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A NEW SPECIES OF LARVAL *ABROLOPHUS* BERLESE 1891 WITH NOTES ON *A. AITAPENSIS* (SOUTHCOTT, 1948) (ACARI, PROSTIGMATA, ERYTHRAEIDAE) FROM GUADELOUPE (LESSER ANTILLES, FRANCE)

Abstract

Abrolophus karamani sp. nov. (Acari: Erythraeidae) is described and illustrated from larva collected in Guadeloupe with sweep net. It is the second report of *Abrolophus* species from America. New metric and meristic data for *A. aitapensis* (Southcott, 1948) are given. Key to *Abrolophus* with comb-like seta on palptarsus of the world is provided.

Keywords: Parasitengona, *Abrolophus karamani*, *A. aitapensis*, new species, key, Lesser Antilles

INTRODUCTION

In America only six species of the genus *Abrolophus* were known: *A. arvensis* (Banks, 1902), *A. incanescens* Berlese, 1916, *A. setipapillus* Berlese, 1916, *A. trinotatus* Berlese, 1916 *A. welbourni* Yao, Snider and Snider, 2000 from Argentina and USA and *A. aitapensis* (Southcott, 1948) from Guadeloupe (Yao *et al*. 2000, Haitlinger 2011, Mąkol & Wohltmann 2012). Unfortunately, specimens from Guadeloupe were mistakenly determined. Reanalysis has demonstrated that

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specimens from Guadeloupe belong to new species. *A. aitapensis* was not exactly described. In this paper, we describe the larva of *Abrolophus karamani* sp. nov. collected with sweep net in Guadeloupe and new metric and meristic data for *A. aitapensis* are given. Key to *Abrolophus* with comb-like seta on palptarsus of the world is provided.

The larvae were collected in four localities in Guadeloupe from herbaceous plants. The specimens were collected by R. Haitlinger in a sweep net and preserved in 70% ethanol. Mite specimens were cleared in Nesbitt's solution and mounted in Faure medium. All measurements are given in micrometers (μm) using microscope NIKON Eclipse 80i. Figures were drawn using Carl Zeiss Axio Imager A2 with differential interference contrast. The terminology and abbreviations follow Haitlinger (1999, 2013) and Haitlinger and Šundić (2015).

Family Erythraeidae Robineau-Desvoidy, 1828

Genus *Abrolophus* Berlese, 1891

Abrolophus karamani sp. nov.

(Figures 1–8)

Diagnosis:

Palptarsus with comb-like seta, AW/PW 1.00–1.06, AL/PL 1.38–157, Ta I 49–52, Ta II 41–46, Ta III 43–46, GL 88–99.

Description (larva):

Idiosoma with 48 weakly barbed setae (in paratypes 46–48). Each side of scutum with one eye, circular, not on platelets; eyes 13–14 across (Fig. 1). Scutum without borders, lines between ASE and PSE, longer than wide with two pairs of scutalae (AL, PL), both with very short barbs. AL slightly longer than PL. Anterior pair of sensilla (ASE) shorter than posterior sensilla (PSE), both slightly barbed at distal ¼ (Fig. 3).

Ventral surface of idiosoma bearing six sternalae (*1a, 2a, 3a*), four nude setae between coxae I and II, 14 nude setae between coxae II and III (12–14 in paratypes) and 20 setae behind coxae III (18–20 in paratypes). Sternalae *1a* longer than sternalae *2a* and *3a*, all nude. Coxae I–III each with one seta (in holotype left coxa with 2 setae); all nude (Fig. 2). NDV = 82 (without sternalae) (78–82 in paratypes).

Gnathosoma with a pair of short and nude adoral setae (*cs*) and two pairs of nude hypostomal setae *(as1, as2*) and a pair of nude subcapitular setae *(bs*). Palpfemur without projection with two setae, dorsal seta (PsFd) slightly barbed,

ventral seta (PsFv) nude. Genu with three nude setae and tibia with two nude setae and small accessory claw (paradontus). Palpal tibial claw (OD) short. Palptarsus with comb-like seta, ω, ζ and 4 nude setae (Fig. 4). fPp = 0-BN-NNN-NN-ωζBNNNN. Cheliceral bases not striated. Supracoxal seta (elcp) present.

