89**	**0.37**	**0.61**
	SD	0.00	0.07	0.05	0.01	0.01	0.03	0.02	0.02
	Range	0.00	0.10	0.07	0.01	0.02	0.04	0.03	0.03
	Min	2.40	1.75	0.18	0.43	0.70	0.87	0.35	0.60
	Max	2.41	1.85	0.25	0.44	0.72	0.91	0.38	0.63
F (N = 3)	**Mean**	**2.47**	**1.86**	**0.20**	**0.41**	**0.72**	**0.89**	**0.38**	**0.62**
	SD	0.20	0.13	0.03	0.01	0.01	0.03	0.01	0.08
	Range	0.41	0.25	0.05	0.03	0.01	0.06	0.02	0.15
	Min	2.29	1.75	0.18	0.40	0.72	0.85	0.37	0.57
	Max	2.69	2.00	0.23	0.42	0.73	0.91	0.39	0.71
ruficornis									
M (N = 5)	**Mean**	**1.79**	**1.38**	**0.27**	**0.39**	**0.74**	**0.72**	**0.34**	**0.66**
	SD	0.04	0.08	0.03	0.02	0.02	0.03	0.01	0.04
	Range	0.10	0.20	0.09	0.05	0.03	0.07	0.03	0.11
	Min	1.74	1.29	0.24	0.36	0.73	0.68	0.32	0.60
	Max	1.84	1.49	0.33	0.41	0.76	0.75	0.36	0.71
F (N = 5)	**Mean**	**2.28**	**1.53**	**0.27**	**0.42**	**0.77**	**0.77**	**0.37**	**0.66**
	SD	0.14	0.03	0.03	0.02	0.03	0.04	0.02	0.05
	Range	0.37	0.08	0.08	0.05	0.09	0.09	0.05	0.11
	Min	2.07	1.48	0.23	0.40	0.72	0.74	0.34	0.60
	Max	2.44	1.56	0.31	0.45	0.81	0.83	0.39	0.71
schuhi									
M (N = 5)	**Mean**	**2.42**	**1.68**	**0.18**	**0.39**	**0.70**	**0.86**	**0.35**	**0.57**
	SD	0.15	0.07	0.03	0.03	0.02	0.05	0.02	0.04
	Range	0.39	0.17	0.08	0.08	0.05	0.11	0.04	0.09
	Min	2.27	1.61	0.12	0.36	0.68	0.81	0.33	0.53
	Max	2.66	1.77	0.20	0.44	0.73	0.91	0.36	0.62

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TABLE 1
(*Continued*)

Species		Length				Width			
		Total Body	Cun-Clyp	Head	Pronotum	Head	Pronotum	InterOcDi	AntSeg2
schuhi (continued)									
F (N = 5)	**Mean**	**2.47**	**1.77**	**0.21**	**0.39**	**0.74**	**0.88**	**0.37**	**0.50**
	SD	0.11	0.06	0.01	0.02	0.02	0.03	0.01	0.02
	Range	0.27	0.18	0.03	0.04	0.04	0.07	0.02	0.04
	Min	2.34	1.68	0.19	0.37	0.72	0.84	0.37	0.48
	Max	2.62	1.85	0.22	0.41	0.76	0.91	0.39	0.52
suavis									
M (N = 5)	**Mean**	**2.27**	**1.57**	**0.14**	**0.37**	**0.61**	**0.81**	**0.32**	**0.58**
	SD	0.17	0.07	0.02	0.03	0.01	0.05	0.01	0.05
	Range	0.43	0.16	0.04	0.06	0.03	0.13	0.03	0.13
	Min	2.12	1.51	0.13	0.34	0.60	0.75	0.31	0.51
	Max	2.55	1.68	0.16	0.40	0.63	0.87	0.34	0.64
F (N = 5)	**Mean**	**2.24**	**1.56**	**0.15**	**0.37**	**0.62**	**0.83**	**0.34**	**0.47**
	SD	0.07	0.04	0.02	0.02	0.01	0.04	0.01	0.02
	Range	0.18	0.12	0.04	0.05	0.03	0.10	0.03	0.05
	Min	2.13	1.49	0.13	0.34	0.60	0.79	0.31	0.44
	Max	2.31	1.61	0.17	0.39	0.63	0.89	0.35	0.49
uniformis									
M (N = 5)	**Mean**	**2.77**	**1.97**	**0.24**	**0.43**	**0.81**	**0.94**	**0.40**	**0.57**
	SD	0.10	0.10	0.02	0.04	0.04	0.02	0.02	0.07
	Range	0.23	0.26	0.05	0.08	0.09	0.06	0.05	0.14
	Min	2.65	1.85	0.22	0.39	0.77	0.90	0.37	0.50
	Max	2.88	2.12	0.27	0.47	0.87	0.97	0.42	0.65
F (N = 5)	**Mean**	**2.94**	**2.13**	**0.29**	**0.47**	**0.86**	**1.00**	**0.42**	**0.56**
	SD	0.18	0.15	0.02	0.03	0.06	0.03	0.02	0.06
	Range	0.43	0.33	0.06	0.08	0.12	0.07	0.04	0.14
	Min	2.74	1.98	0.27	0.44	0.81	0.97	0.41	0.48
	Max	3.17	2.32	0.32	0.51	0.93	1.04	0.45	0.63
wilkinsoni									
M (N = 5)	**Mean**	**1.69**	**1.34**	**0.24**	**0.33**	**0.68**	**0.69**	**0.35**	**0.52**
	SD	0.25	0.14	0.02	0.02	0.06	0.03	0.02	0.05
	Range	0.61	0.38	0.06	0.05	0.15	0.06	0.03	0.13
	Min	1.28	1.15	0.22	0.30	0.60	0.67	0.33	0.44
	Max	1.89	1.53	0.28	0.35	0.74	0.73	0.36	0.57
F (N = 3)	**Mean**	**1.94**	**1.39**	**0.27**	**0.35**	**0.70**	**0.76**	**0.36**	**0.45**
	SD	0.14	0.13	0.05	0.02	0.05	0.08	0.03	0.07
	Range	0.26	0.24	0.08	0.04	0.09	0.17	0.06	0.14
	Min	1.78	1.24	0.24	0.33	0.64	0.67	0.33	0.37
	Max	2.04	1.48	0.32	0.37	0.74	0.84	0.39	0.51

was the acceptance of some flawed species concepts and the misidentification of certain taxa. Our solution to this problem involves the description of two new species and the treatment of four names used by Kelton as junior synonyms.

Second, Kelton's key relied heavily on pubescence type and coloration. Although pubescence is very important in recognizing some *Chlamydatus* spp., the attributes of coloration which Kelton ascribed to the vestiture are at times difficult—if not impossible—to recognize. We believe they also show infraspecific variability. As a conse-

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quence, some of the most similar appearing, and presumably most closely related, species did not come out together in his key.

An additional difficulty with Kelton's paper that is not completely removed in ours is the rendering of the genitalia. Whereas most members of the Phylinae have a vesica that is sufficiently rigid to remain undistorted during the process of dissection and illustration and which can be presented in a uniform orientation, this does not appear to always be the case in *Chlamydatus*. Nonetheless, the genitalia offer rather obvious diagnostic features for most species. We have shown what we believe to be the most useful comparative orientation. The reader is encouraged to consult Kelton (1965) to appreciate the plasticity of interpretation of genitalic structure in this group.

The present work provides revised diagnoses, color digital habitus figures, and consistent illustrations of the male genitalia. We present a new key that we believe will make clearer which species are most similar to one another in appearance and therefore most difficult to separate. Much new distributional information and substantial host data for *Chlamydatus* spp. recorded from North America are included in the present paper. For common species, most notably *C. associatus* (Uhler), we have not recorded the number and sex of specimens in all cases, but for some material indicated only localities and specimen depositories.

Complete synonymies are not presented in most cases because little work has been done on the North American fauna since the treatment of Kelton (1965). The reader should consult Henry and Wheeler (1988) and Schuh (1995) for more detailed synonymic listings.

All measurements are in millimeters; see table 1 for measurements of all species.

Chlamydatus Curtis

Chlamydatus Curtis 1833: 198 (n.gen.).

REVISED DIAGNOSIS: Small, elongate oval or ovate, sometimes submacropterous with membrane shortened and just covering abdomen, or brachypterous, with hemelytra truncate, leaving much of abdomen exposed (figs. 1, 2); total length 1.28–3.09, width across pronotum 0.67–1.03; coloration at least partially dark brown or castaneous, often entirely black (figs. 1, 2); eyes somewhat bulging and extending laterally beyond anterolateral angles of pronotum (figs. 7A,B, 8A, 9A,B); posterior margin of vertex rounded, sometimes broadly so (figs. 7A, 9A); antennae not sexually dimorphic, segment 2 usually slender, rarely fusiform, generally no longer than width of head across eyes (figs. 1, 2); claws only moderately elongate, nearly straight over much of length, pulvilli relatively large, adnate to at least basal half of ventral claw surface (figs. 7E,F, 8C,D, 9D); parempodia setiform. Vestiture of dorsum composed of simple or weakly woolly setae, these ranging from dull black to silvery or golden and shining, sometimes appearing neatly arranged, less frequently having a somewhat disordered appearance (e.g., *C. associatus*, *C. obliquus* (Uhler)) (figs. 1, 2, 7C, 8B, 9D). Femora moderately broad (fig. 7E). Genitalia (figs. 4–6, 7H, 8F, 9F): Vesica with a single strap, apical attenuation single, varying greatly from about the length of the gonopore to about half the length of the vesica, and occasionally with a ''secondary spine'' on the apical attenuation (see *C. opacus*, *C. schuhi* Knight) or with apical spicules (see *C. monilipes*, *C. montanus* Knight); gonopore relatively large, closed both proximally and distally, distal margin broadly rounded, without area of attenuation, proximally without a gonopore sclerite (as found in *Atractotomus* Fieber [see Stonedahl, 1990]); phallotheca without distinctive features; left paramere conventionally phyline, without distinctive structural variation; right paramere lanceolate.

DISCUSSION: Dark-colored *Chlamydatus* spp. will be most easily confused with some of the small black species of *Plagiognathus* Fieber. The male genitalia in the two groups are absolutely distinctive from one another, however, *Chlamydatus* having a vesica formed of a single strap with an attenuated apex, whereas the vesica in *Plagiognathus* has two straps and terminates in two broad blades; on that basis they can be unequivocally separated. *Chlamydatus* spp. are similar in size and coloration to some other North American taxa, such as species of *Arctostaphylocoris* Schuh and Schwartz, 2004 and

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Phoenicocoris spp. (see Schwartz and Stonedahl, 2004), but those taxa always have some scalelike setae on the dorsum and usually on the thoracic pleuron, whereas *Chlamydatus* spp. never possess scalelike setae.

Chlamydatus is a taxon of longstanding recognition. Nonetheless, producing a straightforward diagnosis for the group on the basis of external and genitalic characters has not proved to be a simple matter. Whereas most specimens of *Chlamydatus* in reasonably good condition can be recognized without the necessity of dissecting the male genitalia, placing specimens to genus will often be the more difficult part of the identification process. The labium varies considerably in length within the genus. Its use in identification of species can be frustrating because of intraspecific variation, sexual dimorphism, and because of flexion of both the head and the labium. Consequently, we have largely avoided using labial length as a diagnostic feature. We have, however, used total length of specimens as a way of distinguishing many taxa. Experience suggests that attempting to determine size simply by inspection will produce inaccurate results. Thus, we recommend performing all measurements with an ocular micrometer.

Many of the New World species of *Chlamydatus* for which hosts are known feed on members of the Asteraceae, both herbaceous and woody. Several appear to show substantial host specificity, such as *C. becki* and *C. brevicornis* on *Artemisia* spp. and *C. californicus*, n. sp., on *Hemizonia pungens*; it is these species that are usually least well represented in collections. A few species, such as *C. associatus* and *C. suavis* (Reuter) are widespread and appear to feed on a variety of ruderal plants, including Asteraceae, and occasionally on cultivated species. Specimens of these species are often acquired by general collectors through sweeping plants in early successional stages and consequently these are the species most commonly encountered in collections, often without host data.

There is no obvious pattern of host relationships for those taxa that do not feed on Asteraceae. For example, *C. obliquus* (Uhler) feeds primarily on herbaceous legumes in the genera *Lupinus* and *Astragalus*. *Chlamydatus uniformis* (Uhler) feeds on perennial members of the Lamiaceae in the genus *Salvia*. *Chlamydatus schuhi* Knight, although undoubtedly known to breed on Asteraceae, is also known from species of *Leptodactylon* and *Phlox* in the Polemoniaceae. *Chlamydatus keltoni*, n. sp., has been recorded from a variety of plant families, including—among others—the Fabaceae (*Astragalus*, *Lupinus*, and *Medicago* spp.), Ranunculaceae (*Ranunculus* sp.), and Rosaceae (*Potentilla* spp.); a similar pattern of host associations is seen for *C. pulicarius* (Fallén). Host data appear to be completely lacking for some species, including *C. opacus* (Zetterstedt), *C. ruficornis* Knight, and *C. wilkinsoni* (Douglas and Scott).

Key to North American Species of *Chlamydatus* Curtis

1. Fore- and middle femora entirely pale yellowish to white, never with basal infuscation, posterior femur dark brown to nearly black on proximal 90%, pale distally, in marked contrast to fore- and middle femora (fig. 3A) 2
— Coloration of femora not as above (fig. 3A), coloration of hind femora not strongly contrasting with that of fore- and middle femora (fig. 3B–I) 6
2. Large species, length 2.78–2.98; frequently with clavus, exocorium, and posterior margin of pronotum pale, less commonly dorsum entirely black (fig. 1); dorsal vestiture relatively dense, somewhat woolly, shining (fig. 1); often feeding on *Lupinus* or other herbaceous legumes; interior of western North America . . . . . *obliquus* (Uhler)
— Smaller species, length less than 2.76; coloration variable; vestiture woolly or neatly arranged 3
3. Hemelytra largely, and sometimes posterior margin of pronotum, pale; scutellum always dark (fig. 2); known from *Leptodactylon* and *Phlox* (Polemoniaceae) and *Chrysothamnus* spp. Asteraceae); Great Basin . . . . . *schuhi* Knight
— Dorsum unicolorous dark 4
4. Antennal segment 2 longer than width of head across eyes (75:68); body form in males relatively elongate, hemelytra nearly parallel-sided (fig. 1); *Ambrosia* spp. (Asteraceae) and other annuals; widely distributed in North America . . . . . *associatus* (Uhler)

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— Antennal segment 2 shorter than width of head across eyes (56:69, 59:70); body form broader and hemelytra convexly rounded laterally 5

5. Dorsum clothed with moderately shining setae (fig. 1); labium at most reaching slightly beyond posterior margin of middle trochanters; antennal segment 2 in males usually entirely dark; known only from *Artemisia cana*; southeastern Alberta . . . . . *artemisiae* Kelton

— Dorsum clothed with neatly arranged, very weakly shining, dark setae (fig. 2); labium reaching beyond posterior margin of hind trochanters; antennal segment 2 in males usually mostly pale; known from *Potentilla*; montane western North America . . . . . *pallidicornis* Knight

6. All femora and tibiae completely black (fig. 3F) 7

— All femora and tibiae not completely black; femora either pale on distal 10% (fig. 3G–I), or if unicolorous then femora entirely infuscate or reddish (fig. 3C–E), or femora infuscate or reddish on proximal half only (fig. 3B); tibiae either infuscate (fig. 3C–E) or pale, spines with weakly to strongly darkened bases (fig. 3B,G–I) 8

7. Larger species, length 2.65–2.88; jet black, shining; known from *Salvia* spp.; coastal southern California and Baja California Norte . . . . . *uniformis* (Uhler)

— Smaller species, length 2.21–2.23; brownish black, weakly shining; known from *Artemisia* spp.; Mojave Desert and Great Basin . . . . . *becki* Knight

8. Hemelytra covering entire abdomen, with at least a limited area of membrane present; very rarely membrane strongly reduced and pygophore exposed in males (fig. 1, *opacus*) 9

— Hemelytra truncate and membrane completely absent (staphylinoid) (fig. 1, *californicus*, fig. 2, *ruficornis*, *wilkinsoni*); at least half of abdomen exposed 18

9. Dorsum cream and brown, not unicolorous dark; membrane greatly reduced, exposing pygophore in male (fig. 1); northern Canada . . . . . *opacus* (Zetterstedt)

— Dorsum unicolorous dark, usually blackish, castaneous, or very deep brown; membrane sometimes reduced, but never exposing pygophore 10

10. Femora and tibiae conspicuously reddish, although areas of femora may be much darker than remainder of legs 11

— Femora and tibiae never conspicuously reddish; if not black or very dark brown, then at most yellow or yellow orange 12

11. Dorsum dull, slate black (fig. 2); antennal segment 2 weakly fusiform, red (fig. 2); frons distinctly bulging (fig. 2); host unknown; plains of North America . . . . . *ruficornis* Knight

— Dorsum castaneous, polished and moderately shining (fig. 1); antennal segment 2 linear, usually black in males (fig. 1), sometimes paler in females; frons weakly convex (fig. 1), but never bulging; known from *Artemisia* spp.; montane western North America . . . . . *montanus* Knight

12. All femora mostly pale, ornamented with some black spots (see fig. 3B) 13

— All femora largely dark, usually black, pale only on distal one-fourth or less (fig. 3G) 14

13. Smaller species, total length 2.40–2.41; apical portion of phallotheca tapered, barely extending onto posterior surface of genital capsule; apex of vesica tapering towards apex (fig. 6); membrane in males apparently always fully developed, exceeding apex of abdomen (fig. 2); hosts in New World unknown; Yukon Territory and north-central United States . . . . . *pullus* (Reuter)

— Larger species, total length 2.51–3.09; apical portion of phallotheca greatly elongate and slender, more or less parallel sided, extending well onto posterior surface of genital capsule (figs. 5, 9F); apex of vesica greatly elongated and nearly parallel sided (fig. 5); membrane often reduced, hemelytra often not exceeding apex of abdomen in males and females (fig. 2); from annual Asteraceae and other herbaceous spp.; north of 45°N latitude and further south in Rocky Mountains and scattered localities in eastern North America . . . . . *pulicarius* (Fallén)

14. Large species, total length greater than 2.50; distal portion of genital capsule broad, apical portion of phallotheca greatly elongate, but not attenuate distally, strongly extending over posterior surface of genital capsule (figs. 5, 9F); apex of vesica greatly elongated and nearly parallel sided (fig. 5); known from annual Asteraceae and other herbaceous spp.; north of 45°N latitude and further south in Rocky Mountains and scattered localities in eastern North America . . . . . *pulicarius* (Fallén)

— Smaller species, total length less than 2.60, usually less than 2.50; if distal portion of genital capsule broad with apical portion

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of phallotheca elongate and extending over posterior surface of genital capsule, then phallotheca sharply attenuate apically (figs. 4, 8F); apex of vesica variable, but never so greatly elongated and parallel sided 15

15. Tibiae entirely pale, tibial spines without dark bases (fig. 3G); coloration often distinctly brownish rather than blackish; recorded from *Ambrosia* sp.; widely distributed . . . . . *suavis* (Reuter)

— Tibiae pale, tibial spines with distinctly darkened bases (fig. 3H,I); coloration of dorsum variable 16

16. Dorsum densely clothed with conspicuously shining, somewhat woolly pubescence (fig. 1); known from *Artemisia*; British Columbia, south to northern California, east to Colorado . . . . *brevicornis* Knight

— Dorsal vestiture neatly arranged and appearing black when viewed from above, never with a woolly or shaggy appearance 17

17. Hind femur with a very narrow pale band at tibial articulation (fig. 3I); all tibiae white with heavy black spots at bases of spines (fig. 3I); always macropterous, without hemelytral polymorphism as below (fig. 1); vesica as in figure 5; known from *Haplopappus* and other woody Asteraceae; Great Basin, Arizona, and California . . . . . *monilipes* Van Duzee

— Hind femur more broadly pale at tibial articulation (fig. 3H); tibiae yellowish, spots at bases of tibial spines smaller, brown (fig. 3H); most populations showing hemelytral polymorphism, containing both macropterous and submacropterous individuals, males usually macropterous, females usually submacropterous (fig. 1); vesica as in figure 4; known from *Lupinus* and *Potentilla*; Alaska, western Canada, and Rocky Mountains of the United States . . . . . *keltoni*, new species

18. Antennal segment 2 weakly fusiform (fig. 2); antennal segments 1 and 2 largely and distinctly reddish (fig. 2); host association unknown; plains of North America . . . . . *ruficornis* Knight

— Antennal segment 2 linear; antennal segments 1 and 2 not distinctly reddish 19

19. Hemelytra dark to nearly black (fig. 2); small species, total length 1.28–1.89; host association in New World unknown; Alaska, Canada . . . . . *wilkinsoni* (Douglas and Scott)

— Hemelytra brown (fig. 1); larger species, total length 1.60–1.94; known from *Hemizonia pungens* (Asteraceae); central valley of California . . . . . *californicus*, new species

Chlamydatus artemisiae Kelton
Figures 1, 3A, 4

Chlamydatus artemisiae Kelton, 1965: 1138 (n.sp., host).

DIAGNOSIS: Recognized by the moderate size, total length 2.33–2.44, the unicolorous dark dorsum clothed with shining, weakly woolly setae (fig. 1), and yellowish fore- and middle femora contrasting with the strongly infuscate hind femora (fig. 3A). Femoral coloration as in *C. associatus*, *C. obliquus*, *C. pallidicornis*, and *C. schuhi*. Distinguished from *C. associatus* by the broader, less elongate body form and antennal segment 2 distinctly shorter than width of head across eyes, whereas in *C. associatus* body form more elongate and antennal segment 2 longer than width of head (table 1). Male genitalia similar to those of *C. associatus*, the vesica being relatively short with a short apical attenuation (fig. 4). Distinguished from *C. obliquus* specimens with entirely dark hemelytra by the larger size of that species, the total length of males in *C. obliquus* always being greater than 2.77, in *C. artemisiae* total length never greater than 2.44. Antennal segments 1 and 2 in males of *C. pallidicornis* usually entirely pale, whereas *C. artemisiae* males with antennal segments 1 and 2 dark; vestiture in *C. pallidicornis* dark and neatly arranged, not shining and weakly woolly as in *C. artemisiae*. Easily distinguished from *C. schuhi* by the invariable presence of contrasting pale markings on the posterior margin of the pronotum and on the hemelytra in that species (fig. 2), whereas *C. artemisiae* always unicolorous dark on the dorsum (fig. 1).

HOST: *Artemisia cana* (Asteraceae).

DISTRIBUTION: Known from southeastern Alberta, Canada.

DISCUSSION: This species was described by Kelton (1965) on the basis of numerous specimens from southeastern Alberta on *Artemisia cana*. Although we find it remarkable that any species of *Chlamydatus* with such a common host should have so restricted a dis-

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tribution, we were unable to find other material that compares in body form, vestiture type, antennal length, and genitalic structure.

SPECIMENS EXAMINED: Holotype: male: ''Walsh, Alta[.,] 28.V.1952[,] L. A. Konotopetz[;] *Artemisia cana*, Type No. 8907''; deposited in the Canadian National Collection of Insects, Ottawa.

Additional specimens: CANADA: **Alberta:** Onefour, May 14, 1952, A. R. Brooks, *Artemisia cana* (Asteraceae), paratype, 1♂ (CNC). Walsh, May 28, 1952, A. R. Brooks, L. A. Konotopetz, *Artemisia cana* (Asteraceae), paratypes, 12♂, 9♀ (CNC).

Chlamydatus associatus (Uhler)
Figures 1, 3, 4, 7

Agalliastes associatus Uhler, 1872: 419 (n.sp.).

DIAGNOSIS: Recognized by the moderate size, the dorsum unicolorous dark and clothed with shining, weakly woolly setae (fig. 1), the fore- and middle femora yellowish to white—in marked contrast to the strongly infuscate hind femora (fig. 3A)—and the vesica in the male as in figure 4. Femoral coloration as in *C. artemisiae*, *C. obliquus*, *C. pallidicornis*, and *C. schuhi*. Distinguished from *C. artemisiae* by the more elongate body form and length of antennal segment 2 being greater than width of head across eyes, whereas *C. artemisiae* with antennal segment 2 distinctly shorter than width of head (table 1). Male genitalia similar to those of *C. artemisiae*, the vesica being relative short with a short apical attenuation (fig. 4). Distinguished from *C. obliquus* specimens with entirely black hemelytra by the larger size of that species, the total length of males in *C. obliquus* always being greater than 2.77; in *C. associatus* total length never greater than 2.76. Antennal segments 1 and 2 in males of *C. pallidicornis* usually entirely pale, whereas *associatus* males with antennal segments 1 and 2 dark; vestiture in *C. pallidicornis* dark and neatly arranged, not shining and weakly woolly as in *C. associatus*. Easily distinguished from *C. schuhi* by the invariable presence of contrasting pale markings on the posterior margin of the pronotum and on the hemelytra in that species, whereas *C. associatus* always unicolorous dark on the dorsum.

HOSTS: *Ambrosia* spp. (Knight, 1923, 1941; Blatchley, 1926). Label data in collections examined by us indicate that *C. associatus* breeds on *Ambrosia* spp., but has also been collected on a much wider range of plants, in accordance with the list provided by Kelton (1965).

DISTRIBUTION: Widely distributed in North America, ranging from Alaska to central Mexico, and from the Atlantic to the Pacific coasts.

DISCUSSION: As noted by Kelton (1965), this is one of the most common species of *Chlamydatus* in collections. Blatchley (1926) and Knight (1923, 1941) recorded *C. associatus* as breeding on *Ambrosia* spp. in the eastern United States. Kelton (1965) recorded the species from a wide variety of plant taxa, including *Ambrosia* spp., *Artemisia* spp. and other Asteraceae, *Astragalus* sp., and *Medicago* sp. in the Fabaceae, as well as representatives of the Brassicaceae and Chenopodiaceae. The specimens we have examined indicate that *C. associatus* is frequently collected by sweeping of ruderal vegetation. Furthermore, the label data and wide distribution clearly suggest that *C. associatus* is not restricted to *Ambrosia* spp., in conformity with the data presented by Kelton (1965), although like several other *Chlamydatus* spp., the Asteraceae may be the dominant host group. Wheeler (2001) cited sources that record *C. associatus* as a pollen feeder and as an egg predator.

SPECIMENS EXAMINED: Holotype: male (?): ''Ogden [Utah], *Agalliastes associatus* Uhler, Type No. 1133 USNM''; deposited in the National Museum of Natural History, Washington, D.C.

Additional specimens: CANADA: **Alberta:** Brooks, August 20, 1957, A. R. and J. E. Brooks (CNC). Brooks, Special Crops and Horticulture Research Center, July 17, 1990, M. D. Schwartz, *Kochia scoparia* (Chenopodiaceae), 1♂ (AMNH). Conrad, June 21, 1952, A. R. Brooks (CNC). Drumheller, August 11, 1957, A. R. and J. E. Brooks, 1♂ (CNC). Empress, June 7, 1957, A. R. Brooks, MacNay (CNC). Kananaskis Highway, June 25, 1973, L. A. Kelton (CNC). Kananaskis Road, July 20, 1974, L. A. Kelton (CNC). Lethbridge, July 5, 1956, O. Peck, *Medicago sativa* (Fabaceae) (CNC). Manyberries, June 21, 1952, L. A. Konotopetz (CNC). Medicine Hat, August 22, 1930, J. H. Pepper (CNC). Milk River, 25 mi E of, June 28, 1956, O. Peck, *Brassica* sp. (Brassicaceae) (CNC). Onefour, August 19, 1955, A.

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R. Brooks (CNC). Orkney District, July 13, 1934, G. F. Manson (CNC). Steveville, August 21, 1957, A. R. and J. E. Brooks (CNC). **British Columbia:** Barriere, waste lot behind Monte Carlo Motel near Rt 5, August 27, 1993, M. D. Schwartz, *Berteroa incana* (Brassicaceae), 4♂ (AMNH). Cawston, 4 mi E of, July 9, 1959, L. A. Kelton, 1♂ (Asteraceae) (CNC). Cranbrook, July 23, 1959, L. A. Kelton (Pinaceae) (CNC). Cranbrook, September 23, 1959, L. A. Kelton, 2♂ (CNC). Fife, 5 mi E of, June 8, 1959, R. E. Leech, 1♂ (CNC). Grand Forks, August 7, 1950, H. R. MacCarthy (Apiaceae) (CNC). Grand Forks, July 7, 1951, D. A. Arnott, 1♂ (CNC). Grand Forks, June 8, 1959, E. E. MacDougall (CNC). Grand Forks, 9 mi E of, June 8, 1959, L. A. Kelton, 5♂ (CNC). Grand Forks, 15 mi W of, June 7, 1959, L. A. Kelton, 2♂ (CNC). Oliver, April 29, May 15, 23, 27, 29, 1959, L. A. Kelton, R. E. Leech (CNC). Oliver, May 27, 1959, Madge, Kelton and Leech, 5♂ (CNC). Osoyoos Lake, Haynes Ecology Reserve, May 8, 1994, G. G. E. Scudder, *Sisymbrium loeselii*, 1♂ (UBC). Vaseaux Lake, July 9, 1959, L. A. Kelton (CNC). Vaseaux Lake, Oliver, May 28, 29, 1959, L. A. Kelton, 2♂ (CNC). Wasa, August 7, 1970, L. A. Kelton, 1♂ (CNC). Westbank, June 30, 1955, Wilson, Wakefield (CNC). **Manitoba:** Aweme, June 22, 1953, A. R. Brooks, L. A. Kelton (CNC). Boissevain, July 17, 1953, A. R. Brooks, L. A. Kelton (CNC). Brandon, July 19, 1946, P. H. Westdal (CNC). Carberry, July 27, 1953, A. R. Brooks, L. A. Kelton (CNC). Carberry, June 14, 1953, Brooks and Kelton, 1♂ (CNC). Foxwarren, 2.5 mi NW of, on Rt 16, July 19, 1990, M. D. Schwartz, *Capsella bursapastoris* (Brassicaceae), 1♂ (AMNH). Goodlands, August 28, 1920, R. W. White, 1♂ (CNC). Goodlands, July 28, 1930, R. M. White (CNC). Melita, August 23, 1953, A. R. Brooks (CNC). Morden, August 9, 1945, W. R. Allen (CNC). Morris, August 15, 1953, A. R. Brooks, 1♂ (CNC). Pilot Mound, July 31, 1958, A. R. and J. E. Brooks (CNC). Saint Francois Xavier, June 13, 1953, A. R. Brooks, L. A. Kelton (CNC). Souris, July 27, 1953, A. R. Brooks (CNC). Treesbank Ferry, June 5, 1958, J. F. McAlpine, *Thlaspi* sp. (Brassicaceae) (CNC). Turtle Mountain, July 17, 1953, A. R. Brooks, L. A. Kelton (CNC). Virden, July 9, 1953, A. R. Brooks, L. A. Kelton (CNC). Virden, July 9, 1953, Brooks and Kelton, *Helianthus* sp. (Asteraceae), 1♂ (CNC). Winkler, August 24, 1949, W. R. Allen (CNC). Winnipeg, June 6, 1953, A. R. Brooks, L. A. Kelton (CNC). **Ontario:** Ariss, May 27, 1962, L. A. Kelton, Thorpe, *Antennaria* sp. (Asteraceae) (CNC). Aylmer, July 19, 1955, L. A. Kelton, *Ambrosia* sp. (Asteraceae) (CNC). Belle River, June 7, 1961, L. A. Kelton, G. Brumpton (CNC). Belleville, June 25, 1956, J. Franz (CNC). Brantford, July 16, 1962, L. A. Kelton, *Robinia* sp. (Fabaceae) (CNC). Britannia, Ottawa, September 1, 1913, W. Metcalfe, *Helianthus* sp. (Asteraceae) (CNC). Caledonia, July 12, 1955, L. A. Kelton, *Helianthus* sp. (Asteraceae) (CNC). Cayuga, June 26, 1961, L. A. Kelton, G. Brumpton (CNC). Chatham, August 4, 1933, W. F. Lindsay (CNC). Clinton, September 7, 1961, L. A. Kelton, *Ambrosia* sp. (Asteraceae) (CNC). Cobourg, July 11, 1981, D. J. E. Brown (CNC). Collingwood, June 13, 1962, L. A. Kelton, Thorpe (CNC). Constance Bay, September 20, 1961, L. A. Kelton (CNC). Delhi, July 20, 1955, L. A. Kelton (CNC). Eagleville, August 17, 1955, L. A. Kelton, 1♂ (CAS). Effingham, July 12, 1955, L. A. Kelton (CNC). Eramosa, September 5, 1961, L. A. Kelton, G. Brumpton, *Ambrosia* sp. (Asteraceae) (CNC). Forestville, September 9, 1963, G. G. E. Scudder (CNC). Fort Erie, July 10, 1955, L. A. Kelton, 2♂ (CAS, CNC). Gore Bay, July 10, 1961, G. Brumpton (CNC). Guelph, August 31, 1963, G. G. E. Scudder (CNC). Haggersville, July 9, 1962, L. A. Kelton, Thorpe, *Ambrosia* sp. (Asteraceae) (CNC). Harwich, July 13, 1933, G. M. Stirrett (CNC). Horning, June 15, 1961, L. A. Kelton (CNC). Jordan, August 9, 1961, L. A. Kelton, *Ambrosia* sp. (Asteraceae) (CNC). Kincardine, May 28, 1962, L. A. Kelton, Thorpe (CNC). Kingsville, May 23, 1962, L. A. Kelton, Thorpe (CNC). Leamington, July 2, 1931, G. S. Walley, *Helianthus* sp. (Asteraceae) (CNC). Newcastle, September 9, 1963, G. G. E. Scudder (CNC). Niagara Falls, July 7, 1955, L. A. Kelton (CNC). Normandale, June 17, 1931, G. S. Walley (CNC). Oakland, July 17, 1962, L. A. Kelton, Thorpe (CNC). One Sided Lake, June 27, 1960, L. A. Kelton, Whitney (CNC). Ottawa, August 22, 1958 and September 1, 1962, L. A. Kelton (CNC). Point Pelee, September 11, 1961, L. A. Kelton (CNC). Point Ryerse, June 1, 1939, G. E. Shewell (CNC). Presquile Province Park, July 1, 1958, G. G. E. Scudder (CNC). Queenston, June 24, 1961, L. A. Kelton, G. Brumpton (CNC). Rainy River, August 3, 1950, L. A. Kelton, Whitney, *Ambrosia* sp. (Asteraceae) (CNC). Rosemont, May 30, 1962, L. A. Kelton, Thorpe (CNC). Saint Ann's, June 9, 1962, L. A. Kelton, Thorpe (CNC). Saint Catharines, September 3, 1961, L. A. Kelton (CNC). Sherkston, September 22, 1961, L. A. Kelton (CNC). Simcoe, July 13, 1955, L. A. Kelton (CNC). Thessalon, July 11, 1965, W. Gagne, 3♂ (UCB). Tillsonburg, July 20, 1955, L. A. Kelton, *Ambrosia* sp. (Asteraceae) (CNC). Turkey Point, September 9, 1963, G. G. E. Scudder (CNC). Vienna, July 15, 1961, L. A. Kelton (CNC). Vineland, June 9, 1962, L. A. Kelton, Thorpe, *Matricaria* sp. (Asteraceae) (CNC). Violet Hill, September 5, 1961, L. A. Kelton, G.

