

Contributions to the Knowledge of the Quediina (Coleoptera, Staphylinidae, Staphylinini) of China

Part 20. Genus *Quedius* STEPHENS, 1829.
Subgenus *Microsaurus* DEJEAN, 1833. Section 12

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Abstract A key to the species-groups and species of the genus *Quedius*, subgenus *Microsaurus*, is given, including those that are known to occur, or likely to occur, in the People's Republic of China. The species-groups are briefly characterized and discussed, and the species assigned to each of them are listed.

Introduction

The main purpose of this paper is to provide a key to the identification of the species of the subgenus *Microsaurus* that are known to occur in the People's Republic of China. Another goal of the paper is to suggest a natural grouping of these species, while providing an overview of the fauna, with the hope of facilitating the identification and future study of the subgenus. It is understood that some future adjustments may be necessary in the number, scope, and definitions of the species-groups involved, as our knowledge of the Chinese fauna improves.

A few years ago, when I started to study the Chinese fauna of the Quediina, only five species of the subgenus *Microsaurus* (*Q. douglasi*, *Q. kiangsiensis*, *Q. mukuensis*, *Q. przewalskii*, and *Q. szechuanus*) were known from mainland China. At present this number has risen to 60 and there is no doubt that numerous additional species will be added in the near future, since intensive collecting in mainland China continues. This situation is actually characteristic of almost any group of Chinese staphylinids (and many other beetle groups for that matter) that undergo a study, based on recently collected material. It does not exclude even the "large", conspicuous, members of the "*Staphylinus* complex" of which only a fraction of the existing species is known at present, as documented, *e.g.*, by the genus *Miobdelus* SHARP, 1889. The genus at present contains only one species, *M. brevipennis* SHARP, 1889, occurring in Japan; however, at least 14 species occur in mainland China and three in Taiwan, all presumably

new (SMETANA, in preparation). It seems that the species described from China in the past (*e.g.*, by BERNHAUER) were based on specimens obtained by more or less accidental, not targeted, collecting, in easily accessible areas, and therefore represented mostly common, widely distributed species. Once targeted collecting was applied, using a variety of modern collecting methods, particularly at higher mountain elevations, the number of species obtained skyrocketed.

My interest in the *Quediina* of mainland China was a logical extension of my previous work on this group which involved the Himalaya (SMETANA, 1988) and Taiwan (SMETANA, 1995c), since the faunas of these three areas are closely related. The work on Chinese *Quediina* is expected to continue in the future, with the emphasis on other subgenera of *Quediina* (particularly *Raphirus*, of which much material is now available), and on other genera.

In the key, many characters involving both male and female sexual characters are used and very often they are essential for the recognition of the species. All these characters were illustrated in my previous papers dealing with the members of *Microsaurus*; all papers were published in Tokyo, either in the *Bulletin of the National Science Museum* or in *Elytra*. To consult the proper illustrations, the user of the key is referred to these papers; it would be wasteful to repeat all illustrations here.

Key to the Chinese Species of *Microsaurus*

1. First three segments of antenna very short, slightly longer than wide and combined about as long as three following segments combined, outer antennal segments markedly subserrate. Aedeagus as in figs. 2–5 in SMETANA, 1988, 391. Length 10.5–13.0 mm. Himalaya: Uttar Pradesh, Nepal. China: Sichuan, Yunnan. *Q. inquietus* (CHAMPION, 1925)
- First three segments of antenna moderately long to long, distinctly longer than wide and combined longer than three following segments combined, outer antennal segments no more than slightly subserrate. 2
2. Scutellum punctate, or with sculpture consisting of irregular transverse rugae in middle of basal portion. 3
- Scutellum impunctate, smooth. 10
3. Scutellum with sculpture consisting of irregular transverse rugae in middle of basal portion. 4
- Scutellum punctate. 5
4. Surface of elytra between punctures without microsculpture, shiny. Antenna slender, not sexually dimorphic. Aedeagus as in figs. 11–13 in SMETANA, 1988, 393. Length 8.0–12.0 mm. Himalaya: Uttar Pradesh, Nepal, West Bengal. China: Fujian, Guangxi, Shaanxi, Sichuan. Taiwan. *Q. beesoni* CAMERON, 1932
- Surface of elytra between punctures to various extent dull due to variably developed rugulose microsculpture. Antenna sexually dimorphic, robust in male, less

