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On the High Altitude Pseudoscorpions (Arachnida: Pseudoscorpionida) in the Old World

Petar BERON

Order Pseudoscorpionida in the World includes about 3000 species of ca. 435 living genera (429 in HARVEY, 1990). According to the latest revision of HARVEY (1992), the families are 24. Our analysis of all pseudoscorpions in the Old World found over 2200 m shows, that this altitude is reached by 158 species belonging to at least 66 genera and 16 families (Table 1).

Table 1
Genera of Pseudoscorpions in the Old World (including Australia, New Zealand, New Caledonia and St. Helene) living at or above 2200 m

Families	Genera World	Genera > 2000 m	Genera Old World	Genera in the Old World >2200 m	>3000 m	> 4000 m
Chthoniidae	30	7	19	5	4	0
Lechytiidae	1	1	1	1	1	0
Tridenchthoniidae	16	4	9	4	3	0
Geogarypidae	3	3	3	2	1	0
Olpiidae	51	12	29	5	3	0
Gymnobisiidae	4	1	3	1	1	0
Ideoroncidae	9	1	6	1	1	0
Hyidae	4	1	1	1	1	1
Neobisiidae	36	5	21	1	0	0
Syarinidae	14	1	1	1	0	0
Cheiridiidae	6	2	6	2	2	0
Sternophoridae	3	1	1	1	0	0
Atemnidae	20	6	17	6	2	0
Chernetidae	110	14	53	11	8	1
Cheliferidae	58	13	43	9	4	1
Withiidae	30	4	24	4	3	0

Only small number of pseudoscorpions live in the European mountains higher than 2000 m: 2 in the Pyrenees, 1 in Sierra Nevada, 6 in the Alps, 1 in the Apennines, 2 in the mountains of Balkan Peninsula, 12 in Caucasus. Only 4 species reach or live higher than 3000 m: *Neobisium jugorum* L. Koch (Alps, 3600 m), *N. nivale* Beier (Sierra Nevada, 3481 m), *N. anatolicum* Beier

(Caucasus, 3000 m). The only known dweller of our highest summits *Neobisium carcinoides* Hermann also goes as high as 3000 m in the Alps. Obviously, the members of *Neobisium* are monopolists on the highest parts of European mountains. Within the belt 2000-3000 m in Europe (incl. Caucasus) live also some species belonging to the genera *Chthonius* (*Ch. tetrachelatus* Preyssler in Caucasus up to 2500 m, in Iran up to 2900 m), *Roncus* (*R. microphthalmus* Daday up to 2200 m in Caucasus), *Chernes* (*Ch. montigenus* Simon up to 2740 m), from the genus *Neobisium* also *N. bernardi* Vachon (up to 2800 m), *N. delphinaticum* Beier (up to 2850 m), *N. noricum* Beier (up to 2500 m), *N. dolomiticum* Beier (up to 2400 m), etc.

The studies of Tullgren, Beier, Mahnert, Redikorzev and our own collections from Kenya, Tanzania and Uganda, have shown, that in the East and Central African mountains live at or above 2200 m at least 26 species of Pseudoscorpionida. At least 13 of them reach 3000 m, 4 - 3500 m and only *Titanatemnus palmquisti* is known to live above 4000 m.

At least 12 species of Pseudoscorpionida, belonging to eight families, have been recorded from Central Asia (above 2200 m), including 11 above 3000 m and four above 3500 m. The champions are *Bisetocreagris kaznakovi* (Redikorzev) - 4810 m (Neobisiidae, Tibet), *Dactylochelifer brachialis* Beier (4200 m, Karakorum), *Gobichelifer chelanops* (Redikorzev) (3650 m, Karakorum) and "*Chelifer*" *baltistanus* di Caporiacco (3950 m, Karakorum) (all three belonging to Cheliferidae).

In the Himalaya, over 2200 m have been recorded 29 species of Pseudoscorpionida, over 3000 m - 17, over 3500 m - eleven and over 4000 m - three (*Stenohya martensi* Schawaller - 4700 m, *Orochernes nepalensis* Beier and *Dactylochelifer macrotuberculatus* Krumpal, 4000 m, all three from Nepal). The species above 2200 m belong to 20 genera and 11 families.

The high altitude pseudoscorpions in South and North America belong to the families Chthoniidae (*Austrochthonius*), Pseudogarypidae (*Pseudogarypus*), Olpiidae (*Olpiolum*, *Progarypus*, *Serianus*, *Stenolpiodes*, *Stenolpium*), Cheliferidae (*Parachelifer*, *Haplochelifer*, *Dactylochelifer*, *Hysterochelifer*), Chernetidae (*Lustrochernes*, *Parachernes*) and Withiidae (*Parawithius*). The families Chthoniidae, Olpiidae, Cheliferidae, Chernetidae and Withiidae are common to the Old World. Pseudogarypidae occurs in North and South America and in Australia. None of the species and only two genera of Cheliferidae (*Hysterochelifer* and *Dactylochelifer*) are shared with the oreal of the Old World.

Out of the remaining families, represented in the high altitude fauna of the Old World, Lechytiidae, Tridenchthoniidae, Geogarypidae, Ideoroncidae, Syarinidae, Cheiridiidae and Sternophoridae are represented in the Americas, but are not known there above 2200 m. Hyidae do not live in the Western Hemisphere. Garypidae reach high altitude in South America, but not in the Old World.