Leg setal formula: Leg I: Ta 1ω, 1ε, 1Cp, 2ζ, 21 (paratypes 21–22); Ti 2φ, 1κ, 13; Ge 1σ, 1κ, 11; Tf 8; Bf 4; Tr 2; Cx 1 (Fig. 5). Leg II: Ta 1ω, 2ζ, 18; Ti 2φ, 13; Ge 1σ, 9; Tf 5; Bf 4; Tr 2; Cx 1 (Fig. 6). Leg III: Ta 1ζ, 18; Ti 1φ, 13; Ge 1σ, 9; Tf 5; Bf 4; Tr 2; Cx 1 (Fig. 7). Measurements are given in Table 1.

Type locality: The type larva was collected by R. Haitlinger from herbaceous plants in Port Louis, Guadeloupe, 19 March 2010. Paratypes: 2 larvae from Port Louis, 1 larva from Madame Nogent, 1 larva from Garbotteau, all 19 March 2010. The holotype is deposited in the Museum of Natural History, Wrocław University, Poland, one paratype in the Museum of Natural History of Podgorica, Montenegro and two paratypes in collection of senior author.

Etymology. This species is named in honor of academician Gordan S. Karaman (Podgorica, Montenegro) in appreciation of his numerous zoological studies over the World.

Remarks: *Abrolophus karamani* sp. nov. belongs to the species group without palpfemoral projection, palptibia with one accessory claw and cheliceral bases not striated. This group includes: *A. aitapensis*, *A. basumtwiensis* Haitlinger, 2007, *A. mirabelae* Haitlinger, 2007, *A. nymindegabicus* Haitlinger, 2008, *A. penelopae* Haitlinger, 2006 and *A. welbourni* (Haitlinger 2006a, 2007a, b, 2008). It differs from *A. aitapensis* in scutum without borders vs. scutum with borders, *bs* nude vs. *bs* barbed, AL/PL 1.38–1.57 vs. 1.16–1.37, PW/AW 1.00–1.06 vs. 1.11–1.46, the longer GL (88–99 vs. 81–87), PaGe (W) (23–25 vs. 18–22), *cs* (20–29 vs. 12–15), Ta I (49–52 vs. 41–46), Cx I (51–57 vs. 42–48), Ta II (41–46 vs. 36–40), Cx II (58–67 vs. 48–57), Ta III (43–46 vs. 36–42), Cx III (58–61 vs. 46–56) and IP (885–951 vs. 790–882); from *A. basumtwiensis* in the longer ISD (42–45 vs. 36), AL (43–50 vs. 32–40), Cx I (51–57 vs. 48–50), Ta III (43–46 vs. 36–40), Ti III (61–67 vs. 50–58), Cx III (58–61 vs. 46–57) and IP (885–951 vs. 788–824); from *A. mirabelae* in the shorter ASE (24–28 vs. 34–40), shorter longest dorsal setae (35–38 vs. 50–62), GL (88–99 vs. 100–112), Ti III (61–67 vs. 74–82) and IP (885–951 vs. 976–1078); from *A. nymindegabicus* in fD (46–48 vs. 30), the longer L (59–68 vs. 48–58), AL (43–50 vs. 24–35), Ta I (49–52 vs. 40–48), IP (885–951 vs. 804–884), shorter PW (35–37 vs. 40–46) and fn II–III (12 vs. 10); from *A. penelopae* in the shorter PL (28–36 vs. 38–40), longer Ta I (49–52 vs. 42–48), Cx I (51–57 vs. 44–50), Cx II (58–67 vs. 44–54), Ta III (43–46 vs. 38–40), IP (885–951 vs. 832–872) and fD (46–48 vs. 38) and from *A. welbourni* in fD (46–48 vs. 51–58), the shorter AW (35–38 vs. 54–60), PW

(35–37 vs. 72–80), AL (43–50 vs. 52–70), PL (28–36 vs. 55–67), L (59–68 vs. 78–88), and longer PSE (54–62 vs. 38–47).