- so in female. Aedoeagus as in figs. 5–7 in SMETANA, 1996 a, 3. Length 8.8–10.5 mm. Sichuan, Yunnan. *Q. acco* SMETANA, 1996 a
5. Antenna robust, incrassate. Aedoeagus and paramere as in figs. 7–9 in SMETANA, 1995 a, 237. Fairly robust species, length 8.5–9.0 mm. Fujian, Jianxi.
 *Q. kiangsiensis* BERNHAUER, 1916
- Antenna more or less slender, not incrassate. Aedoeagus and paramere different. Less robust species. 6
6. Eyes very small and flat, tempora considerably longer than eyes seen from above (ratio range: 1.71–1.96). Apical portion of paramere of aedoeagus lancet-shaped (figs. 13–15, 19–21 in SMETANA, 1999 b, 525, 529). 7
- Eyes moderately large and convex, tempora slightly shorter to somewhat longer than eyes seen from above (ratio range: 0.75–1.15). Apical portion of paramere of aedoeagus of different shape. 8
7. Pronotum about as long as wide, widest at about middle, about equally narrowed both anteriorly and posteriorly. Surface of head and pronotum with microsculpture very finely engraved, therefore appearing rather shiny. Aedoeagus with median lobe slightly widened apically, with attenuated apical portion wider, shorter and more blunt; paramere with lancet-shaped apical portion shorter and less attenuated apically, sensory peg setae less numerous, forming two irregular, longitudinal lateral groups that connect at apex (figs. 14, 15 in SMETANA, 1999 b, 525). Length 7.8–8.2 mm. Sichuan: Jinfu Shan (Jinfu Dong Caves).
 *Q. kralli* SMETANA, 1999 b
- Pronotum slightly wider than long (ratio 1.15), widest at about posterior third, slightly more narrowed anteriorly than posteriorly. Surface of head and pronotum with microsculpture more deeply engraved, therefore appearing less shiny. Aedoeagus with median lobe more distinctly widened apically, with attenuated apical portion narrower, longer and sharper; paramere with lancet-shaped apical portion longer and more attenuated apically, sensory peg setae more numerous, almost entirely covering apical portion of paramere and only basally extended into short lateral group on each side (figs. 20, 21 in SMETANA, 1999 b, 529). Length 7.8–8.1 mm. Guizhou: Anjia Yan Cave, Shen Dong Cave.
 *Q. kishimotoi* SMETANA, 1999 b
8. Legs black with more or less paler tarsi. Elytra and abdominal tergites with piceous-black pubescence. Aedoeagus as in figs. 16–18 in SMETANA, 1996 b, 125. Length 8.2–10.2 mm. Yunnan. *Q. kubani* SMETANA, 1996 b
- Legs rufo-brunneous. Elytra and abdominal tergites with brownish to brownish-piceous pubescence. Aedoeagus different. 9
9. Paramere of aedoeagus with apical portion lancet-shaped, almost entirely covering apical portion of median lobe (figs. 22, 23 in SMETANA, 1996 b, 125). Length 7.7–7.9 mm. Fujian, Hebei. *Q. klapperichi* SMETANA, 1996 b
- Paramere of aedoeagus with apical portion spindle-shaped, not covering apical portion of median lobe (figs. 7, 8 in SMETANA, 1997 d, 458). Length 6.8–9.1 mm.

- Shaanxi (Qin Ling Shan). *Q. schuelkei* SMETANA, 1997 d
10. Abdominal tergite 7 (fifth visible) with whitish apical seam of palisade fringe. 11
 — Abdominal tergite 7 (fifth visible) without whitish apical seam of palisade fringe. 57
11. Punctuation of elytra not uniform, each elytron with three inconspicuous longitudinal rows of three or four coarser punctures. (One female specimen of a species belonging to this species group is at present known from Yunnan).
 *Placidus* Group
 — Punctuation of elytra uniform, without longitudinal rows of coarser punctures. 12
12. Sublateral rows on pronotum each with no more than two punctures, posterior puncture situated before level of large lateral puncture. 13
 — Sublateral rows on pronotum each with two to four punctures, posterior puncture situated at or behind level of large lateral puncture. 28
13. Labial palpus sexually dimorphic: shortened, with apical segment swollen in female (figs. 40, 41 in SMETANA, 1995 c, 42). Elytra red, rather finely punctate. Aedoeagus as in figs. 36–39 in SMETANA, 1995 c, 42. Length 8.2–10.3 mm. South Korea. China: Fujian. Taiwan. *Q. liang* SMETANA, 1995 c
 — Labial palpus not sexually dimorphic. If elytra red, then coarsely punctate. 14
14. Posterior frontal puncture on head situated distinctly closer to posterior margin of head than to postero-medial margin of eye. 15
 — Posterior frontal puncture on head situated distinctly closer to postero-medial margin of eye than to posterior margin of head. 18
15. Punctuation and pubescence of abdominal tergites very fine and dense; surface between punctures with quite fine and dense microsculpture of transverse striae, surface therefore appearing somewhat opaque. Length 9.1 mm. Shaanxi. *Q. douglasi* BERNHAUER, 1929
 — Punctuation and pubescence of abdominal tergites fine, moderately dense; surface between punctures with exceedingly fine and dense microsculpture of transverse striae, surface not appearing opaque. 16
16. Elytra red, coarsely punctate. Male abdominal sternite 6 evenly pubescent. Length 7.8 mm. Russian Republic (Far East: Amur area). Very likely occurring in China. [*Q. koltzei* EPPELSHEIM, 1887]
 — Elytra piceous-black, with suture and sometimes also apical margin slightly, narrowly paler, finely punctate. Male abdominal sternite 6 with small patch of denser pubescence. 17
17. Eyes small, flat, not protruding from lateral contours of head; tempora distinctly longer than eyes seen from above (ratio about 1.25). Basal three segments of antenna rufobrunneous, not appreciably darker than rest of antenna. Aedoeagus as in figs. 44, 45 in SMETANA, 1995 b, 245. Length 8.8 mm. Beijing.
 *Q. mnemon* SMETANA, 1995 b