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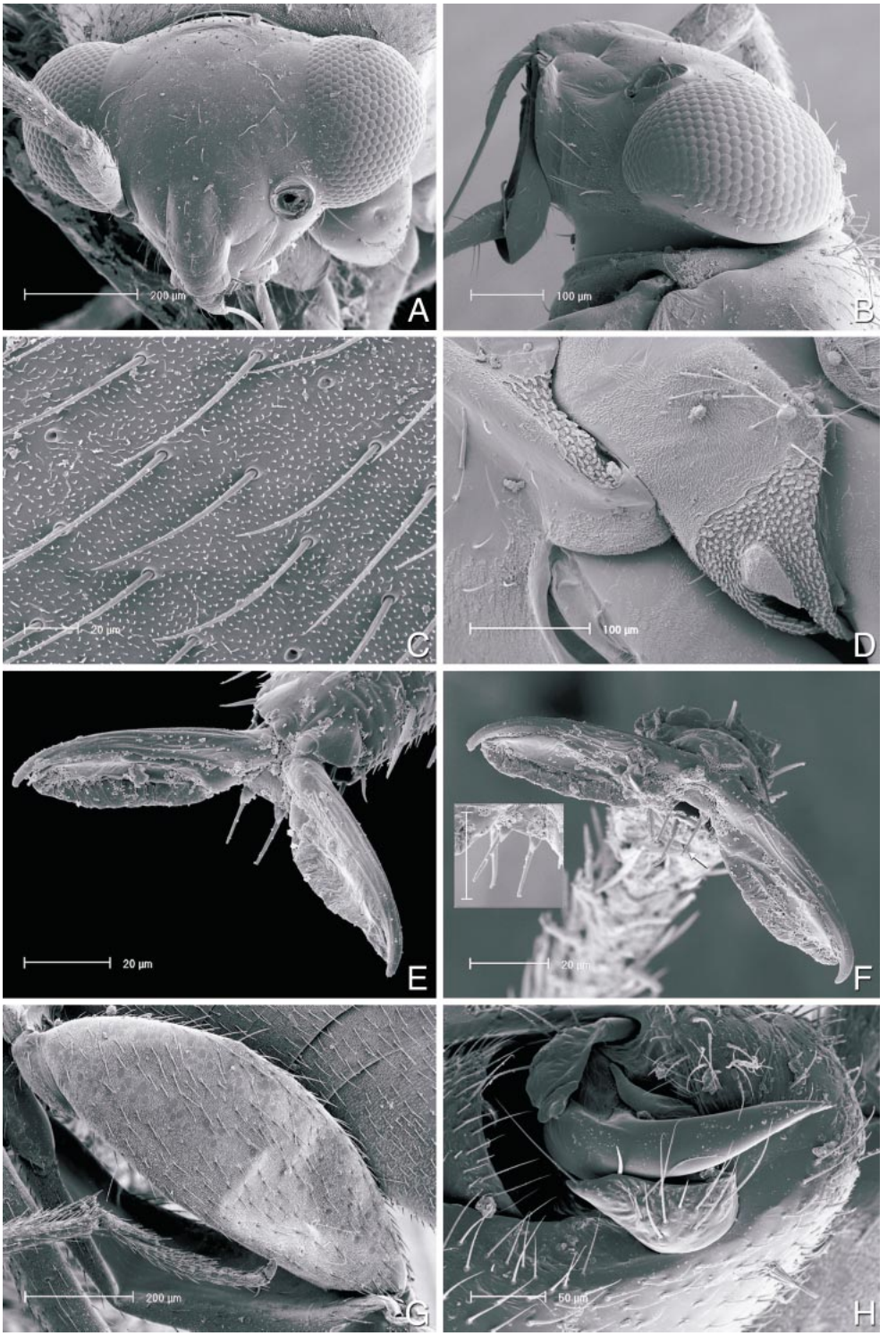

Fig. 7. Scanning electron micrographs of *Chlamydatus associatus*, ♂, Ontario: St. Catharines. **A.** Head, frontal view. **B.** Head, lateral view. **C.** Setae on hemelytra. **D.** Mesothoracic spiracle and meta-

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Brumpton, *Ambrosia* sp. (Asteraceae) (CNC). Virgil, July 9, 1955, L. A. Kelton (CNC). Waterford, July 17, 1962, L. A. Kelton, Thorpe (CNC). Willard Lake, 5 mi E of, August 10, 1960, L. A. Kelton, Whitney (CNC). Wheatley, July 18, 1955, L. A. Kelton, *Medicago sativa* (Fabaceae) (CNC). *Prince Edward Co.:* August 20, 1952, J. F. Brimley (CNC). **Quebec:** Choisy, nr Rigaud, August 28, 1956, Lindberg (CNC). Gatineau National Park, jct. Meech Lk. Rd and Gatineau Pkwy., September 14, 1994, M. D. Schwartz, *Ambrosia artemisiifolia* (Asteraceae), 3♂ (AMNH). Gatineau National Park, June 14, 1981, D. J. E. Brown (CNC). Hudson Heights, August 25, 1956, Lindberg (CNC). Ile Jesus, 20 mi NW Montreal, near St. Rose, August 19, 1956, J. D. Lattin, 3♂ (OSU). Montreal, August 19, 1956, Slater, Davis, et al., 3♂ (AMNH). Sutton, August 5, 1961, G. Brumpton (CNC). **Saskatchewan:** Elbow, June 20, 1060, A. R. Brooks (CNC). Estevan, June 15, 1955, A. R. Brooks (CNC). Gascoigne, August 23, 1957, A. R. and J. E. Brooks (CNC). Minton, August 11, 1955, A. R. Brooks (CNC). Minton, February 8, 1955, A. R. Brooks, 1♂ (CNC). Regina, 186 km N of, off of Rt 11, 3.3 km E of Rt 11, July 10, 1990, M. D. Schwartz, *Brassica juncea* (Brassicaceae), 2♂ (AMNH). Rockglen, August 2, 1955, A. R. Brooks (CNC). Saskatoon, August 9, September 14, 1950, L. A. Konotopetz, *Helianthus* sp. (Asteraceae) (CNC). Tunstal, August 27, 1957, A. R. AND J. E. Brooks (CNC). Val Marie, August 5, 8, 1955, A. R. Brooks, 2♂ (CNC). Weyburn, July 7, 1957, L. A. Konotopetz, 1♂ (CNC). Willow Bunch, July 27, 1955, A. R. Brooks (CNC). Wood Mountain, August 5, 1955, A. R. Brooks (CNC). MEXICO: **Michoacan:** 13 mi S of Nueva Italia, July 9, 1985, Jones and Schaffner, 1♂ (TAMU). **Nuevo Leon:** 37 mi NE of China, July 18, 1954, University of Kansas Mexico Expedition, 1♂ (KU). USA: **Alaska:** 32 mi N of Seward Kenai Peninsula, July 1, 1957, G. Byers and party, 1♂ (KU). **Arizona:** *Apache Co.:* Vernon, July 25, 1956, Gerhardt and Butler, 1♂ (UAZ). *Cochise Co.:* 8 mi S of Apache, September 18, 1978, J. D. Pinto, 1♂ (UCR). Benson, July 12, 1952, R. H. Beamer, 1♂ (KU). *Coconino Co.:* Flagstaff, Coconino National Forest, August 16, 1967, L. A. Kelton (CNC). Flagstaff, July 14, 1947, L. D. Beamer, 1♂ (KU). Flagstaff, July 9, 1938, D. Rockefeller, 1♂ (AMNH). Flagstaff, September 9, 1951, A. T. McClay, 5♂ (UCD). Flagstaff, NW of, August 13, 1975, J. C. Schaffner, 3♂ (TAMU). Fredonia, June 3, 1965, G. F. Knowlton, 1♂ (USU). Fredonia, October 10, 1954, K. Goodarzy and G. F. Knowlton, 10♂ (KU). Grand Canyon, South Rim, June 23, 1930, R. L. Usinger, 2♂ (UCB). Jacob Lake, Kaibab National Forest, August 12, 1973, L. A. Kelton, *Lupinus* sp. (Fabaceae) (CNC). Kaibab National Forest, N of Demotte Campground, August 3, 1983, C. B. Barr, 2♂ (LSU). Kendrick Park, Coconino National Forest, 7400 ft, July 15, 1968, L. A. Kelton (CNC). Mormon Lake, 7000 ft, July 8, 1956, F. G. Werner, 1♂ (UAZ). No specific locality, August 13, 1927, R. H. Beamer, 1♂ (KU). Parks, Kaibab National Forest, August 16, 1967, L. A. Kelton (CNC). Sedona, 3.5 mi S of, on Rt 179, 4200 ft, June 15, 1983, R. T. Schuh and M. D. Schwartz, 1♂ (AMNH). Sunset Crater Road, 1 mi E of Rt 89A, 7300 ft, June 16, 1983, R. T. Schuh, *Artemisia* sp. (Asteraceae), 2♂ (AMNH). *Gila Co.:* White River, June 19, 1950, L. D. Beamer, 3♂ (KU). *Navajo Co.:* Forest Road 45, 3 mi NE of Highway 260, 6800 ft, August 18, 1998, J. C. Schaffner, 2♂ (TAMU). Lewis Canyon Campground, Pinedale, 2 mi S of, 6700 ft, May 30, 1983, R. T. Schuh and G. M. Stonedahl, *Lupinus* sp. (Fabaceae), 2♂ (AMNH). Show Low, Sitgreaves National Forest, August 10, 1967, L. A. Kelton, 1♂ (CNC). Show Low, 3 mi NNW of, July 26, 1952, A. A. Alcorn, 1♂ (KU). *Pima Co.:* Sabino Canyon, Santa Catalina Mountains, July 31, 1941, R. H. Beamer, 1♂ (KU). *Pinal Co.:* Maricopa, October 17, 1937, J. A. Kusch, 1♂ (CAS). *Yavapai Co.:* Chino Valley, July 3, 1950, R. H. Beamer, 1♂ (KU). Cottonwood, August 13, 1975, J. C. Schaffner, 1♂ (TAMU). Page Springs junction on Rt 89A, 1 mi S of, 1700 m, June 21, 1980, R. T. Schuh (Chenopodiaceae), 2♂ (AMNH). Peeples Valley, August 18, 1967, L. A. Kelton, 5♂ (CNC). Prescott, August 16, 1972, L. A. Kelton (CNC). Sedona, 3 mi SW of, August 18, 1968, D. E. Bright (CNC). *Yuma Co.:* Yuma, July 8, 1954, Deal and Swift, 1♂ (UCB). **Arkansas:** *Boone Co.:* 1 mi N of Omaha, August 23, 1955, A. A. Alcorn, 1♂ (KU). **California:** *Fresno Co.:* Coalinga, May 14, 1938, M. A. Cazier, 5♂ (AMNH). Fresno, July 16, 1967, T. R. Haig, 1♂ (CAFA). Fresno, June 3, 1956, R. O. Schuster, 1♂ (UCB). *Inyo Co.:* Alabama Hills, July 8, 1973, J. D. Pinto and G. R. Ballmer, 3♂ (UCR). Batchelder Spring, Westguard Pass, September 7, 1969, M.

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episternal scent efferent system, lateral view. **E.** Pretarsus, frontal view. **F.** Pretarsus, apical ventral view with detail of parempodia. **G.** Hind femur, lateral view. **H.** Pygophore, posterolateral view, showing left paramere and phallotheca in repose. Scales as indicated.

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S. and J. Wasbauer, 1♂ (CAFA). Big Pine, June 16, 1925, R. L. Usinger, 46♂ (CAS). Big Pine, September 4, 1956, R. M. Bohart, 1♂ (UCD). Bishop, June 22, 1929, R. L. Usinger, 1♂ (CAS). Deep Springs, Deep Springs Lake, May 13, 1974, B. Villegas, 1♂ (UCD). Deep Springs, September 8, 1969, M. Wasbauer, 19♂ (CAFA). Little Lake, June 14, 1973, J. D. Pinto, 8♂ (UCR). Westgard Pass, 13 mi E of Big Pine, August 3, 1962, D. R. Smith, 1♂ (OSU). Westgard Pass, 4.5 mi W of White Mountain Road, August 22, 1963, H. B. Leech, 1♂ (CAS). *Kern Co.:* Bakersfield, July 24, 1929, R. H. Beamer, 1♂ (KU). Bakersfield, June 5, 1930, R. L. Usinger, 7♂ (UCB). Comanche Point, April 29, 1954, O. G. Bacon, 1♂ (UCD). Inyokern, November 7, 1969, P. H. Arnaud, Jr., 1♂ (CAS). Headquarters Campground, Sequoia National Forest, near Kernville, June 18, 1993, W. F. Chamberlain, 1♂ (TAMU). Mojave, 7 mi NE of, April 1, 1966, O'Brien, 2♂ (UCB). Oildale, April 3, 1983, 1♂ (TAMU). Poso Creek, June 5, 1929, E. P. Van Duzee, 4♂ (CAS). Poso Creek, June 5, 1929, R. L. Usinger, 9♂ (CAS). Shafter, July 9, 1940, C. G. Lewis (Malvaceae) (UCB). Shafter, June 12, 1931, G. L. Smith, 4♂ (UCB). Shafter, 13 mi S of, May 16, 1965, A. S. Menke, 1♂ (UCD). Tehachapi Pass, June 6, 1929, R. L. Usinger, 11♂ (CAS). Wofford Heights, 12 km W of, 1700 m, July 26, 1999, M. D. Schwartz, *Phacelia* sp. (Hydrophyllaceae) (CNC). *Lassen Co.:* Doyle, June 29, 1957, E. I. Schlinger, 1♂ (UCD). Hallelujah Junction, July 12, 1980, J. A. Skinner, 2♂ (UCD). Hallelujah Junction, June 29, 1976, M. A. Rabel, 2♂ (UCD). Hallelujah Junction, September 1, 1974, R. D. Moon, 2♂ (UCD). Ravendale, 10 mi S of, February 5, 1964, R. C. Dickson, 1♂ (UCR). Ravendale, S of, July 7, 1973, R. C. Dickson, 2♂ (UCR). *Los Angeles Co.:* Flintridge, May 20, 1955, C. L. Hogue, 1♂ (LACM). La Brea, June 16, 1925, L. J. Muchmore, 7♂ (LACM). Lancaster, 6 mi W of, November 1, 1974, J. Doyen, *Chrysothamnus nauseosus* (Asteraceae) (UCB). Mint Canyon, June 21, 1949, H. E. Cott, 1♂ (UCD). Mint Canyon, Oaks, April 20, 1932, E. P. Van Duzee, 1♂ (CAS). *Modoc Co.:* Inspection Station, 8 mi S of, Highway 139, July 17, 1955, Joe Schuh, 3♂ (OSU). Willow Ranch, 3 mi E of, June 6, 1970, *Isatis tinctoria* (Brassicaceae) (UCB). *Mono Co.:* Crooked Creek Naval Res. Station, White Mts., 10,000 ft, July 7, 1966, L. and C. W. O'Brien, 1♂ (UCB). Sardine Creek, 8500 ft, July 8, 1951, A. T. McClay, 1♂ (UCD). *Monterey Co.:* Salinas Road at King City, May 20, 1976, Doyen, 1♂ (UCB). *Napa Co.:* Samuel Springs, May 18, 1955, E. I. Schlinger, 1♂ (UCD). *Orange Co.:* El Modena, June 6, 1935, C. E. Norland (Asteraceae) (LACM). Huntington, August 13, 1963, D. J. Burdick, 1♂ (UCB). *Riverside Co.:* 6 mi E of jct of highways 395 and 71, roadside, April 4, 1968, S. and S. Frommer, 1♂ (UCR). Aguanga, July 25, 1995, G. M. Chamberlain, 6♂ (TAMU). Anza, 6 mi W of, July 26, 1962, D. R. Smith, 13♂ (OSU). Beaumont, 5 mi E of, October 26, 1952, R. F. Smith and E. G. Linsley, *Haplopappus* sp. (Asteraceae) (UCB). Box Springs Mountains, July 25, 1964, G. E. Wallace, 1♂ (UCR). Boyd Desert Research Center, 4 mi S of Palm Desert, April 13, 1963, D. E. and A. Hardy, 1♂ (UCB). Cabazon, October 26, 1952, R. F. Smith and E. G. Linsley, 1♂ (UCB). Cathedral City, August 10, 1950, L. W. Isaak, 3♂ (UCD). Coyote Canyon, 3.5 mi S of Palm Desert, Boyd Desert Research Center, May 19, 1973, E. E. McGregor, 1♂ (UCR). Menifee Valley, hills on W end, 560 m, May 11, 1978, R. T. Schuh and J. D. Pinto, 1♂ (AMNH). Menifee Valley, hills on W end, 1800 ft, October 25, 1981, J. D. Pinto, 1♂ (UCR). Palen Dunes, April 27, 1978, Alan R. Hardy, 10♂ (CAFA). Palen Dunes, September 20, 1977, Hardy and F.G. Andrews, 7♂ (CAFA). Palm Springs, April 30, 1928, C. C. Searl, 1♂ (SDNH). Palm Springs, October 15, 1947, *Pectis pappisa* (Asteraceae) (UCR). Quail Valley, Coastal Sage Scrub Community, October 15, 1973, J. D. Pinto, 1♂ (UCR). Red Rock Canyon, 4 mi E of, 4 mi E of Elsinore, April 14, 1965, C. A. Tosch, 1♂ (UCB). Riverside, August 15, 1953, J. C. Hall, 9♂ (UCD). Riverside, March 27, 1963, E. I. Schlinger, 1♂ (UCR). Riverside, October 12, 1956, J. K. Ferguson and J. Richardson, 2♂ (UCR). Saboba Springs, June 2, 1917, E. P. Van Duzee, 1♂ (CAS). San Jacinto, April 30, 1928, C. C. Searl, 1♂ (SDNH). Sun City, August 28, 1968, D. E. Hardy (CNC). Thousand Palms, April 19, 1955, W. R. Richards (CNC). Whitewater Canyon, July 26, 1963, E. I. Schlinger, 1♂ (UCR). *San Bernardino Co.:* Adelanto, September 8, 1966, T. R. Haig, 1♂ (CAFA). Apple Valley, October 7, 1956, J. Kirk Ferguson, 1♂ (UCR). Cucamonga, June 8, 1945, R. C. Dickson, *Franseria* sp. (Asteraceae) (CAFA). Highland, 5 mi SE of, September 7, 1962, J. T. Doyen, 1♂ (UCB). Lucerne Valley, 4.5 mi E of, 1000 m, May 13, 1978, J. D. Pinto and R. T. Schuh, *Ambrosia dumosa* (Asteraceae), 1♂ (AMNH). Redlands, August 16, 1955, Menke and Stage, 1♂ (LACM). Redlands, August 28, 1947, R. A. Flock, *Chenopodium* sp. (Chenopodiaceae) (UCR). Rialto, July 18, 1956, E. I. Schlinger, 1♂ (UCD). Yucca Valley, 10 mi N of, May 28, 1975, J. D. Pinto, *Acamptopappus sphaerocephalus* (Asteraceae) (UCR). *San Diego Co.:* Borrego Valley, June 6, 1940, R. L. Usinger, 1♂ (UCB). El Cajon, April 23, 1920, E. P. Van Duzee, 1♂ (CAS). Jacumba, August 19, 1967, L. A. Kelton (CNC). No specific locality, October 18, 1913, E. P. Van Duzee, 1♂ (CAS). Warner

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Springs, May 20, 1928, C. C. Searl, 1♂ (SDNH). Warner Springs, 2 mi W of, June 19, 1978, J. D. Pinto, *Quercus agrifolia* (Fagaceae) (UCR). *San Joaquin Co.:* Lodi, August 18, 1929, H. H. Keifer, 2♂ (CAS). Tracy, June 13, 1940, J. W. MacSwain, 1♂ (UCB). *San Luis Obispo Co.:* Arroyo Grande Creek SW of San Luis Obispo, 160 m, May 8, 1985, R. T. Schuh and B. M. Massie, *Lupinus ludovicianus* (Fabaceae), 1♂ (AMNH). *Shasta Co.:* 8 mi W of Fall River Mills, 845 m, July 7, 1979, R. T. and J. Schuh, *Iva axillaris* (Asteraceae), 20♂ (AMNH). *Siskiyou Co.:* Dorris, July 1, 1935, R. H. Beamer, 1♂ (KU). Macdoel, June 16, 1958, Joe Schuh, *Iva axillaris* (Asteraceae) (OSU). *Trinity Co.:* Junction City, June 30, 1975, T. R. Haig, 2♂ (CAFA). *Tulare Co.:* Exeter, J. K. Ellsworth, 2♂ (UCB). Lemon Cove, June 26, 1929, R. H. Beamer, 1♂ (KU). *Tuolomne Co.:* Strawberry, August 8, 1929, P. W. Oman, 2♂ (KU). *Yolo Co.:* Davis, August 3, 1955, A. T. McClay, 1♂ (UCD). Davis, July 22, 1956, A. T. McClay, 1♂ (UCD). Davis, April 24, 1966, R. O. Schuster, 1♂ (UCD). Winters, 8 mi W of, May 5, 1968, J. S. Buckett, 1♂ (CAFA). Woodland, June 14, 1933, E. C. Zimmerman, 1♂ (UCB). **Colorado:** *Arapahoe Co.:* Cherry Creek State Park, July 8, 1977, D. A. and J. T. Polhemus, 5♂ (AMNH). *Archuleta Co.:* Pagosa Springs, 7200 ft, August 24, 1972, L. A. Kelton (CNC). Pagosa Springs, 7200 ft, June 6, 1919, 1♂ (AMNH). *Baca Co.:* Springfield, June 18, 1988, R. Wharton and B. Mann, 3♂ (TAMU). *Bent Co.:* Las Animas, August 20, 1936, M. B. Jackson, 1♂ (KU). *Boulder Co.:* Boulder, August 11, 1973, G. G. E. Scudder (CNC). Boulder, June 19, 1922, 1♂ (AMNH). Boulder, June 21, 1903, E. P. Van Duzee, 1♂ (CAS). Boulder, 4 mi NW of, 6900 ft, June 8, 1961, B. H. Poole (CNC). Boulder, 6 mi W of, August 12, 1973, J. C. Schaffner, 10♂ (TAMU). Eldora, July 12, 1949, L. D. Beamer, 1♂ (KU). Nederland, Science Lodge, 9500 ft, July 4, 1961, B. H. Poole (CNC). S of St. Vrain Canyon, August 16, 1973, G. F. Knowlton and W. J. Hanson, 1♂ (USU). Ward, Roosevelt National Forest, July 30, 1968, L. A. Kelton, *Solidago* sp. (Asteraceae) (CNC). *Clear Creek Co.:* Doolittle Ranch, Mount Evans, 9700–9800 ft, July 11, 1964 and August 10, 1964, B. H. Poole (CNC). Echo Lake, 10,000 ft, August 27, 1978, D. A. Polhemus, 1♂ (JTP). Loveland Pass, 10,000 ft, June 8, 1961, B. H. Poole (CNC). Mount Evans, 12,000 ft, August 3, 1961, B. H. Poole (CNC). Mount Evans, 11,300 ft, August 10, 1961, J. G. Chillcott (CNC). Mount Goliath, 12,000 ft, August 7, 1987, D. A. and J. T. Polhemus, 1♂ (JTP). Summit Lake, Mount Evans, 12800 ft, July 10, 1961, W. R. M. Mason (CNC). Timberline, Mount Evans, 11,600 ft, July 13, 1961, J. R. Stainer (CNC). West Chicago Creek, Arapaho National Forest, 9800 ft, July 28, 1968, L. A. Kelton (CNC). *Custer Co.:* 7 mi W of Greenwood, August 11, 1964, J. G., B. L., and K. C. Rozen, 1♂ (AMNH). *Douglas Co.:* Chatfield State Park, June 18, 1978, J. T. Polhemus, 1♂ (JTP). Daniels Park, July 2, 1979, D. A. Polhemus, 1♂ (JTP). Perry Park, July 13, 1977, D. A. and J. T. Polhemus, 2♂ (JTP). Roxborough Road near Chatfield Park, July 9, 1978, J. T. Polhemus, 1♂ (JTP). S of Roxborough Park, August 24, 1982, D. A. and J. T. Polhemus, 2♂ (JTP). Waterton, August 8, 1987, T. J. Henry, *Artemisia* sp. (Asteraceae), 5♂, 1♀ (USNM). *Eagle Co.:* Gypsum, 6300 ft, August 28, 1959, E. Ordway, 1♂ (KU). *El Paso Co.:* Calhan, August 19, 1936, R. H. Beamer, 1♂ (KU). Colorado Springs, 5915 ft, E. S. Tucker, 6♂ (KU). Colorado Springs, June 27, 1966, J. A. Slater, 1♂ (AMNH). Security, July 4, 1983, J. T. Polhemus, 1♂ (JTP). *Elbert Co.:* 5 mi E of Agate, August 9, 1987, J. T. and D. A. Polhemus, 1♂ (JTP). *Garfield Co.:* Glenwood Springs, 5800 ft, July 22, 1920 and August 5, 1920, 6♂ (AMNH). *Gunnison Co.:* Gunnison, August 30, 1954, A. A. Alcorn, 1♂ (KU). *Huerfano Co.:* 3 mi W of Walensburg, near stream, 6500 ft, August 17, 1982, L. Herman, 9♂ (AMNH). *Jackson Co.:* Rabbit Ears Pass, June 3, 1947, R. H. Beamer, 1♂ (KU). *Jefferson Co.:* Deer Creek Canyon, 6500 ft, July 11, 1986, R. T. Schuh and J. T. Polhemus, *Quercus gambelii* (Fagaceae) (AMNH). Morrison, 5766 ft, July 27, 1968, L. A. Kelton (CNC). Waterton, Platte River, 5350 ft, July 11, 1986, R. T. Schuh and J. T. Polhemus, 1♂ (AMNH). *La Plata Co.:* Durango, August 26, 1972, L. A. Kelton, *Chenopodium album* (Chenopodiaceae) (CNC). *Larimer Co.:* Chambers Lake, Roosevelt National Forest, 9200 ft, August 11, 1968, L. A. Kelton (CNC). Fall River Pass, Rocky Mountain National Park, August 17, 1936, R. H. Beamer, 1♂ (KU). Glen Haven, July 12, 1946, P. B. Lawson, 1♂ (KU). Hudson, August 25, 1925, C. J. Drake, 1♂ (USNM). Owl Canyon, 6000 ft, August 15, 1968, L. A. Kelton (CNC). Rocky Mountain National Park, August 5, 1947, L. D. Beamer, 1♂ (KU). *Las Animas Co.:* No specific locality, September 22, 1927, P. A. Readio, 1♂ (KU). *Mesa Co.:* Fruita, 4500 ft, July 16, 1919, 36♂ (AMNH). Grand Junction, September 4, 1938, D. E. Hardy, 2♂ (KU). *Moffat Co.:* Massadona, August 8, 1965, G. F. Knowlton, 3♂ (USU). *Montezuma Co.:* Cortez, July 19, 1968, L. A. Kelton, *Salicornia* sp. (Chenopodiaceae) (CNC). *Montrose Co.:* 15 mi SW of Montrose, August 8, 1987, T. J. Henry, 1♂ (USNM). *Otero Co.:* La Junta, May 13, 1979, J. T. and D. A. Polhemus, 1♂ (JTP). *Pitkin Co.:* Aspen, 8000 ft, July 24, 1919, 1♂ (AMNH). *Pueblo Co.:* Pueblo, 5000 ft, August 19, 1960, R. E. Dreisbach, 1♂

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(USNM). *Rio Blanco Co.:* Meeker, 6200 ft, July 20, 1919, 1♂ (AMNH). *Routt Co.:* Steamboat Springs, 6900 ft, July 11, 1964, H. H. Knight (CNC). Steamboat Springs, July 9, 1964, H. H. Knight, 1♂ (USNM). *San Juan Co.:* San Juan National Forest, Chimney Rock, July 15, 1991, W. F. Chamberlain, 1♂ (TAMU). *Unknown Co.:* Little Beaver Creek, July 11, 1937, C. L. Johnston, 7♂ (KU). Macedonia, July 1, 1931, H. T. Peters, 2♂ (KU). Regnier, 4500 ft, June 6, 1919, 1♂ (AMNH). *Weld Co.:* Keenesburg, June 11, 1961, B. H. Poole (CNC). Pawnee National Grassland Headquarters, August 9, 1973, G. G. E. Scudder (CNC). Nunn, 17.5 mi N of, Pawnee National Grassland, August 6, 1973, J. A. Slater and R. Baranowski, 1♂ (AMNH). Rockport, 3 mi N of, 5794 ft, July 23, 1971, O'Brien and Marshall, 1♂ (AMNH). Roggen, July 2, 1978, G. E. Bohart, 1♂ (USU). *Yuma Co.:* 13.5 mi E of Idalia, August 10, 1964, J. G. and B. L. Rozen, 1♂ (AMNH). Wray, 3700 ft, August 17, 1919, 2♂ (AMNH). **Connecticut:** *New Haven Co.:* Mount Carmel, August 8, 1962, A. Decaprio, 1♂ (AMNH). New Haven, August 20, 1934, R. H. Beamer and M. E. Griffith, 14♂ (KU). N of Southbury on Rt 67, September 1, 1970, F. P. Maroney, 1♂ (AMNH). *Tolland Co.:* Somers, LaChance Farm, July 8, 1965, J. A. Slater, 1♂ (AMNH). Storrs, July 3, 1954, J. A. Slater, 6♂ (AMNH). **Florida:** *Seminole Co.:* No specific locality, June 10, 1900, E. M. Davis, 1♂ (AMNH). **Idaho:** *Bear Lake Co.:* Bloomington Lake, T14S, R42E, sec. 5, July 24, 1982, M. D. Schwartz, *Picea engelmannii* (Pinaceae) (AMNH). *Blaine Co.:* 20 mi N of Shoshone, Big Wood River, July 1, 1968, W. Gagne, J. Haddock, 9♂ (UCB). *Bonneville Co.:* Swan Valley, 4 mi W, 5400 ft, July 10, 1973, P. Oman, 1♂ (OSU). *Cassia Co.:* Burley, May 6, 1931, R. H. Beamer, H. T. Peters, M. W. Sanderson, 6♂ (KU). *Franklin Co.:* Cub River Canyon, August 28, 1954, G. F. Knowlton, 1♂ (KU). *Latah Co.:* 5 mi E of Harvard, Paillasse River, July 3, 1966, W. Gagne, J. Haddock (CNC). *New Perce Co.:* Lewiston, August 3, 1972, L. A. Kelton, *Medicago sativa* (Fabaceae) (CNC). *Oneida Co.:* Holbrook Summit, August 20, 1969, G. F. Knowlton, 2♂ (USU). *Owyhee Co.:* 40 mi S of Bruneau, Clover Creek, June 20, 1982, T. J. Henry, *Iva axillaris* (Asteraceae), 8♂, 4♀ (USNM). *Power Co.:* American Falls, August 5, 1972, L. A. Kelton (CNC). **Illinois:** *Boone Co.:* Belvedere, August 7, 1950, J. A. Slater, 1♂ (AMNH). *Champaign Co.:* Champaign, August 9, 1937, Mohr and Burke, 1♂ (AMNH). Champaign, October 3, 1956, J. F. McAlpine (CNC). Urbana, October 7, 1941, J. A. Slater, 1♂ (INHS). *Hancock Co.:* Hamilton, July 16, 1967, L. A. Kelton, *Ambrosia* sp. (Asteraceae) (CNC). Nauvoo, July 17, 1967, L. A. Kelton (CNC). *McLean Co.:* Bloomington, July 24, 1971, L. A. Kelton, *Ambrosia* sp. (Asteraceae) (CNC). *Mercer Co.:* Norwood, July 16, 1967, L. A. Kelton (CNC). *Sangamon Co.:* Springfield, September 16, 1932, T. H. Frison, 1♂ (AMNH). *Tazewell Co.:* Delavan, July 12, 1932, Dozier and Park, 1♂ (AMNH). *Warren Co.:* Roseville, August 20, 1940, R. I. Sailer, 1♂ (KU). *Winnebago Co.:* Rockford, September 2, 1930, T. H. Frison, 1♂ (AMNH). **Indiana:** *Howard Co.:* NW Howard County, August 20, 1984, D. A. Rider, 1♂ (DAR). *Kosciusko Co.:* 2 mi N of Warsaw, September 1, 1966, C. W. O'Brien, 1♂ (UCB). **Iowa:** *Adair Co.:* Adair, July 25, 1960, P. M. Marsh, 1♂ (UCD). *Boone Co.:* Boone, May 22, 1949, J. A. Slater, 1♂ (AMNH). Ledges State Park, July 9, 1956, J. C. Schaffner, 1♂ (TAMU). *Clay Co.:* Peterson, June 13, 1981, D. A. Polhemus, 1♂ (JTP). *Dickinson Co.:* Silver Lake, July 8, 1963, J. C. Schaffner, 1♂ (TAMU). *Henry Co.:* 7 mi W of Mount Pleasant, July 2, 1976, J. C. Schaffner, 1♂ (TAMU). *Mahaska Co.:* New Sharon, July 17, 1932, F. Andre, 1♂ (UCB). *Polk Co.:* 4 mi NE of Alleman, Polk City, May 28, 1950, J. Laffoon, 1♂ (AMNH). *Story Co.:* Ames, August 16, 1934, H. A. Scullen, 1♂ (OSU). Ames, August 23, 1952, J. C. Schaffner, 6♂ (TAMU). Ames, August 9, 1932, F. Andre, 1♂ (UCB). Ames, Exp. Station, June 4, 1897, E. D. Ball, 1♂ (UAZ). Ames, June 1, 1954, L. A. Kelton (CNC). Ames, June 13, 1950, J. A. Slater, 2♂ (AMNH). Ames, October 1, 1949, W. Downes, 1♂ (OSU). 4 mi E of Gilbert, May 11, 1949, J. Laffoon, 1♂ (AMNH). Pleat Bog Valley, Ames, July 22, 1928, G. S. Walley (CNC). Sopers Mill Dam, 4 mi E of Gilbert, May 24, 1949, J. A. Slater, 2♂ (AMNH). *Warren Co.:* 1.5 mi E of Hartford, July 5, 1976, J. C. Schaffner, 1♂ (TAMU). **Kansas:** *Crawford Co.:* Cherokee, September 2, 1941, R. H. Beamer, 1♂ (KU). *Douglas Co.:* Lawrence, August 10, 1936, L. J. Lipovsky, 2♂ (KU). Lawrence, August 14, 1954, W. E. LaBerge, 1♂ (KU). Lawrence, October 12, 1963, B. Harrison, 1♂ (KU). No specific locality, August 22, 1920, W. K. Hoffmann, 2♂ (KU). *Finney Co.:* Garden City, June 12, 1940, R. H. Beamer, 1♂ (KU). Garden City, Sand H., September 10, 1935, M. E. Griffith, 10♂ (KU). Garden City, September 3, 1951, C. D. M. and W. E. L., 1♂ (KU). *Kearny Co.:* No specific locality, 2998 ft, July 15, 1921, 21♂ (KU). *Kingman Co.:* No specific locality, 1516 ft, R. H. Beamer, 1♂ (KU). *Meade Co.:* No specific locality, September 13, 1944, R. H. Beamer, 1♂ (KU). *Osborne Co.:* No specific locality, 1♂ (KU). *Pratt Co.:* Cairo, June 11, 1964, Kerfoot and Michener, *Gaillardia pulchella* (Asteraceae) (KU). No specific locality, 1900 ft, June 12, 1921, 1♂ (KU). *Rawlins Co.:* No specific locality, 2850 ft, F. X. Williams, 1♂