***Abrolophus aitapensis* (Southcott, 1948)**

This species was known from Papua-New Guinea, Bali and Lombok (Indonesia), Macao (China), Madagascar and Vietnam (Southcott 1948, Haitlinger 1987a, b, 2006b, c, 2011a). *A. aitapensis* was mentioned also from Guadeloupe (Haitlinger 2011b), but it was mistake determined. *A. aitapensis* was not clear described, especially leg setal formula is not mentioned and special setae solenidia, eupathidia, famuli and microsetae on figures are invisible (Saboori *et al*. 2012). Measurements were given only for holotype from Papua-New Guinea. Leg setal formula. Leg I: Ta 1ω, 2ζ, 1ε, 1Cp, 22, Ti 2φ, 1κ, 13, Ge 1σ, 1κ, 11, Tf 8, Bf 4, Tr 2, Cx 1. Leg II: Ta 1ω, 2ζ, 1Cp, 20, Ti 2φ, 13, Ge 1σ, 1κ, 9, Tf 5, Bf 4, Tr 2, Cx 1. Leg III: Ta 1ζ, 18, Ti 1φ, 13, Ge 1σ, 9, Tf 5, Bf 4, Tr 2, Cx 1.

Key to species of *Abrolophus* with comb-like seta on palptarsus of the World

1. Palpfemur with projection 2
— Palpfemur without projection 12

2. Palptarsus with at least two barbed setae 3
— Palptarsus without such setae 6

3. AL > 58, GL > 160 . . . . . ***A. anzelmi*** Haitlinger & Łupicki, 2013
— AL < 50, GL < 140 4

4. AL 28, fD 35, *bs* 23, GL 92 . . . . . ***A. marinensis*** Haitlinger, 2007
— AL > 38, fD > 40, *bs* > 28, GL > 100 5

5. Ta I 64, Ta II 56, Ta III 62, Prd (W) (6) . . . ***A. crimensis*** Haitlinger, 2008
— Ta I 52–59, Ta II 44–50, Ta III 50–54, Prd (W) (3) . . . . . ***A. petanovicae*** Saboori, Šundić & Pešić, 2012

6. Ti III 56–68 . . . . . ***A. bohdani*** (Haitlinger, 2003)
— Ti III > 80 7

7. AL 68–84 8
— AL < 64 9

8. ASE 44–54, PSE 68–78, ISD 56–64, *1a* 72–88, GL 162–180. . . . . ***A. longicollis*** (Oudemans, 1910)
— ASE 60–66, PSE 90–92, ISD 44, *1a* 48–50, GL 134–140 . . . . . ***A. humberti*** (Haitlinger, 1996)

9. Cheliceral base striated . . . . . .10.
— Cheliceral base not striated 11

10. Cheliceral base partly striated, IP 1056–1150 . . ***A. unimiri*** Haitlinger, 2006
— Cheliceral base entirely striated, IP 1158–1234. .***A. benoni*** (Haitlinger, 2002)

11. L 60–80, fD 42–44 . . . . . ***A. quisquiliarus*** (Hermann, 1804)
Syn. ***H. pseudolongicollis*** Haitlinger, 1987,
A. montenegrinus Saboori, Šundić & Pešić, 2012
— L 52, fD 34 . . . . . ***A. khanjani*** (Haitlinger & Saboori, 1996)

12. Palpal odontus with two accessory claws. . ***A. mortenseni*** (Southcott, 1994)
— Palpal odontus with one accessory claw. 13

13. Cheliceral bases longitudinally striated. 14
— Cheliceral base not striated 15

14. L/W 1.14, fD 45, palpfemoral setae nude. . . . . ***A. tonsor*** Southcott, 1996
— L/W 1.03, fD 52, palpfemoral setae weakly barbed. . . . . .
. . . . . .***A. iraninejadi*** Saboori & Hajnqanbar, 2000