- Eyes moderately large and convex, slightly protruding from lateral contours of head; tempora slightly longer than eyes seen from above (ratio about 1.15). Basal three segments of antenna piceous-black, distinctly darker than rest of antenna. Aedoeagus as in figs. 26, 27 in SMETANA, 1999 b, 531. Length 7.8–8.0 mm. Hunan (Feihu Dong Cave). *Q. feihuensis* SMETANA, 1999 b
- 18. Temporal puncture situated closer to posterior margin of head than to postero-medial margin of eye. Eyes small to moderately large, tempora at most about as long as eyes seen from above. 19
- Temporal puncture situated closer to postero-medial margin of eye than to posterior margin of head, or about midway. Eyes large, tempora shorter than eyes seen from above. 20
- 19. Head markedly narrowed posteriad behind eyes; eyes moderately long, tempora as long as eyes seen from above, or vaguely longer (ratio 1.13). Male sternite 8 with 3 long setae on each side, with wide and deep medio-apical emargination (fig. 33 in SMETANA, 1995 b, 241). Aedoeagus symmetrical (fig. 36 in SMETANA, 1995 b, 241). Length 7.0–8.8 mm. Yunnan, Sichuan. *Q. otho* SMETANA, 1995 b
- Head parallel-sided behind eyes; eyes small, tempora markedly longer than eyes seen from above (ratio 1.56). Male sternite 8 with 2 long setae on each side, with narrow and shallow medio-apical emargination (fig. 17 in SMETANA, 1999 a, 225). Aedoeagus conspicuously asymmetrical, as in fig. 20 in SMETANA, 1999 a, 225. Length 8.3 mm. Tibet. *Q. turnai* SMETANA, 1999 a
- 20. Aedoeagus conspicuously asymmetrical, underside of paramere with sensory peg setae (figs. 5, 6 in SMETANA, 1996 b, 117; figs. 45, 47 in SMETANA, 1997 d, 467; figs. 32, 34–36, 41, 42 in SMETANA, 1999 a, 231, 233). Smaller species, length not exceeding 7.2 mm. 21
- Aedoeagus symmetrical, underside of paramere without sensory peg setae (figs. 14, 21, 28 in SMETANA, 1996 a, 11, 13, 15). Larger species, length not below 9.0 mm. 24
- 21. Paramere considerably exceeding apex of median lobe; apex of median lobe divided into two unequal lobes (fig. 5 in SMETANA, 1996 b, 117). Larger species with dark appendages. Length 7.2 mm. Sichuan. *Q. szechuanus* BERNHAUER, 1933
- Paramere no more than moderately exceeding apex of median lobe; apex of median lobe not divided (figs. 45, 48 in SMETANA, 1997 d, 467; figs. 32, 33, 35 in SMETANA, 1999 a, 231). Smaller species with pale appendages. Length 4.4–5.1 mm. 22
- 22. Aedoeagus large and robust, apical portion of median lobe of characteristic shape, as in fig. 33 in SMETANA, 1999 a, 231. Sensory peg setae in irregular longitudinal rows on underside of paramere very numerous, rows therefore very long (fig. 34 in SMETANA, 1999 a, 231). Antenna slender, with outer segments as long as wide. First four segments of male front tarsus less dilated, segment 2 about

- as wide as apex of tibia. Punctuation on abdominal tergites dense, particularly on base of each tergite. Length 5.1 mm. Shaanxi (Qin Ling Shan). *Q. liau* SMETANA, 1999 a
- Aedoeagus smaller and more slender, apical portion of median lobe of different characteristic shape, as in figs. 35, 41 in SMETANA, 1999 a, 231, 233. Sensory peg setae in irregular longitudinal rows on underside of paramere markedly less numerous, rows therefore appreciably shorter (figs. 36, 42 in SMETANA, 1999 a, 231, 233). Antenna somewhat incrassate, with outer segments wider than long. First four segments of male front tarsus more dilated, segment 2 wider than apex of tibia (ratio around 1.2). Punctuation on bases of abdominal tergites sparse. 23
23. Median lobe of aedoeagus with rather long, sharp apical portion. Paramere exceeding apex of median lobe; sensory peg setae on underside of paramere less numerous, no more than 11 in one row (fig. 42 in SMETANA, 1999 a, 233). Length 4.4 mm. Sichuan (Gongga Shan). *Q. hailuogou* SMETANA, 1999 a
- Median lobe of aedoeagus with short, obtuse apical portion. Paramere no more than vaguely exceeding apex of median lobe; sensory peg setae on underside of paramere more numerous, at least 14 in one row (fig. 47 in SMETANA, 1997 d, 467 and fig. 36 in SMETANA, 1999 a, 231). Length 4.4–5.0 mm. Yunnan (Xue Shan). *Q. amicornum* SMETANA, 1997 d
24. Abdominal tergite 3 (first visible) evenly punctate, without smooth impunctate area in middle. 25
- Abdominal tergite 3 (first visible) with smooth impunctate area in middle. . . . 26
25. Apical portion of median lobe of aedoeagus narrowed into subacute apex (fig. 20 in SMETANA, 1996 a, 13). Female genital segment without accessory sclerite. Length 9.0–9.8 mm. Gansu, Shaanxi, Sichuan. . . . *Q. chremes* SMETANA, 1996 a
- Apical portion of median lobe of aedoeagus with apex arcuate, usually minutely notched medio-apically (fig. 25 in SMETANA, 1997 d, 466). Female genital segment with accessory sclerite (fig. 26 in SMETANA, 1997 d, 466). Length 8.1–9.7 mm. Yunnan (Xue Shan). *Q. bohemorum* SMETANA, 1997 d
26. At least three punctures (at least unilaterally) on each side of head in front of posterior margin. Paramere of aedoeagus well short of apex of median lobe, apex of median lobe no more than minutely emarginate (figs. 13, 15 in SMETANA, 1996 a, 11). Female genital segment without accessory sclerite. Length 9.1–10.0 mm. Gansu, Sichuan, Tibet, Yunnan. *Q. bito* SMETANA, 1996 a
- Two punctures on each side of head in front of posterior margin. Paramere of aedoeagus exceeding apex of median lobe, apex of median lobe distinctly emarginate (figs. 27, 37 in SMETANA, 1996 a, 15, 17). Female genital segment with accessory sclerite (figs. 30, 41 in SMETANA, 1996 a, 15, 17). 27
27. Antennal segments 8–10 whitish-yellow, conspicuously differing in colour from rest of antenna. Antenna slender, not sexually dimorphic. Aedoeagus as in figs. 27–29 in SMETANA, 1996 a, 15). Length 9.8–10.6 mm. Sichuan.