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(KU). *Reno Co.:* Hutchinson, September 7, 1938, D. E. and A. Hardy, 1♂ (KU). Medora, sand dunes, June 13, 1934, R. H. Beamer, 1♂ (KU). No specific locality, September 3, 1919, W. E. Hoffmann, 46♂ (KU). *Republic Co.:* No specific locality, July 11, 1935, R. H. Beamer, 1♂ (KU). *Scott Co.:* Lake Scott State Park, July 26, 1992, E. G. Riley, 1♂ (TAMU). *Sedgwick Co.:* Wichita, June 21, 1940, D. E. Hardy, 3♂ (KU). *Seward Co.:* Liberal, August 16, 1945, R. H. Beamer, 1♂ (KU). Liberal, June 22, 1940, D. E. Hardy, 2♂ (KU). No specific locality, October 28, 1945, R. H. Beamer (Malvaceae) (KU). *Sheridan Co.:* Hoxie (near), August 21, 1950, V. Roth, 2♂ (OSU). *Smith Co.:* No specific locality, July 8, 1926, R. H. Beamer, 1♂ (KU). **Massachusetts:** *Essex Co.:* Beach Bluff, July 24, 1914, H. M. Parshley, 12♂ (CAS). Swampscott, August 19, 1914, H. M. Parshley, 1♂ (CAS). *Middlesex Co.:* Holliston, August 1, 1900, N. Banks, 10♂ (AMNH). *Norfolk Co.:* Needham, September 3, 1911, C. W. Johnson, 1♂ (CAS). Wellesley, July 11, 1909, E. P. Van Duzee, 1♂ (CAS). *Suffolk Co.:* Forest Hills, September 19, 1914, H. M. Parshley, 1♂ (CAS). **Michigan:** *Cheboygan Co.:* No specific locality, July 27, 1933, H. B. Hungerford, 1♂ (KU). *Emmet Co.:* 6 mi S of Pellston, July 27, 1965, W. R. Anderson, 1♂ (AMNH). *Monroe Co.:* Temperance, September 10, 1963, G. G. E. Scudder (CNC). *Shiawassee Co.:* T5N, R1E, sec. 20–29, May 28, 1967, R. T. Schuh, T. Hlavac, 1♂ (AMNH). **Minnesota:** *Chisago Co.:* North Branch, August 5, 1922, H. H. Knight, 10♂ (USNM). *Clay Co.:* Bluestem SNA D6, T139N, R46W, sec. 15, August 22, 1995, Rider, Locken, Fauske, 6♂ (AMNH). *Polk Co.:* Agassiz Dunes, T147N, R44W, sec. 32, August 28, 1995, Marty, Urlacher, Locken, 20♂ (DAR). Crookston, July 11, 1953, B. A. Haws, 4♂ (USU). *Ramsey Co.:* Saint Anthony Park, July 25, 1921, H. H. Knight, 2♂ (USNM). Saint Paul, University Farm, August 5, 1921, H. H. Knight, 5♂ (USNM). *Renville Co.:* Olivia, June 28, 1921, H. H. Knight, 1♂ (USNM). *Scott Co.:* dunes near Jordan, August 1, 1923, W. H. Hoffmann, 1♂ (USNM). **Mississippi:** *Unknown Co.:* Luka, July 14, 1930, P. W. Oman, 1♂ (KU). **Missouri:** *Clinton Co.:* Lathrop, June 27, 1955, E. C. Becker (CNC). *Jackson Co.:* Atherton, July 10, 1915, C. F. Adams, 2♂ (CAS). Atherton, May 19, 1922, C. F. Adams, 1♂ (KU). Kansas City, F. Rogers, 5♂ (KU). *Randolph Co.:* 1 mi E of Moberly, July 4, 1986, E. G. Riley, 1♂ (DAR). **Montana:** *Gallatin Co.:* Elkhorn Ranch, Gallatin River, Upper Gallatin Canyon, 7000 ft, August 1, 1928, J. McDunnough (CNC). *Glacier Co.:* East Glacier Park, 6 mi N on Rt 49, Looking Glass Hill, August 3, 1994, M. D. Schwartz, 1♂ (AMNH). *Jefferson Co.:* Whitehall, August 13, 1931, H. T. Peters, 2♂ (KU). *Mineral Co.:* St. Regis, 770 m, August 28, 1981, P. H. Arnaud, Jr., 1♂ (CAS). **Nebraska:** *Adams Co.:* Hastings, June 1, 1900, A. P. Morse, 2♂ (AMNH). *Antelope Co.:* Royal, July 27, 1973, L. A. Kelton (CNC). *Brown Co.:* extreme NW corner of Brown County, June 10, 1950, Hicks, Slater, and Laffoon, 1♂ (AMNH). *Cass Co.:* rest area on I-80, 2 mi W of Platte Rd., June 29, 1980, K. Schmidt, 1♂ (AMNH). *Dawson Co.:* Cozad, July 23, 1960, P. M. Marsh, 1♂ (UCD). *Douglas Co.:* Omaha, May 14, 1936, K. Rankin, 1♂ (KU). *Hall Co.:* Grand Island, July 8, 1964, H. H. Knight, 2♂ (CNC, USNM). *Hitchcock Co.:* 4 mi W of Culbertson, August 10, 1964, J. G. and B. L. Rozen, 1♂ (AMNH). *Keith Co.:* Lake McConaughy, July 21, 1973, W. F. Chamberlain, 1♂ (TAMU). *Platt Co.:* No specific locality, July 28, 1949, D. G. Denning, 1♂ (CNC). *Red Willow Co.:* Indianola, July 5, 1900, A. P. Morse, 5♂ (AMNH). *Sioux Co.:* 7 mi N of Harrison, August 13, 1962, J. G. and B. L. Rozen, 4♂ (AMNH). 8 mi N of Harrison, August 9, 1971, J. G., B. L., and K. C. Rozen, 7♂ (AMNH). **Nevada:** *Carson City Co.:* Carson City, June 27, 1929, R. L. Usinger, 1♂ (CAS). *Churchill Co.:* Fallon, August 12, 1940, D. E. Hardy, 2♂ (KU). *Elko Co.:* Carlin, June 25, 1935, R. H. Beamer, 1♂ (KU). *Humboldt Co.:* Orovada, June 15, 1960, A. S. Menke, 1♂ (UCD). *Lander Co.:* Austin, August 12, 1940, D. E. Hardy and R. H. Beamer, 6♂ (KU). *Lyon Co.:* Fernley, August 20, 1980, J. Powell, J. DeBenedictis, 1♂ (UCB). *Pershing Co.:* 7 mi E of Oreana, August 12, 1976, T. R. Haig, 1♂ (CAFA). *Washoe Co.:* Nixon, August 14, 1963, R. L. Westcott, 2♂ (LACM). Patrick, June 30, 1964, J. A. Froebe, 1♂ (UCD). Pyramid Lake, June 27, 1972, R. A. Belmont, 2♂ (UCD). Reno, July 3, 1929, F. E. Blaisdell, 1♂ (CAS). Wadsworth, August 30, 1967, L. A. Kelton, *Ambrosia* sp. (Asteraceae) (CNC). Wadsworth, 2 mi W of, June 23, 1962, G. I. Stage, 1♂ (UCB). *White Pine Co.:* Charcoal Ovens State Park, July 5, 1960, T. R. Haig, 3♂ (UCD). Ely, August 13, 1940, R. H. Beamer, 2♂ (KU). **New Hampshire:** *Coos Co.:* Lake of the Clouds, Mount Washington, 500 ft, August 1, 1954, Becker, Munroe, Mason (CNC). Mount Washington, A. T. Slosson, 1♂ (AMNH). *Grafton Co.:* Franconia, A. T. Slosson, 1♂ (AMNH). **New Jersey:** *Bergen Co.:* Ridgewood, August 30, 1969, 1♂ (AMNH). *Passaic Co.:* Great Notch, August 20, 1925, Scott, 1♂ (AMNH). **New Mexico:** *Bernalillo Co.:* Albuquerque, June 5, 1941, R. H. Beamer, 6♂ (KU). *Catron Co.:* 18 mi E of Quemado, August 15, 1982, J. C. Schaffner, 15♂ (TAMU). *Chaves Co.:* Elkins, July 20, 1967, L. A. Kelton (CNC). *Colfax Co.:* 5 mi E of Eagle's Nest, August 8, 1969, J. C. Schaffner, 1♂ (TAMU). *Eddy Co.:* No specific

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locality, May 30, 1979, Burke, Schaffner, et al., 3♂ (TAMU). *Grant Co.:* Silver City, 1800 m, August 1, 1977, N. L. H. Krauss, 1♂ (AMNH). Silver City, 1800–1900 m, August 15, 1977, N. L. H. Krauss, 3♂ (AMNH). *Guadalupe Co.:* Cuervo, June 23, 1940, L. J. Lipovsky, 7♂ (KU). Santa Rosa, June 23, 1940, D. E. Hardy, 2♂ (KU). Santa Rosa, June 23, 1941, L. H. Banker, 1♂ (KU). *Hidalgo Co.:* 18 mi N of Rodeo, August 25, 1958, G. B. Pittman, 1♂ (UCD). *Lea Co.:* No specific locality, September 24, 1979, R. R. Murray and J. C. Schaffner, 4♂ (TAMU). *Otero Co.:* Cloudcroft, June 27, 1940, L. J. Lipovsky, 5♂ (KU). Mayhill, July 23, 1967, L. A. Kelton (CNC). Cloudcroft, 2 mi S of, July 17, 1979, Delorme, McHugh, Schaffner, 1♂ (TAMU). Cloudcroft, 2.5 mi E of, June 28, 1973, W. N. Mathis, 1♂ (OSU). Cloudcroft, 4 mi E of, September 26, 1979, Murray and Schaffner, 1♂ (TAMU). Cloudcroft, 7 mi N of, August 13, 1982, J. C. Schaffner, 3♂ (TAMU). Mountain Park, July 27, 1940, L. J. Lipovsky, 1♂ (KU). Tularosa, 25 mi W of, July 1, 1940, D. E. Hardy, 2♂ (KU). *Roosevelt Co.:* Oasis State Park, 4 mi N, 2 mi W of Portales, stabilized dune, July 12, 1977, S. Frommer, 1♂ (UCR). *San Miguel Co.:* Conchas Dam, 15 mi SW of, July 16, 1991, G. M. Chamberlain, 3♂ (TAMU). Ilfeld, July 3, 1968, L. A. Kelton, *Helianthus* sp. (Asteraceae) (CNC). Montezuma, Gallinas Canyon, August 22, 1972, L. A. Kelton (CNC). Trujillo, July 3, 1968, L. A. Kelton (CNC). *Socorro Co.:* Magdalena, Cibola National Forest, August 21, 1972, L. A. Kelton (CNC). Magdalena, 12 mi W of, August 15, 1982, J. C. Schaffner, 1♂ (TAMU). No specific locality, August 18, 1927, R. H. Beamer, 4♂ (KU). *Torrance Co.:* Estancia, June 24, 1940, D. E. Hardy, 5♂ (KU). Manzano, June 26, 1941, B. Hogden, 2♂ (KU). Manzano, 6 mi SW of Red Canyon Campground, June 11, 1982, J. D. Pinto, 1♂ (UCR). Tajique, June 25, 1940, R. H. Beamer, 2♂ (KU). **New York:** *Columbia Co.:* Chatham, August 23, 1904, A. P. Morse, 5♂ (AMNH). *Erie Co.:* Buffalo, August 24, 1898, E. P. Van Duzee, 3♂ (CAS). Buffalo, June 9, 1888, E. P. Van Duzee, 1♂ (AMNH). *Essex Co.:* Whiteface Mountain, 4600–4872 ft, July 19, 1962, J. R. Vockeroth (CNC). *Genesee Co.:* Batavia, July 31, 1915, H. H. Knight, 3♂, 1♀ (CAS, CNC). Batavia, September 2, 1915, H. H. Knight, 1♂ (USNM). *Nassau Co.:* Sea Cliff, Long Island, N. Banks, 2♂ (AMNH). *Rockland Co.:* Pearl River, June 21, 1914, 1♂ (AMNH). Suffern, September 17, 1910, 1♂ (AMNH). *Suffolk Co.:* Huntington, Long Island, Kalbfleisch Research Station, August 16, 1962, P. H. Arnaud, 1♂ (AMNH). *Tompkins Co.:* Ithaca, September 4, 1973, M. D. Schwartz, 1♂ (AMNH). *Warren Co.:* Warrensburg, August 25, 1955, R. Baranowski, 3♂ (AMNH). **North Dakota:** *Bottineau Co.:* 10 mi S of Antler, Walker Farm, July 30, 1920, A. C. Burrill, 2♂ (AMNH). *Cass Co.:* Fargo, July 31, 1977, N. L. H. Krauss, 6♂ (AMNH). *Grand Forks Co.:* 6 mi NW of Grand Forks, August 19, 1993, M. D. Schwartz, *Helianthus* sp. (Asteraceae) (CNC). *Richland Co.:* Sheyenne National Grassland, 2.5 mi SE of McLeod, May 26, 1992, D. A. Rider, 1♂ (DAR). **Ohio:** *Summit Co.:* Barberton, August 10, 1936, L. J. Lipovsky, 14♂ (KU). No specific locality, August 3, 1936, L. J. Lipovsky, 1♂ (KU). *Unknown Co.:* Trading Post, September 10, 1963, G. G. E. Scudder (CNC). **Oregon:** *Baker Co.:* 3 mi E of Baker, Conrad Allen Ranch, August 6, 1963, C. W. Baker, 2♂ (OSU). Hells Canyon, Ballards Landing, July 31, 1976, J. D. Lattin, 2♂ (OSU). *Crook Co.:* 15 mi SE of Prineville, near Eagle Rock, June 9, 1968, P. Oman, 10♂ (OSU). *Douglas Co.:* Roseburg, 71 mi E, 3400 ft, July 26, 1945, H. A. Scullen, 10♂ (OSU). *Grant Co.:* Izee, Keerin's Ranch, June 25, 1935, Joe Schuh, 1♂ (AMNH). Izee, Keerin's Ranch, June 25, 1955, L. A. Kelton (CNC). Seneca, June 30, 1955, Joe Schuh, 1♂ (AMNH). *Harney Co.:* Fish Lake, Steens Mts., 7200 ft, August 12, 1958, K. M. Fender, 1♂ (OSU). Frenchglen, 1 mi E of, July 10, 1968, J. D. Lattin, 1♂ (OSU). Malheur Wildlife Refuge, 10 mi S of headquarters, July 12, 1968, Oman, 5♂ (OSU). T36S, R35E, sec. 8 NW, August 8, 1969, T. Seibert and N. Cobb, 1♂ (OSU). *Jackson Co.:* Medford, 10 mi NE of, October 7, 1965, K. Goeden, 1♂ (OSU). Medford, 12 mi NW of, August 7, 1966, K. Goeden (Asteraceae) (OSDA, OSU). Pinehurst, 3400 ft, June 24, 1971, P. Oman, 1♂ (OSU). Siskiyou, June 14, 1959, L. A. Kelton, R. Madge (CNC). *Jefferson Co.:* 10 mi N of Warm Springs, July 2, 1968, Oman, 7♂ (OSU). *Klamath Co.:* between Worden and Keno, 1280 m, June 27, 1979, R. T. and J. Schuh, 1♂ (AMNH). Klamath Falls, July 3, 1953, J. Schuh, *Trifolium* sp. (Fabaceae) (CNC). Midland, August 7, 1955, Joe Schuh, *Iva axillaris* (Asteraceae) (OSU). Skookum Meadow, R9E, T27S, sec. 16, July 17, 1979, Oman, 1♂ (OSU). *Lake Co.:* Hart Mountain, 6250 ft, September 2, 1977, Joe Schuh (Asteraceae), 1♂ (AMNH). Lakeview, June 27, 1951, B. Malkin, 1♂ (CAS). *Malheur Co.:* Ontario, July 23, 1963, S. Besse, 1♂ (OSU). *Morrow Co.:* Boardman, May 11, 1960, K. Goeden, 3♂ (OSU). Boardman, May 24, 1938, K. Gray and J. Schuh, 1♂ (AMNH). Boardman, September 13, 1949, V. Roth, 1♂ (OSU). *Umatilla Co.:* Cayuse, July 13, 1938, Schuh and Gray, 1♂ (AMNH). Echo, May 11, 1960, K. Goeden (Fabaceae) (OSU). *Wasco Co.:* 5 mi W of The Dalles, May 18, 1972, J. D. Lattin, 1♂ (OSU). **Pennsylvania:** *Monroe Co.:* Delaware

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Water Gap, A. T. Slosson, 2♂ (AMNH). *Washington Co.:* Taylorstown exit off Hwy 70, July 3, 1966, P. H. Arnaud, Jr., 1♂ (CAS). *Westmoreland Co.:* Greensberg, 2♂ (CAS). **South Dakota:** *Custer Co.:* Custer State Park, Black Hills, August 7, 1971, L. A. Kelton (CNC). Custer, August 26, 1935, N. W. Sanderson, 1♂ (KU). Flynn Creek, 8 mi N of Pringle, 5400 ft, July 8, 1961, H. and A. Howden (CNC). *Davison Co.:* Mitchell, September 12, 1963, G. G. E. Scudder (CNC). *Jones Co.:* Capa, June 1, 1921, H. C. Severin, 1♂ (CAS). *Stanley Co.:* Fort Pierre, September 21, 1920, H. C. Severin, 2♂ (CAS). Pierre, July 19, 1937, C. L. Johnston, 1♂ (KU). *Union Co.:* 3 mi S of Jefferson, June 11, 1949, Slater and Laffoon, 2♂ (AMNH). **Texas:** *Bailey Co.:* 5 mi SW of Muleshoe, June 17, 1992, W. F. Chamberlain, 3♂ (TAMU). *Carson Co.:* Panhandle, July 2, 1968, L. A. Kelton (CNC). *Culberson Co.:* 14 mi N of Van Horn, August 11, 1982, J. C. Schaffner, 1♂ (TAMU). 14 mi N of Van Horn, August 11, 1982, J. C. Schaffner, *Parthenium incanum* (Asteraceae), 28♂ (TAMU). *Eastland Co.:* No specific locality, August 18, 1920, Grace Olive Wiley, 2♂ (KU). *El Paso Co.:* Clint, August 16, 1976, W. F. Chamberlain, 3♂ (TAMU). *Hartley Co.:* Romero, June 22, 1940, L. J. Lipovsky, 3♂ (KU). *Kerr Co.:* Kerrville, RNC, June 15, 1996, W. F. Chamberlain, 1♂ (TAMU). *Oldham Co.:* Adrian, September 6, 1951, A. T. McClay, 3♂ (UCD). *Parmer Co.:* 8 mi SW of Friona, July 30, 1937, Kansas University Mex. Expedition, 1♂ (KU). *Rusk Co.:* Big Springs, June 20, 1947, A. C. Michener, 3♂ (KU). *Ward Co.:* 1 mi S of Grandfalls, April 19, 1985, J. C. Schaffner, 1♂ (TAMU). **Utah:** *Box Elder Co.:* Bear River City, August 16, 1953, G. F. Knowlton (Apiaceae) (USU). Corinne, August 8, 1961, G. F. Knowlton, 1♂ (KU). Corinne, July 25, 1953, G. F. Knowlton, 1♂ (USU). Corinne, September 22, 1949, G. F. Knowlton, 2♂ (USU). Deweyville, June 30, 1967, G. F. Knowlton, 2♂ (UCD). Deweyville, September 15, 1953, G. F. Knowlton, 2♂ (USU). Garland, August 25, 1953, G. F. Knowlton, 4♂ (USU). Garland, September 6, 1925, G. F. Knowlton, 1♂ (USU). Hansel Mountains, July 8, 1969, G. F. Knowlton, 8♂ (USU). Hardup, June 18, 1964, G. F. Knowlton, 1♂ (USU). Honeyville, September 16, 1948, G. F. Knowlton, *Apium graveolens* (Apiaceae) (USU). Kelton, June 30, 1969, G. F. Knowlton, 1♂ (USU). Kelton, 9 mi NW of, June 30, 1969, G. F. Knowlton and W. J. Hanson, 2♂ (USU). Penrose, August 20, 1949, G. F. Knowlton, 1♂ (USU). Snowville, August 12, 1969, G. F. Knowlton, 3♂ (USU). Snowville, 6 mi W of, June 27, 1969, G. F. Knowlton, 1♂ (USU). Tremonton, August 8, 1953, G. F. Knowlton (Solanaceae) (USU). *Cache Co.:* Avon, August 16, 1967, G. F. Knowlton, 1♂ (UCD). Clarkston, July 1, 1946, G. F. Knowlton (Solanaceae) (USU). Lewiston, August 26, 1925, G. F. Knowlton (Asteraceae) (USU). Logan Canyon, September 12, 1973, G. F. Knowlton, 1♂ (USU). Logan, August 14, 1953, W. J. Hanson and G. F. Knowlton (Solanaceae) (USU). Logan, July 23, 1963, G. F. Knowlton, 1♂ (USU). Logan, September 20, 1939, G. F. Knowlton, 1♂ (USU). Petersburg, September 5, 1958, K. C. Tilley, 5♂ (USU). Richmond, July 11, 1958, K. C. Tilley (Fabaceae) (USU). Wellsville, August 15, 1958, K. C. Tilley (Fabaceae) (USU). *Davis Co.:* Farmington, July 9, 1953, G. F. Knowlton and W. J. Hanson (Apiaceae) (USU). Farmington, June 22, 1932, G. F. Knowlton and M. J. Janes, 1♂ (USU). Kings Station, July 24, 1922, H. H. Knight, 3♂ (CAS). North Farmington, September 19, 1949, G. F. Knowlton and D. McComb (Apiaceae) (USU). *Duchesne Co.:* Duchesne, August 25, 1966, L. and C. W. O'Brien, 1♂ (UCB). Myton, July 15, 1953, Knowlton and Liebmann, 1♂ (USU). Myton, July 21, 1954, G. F. Knowlton, 3♂ (KU). Roosevelt, July 20, 1954, G. F. Knowlton, 2♂ (AMNH). Roosevelt, June 12, 1963, G. F. Knowlton, 1♂ (USU). *Emery Co.:* Hanksville ''dunes'', 17 mi N near Butte well, July 26, 1978, Andrews and Hardy, 1♂ (CAFA). Woodside, September 4, 1938, D. E. and A. Hardy, 1♂ (KU). *Garfield Co.:* 14.3 mi S of Rt 95 on Rt 276, 3.4 mi N of Starr Springs Turnoff, 5000 ft, June 19, 1983, R. T. Schuh and M. D. Schwartz, 10♂ (AMNH). *Grand Co.:* Arches National Park, September 3, 1947, G. F. Knowlton, 1♂ (USU). Green River, July 14, 1954, G. F. Knowlton, 4♂ (AMNH). Kane Springs, 15 mi SE of Moab, August 9, 1957, C. D. Michener, *Cleome lutea* (Capparidaceae) (KU). Moab, August 9, 1963, G. F. Knowlton, 1♂ (USU). Moab, July 14, 1991, W. F. Chamberlain, 1♂ (TAMU). Moab, July 15, 1954, G. F. Knowlton, 34♂ (AMNH). South Beaver Mesa, La Sal Mts., July 4, 1980, J. T. and D. A. Polhemus, 1♂ (JTP). *Iron Co.:* 22 mi W of St. George, 4500 ft, March 20, 1971, Oman, 1♂ (OSU). *Juab Co.:* Levan, August 20, 1963, G. F. Knowlton, 1♂ (UCD). Mona Lake, July 28, 1957, A. H. Barnum, 2♂ (TAMU). *Kane Co.:* Kanab, August 11, 1965, R. S. Roberts, 1♂ (USU). Kanab, August 9, 1936, R. H. Beamer, 14♂ (KU). *Millard Co.:* Abraham, July 23, 1965, G. F. Knowlton, 1♂ (USU). Cove Fort, September 8, 1954, G. F. Knowlton, 3♂ (KU). Fillmore, July 22, 1965, G. F. Knowlton, 1♂ (USU). No specific locality, September 14, 1965, G. F. Knowlton, 1♂ (USU). Oak City, July 23, 1965, G. F. Knowlton, 1♂ (USU). Price, July 13, 1954, G. F. Knowlton, 3♂ (AMNH). *Piute Co.:* Circleville, August 11, 1957, C. D. Michener, *Cleome serrulata* (Capparidaceae) (KU). *Price Co.:* No specific locality,

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August 10, 1957, C. D. Michener, 1♂ (KU). *Salt Lake Co.:* Emigration Canyon, June 17, 1933, O. H. Swezey, 1♂ (CAS). Hunter, July 9, 1954, G. F. Knowlton, 4♂ (AMNH). Salt Lake City, July 20, 1948, G. F. Knowlton (Apiaceae) (USU). Salt Lake City, June 10, 1952, G. F. Knowlton (Solanaceae) (USU). Sandy, May 27, 1930, G. F. Knowlton, 1♂ (USU). *San Juan Co.:* La Sal Mts., nr Brumley Creek, T27S, R24E, 8000 ft, June 11, 1982, M. D. Schwartz, *Artemisia tridentata* (Asteraceae), 1♂ (AMNH). Mexican Hat, July 13, 1967, G. F. Knowlton, 4♂ (UCD). Mexican Hat, 7.7 mi N of, on Rt 261, T41S, R18E, 5000 ft, June 17, 1983, R. T. Schuh and M. D. Schwartz, 1♂ (AMNH). Monticello, July 15, 1952, G. E. Bohart and G. F. Knowlton, 1♂ (USU). *Sevier Co.:* Richfield, July 28, 1954, G. F. Knowlton, 1♂ (AMNH). Salina, July 2, 1943, G. F. Knowlton, 3♂ (KU). Salina, June 24, 1954, G. L. Nielson, 6♂ (USU). Venice, August 17, 1961, G. F. Knowlton, *Silphium* sp. (Asteraceae) (KU). *Summit Co.:* Kimball Junction, August 31, 1967, L. A. Kelton, *Chrysothamnus* sp. (Asteraceae) (CNC). *Tooele Co.:* Erda, August 18, 1953, G. F. Knowlton, 1♂ (USU). Tooele, August 8, 1952, G. F. Knowlton, 1♂ (USU). *Uintah Co.:* Bonanza, 5–10 mi SW of, T11S, R24E, sec. 6, 5000–5600 ft, June 9, 1981, M. D. Schwartz, *Artemisia tridentata* (Asteraceae), 1♂ (AMNH). Escalate Ranch, Vernal, August 21, 1954, J. B. Karren, 1♂ (USU). Jensen, 10 mi E of, July 13, 1993, W. F. Chamberlain, *Helianthus* sp. (Asteraceae), 4♂ (TAMU). Vernal, 7 mi N of, August 25, 1966, L. and C. W. O'Brien, 1♂ (UCB). *Unknown Co.:* Antelope, July 1, 1931, J. Nottingham, 2♂ (KU). *Utah Co.:* American Fork, August 28, 1958, G. F. Knowlton (Apiaceae) (USU). American Fork, July 12, 1949, G. F. Knowlton (Apiaceae) (USU). Lehi, August 18, 1953, G. F. Knowlton (Apiaceae) (USU). Lehi, July 25, 1927, G. F. Knowlton, 1♂ (USU). Pleasant Grove, June 22, 1953, G. F. Knowlton, 4♂ (USU). Provo Canyon, August 7, 1954, G. L. Nielson, 11♂ (USU). Provo, environs, September 9, 1974, L. J. Westover, 1♂ (TAMU). Spanish Fork Canyon, July 13, 1954, G. T. Knowlton and D. W. Davis, 2♂ (KU). Spanish Fork, August 14, 1940, D. E. Hardy, 1♂ (KU). Springville, June 5, 1930, G. F. Knowlton, 1♂ (USU). Springville, September 23, 1953, G. F. Knowlton, 2♂ (USU). Thistle, July 6, 1954, G. F. Knowlton, 5♂ (KU). Thistle, August 12, 1947, G. F. Knowlton, 1♂ (USU). *Washington Co.:* Dixie State Park, July 28, 1965, M. S. Lee, 1♂ (USU). Pine Valley, June 14, 1931, B. A. Haws, 1♂ (USU). Pintura, August 11, 1929, R. H. Beamer, 2♂ (KU). St. George, 2800 ft, September 9, 1954, G. F. Knowlton, 1♂ (KU). Toquerville, June 18, 1935, G. F. Knowlton, 1♂ (USU). Zion National Park at Lava Point Campground, 7000 ft, May 24, 1982, M. D. Schwartz, 1♂ (AMNH). Zion National Park, August 11, 1975, M. H. Sweet, 1♂ (TAMU). Zion National Park, August 13, 1929, P. W. Oman, R. H. Beamer, 6♂ (KU). Zion National Park, October 10, 1954, K. Goodarzy and G. F. Knowlton, 2♂ (KU). *Wayne Co.:* Caineville, June 2, 1966, G. F. Knowlton, 1♂ (UCD). *Weber Co.:* Ogden, June 10, 1965, G. F. Knowlton, 1♂ (USU). Ogden, May 27, 1954, G. F. Knowlton, 1♂ (KU). Plain City, July 19, 1940, G. F. Knowlton, 1♂ (USU). **Virginia:** *Charlottes Co.:* Charlottesville, July 5, 1928, L. C. Woodruff, 1♂ (KU). **Washington:** *Benton Co.:* Hanford Site ALE, T11N, R26E, sec. 35, 1200 ft, April 20, 1994, R. S. Zack, 2♂, 2♀ (WSU). *Columbia Co.:* 17 mi W of Pomeroy on Highway 12, July 7, 1979, G. Stonedahl, 12♂ (AMNH). *Grant Co.:* Coulee City, June 12, 1959, Madge and Kelton, *Iva axillaris* (Asteraceae), 2♂ (CNC). 21 mi W of Moses Lake, May 30, 1957, E. F. Dailey (Asteraceae), 5♂, 5♀ (WSU). **Wisconsin:** *Eau Claire Co.:* Eau Claire, June 14, 1986, D. A. Rider, 6♂ (DAR). *Waukesha Co.:* Muskego, July 21, 1939, P. B. Lawson, 7♂ (KU). **Wyoming:** *Goshen Co.:* Lingle, May 17, 1955, W. D. Fronk (CNC). No specific locality, June 9, 1949, D. G. Denning (CNC). Torrington, September 13, 1955, W. D. Fronk (CNC). *Laramie Co.:* Albin, August 10, 1949, D. G. Denning (CNC). *Natrona Co.:* 9 mi E of Casper, August 12, 1962, J. G. and B. L. Rozen, 1♂ (AMNH). *Niobrara Co.:* 18 mi N of Lusk, August 10, 1971, J. G., B. L., and K. C. Rozen, 2♂ (AMNH). *Park Co.:* Powell, July 10, 1935, D. G. Denning (CNC). *Platte Co.:* Chugwater, August 30, 1954, W. D. Fronk (CNC). No specific locality, July 28, 1949, D. G. Denning (CNC). Wheatland, September 1, 1949, R. E. Pradt (CNC). *Sheridan Co.:* Bighorn Mountains, 6500 ft, August 17, 1927, H. H. Knight (CNC). *Uinta Co.:* Evanston, July 17, 1961, G. F. Knowlton, 1♂ (UCD). Lyman, June 25, 1935, J. Russell, 1♂ (KU).

Chlamydatus becki Knight
Figures 1, 3, 4

Chlamydatus becki Knight, 1968: 28 (n.sp., host).

DIAGNOSIS: Along with *uniformis*, the only North American species with completely dark legs, including the tibiae. Easily distinguished from *C. uniformis* by its smaller size, total length 2.23 mm or less, whereas that species always 2.65 mm or more. Coloration in *C. becki* brownish black, whereas coloration in *C. uniformis* jet black, shining. Dorsal vestiture in *C. becki* shining, distinctly visi-

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ble in dorsal perspective, whereas vestiture in *C. uniformis* black, not contrasting with coloration of dorsum.

HOST: *Artemisia* sp. (Asteraceae).

DISTRIBUTION: Great Basin, including western Utah, Nevada, and eastern Mojave Desert.

SPECIMENS EXAMINED: Holotype: male: ''American Fork, Utah, June 28, 1965, Harry H. Knight''; deposited in the National Museum of National History, Washington, D.C.

Additional specimens: USA: **California:** *San Bernardino Co.:* New York Mts., Live Oak Canyon, 5500 ft, May 25, 1977, J. D. Pinto, 2♂ (UCR). *San Diego Co.:* No specific locality, May 28, 1923, W. Benedict, 1♀ (KU). **Nevada:** *Carson City Co.:* Carson City, 6000 ft, July 11, 1965, H. H. Knight, 1♂ (USNM). *Elko Co.:* 30 mi W of Elko, June 18, 1982, T. J. Henry, *Artemisia* sp. (Asteraceae), 3♂, 14♀ (USNM). *Nye Co.:* Atomic Test Site, 2 mi W of Tippapah Hwy on Mine Mt. Road, 4400 ft, June 7, 1983, Schuh, Schwartz, Stonedahl, 1♂, 1♀ (AMNH). Mercury, 6 M, June 17, 1965, H. H. Knight and J. Merino, paratype, 1♂ (USNM). **Utah:** *Millard Co.:* Kanosh, July 7, 1965, G. F. Knowlton, 1♀ (USU). Scipio, June 29, 1965, H. H. Knight, 1♀ (USNM). *Tooele Co.:* Benmore, environs, June 19, 1954, G. L. Nielson, 1♂ (USU). *Utah Co.:* American Fork, June 28, 1965, H. H. Knight, paratypes, 2♂, 1♀ (CNC). *Wasatch Co.:* Heber, July 5, 1922, E. P. Van Duzee, 3♀ (CAS).

Chlamydatus brevicornis Knight
Figures 1, 3, 4

Chlamydatus brevicornis Knight, 1964: 141 (n.sp.).

DIAGNOSIS: Recognized by the unicolorous dark coloration, the somewhat woolly, shining pubescence on the dorsum, and the dark femora and pale tibiae. Distinguished from *C. keltoni*, *C. monilipes*, and *C. suavis*, the three species with similar coloration, by the shining, somewhat woolly pubescence on the dorsum, whereas in those species the dorsal vestiture always dark.

HOST: *Artemisia tridentata* (Asteraceae).

DISTRIBUTION: Western North America. Restricted to higher latitudes and altitudes.

SPECIMENS EXAMINED: Holotype: male: ''Shoshone N. For., Wyo., Aug. 14, 1927, H. H. Knight''; deposited in the National Museum of Natural History, Washington, D.C.