Table 2

Species of Pseudoscorpions living at or above 2200 m in Europe, Central Asia, Himalaya and Tropical Africa

Families and genera	Europe	Central Asia	Himalaya	Tropical Africa
1	2	3	4	5
Chthoniidae	**3**	**1**	**2**	**5**
Centrochthonius	0	1	0	0
Chthonius	3	0	0	0
Lagynochthonius	0	0	1	0
Tyrannochthonius	0	0	1	5
Lechytiidae	**0**	**0**	**1**	**1**
Lechytia	0	0	1	1
Tridenchthoniidae	**0**	**0**	**1**	**5**
Compsaditha	0	0	0	2
Ditha	0	0	1	0
Pycnodithella	0	0	0	1
Verrucadithella	0	0	0	2
Geogarypidae	**0**	**2**	**2**	**4**
Afrogarypus	0	0	0	4
Geogarypus	0	2	2	0
Olpiidae	**0**	**2**	**1**	**1**
Calocheiridius	0	0	1	1
Garypinus	0	1	0	0
Olpium	0	1	0	0
Ideoroncidae	**0**	**0**	**0**	**1**
Negroroncus	0	0	0	1
Hyidae	**0**	**0**	**4**	**0**
Stenohya	0	0	4	0
(syn. *Laevigatocreagris*)	0	0	1	0
Neobisiidae	**17**	**2**	**2**	**1(2)**
Bisetocreagris	0	2	1	0
Microbisium	0	0	0	1
Neobisium	16	0	0	1(2)
Nepalobisium	0	0	1	0
Roncus	1	0	0	0
Syarinidae	**0**	**0**	**0**	**1**
Ideoblothrus	0	0	0	1
Cheiridiidae	**0**	**0**	**2**	**2**
Apocheiridium	0	0	1	1
Cheiridium	0	0	1	0

1	2	3	4	5
Cryptocheiridium	0	0	0	1
Atemnidae	**0**	**1**	**2**	**7**
Atemnus	0	1	2	0
Cyclatemnus	0	0	0	3
Micratemnus	0	0	0	1
Paratemnoides	0	0	0	1
Titanatemnus	0	0	0	2
Cheliferidae	**0**	**6**	**3**	**4**
Dactylochelifer	0	5	1	0
Gobichelifer	0	1	0	0
Hansenius	0	0	0	1
Chelifer	0	0	0	1
Hysterochelifer	0	0	1	0
Lophochernes	0	0	1	0
Microchelifer	0	0	0	2
Chernetidae	**1**	**4**	**9**	**14**
Alochernes	1	1	0	0
Caffrowithius	0	0	0	5
Ceriochernes	0	0	3	0
Dendrochernes	0	1	1	0
Lasiochernes	0	0	0	1
Lamprochernes	0	0	1	0
Megachernes	0	1	3	0
Nudochernes	0	0	0	8
Orochernes	0	0	1	0
Pselaphochernes	0	1	0	0
Withiidae	**0**	**0**	**1**	**7**
Ectromachernes	0	0	0	1
Stenowithius	0	0	0	1
Trichotowithius	0	0	0	2
Withius	0	0	1	3

Pseudoscorpionida in the Old World, known at or above 2200 m

Order PSEUDOSCORPIONIDA - up to ? 5000 m (Nepal)

Chthoniidae - up to 3650 m (Nepal)

Afrochthonius Beier - up to 2590 m (*A. brincki* Beier, Lesotho), 2500 m (*A. ceylonicus* Beier, Sri Lanka)

Centrochthonius Beier - up to 3650 m (*C. kozlovi* Redikorzev, Nepal, Tibet)

Chthonius C. L. Koch - up to 3030 m (*Ch. hispanus* Beier, Sierra Nevada), 2900 m (*Ch. tetrachelatus* Preyssler, Iran, Elburs; 2500 m, Caucasus), 2400 m (*Ch. dacnodes* Navas, Spain)