15. AW 54–60 . . . . . ***A. welbourni*** Yao, Snider J. & Snider R, 2000
— AW < 50. 16

16. Ti III 74–8 . . . . . .***A. mirabelae*** Haitlinger, 2007
— Ti III < 72 . . . . . .17.

17. fD 30 . . . . . ***A. nymindegabicus*** Haitlinger, 2008
— fD > 34. 18

18. Ta I 49–52, Ta III 43–46 . . . . . .***A. karamani*** sp. nov.
— Ta I < 49, Ta III < 42 19

19. GL 92–104. . . . . .***A. penelopae*** Haitlinger, 2005
— GL < 90 20

20. fD 46–47, fn behind coxae III < 20 . . . . .***A. aitapensis*** (Southcott, 1948)
— fD 40, fn behind coxae III > 20 . . . . .***A. basumtwiensis*** Haitlinger, 2006

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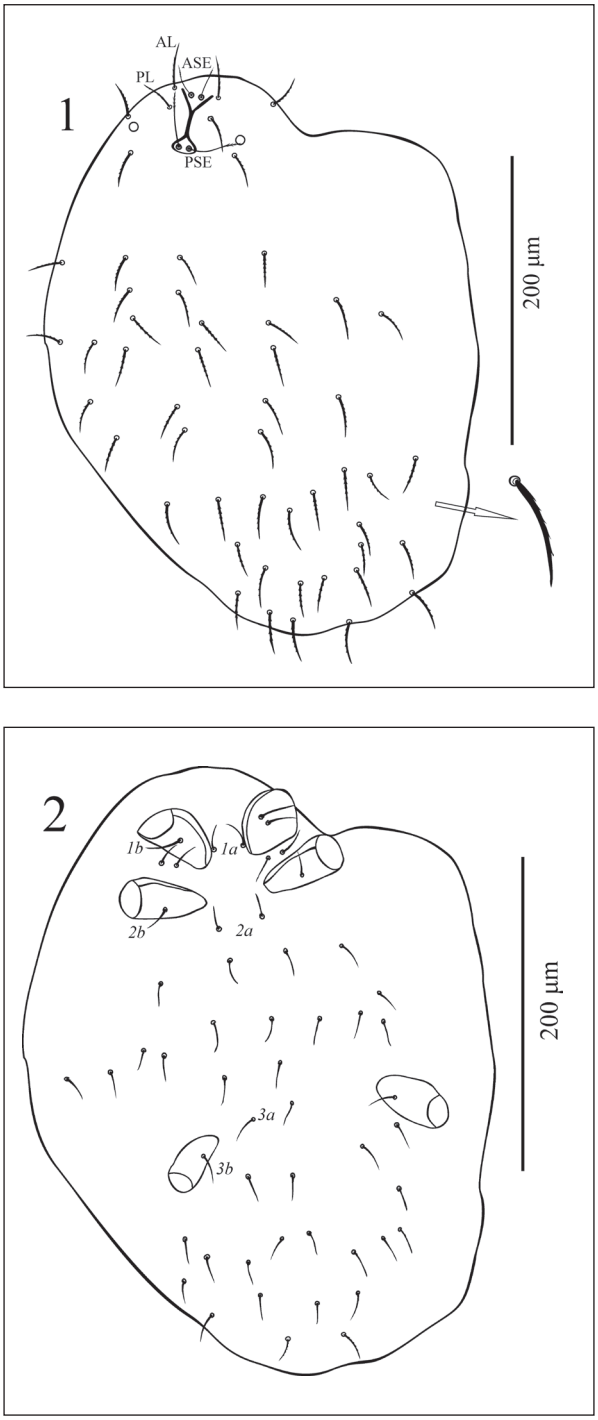
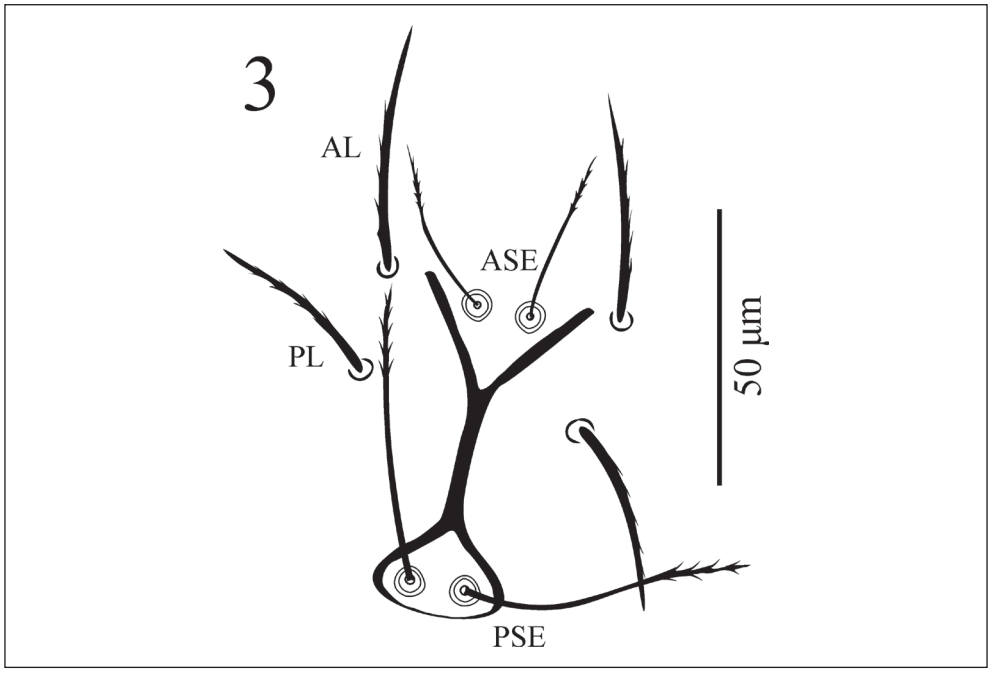
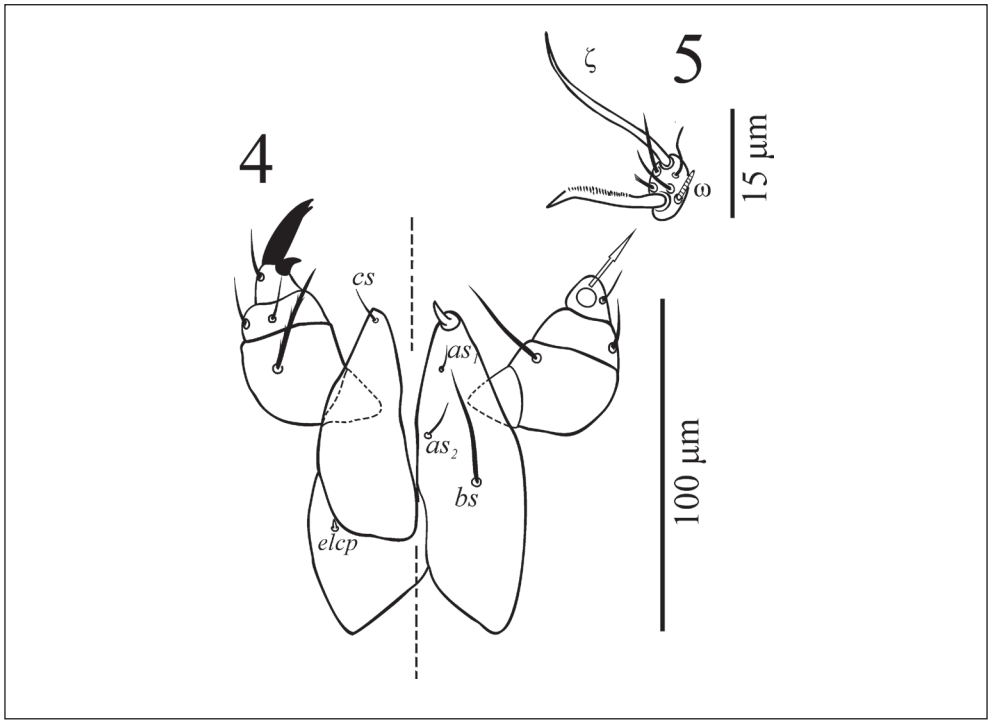
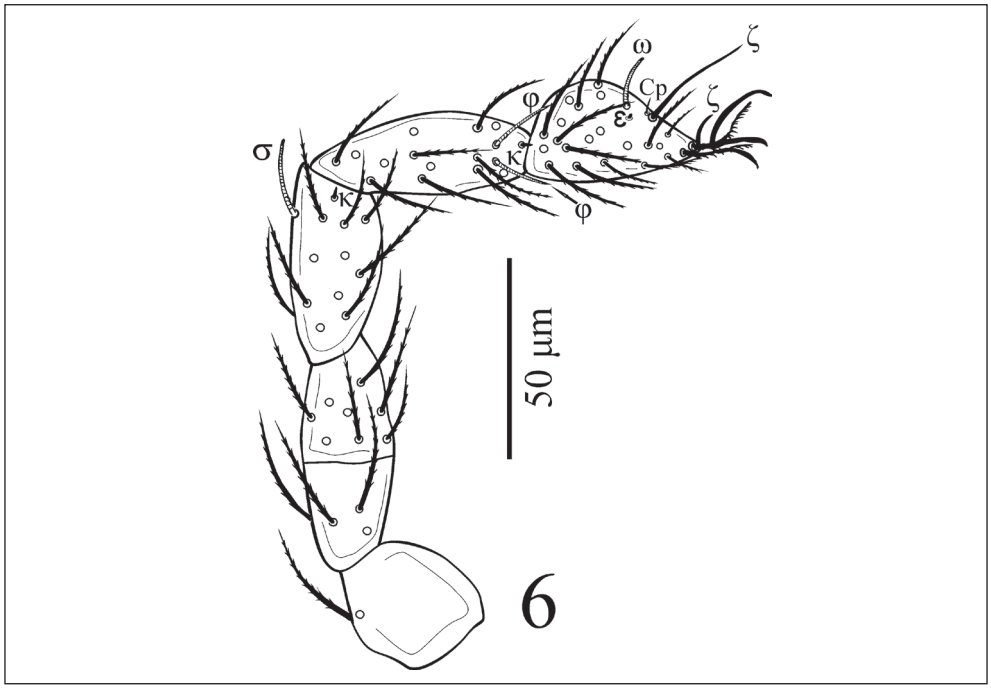