- *Q. decius* SMETANA, 1996 a
- Antenna becoming gradually paler toward apex, segments 8–10 not conspicuously differing in colour from rest of antenna. Antenna sexually dimorphic, robust in male, less so in female. Aedoeagus as in figs. 37–40 in SMETANA, 1996 a, 17. Length 10.5–12.2 mm. Yunnan. *Q. ennius* SMETANA, 1996 a
28. Posterior frontal puncture situated away from postero-medial margin of eye, separated from it by distance at least twice as large as diameter of puncture but usually markedly more so. 29
- Posterior frontal puncture situated quite close to postero-medial margin of eye, separated from it by distance not larger than diameter of puncture, or even touching it, rarely distance may be around 1.5 diameter of puncture. 37
29. No additional setiferous puncture on head between posterior frontal puncture and temporal puncture. Antenna short, incrassate anteriorly, outer segments transverse, slightly subserrate. Sternite 9 of male genital segment with apical portion asymmetrical (fig. 12 in SMETANA, 1999 a, 221). Aedoeagus very narrow and elongate, as in figs. 13–15 in SMETANA, 1999 a, 221. Length 9.4–10.1 mm. Sichuan (Emei Shan). *Q. holzschuhi* SMETANA, 1999 a
- At least one additional setiferous puncture between posterior frontal puncture and temporal puncture, situated at posterior margin of eye. Antenna at least moderately long, not incrassate anteriorly, outer segments variable, but not subserrate. Sternite 9 of male genital segment with apical portion symmetrical. Aedoeagus of different shape. 30
30. One additional setiferous puncture between posterior frontal puncture and temporal puncture, situated at posterior margin of eye, no other additional setiferous punctures around posterior frontal puncture. No additional setiferous puncture between each dorsal and sublateral row on pronotum. 31
- More additional setiferous punctures around posterior frontal puncture, represented sometimes only by two punctures between it and postero-medial margin of eye, but punctures usually also present anteriorly, medially and/or postero-medially of it. One additional setiferous puncture between each dorsal and sublateral row on pronotum. 32
31. Black, antennae and legs entirely or predominantly black. Median lobe of aedoeagus with three (one medial and two lateral) teeth on face adjacent to paramere; paramere slender, slightly asymmetrical, with only a few sensory peg setae on underside (figs. 1, 2 in SMETANA, 1996 a, 3). Length 9.5–11.2 mm. Himalaya: Kashmir, Himachal Pradesh, Uttar Pradesh. China: Shaanxi, Sichuan. *Q. adjacens* CAMERON, 1926
- Piceous to piceous-black with parts of pronotum, elytra and abdomen variably paler, antennae brunneo-piceous with first three segments more or less paler, at least partially, legs brunneo-piceous with somewhat paler tarsi. Median lobe of aedoeagus with fine, arcuate transverse carina on face adjacent to paramere; paramere large, robust, symmetrical, with very numerous sensory peg setae on

- underside (figs. 15–18 in SMETANA, 1997 d, 459). Length 7.0–8.6 mm. Shaanxi (Qin Ling Shan). *Q. germanorum* SMETANA, 1997 d
32. Bicolored, small species: black with testaceo-brunneous elytra. Aedoeagus as in figs. 38–40 in SMETANA, 1997 d, 467. Length 4.9–5.5 mm. Yunnan (Xue Shan). *Q. kabateki* SMETANA, 1997 d
- Unicolored dark, larger species. Aedoeagus different. Length not below 6.9 mm. 33
33. Two additional setiferous punctures between posterior frontal puncture and postero-medial margin of eye. Male sternite 8 with only two long setae on each side, medio-apical emargination wide and very shallow (fig. 1 in SMETANA, 1995 b, 235). Aedoeagus as in figs. 4–6 in SMETANA, 1995 b, 235. Length 6.9–7.2 mm. Sichuan. *Q. mukuensis* BERNHAUER, 1933
- One additional setiferous puncture between posterior frontal puncture and postero-medial margin of eye (further additional punctures elsewhere around posterior frontal puncture). Male sternite 8 with at least three long setae on each side, medio-apical emargination variably wide but distinctly deeper (figs. 7, 21, 26 in SMETANA, 1995 b, 235, 237). Aedoeagus different (figs. 10, 17, 24, 29 in SMETANA, 1995 b, 235, 237). 34
34. Dorsal rows on pronotum each with four punctures. Aedoeagus short and robust (fig. 29 in SMETANA, 1995 b, 237). Length 7.5–8.0 mm. Sichuan, Gansu. *Q. nireus* SMETANA, 1995 b
- Dorsal rows on pronotum each with three punctures. Aedoeagus elongate and slender (figs. 10, 17, 24 in SMETANA, 1995 b, 235, 237). 35
35. Aedoeagus with apex of paramere distinctly not reaching apex of median lobe (fig. 10 in SMETANA, 1995 b, 235). Male sternite 8 with three long setae on each side (fig. 7 in SMETANA, 1995 b, 235). Length 7.8–8.1 mm. Sichuan, Yunnan. *Q. antoni* SMETANA, 1995 b
- Aedoeagus with apex of paramere almost reaching apex of median lobe (figs. 17, 24 in SMETANA, 1995 b, 235, 237). Male sternite 8 with at least four long setae on each side (fig. 21 in SMETANA, 1995 b, 237). 36
36. Antenna shorter, with outer segments slightly wider than long. Male sternite 8 with four long setae on each side. Paramere of aedoeagus with apex minutely notched, sensory peg setae on underside situated close to apical margin (fig. 19 in SMETANA, 1995 b, 237). Length 7.2–8.0 mm. Gansu. *Q. epytus* SMETANA, 1995 b
- Antenna longer, with outer segments as long as wide. Male sternite 8 with five long setae on each side. Paramere of aedoeagus with apex narrowly arcuate, sensory peg setae on underside situated away from apical margin (fig. 25 in SMETANA, 1995 b, 237). Length 7.9 mm. Sichuan (Gongga Shan). *Q. haemon* SMETANA, 1995 b
37. Punctuation of abdominal tergites sparse, middle portion of first visible tergite and apical portions of all tergites almost impunctate. 38