Lagynochthonius Beier - up to 3100 m (*L. himalayensis* Morikawa, Nepal),

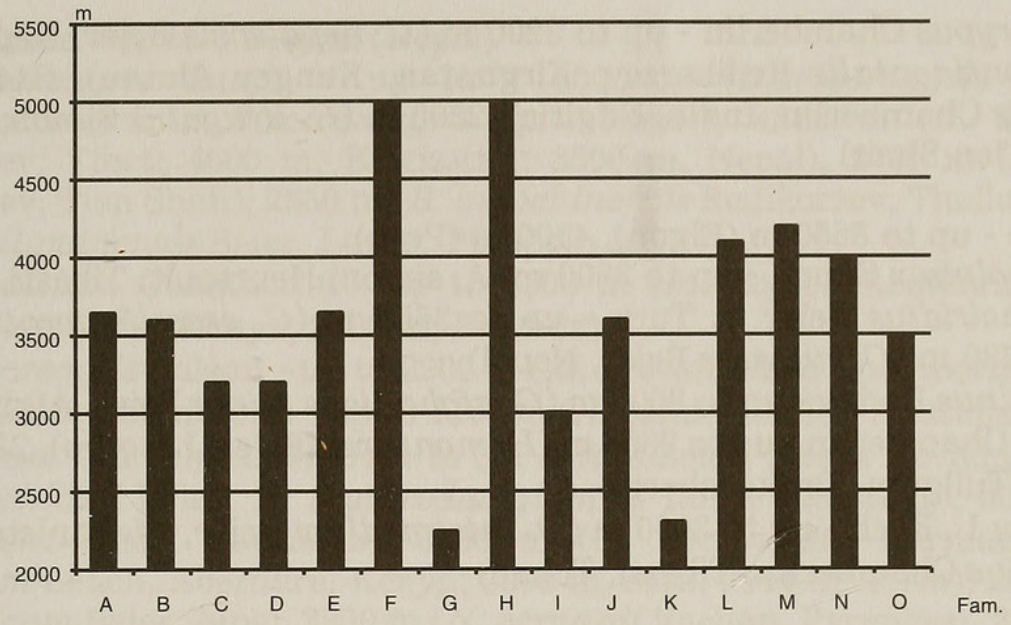

Fig. 1. Altitudinal distribution of Pseudoscorpionida living at and above 2200 m in the Old World. A - Chthoniidae (up to 3650 m); B - Lechytiidae (up to 3600 m); C - Tridenchthoniidae (up to 3200 m); D - Geogarypidae (up to 3200 m); E - Olpiidae (up to 3650 m); F - Hyidae (up to 5000 m); G - Ideoroncidae (up to 2250 m); H - Neobisidae (up to 5000 m); I - Syarinidae (up to 3000 m); J - Cheiridiidae (up to 3600 m); K - Sternophoridae (up to 2300 m); L - Atemnidae (up to 4100 m); M - Cheliferidae (up to 4200 m); N - Chernetidae (up to 4000 m); O - Withiidae (up to 3500 m)

2400 m (*L. tonkinensis* Beier, Vietnam; 2300 m, Thailand), 2400 m (*L. annamensis* Beier, Vietnam)

Tyrannochthonius Chamberlin - up to 3500 m (*T. rahmi* Beier, Nepal; *T. robustus* Beier, Sichuan, China), 3300 m (*T. brevimanus* Beier, Elgon), 3300 m (*T. meneghettii* di Caporiacco = *T. holmi* Beier, Elgon), 3025 m (*T. wittei* Beier, Kivu), 2800 m (*T. sokolovi* Redikorzev, Kenya; 2780 m, Kivu), 2550 m (*T. pachythorax* Redikorzev, Thailand), 2350 m (*T. elegans* Beier, Kivu)

Lechytiidae - up to 3600 m (Nepal)

Lechytia Balzan - up to 3600 m (*L. himalayana* Beier, Nepal), 2900 m (*L. maxima* Beier, Kenya)

Tridenchthoniidae - up to 3200 m (Kenya)

Compsaditha Chamberlin - up to 2300 m (*C. basilewskyi* Beier, Kenya), 2250 m (*C. congica* Beier, Kivu)

Verrucadithella Beier - up to 3200 m (*V. dilatimana* Redikorzev, Kenya), 2950 m (*V. jeanneli* Beier, Elgon)

Pycnodithella Beier - up to 3000 m (*P. abyssinica* Beier, Ethiopia)

Ditha Chamberlin - up to 3000 m (*D. proxima* Beier, Nepal), 2500 m (*D. tonkinensis* Beier, Vietnam)

Geogarypidae - up to 3200 m (Nepal, Kivu)

Afrogarypus Beier - up to 3200 m (*A. intermedius* Beier, Kivu), 2900 m (*A. monticola* Beier, Kenya), 2900 m (*A. zonatus* Beier, Kivu), 2200 m (*A. basilewskyi* Beier, Kenya)

Geogarypus Chamberlin - up to 3200 m (*G. nepalensis* Beier, Nepal), 3000 m (*G. continentalis* Redikorzev, Kirgizstan, Kungey Alatau), 2440 m (*G. angulatus* Chamberlin, India, Nilgiris), 2300 m (*G. irrugatus* Simon, Bhutan; 2200 m, Tien Shan)

Olpiidae - up to 3650 m (Elgon), 4100 m (Peru)

Amblyolpium Simon - up to 3300 m (A. simoni Heurtault, Tibesti, Tchad)

Calocheiridius Beier et Turk - up to 3650 m (*C. crassifemoratus* Beier, Elgon), 2730 m (*C. sulcatus* Beier, Nepal)

Garypinus Daday - up to 3000 m (*G. afghanicus minor* Beier, Afghanistan)

Horus Chamberlin - up to 2350 m (*H. montanus* Beier, Lesotho), 2318 m (*H. obscurus* Tullgren, Drakensberg)

Olpium L. Koch - up to 3000 m (*O. intermedium* Beier, Afghanistan), 2800 m (*O. tenue* Chamberlin, Tibesti, Tchad)

Hyidae - up to ? 5000 m (Nepal)

Stenohya Beier (syn. *Levigatocreagris* Curčić) - up to 5000 m (*Stenohya* sp., sub "*Levigatocreagris / Bisetocreagris* sp.", Nepal), 4700 m (*S. martensi* Schawaller, Nepal), 3500 m (*S. gruberi* Curčić, Nepal), 2700 m (*S. kashmirensis* Schawaller, Kashmir), 2500 m (*S. hamatus* Leclerc et Mahnert, Thailand)