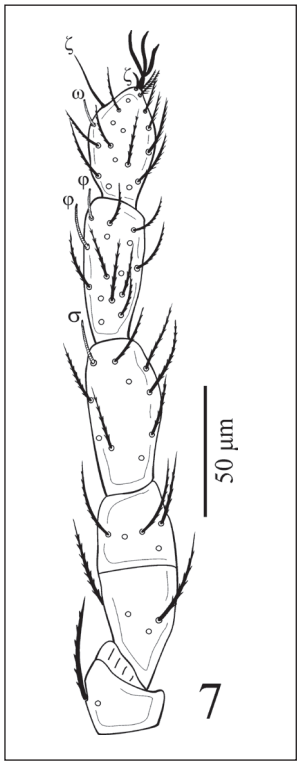
FIGURES 1–2. *Abrolophus karamani* sp. nov. (1) idiosoma, dorsal view; (2) idiosoma, ventral view.

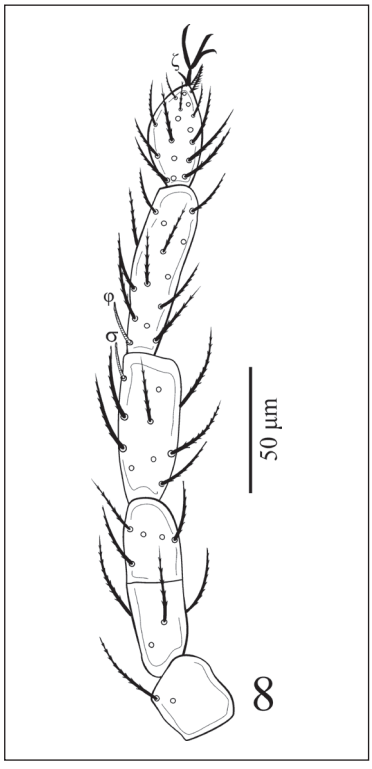




FIGURES 3–5. *Abrolophus karamani* sp. nov. (3) Scutum (holotype — left picture; paratype — right picture); (4) gnathosoma; (5) palptarsus.







FIGURES 6–8. *Abrolophus karamani* sp. nov. (6) leg I; (7) leg II; (8) leg III.

TABLE 1. Metric data for *Abrolophus karamani* sp. nov.

Character	H	P	P	P	P	Range
IL	468	422	365	626	455	365–626
IW	346	257	250	354	324	250–346
L	60	65	60	68	59	59–68
W	50	46	52	49	47	46–52
AW	37	35	35	38	38	35–38
PW	35	35	35	37	37	35–37
ISD	45	44	42	42	45	42–45
AP	20	18	18	19	21	18–21
AL	43	43	44	50	44	43–50
PL	30	30	32	36	28	28–36
ASE	26	24	28	28	—	24–28
PSE	58	54	62	57	—	54–62
AA	11	9	9	11	11	9–11
SB	11	9	9	11	9	9–11
GL	94	—	88	99	95	88–99
DS	28–35	28–37	25–34	29–36	28–38	25–38
PsFd	38	—	29	39	30	29–39
PsFv	36	—	36	39	33	33–39
PaFe (L)	28	—	25	27	27	25–28
PaFe (W)	30	—	27	32	29	27–32
PaGe (L)	9	—	8	9	10	8–10
PaGe (W)	25	—	23	25	25	23–25
1a	27	28	29	32	31	27–32
2a	19	20	-	21	19	19–21
3a	26	26	21	-	-	21–26
1b	38	34	31	36	33	31–38
2b	25	22	23	22	22	22–25
3b	24	23	21	26	21	21–26
bs	33	—	36	41	32	32–41
cs	27	—	29	23	20	20–29
as_1	8	—	11	8	—	8–11
as_2	16	—	14	17	—	14–17
OD	19	—	18	17	19	17–19
ω_1	23	24	24	26	23	23–26
elcp	5	—	5	4	4	4–5
Ta I	50	51	50	52	49	49–52
Ti I	51	52	52	57	49	49–57
Ge I	53	53	47	50	58	47–58
Tf I	31	29	27	30	30	27–31
Bf I	39	38	35	39	40	35–40

Character	H	P	P	P	P	Range
Tr I	29	30	25	33	26	25–33
Cx I	57	56	51	56	53	51–57
Ta II	44	45	46	44	42	42–46
Ti II	51	50	48	51	46	46–51
Ge II	47	48	44	48	49	44–49
Tf II	25	26	24	25	30	24–30
Bf II	35	31	29	34	37	29–37
Tr II	31	29	32	30	31	29–32
Cx II	58	63	61	67	60	58–67
Ta III	44	45	43	46	46	43–46
Ti III	63	67	61	63	62	61–67
Ge III	52	58	52	58	57	52–58
Tf III	27	30	29	34	29	27–34
Bf III	39	40	37	37	39	37–40
Tr III	34	30	33	36	32	30–36
Cx III	58	60	59	61	58	58–61
Leg I	310	309	287	317	305	287–317
Leg II	291	292	284	299	295	284–299
Leg III	317	330	314	335	323	314–335
IP	918	931	885	951	923	885–951