Additional specimens: CANADA: **British Columbia:** Richter Pass, Osoyoos, June 25, 1959, L. A. Kelton, 1♀ (CNC). USA: **California:** *Alpine Co.:* E of Pacific Grade Summit on Rt 4, Sandy Meadow Trail head, near Toiyabe National Forest, 8000 ft, July 5, 1994, M. D. Schwartz, *Artemisia* sp. (Asteraceae), 1♂, 1♀ (AMNH). *Modoc Co.:* 24.7 mi NW of Canby, 1375 m, July 1, 1979, R. T. Schuh and B. M. Massie, 7♀ (AMNH). *Mono Co.:* Tioga Pass, July 31, 1940, D. E. Hardy, 1♂ (KU). *Nevada Co.:* Sagehen Creek, June 27, 1972, M. L. Kok, 1♀ (UCD). *Siskiyou Co.:* Bray, June 20, 1935, R. H. Beamer, 1♀ (KU). Dorris, July 1, 1935, R. H. Beamer, 1♂, 1♀ (KU). **Colorado:** *Jackson Co.:* Gould, 9200 ft, August 12, 13, 1968, L. A. Kelton, 1♂, 3♀ (CNC). *Routt Co.:* Steamboat Springs, 6700–6900 ft, July 15, 1964, H. H. Knight, 5♂, 4♀ (CNC). Steamboat Springs, June 30, 1931, R. H. Beamer, 1♀ (KU). *Saquache Co.:* 23 mi E of Gunnison on Rt 50, 8100 ft, July 17, 1986, R. T. Schuh, *Artemisia tridentata* (Asteraceae), 2♂, 1♀ (AMNH). **Idaho:** *Gooding Co.:* Wendell, September 6, 1933, 1♂, 1♀ (CNC). *Oneida Co.:* 6 mi NW of Holbrook, June 9, 1969, G. F. Knowlton, *Artemisia tridentata* (Asteraceae), 2♂ (USU). **Nevada:** *Elko Co.:* 30 mi W of Elko on Rt 80, June 18, 1982, T. J. Henry, *Artemisia* sp. (Asteraceae), 5♂, 3♀ (USNM). **Oregon:** *Baker Co.:* 4 mi E of Unity, June 8, 1970, P. Oman, 1♂ (OSU). *Crook Co.:* Redmond, June 1, 1938, Schuh and Gray, 1♂ (AMNH). *Klamath Co.:* Chiloquin, 10 mi SE of, on Interstate 15, July 4, 1982, G. M. Stonedahl and T. J. Henry, *Artemisia tridentata* (Asteraceae), 6♂, 8♀ (AMNH, USNM). Junction of Rts 97 and 31, 28 mi SE of, 4910 ft, July 25, 1979, M. D. Schwartz, 3♀ (AMNH). Keno, 6 mi SE of, June 27, 1979, M. D. Schwartz, *Artemisia tridentata* (Asteraceae), 1♀ (AMNH). Klamath Falls, July 5, 1953, J. Schuh, 1♂, 1♀ (CNC). Lower Klamath Lake, Hill Area, July 10, 1953, J. Schuh, 3♂ (CNC). Swan Lake, July 12, 1953, J. Schuh, 1♂ (CNC). *Lake Co.:* Abert Lake, July 2, 1935, Joe Schuh, 1♂ (AMNH). Fort Rock, June 15, 1938, K. Gray and J. Schuh, *Artemisia* sp. (Asteraceae), 1♂ (AMNH). Silver Lake, June 15, 1938, Schuh and Gray, 1♀ (AMNH). Silver Lake, June 16, 1938, J. Schuh, Gray, 3♂, 1♀ (CNC). Silver Lake, 11 mi NW of, on Hwy 31, 4500 ft, June 25, 1979, M. D. Schwartz and G. M. Stonedahl, *Artemisia tridentata* (Asteraceae), 2♂, 2♀ (AMNH). **Utah:** *Cache Co.:* Franklin Basin Road, 0.4 mi N of Rt 89, 6575 ft, July 18, 2001, T. J. Henry and A. G. Wheeler, Jr., *Artemisia tridentata* (Asteraceae), 3♂, 30♀ (USNM). Logan Canyon, July 24, 1948, G. G. Fleener, *Artemisia* sp. (Asteraceae), 1♀ (USU). *Rich Co.:* Garden City, June 20, 1969, G. F. Knowlton, 1♀ (USU). *Sevier Co.:* Fish Lake National Forest, R2E T25S, sec. 24, 25, July 16,

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1980, G. M. Stonedahl, *Artemisia tridentata* (Asteraceae), 1♂ (AMNH). *Wasatch Co.:* 30 mi SE of Kamas on Rt 34, Uintah National Forest, Wolf Creek Campground, T4S, R10W, sec. 7, 9000 ft, August 15, 1986, Schwartz and Stonedahl, *Artemisia tridentata* (Asteraceae), 8♂, 36♀ (AMNH). **Wyoming:** *Lincoln Co.:* 15 mi S of Afton on Rt 89, Salt River Pass, 7630 ft, July 21, 1981, M. D. Schwartz, *Artemisia tridentata* (Asteraceae), 1♀ (AMNH). *Sublette Co.:* 25 mi SE of Jackson, Hobart River, June 27, 1966, W. Gagne and J. Haddock, 1♂ (UCB). *Sweetwater Co.:* 10 mi E of Rock Springs, July 4, 1968, H. H. Knight, 1♀ (USNM).

Chlamydatus californicus, new species
Figures 1, 3D, 4

DIAGNOSIS: Recognized by the abbreviated hemelytra (staphylinoid) with rounded apices, the highly polished and shining frons, and the generally brown coloration. Most similar in structure of the wings to *C. opacus*, *C. ruficornis* (fig. 1), and *C. wilkinsoni* (fig. 2); separated from *C. opacus* by the dull vertex and face with only the clypeus and maxillary and mandibular plates shining in that species, whereas entire vertex and face shining in *C. californicus*; *C. opacus* furthermore known only from high latitudes in Canada and *C. californicus* from the southern half of California; male genitalia in *C. californicus* with a much longer apical attenuation of the vesica than that in *opacus*; separated from *C. ruficornis* by the red, weakly fusiform second antennal segment, uniform slate gray coloration, and entirely dull vertex and face in that species; separated from *C. wilkinsoni* by the smaller size (1.28–1.89 mm) and uniform, nearly black coloration in that species; *C. wilkinsoni* similar to *C. californicus* in possession of highly polished vertex and face. Females of *C. californicus* (fig. 1) much larger than males and largely pale, in contrast to mostly brown males.

DESCRIPTION: *Male*: Moderately small, all known specimens brachypterous, hemelytra cover about half of abdomen; total length 1.60–1.94, length apex clypeus–cuneal fracture 1.60, width across pronotum 0.72. COLORATION (fig. 1): Body and antennae mostly deep brown to castaneous, legs somewhat paler, reddish. SURFACE AND VESTITURE (figs. 1, 7C): Pronotum, scutellum, hemelytra, abdominal dorsum, thoracic pleuron, and abdominal venter granular, dull; vertex and face, including clypeus and mandibular and maxillary plates highly polished and shining; legs polished, but not so strongly as face; dorsum and abdominal venter covered with recumbent, shining, weakly woolly setae (fig. 1). STRUCTURE: Vertex and eyes more or less conforming to anterior margin of pronotum, eyes extending posteriorly along anterolateral angles of pronotum (fig. 1); posterior margin of vertex and eyes smoothly and rather broadly rounded (fig. 1); frons projecting well beyond anterior margin of eyes, broadly transversely rounded in dorsal view; clypeus not visible from above; antennae inserted just below ventral margin of eye; eyes occupying about half of height of head in lateral view; labium very long, reaching to about anterior margin of genital capsule; hemelytra truncate, posterior margin broadly rounded, devoid of membrane (fig. 1); claws of moderate length, bent at about 20° angle at apex of pulvilli, pulvilli moderately large and covering approximately half of the length of claw, parempodia setiform and attenuated; abdomen broad, genital capsule occupying about half the length of abdomen. MALE GENITALIA (fig. 4): Vesica composed of a single strap forming a single coil with a weakly curving apical attenuation; secondary gonopore well sclerotized, distant from apex of vesica, gonopore sclerite lacking.

Female: Distinctly larger than male; total length 2.57–2.77, length apex clypeus–cuneal fracture 1.76–1.87, width pronotum 0.73–0.85. COLORATION (fig. 1): Overall coloration much paler than in male, mostly pale with some darker markings. SURFACE AND VESTITURE (fig. 1): As in male. STRUCTURE (fig. 1): Similar to male.

ETYMOLOGY: Named for its apparently exclusive occurrence in California.

HOST: *Hemizonia pungens* (Asteraceae).

DISTRIBUTION: California: San Joaquin Valley.

SPECIMENS EXAMINED: Holotype: male: ''California, San Benito, Big Panoche Creek, April 21, 1967, J. Powell and P. Opler''; deposited in the California Academy of Sciences, San Francisco.

Paratypes: USA: **California:** *Fresno Co.:* Mendota, April 25, 1932, E. P. Van Duzee, *Centro-*

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madia (= *Hemizonia*) *pungens* (Asteraceae), 18♀ (CAS, AMNH). San Benito, Big Panoche Creek, April 21, 1967, J. Powell and P. Opler, 2♂, 25♀ (UCB, AMNH).

Chlamydatus keltoni, new species
Figures 1, 3H, 4, 8

Chlamydatus pullus: Kelton, 1965: 1134 (misidentification).

DIAGNOSIS: Recognized by the uniformly dark coloration of the body, the dark setae on the dorsum, the dark femora with a pale band distally, the pale tibiae with dark spots at the base of the tibial spines, and the convoluted form of the vesica in the male. Similar to *C. pulicarius* and *C. pullus* in body form and coloration, but usually smaller than *C. pulicarius*, ranging in length from 2.29 to 2.61 whereas total length in *C. pulicarius* always 2.51 or more; males usually macropterous, an uncommon condition in *C. pulicarius*. Readily distinguished from *C. pulicarius* by the form of the male genitalia, the apical process of the vesica longer and the vesica more highly convoluted in *C. pulicarius* (fig. 5) than in *C. keltoni* (fig. 4); differences in vesical structure not so striking between *C. keltoni* and *C. pullus*, but *C. pullus* (fig. 6) with less highly convoluted vesica and apex somewhat shorter than in *C. keltoni* (fig. 4). Similar in size and coloration to *C. brevicornis*, *C. monilipes*, and *C. suavis*, relatively small species with all femora dark and the background coloration of the tibiae pale. Distinguished from *C. suavis* by generally brown coloration and faint brown bases of the tibial spines in that species (fig. 3G), from *C. brevicornis* by the shining, weakly woolly setae in that species (fig. 1) as opposed to the inconspicuous dorsal vestiture of dark common setae in *C. keltoni* (fig. 1), and from *C. monilipes* by the narrower pale area at the tibial articulation of the femora and white tibiae with contrasting heavy black bases of the tibial spines in that species (fig. 3). Male genitalia unlike those of *C. brevicornis*, *C. monilipes*, and *C. suavis* with their relatively short apical projection of the vesica (figs. 4–6).

DESCRIPTION: *Male*: Moderately small, broad bodied, somewhat flattened, total length 2.29–2.61, length apex clypeus–cuneal fracture 1.63–1.79, width across pronotum 0.82–0.88. COLORATION (figs. 1, 3H): Body and appendages castaneous to nearly black; femora with a moderately broad, pale, distal band; tibiae and tarsal segments 1 and 2 pale; tibial spines with dark bases, these being most distinct on hind tibiae; membrane of wing fumose, veins darker than surrounding areas. SURFACE AND VESTITURE (figs. 1, 7C): Dorsum granular, with weakly rugose appearance, weakly shining, covered with recumbent, dark, simple setae (fig. 1). STRUCTURE: Curvature of posterior margin of vertex and eyes more or less conforming to anterior margin of pronotum (fig. 1); posterior margin of vertex and eyes smoothly and rather broadly rounded (fig. 1); vertex and frons moderately rounded; clypeus at most barely visible from above; dorsal margin of antennal fossa at level of ventral margin of eye; eyes occupying about 60% of height of head in lateral view (fig. 8A); labium reaching to about posterior margin of hind trochanters; costal margin of hemelytra distinctly rounded, convex, cuneal fracture weakly incised, hemelytra weakly deflexed at fracture (fig. 1); claws of moderate length, bent at about 20° angle at apex of pulvilli, pulvilli moderately large and covering approximately three-fourths of the length of claw (fig. 8C,D), parempodia setiform and attenuated (fig. 8D); abdomen somewhat flattened, relatively broad, widest at midpoint, tapering toward relatively small genital capsule, the latter occupying than one-half length of abdomen. MALE GENITALIA (fig. 4): Vesica formed of a single strap curving in a convoluted manner and with a long, decurved, apical attenuation; secondary gonopore well sclerotized, distant from apex of vesica, gonopore sclerite lacking; phallotheca with elongate, more or less parallel-sided apical portion; left paramere boat shaped; right paramere lanceolate.

Female: Small; total length 2.04–2.45, length apex clypeus–cuneal fracture 1.58–1.85, width pronotum 0.73–0.85. COLORATION (fig. 1): As in male, except distal half of antennal segment 2 pale. SURFACE AND VESTITURE (figs. 1, 8B): As in male. STRUCTURE (fig. 1): Usually submacropterous, membrane of wing shorter than in male, body broader, with lateral margins of

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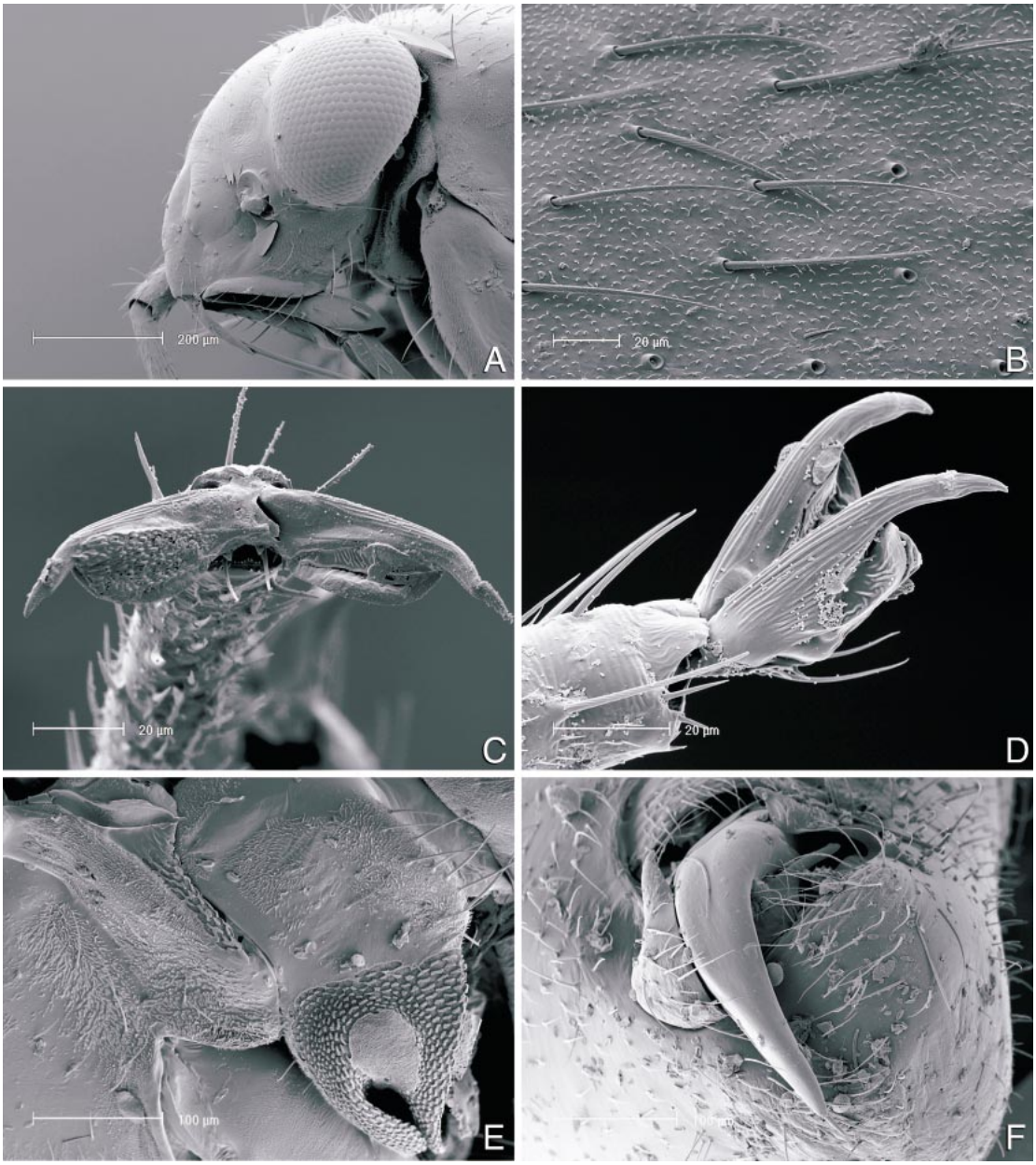

Fig. 8. Scanning electron micrographs of *Chlamydatus keltoni*, ♂, British Columbia: Yoho National Park. **A.** Head, lateral view. **B.** Setae on hemelytra. **C.** Pretarsus, apical ventral view. **D.** Pretarsus, lateral view. **E.** Mesothoracic spiracle and metaepisternal scent efferent system, lateral view. **F.** Pygophore, posterodorsal view, showing left paramere and phallotheca in repose. Scales as indicated.

hemelytra more strongly convexly rounded; eyes smaller than in male in dorsal view, vertex broader relative to width of head, but eyes of similar height to male in lateral view; head more strongly projecting anteriorly than in male, clypeus readily visible from above.

ETYMOLOGY: Named after Leonard A. Kelton, in recognition of his pioneering work on

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New World *Chlamydatus*, and North American Miridae in general.

HOSTS: Recorded from a variety of plant families, including—among others—the Fabaceae (*Astragalus*, *Lupinus*, and *Medicago* spp.), Ranunculaceae (*Ranunculus* sp.), and Rosaceae (*Potentilla* spp.)

DISTRIBUTION: Distribution from Alaska to Greenland at higher latitudes; at lower latitudes restricted to the western United States, the most southern occurrence being in Colorado.

DISCUSSION: Kelton (1965) recorded this species from North America under the name *Chlamydatus pullus*. Comparison of male genitalia indicates that his concept for the species was based on misidentified specimens, as confirmed by I. M. Kerzhner (in litt.).

SPECIMENS EXAMINED: Holotype: male: ''[CANADA:] Miller Lake, ONT.[,]12.VI.62[,] Kelton & Thorpe''; deposited in the Canadian National Collection of Insects, Ottawa.

Paratypes: CANADA: **Alberta:** Banff, 5000–6000 ft, July 4, 1925, O. Bryant, 1♂ (USNM). Banff, July 5, 1924, E. Hearle, 3♀ (CNC). Calgary, June 18, 1963, Carr, 1♀ (CNC). Calgary, 32 mi W of, July 18, 1970, P. Oman, 2♂, 4♀ (OSU). Canmore, August 27, 1952, L. A. Konotopetz, 1♂ (CNC). Coal Valley, August 31, 1970, L. A. Kelton, 2♂, 3♀ (CNC). Coults, June 15, 1952, L. A. Konotopetz, *Lupinus argenteus* (Fabaceae), 14♂, 4♀ (CNC). Cypress Hills Provincial Park, Horseshoe Canyon Overlook, 4700 ft, July 18, 1990, M. D. Schwartz, 1♂ (CNC). Cypress Hills Provincial Park, Top Road, 1.2 km E of Spruce Coulee, 4700 ft, July 15, 1990, M. D. Schwartz, *Potentilla fruticosa* (Rosaceae), 2♂ (CNC). Cypress Hills Provincial Park, Top Road, 9.6 km E of Rt 41 jct, 4700 ft, July 15, 1990, M. D. Schwartz, 3♂, 2♀ (CNC). Del Bonita, June 16, 1952, L. A. Konotopetz, 3♂ (CNC). Drumheller, June 18, 1957, Brooks, MacNay, 2♂, 1♀ (CNC). Eisenhower Junction, August 5, 1970, L. A. Kelton, 19♂, 38♀ (CNC). Eisenhower Junction, Banff National Park, 4700 ft, June 23, 1955, J. Coyles, 1♂ (CNC). Elkwater Lake, July 19, 1956, O. Peck, 2♀ (CNC). Elkwater Park, around marina, 3900 ft, July 16, 1990, M. D. Schwartz, *Potentilla fruticosa* (Rosaceae), 3♂, 2♀ (CNC). Elkwater Park, July 7, 1952 and July 26, 1952, L. A. Konotopetz, 6♂, 6♀ (CNC). Fisher Creek A. F. S., July 26, 1973, L. A. Kelton, 8♂, 2♀ (CNC). Frank, June 18, 1952, A. R. Brooks, 1♂ (CNC). Geikie Road, Jasper National Park, August 29, 1932, R. H. Handford, 2♀ (CNC). Grande Prairie, July 4, 1940, C. L. Nelson, 2♀ (CNC). Grande Prairie, June 9, 1961 and July 26, 1961, A. R. Brooks, 3♂, 2♀ (CNC). High Prairie, June 22, 1961 and September 6, 1961, A. R. Brooks, 3♂, 2♀ (CNC). Jasper National Park, August 6, 1952, L. A. Konotopetz, 1♂ (CNC). Jumping Pound Creek, June 21, 1963, Carr, 1♀ (CNC). Kananaskis Highway, July 25, 1973, L. A. Kelton, 15♂, 14♀ (CNC). Kananaskis Road, July 20, 1974 and July 25, 1973, L. A. Kelton, 35♂, 32♀ (CNC). Kananaskis Valley, Pocaterra Creek, 5350 ft, July 15, 1964, H. B. Leach, 7♂, 1♀ (CAS). Lethbridge, June 20, 1952, L. A. Konotopetz, *Trifolium repens* (Fabaceae), 2♂, 1♀ (CNC). Lethbridge, June 21, 1956, O. Peck, *Medicago sativa* (Fabaceae), 1♂, 1♀ (CNC). Lethbridge, July 2, 1938, R. W. Salt, *Medicago sativa* (Fabaceae), 3♂, 1♀ (CNC). Manyberries, June 21, 1952, A. R. Brooks, 1♀ (CNC). McMurray, August 7, 1953, G. E. Ball, 2♂ (CNC). Medicine Hat, July 28, 1930, F. S. Carr, 1♀ (USNM). Mile 14 Banff-Jasper Highway, Banff, August 2, 1955, J. Coyles, 1♂ (CNC). Nordegg, August 31, 1970, L. A. Kelton, 1♂ (CNC). Nordegg, July 31, 1921, J. McDunnough, 1♂, 1♀ (USNM). Nordegg, July 31, 1921, J. McDunnough, 4♀ (CNC). Onefour, June 14, 1952, L. A. Konotopetz, 1♂ (CNC). Pincher, June 29, 1923, W. Carter, *Medicago sativa* (Fabaceae), 2♂ (CNC). Rycroft, June 21, 1961, A. R. Brooks, 2♂ (CNC). Valleyview, June 6, 1961, A. R. Brooks, 2♂, 2♀ (CNC). Waterton Lakes National Park, July 4, 1972, L. A. Kelton, 20♂, 20♀ (CNC). **British Columbia:** Aspen Grove, July 10, 1975, L. A. Kelton, 1♂ (CNC). Atlin, July 4, 6, 7, 1955, B. A. Gibbard, 4♂, 1♀ (CNC). Buckinghorse River, Alaska Highway, June 24, 1985, S. G. Cannings, 2♂ (UBC). Cache Creek, 450–500 ft, June 1, 1978, N. L. H. Krauss, 1♂ (AMNH). Cathedral Provincial Park, Diamond Trail, E slope Scout Mountain, July 26, 1988, S. G. Cannings, 3♂ (UBC). Field, August 10, 1952, L. A. Konotopetz, 1♀ (CNC). Kaleden, July 2, 1975, L. A. Kelton, 1♂ (CNC). Kamloops, Paul Lake, June 29, 1950, B. P. Beirne, 3♂, 2♀ (CNC). Leanchoil, August 5, 1970, L. A. Kelton, 1♀ (CNC). Lumby, August 13, 1975, L. A. Kelton, 1♀ (CNC). Manning Provincial Park, Allison Pass, August 12, 1970, L. A. Kelton, 6♂, 5♀ (CNC). Manning Provincial Park, Blackwall, July 23, 1970, L. A. Kelton, 1♂, 3♀ (CNC). Manning Provincial Park, Gibson Pass, August 11, 1970, L. A. Kelton, 1♂, 1♀ (CNC). McLease Lake, June 28, 1950, B. P. Beirne, 1♀ (CNC). Merritt, 10 mi S of, July 19, 1959, L. A. Kelton, 1♂, 3♀ (CNC). Mi 392 Alaska Highway, Summit Lake, 4500 ft, June 26, 1959, E. E. MacDougall, 1♂ (CNC). Mi 496 Alaska Highway, Liard Hot Springs, 1500 ft, July 9, 1959, R. E. Leech, 19♂, 6♀ (CNC). Mon-

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askie Pass, July 16, 1975, L. A. Kelton, 4♂ (CNC). Oliver, 7 mi E of, Indian Reservation, July 8, 1959, L. A. Kelton (Asteraceae), 2♂, 2♀ (CNC). Oliver, Vaseaux Lake, May 29, 1959, L. A. Kelton, 1♂, 1♀ (CNC). Osoyoos, Anarchist Mountain, July 13, 1970, L. A. Kelton, 3♂, 1♀ (CNC). Osoyoos, Anarchist Mountain, July 20, 1959, L. A. Kelton, 1♂, 2♀ (CNC). Osoyoos, Anarchist Mountain, July 6, 1959, R. Madge, 5♂, 10♀ (CNC). Osoyoos, Mount Kobau, July 18, 1996, J. Jarrett, 3♂, 1♀ (UBC). Osoyoos, Mount Kobau Rd., VK, Msxh pitfall trap K4 B-1, 5, July 20–August 18, 1996, J. Jarrett, 15♂, 3♀ (UBC). Osoyoos, Mount Kobau, VK, Msxh pitfall trap K4 A-2, 3, August 18–September 28, 1996, J. Jarrett, 3♂, 1♀ (UBC). Osoyoos, Mount Kobau, July 28–August, 18, 1997, J. Jarrett, 1♂ (UBC). Osoyoos, Richter Pass, June 28, 1959, L. A. Kelton, 1♂ (CNC). Osoyoos, Richter Pass, May 24, 1959, R. E. Leech, 1♂ (CNC). Parson, August 6, 1970, L. A. Kelton, 1♂, 1♀ (CNC). Pink Mountain, August 17, 1982, L. A. Kelton, 7♂, 4♀ (CNC). Prince George, July 10, 1947, G. J. Spencer (Solanaceae), 2♂ (CNC). Prophet River Provincial Park, June 24, 1985, E. Bijdemast, S. G. Cannings, 3♂, 1♀ (UBC). Quesnel: June 3, 1949, G. J. Spencer, *alfalfa* (Fabaceae), 1♂ (CNC); June 14, 1949, G. J. Spencer, 4♂, 3♀ (CNC); June 15, 1947, G. J. Spencer, 1♂ (CNC); June 15, 1949, G. J. Spencer, *alfalfa* (Fabaceae), 1♂, 1♀ (CNC); June 23, 1945, G. J. Spencer, 1♂, 1♀ (CNC); June 29, 1948, G. J. Spencer (Solanaceae), 1♂ (CNC); July 7, 1949, R. Stace-Smith, 1♀ (CNC); July 21, 1947, G. J. Spencer, 5♀ (CNC); July 31, 1947, G. J. Spencer, 4♀ (CNC). Soda Creek, June 13, 1950, G. J. Spencer, 3♂, 1♀ (CNC). Soda Creek, June 24, 1950, G. J. Spencer (Solanaceae), 1♀ (CNC). Soda Creek, July 12, 1950, G. J. Spencer, *A. morloni* 1♂ (CNC). Stanley, July 26, 1947, G. J. Spencer, 1♂ (CNC). Tete Jaune Cache, June 8, 1997, G. G. E. Scudder, 1♀ (UBC). Tunkwa Lake, August 15, 1951, D. G. Finlayson, 1♂ (CNC). Valemont, June 8, 1997, G. G. E. Scudder, 2♂ (UBC). Yolo National Park, July 16, 1970, L. A. Kelton, 3♂, 5♀ (CNC). **Labrador:** Hebron, July 10, 1954 and August 3, 1954, J. F. McAlpine, *Ranunculus* sp. (Ranunculaceae), 15♂, 6♀ (CNC). Tessiujak Bay, Nagvak Fjord, August 15, 1954, J. F. McAlpine, 1♂ (CNC). **Manitoba:** Churchill, July 1, 1939, W. J. Brown (CNC). Churchill, July 12, 1952 and August 2, 1952, J. G. Chillcott, 13♂, 31♀ (CNC). Churchill, July 23, 1936 and August 9, 1937, H. E. McClure, D. G. Denning, 11♂, 6♀ (USNM). Churchill, July 27, 1936, C. T. Parsons, 1♀ (AMNH). Churchill, August 2, 1937, D. G. Dennig, 1♂, 1♀ (USNM). Fort Churchill, July 13, 1952, J. G. Chillcott, 5♂, 5♀ (CNC). Gillam, July 19, 1950, J. F. McAlpine, 1♂, 3♀ (CNC). Hudson Bay, August 3, 1952, J. G. Chillcott, 4♂ (CNC). Keld, August 8, 1937, R. H. Beamer, 1♀ (KU). Roblin, 30 mi N of, July 14, 1954, A. R. Brooks, Wallis, 5♂, 2♀ (CNC). Russell, July 21, 1954, A. R. Brooks, Wallis, 1♂ (CNC). Warkworth Creek, nr Churchill, July 7, 1952, J. G. Chillcott, 4♂ (CNC). **Northwest Territories:** Aklavik, June 18, 1931, Bryant, 1♀ (CNC). Aklavik, July 16, 1931, Bryant, 1♂ (CNC). Baffin Island, Lake Harbour, August 13, 1935, W. J. Brown, 1♀ (USNM). Geillini Lake, August 19, 1952, J. G. Chillcott, 8♂, 3♀ (CNC). Inuvik, July 25, 1983, L. A. Kelton, 2♂, 3♀ (CNC). Nicholson Lake, N end, July 27, 1966, J. G. Chillcott, 1♀ (CNC). Reindeer Depot, Mackenzie Delta, August 11, 1948, J. R. Vockeroth, 5♂, 4♀ (CNC). Reindeer Depot, Mackenzie Delta, July 7, 1948, W. J. Brown, 1♂ (CNC). Tuktoyaktuk, 20 mi E of, July 6, 1971, W. R. M. Mason, 11♂, 2♀ (CNC). Whatever Lake, July 1, 1989, J. Pilny, 1♂ (CNC). **Nunavut:** Lake Harbour, Baffin Island, August 3, 1935, L. A. Kelton, 49♀ (CNC). **Ontario:** Almonte, June 28, 1974, D. J. E. Brown, 2♂, 3♀ (CNC). Bell's Corners, June 22, 1952, R. S. Bigelow, 1♂ (CNC). Calabogie, June 21, 1979, D. J. E. Brown, 6♂, 9♀ (CNC). Carp, June 22, 1981, D. J. E. Brown, 5♂, 1♀ (CNC). Flower Station, June 28, 1987, D. J. E. Brown, 1♀ (CNC). Gore Bay, July 10, 1961, G. Brumpton, 2♂ (CNC). Huntley, July 14, 1960, D. J. E. Brown, 1♀ (CNC). Mer Blue, August 9, 1932, G. S. Walley, 1♀ (CNC). Midland, June 14, 1962, Kelton, Thorpe, 5♂, 5♀ (CNC). Miller Lake, June 12, 1962, Kelton, Thorpe, 26♂, 14♀ (CNC). North Bay, June 19, 1963, L. A. Kelton, 12♂, 14♀ (CNC, USNM). Norway Point, Lake of Bays, July 10, 1922, J. McDunnough, 3♀ (CNC). Pautois Creek on Highway 17, 3 km E of Rt 630, July 1, 1990, M. D. Schwartz, *Potentilla argentea* (Rosaceae), 6♂, 3♀ (CNC). South Gloucester, Blossom Park, Greenbelt, June 9, 1991, M. D. Schwartz, *Potentilla argentea* (Rosaceae), 13♂, 10♀ (CNC, AMNH). Stittsville, June 20, 1962 and July 12, 1961, D. J. E. Brown, 3♂, 1♀ (CNC). Thessalon, June 15, 1965, W. Gagne, 8♂, 4♀ (UCB). Tobermory, June 12, 1962, Kelton, Thorpe, 1♀ (CNC). Wawa, July 7, 1961, G. Brumpton, 3♂, 1♀ (CNC). White Lake bog near White Lake, June 6, 1991, M. D. Schwartz, 2♂ (CNC). **Quebec:** Bradore Bay, July 29, 1930, W. J. Brown, 3♂, 4♀ (CNC). Bradore Bay, August 12, 1930, W. J. Brown, 1♂ (USNM). Fabre, June 13, 1963, L. A. Kelton, 46♂, 20♀ (CNC, USNM). Fort Chimo, July 2, 1954, W. R. Richards, 1♀ (CNC). Gatineau National Park, June 11, 1981, D. J. E. Brown, 13♂, 3♀ (CNC). Great Whale River, July 12, 1949 and August 18, 1949, J. R. Vockeroth, 4♂, 8♀ (CNC). Indian House Lake, July 6, 1954 and August 4, 1954, W. R. Richard,