Gymnobisiidae - up to 3203 m (South Africa)

Gymnobisium Beier - up to 3203 m (*G. quadrispinosum* Tullgren, South Africa)

Ideoroncidae - up to 2250 m (Kenya)

Negroroncus Beier - up to 2250 m (*N. silvicola* Mahnert, Kenya)

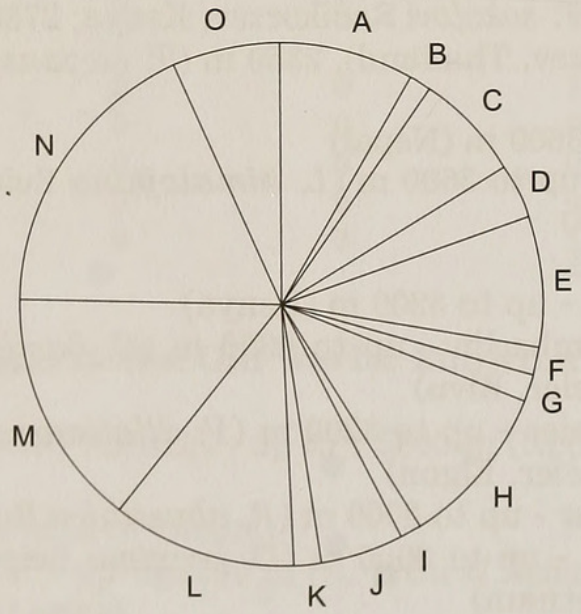

Fig. 2. Genera of Pseudoscorpionida living at or above 2200 m in the Old World. A - Chthoniidae (5); B - Lechytiidae (1); C - Tridenchthoniidae (4); D - Geogarypidae (2); E - Olpiidae (5); F - Hyidae (1); G - Ideoroncidae (1); H - Neobisiidae (6); I - Syarinidae (1); J - Cheiridiidae (3); K - Sternophoridae (1); L - Atemnidae (7); M - Cheliferidae (9); N - Chernetidae (11); O - Withiidae (4)

Neobisiidae - up to ? 5000 m (Nepal)

Bisetocreagris Curčić - up to ? 5000 m (*Bisetocreagris* sp., sub "*Levigatocreagris / Bisetocreagris* sp.", Nepal), 4810 m (*B. kaznakovi* Redikorzev, Tibet; 4000 m, Kirgizstan; 3600 m, Nepal), 2700 m (*B. tenuis* Redikorzev, Tien Shan), 2550 m (*B. indochinensis* Redikorzev, Thailand), 2400 m (*B. philippinensis* Beier, Luzon, Philippin Is.)

Microbisium Chamberlin - up to 3300 m (*M. dogieli* Redikorzev = *M. perpusillum* Beier, Kenya; 2300 m, Rwanda)

Microcreagris Balzan - up to 2200 m (*M. brevidigitata* Chamberlin, Japan)

Neobisium Chamberlin - up to 4100 m (*N. alticola* Beier, Anatolia), 3600 m (*N. jugorum* L. Koch, Alps), 3481 m (*N. nivale* Beier, Sierra Nevada), 3200 m (*N. kobachidzei* Beier, *N. erythrodactylum* L. Koch, Caucasus), 3000 m (*N. anatolicum* Beier, Caucasus), 3203 m (*N. carcinoides* Hermann = *N. muscorum* Leach, Aberdare, Kenya; 3000 m, Alps; 2914 m, Pirin), 2850 m (*N. delfinaticum* Beier, Alps), 2800 m (*N. bernardi* Vachon, Pyrenees), 2500 m (*N. crassifemoratum* Beier, Caucasus; *N. carpaticum* Beier, Carpathes; *N. noricum* Beier, Alps; *N. fuscimanum* C. L. Koch, Caucasus; *N. validum* C. L. Koch, Caucasus; *N. labinskyi* Beier, Caucasus), 2400 m (*N. dolomiticum* Beier, Dolomiti), 2200 m (*N. ischyrum* Beier, Dolomiti)

Nepalobisium Beier - up to 3150 m (*N. franzi* Beier, Nepal)

Roncus Beier - up to 2200 m (*R. microphthalmus* Daday, Caucasus)

Syarinidae - up to 3000 m (Japan)

"*Orideobisium*" Kishida (nomen nudum) - up to 3000 m ("*O. takanoanum*" Kishida, nomen nudum, Japan)

Ideoblothrus Balzan - up to 2200 m (*I. leleupi* Beier, Kivu, sub "*Ideobisium*")