- Punctuation of abdominal tergites more or less dense, almost evenly covering each tergite. 39
- 38. Body black, appendages predominantly piceous-black to black. Aedoeagus as in figs. 10–12 in SMETANA, 1996 b, 117. Length 6.3–8.0 mm. Sichuan, Yunnan. *Q. becvari* SMETANA, 1996 b
- Body bicolored, elytra almost entirely pale testaceous, appendages pale testaceous to testaceous. Aedoeagus as in figs. 37, 38 in SMETANA, 1996 b, 129. Length 5.9–6.8 mm. Fujian. *Q. pallens* SMETANA, 1996 b
- 39. Body uniformly black, elytra with feeble dark metallic hue. Sternite 9 of male genital segment of characteristic shape, with apical portion asymmetrical; aedoeagus asymmetrical (figs. 25–27 in SMETANA, 1999 a, 227). Length 9.1–10.0 mm. Sichuan (Gongga Shan). *Q. wrasei* SMETANA, 1999 a
- Body never uniformly black, elytra without metallic hue. Sternite 9 of male genital segment with apical portion symmetrical (figs. 3, 10, 16 in SMETANA, 1997 a, 56, 57); aedoeagus symmetrical (figs. 4, 11, 24 in SMETANA, 1997 a, 56, 57; etc.). 40
- 40. Eyes moderately large, tempora distinctly more than half as long as eyes seen from above (ratio 0.74). Temporal puncture on head situated slightly closer to posterior margin of head than to posterior margin of eye. Elytra relatively long, at suture slightly longer than pronotum at midline. Aedoeagus as in figs. 4–6 in SMETANA, 1999 c, 539. Length 6.8–7.5 mm. Sichuan. *Q. myau* SMETANA, 1999 c
- Eyes large to very large, tempora less than half as long as eyes seen from above (ratios between 0.23–0.47). Temporal puncture on head situated variably closer to posterior margin of eye (in some species almost touching it) than to posterior margin of head. Elytra moderately long, at suture no more than equally long as pronotum at midline, but in most species variably shorter. Aedoeagus different. 41
- 41. Sternite 9 of male genital segment with setation characteristically arranged into two longitudinal groups, at least apically (fig. 3 in SMETANA, 1997 a, 56; fig. 9 in SMETANA, 1999 c, 539; fig. 4 in SMETANA, 2001 b, 187). 42
- Sternite 9 of male genital segment with setation not arranged into two longitudinal groups (figs. 10, 16 in SMETANA, 1997 a, 57; figs. 14, 22, 29 in SMETANA, 1999 c, 541, 545, 549). 44
- 42. Apex of median lobe of aedoeagus tapered into subacute apex (fig. 10 in SMETANA, 1999 c, 539). Length 7.6–7.9 mm. Sichuan. *Q. faang* SMETANA, 1999 c
- Apex of median lobe of aedoeagus rounded (fig. 5 in SMETANA, 1997 a, 56; fig. 5 in SMETANA, 2001 b, 187). 43
- 43. Size large, at least 8.4 mm, but usually over 9.0 mm. Paramere of aedoeagus reaching apex of median lobe (fig. 4 in SMETANA, 1997 a, 56). Length 8.4–10.2 mm. Sichuan (Gongga Shan). *Q. euryalus* SMETANA, 1997 a
- Size smaller, 8.2 mm. Paramere of aedoeagus distinctly not reaching apex of me-