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R. Coyles, 17♂, 2♀ (CNC). Laniel, June 17, 1963 and July 3, 1963, L. A. Kelton, 25♂, 10♀ (CNC). Laniel, June 26, 1963, L. A. Kelton, 1♂, 1♀ (CAS). Near Luskville, June 11, 1991, M. D. Schwartz, *Potentilla argentea* (Rosaceae), 1♂, 3♀ (CNC). Petit-Gaspé beach, Cap-des-Rosiers, Forillon National Park, 5 m, July 20, 1995, M. D. Schwartz, *Epilobium angustifolium* (Onagraceae), 1♂ (CNC). Shawville, July 22, 1958, L. A. Kelton, 4♂, 8♀ (CNC). Tasiujaq, Karivik, August 20, 1996, B. J. Sinclair, 2♀ (CNC). Yarms, July 23, 1958, L. A. Kelton, 1♀ (CNC). **Saskatchewan:** Big River, June 5, 1959 and July 3, 1959, A. R. and J. E. Brooks, 5♂, 2♀ (CNC). Christopher Lake, July 11, 1959, A. R. and J. E. Brooks, 6♂, 3♀ (CNC). Christopher Lake, July 13, 1959, A. and J. Brooks, 1♂ (USNM). Fish Creek, July 18, 1925, K. M. King, 2♂, 1♀ (CNC). Garrick, June 29, 1950, L. A. Konotopetz, *Medicago sativa* (Fabaceae), 24♂, 5♀ (CNC). Good Spirit Lake, July 10, 1954, A. R. Brooks, Wallis, 1♂, 1♀ (CNC). Love, July 5, 1950, L. A. Konotopetz, *Medicago sativa* (Fabaceae), 1♀ (CNC). Melfort, July 16, 1925, K. M. King, 1♂ (CNC). Preeceville, July 9, 1954, A. R. Brooks, Wallis, 8♂, 8♀ (CNC). Prince Albert, July 3, 1954, A. R. Brooks, Wallis, 7♂, 3♀ (CNC). Saskatoon, June 21, 1951, L. A. Konotopetz, 2♂, 2♀ (CNC). Saskatoon, June 28, 1950, A. R. Brooks, 10♂, 2♀ (CNC). Saskatoon, near Research Farm and Experimental Plots, July 11, 1990, M. D. Schwartz, 1♂ (CNC). Stoughton, 35.4 km N of, on Rt 7, July 9, 1990, M. D. Schwartz and R. G. Foottit, *Brassica juncea* (Brassicaceae), 1♀ (CNC). Torch River, July 20, 1950, L. A. Konotopetz, 1♂ (CNC). Torch River Campground, 10.7 mi S of, on Rt 106, July 12, 1990, M. D. Schwartz, *Achillea* sp. (Asteraceae), 1♂, 1♀ (CNC). White Fox, June 20, 1950 and August 7, 1950, L. A. Konotopetz, 14♂, 7♀ (CNC). **Yukon Territory:** Carcross, August 1, 1982, L. A. Kelton, *Lupinus* sp. (Fabaceae), 4♂, 3♀ (CNC). Carcross, August 9, 1983, L. A. Kelton, *Artemisia frigida* (Asteraceae), 2♀ (CNC). Carmacks, July 17, 1983, L. A. Kelton, *Artemisia* sp. (Asteraceae), 4♀ (CNC). Dawson, July 21, 1982, L. A. Kelton, 5♂, 15♀ (CNC). Dawson, July 27, 1949, W. W. Judd, 2♂ (CNC). Destruction Bay, July 26, 1982, L. A. Kelton, *Hedysarum mackenzii* (Fabaceae), 4♂, 2♀ (CNC). Destruction Bay, July 26, 1982, L. A. Kelton, *Lathyrus* sp. (Fabaceae), 26♂, 23♀ (CNC). Dislocation Bay, July 25, 1982, L. A. Kelton, 3♂, 6♀ (CNC). Gravel Lake, 58 mi E of Dawson, 2050 ft, August 11, 1962, P. J. Skisko, *Achillea* sp. (Asteraceae), 1♀ (CNC). Haines Junction, July 28, 1982, L. A. Kelton, 12♂, 20♀ (CNC). Jct Dempster and Klondike Hwy, July 20, 1982, L. A. Kelton, 1♂ (CNC). Koidern, July 24, 1982, L. A. Kelton (CNC). Mi 465 on Dempster Highway, 800 m, July 5, 1980, D. M. Wood, D. Lafontaine, 5♂, 4♀ (CNC). Moose Creek, July 18, 1982, L. A. Kelton, 4♂, 5♀ (CNC). Rampart House, July 19, 1951, J. E. H. Martin, 1♀ (CNC). Rancheria, August 11, 1982, L. A. Kelton, *Lathyrus* sp. (Fabaceae), 1♂ (CNC). Silver City, July 27, 1982, L. A. Kelton, 8♂, 19♀ (CNC). Tagish, July 17, 1983, August 3, 1982, L. A. Kelton, *Astragalus abniginum* (Fabaceae), 31♂, 26♀ (CNC). Takhini Hot Springs, 2400 ft, August 19, 1962, R. E. Leech, 2♂, 3♀ (CNC). Tatchun, August 18, 1982, L. A. Kelton, *Lathyrus* sp. (Fabaceae), 1♂, 9♀ (CNC). Von Wilczek Lake, July 18, 1982, L. A. Kelton, 1♀ (CNC). Whitehorse, July 16, 1982, L. A. Kelton, *Astragalus* sp. (Fabaceae), 32♂, 40♀ (CNC). Whitehorse, July 30, 1982, L. A. Kelton, *Oxytropis campestris* (Fabaceae), 4♂, 14♀ (CNC). Whitehorse, August 6, 1974, N. L. H. Krauss, 1♀ (AMNH). DENMARK: **Greenland:** Sondrestrom Air Base, July 4, 1952, W. J. Brown, 1♀ (USNM). Sondrestrom Air Base, July 4, 1952 and July 30, 1952, W. J. Brown, 57♀ (CNC). USA: **Alaska:** *Bristol Bay Co.:* King Salmon, Naknek River, July 13, 1952, W. R. Mason, 1♂ (CNC). *Denali Co.:* Mount McKinley National Park, 1730 ft, June 19, 1957, G. W. Byers and party, 14♂, 16♀ (KU). *Kenai Peninsula Co.:* Hope, July 15, 1951, W. J. Brown, 1♂ (CNC). *Nome Co.:* Unalakleet, July 5, 1961, R. Madge, B. S. Heming, 31♂, 19♀ (CNC, USNM). *South Fairbanks Co.:* Big Delta, July 13, 1951, W. R. M. Mason, J. R. McGillis, 3♂, 1♀ (CNC). Big Delta, July 16, 1948, R. I. Sailer, 13♂, 2♀ (CNC, USNM). Chicken, July 22, 1982, L. A. Kelton, *Aster* sp. (Asteraceae), 3♂, 9♀ (CNC). Shaw Creek, mi 289 Richardson Highway, July 11, 1951, Mason, McGillis, 1♀ (CNC). **Colorado:** *Archuleta Co.:* Pagosa Springs, July 22, 1968, L. A. Kelton, 1♀ (CNC). *Eagle Co.:* 9.2 mi S of Minturn, White River National Forest, 9080 ft, July 19, 1990, Zolnerowich, 1♂, 3♀ (TAMU). *Jackson Co.:* 4 mi N of Gould, August 5, 1975, J. C. Schaffner, 9♂, 10♀ (TAMU). *Larimer Co.:* Bennett Creek Picnic Grounds, Pingree Park Road, 46 mi W of Fort Collins, 7400 ft, July 14, 1986, R. T. Schuh and J. T. Polhemus, 2♂ (AMNH). Fish Creek Picnic Grounds, Pingree Park Road, 46 mi W of Fort Collins, 7700 ft, July 14, 1986, R. T. Schuh and J. T. Polhemus, 1♂, 2♀ (AMNH). Pingree Park, August 23, 1924, C. J. Drake, 1♀ (USNM). Pingree Park, August 25, 1935, Beamer, Lawson, 3♂ (CNC). *Mesa Co.:* Grand Mesa, Carson Lake, August 6, 1993, J. T. Polhemus, 1♀ (JTP). *Routt Co.:* Meadows, Routt National Forest, August 20, 1968, L. A. Kelton, *Ranunculus* sp. (Ranunculaceae), 20♂, 15♀ (CNC). Steamboat Springs, August 22, 1968, L.

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A. Kelton, 1♀ (CNC). **Idaho:** *Blaine Co.:* Ketchum, July 30, 1955, B. P. Bliven, 1♀ (CAS). **Montana:** *Beaverhead Co.:* 5 mi E of Wise River, July 21, 1983, J. D. Pinto, 1♂ (UCR). *Glacier Co.:* 6 mi N of East Glacier Park on Rt 49, Blackfeet Indian Reservation, 5400 ft, August 3, 1994, M. D. Schwartz, 3♂ (CNC). *Park Co.:* 2 mi E of Cooke City on Rt 212, Soda Butte Campground, Gallatin National Forest, 7700 ft, August 11, 1986, Schuh, Schwartz, Stonedahl, 1♂ (AMNH). **Utah:** *Uintah Co.:* Oaks Park, August 2, 1965, G. F. Knowlton, 2♂, 4♀ (USU). **Wyoming:** *Big Horn Co.:* 24 mi W of Burgess Jct on road to radar station, 9000–9200 ft, August 12, 1986, Schuh, Schwartz, Stonedahl, *Lupinus argenteus* (Fabaceae), 80♂, 75♀ (AMNH, USNM). *Park Co.:* E of Beartooth Pass on Hwy 212, 10,800 ft, August 1, 1994, M. D. Schwartz, *Achillea millefolium* (Asteraceae), 12♂, 8♀ (CNC, AMNH). *Sheridan Co.:* Prune Creek, 42 mi W of Sheridan, at Prune Creek Campground, 7400 ft, July 25, 1978, N. L. Herman, 1♂ (AMNH).

Chlamydatus monilipes Van Duzee
Figures 1, 3I, 5

Chlamydatus monilipes Van Duzee, 1921: 132 (n.sp.).

DIAGNOSIS: Recognized by the small size, black coloration of body and femora, and the nearly white background coloration of tibiae with strongly contrasting black spots at the bases of the tibial spines. Most similar in overall coloration to *C. brevicornis*, *C. keltoni*, and *C. suavis*; distinguished from *C. brevicornis* by the conspicuously shining vestiture of the dorsum (fig. 1) and the bases of the tibial spines being pale in that species (fig. 3G); distinguished from *C. keltoni* by the brown bases of the tibial spines (fig. 3H) and convoluted vesica with a rather long apical spine (fig. 4) in that species as opposed to the heavy black tibial spines on a stark white background (fig. 3I) and the shorter vesica with a relatively short apical spine in *C. monilipes* (fig. 5); distinguished from *C. suavis* by generally brown coloration and faint brown bases of the tibial spines in that species (fig. 3G) as opposed to the nearly black coloration and heavy black bases of the tibial spines in *C. monilipes* (fig. 3I); coloration similar to *C. pulicarius* with femora almost totally dark, but that species always much larger, total length always more than 2.51 and with a long convoluted vesica with a very long apical process (fig. 5), whereas total length in *C. monilipes* never more than 2.60 and vesica relatively short with a short apical process (fig. 5).

HOSTS: Most frequently collected on *Chrysothamnus* spp. and *Haplopappus* spp. (Asteraceae).

DISTRIBUTION: Restricted to western North America, ranging from Montana in the north to northern Baja California in the south.

DISCUSSION: The presumed holotype of *C. monilipes* is deposited in the California Academy of Sciences, San Francisco as type No. 3574. We have not examined it as the identity of this species seems not to be in question based on our examination of specimens identified by Van Duzee.

SPECIMENS EXAMINED: MEXICO: **Baja California Norte:** 8 mi E of Tecate, Highway 2, May 13, 1980, Brown and Faulkner, 1♂ (SDNH). junction Highway 3, Ojos Negros, April 4, 1981, Brown and Faulkner, 2♂ (SDNH). **Baja California Sur:** 3 mi N of San Jose Viejo, July 16, 1971, H. G. Real and R. E. Main, 1♂ (CAS). USA: **Arizona:** *Gila Co.:* 2 mi W of Miami, 3800 ft, May 4, 1979, E. M. Fisher, J. D. Pinto, 1♂ (UCR). *Graham Co.:* San Carlos Indian Reservation, April 16, 1969, D. and J. Schuh, 5♂ (AMNH). San Carlos Reservoir, S side of, April 17, 1969, D. and J. Schuh, 7♂ (AMNH). *Maricopa Co.:* Fort McDowell, March 15, 1982, J. T. Polhemus, 1♂ (JTP). Wickenburg, 4 mi SW of, on Vulture Mine Road, 700 m, April 1, 1981, R. T. Schuh and M. D. Schwartz, *Haplopappus* sp. (Asteraceae), 110♂ (AMNH). Wickenburg, 6 mi W of, April 2, 1966, Joe Schuh, *Astragalus* (Fabaceae), 1♂ (AMNH). *Pima Co.:* Santa Catalina Mountains, 2 mi N of Molino Canyon Campground, April 10, 1989, T. J. Henry and A. G. Wheeler, Jr., ?*Hypericum* sp. (Saxifragaceae), 1♂, 3♀ (USNM). Tucson, Santa Catalina Mts., Bear Creek near Saddleback Drive, February 26, 1995, M. D. Schwartz, 3♂ (CNC). Tucson, wash nr. 8712 Saddleback Dr., February 26, 1995, M. D. Schwartz, *Ambrosia ambrosioides* (Asteraceae), 10♂ (CNC). *Pinal Co.:* Oracle, 14 mi E of, July 27, 1924, E. P. Van Duzee, 21♂ (CAS). Superior, 4 mi E of, 4000 ft, May 5, 1979, E. M. Fisher (Fagaceae), 1♂ (UCR). *Santa Cruz Co.:* Nogales, October 15, 1906, Koebele, 1♂ (CAS). **California:** *El Dorado Co.:* Lake Tahoe, lakeside, July 27, 1930, H. H. Keifer, *Chrysothamnus nauseosus* (Asteraceae), 2♂, 2♀ (CAFA, CAS, LACM). *Fresno Co.:* Coalinga, April 16, 1980, R. S. Miller, 1♂ (TAMU). Jacolitos Canyon, April 8, 1966, R. O. Schuster, 1♂ (UCB). *Inyo Co.:* Alabama Hills, May 12, 1979, L. D.

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French, 1♂ (UCD). Big Pine, 12 mi E of, June 9, 1966, W. Gagne, 6♂ (UCB). Darwin, May 12, 1969, J. Doyen, 1♂ (UCB). Mesquite Spring Campground, Death Valley National Monument, 1760 ft, March 24, 1982, L. Russell, *Mentzelia* sp. (Loasaceae), 7♂ (OSU). Plauche, May 20, 1937, N. W. Frazier, 1♂ (UCB). Saline Valley Rd., 26 mi N of junction with Hwy. 190, April 21, 1975, J. D. Pinto, *Amphipappas fremontii* (Asteraceae), 4♂ (UCR). Westgard Pass summit, White Mountains, 2250 m, July 2, 1980, R. T. Schuh, *Chrysothamnus* sp. (Asteraceae), 12♂ (AMNH). Wildrose Station, May 14, 1969, J. Doyen, 4♂ (UCB). *Kern Co.:* Antelope Canyon, Tehachapi Mts., 4800–5200 ft, May 15, 1976, J. D. Pinto, 1♂ (UCR). Freeman Junction on Rt 178 and 14, 21 mi N of Mojave, April 24, 1980, Russell and Schwartz (Asteraceae), 18♂ (OSU). McKittrick, April 9, 1966, L. and C. W. O'Brien, 2♂ (UCB). Mojave, May 3, 1918, 2♂, 5♀ (CNC). Mojave, May 3, 1919, 2♂ (CNC). Red Rock Canyon, May 2, 1968, J. Doyen, 26♂ (UCB). Red Rock Canyon, May 18, 1937, E. P. Van Duzee, 6♂ (CAS). Red Rock Canyon, 4 mi N of, May 1, 1968, J. Powell, 16♂ (UCB). Shadow Mountain, May 27, 1941, G. H. and J. L. Perry, 1♂ (AMNH). *Lassen Co.:* Madeline, July 24, 1954, B. P. Bliven, 1♂ (CAS). Sagehen, July 26, 1954, B. P. Bliven, 1♂ (CAS). Susanville, June 17, 1959, L. A. Kelton, R. Madge, 27♂, 17♀ (CNC). *Los Angeles Co.:* Lancaster, 3 mi S of, March 22, 1971, P. Oman, 15♂ (OSU). Lovejoy Butte, Mojave Desert, May 10, 1944, A. L. Melander, 3♂ (UCR). Mint Canyon, 5 mi E of Saugus, April 20, 1932, E. P. Van Duzee, 41♂ (CAS). Mint Canyon, May 16, 1937, E. P. Van Duzee, 21♂ (CAS). Neenach, May 17, 1928, J. O. Martin, 7♂ (CAS). Palmdale, June 17, 1937, E. P. Van Duzee, 8♂ (CAS). Palmdale, 5 mi W of, April 14, 1932, E. P. Van Duzee, 9♂ (CAS). Pearblossom, May 15, 1955, W. E. Simonds, 3♂ (CAFA). Solemint, April 28, 1955, W. R. M. Mason, 11♂, 5♀ (CNC). Valyermo, May 1, 1968, J. Powell, 3♂ (UCB). *Modoc Co.:* 2.5 mi S of Rt 139 towards Lookout, 1440 m, July 6, 1979, R. T. and J. Schuh, *Chrysothamnus nauseosus* (Asteraceae), 15♂ (AMNH). 8 mi S of Rt 139 towards Lookout, 1420 m, July 6, 1979, R. T. and J. Schuh, *Chrysothamnus nauseosus* (Asteraceae), 10♂ (AMNH). Altura-Likely, June 20, 1956, J. Schuh, 3♂, 2♀ (CNC). Canby, 24.7 mi NW of, 1375 m, July 1, 1979, R. T. Schuh and B. M. Massie, 1♂ (AMNH). Cedar Pass, W of Cedarville, 1850 m, July 1, 1979, R. T. Schuh and B. M. Massie, *Chrysothamnus nauseosus* (Asteraceae), 30♂ (AMNH). Hackamore, July 12, 1947, R. L. Usinger, 16♂ (UCB). *Mono Co.:* Benton Hot Springs, June 8, 1966, W. Gagne, 6♂ (UCB). Coleville, 5200 ft, June 10, 1966, W. Gagne, 1♂ (UCB). Crooked Creek Naval Res. Station, White Mts., 10,000 ft, August 8, 1966, L. and C. W. O'Brien, 1♂ (UCB). No specific locality, August 3, 1939, W. Dwight Pierce, 5♂ (LACM). Sardine Creek, 8500 ft, July 6, 1951, A. T. McClay, 1♂ (UCD). *Nevada Co.:* Boca, June 18, 1974, R. D. Moon, 2♂ (UCD). Boca, June 25, 1976, R. M. Giblin, 2♂ (UCD). Boca, July 23, 1970, R. M. Bohart, 1♂ (UCD). Sagehen Creek Station near Hobart Mills, August 20, 1969, W. Gagne, *Artemisia* sp. (Asteraceae), 1♂ (UCB). Truckee, July 5, 1927, E. P. Van Duzee, 1♂ (CAS). *Orange Co.:* Cleveland National Forest, 1.5 mi E of San Juan Campground, May 12, 1978, J. D. Pinto and R. T. Schuh, 6♂ (AMNH). Irvine, April 5, 1972, Lilly and Enns (Asteraceae), 1♂ (CAFA). *Plumas Co.:* Chester, 8 mi NW of, August 17, 1968, J. Powell, 1♂ (UCB). Near Chester, July 7, 1932, R. L. Usinger, 47♂ (UCB). Spring Garden, June 23, 1937, B. P. Bliven, 1♂ (CAS). *Riverside Co.:* Coyote Canyon, 3.5 mi S of Palm Desert, Boyd Desert Research Center, May 17, 1975, J. B. Tucker, 1♂ (UCR). Lake Elsinore, April 21, 1920, E. P. Van Duzee, 1♂ (CAS). Maze Stone County Park near Hemet, April 10, 1974, J. D. Pinto, 2♂ (UCR). Menifee Valley, hills on W end, 1800 ft, May 11, 1978, J. D. Pinto and R. T. Schuh, *Salvia apiana* (Lamiaceae), 1♂ (AMNH). Near Menifee Valley, April 19, 1974, J. D. Pinto, 1♂ (UCR). Quail Valley, 8 mi NE of Elsinore, April 11, 1965, J. Powell, 1♂ (UCB). Thousand Palms, April 27, 1955, W. R. Richards, 9♂, 6♀ (CNC). White Water, March 19, 1955, W. R. Richards, 2♂ (CNC). Wilson Valley Rd., 1 mi N of Hemet, April 21, 1980, Russell and Schwartz, *Salvia* sp. (Lamiaceae), 1♂ (AMNH). *San Bernardino Co.:* Apple Valley, May 19, 1955, W. R. Richards, 16♂, 7♀ (CNC). Barstow, 26.7 mi S of, on St Rt 247, 1000 m, May 2, 1985, R. T. Schuh and B. M. Massie, *Lycium cooperi* (Solanaceae), 9♂ (AMNH). Cajon Pass Summit, 1.5 mi N of, on I-15, 1310 m, May 2, 1985, R. T. Schuh and B. M. Massie, *Haplopappus linearifolius* (Asteraceae), 32♂ (AMNH). Granite Pass, 3800–4320 ft, April 27, 1968, C. Beesley, *Larrea divaricata* (Zygophyllaceae), 1♂ (UCR). Joshua Tree National Monument, entrance, April 20, 1960, Gertsch, Ivie, and Schrammel, 1♂ (AMNH). Kramer Hills, Boron, May 10, 1955, W. R. M. Mason, 3♂ (CNC). Kramer Junction, 1.5 mi W of, April 24, 1980, M. D. Schwartz and L. K. Russell, unidentified sp. (Asteraceae), 40♂ (AMNH). Lucerne Valley, 5.4 mi W of, 935 m, May 13, 1978, J. D. Pinto and R. T. Schuh, *Chrysothamnus nauseosus* (Asteraceae), 6♂ (AMNH, UCR). March's Ranch Road, 2 mi NE Baldwin Lake, May 25, 1968, S. Freeman, *Haplopappus* sp. (Asteraceae), 1♂ (UCR). Old

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Woman Springs Rd, 6.3 mi N of Yucca Valley, May 13, 1978, J. D. Pinto, 6♂ (UCR). Piñon Hills T4N, R7W, Sec 7, May 22, 1979, H. L. Murray, R. A. Sherman, 13♂ (UCR). Rialto, May 13, 1956, W. E. Simonds, 1♂ (CAFA). Victorville, April 21, 1935, 2♂ (LACM, UCD). Yucca Valley, 6.3 mi N of, 1125 m, May 13, 1978, J. D. Pinto and R. T. Schuh, *Dalea* sp. (Fabaceae), 10♂ (AMNH). Yucca Valley, 10 mi N of, May 28, 1975, J. D. Pinto, *Acamptopappus sphaerocephalus* (Asteraceae), 1♂ (UCR). *San Diego Co.:* Carrista Creek, Morettis Junction, May 13, 1980, Brown and Faulkner, 2♂ (SDNH). Palm Canyon Campground, Anza-Borrego State Park, 592 ft, May 16, 1982, M. D. Schwartz, 1♂ (AMNH). No specific locality, April 22, 1913, E. P. Van Duzee, 2♂ (CAS). Warner Springs, 7 mi S of, Carrizo Creek intersection w/ Rt 79, May 16, 1982, M. D. Schwartz, *Gutierrezia sarothrae* (Asteraceae), 14♂ (AMNH). Warner Springs, 20 mi S of, April 5, 1967, D. M. Wood, 3♂, 4♀ (CNC). *San Luis Obispo Co.:* near Cuyama Rd., 1 mi W of Cottonwood Cyn. on Rt 166, April 20, 1980, Russell and Schwartz, *Chrysothamnus nauseosus* (Asteraceae), 35♂ (AMNH). Tembler Range, 12 mi E of Simmler, 3200 ft, April 25, 1964, W. Turner, 1♂ (UCB). *Santa Cruz Co.:* Mount Hermon, July 15, 1922, F. E. Blaisdon, 1♂ (CAS). *Shasta Co.:* Lake Britton, June 29, 1947, T. F. Leigh, 1♂ (UCB). *Sierra Co.:* S of Sierraville, June 18, 1966, L. and C. W. O'Brien, at night, 1♂ (UCB). *Siskiyou Co.:* 12.3 mi N of St. Hwy. 89 on Powder Hill Road, July 19, 1985, G. M. Stonedahl and J. D. McIver, *Chrysothamnus nauseosus* (Asteraceae), 25♂ (AMNH). Hornbrook, April 14, 1959, L. A. Kelton, R. Madge, *Artemisia* sp. (Asteraceae), 1♀ (CNC). Lava Beds National Monument, August 13, 1961, Joe Schuh, 1♂ (OSU). Lava Beds National Monument, just S of, on Medicine Lake Road, 1625 m, June 26, 1979, R. T. and J. Schuh, *Haplopappus* sp. (Asteraceae), 60♂ (AMNH). Mammoth Crater, 0.3 mi SE of, Klamath National Forest, 5200 ft, June 26, 1979, M. D. Schwartz, *Haplopappus* sp. (Asteraceae), 26♂ (AMNH). McCloud, July 16, 1974, Shaw, Ruddiman, 9♂ (CAFA). Medicine Lake, 2.5 mi N of, on Medicine Lake Rd, July 18, 1985, G. M. Stonedahl and J. D. McIver, *Ribes cereum* (Grossulariaceae), 4♂ (AMNH). Medicine Lake Road, 5200 ft, June 26, 1979, G. Stonedahl, J.D. Lattin, 40♂ (OSU). Mount Shasta City, June 30, 1937, B. P. Bliven, 1♂ (CAS). Shasta City exit on Interstate 5, May 22, 1981, J. D. Lattin, 11♂ (OSU). *Stanislaus Co.:* Patterson, 74E14-67, May 2, 1979, Bingham, Paddock, Carlson, *Stenotopsis* sp. (Asteraceae) 23♂ (CAFA). *Tulare Co.:* 21 mi W of Rt 395 toward Kennedy Meadows, 1875 m, July 1, 1980, R. T. Schuh, *Chrysothamnus parryi* (Asteraceae), 17♂ (AMNH). **Colorado:** *Jackson Co.:* 3 mi N of Gould, August 13, 1968, P. Oman, 1♂ (OSU). **Idaho:** *Caribou Co.:* 11 mi E of Wayan on Rt 34, Pine Bar Campground, 6000 ft, July 30, 1981, M. D. Schwartz, *Purshia tridentata* (Rosaceae), 1♂ (AMNH). *Oneida Co.:* 6 mi NW of Holbrook, June 9, 1969, G. F. Knowlton, 2♂ (USU). Holbrook, June 27, 1969, G. F. Knowlton, 1♂ (USU). **Montana:** *Glacier Co.:* 15 mi W of Babb, Glacier National Park, August 8, 1969, Oman, 1♂ (OSU). **Nevada:** *Carson City Co.:* Carson City, June 20, 1929, E. P. Van Duzee, 2♂ (CAS). *Elko Co.:* Elko, 15 mi SE of, on Rt 227, 5600 ft, June 26, 1983, R. T. Schuh and M. D. Schwartz, *Lupinus* sp. (Fabaceae), 2♂ (AMNH). Elko, 30 mi W of, June 18, 1982, T. J. Henry, *Artemisia* sp. (Asteraceae), 2♂ (USNM). *Esmeralda Co.:* Goldfield, 6 mi N of, 5300 ft, June 8, 1966, W. Gagne, 11♂ (UCB). Lida, 2 mi W of, 6500 ft, June 8, 1966, W. Gagne, 6♂ (UCB). Lida, 3 mi W of, 6800 ft, June 7, 1966, W. Gagne, 6♂ (UCB). *Eureka Co.:* 28 mi W of Eureka on Rt 50, 6000 ft, June 27, 1983, R. T. Schuh and M. D. Schwartz, *Gutierrezia sarothrae* (Asteraceae), 25♂ (AMNH). *Lincoln Co.:* 11.7 mi NW of Oak Spring Summit on Rt 93, 5000 ft, M. D. Schwartz, *Tetradymia canescens* (Asteraceae), 1♂ (AMNH). *Lyon Co.:* 7 mi N of Sweetwater Summit on Rt 22, Toiyabe National Forest, 1865 m, July 11, 1980, R. T. Schuh and G. M. Stonedahl, *Chrysothamnus nauseosus* (Asteraceae), 1♂ (AMNH). *Mineral Co.:* 27 mi SW of Hawthorne on Rt 359, 7400 ft, July 2, 1983, R. T. Schuh and M. D. Schwartz, *Chrysothamnus viscidiflorus* (Asteraceae), 5♂ (AMNH). *Nye Co.:* Atomic Test Site, 1.5 mi W Area 12 camp on Stockade Wash Rd, June 7, 1983, Schuh, Schwartz, Stonedahl, *Chrysothamnus nauseosus* (Asteraceae), 55♂ (AMNH). Atomic Test Site, 2.6 mi W of Mercury Hwy, Cane Springs Rd, 3400 ft, June 6, 1983, Schuh, Schwartz, Stonedahl, *Chrysothamnus viscidiflorus* (Asteraceae), 10♂ (AMNH). Atomic Test Site, 4.5 mi S GS500 on Jackass Flats Rd, 3300 ft, June 6, 1983, Schuh, Schwartz, Stonedahl (Brassicaceae), 2♂ (AMNH). Belmont, 7 mi S of, T8N, R45E, 6800 ft, June 29, 1983, R. T. Schuh and M. D. Schwartz, *Gutierrezia sarothrae* (Asteraceae), 25♂ (AMNH). Belmont, 11 mi N of, T10N, R46E, sec. 26, 7200 ft, June 29, 1983, R. T. Schuh and M. D. Schwartz, *Gutierrezia sarothrae* (Asteraceae), 8♂ (AMNH). Mercury, 19 M, July 23, 1965, H. H. Knight and J. Merino, 2♂, 1♀ (CNC, USNM). Northumberland Canyon Rd., Toquima Mts., 6400 ft, June 28, 1983, R. T. Schuh and M. D. Schwartz, *Gutierrezia sarothrae* (Asteraceae), 1♂ (AMNH). **Oregon:** *Deschutes Co.:* Brothers, 8 mi SE of, July 9, 1968, Lattin, 2♂ (OSU). Millican, 0.5 mi S of, June 29, 1978,

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J. D. Lattin, 40♂ (OSU). Millican, 1 mi S of, 4380 ft, June 21, 1979: G. M. Cooper, 19♂ (OSU); G. M. Stonedahl, 10♂ (OSU); M. D. Schwartz, *Chrysothamnus nauseosus* (Asteraceae), 15♂ (AMNH); R. T. Schuh, *Chrysothamnus viscidiflorus* (Asteraceae), 130♂ (AMNH). Millican, 2.2 mi SW of, 4520 ft, June 29, 1978, Lattin and Oman, 1♂ (OSU). Millican Sand Dunes, 3 mi W of, July 6, 1977, J. D. Lattin, 12♂ (OSU). *Harney Co.:* Burns, June 24, 1954, G. F. Knowlton, 1♂ (KU). *Jackson Co.:* Mount Ashland, 1 mi below summit, 6500 ft, September 24, 1968, J. D. Lattin, 1♂ (OSU). *Klamath Co.:* Bly Mount Summit, 25 mi E of Klamath Falls, June 18, 1952, V. Roth, 1♂ (OSU). Chemult, 8 mi S of, August 7, 1941, J. Schuh, 1♀ (CNC). Hayden Mountain Summit, W of Keno, 1475 m, June 27, 1979, R. T. and J. Schuh, 2♂ (AMNH). Near Pothole, July 25, 1958, Joe Schuh, *Haplopappus* sp. (Asteraceae), 1♂ (OSU). R8E T30S Section 9, July 13, 1978, P. Oman, 1♂ (OSU).

Chlamydatus montanus Knight
Figures 1, 3D, 5

Chlamydatus montanus Knight, 1964: 140 (n.sp.).

DIAGNOSIS: Recognized by the uniformly dark coloration of the dorsum, the reddish coloration of the legs, and the macropterous wing development. Distinguished from other species with unicolorous legs by the distinctive reddish quality in *C. montanus*, this condition otherwise occurring only in *C. ruficornis*, but that species easily distinguished by antennal segment 2 being red and weakly fusiform (fig. 2), whereas segment 2 black and of uniform diameter in *C. montanus*.

HOSTS: Apparently *Artemisia* spp. (Asteraceae).

DISTRIBUTION: Western North America.

DISCUSSION: Knight (1964) described *C. montanus* from a single, somewhat mutilated specimen from Missoula, Montana, which is deposited in the U.S. National Museum. Kelton (1965) later recorded the species from Alberta and Saskatchewan, indicating the host as *Pinus* spp. Kelton's host record is certainly in error, although his specimens undoubtedly represent a *Chlamydatus* species, based on his genitalic illustration (Kelton, 1965). We collected specimens near Fort Collins, Colorado, probably sweeping an herbaceous *Artemisia* sp. and have a single specimen from near Kennedy Meadows in the Sierra Nevada mountains of California from *Artemisia*.

SPECIMENS EXAMINED: Holotype: female: ''Montana: Missoula, August 1, 1920, A. A. Nichol''; deposited in the National Museum of Natural History, Washington, D.C.

Additional specimens: CANADA: **Alberta:** Canmore, August 27, 1952, L. A. Konotopetz, 1♀ (CNC). **British Columbia:** Chilcotin, Lee's Corner, 5 mi E of, July 15, 1978, G. G. E. Scudder, 1♂ (UBC). Stewart Crossing, 16 km NW of, July 21, 1985, J. J. Robinson, 1♂ (UBC). **Manitoba:** Riding Mountain National Park, July 20, 1972, L. A. Kelton, 3♂ (CNC). **Saskatchewan:** Christopher Lake, July 15, 1959, A. R. and J. E. Brooks, 1♂ (CNC). Hudson Bay, August 24, 1954, A. R. Brooks, Wallis, 1♂, 1♀ (CNC). **Yukon Territory:** Jake's Corner, August 24, 1981, C. S. Guppy, 1♀ (UBC). USA: **California:** *Tulare Co.:* 21 mi W of Rt 395 toward Kennedy Meadows, 1875 m, July 1, 1980, R. T. Schuh, *Artemisia tridentata* (Asteraceae), 1♀ (AMNH). **Colorado:** *Boulder Co.:* Gold Hill, 8200 ft, August 6, 1973, J. Sawbridge, 1♂, 1♀ (OSU). Sunset, 8000 ft, July 19, 1903, E. P. Van Duzee, 1♂ (CNC). *Larimer Co.:* 46 mi W of Fort Collins, Fish Creek Picnic Grounds, Pingree Park Road, 7700 ft, July 14, 1986, R. T. Schuh and J. T. Polhemus, 5♂, 3♀ (AMNH).

Chlamydatus obliquus (Uhler)
Figures 1, 3A, 5

Agalliastes obliquus Uhler, 1893: 378 (n.sp.).

DIAGNOSIS: Recognized by the relatively large size, total length 2.78–2.98, fore- and middle femora pale, contrasting with dark hind femora, and the pronotum and hemelytra usually partially pale, as in the smaller *C. schuhi*, but less frequently dorsum entirely black. Dorsum clothed with shining, weakly woolly setae. Femoral coloration as in *C. artemisiae*, *C. associatus*, *C. pallidicornis*, and *C. schuhi*; distinguished from those species by its larger size, the total length always at least 2.78 or more as opposed to a total length of 2.76 or less in the other three taxa; length of antennal segment 2 roughly equal to width of head in *C. obliquus* (75:74), whereas in *C. associatus* antennal segment 2 always longer than width of head (75:68) (table 1). Antennal segments 1 and 2 in males of *C. pallidicornis* usually entirely pale, whereas *obliquus* males always with antennal segments 1 and 2 black; vestiture in *C. pal-*

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lidicornis dark and neatly arranged, not shining and weakly woolly as in *C. obliquus*. Pale form of *C. obliquus* easily distinguished from *C. schuhi* by its larger size, total length in *C. schuhi* always being 2.66 or less. Vesica similar in form to several other North American spp. such as *C. becki*, *C. brevicornis*, and *C. monilipes* (figs. 4, 5).

HOSTS: Most commonly collected on *Lupinus* spp. (Fabaceae) and other herbaceous legumes growing on the forest floor.