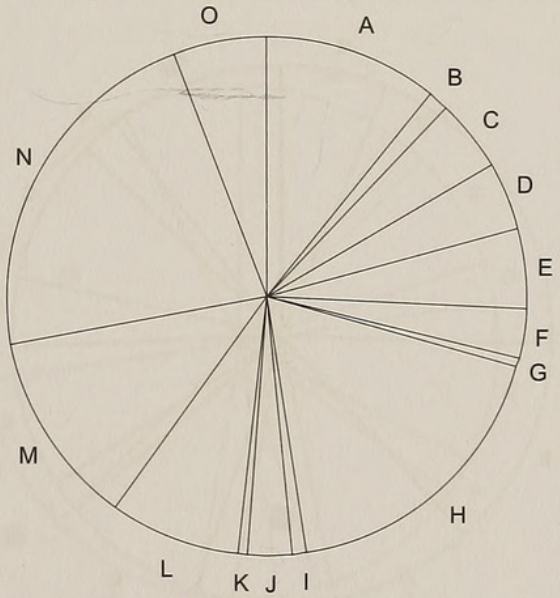

Fig. 3. Species of Pseudoscorpionida living at or above 2200 m in the Old World. A - Chthoniidae (15); B - Lechytiidae (2); C - Tridenchthoniidae (6); D - Geogarypidae (6); E - Olpiidae (7); F - Hyidae (4); G - Ideoroncidae (1); H - Neobisiidae (25); I - Syarinidae (1); J - Cheiridiidae (4); K - Sternophoridae (1); L - Atemnidae (11); M - Cheliferidae (17); N - Chernetidae (31); O - Withiidae (8)

Cheiridiidae - up to 3600 m (Nepal)

Apocheiridium Chamberlin - up to 3600 m (*A. rossicum* Redikorzev = *A. nepalense* Curčić, Nepal), 2300 m (*A. pallidum* Mahnert, Kenya)

Cheiridium Menge - up to 2800 m (*Ch. nepalense* Beier, Nepal)

Cryptocheiridium Chamberlin - up to 3200 m (*C. elgonense* Beier, Elgon), 2250 m (*C. kivuense* Beier, Kivu)

Sternophoridae - up to 2300 m (New Guinea)

Afrosternophorus Beier - up to 2300 m (*A. cavernae* Beier, Papua New Guinea)

Atemnidae - up to 4100 m (Kilimanjaro)

Anatemnus Beier - up to 2400 m (*A. angustus* Redikorzev, Vietnam)

Atemnus Canestrini - up to 3000 m (*A. politus* Simon, Kirgizstan; 2500 m, Karakorum; 2400 m, Kashmir; 2200 m, Nepal), 2300 m (*A. turkestanicus* Redikorzev, Bhutan)

Cyclatemnus Beier - up to 3000 m (*C. minor* Beier, Ethiopia), 2350 m (*C. centralis* Beier, Rwanda; *C. fallax* Beier, Elgon), 2220 m (*C. robustus* Beier, Kivu)

Micratemnus Beier - up to 2200 m (*M. sulcatus* Beier, Kenya)

Oratemnus Beier - up to 2200 m (*O. indicus* With, India)

Paratemnoides Harvey (pro *Paratemnus* Beier) - up to 3050 m (*Paratemnoides* sp., Kenya)

Stenatemnus Beier - up to 2300 m (*S. brincki* Beier, India)

Titanatemnus Beier - up to 4100 m (*T. palmquisti* Tullgren = *T. montanus* Beier, Tanzania, Kenya), 2900 m (*T. chappuisi* Beier, Elgon), 2780 m (*T. sjostedti* Tullgren, Kivu)

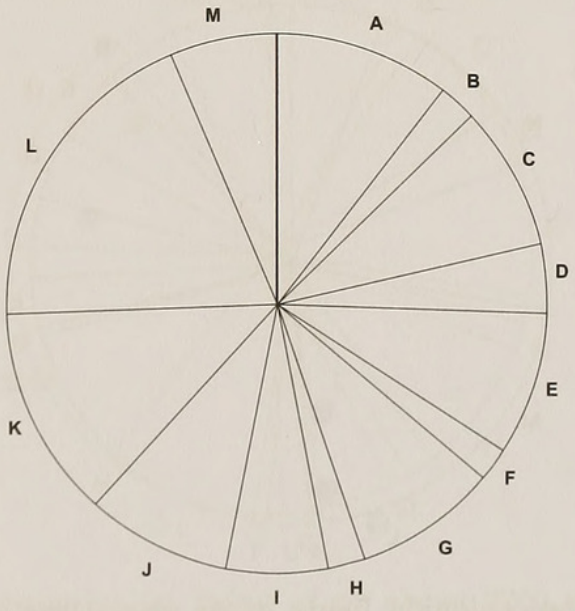

Fig. 4. Genera of Pseudoscorpionida living at or above 2500 m in the Old World. A - Chthoniidae (5); B - Lechytiidae (1); C - Tridenchthoniidae (4); D - Geogarypidae (2); E - Olpiidae (4); F - Hyidae (1); G - Neobisiidae (4); H - Syarinidae (1); I - Cheiridiidae (3); J - Atemnidae (4); K - Cheliferidae (6); L - Chernetidae (9); M - Withiidae (3)

Cheliferidae - up to 4200 m (Karakorum)

Amaurochelifer Beier - up to 2400 m (*A. annamensis* Beier, Vietnam)

Chelifer Geoffroy - up to 2750 m (*Ch. cancroides* L., Kivu)

"*Chelifer*" - up to 3950 m ("*Ch. baltistanus*" di Caporiacco, Karakorum, nomen dubium)