- dian lobe (fig. 5 in SMETANA, 2001 b, 187). Length 8.2 mm. Sichuan (Emei Shan). *Q. haw* SMETANA, 2001 b
44. Male sternite 7 with distinct, moderately wide and deep, almost semicircular medio-apical emargination. Both median lobe and paramere of aedoeagus conspicuously, almost conically narrowed anteriorly (figs. 47, 48, 50 in SMETANA, 1999 a, 233, 237). Length 6.0–6.5 mm. Sichuan (Daxue Shan: Zheduo Shan-kou). *Q. zheduo* SMETANA, 1999 a
- Male sternite 7 without distinct medio-apical emargination. Median lobe and paramere of aedoeagus only rarely (*Q. farkaci*) almost conically narrowed anteriorly. 45
45. Medio-apical emargination of male sternite 8 wide and moderately deep, margined by membranous seam, without flattened and asetose medio-apical area in front of it. Apex of median lobe of aedoeagus spoon-like dilated (figs. 27, 30 in SMETANA, 1999 c, 549). Length 7.9–8.1 mm. Sichuan.
- *Q. songpan* SMETANA, 1999 c
- Medio-apical emargination of male sternite 8 simple, without membranous seam, but with flattened asetose medio-apical area in front of it (e.g., fig. 13, 20 in SMETANA, 1999 c, 541, 545). 46
46. Elytra short, at suture appreciably shorter (ratio 0.77), at sides vaguely shorter (ratio 0.94) than pronotum at midline. Wings reduced to short stumps, each shorter than elytron when extended. Whitish apical seam of palisade fringe on abdominal tergite 7 (fifth visible) very fine, indistinct, often interrupted, or entirely missing. Aedoeagus as in figs. 55–57 in SMETANA, 1999 a, 237. Length 5.8–6.4 mm. Sichuan (Jiuding Shan). *Q. tronqueti* SMETANA, 1999 a (pars)
- Elytra longer, at suture no more than slightly shorter, at sides variably longer, than pronotum at midline. Wings fully developed, or moderately reduced, each variably exceeding length of elytron when extended. Aedoeagus different. 47
47. Paramere of aedoeagus almost conically narrowed toward narrowly emarginate apex; tergite 10 of female genital segment gradually narrowed toward apex (figs. 31, 34 in SMETANA, 1997 d, 466). Length 7.0–7.7 mm. Yunnan (Xue Shan). *Q. farkaci* SMETANA, 1997 d
- Paramere of aedoeagus of different shape, not almost conically narrowed toward apex (figs. 11, 17, 24, 31, 39 in SMETANA, 1997 a, 57, 61, 66; figs. 16, 18, 23, 25 in SMETANA, 1999 c, 541, 545); tergite 10 of female genital segment anteriorly at least somewhat abruptly narrowed into differentiated, often rod-like apical portion (as in figs. 2, 7, 20 in SMETANA, 1997 a, 56, 57). 48
48. Tergite 10 of male genital segment V-shaped; styli of tergite 9 of male genital segment flattened and rather wide; sensory peg setae on underside of paramere forming a round medial group situated far below apex of paramere; aedoeagus of quite characteristic shape (figs. 15, 16, 18 in SMETANA, 1999 c, 541, 545). Tergite 10 of female genital segment of characteristic shape, with one strong apical seta (fig. 19 in SMETANA, 1999 c, 545). Length 7.2–7.4 mm. Sichuan.

- *Q. yaoqi* SMETANA, 1999 c
- Tergite 10 of male genital segment triangular (figs. 9, 15, 37 in SMETANA, 1997 a, 56, 57, 66); styli of tergite 9 of male genital segment not flattened, slender; sensory peg setae on underside of paramere usually less numerous and situated closer to apex of paramere (figs. 13, 19, 33 in SMETANA, 1997 a, 57, 61; fig. 25 in SMETANA, 1999 c, 545); aedoeagus of different shape. Tergite 10 of female genital segment of different shape and with different setation (figs. 20, 27 in SMETANA, 1997 a, 57, 61; fig. 26 in SMETANA, 1999 c, 545). 49
49. Sternite 9 of male genital segment at least slightly emarginate apically (figs. 10, 23, 38 in SMETANA, 1997 a, 57, 61, 66; fig. 5 in SMETANA, 1999 a, 219). 50
- Sternite 9 of male genital segment rounded or subtruncate apically (figs. 16, 30 in SMETANA, 1997 a, 57, 61; fig. 22 in SMETANA, 1999 c, 545). 53
50. Male sternite 8 with six long setae on each side (fig. 8 in SMETANA, 1997 a, 56). Sternite 9 of male genital segment deeply emarginate apically (fig. 10 in SMETANA, 1997 a, 57). Aedoeagus as in figs. 11–13 in SMETANA, 1997 a, 57. Length 7.2 mm. Sichuan (Gongga Shan). *Q. katerinae* SMETANA, 1997 a
- Male sternite 8 with 3 or 4 long setae on each side (figs. 21, 36 in SMETANA, 1997 a, 57, 66; fig. 3 in SMETANA, 1999 a, 219). Sternite 9 of male genital segment slightly to moderately deeply emarginate apically (figs. 23, 38 in SMETANA, 1997 a, 61, 66; fig. 5 in SMETANA, 1999 a, 219). Aedoeagus different. 51
51. Tergite 10 of female genital segment almost gradually narrowed into sharp apex (fig. 35 in SMETANA, 1997 a, 66). Male sternite 8 with deep and very wide medio-apical emargination bearing long, strong setae (fig. 3 in SMETANA, 1999 a, 219). Aedoeagus as in figs. 6, 7 in SMETANA, 1999 a, 219. Length 5.8–6.8 mm. Sichuan. *Q. echion* SMETANA, 1997 a
- Tergite 10 of female genital segment apically more or less abruptly narrowed into narrow, sometimes conspicuously long, rod-like apical portion (fig. 27 in SMETANA, 1997 a, 61; fig. 2 in SMETANA, 1997 d, 458). Male sternite 8 with moderately wide and not deep medio-apical emargination not bearing long, strong setae (figs. 21, 36 in SMETANA, 1997 a, 57, 66). Aedoeagus different. 52
52. Paramere of aedoeagus deeply and narrowly emarginate medio-apically, narrowly exposing medio-apical portion of median lobe (figs. 24, 26 in SMETANA, 1997 a, 61; figs. 1, 2 in SMETANA, 1999 a, 219). Length 6.5–7.77 mm. Sichuan. *Q. ephialtes* SMETANA, 1997 a
- Paramere of aedoeagus with apex minutely emarginate medio-apically, entirely covering median lobe (figs. 39, 41 in SMETANA 1997 a, 66). Length 6.8–7.2 mm. Sichuan (Emei Shan). *Q. emei* SMETANA, 1997 a
53. Aedoeagus slender, elongate, paramere slender, not dilated anteriorly (figs. 31, 33 in SMETANA, 1997 a, 61). Sternite 9 of male genital segment with basal portion very long, of characteristic shape (fig. 30 in SMETANA, 1997 a, 61). Rod-like