DISTRIBUTION: Widely distributed in western North America.

DISCUSSION: We are designating a lectotype from material examined by Uhler in order to assure stability of nomenclature for this taxon.

SPECIMENS EXAMINED: Lectotype: male: ''Wasatch, Ut., 27-6.91, P. R. Uhler Collection, *Agalliastes obliquus* Uhler Utah, *Agalliastes obliquus* Uhler lectotype''; deposited in the National Museum of Natural History, Washington, D.C.

Additional specimens: CANADA: **Alberta:** Coults, June 15, 1952, A. R. Brooks, L. A. Konotopetz, *Lupinus argenteus* (Fabaceae), 17♂, 11♀ (CNC). Cypress Hills Provincial Park, Murray Hill Road, 4700 ft, July 18, 1990, M. D. Schwartz, 1♂ (AMNH). Frank, June 18, 1952, L. A. Konotopetz, 2♂ (CNC). Kananaskis Road, July 20, 1974, L. A. Kelton, 1♂ (CNC). Kananaskis Road, July 27, 1974, L. A. Kelton, 2♂, 2♀ (CNC). Lethbridge, July 13, 1938, R. W. Salt, *Medicago sativa* (Fabaceae), 1♀ (CNC). Waterton Lakes National Park, July 22, 1923, J. McDunnough, 3♀ (CNC). Waterton Lakes National Park, July 4–6, 26, 1972, L. A. Kelton, 18♂, 15♀ (CNC). **British Columbia:** Anarchist Mountain, Osoyoos, June 7, 1959, L. A. Kelton, R. Madge, *Lupinus* sp. (Fabaceae), 10♂, 5♀ (CNC). Anarchist Mountain, Osoyoos, July 6, 1959, R. Madge, 1♂, 1♀ (CNC). Anarchist Mountain, Osoyoos, July 30, 1959, L. A. Kelton, 1♂ (CNC). Anarchist Mountain, Osoyoos, July 13, 1970, L. A. Kelton, 25♂, 1♀ (CNC). Aspen Grove, July 10, 1975, L. A. Kelton, 6♂ (CNC). Christina Lake, July 12, 1970, L. A. Kelton, 1♂ (CNC). Cranbrook, July 23, 1959, L. A. Kelton, 1♂, 4♀ (CNC). Creston, July 22, 1959, R. Madge, 1♀ (CNC). Crowsnest Provincial Park, 4 km W of Crows Nest Pass, 1396 m, September 1, 1993, M. D. Schwartz, *Lupinus argenteus* (Fabaceae), 1♂ (AMNH). Elko, E Kootenay, July 9, 1949, H. B. Leech, 1♂ (CAS). Fairview, White Lake, July 7, 1996, G. G. E. Scudder, 6♀ (UBC). Grand Forks, June 13, 1950, H. R. MacCarthy, 1♂ (CNC). Jaffray, July 17, 1974, L. A. Kelton, 1♂ (CNC). Kaleden, July 2, 1975, L. A. Kelton, 2♂ (CNC). Madden Lake, Oliver, July 8, 1959, L. A. Kelton, *Rhus* sp. (Anacardiaceae), 1♂, 1♀ (CNC). Manning Provincial Park, Blackwall, July 23, 1970, L. A. Kelton, 2♂ (CNC). McIntyre Creek, Oliver, May 27, 1959, R. E. Leech, *Balsamorhiza* sp. (Asteraceae), 1♂ (CNC). McIntyre Creek, Oliver, July 4, 1959, L. A. Kelton, 1♂ (CNC). Merritt, 10 mi S of, July 19, 1959, L. A. Kelton, 3♂, 4♀ (CNC). 10 mi W of Princeton, July 31, 1957, N. H. Anderson, 2♀ (CNC). Merritt, 8 mi SE of, July 19, 1970, P. Oman, 3♂ (OSU). Nicola, July 10, 1932, G. J. Spencer, 1♀ (UBC). Nicola, June 14, 1963, G. G. E. Scudder, 3♂, 4♀ (UBC). Okanangan Valley, June 1, 1996, R. G. Foottit, D. R. Gillespie (Fabaceae) (CNC). Oliver, May 25, 1959, R. Madge, *Astragalus* sp. (Fabaceae), 1♂, 1♀ (CNC). Oliver, May 27, 1959, L. A. Kelton, 1♂ (CNC). Oliver, May 29, 1959, R. E. Leech, E. E. McDougall, *Lupinus* sp. (Fabaceae), 47♂, 25♀ (CNC). Oliver, June 20, 1975, L. A. Kelton, 1♂ (CNC). Oliver, July 2, 1975, L. A. Kelton, 1♂ (CNC). Oliver, July 19, 1970, L. A. Kelton, 1♂ (CNC). Osoyoos, June 24, 25, 1953, J. R. McGillis, 8♂, 34♀ (CNC). Osoyoos, 900 m, July 5, 1996, R. G. Foottit, D. R. Gillespie, 1♀ (CNC). Princeton, 870 m, July 4, 1996, R. G. Foottit, D. R. Gillespie (CNC). Princeton, June 4, 1961, G. G. E. Scudder, 3♂ (UBC). Quilchena Pennask Lake Rd, km 7.1, June 29, 2001, G. G. E. Scudder, 3♂, 5♀ (UBC). Richter Pass, June 6, 1959, E. E. McDougall, 1♂ (CNC). Richter Pass, Osoyoos, May 24, 1959, L. A. Kelton, *Lupinus* sp. (Fabaceae), 46♂, 25♀ (CNC). Rock Creek, June 7, 1959, L. A. Kelton and R. E. Leech, 22♂, 8♀ (CNC). Ross Lake, Okanagan Falls, June 5, 1959, R. Madge, 1♂ (CNC). Sawmill Lake, Oliver, June 30, 1959, L. A. Kelton, *Lupinus* sp. (Fabaceae), 2♀ (CNC). Summerland, July 10, 1975, L. A. Kelton, 1♂ (CNC). Summit Lake, mi 392 Alaska Highway, 4500 ft, July 8, 1959, R. E. Leech, 1♂ (CNC). Vaseaux Lake, Oliver, May 23, 1959, R. E. Leech, 1♀ (CNC). Vaseaux Lake, Oliver, May 29, 1959, E. E. MacDougall, 3♂, 3♀ (CNC). Vaseaux Lake, Oliver, June 26, 1959, L. A. Kelton, 3♂, 5♀ (CNC). Vernon, June 26, 1949, C. L. Neilson, 3♂ (CNC). Vernon, June 30, 1940, R. L. Usinger, 1♂ (UCB). White Lake, Oliver, May 23, 27, 1959, E. E. MacDougall, 5♂, 9♀ (CNC). White Lake, Oliver, May 28, June 10, 29, 1959, L. A. Kelton, *Lupinus* sp. (Fabaceae), 26♂, 23♀ (CNC). Wycliffe, June 8, 1961, G. G. E. Scudder, 1♂ (UBC). USA: **Arizona:** *Apache Co.:* 4.8 mi S of Hwy 60 on FR 117, 7930 ft, September 19, 1998, J. C. Schaffner, 2♂ (TAMU). *Coconino Co.:* Grand Canyon, south Rim, June 24, 1930, R. L. Usinger, 4♂ (UCB). Jacob Lake, June 5, 1969, W. F. Chamberlain, 5♂ (TAMU). *Greenlee Co.:* 8 mi S

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of Hannagan Meadow, Blue Vista scenic viewpoint, September 19, 1998, J. C. Schaffner, 1♂ (TAMU). **California:** *Alpine Co.:* Markleeville, SE of on Rt 89, 1.5–5 mi NW jct. of Rts 4/89, July 5, 1994, Schwartz, *Lupinus* sp. (Fabaceae), 6♂ (AMNH). *Lassen Co.:* Susanville, June 17, 1959, L. A. Kelton, R. Madge, *Lupinus* sp. (Fabaceae), 26♂, 21♀ (CNC). *Modoc Co.:* 2.5 mi S of Rt 139 towards Lookout, 1440 m, July 6, 1979, R. T. and J. Schuh, *Lupinus* sp. (Fabaceae), 140♂ (AMNH). 8 mi S of Rt 139 towards Lookout, 1420 m, July 6, 1979, R. T. and J. Schuh, *Lupinus* sp. (Fabaceae), 4♂ (AMNH). 18 mi S of Rt 139 towards Lookout, 1420 m, July 6, 1979, R. T. and J. Schuh, *Lupinus* sp. (Fabaceae), 7♂ (AMNH). 5 mi S of Inspection Station, Highway 139, July 17, 1955, Joe Schuh, 3♂ (OSU). *Shasta Co.:* 8 mi W of Fall River Mills, 845 m, July 7, 1979, R. T. and J. Schuh, *Iva axillaris* (Asteraceae), 2♂ (AMNH). Mount Shasta Ski Area, 8000 ft, August 31, 1979, J. D. Lattin, *Lupinus* sp. (Fabaceae), 1♂ (OSU). *Siskiyou Co.:* 1 mi W of Bartle, 1220 m, July 7, 1979, R. T. and J. Schuh, 1♂ (AMNH). 12.3 mi N of St. Hwy. 89 on Powder Hill Road, July 19, 1985, G. M. Stonedahl and J. D. McIver, *Chrysothamnus viscidiflorus* (Asteraceae), 1♂ (AMNH). Big Flat, August 4, 1931, R. L. Usinger, 3♂ (UCB). McCloud, July 5, 1952, M. Cazier, W. Gertsch, and R. Schrammel, 8♂ (AMNH). **Colorado:** *Garfield Co.:* Baxter Pass (Radio Tower), 14 mi SE of CO St. Border, 8200 ft, July 9, 1981, M. D. Schwartz, *Artemisia tridentata* (Asteraceae), 1♂ (AMNH). *Gunnison Co.:* Taylor Park, July 25, 1982, J. T. Polhemus, 20♂ (JTP). *Jackson Co.:* Cowdrey, 8000 ft, August 15, 1968, L. A. Kelton, *Chrysothamnus* sp. (Asteraceae), 1♂, 1♀ (CNC). Near Cowdrey, Colorado–Wyoming state line on Rt 125, August 4, 1979, J. T. Polhemus, 1♂ (JTP). *Montezuma Co.:* Mesa Verde National Park, July 13, 1930, R. L. Usinger, 14♂ (UCB). *Montrose Co.:* 27 mi E of Nucla, 9200 ft, August 14, 1987, T. J. Henry, 1♂, 13♀ (USNM). *Routt Co.:* Steamboat Springs, 6700 ft, July 11, 1964, H. H. Knight, 4♂, 1♀ (AMNH, CNC). Steamboat Springs, July 15, 1942, 1♂ (AMNH). Steamboat Springs, July 23, 1983, J. T. Polhemus, 6♂ (JTP). **Idaho:** *Bear Lake Co.:* Montpelier, 6100 ft, July 6, 1920, 1♂ (AMNH). *Bonner Co.:* Pend Orielle River, Laclede, July 4, 1966, W. Gagne, J. Haddock, 4♂ (UCB). *Fremont Co.:* 20 mi N of Ashton, Mac's Inn, July 29, 1982, S. E. Cummings, 1♂ (UNHP). *Kootenai Co.:* Post Falls, July 13, 1929, R. A. Flock, 1♂ (UCR). *Latah Co.:* 6.4 mi S of Troy on Rt 99, June 8, 1989, R. S. Zack, 2♂, 2♀ (WSU). Moscow, May 17, 1934, G. W. Dahmen, 1♀ (CNC). Moscow Mountain, July 31, 1972, L. A. Kelton, 6♂, 6♀ (CNC). *Lemhi Co.:* Bannock Pass, on Rt 29, Beaverhead Mountains, Salmon National Forest, July 31, 1994, M. D. Schwartz, *Lupinus argenteus* (Fabaceae), 1♂ (CNC). *Nez Perce Co.:* Lewiston, 550 ft, May 30, 1932, T. A. Brindley (CNC). Lewiston, 550 ft, May 30, 1932, T. A. Brindley, 4♂ (AMNH, CNC, USNM). *Oneida Co.:* Salyer Cow Camp, July 23, 1971, W. J. Hanson, 1♂ (USU). **Montana:** *Beaverhead Co.:* 5 mi E of Wise River, July 21, 1983, J. D. Pinto, 2♂ (UCR). Clark Canyon Dam, July 14, 1982, S. E. Cummings, 1♂ (UNHP). *Flathead Co.:* Glacier National Park, July 28, 1972, L. A. Kelton, 3♂, 1♀ (CNC). *Gallatin Co.:* Bozeman, 12 mi E of, July 23, 1983, J. D. Pinto, 5♂ (UCR). Moose Flat Campground, 26 mi S of Bozeman Hot Springs, on Rt 191, 5700 ft, August 10, 1986, Schuh, Schwartz, Stonedahl, 1♂ (AMNH). Elkhorn Ranch, Gallatin River, Upper Gallatin Canyon, 7000 ft, August 1, 1928, J. McDunnough 1♂, 7♀ (CNC). *Madison Co.:* 15 mi SE of Virginia City, July 12, 1982, S. E. Cummings, 1♂ (UNHP). *Powell Co.:* 1.4 mi SW of Ovado on Rt 200, May 28, 1992, R. S. Zack, 2♂, 2♀ (WSU). *Silverbow Co.:* Butte, July 20, 1983, J. D. and D. R. Pinto, 11♂ (UCR). **Nevada:** *Carson City Co.:* Carson City, June 25, 1929, R. L. Usinger, 5♂ (CAS). *Elko Co.:* Ruby Mts., Lomoille Canyon, E of Powerhouse Picnic Area, 6200 ft, June 16, 1983, R. T. Schuh and M. D. Schwartz, *Artemisia dracunculus* (Asteraceae), 11♂ (AMNH). *Humboldt Co.:* 4 mi E of Winnemucca, June 23, 1971, P. Oman, 1♂ (OSU). *Lander Co.:* 6 mi E of Austin, July 2, 1961, H. and A. Howden, 1♀ (CNC). *Nye Co.:* Atomic Test Site, 2 mi W of Tippapah Hwy on Mine Mt. Road, 4400 ft, June 7, 1983, Schuh, Schwartz, Stonedahl, *Artemisia tridentata* (Asteraceae), 2♂ (AMNH). Atomic Test Site, 1.5 mi W Area 12 camp on Stockade Wash Rd, June 7, 1983, Schuh, Schwartz, Stonedahl, *Lupinus argenteus* (Fabaceae), 2♂ (AMNH). Manhattan, 3.5 mi SE of, Toiyabe National Forest, 7000 ft, July 13, 1980, R. T. Schuh and G. M. Stonedahl, *Lupinus* sp. (Fabaceae), 1♂ (AMNH). *Washoe Co.:* Nixon, June 29, 1927, E. P. Van Duzee, 1♂ (CAS). **New Mexico:** *Colfax Co.:* 5 mi W of Cimmaron, June 16, 1992, G. M. Chamberlain, 1♂ (TAMU). **Oregon:** *Baker Co.:* 3.3 mi E of Halfway, June 7, 1970, P. Oman, 1♂ (OSU). *Crook Co.:* 10 mi E of western boundary of Ochoco National Forest on Rt 26, R19E T13S, sec. 3, June 22, 1979, R. T. Schuh, 3♂ (AMNH). *Deschutes Co.:* Brothers, 8 mi SE of, July 9, 1968, J. D. Lattin, 1♂ (OSU). Millican, 1 mi S of, 4380 ft, June 21, 1979, G. M. Cooper, 1♂ (OSU). Millican, 14 mi S of, R15E, T20S, sec. 34, 5400 ft, July 21, 1979, M. D. Schwartz and R. T. Schuh, 10♂ (AMNH). Pine Mountain, R15E, T21S, Section 10, 5400 ft, June 21, 1979, P. Oman, 1♂

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(OSU). *Grant Co.:* 16 mi NE of Prairie City, July 13, 1991, W. F. Chamberlain, 2♂ (TAMU). *Harney Co.:* Burns, 15 mi W of, on State Rd 20, rest stop, 4850 ft, June 14, 1981, M. D. Schwartz, *Agropyron* sp. (Poaceae), 1♂ (AMNH). Fish Lake, Steens Mts., 7200 ft, August 12, 1958, K. M. Fender, 23♂ (OSU). Frenchglen, 8 mi E of, July 16, 1957, J. D. Lattin, *Lupinus caudatus* (Fabaceae), 2♂ (OSU). Frenchglen, 13 mi E of, 6500 ft, August 13, 1971, P. Oman, 1♂ (OSU). Lily Lake, 13 mi E of Frenchglen, 7200 ft, July 10, 1968, P. Oman, 2♂ (OSU). Malheur Lake, August 17, 1958, K. M. Fender, 1♂ (OSU). T36S, R35E, sec. 8 N1/2, dunes, August 7, 1979, Lightfoot and Cobb, 1♂ (OSU). *Jackson Co.:* 0.5 mi E of Pinehurst, 3550 ft, June 27, 1979, M. D. Schwartz, 8♂ (AMNH). Just E of Pinehurst, 1340 m, June 27, 1979, R. T. and J. Schuh, *Lupinus* sp. (Fabaceae), 8♂ (AMNH). *Klamath Co.:* between Worden and Keno, 1280 m, June 27, 1979, R. T. and J. Schuh, 3♂ (AMNH). Chiloquin, Rt 97, July 4, 1982, G. M. Stonedahl and T. J. Henry, *Lupinus* sp. (Fabaceae), 22♂ (AMNH). Skookum Meadow, R9E, T27S, Section 16, July 17, 1979, P. Oman, 1♂ (OSU). *Lake Co.:* Hart Mountain, June 17, 1938, Gray and Schuh, 1♂ (AMNH). *Linn Co.:* Tombstone Prairie, 35 mi E of Sweet Home, 4500 ft, August 15, 1970, J. D. Lattin, 1♂ (OSU). *Morrow Co.:* Boardman, May 11, 1960, K. Goeden, 1♂ (OSU). *Umatilla Co.:* 0.4 mi S of Jct of Rts 244 and 395, *Lupinus* sp. (Fabaceae), 15♂ (AMNH). Near Ukiah, June 23, 1935, Joe Schuh, 3♂, 2♀ (AMNH, CNC). *Union Co.:* Imbler, 3 mi NW of, July 6, 1956, J. D. Lattin, 1♂ (OSU). Woodland Campground, 4.5 mi E of Tollgate, 5000 ft, August 4, 1986, Schuh, Schwartz, Stonedahl, *Potentilla fruticosa* (Rosaceae), 1♂ (AMNH). *Wallowa Co.:* Enterprise, June 4, 1924, 1♂ (OSU). Enterprise, 30 mi N of, July 30, 1968, P. Oman, 1♂ (OSU). Joseph, June 6, 1970, P. Oman, 7♂ (OSU). Joseph, June 13, 1973, Oman and Musgrave, 1♂ (OSU). Joseph, July 10, 1969, P. Oman, 25♂ (OSU). Joseph, 15 mi NE of, June 19, 1968, P. Oman, 1♂ (OSU). Joseph, 24 mi E of, July 11, 1969, P. Oman, 1♂ (OSU). Joseph, 35 mi N of, June 21, 1968, P. Oman, 23♂ (OSU). Lostine, 3.5 mi S of, July 21, 1970, P. Oman, 3♂ (OSU). *Wasco Co.:* Maupin, June 5, 1962, K. M. and D. M. Fender, 5♂ (OSU). The Dalles, June 3, 1970, P. Oman, 1♂ (OSU). Tyghe Valley, 6 mi S of, June 6, 1962, K. M. Fender, 1♂ (OSU). *Wheeler Co.:* 4 mi SW of Fossil, June 5, 1979, P. Oman, *Balsamorhiza* sp. (Asteraceae), 1♂ (AMNH). **Utah:** *Bear Lake Co.:* Garden City, July 6, 1968, G. R. Knowlton, H. H. Knight, 1♂ (CNC). *Box Elder Co.:* Blue Creek, June 24, 1932, G. F. Knowlton, 1♂ (USU). *Cache Co.:* 14 mi S on FS Rd 055 off UT St. Rt 89, T13N, R4E S15, July 25, 1981, Schwartz, *Artemisia tridentata* (Asteraceae) (AMNH). *Garfield Co.:* 6 mi W of Starr Springs, Mount Hillers, 6700 ft, June 20, 1983, Schuh and Schwartz, *Lupinus* sp. (Fabaceae), 10♂ (AMNH). *San Juan Co.:* La Sal Mts., nr. Brumley Creek, T27S, R24E, 8000 ft, June 11, 1982, M. D. Schwartz, *Artemisia tridentata* (Asteraceae), 3♂ (AMNH). *Sevier Co.:* Clear Creek Narrows Summit on Rt 4, 4224 m, July 15, 1980, R. T. Schuh and G. M. Stonedahl, 9♂ (AMNH). *Uintah Co.:* Oaks Park, August 2, 1965, G. F. Knowlton, 14♂ (USU). *Utah Co.:* Provo City, April 15, 1965, A. T. Whitehead, 1♂ (UCB). **Washington:** *Adams Co.:* 17 mi W of Washtucna, Sand Hills Park, June 13, 1989, R. S. Zack, 1♂ (WSU). *Asotin Co.:* 2.5 mi S of Anatone, 2 mi N Rattlesnake Summit, 3900 ft, August 4, 1986, Schwartz, Schuh, Stonedahl, *Lupinus* sp. (Fabaceae), 1♂ (AMNH). 3 mi N of Anatone, June 5, 1970, P. Oman, 1♂ (OSU). *Benton Co.:* Hanford Site ALE, near ALE HQ, T11N, R26E, sec. 34, 1200 ft, May 4, 1974, R. S. Zack, 2♂ (CNC). Hanford Site ALE, T11N, R26E, 1200 ft, May 4, 1994 and June 1, 1994, R. S. Zack, 8♂, 8♀ (WSU). *Douglas Co.:* 14 mi N of Wenatchee, Columbia View Orchards, June 20, 1985, R. J. Herman, 6♂, 6♀ (WSU). *Ferry Co.:* Republic, August 6, 1931, H. T. Peters, 1♂ (KU). *Garfield Co.:* Colton, July 6, 1948, C. C. Shelton, 10♂, 10♀ (WSU). *Kittitas Co.:* Cliffdell, July 7, 1935, R. H. Beamer, 1♂ (KU). *Klickitat Co.:* Bickleton, June 15, 1935, W. Downes, 1♂ (UBC). *Okanogan Co.:* Okanogan, 11 mi W of, May 19, 1973, P. Oman, 1♂ (OSU). Sidley Lake, Molson, July 7, 1964, G. G. E. Scudder, 4♂, 6♀ (CNC). *Pierce Co.:* Mount Rainier, July 6, 1935, R. H. Beamer, 1♂ (KU). *Whitman Co.:* Smoot Hill, 2 mi N of Albion, July 9, 1989, R. S. Zack, 1♂, 1♀ (WSU). Steptoe Butte, 4 mi NE of Steptoe, June 11, 1989, R. S. Zack, 4♂, 4♀ (WSU). *Yakima Co.:* 13 mi SW of Ellensburg, T16N, R17E, sec. 6, June 13, 1989, R. S. Zack, 1♂ (WSU). **Wyoming:** *Big Horn Co.:* 24 mi W of Burgess Jct on road to radar station, 9000–9200 ft, August 12, 1986, Schuh, Schwartz, Stonedahl, *Lupinus argenteus* (Fabaceae), 4♂ (AMNH). Big Horn Mts., 6500 ft, August 17, 1927, H. H. Knight, 1♂ (USNM). *Carbon Co.:* Saratoga, July 29, 1931, H. H. Knight, 1♂ (USNM). *Fremont Co.:* Wind River Mts., Shoshone National Forest, Popoagie Campground on Rt 131, August 14, 1986, Schwartz and Stonedahl, *Shepherdia canadensis* (Elaeagnaceae), 2♂ (AMNH). *Lincoln Co.:* 10 mi E of Alpine near Wolf Creek Campground, July 21, 1981, M. D. Schwartz, *Lupinus* sp. (Fabaceae), 31♂ (AMNH). *Shoshone Co.:* 19 mi E of Cooke City on Rt 212, 8000 ft, August 11, 1986, Schuh, Schwartz, Stonedahl, *Lupinus* sp. (Fabaceae), 3♂ (AMNH).

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Teton Co.: Grand Teton National Forest, August 7, 1972, L. A. Kelton, 1♂ (CNC). Grand Teton National Park, 2 mi SE Colter Bay Village, 7000 ft, July 22, 1981, M. D. Schwartz, 2♂ (AMNH).

Chlamydatus opacus (Zetterstedt)
Figures 1, 3G, 5

Capsus opacus Zetterstedt, 1838: 279 (n.sp.).

DIAGNOSIS: Easily recognized by the brachypterous condition of the hemelytra, the membrane small, but present, and the brown and cream coloration (fig. 1). Most easily confused with *C. californicus* in North America, but hemelytra truncate in that species, staphylinoid in form, and the membrane completely lacking.

HOSTS: No host records exist for this species.

DISTRIBUTION: Holarctic. Occurring only at very high latitudes in the New World.

DISCUSSION: All Palearctic specimens we examined lacked the hemelytral membrane.

SPECIMENS EXAMINED: AUSTRIA: Neusiedl, July 21, 1960, G. G. E. Scudder, 1♀ (CNC). Neusiedler Lake, July 21, 1960, G. G. E. Scudder, 1♂ (CNC). CANADA: **Manitoba:** Churchill, July 12, 1952, J. G. Chillcott, 3♀ (CNC). **Northwest Territories:** Geillini Lake, August 14, 1952, J. G. Chillcott, 1♂, 5♀ (CNC). **Quebec:** Great Whale River, July 12 and 18, 1949, J. R. Vockeroth, 21♂, 11♀ (CNC). GERMANY: Holstein, Plön, July 26, 1964, G. G. E. Scudder, 3♂, 5♀ (CNC). RUSSIA: Khabarovak, E. Siberia, August 26, 1979, G. G. E. Scudder, 1♂, 1♀ (CNC). Khekhtzir Forest, nr Khabarovak, E. Siberia, August 26, 1979, G. G. E. Scudder, 1♂, 1♀ (CNC). Moscow Hills, August 5, 1968, G. G. E. Scudder, 4♂ (CNC).

Chlamydatus pallidicornis Knight
Figures 1, 3A, 5

Chlamydatus pallidicornis Knight, 1964: 138 (n.sp., host).

DIAGNOSIS: Recognized by the uniformly dark coloration of the dorsum, the pale whitish or yellowish fore- and middle femora and contrastingly dark hind femora, the dorsal vestiture composed of simple, dark, neatly arranged, nonshining setae, and by the usually pale antennal segments 1 and 2 (fig. 2). Most similar in overall coloration to *C. artemisiae*, *C. associatus*, and *C. obscurus*. Distinguished from *C. artemisiae*, *C. associatus*, and *C. obliquus* by the dorsal vestiture being shining and somewhat disordered in those species, whereas dorsal vestiture dark and neatly arranged in *C. pallidicornis*. Antennal segment 2 shorter than width of head in *C. pallidicornis* (59:70), similar to *C. artemisiae*, whereas antennal segment 2 about equal to width of head in *C. obliquus* (75:74), and longer than the width of the head in *C. associatus* (75:68) (table 1); in males of *C. artemisiae*, *C. associatus*, and *C. obliquus* antennal segments 1 and 2 dark colored, or mostly so, whereas segment 2 usually pale in males of *C. pallidicornis*. Easily distinguished from *C. obliquus* specimens with a totally dark dorsum by total length in that species always being at least 2.78, whereas total length in *C. pallidicornis* 2.54 or less.

HOST: *Potentilla plattensis* (Knight, 1964); *Potentilla* sp. (Rosaceae), on the basis of the only available specimen label data.

DISTRIBUTION: Western Canada and higher latitudes in the western United States.

DISCUSSION: Knight (1964) recorded the host of this species as *Potentilla plattensis*, with every indication that the bugs were breeding on the plant. Host information available to us is much less clear-cut, suggesting the need for further fieldwork.

SPECIMENS EXAMINED: Holotype: male: ''Shoshone N. Forest, Wyo., Aug. 14, 1927, H. H. Knight''; deposited in the National Museum of Natural History, Washington, D.C.

Additional specimens: CANADA: **Alberta:** Cypress Hills Provincial Park, Top Road, 9.6 km E of Rt 41 jct, July 15, 1990, M. D. Schwartz, 1♀ (CNC). Elkwater Park, July 12, 1952 and August 15, 1952, A. R. Brooks, L. A. Konotopetz, 2♀ (CNC). **British Columbia:** Anarchist Mountain, Osoyoos, July 13, 1970, L. A. Kelton, 3♂, 2♀ (CNC). Blackwall, Manning Provincial Park, July 23, 1970, L. A. Kelton, 1♂ (CNC). Christina Lake, July 12, 1970, L. A. Kelton, *Potentilla* sp. (Rosaceae), 18♂, 24♀ (CNC). Merritt, 10 mi S of, July 19, 1959, L. A. Kelton, 1♂, 4♀ (CNC). Merritt, 12 mi S of, July 19, 1959, L. A. Kelton, 2♂, 2♀ (CNC). USA: **Arizona:** *Apache Co.:* Big Lake, Apache National Forest, 9100 ft, July 11, 1968, August 14, 1967, L. A. Kelton, 46♂, 69♀ (CNC). **Colorado:** *Archuleta Co.:* Pagosa Springs, July 22, 1968, L. A. Kelton, 8♂, 2♀ (CNC). *Jackson Co.:* Muddy Pass, Routt National Forest, 8600 ft, August 21, 1968, L. A. Kelton,

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6♂, 5♀ (CNC). Rabbit Ears Pass, 9400 ft, July 4, 1978, J. T. Polhemus, 1♀ (JTP). Rabbit Ears Pass, August 3, 1947, L. M. and R. H. Beamer, 5♂, 2♀ (KU). *La Platta Co.:* La Platta, San Juan National Forest, 8500 ft, July 19, 1968, L. A. Kelton, 1♂, 1♀ (CNC). *Routt Co.:* Steamboat Springs, 6900 ft, July 15, 1964, H. H. Knight, 1♀ (CNC). *San Juan Co.:* near Ophir, 8500 ft, July 7, 1980, J. T. Polhemus, 8♂, 4♀ (JTP). **Idaho:** *Blaine Co.:* Ketchum, July 31, 1955 and August 1, 1955, B. P. Bliven, 2♂ (CAS). *Idaho Co.:* Lowell, Clearwater National Forest, July 30, 1972, L. A. Kelton, 1♀ (CNC). **New Mexico:** *Otero Co.:* Cloudcroft, June 27, 1940, R. H. Beamer, 3♀ (KU). **Oregon:** *Crook Co.:* 10 mi E of W boundary of Ochoco National Forest on Rt 26, T13S, R19E, sec. 3, June 22, 1979, R. T. Schuh, 1♂ (AMNH). Ochoco National Forest, T14S, R18E, sec. 3, June 22, 1979, M. D. Schwartz, *Senecio* sp. (Asteraceae), 1♂, 1♀ (OSU). *Lake Co.:* Hart Mountain Refuge, Hot Spring Campground, July 19, 1971, J. D. Lattin, 1♀ (OSU). *Union Co.:* 4.5 mi E of Tollgate, Woodland Campground, 5000 ft, August 4, 1986, Schuh, Schwartz, Stonedahl, 1♂, 4♀ (AMNH). *Wallowa Co.:* 15 mi N of Enterprise, August 18, 1969, P. W. Oman, 2♂, 2♀ (OSU). 8 mi E of Joseph, July 10, 1969, P. W. Oman, 1♂ (OSU). *Wheeler Co.:* 4.5 mi S of Mitchell on Summit Prairie Road, June 22, 1979, M. D. Schwartz, *Cercocarpus ledifolius* (Rosaceae), 3♂ (OSU). **Utah:** *Cache Co.:* Ant Valley, July 6, 1973, G. E. Bohart and G. F. Knowlton, 1♂, 1♀ (USU). Blacksmith Fork Canyon, June 28, 1971, G. F. Knowlton, 1♂ (USU). Franklin Basin, July 4, 1972, G. E. Bohart, 5♂ (USU). Logan, July 17, 1973, G. F. Knowlton, 2♂, 1♀ (UCD). Richmond, August 2, 1971, G. F. Knowlton, 1♀ (USU). Rock Creek, July 22, 1976, W. J. Hanson, 1♀ (USU). *Washington Co.:* Zion National Park, August 18, 1929, P. W. Oman, 1♂ (KU). **Washington:** *Benton Co.:* Hanford Site ALE, radio telescope, June 9, 1994, R. S. Zack, 3♂, 3♀ (WSU). *Columbia Co.:* Dayton, July 12, 1937, R. E. Miller, 1♀ (CNC). *Okanogan Co.:* 8 mi WNW of Republic, Sweet Creek, 3600 ft, July 20, 1978, N. Herman, 10♂, 7♀ (AMNH). *Whitman Co.:* Steptoe Butte State Park, 4 mi NE of Steptoe, June 11, 1989, R. S. Zack, 2♂ (WSU). Near Colton, Palouse Prairie, Kramer Strip, June 25, 1983, W. J. Turner, 6♂, 2♀ (WSU). **Wyoming:** *Fremont Co.:* Shoshone National Forest, August 14, 1927, H. H. Knight, 2♂, 1♀ (CNC). *Sublette Co.:* 25 mi SE of Jackson, Hobart River, June 27, 1966, W. Gagne and J. Haddock, 1♂ (UCB). *Teton Co.:* Grand Teton National Forest, August 7, 1972, L. A. Kelton, 1♂, 3♀ (CNC). Grand Teton National Park, near Kelly, July 24, 1982, S. C. Williams, 2♀ (CAS).

Chlamydatus pulicarius (Fallén)
Figures 2, 3B, C, 5, 9

Lygaeus pulicarius Fallén, 1807: 95 (n.sp.).
Chlamydatus arcuatus Knight, 1964: 139 (n.sp.). NEW SYNONYMY.
Chlamydatus auratus Kelton, 1965: 1133 (n.sp., host). NEW SYNONYMY.

DIAGNOSIS: Recognized by its relatively large size, total length 2.51–3.09, the often ovate to obovate body form, and the unicolorous hemelytra being submacropterous in form and just covering the abdomen (fig. 2), or more rarely macropterous (fig. 2) and being elongate and nearly parallel sided. Femora ranging from almost entirely yellowish to almost entirely dark (fig. 3B,C). The coloration of antennal segments 1 and 2 varying from completely pale to almost entirely black. Most easily confused with *C. keltoni* and *C. pullus* on the basis of frequent submacroptery in all of these species and conformation of hemelytra to abdomen, but total length in those species 2.61 or less, whereas *C. pulicarius* always 2.51 or more, and male genitalia (fig. 5) more highly convoluted and vesica with a longer apical process in *C. pulicarius* than in *C. keltoni* (fig. 4); variation in coloration of appendages in *C. pullus* similar to that found in *C. pulicarius*. Possibly also confused with *C. uniformis* on the basis of size, but that species jet black with all legs entirely black and occurring in southern California and adjacent northern Mexico, whereas *C. pulicarius* with at least tibiae always pale (figs. 2, 3B,C) and restricted to much higher latitudes or higher altitudes.