Dactylochelifer Beier - up to 4200 m (*D. brachialis* Beier, Karakorum), 4000 m (*D. macrotuberculatus* Krumpal, Nepal), 3650 m (*D. popovi* Redikorzev, Tajikistan; 3200 m, Terskey Alatau, Kirgizstan), 2640 m (*D. monticola* Beier, Afghanistan), 2500 m (*D. redikorzevi* Beier, Kazakhstan), 2200 m (*D. vtorovi* Mahnert, Tien Shan; *D. syriacus* Beier, Syria)

Gobichelifer Krumpal - up to 3000 m (*G. semenovi* Redikorzev, Kirgizstan)

Hansenius Chamberlin - up to 2250 m (*H. kilimanjaricus* Beier, Kenya, Kilimanjaro)

Hysterochelifer Chamberlin - up to 3500 m (*H. nepalensis* Beier, Nepal)

Lophochernes Simon - up to 2600 m (*L. indicus* Beier, Nepal)

Microchelifer Beier - up to 2700 m (*M. granulatus* Beier, Kenya), 2300 m (*M. dentatus* Mahnert, Kenya)

Pseudorhacochelifer Beier - up to 2300 m (*P. schurmanni* Beier, La Palma, Canary Is.)

Rhacochelifer Beier - up to 3500 (*Rh.* cf. *subsimilis* Vachon, Tibesti), 2910 m (*Rh. anatolicus* Beier, Turkey)

Chernetidae - up to 4000 m (Nepal)

Allochernes Beier - up to 3200 m (*A. asiaticus* Redikorzev, Terskey Alatau, Kirgizstan; *Allochernes* sp., Kashmir), 2800 m (*A. tropicus* Beier, Sichuan, China), 2600 m (*A. wideri* C. L. Koch, Alps), 2200 m (*A. longipilosus* Mahnert, Tenerife)

Caffrowithius Beier (syn. *Plesiochernes* Vachon) - up to 3300 m (*C. elgonensis* Vachon, Elgon), 3000 m (*C. aethiopicus* Beier, Ethiopia), 2780 m (*C.*

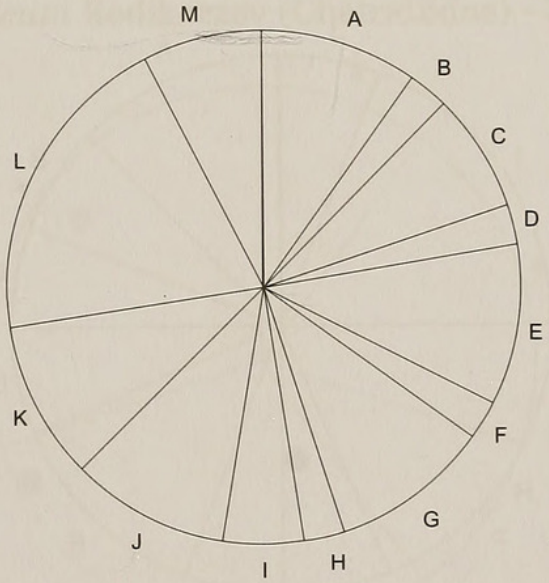

Fig. 5. Genera of Pseudoscorpionida living at or above 3000 m in the Old World. A - Chthoniidae (4); B - Lechytiidae (1); C - Tridenchthoniidae (3); D - Geogarypidae (1); E - Olpiidae (4); F - Hyidae (1); G - Neobisiidae (4); H - Syarinidae (1); I - Cheiridiidae (2); J - Atemnidae (4); K - Cheliferidae (4); L - Chernetidae (8); M - Withiidae (3)

simplex Beier, Kivu), 2300 m (*C. rusticus* Beier, Elgon; *C. calvus* Beier, Aberdare)

Ceriochernes Beier - up to 3200 m (*C. vestitus* Beier, Nepal), 3100 m (*C. nepalensis* Beier, Nepal), 2500 m (*C. martensi* Beier, Nepal)

Dendrochernes Beier - up to 3200 m (*D. cyrneus* L. Koch, Nepal; 2400 m, Kazakhstan)

Lamprochernes Tömösvary - up to 2350 m (*Lamprochernes* sp. ? *savignyi* Simon, Nepal)

Lasiochernes Beier - up to 2200 m (*L. punctiger* Beier, Kivu)

Megachernes Beier - up to 3650 m (*M. himalayensis* Ellingsen, Nepal; 2400 m, Kashmir), 3550 m (*M. soricicola* Beier, Nepal), 2800 m (*M. loebli* Schawaller, Nepal), 2530 m (*M. trautneri* Schawaller, Thailand), 2390 m (*M. afghanicus* Beier, Afghanistan), 2300 m (*M. papuanus* Beier, New Guinea), 2200 m (*M. limatus* Hoff et Parrack, New Guinea)

Nudochernes Beier - up to 3700 m (*N. crassus* Beier, Elgon; 3000 m, Aberdare), 3500 m (*N. montanus* Beier, *N. robustus* Beier, Elgon), 3130 m (*N. longipes* Beier, Mount Kenya), 3025 m (*N. gracilipes* Beier, Kivu), 3000 m (*N. nidicola* Beier, Marakwet, 2470 m, Elgon), 2900 m (*N. leleupi* Beier, Kivu), 2780 m (*N. intermedius* Beier, Kivu), 2750 m (*N. gracilimanus* Mahnert, Mount Kenya), 2600 m (*N. granulatus* Beier, Kilimanjaro), 2200 m (*N. punctiger* Beier, Kivu)

Orochernes Beier - up to 4000 m (*O. nepalensis* Beier, Nepal)

Pselaphochernes Beier - up to 3300 m (*Pselaphochernes* sp.)