- apical portion of tergite 10 of female genital segment conspicuously long and slender (fig. 34 in SMETANA, 1997 a, 61). Length 6.2–7.0 mm. Sichuan (Gongga Shan). *Q. euander* SMETANA, 1997 a
- Aedoeagus robust, paramere large and more or less wide, of variable shape (figs. 17, 19 in SMETANA, 1997 a, 57; figs. 23, 25 in SMETANA, 1999 c, 545; fig. 10 in SMETANA, 2001 b, 189). Sternite 9 of male genital segment with basal portion of different shape (fig. 16 in SMETANA, 1997 a, 57; fig. 22 in SMETANA, 1999 c, 545; figs. 9, 15 in SMETANA, 2001 b, 187, 189). Apical portion of tergite 10 of female genital segment of different shape, if rod-like then distinctly shorter (fig. 20 in SMETANA, 1997 a, 57; fig. 26 in SMETANA, 1999 c, 545; figs. 12, 18 in SMETANA, 2001 b, 189). 54
54. Paramere of aedoeagus markedly, arcuately widened in apical third; sensory peg setae on underside of paramere numerous, 10–11 on each side of medio-apical emargination (fig. 11 in SMETANA, 2001 b, 189). Tergite 10 of female genital segment of characteristic shape (fig. 12 in SMETANA, 2001 b, 189). Length 8.5–8.7 mm. Shaanxi (Qin Ling Shan). *Q. duh* SMETANA, 2001 b
- Paramere of aedoeagus of different shape, not arcuately widened in apical third; sensory peg setae on underside of paramere not numerous, 2–4 on each side of medio-apical emargination (fig. 19 in SMETANA, 1997 a, 57; fig. 25 in SMETANA, 1999 c, 545). Tergite 10 of female genital segment of different shape (fig. 20 in SMETANA, 1997 a, 57; fig. 26 in SMETANA, 1999 c, 545). 55
55. Paramere of aedoeagus concavely narrowed anteriad (figs. 23, 25 in SMETANA, 1999 c, 545), underside of paramere with 2 sensory peg setae on each side of medio-apical emargination (fig. 25 in SMETANA, 1999 c, 545). Tergite of female genital segment with apical portion not rod-like differentiated (fig. 26 in SMETANA, 1999 c, 545). Length 7.5–7.8 mm. Shaanxi (Qin Ling Shan). *Q. koei* SMETANA, 1999 c
- Paramere of aedoeagus parallel-sided, underside with at least 3 or 4 sensory peg setae on each side of medio-apical emargination (fig. 19 in SMETANA, 1997 a, 57; figs. 16, 17 in SMETANA, 2001 b, 189). 56
56. Paramere of aedoeagus with parallel-sided part moderately wide, with wide and rather shallow, rounded medio-apical emargination (fig. 19 in SMETANA, 1997 a, 57). Tergite 10 of female genital segment with distinctly differentiated, rod-like apical portion (fig. 20 in SMETANA, 1997 a, 57). Length 6.8–7.4 mm. Gansu, Sichuan. *Q. erythras* SMETANA, 1997 a
- Paramere of aedoeagus with parallel-sided part conspicuously wide, with deep and very narrow medio-apical emargination (fig. 16 in SMETANA, 2001 b, 189). Tergite 10 of female genital segment with apical portion not rod-like differentiated (fig. 18 in SMETANA, 2001 b, 189). Length 7.8–8.0 mm. Shaanxi (Qin Ling Shan). *Q. guey* SMETANA, 2001 b
57. Eyes large, tempora less than half as long as eyes seen from above. Sublateral rows on pronotum each with three punctures, posterior puncture situated behind