HOSTS: Substantial numbers of specimens have been collected from the following plant taxa: *Artemisia* sp., *Hieracium* sp. (Asteraceae), *Stellaria longifolia* (Caryophyllaceae), *Lathyrus* sp., *Vicia* sp. (Fabaceae), *Ranunculus* sp. (Ranunculaceae), and *Potentilla argentea* (Rosaceae). Other taxa may serve as breeding hosts, but the available specimen data are not sufficient to draw that conclusion at the present time.

DISTRIBUTION: Holarctic. Occurring primarily at higher latitudes and higher altitudes in North America, but extending as far south as West Virginia in the eastern United States.

DISCUSSION: Knight (1964) described *C. arcuatus* as widely distributed in the Rocky

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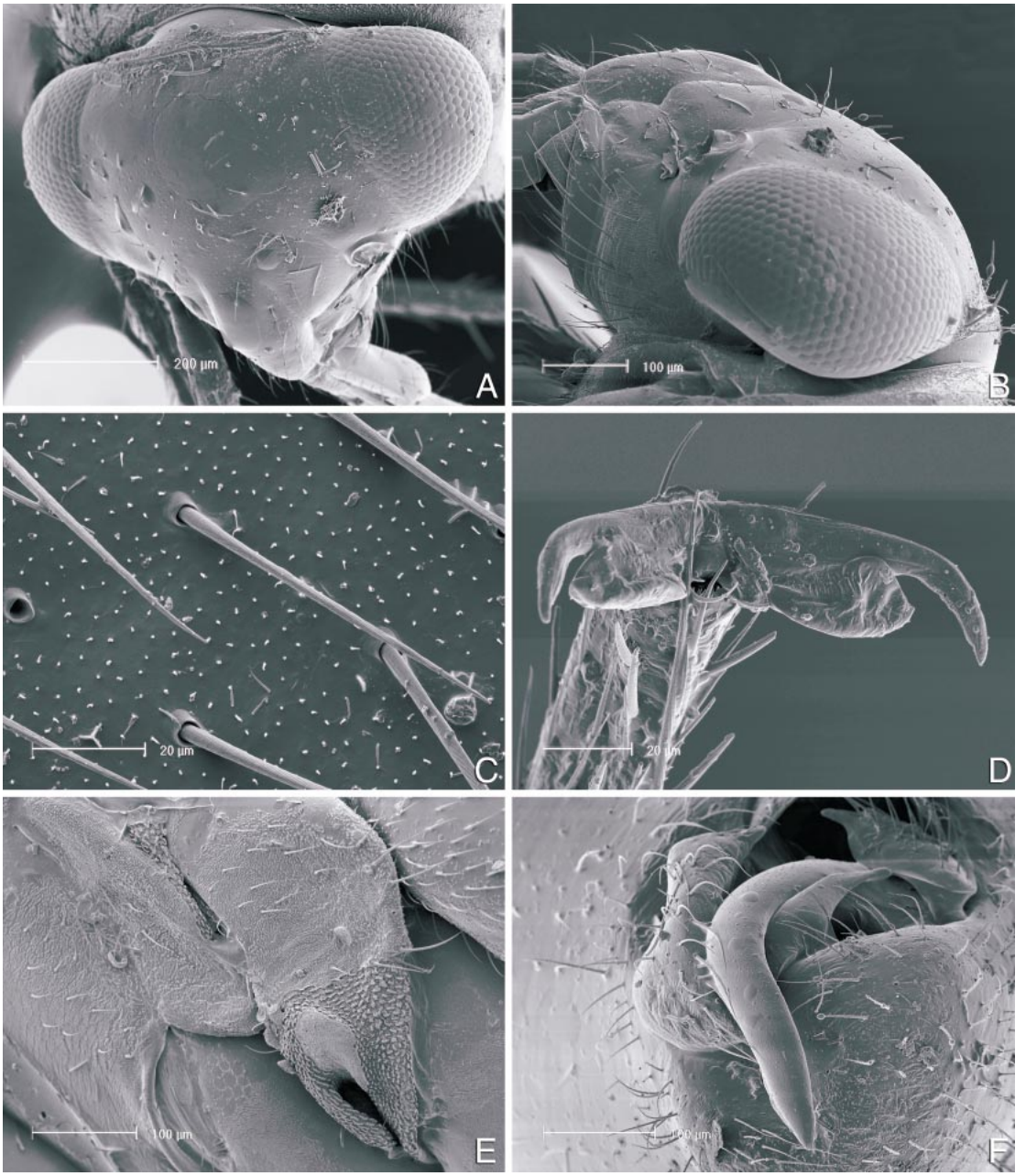

Fig. 9. Scanning electron micrographs of *Chlamydatus pulicarius*, ♂, British Columbia: Pink Mountain. **A.** Head, frontal view. **B.** Head, lateral view. **C.** Setae on hemelytra. **D.** Pretarsus, frontal view. **E.** Mesothoracic spiracle and metaepisternal scent efferent system, lateral view. **F.** Pygophore, posterolateral view, showing left paramere and phallotheca in repose. Scales as indicated.

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Mountain system and Kelton (1965) described *C. auratus* as occurring across Canada and in adjacent New York. The characters used by Knight and Kelton to distinguish both of these nominal species from *C. pulicarius*, particularly the vestiture, are variable and difficult to interpret. The genitalia of both appear identical to *C. pulicarius*, and after having examined the holotypes and substantial other material of *C. arcuatus* and *C. auratus*, we have concluded that both are synonymous with *C. pulicarius* **new synonymy.**

Kelton (1965) had a narrowly conceived diagnosis of this species, largely based on color. He assigned to *C. pulicarius* only specimens from Alaska, Alberta, and British Columbia. Kelton (1980) indicated that he doubted that *C. pulicarius* actually occurred in North America. Wheeler and Henry (1992) indicated that they had no definitive records of the species from North America and therefore excluded it from their treatment of Holaractic taxa. Our conception of the species is based on the distinctive genitalic structure, an approach that construes the taxon as being much more widely distributed than was thought to be the case by all previous authors. We have not examined material originally studied by Fallén, but rather have relied on the characterizations of authors such as Kerzhner (e.g., 1964, in litt.) in forming our understanding of the correct identity of this taxon.

SPECIMENS EXAMINED: Holotype: *Chlamydatus arcuatus*: male: ''Wolf Creek Pass, Colo., Aug. 12, 1925, H. H. Knight''; deposited in the National Museum of Natural History, Washington, D.C. Holotype: *Chlamydatus auratus*: male: ''One Sided Lake, ONT., 25.VI.1960, Kelton & Whitney, Type No. 8901''; deposited in the Canadian National Collection of Insects, Ottawa.

Additional specimens: AUSTRIA: Igls, Tirol, 900 m, September 17, 1953, J. R. Vockeroth, 1♂ (CNC). Neusiedl, July 21, 1960, G. G. E. Scudder, 1♀ (CNC). Obergurgl, Tirol, 900 m, August 12, 1953, J. R. Vockeroth, 2♀ (CNC). Ofztal, Tirol, 700 m, July 2, 1953, J. R. Vockeroth, 1♀ (CNC). Schönfeld, August 21, 1960, G. G. E. Scudder, 4♂, 1♀ (CNC). CANADA: **Alberta:** Athabasca, Peace River, July 1, 1900, Raup, 1♂ (AMNH). Coal Valley, August 31, 1970, L. A. Kelton, 2♂, 6♀ (CNC). Cypress Hills Provincial Park, Murray Hill Road, July 18, 1990, M. D. Schwartz, 1♀ (CNC). Drumheller, June 18, 1957, Brooks, MacNay, *C. auratus* paratypes, 1♂, 2♀ (CNC). Edmonton, August 5, 1952, L. A. Konotopetz, 1♂, 1♀ (CNC). Elkwater Park, July 7, 12, 23, 30, 1952, A. R. Brooks, L. A. Konotopetz, including, *C. auratus* paratypes, 10♂, 4♀ (CNC). Grande Prairie, July 26, 1961, A. R. Brooks, including, *C. auratus* paratypes, 2♀ (CNC). High Prairie, July 16, 1961, A. R. Brooks, including *C. auratus* paratypes, 8♂,10♀ (CNC). Hines Creek, June 16, 1961, A. R. Brooks, *C. auratus* paratypes, 2♀ (CNC). Kananaskis Highway, July 25, 1973, L. A. Kelton, 3♀ (CNC). Kananaskis Road, July 20, 1974, L. A. Kelton, 1♂ (CNC). Lac la Biche, June 25, 1961, A. R. Brooks, *C. auratus* paratype, 1♀ (CNC). McMurray, June 30, 1973, W. J. Brown, including *C. auratus* paratypes, 1♂, 2♀ (CNC). Nordegg, July 31, 1921, J. McDunnough, *C. auratus* paratype, 1♂ (CNC). Robb, August 30, 1970, L. A. Kelton, 1♀ (CNC). Rycroft, August 7, 1961, A. R. Brooks, *C. auratus* paratype, 1♀ (CNC). Valleyview, August 10, 1961, A. R. Brooks, *C. auratus* paratype, 1♂, 1♀ (CNC). **British Columbia:** Alaska Highway, km 1204, July 30, 1982, G. G. E. Scudder, 1♂, 1♀ (UBC). Cache Creek, 450–500 m, June 1, 1978, N. L. H. Krauss, 1♀ (AMNH). Chetwynd, 30 km SW of, June 22, 1982, E. Bijdemast, S. G. Cannings, 1♂ (UBC). Chetwynd, 85 km SW of, on Rt 97, August 26, 1993, M. D. Schwartz, *Anaphalis margaritacea* (Asteraceae), 1♂ (CNC). 3 km S of Chilkat Pass Summit, July 6, 1983, G. G. E. Scudder, 1♂, 4♀ (UBC). Fernie, July 23, 1959, L. A. Kelton, *C. auratus* paratypes, 5♂, 9♀ (CNC). Ladysmith, August 14–17, 1970, L. A. Kelton, 1♂ (CNC). Monaskie Pass, July 16, 1975, L. A. Kelton, 1♂ (CNC). Pink Mountain, August 17, 1982, L. A. Kelton, 6♂, 2♀ (CNC). Prophet River Provincial Park, June 24, 1985, E. Bijdemast, 1♂, 1♀ (UBC). Sicamous, July 17, 1970, L. A. Kelton, 2♀ (CNC). Summit Lake, mi 392 on Alaska Highway, 4500 ft, July 8, 1959, R. E. Leech, 1♂ (CNC); Summit Lake, mi 392 on Alaska Highway, 4200 ft, July 19–21, 1959, R. E. Leech, 1♀ (CNC). Taylor Flats, July 26, 1948, H. MacMahon, 3♂, 4♀ (CNC). Terrace, July 9, 10, 13, 15, 17, 1960, W. R. Richards, 8♂, 10♀ (CNC). Vernon, June 28, July 2, 1927, D. B. Waddell, 2♂ (CNC). **Manitoba:** Clear Lake, July 1, 1930, C. T. Parsons, 1♂ (AMNH). Falcon Lake, June 1, 25, 1972, L. A. Kelton, 3♂, 5♀ (CNC). Horton, July 25, 1953, Brooks and Kelton, 1♀ (CAS). Horton, July 25, 1953, Brooks, Wallis, including *C. auratus* paratypes, 6♂, 1♀ (CNC). Keld, August 8, 1937, R. H. Beamer, 1♀ (KU). Moose Lake, July 25, 1972, L. A. Kelton, 4♂, 4♀ (CNC). Riding Mountain National Park, July 20, 1972, L. A. Kelton, 2♂, 3♀ (CNC). Roblin, 10 mi W of, July 15,

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1954, Brooks, Wallis, 2♂, 1♀ (CNC). Roblin, 30 mi N of, July 13, 14, 1954, Brooks, Wallis, *Lathyrus* sp. (Fabaceae), including *C. auratus* paratypes, 13♂, 8♀ (CNC). Turtle Mountain, July 21, 1953, Brooks, Wallis, including *C. auratus* paratype, 1♂, 1♀ (CNC). **New Brunswick:** Andover, June 22, 1966, L. A. Kelton, 6♂, 3♀ (CNC). Chatham, June 27, 1966, L. A. Kelton, *Vicia* sp. (Fabaceae), 14♂, 2♀ (CNC). Edmundston, June 29, July 1–2, 1966, L. A. Kelton, *Vicia* sp. (Fabaceae), 16♂, 17♀ (CNC). Glencoe, June 29, 1966, L. A. Kelton, 1♂, 2♀ (CNC). Kouchibouguac National Park, June 23, 1978, July 25, 1977, L. A. Kelton, D. J. Brown, J. R. Vockeroth, 8♂, 4♀ (CNC). Petersville, July 5, 1966, L. A. Kelton, *Vicia* sp. (Fabaceae), 14♂, 11♀ (CNC). White's Brook, June 29, 1966, L. A. Kelton, 2♂, 1♀ (CNC). Wolf Lake, August 13, 1966, L. A. Kelton, 1♀ (CNC). Woodstock, June 22, 1966, L. A. Kelton, 1♀ (CNC). **Newfoundland:** Badger, July 31, 1980, L. A. Kelton, 10♂, 5♀ (CNC). Change Island, August 1, 1981, D. J. Larson, 1♀ (CNC). Norris Point, Bonne Bay, August 10, 1982, D. J. Larson, 3♂, 1♀ (CNC). Nova Terra National Park, July 17, 1980, L. A. Kelton, 3♂ (CNC). Saint John's, July, 23, 1949, W. J. Brown, 1♂ (CNC). **Northwest Territories:** Aklavik, July 16, 1931, Bryant, 1♀ (CAS). Inuvik, July 25, 1983, L. A. Kelton, *Artemisia* sp. (Asteraceae), 1♂, 5♀ (CNC). **Nova Scotia:** Bible Hill, July 12, 1966, L. A. Kelton, 8♂, 7♀ (CNC). Cape Breton National Park, August 22, 1966, L. A. Kelton, 15♂, 18♀ (CNC). Kentville, July 10, 1976, L. A. Kelton, 1♂ (CNC). Mount Uniacke, July 13, 1966, L. A. Kelton, 9♂, 4♀ (CNC). **Ontario:** Algonquin Provincial Park, June 18, 1922, J. McDunnough, 1♂ (CNC). Black Rapids, Ottawa, June 22, 1913, W. Metcalfe, 1♀ (CNC). Black Sturgeon Lake, August 1, 1956, Lindberg, 16♂, 12♀ (CNC). Collingwood, June 13, 1962, Kelton, Thorpe, *C. auratus* paratype, 1♂ (CNC). Devlin, 6 mi S of, June 28, 1960, Kelton, Whitney, 3♂, 1♀ (CNC). Dryden, August 12, 1960, Kelton, Whitney, 1♀ (CNC). Eagle River, August 11, 1960, Kelton, Whitney, *C. auratus* paratypes, 3♂, 1♀ (CNC). Elmvale, June 13, 1962, Kelton, Thorpe, 10♂, 3♀ (CNC). Emo, July 31, 1960, Kelton, Whitney, *C. auratus* paratype, 1♂ (CNC). Emo, 10 mi N of, June 28, 1960, Kelton, Whitney, 11♂, 3♀ (CNC). Finland, June 28, 1950, Kelton, Whitney, including *C. auratus* paratypes, 5♂, 3♀ (CNC). Flower Station, June 28, 1987, D. J. E. Brown, 1♂, 1♀ (CNC). Fort Frances, July 30–31, 1960, Kelton, Whitney, *C. auratus* paratypes, 2♂ (CNC). Fort Frances, July 20, 1969, Kelton and Whitney, 1♂ (CNC). Grenadier Island Centre, Saint Lawrence Islands National Park, July 27, 1975, E. Wilson, 1♂ (CNC). Harris Hill, June 24, 1960, Kelton, Whitney, 3♂ (CNC). Iroquois Falls, June 5, 1987, J. R. Vockeroth, ground among grass roots, 1♀ (CNC). Kapuskasing, July 18, 1959, G. Brumpton, including *C. auratus* paratypes, 7♂, 3♀ (CNC). Kenora, 14 mi E of, August 9, 1960, Kelton, Whitney, including *C. auratus* paratype, 1♂, 1♀ (CNC). Kirkland Lake, July 17, 1961, G. Brumpton, including *C. auratus* paratypes, 2♂, 2♀ (CNC). Long Swamp, Marmora, July 21, 1952, B. P. Beirne, 1♀ (CNC). Marmora, June 25, 1952, J. R. Vockeroth, *C. auratus* paratype, 1♀ (CNC). Miller Lake, June 12, 1962, Kelton, Thorpe, *C. auratus* paratypes, 6♂ (CNC). North Bay, June 19, 1963, L. A. Kelton, including *C. auratus* paratypes, 12♂, 5♀ (CNC). Norway Point, Lake of Bays, June 28, 1922, J. McDunnough, 1♀ (CNC). One Sided Lake, June 27, 29, August 1, 1960, Kelton and Whitney, including *C. auratus* paratypes, 31♂, 32♀ (CNC). Ottawa, July 15, 1957, J. E. H. Martin, *C. auratus* paratype, 1♀ (CNC). Ottawa, July 2, 1912, E. P. Van Duzee, 5♂, 3♀ (CAS). Prince Edward County, July 25, 1926, Brimley, 1♀ (CNC). Rainy River, June 24, 25, 1960, Kelton, Whitney, including *C. auratus* paratype, 4♂, 2♀ (CNC). Sault Ste. Marie, July 5–6, 1961, G. Brumpton, including *C. auratus* paratypes, 3♂, 3♀ (CNC). Sibley Park, August 1, 1956, Lindberg (CNC). Sioux Narrows, June 25, 1960, Kelton, Whitney, *C. auratus* paratype, 1♂ (CNC). South Gloucester, Blossom Park, Greenbelt, June 9, 1991, M. D. Schwartz, *Potentilla argentea* (Rosaceae), 9♂, 1♀ (CNC). Thomasburg, August 24, 1973, D. G. Reid, *Solidago* sp. (Asteraceae), 1♀ (CNC). Wawa, July 7, 1961, G. Brumpton, including *C. auratus* paratypes, 3♂, 1♀ (CNC). **Prince Edward Island:** Brackley Beach, Rustico, July 23, 1967, J. E. H. Martin, 1♂ (CNC). Cavendish National Park, July 9, 1966 and August 13–19, 1976, L. A. Kelton, 14♂, 11♀ (CNC). Charlottetown, August 7, 1976, L. A. Kelton, 1♂, 1♀ (CNC). Dalvey, July 10, 1966, L. A. Kelton, 1♂ (CNC). Woods Island, July 11, 1966, L. A. Kelton, 9♂, 4♀ (CNC). **Quebec:** Bradore Bay, July 29, 1930, W. J. Brown, *C. auratus* paratype, 1♀ (CNC). Cascapedia, August 17, 1933, W. J. Brown, 1♀ (CNC). Duchesnay, July 5, 1953, O. Peck (CNC), 1♀. Fabre, June 13, July 12, 1963, L. A. Kelton, W. Gagne, *Hieracium* sp. (Asteraceae), including *C. auratus* paratypes, 12♂, 4♀ (CNC). Gatineau National Park: Browns Lake, Camp Fortune, and north end, June, 11, 25, July 4, 1981, D. J. E. Brown, 19♂, 19♀ (CNC). Graceville, June 25, 1937, O. Peck, 1♀ (CNC). Harrington Lake, Gatineau National Park, June 18, 1982, D. Brown, 3♂, 1♀ (CNC). Hudson Heights, August 24, 1956, Lindberg, 2♂, 3♀ (CNC). Hull, July 16, 1955, L. A. Kelton, 1♂, 1♀ (CNC). Kingsmere, Gatineau National Park, July 25,

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1914, C. G. Hewitt, 1♂ (CNC). Knowlton, July 8, 1929, L. J. Milne, 1♂ (CNC). La Minerve, August 28, 1956, Lindberg, 1♀ (CNC). Lac a la Tortue, June 28, 1951, E. G. Munroe, 1♂, 1♀ (CNC). Lac Mondor, Ste. Flore, June 24, 1951, E. G. Munroe (CNC), 1♀. Ladysmith, July 24, 1958, L. A. Kelton, *C. auratus* paratype, 1♀ (CNC). Laniel, June 12, 13, 18–19, 24–27, 29, July 1–4, 1963, L. A. Kelton, W. Gagne, *Aster* sp. (Asteraceae) including *C. auratus* paratypes, 93♂, 50♀ (CNC). Laniel, June 5, 1963, W. Gagne, 2♂ (UCD). Mount Albert, July 11, 1954, W. J. Brown, 1♂ (CNC). Mount Lyall, 1500 ft, July 3, 25, 1933, W. J. Brown, including *C. auratus* paratypes, 8♂, 5♀ (CNC). Old Chelsea, June 11, 1959, J. R. Vockeroth, 1♂ (CNC). Otter Lake, July 24, 1958, L. A. Kelton, *C. auratus* paratypes, 3♂, 3♀ (CNC). Quyon, July 22, 1958, E. G. Munroe, 1♂, 6♀ (CNC). Thurso, August 20, 1958, L. A. Kelton, *C. auratus* paratype, 1♀ (CNC). Ville Marie, June 25, 1963, L. A. Kelton, *C. auratus* paratypes, 3♂, 3♀ (CNC). **Saskatchewan:** Asquith, July 19, 1951, L. A. Konotopetz, *Anemone canadensis* (Ranunculaceae), including *C. auratus* paratypes, 1♂, 2♀ (CNC). Big River, July 3, 1959, A. and J. Brooks, including *C. auratus* paratypes, 10♂, 16♀ (CNC). Big River, July 3, 1959, A. and J. Brooks, 1♀ (CAS). Christopher Lake, July 11, 1950, A. R. and J. E. Brooks, 3♂, 3♀ (CNC). Garrick, June 29, 1950, L. A. Konotopetz, *Medicago sativa* (Fabaceae), including *C. auratus* paratypes, 1♂, 4♀ (CNC). Kenosee, July 7, 19, 1958, A. R. and J. E. Brooks, including *C. auratus* paratype, 2♂ (CNC). Lebret, July 5, 1951, L. A. Konotopetz, 1♂ (CNC). Love, July 5, 1950, L. A. Konotopetz, *Medicago sativa* (Fabaceae), 1♂ (CNC). Somme, July 8, 1954, Brooks, Wallis, 1♀ (CNC). Torch River Campground on Rt 106, July 12, 1990, M. D. Schwartz, 1♂ (CNC). Torch River, August 14, 1950, L. A. Konotopetz, *Lathyrus venosus* (Fabaceae), including *C. auratus* paratypes, 2♂, 2♀ (CNC). White Fox, June 3, 4, 6, 8, 28, 1950, L. A. Konotopetz, 24♂, 7♀ (CNC). Wood Mountain, August 5, 1955, A. R. Brooks, *C. auratus* paratype, 1♂ (CNC). **Yukon Territory:** Arctic Circle, Dempster Highway, July 29, 1983, L. A. Kelton, 10♂, 8♀ (CNC). Dawson, July 21, 1982, L. A. Kelton, *Artemisia frigida* (Asteraceae) 1♂, 2♀ (CNC). Eagle Plains, July 7, 1983, L. A. Kelton, 1♂ (CNC). Engineer Creek, Dempster Highway, July 27, 1983, L. A. Kelton, 2♂, 1♀ (CNC). Junction of Dempster and Klondike Highway, July 20, 1982, L. A. Kelton, 8♂, 6♀ (CNC). Rancheria, August 11, 1982, L. A. Kelton, *Lathyrus* sp. (Fabaceae), 1♀ (CNC). Snag Junction, July 22, 1982, L. A. Kelton, 1♀ (CNC). Tombstone, Dempster Highway, July 27, 1983, L. A. Kelton, 1♂ (CNC). FINLAND: Tvärminne, August 12, 13, 1960, G. G. E. Scudder, 9♂, 26♀ (CNC). SWEDEN: Abisko, Lapland, July 29, 31, August 19, 20, 1951, J. R. Vockeroth, 20♂, 20♀ (CNC). Masugnsbyn, July 23, 1951, J. R. Vockeroth, 1♂ (CNC). Uppsala, August 6, 1960, G. G. E. Scudder, 2♀ (CNC). USA: **Alaska:** Kenai Peninsula, 6 mi N of Granite Creek Campground, June 29, 1957, R. W. Fredrickson, 1♂ (KU). *Bristol Bay Co.:* Naknek, July 21, 1952, W. R. Mason, 1♀ (CNC). *Kenai Peninsula Co.:* Moose Pass, 1500 ft, July 2, 1951, W. J. Brown, 1♂ (CNC). *Nome Co.:* Unalakleet, August 8, 10, 1961, R. Madge, 2♂, 6♀ (CNC). *South Fairbanks Co.:* Chicken, July 22, 1982, L. A. Kelton, 2♂ (CNC). Tok, July 22, 1982, L. A. Kelton, 1♂ (CNC). **Arizona:** *Apache Co.:* Greer, August 1, 1941, L. L. Stitt, *C. arcuatus* paratypes, 2♂, 1♀ (CNC). Greer, August 1, 1941, L. L. Stitt, 1♀ (USNM). *Greenlee Co.*: Hannagan, Apache National Forest, 9000 ft, July 10, 1968, L. A. Kelton, 10♂, 8♀ (CNC). **California**: *Nevada Co.*: 5 mi N of Hobart Mills, Sagehen Creek Research Station, June 19, 1983, C. B. Barr, 1♀ (LSU). Sagehen Creek, July 5, 1978, M. Williams, 1♂ (UCD). *Siskiyou Co.*: Mount Shasta, Shasta National Forest, McBride Springs Campground, June 23, 1985, C. B. Barr, 2♂, 3♀ (LSU). **Colorado**: *Archuleta Co.*: Pagosa Spring, July 22, 1968, L. A. Kelton, 1♂ (CNC). *Clear Creek Co.*: Chicago Creek, 8800 ft, August 5, 1961, B. H. Poole, 1♀ (CNC). Doolittle Ranch, Mount Evans, 9800 ft, July 22, 1961 and August 10, 1961, B. H. Poole, J. R. Stainer, 7♂, 2♀ (CNC). *Conejos Co.*: Stunner Pass near Platorb, July 27, 1972, H. R. Burke, 1♀ (TAMU). *Dolores Co.*: Lizard Head, August 1, 1900, E. D. Ball, 1♀ (UAZ). *Eagle Co.*: 22 km N of Wolcott, Big Piney Creek, June 27, 1989, D. A. Polhemus, *Artemisia tridentata* (Asteraceae), 1♀ (JTP). N of Minturn, Grouse Creek Trail, 7840 ft, June 24, 1987, D. A. Polhemus, 11♂, 1♀ (JTP). Vail, June 23, 1986, J. T. Polhemus, 1♂ (JTP). *Gilpin Co.*: Jumbo, Grand Mesa National Forest, 9800 ft, August 25, 1968, L. A. Kelton, 8♂, 7♀ (CNC). *Gunnison Co.*: 2 mi N of Gothic, 9300 ft, August 13, 1987, T. J. Henry, 5♂, 15♀ (USNM). *Jackson Co.*: 2 mi E of Gould, August 5, 1975, J. C. Schaffner, 1♀ (TAMU). Gould, 9200 ft, August 12, 1968, L. A. Kelton, *Artemisia* sp. (Asteraceae), 2♀ (CNC). Muddy Pass, Routt National Forest, 8600 ft, August 19, 1968, L. A. Kelton, *Artemisia* sp. (Asteraceae), 4♀ (CNC). Rabbit Ears Pass, August 3, 1947, R. H. Beamer, 1♂, 3♀ (KU). *Park Co.*: Geneva Park, 9600 ft, September 6, 1982, D. A. and J. T. Polhemus, 1♀ (JTP). *Pitkin Co.*: Aspen, 8000 ft, July 24, 1919, 1♀ (AMNH). *Routt Co.*: Meadows, Routt National Forest, August 20, 1968, L. A. Kelton, *Ranunculus* sp. (Ranunculaceae), 10♂,

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15♀ (CNC). Steamboat Springs, 7000 ft, July 16, 1964, H. H. Knight, *C. arcuatus* paratype, 1♀ (CNC). Steamboat Springs, August 22, 1968, L. A. Kelton, 6♀ (CNC). *Teller Co.:* 5 mi S of Divide, 9500 ft, August 1, 1955, Ross and Ross, 1♀ (CNC). **Connecticut**: *Litchfield Co.:* 4.5 mi N of Salisbury, Mount Riga State Park, July 25, 1970, J. Slater and J. Harrington, 1♀ (AMNH). **Idaho**: *Blaine Co.*: Ketchum, July 30, 1955, B. P. Bliven, 4♂, 4♀ (CAS). *Cassia Co.*: Burley, July 6, 1931, M. W. Sanderson, 1♀ (KU). *Custer Co.*: 14 mi NW of Stanley, Vader Creek Camp, 6750 ft, July 14, 1973, C. Musgrave, 1♂ (OSU). *Latah Co.*: 5 mi E of Harvard, Palouse River, July 3, 1966, W. Gagne, J. Haddock, 8♂, 7♀ (CNC). **Maine**: *Kent Co.:* E Parsonfield, June 17, 1986, Larochelle, Larivière, 1♀ (CNC). **New Hampshire**: *Coos Co.*: Bretton Woods, June 20, 1909, E. P. Van Duzee, 1♂ (CAS). Mount Washington, Subalpine, July 2, 1896, F. Blanchard, 1♂ (AMNH). **New Mexico**: *Lincoln Co.*: Apache, Sierra Blanca Ski area, 9600 ft, June 20, 1998, E. Riley, 1♂, 4♀ (TAMU). *Otero Co.*: 3 mi E of Cloudcroft, July 19, 1976, J. D. Pinto, *Geranium* sp. (Geraniaceae), 2♀ (UCR). 4 mi E of Cloudcroft, August 18, 1979, Delorme, McHugh, Schaffner, 3♂, 8♀ (TAMU). Cloudcroft, July 23, 1967, L. A. Kelton, 3♀ (CNC). Cloudcroft, June 27, 1940, D. E. Hardy and R. H. Beamer, 7♂, 9♀ (KU). **New York**: *Cattaraugus Co.*: Rock City, July 5, 1915, H. H. Knight, *C. auratus* paratypes, 4♂, 1♀ (AMNH, CNC). *Essex Co.*: Whiteface Mountain, 4600–4872 ft, July 19, 1962, J. R. Vockeroth, 1♂ (CNC). **Pennsylvania**: *Centre Co.*: Scotia Barrens, June 25, 1988, A. G. Wheeler, Jr., 1♂, 17♀ (PDA). Scotia Barrens, May 19, 1980, A. G. Wheeler, Jr., *Stellaria longifolia* (Caryophyllaceae), 12♂, 15♀ (PDA, AMNH). **Utah**: *Duchesne Co.*: Indian Canyon, July 14, 1964, G. F. Knowlton, 1♂ (UCD). *Sevier Co.*: Fish Lake National Forest, R2E, T25S, sec. 24, 25, 8720 ft, June 16, 1980, G. M. Stonedahl, *Artemisia* sp. (Asteraceae), 2♂, 1♀ (OSU). **Vermont**: *Grand Isle Co.*: Grand Isle, July 3, 1900, A. P. Morse, 1♀ (AMNH).

Chlamydatus pullus (Reuter)
Figures 2, 3C, 6

Agalliastes pullus Reuter, 1870: 324 (n.sp.).
Chlamydatus fulvipes Knight, 1964: 139 (n.sp.). NEW SYNONYMY.
Chlamydatus auratus?: Scudder, 1997: 271 (list).

DIAGNOSIS: Recognized by the brown coloration, the frequent submacroptery in the female, the size, and the form of the male genitalia. Most easily confused with *C. keltoni* and *C. pulicarius* by the frequent occurrence of submacroptery/brachyptery (figs. 1, 2), but total length in *C. pulicarius* always 2.51or more as opposed to total length of 2.41 or less in *C. pullus*, and male genitalia more highly convoluted and vesica with a longer apical process in *C. pulicarius* (fig. 5) than in *pullus* (fig. 6); coloration of appendages variable in *C. pullus* and similar to that found in *C. pulicarius*. Distinguished from *C. keltoni*, in which submacroptery/brachypterous found most frequently only in females, by the paler coloration of the femora in some specimens of *C. pullus* and by the form of the male genitalia (compare figs. 4, 5). Possibly also confused with *C. uniformis* on the basis of size, but that species jet black with all legs entirely black and occurring in southern California and adjacent northern Mexico, whereas *C. pullus* with at least tibiae always pale (figs. 2, 3) and restricted to much higher latitudes.

HOSTS: No host records from North America.

DISTRIBUTION: Holarctic, occurring only at higher latitudes.

DISCUSSION: *Chlamydatus pullus* was recorded as being widely distributed in Alaska and Canada and as also occurring in New Mexico by Kelton (1965), but with no mention of a specific locality for the last record. As indicated in our discussion under *C. keltoni*, we consider most, if not all, of Kelton's records of *C. pullus* to represent misidentifications. Scudder (1997) tentatively placed specimens of this species from the Yukon and Northwest Territories in *auratus*, noting that they had different antennal and leg coloration than reported by Kelton (1965). We have compared the Yukon material with authoritatively identified *C. pullus* specimens from Russia and consider them conspecific.

The identity of *Chlamydatus fulvipes* Knight was always problematical to us. The male genitalia were not illustrated by Kelton (1965) and the species was known only from the three specimens of the type series from Minnesota. We compared the holotype of *C. fulvipes* with true *C. pullus* and found them to be conspecific **new synonym.** The male genitalia of the holotype were regrettably destroyed by the senior author during the process of preparing them for illustration. The

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male specimen illustrated in figure 2 from Cascapedia, Quebec, agrees closely with the holotype in all attributes.

Kelton (1965) recorded the host of this species as *Plantago*, but Knight's material from the type locality does not bear host labels. Because of the history of misidentification of this species, we consider the host association of *C. pullus* in North America to be in doubt.

SPECIMENS EXAMINED: AUSTRIA: Neusiedl, July 21, 1960, G. G. E. Scudder, 2♂, 1♀ (CNC). CANADA: **Quebec**: Cascapedia, August 16, 1933, W. J. Brown, 3♂ (CNC). Laniel, July 4, 1963, L. A. Kelton, 2♀ (CNC). **Saskatchewan**: Prince Albert, July, 23, 1959, A. and J. Brooks, *Larix* sp. (Pinaceae). **Yukon Territory**: 5.4 km E of Boundary, July 11, 1983, G. G. E. Scudder, 2♂ (UBC). 7.7 km E of Boundary, July 11, 1983, G. G. E. Scudder, 1♂ (UBC). 9 km S of Ross River on Campbell Highway, July 27, 1981, C. S. Guppy, 1♂ (UBC). Arctic Circle, Dempster Highway, July 14, 1983, G. G. E. Scudder, 1♀ (UBC). Carcross, July 15, 1985, E. Krebs, J. J. Robinson, 1♂ (UBC). Cornwall Creek, km 439 Dempster Highway, July 17, 1980, R. J. Cannings, 1♂ (UBC). Dawson, Midnight Dome, July 12, 1985, E. Bijdemast, 1♂ (UBC). Eagle Plains, km 278 Dempster Highway, July 25, 1982, G. G. E. Scudder, 1♂ (UBC). Eagle Plains, km 371 Dempster Highway, July 22, 1982, G. G. E. Scudder, 1♂, 2♀ (UBC). Lower Salmon Lake, August 14, 1980, R. J. Cannings, 1♂ (UBC). Peel Plateau, km 505 Dempster Highway, August 14, 1983, G. G. E. Scudder, 1♂ (UBC). FINLAND: Esbo-Westend, Smålholm Island, August 9, 1960, G. G. E. Scudder, 1♂ (CNC). Süd Finnland, 1♂ (CNC). RUSSIA: Khabarovak, E. Siberia, August 26, 1979, G. G. E. Scudder, 3♀ (CNC). Moscow Hills, August 5, 1968, G. G. E. Scudder, 1♀ (CNC). SWEDEN: Uppsala, August 6, 1960, G. G. E. Scudder, 2♂ (CNC). USA: **Minnesota**: *Lake Co.*: Cramer, August 10, 1922, H. H. Knight, *C. fulvipes* paratype, 1♀ (CNC). **New York**: *Essex Co.*: Whiteface Mountain, August 22, 1916, H. H. Knight, *C. fulvipes* paratypes, 1♂, 1♀ (CNC, USNM).