Sundochernes Beier - up to 2550 m (*S. novaeguineae* Beier, New Guinea)

Verrucachernes Chamberlin - up to 2200 m (*V. montigenus* Beier, New Guinea)

Withiidae - up to 3500 m (Elgon)

Ectromachernes Beier - up to 3000 m (*E. mirabilis* Beier, Ethiopia)

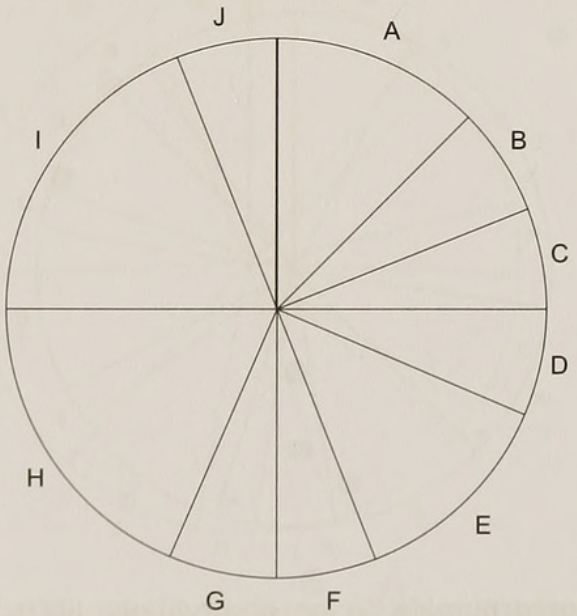

Fig. 6. Genera of Pseudoscorpionida living at or above 3500 m in the Old World. A - Chthoniidae (2); B - Lechytiidae (1); C - Olpiidae (1); D -Hyidae (1); E - Neobisiidae (2); F - Cheiridiidae (1); G - Atemnidae (1); H - Cheliferidae (3); I - Chernetidae (3); J - Withiidae (1)

Stenowithius Beier - up to 2180 m (*S. bayoni* Ellingsen = *S. ugandanus* Beier, Elgon)

Trichotowithius Beier - up to 3000 m (*T. abyssinicus* Beier, Ethiopia), 2400 m (*T. elgonensis* Beier, Elgon)

Withius Kew - up to 3500 m (*W. somalicus* Beier = *Allowithius crassus* Beier, Elgon), 3000 m (*W. abyssinicus* Beier, Ethiopia), 2500 m (*W. nepalensis* Beier, Nepal), 2300 m (*W. lewisi* Beier, Kenya)

Pseudoscorpions living in the Old World at or above 3500 m

Stenohya (= *Levigatocreagris*) / *Bisetocreagris* sp. (Hyidae or Neobisiidae) - ca. 5000 m (Nepal)

Bisetocreagris kaznakovi (Redikorzev) (Neobisiidae) - 4810 m (Tibet)

Stenohya (= *Levigatocreagris*) *martensi* (Schawaller) (Hyidae) - 4700 m (Nepal)

Dactylochelifer brachialis Beier (Cheliferidae) - 4200 m (Karakorum)

Titanatemnus palmquisti (Tullgren) (= *T. montanus* Beier) (Atemnidae) - 4100 m (Kilimanjaro)

Neobisium alticola Beier (Neobisiidae) - 4100 m (Anatolia)

Orochernes nepalensis Beier (Chernetidae) - 4000 m (Nepal)

Dactylochelifer macrotuberculatus Krumpal (Cheliferidae) - 4000 m (Nepal)

"*Chelifer*" *baltistanus* di Caporiacco (Cheliferidae) - 3950 m (Karakorum)

Nudochernes crassus Beier (Chernetidae) - 3700 m (Elgon)

Gobichelifer chelanops (Redikorzev) (Cheliferidae) - 3650 m (Karakorum, Kirgizstan)

Dactylochelifer popovi Redikorzev (Cheliferidae) - 3650 m (Tajikistan)

Calocheiridius crassifemoratus Beier (Olpiidae) - 3650 m (Elgon)

Centrochthonius kozlovi (Redikorzev) (Chthoniidae) - 3650 m (Nepal)

Megachernes himalayensis (Ellingsen) (Chernetidae) - 3650 m (Nepal)

Apocheiridium rossicum Redikorzev (Cheiridiidae) - 3600 m (Nepal)

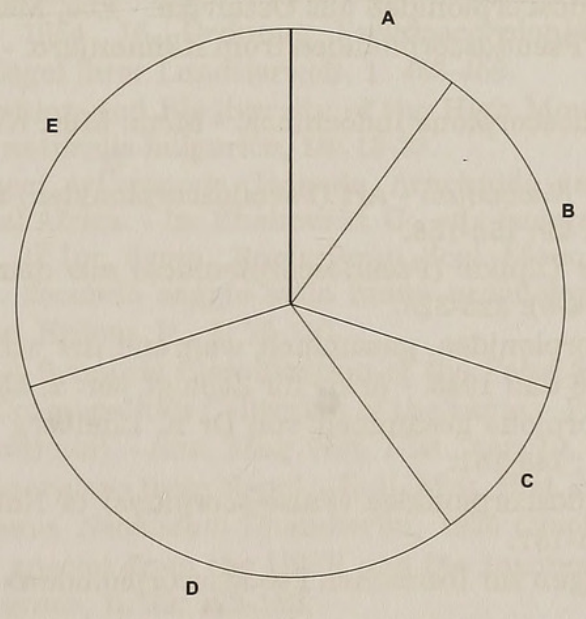

Fig. 7. Genera of Pseudoscorpionida living at or above 4000 m in the Old World. A - Hyidae (1); B - Neobisiidae (2); C - Atemnidae (1); D - Cheliferidae (3); E - Chernetidae (3)

Lechytia himalayensis Beier (Lechytiidae) - 3600 m (Nepal)
Megachernes soricicola Beier (Chernetidae) - 3550 m (Nepal)
Withius somalicus Beier (Withiidae) - 3500 m (Elgon)
Stenohya gruberi (Curčić) (Hyidae) - 3500 m (Nepal)
Tyrannochthonius rahmi Beier (Chthoniidae) - 3500 m (Nepal)
Tyrannochthonius robustus Beier (Chthoniidae) - 3500 m (Sichuan, China)
Hysterochelifer nepalensis Beier (Cheliferidae) - 3500 m (Nepal)
Nudochernes montanus Beier (Chernetidae) - 3500 m (Elgon)
Nudochernes robustus Beier (Chernetidae) - 3500 m (Elgon)
Rhacochelifer cf. *subsimilis* Vachon (Cheliferidae) - 3500 m (Tibesti)

As we can see from this list, from the 25 species 12 are known from Nepal/Tibet, 6 from Elgon/Kilimanjaro, 3 from Karakorum, 1 from Sichuan, 1 from Tajikistan, 1 from Tibesti and 1 from Anatolia. Ten families are represented. Beyond 4000 m we can find only 7 species, and only 1 or 2 to go higher than 4500 m, reaching 5000 m in Nepal.

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Author's address:
Dr Petar Beron
National Museum of Natural History
Tsar Osvoboditel Blvd. 1
1000 Sofia, Bulgaria

Върху високопланинските псевдоскорпиони (Arachnida: Pseudoscorpionida) на Стария свят

Петър БЕРОН

(Р е з ю м е)

От известните около 435 рода псевдоскорпиони в света от 24 семейства, 66 рода и общо 158 вида са познати от Стария свят на височина над 2200 m. Те спадат към 16 семейства: Chthoniidae (17 вида), Lechytiidae (2 вида), Tridenchthoniidae (7 вида), Geogarypidae (8 вида), Olpiidae (8 вида), Hyidae (4 вида), Gymnobisiidae (1 вид), Ideoroncidae (1 вид), Neobisiidae (25 вида), Syarinidae (2 вида), Cheiridiidae (5 вида), Sternophoridae (1 вид), Atemnidae (14 вида), Cheliferidae (18 вида), Chernetidae (37 вида), Withiidae (8 вида). В Европа само 4 вида достигат 3000 m: *Neobisium jugorum* L. Koch (Алпите, 3600 m), *N. nivale* Beier (Сиера Невада, 3481 m), *N. anatolicum* Beier (Кавказ, 3000 m) и *N. carcinoides* Hermann (Алпите, 3000 m, Пирин, 2914 m). В планините на Централна и Източна Африка над 2200 m живеят най-малко 26 вида, от които 13 достигат 3000 m, 4 - 3500 m и само *Titanatemnus palmquisti* Tulgren надминава 4000 m (до 4100 m в Танзания и Кения). В Хималаите неопределен до вид псевдоскорпион от сем. Hyidae или Neobisiidae (juv.) е намерен на височина около 5000 m, която е и максималната за представителите на този разред в света.

В Хималаите над 2200 m са намерени 29 вида псевдоскорпиони, над 3000 m - 17, над 4000 m - 3 (*Stenohya martensi* Schawaller - 4700 m, *Orochernes nepalensis* Beier и *Dactylochelifer macrotuberculatus* Krumpal, 4000 m, всички от Непал). Видовете над 2200 m спадат към 20 рода и 11 семейства. Интересен факт е, че високопланинските псевдоскорпиони в Източна и Централна Африка също спадат към 11 семейства, десет от които са общи за двата района.

От планините на Централна Азия са известни не по-малко от 12 вида псевдоскорпиони от 8 семейства, обитаващи райони над 2200 m, включително 11 вида над 3000 m и 4 над 3500 m. Шампиони са *Bisetocreagris kaznakovi* (Redikorzev) - 4810 m (Neobisiidae, Тибет), *Dactylochelifer brachialis* Beier (4200 m, Каракорум), *Gobichelifer chelanops* (Redikorzev) (3650 m, Каракорум) и *"Chelifer" baltistanus* di Caporiacco (3950 m, Каракорум) (и четирите спадат към сем. Cheliferidae), докато всички европейски псевдоскорпиони над 3000 m принадлежат към сем. Neobisiidae. В Европа никой от многобройните видове Cheliferidae не живее над 2200 m.