Chlamydatus ruficornis Knight
Figures 2, 3E, 6

Chlamydatus ruficornis Knight, 1959: 424 (n.sp.).

DIAGNOSIS: Distinguished from all other *Chlamydatus* spp. by the following combination of characters: the slate gray coloration, the red appendages, the fusiform antennal segment 2, the frequent brachyptery (fig. 2) with the males rarely being macropterous, and the entirely dull vertex and face.

HOSTS: None recorded.

DISTRIBUTION: Plains region of North America.

DISCUSSION: Knight (1959) and Kelton (1965) treated *C. ruficornis* as always brachypterous with truncate hemelytra. We have examined a male specimen from Colorado that is fully macropterous (fig. 2); it was taken with a series of brachypterous females on prostrate vegetation in a waste area. Macropterous males are now known from Alberta.

SPECIMENS EXAMINED: Holotype: male: ''Ames, Iowa, VII-22-1940, H. H. Knight''; deposited in the National Museum of Natural History, Washington, D.C.

Additional specimens: CANADA: **Alberta**: Irvine, May 23, 1952, A. R. Brooks, 1♂ (CNC). **Saskatchewan**: Saskatchewan Landing, June 22, 1982, G. G. E. Scudder, 2♀ (UBC). Val Marie, May 11, 1965, A. R. Brooks, 1♂ (CNC). USA: **Colorado**: *Albert Co.*: E of Kiowa on Rt 86, West Bijou Creek, 1810 m, May 20, 1978, R. T. Schuh and J. T. Polhemus, 8♂, 19♀ (AMNH). **Iowa**: *Story Co.*: Ames, July 22, 1930, H. H. Knight, paratypes, 2♂, 1♀ (CNC, USNM). **New Mexico**: *Torrance Co.*: Estancia, June 24, 1940, D. E. Hardy, 1♂ (KU).

Chlamydatus schuhi Knight
Figures 2, 3A, 6

Chlamydatus schuhi Knight, 1964: 141 (n.sp.).
Chlamydatus knighti Kelton, 1965: 1140 (n.sp., host). NEW SYNONYMY.

DIAGNOSIS: Recognized by the relatively small size, total length 2.66 or less, the pale fore- and middle femora contrasting with the dark hind femora, and by always having a portion of the hemelytra—and often the posterior margin of the pronotum—pale and somewhat greenish. Most easily confused with pale specimens of *C. obliquus* on the basis of coloration of dorsum and legs, but total length in that species always 2.78 or greater, whereas total length in *C. schuhi* never more than 2.66.

HOSTS: Most frequently collected on the Polemoniaceae (*Leptodactylon* sp. and *Phlox* sp.) and the Asteraceae (*Chrysothamnus* spp.).

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DISTRIBUTION: Great Basin of western North America.

DISCUSSION: Kelton (1965) described *Chlamydatus knighti* on the basis of specimens from Utah and eastern Washington. He compared his material with specimens of *C. schuhi* from British Columbia, which he indicated were identified by Knight. Although Kelton believed size, coloration of the pronotum, and form of the male genitalia to be diagnostic for these two nominal species, after having examined large numbers of specimens, including the types and associated material, from a variety of localities and hosts, we can find no constant differences in coloration, size, or genitalic structure to support the distinction. The distributions are also grossly overlapping suggesting variation rather than discrete differences. Furthermore, the phenotypes of both *C. schuhi* and *C. knighti* occur in more than one series from a single locality and host. We therefore treat these names as synonyms **new synonymy.** Although Kelton (1965) illustrated the male genitalia of the two nominal species as distinctive, our comparison suggests that his rendering of the vesica for *C. schuhi* is in error.

SPECIMENS EXAMINED: Holotype: *Chlamydatus schuhi*: female: ''2 miles east of Redmond, Ore, June 25, 1939, Gray and Schuh''; deposited in the National Museum of Natural History, Washington, D.C. Holotype: *Chlamydatus knighti*: male: ''Coulee City, Wash., 12.VI.1959, Kelton & Whitney, *Iva axillaris*, Type No. 8902''; deposited in the Canadian National Collection of Insects, Ottawa.

Additional specimens: CANADA: **British Columbia**: Fruitvale, July 11, 1970, L. A. Kelton, 2♂, 10♀ (CNC). Oliver, May 27, June 26, 27, 1959, L. A. Kelton, R. E. Leech, *Leptodactylon pungens* (Polemoniaceae), 21♂, 18♀ (CNC). USA: **California**: *Alpine Co.*: 1.5 mi NE of Red Lake, July 25, 1955, E. I. Schlinger, 1♂, 2♀ (UCD). Red Lake, July 16, 1962, M. E. Irwin, 1♂ (UCD). *Inyo Co.*: Bishop, June 13, 1972, Gilbert and Paddock, *Phlox* sp. (Polemoniaceae), 1♂, 2♀ (CAFA). *Mariposa Co.*: Yosemite National Park, August 1, 1940, D. E. Hardy, 1♂ (KU). *Mono Co.*: 10 mi NE of Bishop, June 3, 1975, J. D. Pinto, 1♂, 10♀ (UCR). *Siskiyou Co.*: road mi 1 E of Shasta City, McBride Campground, July 23, 1962, D. C. Rentz and C. D. MacNeill, 1♀ (CAS). 3 mi E of Bartle, July 22, 1962, D. C. Rentz and C. D. MacNeill, 1♂, 1♀ (CAS). 5 mi N of Gazelle, June 15, 1959, L. A. Kelton, R. Madge, *Chenopodium* sp.(Chenopodiaceae), 1♀ (CNC). Bear Basin, August 9, 1967, C. Brown, 4♂, 4♀ (PUC). *Yolo Co.*: Putah Canyon, July 12, 1932, R. L. Usinger, 1♀ (UCB). **Idaho**: *Bonneville Co.*: 4 mi W of Swan Valley, 5400 ft, July 10, 1973, C. Musgrave, 1♀ (OSU). *Oneida Co.*: Stone Reservoir, May 31, 1969, G. F. Knowlton, 1♀ (USU). **Nevada**: *Humboldt Co.*: 5 mi S of jct of Rts 8A and 34A, Sheldon National Antelope Range, 1900 m, July 2, 1979, R. T. Schuh and B. M. Massie, *Chrysothamnus* sp. (Asteraceae), 4♂, 1♀ (AMNH). Winnemucca, June 26, 1936, R. H. Beamer, 2♀ (KU). *Lander Co.*: Kingston Creek Canyon, Toiyabe Mts., 6500–7500 ft, June 28, 1983, R. T. Schuh and M. D. Schwartz, unidentified sp. (Asteraceae), 12♂, 10♀ (AMNH). Smith Creek Valley, 9.5 mi S of Rt 2, T15N, R19E, 6300 ft, June 20, 1983, R. T. Schuh and M. D. Schwartz, 1♀ (AMNH). *Mineral Co.*: 27 mi SW of Hawthorne on Rt 359 (1 mi NE of Anchorite Summit), 7400 ft, July 2, 1983, R. T. Schuh and M. D. Schwartz, unidentified sp. (Polemoniaceae), 71♂, 46♀ (AMNH, CNC). *Nye Co.*: 11 mi N of Belmont, T10N, R46E, sec. 26, 7200 ft, June 29, 1983, R. T. Schuh and M. D. Schwartz, *Chrysothamnus viscidiflorus* (Asteraceae), 10♂, 11♀ (AMNH). *Washoe Co.*: Reno, Sky Ranch, June 16, 1952, E. I. Schlinger, 1♂ (UCD). **Oregon**: *Crook Co.*: 5 mi E of Redmond on Hwy 126, June 22, 1979, G. M. Stonedahl and M. D. Schwartz, *Phlox* sp. (Polemoniaceae), 25♂, 40♀ (OSU). 5 mi E of Redmond, June 22, 1979, R. T. Schuh, 45♂, 35♀ (AMNH). *Deschutes Co.*: 1 mi S of Millican on Pine Mt. Road, 4380 ft, June 21, 1979, G. M. Stonedahl, G. Cooper, M. D. Schwartz, *Chrysothamnus nauseosus* (Asteraceae), 11♂, 5♀ (OSU). 1 mi S of Millican, 4380 ft, June 21, 1979, R. T. Schuh, *Chrysothamnus viscidiflorus* (Asteraceae), 14♂, 5♀ (AMNH). 2 mi E of Redmond, June 25, 1939, J. Schuh, Gray, paratype, 1♀ (CNC). 29 mi E of Bend, Horse Ridge Summit, 4300 ft, June 29, 1978, Lattin and Oman, 2♂ (OSU). 3 mi W of Millican, sand dunes, July 6, 1977, J. D. Lattin, 1♂ (OSU). *Grant Co.*: 16 mi NE of Prairie City, July 13, 1991, W. F. Chamberlain, 1♂, 2♀ (TAMU). *Harney Co.*: Malheur National Wildlife Refuge, 10 mi S of Headquarters, July 12, 1968, P. W. Oman, 4♀ (OSU). *Jackson Co.*: Siskiyou Summit on Int. 5, July 4, 1982, G. M. Stonedahl and T. J. Henry, *Phacelia hastata* (Hydrophyllaceae), 9♂, 13♀ (AMNH). Siskiyou Summit, 4300 ft, July 5, 1982, T. J. Henry and G. M. Stonedahl, *Lupinus* sp. (Fabaceae), 5♂, 16♀ (USNM). *Wallowa Co.*: Joseph, June 6, 1970, P. W. Oman, 1♂ (OSU). **Utah**: *Duchesne Co.*: Roosevelt, June 12, 1963, G. F. Knowlton, 1♀ (USU). *Iron Co.*: Kanarraville,

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June 9, 1960, G. F. Knowlton, 1♂ (USU). *Juab Co.*: Mills, June 7, 1963, G. F. Knowlton, 1♀ (USU). *Millard Co.:* Cove Fort, June 20, 1928, E. W. Davis, *Iva axillaris* (Asteraceae) 1♀ (CNC). Deseret, July 8, 1965, G. F. Knowlton, 1♀ (USU). *Tooele Co.*: 4 mi NE of Camel Back Mountain, May 24, 1954, P. D. Ashlock, *Leptodactylon* sp. (Polemoniaceae), 2♂ (USNM). Dugway Proving Grounds, dog area, May 28, 1953, P. D. Ashlock, *Phlox* sp. (Polemoniaceae), 13♂, 5♀ (USNM). Vernon, June 15, 1924, G. F. Knowlton, 1♂ (CNC). *Unknown Co.*: Antelope, July 1, 1931, J. Nottingham, 1♂ (KU). **Washington**: *Grant Co.*: Coulee City, June 12, 1959, Kelton and Madge, *Iva axillaris* (Asteraceae) 7♀ (CNC). *Spokane Co.*: Spokane, August 8, 1931, R. H. Beamer, 1♀ (KU). **Wyoming**: *Sweetwater Co.*: 11.5 mi S of Eden, by old Hwy 187, August 23, 1965, H. B. Leech, 1♀ (CAS). *Teton Co.*: Grand Teton National Forest, August 7, 1972, L. A. Kelton, 17♂, 6♀ (CNC).

Chlamydatus suavis (Reuter)
Figures 2, 3G, 6

Agalliastes suavis Reuter, 1876: 92 (n.sp.).

DIAGNOSIS: Recognized by the relatively small size, macropterous hemelytral condition, brown coloration of the legs, pale tibiae with tibial spines weakly brown at bases, and the neatly arranged dark setae on the dorsum. Most similar in size and coloration to *C. brevicornis*, *C. keltoni*, and *C. monilipes*, these being relatively small species with all femora dark and the background coloration of the tibiae pale. Distinguished from *C. monilipes* by the black coloration and heavy black bases of the tibial spines in that species, from *C. brevicornis* by the shining weakly woolly setae in that species as opposed to the inconspicuous dark dorsal vestiture of *C. suavis*, and from *C. keltoni* by the nearly black coloration and the black bases of the tibial spines in that species as opposed to the entirely pale condition in *C. suavis*. Coloration similar to *C. pulicarius* and *C. pullus* with almost totally infuscate femora, but *C. pulicarius* much larger, total length always more than 2.51 and *C. pullus* somewhat larger, total length always more than 2.40, whereas total length in *suavis* never more than 2.55. Always macropterous, unlike many specimens of *C. keltoni*, *C. pulicarius*, and *C. pullus*.

HOSTS: Recorded by Knight (1941) and Kelton (1965) as occurring on *Ambrosia* sp. (Asteraceae). No host data are available on labels of numerous specimens examined by us. Like *C. associatus*, *C. sauvis* is apparently most commonly collected sweeping ruderal vegetation.

DISTRIBUTION: Recorded from Florida to Arizona and south to the Isthmus of Tehuantepec in Mexico. Occasionally further north as evidenced by records from New York.

DISCUSSION: Our concept of this species is based on the that used by Knight and Kelton, in their various works on *Chlamydatus*. We have not located the holotype.

SPECIMENS EXAMINED: MEXICO: **Baja California Sur**: 3 mi N of San Jose Viejo, July 16, 1971, H. G. Real, R. E. Main, U. V. Light, 7♂ (CAS). Mulege, May 15, 1921, E. P. Van Duzee, 1♂ (CAS). **Chiapas**: San Cristóbal de las Casas, July 12–14, 16–17, 1969, L. A. Kelton, 25♂, 25♀ (CNC). San Cristóbal, July 26, 1969, L. A. Kelton, 1♀ (CNC). Temoris, August 2, 1969, T. A. Sears, R. C. Gardner, C. S. Glaser, 11♂ (UCD). Teopisca, August 14, 1969, L. A. Kelton, 4♂, 2♀ (CNC). **Hidalgo**: S Hidalgo, July 19, 1953, University of Kansas Mexico Expedition, 3♂ (KU). **Nuevo Leon**: 10 mi S of China, July 18, 1954, University of Kansas Mexico Expedition, 2♂ (KU). 10 mi S of Linares, December 24, 1940, G. E. Bohart, 2♂ (CAS). 18 mi W of Linares, September 24, 1975, P. H. Arnaud, Jr., E. S. Ross, D. C. Rentz, 1♂ (CAS). 37 mi NE of China, July 18, 1954, University of Kansas Mexico Expedition, 3♂ (KU). 5 mi S of Linares, February 24, 1972, F. Parker, D. Miller, 2♂ (USU). **Oaxaca**: El Paradon, August 24, 1969, L. A. Kelton, 1♀ (CNC). **Sinaloa**: 26 mi N of Pericos, August 13, 1960, P. H. Arnaud, Jr., E. S. Ross, D. C. Rentz, 1♂ (CAS). **Sonora**: 10 mi S of Guaymas, October 8, 1968, G. E. Bohart, 1♂ (USU). 13 km W of Alamos, September 1, 1975, B. Villegas, 1♂ (UCD). Alamos, August 12, 1960, P. H. Arnaud, Jr., E. S. Ross, D. C. Rentz, 1♂ (CAS). USA: **Arizona**: *Cochise Co.*: 2 mi N of Paradise, July 31, 1973, J. D. Pinto, 1♂ (UCR). 25 mi W of Bisbee, June 15, 1966, J. S. Buckett, M. R. and R. C. Gardner, 2♂ (UCD). 3 mi N of Paradise, August 3, 1973, J. D. Pinto, 1♂ (UCR). 8 mi SW of Apache, 3 mi up Texas Canyon Road, August 12, 1973, J. D. Pinto, 1♂ (UCR). Portal, 1500 m, August 2, 1975, J. D. Pinto, 1♂ (UCR). Portal, July 29, 1967, L. A. Kelton, 1♀ (CNC). *Coconino Co.*: Oak Creek Canyon, July 9, 1941, L. H. Banker, 1♂ (KU). *Gila Co.*: Globe, Tonto National Forest, August 9, 1967, L. A. Kelton, 1♂ (CNC). *Pima Co.*: Arivaca, July 12, 1940, D. E. Hardy, 1♂ (KU). Ba-

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boquivari Mountain, south end, August 1, 1968, D. E. Bright, 2♀ (CNC). Chutum Vaya Canyon, W slope Baboquivari Mts., 3250 ft, August 4, 1966, F. Werner Family, 1♂ (UAZ). Molino Basin, August 8, 1968, D. E. Bright, 1♂ (CNC). Santa Rita Range Reserve, desert grassland, 4000 ft, May 27, 1957, F. Werner (Fabaceae) (UAZ). *Pinal Co.*: Oracle, 4500 ft, August 26, 1934, Ian Moore, 3♂ (SDNH). *Santa Cruz Co.*: 10 mi N of Nogales, October 5, 1958, T. R. Haig, 1♂ (UCD). 4 mi W of Patagonia, August 6, 1973, J. D. Pinto, 6♂ (UCR). Canelo, July 19, 1958, M. S. Adachi, 3♂ (UAZ). Carmen, August 6, 1967, L. A. Kelton, *Ambrosia* sp. (Asteraceae), 13♂, 13♀ (CNC). Mount Wrightson summit, Santa Rita Mts., 9453 ft, September 11, 1961, F. Werner, W. Nutting, 1♂ (UAZ). No specific locality, August 19, 1950, R. S. Beal, 1♂ (UCB). Patagonia, August 10, 1958, M. Adachi, 1♂ (UAZ). Pena Blanca Lake, Nogales, August 5, 1967, L. A. Kelton, *Ambrosia* sp. (Asteraceae), 13♂, 17♀ (CNC). Sonoita, August 18, 1972, L. A. Kelton, 4♂, 4♀ (CNC). Sonoita, July 9, 1930, J. O. Martin, 1♂ (CAS). White Rock C. Gr., Pena Blanca Recreation Area, June 21, 1981, J. D. Pinto, 11♂ (UCR). *Yavapai Co.*: Peeples Valley, August 18, 1967, L. A. Kelton, 1♂ (CNC). **Arkansas**: *Polk Co.*: No specific locality, July 21, 1928, R. H. Beamer, 1♂ (KU). **Florida**: *Dade Co.*: Crestwood, April 14, 1961, L. A. Kelton, 2♂ (CNC). Homestead, April 4, 1952, G. S. Walley, 2♂, 5♀ (CNC). Paradise Key, April 6, 1951, H. and A. Howden, 1♀ (CNC). Westgate, March 24, 1962, J. F. Brumpton, 1♂ (CNC). *Glades Co.*: Palmdale, April 30, 1961, L. A. Kelton, 1♂, 1♀ (CNC). *Hendry Co.*: Clewiston, June 30, 1961, L. A. Kelton, 20♂, 20♀ (CNC). *Lee Co.*: Fort Myers, April 22, 1961, L. A. Kelton, 19♂, 16♀ (CNC). *Levy Co.*: Cedar Keys, July 12, 1939, P. B. Lawson, 5♂ (KU). *Orange Co.*: Taft, April 13, 1961, L. A. Kelton, 11♂, 17♀ (CNC). *Palm Beach Co.*: Belle Glade, March 15, 1994, M. D. Schwartz, 3♂, 1♀ (CNC). *Sarasota Co.*: Englewood, April 11, 1952, J. R. Vockeroth, 1♂, 1♀ (CNC). *Union Co.*: 2 mi E of Lake Butler, March 29, 1976, C. W. O'Brien and Marshall, 1♂ (CAS). *Unknown Co.*: Seven Oaks, May 1, 1908, E. P. Van Duzee, 1♂ (CAS). **Georgia**: *Spalding Co.*: Griffin, August 12, 1939, R. G. Wegenek, 9♂ (KU). **Illinois**: *McLean Co.*: Bloomington, July 24, 1971, L. A. Kelton, 2♂ (CNC). *Mercer Co.*: Norwood, July 16, 1967, L. A. Kelton, 1♂ (CNC). *Washington Co.*: Dubois, August 23, 1909, 1♂ (INHS). **Kansas**: *Crawford Co.*: Cherokee, September 2, 1941, R. H. Beamer, 7♂ (KU). *Douglas Co.*: No specific locality, 900 ft, F. H. Snow, 1♂ (KU). No specific locality, August 22, 1920, W. K. Hoffmann, 19♂ (KU). No specific locality, October 1, 1949, P. Cook, 1♂ (UCB). *Pottawatomi Co.*: Onaga, E. D. Ball, 1♂ (UAZ). **Missouri**: *Greene Co.*: Springfield, July 15, 1915, H. H. Knight, 1♂, 2♀ (CNC). Willard, August 29, 1918, H. H. Knight, 1♂ (CAS). *St. Louis Co.*: Castlewood, August 7, 1949, W. Downes, 1♂ (OSU). *Wayne Co.*: Williamsville, July 8, 1955, E. C. Becker, 5♂, 2♀ (CNC). **New Mexico**: *Hidalgo Co.*: Skeleton Canyon, August 16, 1968, G. C. Batista, 1♂ (UCR). *Lea Co.*: September 24, 1979, J. C. Schaffner, 1♂ (TAMU). *Otero Co.*: Cloudcroft, June 27, 1940, R. H. Beamer, 1♂ (KU). **New York**: *Erie Co.*: Hamburg, September 6, 1909, E. P. Van Duzee, 1♂ (CAS). *Greene Co.*: Hunter, August 5, 1932, J. R. de la Torre-Bueno, 1♂ (KU). **North Carolina**: *Macon Co.*: Whiteface Cave, nr Highlands, August 17, 1957, L. A. Kelton, 2♀ (CNC). *Onslow Co.*: Onslow Beach, Onslow, September 13, 1972, G. E. Bohart, 5♂ (USU). **South Carolina**: *Pickens Co.*: Clemson, August 24, 1955, D. Dunavan, 2♂ (CLEMSON). **Texas**: *Dimmit Co.*: 14 mi NW of Carrizo Springs, June 20, 1966, J. S. Buckett, M. R. and R. C. Gardner, 1♂ (UCD). *Edwards Co.*: 1 mi W of Carta Valley, April 13, 1965, R. C. Dickson, 5♂ (UCR). *Unknown Co.*: Los Ebenos, October 18, 1944, R. Usinger, 10♂ (UCB). *Uvalde Co.*: 5 mi E of Uvalde, June 17, 1964, 1♂ (UCB). Uvalde, June 15, 1930, J. O. Martin, 2♂ (CAS). **Washington, D.C.**: July 19, 1926, H. H. Knight, 2♂ (USU).

Chlamydatus uniformis (Uhler)
Figures 2, 3F, 6

Agalliastes uniformis Uhler, 1893: 379 (n.sp.).

DIAGNOSIS: Recognized by the relatively large size, jet black coloration, including the body and all appendages, and the dark, neatly arranged dorsal vestiture. Along with *C. becki*, the only North American species with completely dark legs, including the tibiae. Easily distinguished from *C. becki* by its larger size, total length 2.65 or more, whereas *C. becki* always 2.23 or less. Coloration in *C. uniformis* jet black, shining, whereas coloration of *C. becki* brownish black. Dorsal vestiture in *C. uniformis* black, not contrasting with coloration of dorsum; dorsal vestiture in *C. becki* shining, distinctly visible in dorsal perspective.

HOSTS: *Salvia* spp. (Lamiaceae).

DISTRIBUTION: Utah to southern California and northern Baja California.

DISCUSSION: The type of this species is in poor condition, the hemelytra being com-

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pletely missing. The type locality, according to the specimen examined by Uhler is American Fork, Utah. Although we have made a thorough search of collections and examined a very large number of specimens of *Chlamydatus*, we have seen no additional material from Utah or from other areas within the Great Basin.

SPECIMENS EXAMINED: Holotype [?]: male: ''Am Fork [Utah], 22-6.91, P. R. Uhler Collection, *Agalliastes uniformis*, *Agalliastes uniformis* Uhler, det Uhler''; deposited in the National Museum of Natural History, Washington, D.C.

Additional specimens: MEXICO: **Baja California Norte**: 19 km E of El Rosario (km 47), March 28, 1980, J. D. Pinto and E. Fisher, 2♂ (UCR). 38 km E of Rt 1 toward Parque San Pedro Martin, 400 m, April 24, 1985, R. T. Schuh and B. M. Massie, *Salvia* sp. (Lamiaceae), 9♂, 28♀ (AMNH). 44.5 km E of Rt 1 toward Parque San Pedro Martin, 720 m, April 24, 1985, R. T. Schuh and B. M. Massie, *Salvia* sp. (Lamiaceae), 8♂, 14♀ (AMNH). USA: **California**: *Los Angeles Co.*: 5 mi E of Fergus, Mint Canyon, April 20, 1932, E. P. Van Duzee, 5♂, 3♀ (CAS). *Orange Co.*: Lower Santa Ana Canyon, Green River Camp, May 11, 1933, E. P. Van Duzee, 1♂ (CAS). *Riverside Co.*: 6 mi E of Anza, July 25, 1995, W. F. Chamberlain, 1♀ (TAMU). Menifee Valley (hills on W end), 560 m, May 11, 1978 and May 14, 1978, R. T. Schuh and J. D. Pinto, *Salvia apiana* (Lamiaceae), 12♂, 15♀ (AMNH, UCR). Riverside, May 30, 1935, H. L. McKenzie, *Salvia apiana* (Lamiaceae), 1♂ (UCD). *San Luis Obispo Co.*: 18.5 mi E of Arroyo Grande, Huasna Valley, 1100 ft, May 9, 1985, R. T. Schuh and B. M. Massie, *Salvia leucophylla* (Lamiaceae), 10♂, 3♀ (AMNH). *Santa Barbara Co.*: Upper Oso Campground off Rt 154, 350 m, May 7, 1985, R. T. Schuh and B. M. Massie, *Salvia leucophylla* (Lamiaceae), 10♂, 9♀ (AMNH). *Ventura Co.*: Ojai, June 12, 1955, W. E. Simonds, 1♂ (CAFA).

Chlamydatus wilkinsoni (Douglas and Scott) Figures 2, 3B, 6

Agalliastes wilkinsoni Douglas and Scott, 1866: 273 (n.sp.).

DIAGNOSIS: Recognized by its very small size, total length 1.89 or less, and truncate, black hemelytra (fig. 2). Most easily confused with males of *californicus*, but specimens in that species usually larger and occurring only in southern California, whereas *wilkinsoni* restricted to high latitudes and high elevations in the Rocky Mountains.

HOSTS: No hosts are recorded for this species.

DISTRIBUTION: Holarctic. Occurring only at the highest latitudes and altitudes.

SPECIMENS EXAMINED: CANADA: **Manitoba**: Churchill, July 25, 1952 and August 2, 1952, J. G. Chillcott, 3♂ (CNC). Fort Churchill, July 12, 1952, J. G. Chillcott, 2♂ (CNC). **Newfoundland**: Gander, July 1, 1979, 2♂, 2♀ (CNC). **Northwest Territories**: 20 mi E of Tuktoyaktuk, July 6, 1971, W. R. M. Mason, 1♂ (CNC). Chesterfield, August 7, 1950, J. R. Vockeroth, 4♂, 1♀ (CNC). Whatever Lake, July 1, 1989, J. Pilny, 1♂ (CNC). **Quebec**: Bradore Bay, July 31, August 2, 8, 1930, W. J. Brown, 14♂, 1♀ (CAS, CNC). Payne Bay, July 27, 31, August 1, 2, 10, 12, 15, 18, 1958, W. R. M. Mason, 40♂ (CNC). **Yukon Territory**: 58 mi E of Dawson, Gravel Lake, 2050 ft, August 10, 1962, R. E. Leech, 1♂ (CNC). Herschel Island, July 25, 1971, W. R. M. Mason, 2♂ (CNC). Koidern, July 24, 1982, L. A. Kelton, 1♀ (CNC). USA: **Alaska**: *Nome Co.*: Unalakleet, July 5, 1961, R. Madge, 1♂ (CNC). *North Slope Co.*: Cape Thompson, July 29, 1961, R. Madge, 4♂, 1♀ (CNC). *Southeast Fairbanks Co.:* 8 mi W of Dot Lake, August 10, 1968, W. Ivie, 1♂, 1♀ (AMNH). **Colorado**: *Clear Creek Co.*: Mount Goliath, 12,000 ft, August 7, 1986 and August 21, 1987, D. A. and J. T. Polhemus, 4♀ (JTP). *Larimer Co.*: Rocky Mountain National Park, 10,500 ft, August 8, 1968, E. C. Becker, 1♀ (CNC).

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The herbarium staff at the New York Botanical Garden identified the hosts for material collected by us. These authoritative determinations add greatly to confidence in our knowledge concerning host relationships within *Chlamydatus*. Our special thanks to Jackie Kallunki and Eileen Schofield for their prompt and professional service.

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Many individuals and institutions provided material for this study, during the course of which we examined on the order of 7000 specimens. Without their assistance, the diversity, distributions, and host relationships for species in the group would be much less well understood. Institutions, names of curators or other responsible individuals, and institutional abbreviations are presented in the following list:

AMNH	American Museum of Natural History, New York
CAFA	California Department of Food and Agriculture, Sacramento, Alan Hardy
CAS	California Academy of Sciences, San Francisco, Paul Arnaud, Jr., Norman Penny
CLEMSON	Clemson University, Clemson, South Carolina, John Morse
CNC	Canadian National Collection of Insects, Agriculture Canada, Ottawa, Leonard Kelton
DAR	David A. Rider Collection, Fargo, North Dakota
INHS	Illinois Natural History Survey, Urbana, Kathryn C. McGiffen
JTP	John T. Polhemus Collection, Englewood, Colorado
KU	University of Kansas, Snow Entomological Museum, Lawrence, Alex Slater
LACM	Natural History Museum of Los Angeles County, Julian P. Donahue
LSU	Louisiana State University Insect Collection, Baton Rouge, Victoria L. Moseley
OSDA	Oregon State Department of Agriculture, Salem, Richard L. Westcott
OSU	Oregon State University, Corvallis, John D. Lattin
PDA	Pennsylvania Department of Agriculture, Harrisburg, Karl Valley
PUC	Pacific Union College, Angwin, California, Arvin Provansha
SDNH	San Diego Museum of Natural History, David K. Faulkner
TAMU	Texas A & M University, College Station, Joseph C. Schaffner
UAZ	University of Arizona, Tucson, the late Floyd Werner
UBC	University of British Columbia, Spencer Entomological Museum, Vancouver, Geoffroy G. E. Scudder
UCB	University of California, Berkeley, John Chemsak, Cheryl Barr
UCD	University of California, Davis, the late Robert Schuster
UCR	University of California, Riverside, Saul Frommer, John D. Pinto
UNHP	University of New Hampshire, Durham, Donald Chandler
USNM	United States National Museum of Natural History, Washington, D.C., Thomas J. Henry, the late Richard C. Froeschner
USU	Utah State University, Logan, Wilford J. Hanson
WSU	Washington State University, Pullman, Richard Zack

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APPENDIX 1

Localities for Specimens Shown in Figures

Figure 1: *C. artemisiae*: male and female: Alberta: Walsh. *C. associatus*: male: Minnesota: Clay Co: Bluestem Site D5–D6; female: Minnesota: Norman Co.: Agassiz Dunes. *C. becki*: male: Nevada: Nye Co: female: Utah: Millard Co.: Scipio. *C. brevicornis*: male: Colorado: Saguache Co.: 23 mi E of Gunnison on Rt 50; female: Utah: Wasatch Co.: Wolf Creek Campground. *C. californicus*: male (holotype): California: Fresno Co.: San Benito; female: California: Fresno Co.: Mendota. *C. keltoni*: male and female: Wyoming: Big Horn Co.: 24 mi W of Burgess Junction. *C. monilipes*: male and female: California: Siskiyou Co.: 12.3 mi N of State Highway 89 on Powder Hill Road. *C. montanus*: male: Colorado: Larimer Co.: Bennett Creek Picnic Ground; female: Colorado: Larimer Co.: Fish Creek Picnic Ground. *C. obliquus*: male 1: Oregon: Deschutes Co.: 14 mi S of Millican; male 2: Oregon: Klamath Co.: Chiloquin, Rt 97; female: California: Modoc Co.: 2.5 mi S of Rt 139 towards Lookout. *C. opacus*: male and female: Quebec: Great Whale River.

Figure 2: *C. pallidicornis*: male: British Columbia: Christina Lake; female: Oregon: Union Co.: 4.5 mi E of Tollgate. *C. pulicarius*: male and female: Pennsylvania: Centre Co.: Scotia Barrens. *C. pullus*: male: Yukon Territory: 5.4 km E of Boundary; female: Russia: E Siberia, near Khabarovsk. *C. ruficornis*: male 1: New Mexico: Estancia; male 2, females 1, 2: Colorado: Albert Co.:

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West Bijou Creek E of Kiowa on Rt 86. *C. schuhi*: male 1, female: Nevada: Mineral Co.: 27 mi SW of Hawthorne on Rt 359; male 2: Nevada: Humboldt Co.: 5 mi S of jct of Rts 8A and 34A, Sheldon National Antelope Range. *C. suavis*: Arizona: Pima Co.: 2 mi N of Madera Canyon; female: Texas: Frio Co.: 2 mi N of Pearsall. *C. uniformis*: male and female: Mexico: Baja California Norte: 44.5 km E of Rt 1 to Parque Sierra San Pedro Martir. *C. wilkinsoni*: male: Quebec: Bradore Bay; female: Colorado: Clear Creek Co.: Mt. Goliath.

Figure 4: *Chlamydatus artemisae*, Alberta: Walsh; *C. associatus*, Ontario: Leamington; *C. becki*, Utah: American Fork; *C. brevicornis*, Colorado: Steamboat Springs; *C. californicus*, California: Big Panoche Creek; *C. keltoni*, British Columbia: Soda Creek.

Figure 5: *Chlamydatus monilipes*, California: Apple Valley; *C. montanus*, Manitoba: Riding Mountain National Park; *C. obliquus*, Alberta: Frank; *C. opacus*, Holstein: Plön; *C. pallidicornis*, Colorado: Muddy Pass. *C. pulicarius*, Lapland: Abisko.

Figure 6: *Chlamydatus pullus* (left), Smålholm Island: Esbo-Westend; *C. pullus* (right), Quebec: Cascapedia; *C. ruficornis*, Iowa: Ames; *C. schuhi*, Wyoming: Grand Teton; *C. suavis*, Florida: Fort Myers; *C. uniformis*, California: Upper Oso Campground; *C. wilkinsoni*, Manitoba: Churchill.

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