- level of large lateral puncture. Smaller species, not exceeding 6.5 mm. Aedoeagus as in figs. 55–57 in SMETANA, 1999 a, 237. Sichuan.
- *Q. tronqueti* SMETANA, 1999 a (pars)
- Eyes small, tempora considerably longer than eyes seen from above. Sublateral rows on pronotum each usually with no more than two punctures, posterior puncture always situated before level of large lateral puncture. Larger species, at least about 7 mm long. Aedoeagus different. 58
58. Head with fine additional puncture between posterior frontal puncture and posterior margin of eye. Punctuation of elytra moderately dense, transverse interspaces between punctures mostly about 2.5 times as large as diameters of punctures. Aedoeagus as in figs. 49–51 in SMETANA, 1995 b, 245. Small species, length 6.9–7.7 mm. Qinghai. *Q. fonteius* SMETANA, 1995 b
- Head without additional puncture between posterior frontal puncture and posterior margin of eye. Punctuation of elytra dense, transverse interspaces between punctures about as large as diameters of punctures. Larger species, length 7.9–12.0 mm. 59
59. Eyes large and convex, tempora at least vaguely shorter than eyes seen from above. Posterior frontal and temporal punctures situated quite close to postero-medial margin of eye, separated from it by distance smaller or about as large as diameter of puncture. 60
- Eyes small and flat, tempora much longer than eyes seen from above. Posterior frontal and temporal punctures situated far from postero-medial margin of eye, separated from it by distance considerably larger than diameter of puncture. 61
60. Head with group of three to five additional punctures postero-medial of posterior frontal puncture, in addition to usual two punctures at posterior margin of head. Length 8.4–8.6 mm. Male unknown. Yunnan. *Q. vafer* SMETANA, 1997 c
- Head without additional punctures postero-medial of posterior frontal puncture, with only usual pair of punctures at posterior margin of head. Aedoeagus as in figs. 29–32 in SMETANA, 1996 b, 129. Length 7.9–9.0 mm. Yunnan.
- *Q. kucerai* SMETANA, 1996 b
61. Interspaces between elytral punctuation with microsculpture of very fine irregularities, so that surface of elytra appears dull. Male unknown. Length 10.3 mm. Northern Sichuan. *Q. petilius* SMETANA, 1995 a
- Interspaces between elytral punctuation without microsculpture, but sometimes with micropunctulation, surface of elytra not appearing dull. 62
62. Paramere of aedoeagus slightly curved toward left side of median lobe, in general narrower, appearing located on median lobe more or less asymmetrically (fig. 4 in SMETANA, 1999 b, 523). Medio-apical emargination of male sternite 8 shallow, inconspicuous (fig. 11 in SMETANA, 1995 a, 243). Differentiated apical portion of tergite 10 of female genital segment large (figs. 6, 7 in SMETANA, 1999 b, 523). Antenna more slender, outer segments usually about as long as

- wide. Length 9.7–12.8 mm. Qinghai, Tibet, Yunnan.
 *Q. przewalskii* REITTER, 1887
- Paramere of aedoeagus situated along midline of median lobe, in general wider and more robust, appearing located on median lobe symmetrically (fig. 19 in SMETANA, 1995 a, 243; fig. 8 in SMETANA, 1999 b, 525). Differentiated apical portion of tergite 10 of female genital segment small (fig. 9 in SMETANA, 1999 b, 525). Antenna more robust, outer segments usually slightly wider than long. Length 10.4–12.0 mm. Qinghai, Sichuan. . . . *Q. moeris* SMETANA, 1995 a

Most Chinese species of *Microsaurus* may be assigned to several more or less well characterized species-groups. On the other hand, relationships of several species still remain uncertain at present, due probably to our still insufficient knowledge of the east Palaearctic fauna of the group.

In the following the well defined species-groups are briefly characterized and discussed, and the species assigned to each of them are listed. The species-groups are listed in alphabetical order. A key to the species-groups is attached.

Adjacens Group

Diagnosis. This group is characterized by the following combination of character states: size large; body uniformly black; additional setiferous puncture present between posterior frontal puncture and postero-medial margin of eye, temporal puncture situated closer to posterior margin of head than to postero-medial margin of eye or about midway, no additional setiferous punctures on disc of head; eyes moderately large; pronotum markedly narrowed anteriorly, with lateral portions explanate; posterior puncture of sublateral rows of pronotum situated behind level of large lateral puncture; scutellum glabrous, impunctate, without transverse rugae; elytra evenly punctate; apical portion of median lobe of aedoeagus asymmetrical, with one medial and two lateral teeth on face adjacent to paramere; paramere with sensory peg setae; tergite 10 of female genital segment not modified.

Monophyly. This is a monophyletic group, based on several synapomorphies: the presence of an additional setiferous puncture on the head between the posterior frontal puncture and the eye; the position of the temporal puncture which is situated closer to the posterior margin of the head than to the posterior margin of the eye or midway; the presence of three teeth on the apical portion of the median lobe of the aedoeagus, and the asymmetry of the apical portion of the median lobe of the aedoeagus.

Comments. The group contains only two species, one widely distributed, from the western Himalaya to China, and one apparently endemic to Taiwan (*Q. insulanus* SMETANA, 1995).

Chinese species included: *Q. adjacens*.

***Apicornis* Group**

Diagnosis. This species-group was characterized and discussed in detail, including its monophyly, in SMETANA, 1996 a, 6, 7.

Comments. The species-group contains seven Chinese species at present, occurring at middle and higher mountain elevations in the provinces of Gansu, Shaanxi, Sichuan, Tibet and Yunnan, and one species (*Q. apicornis* EPPELSHEIM, 1895) in the Himalaya. One of the Chinese species, *Q. vafer*, is assigned to this species-group only tentatively, since no males are known at present and one of the synapomorphies of the group is present on the aedeagus (see SMETANA, 1996 a, 7).

Chinese species included: *Q. bito*, *Q. bohorum*, *Q. chremes*, *Q. decius*, *Q. ennius*, *Q. kucerai*, [*Q. vafer*].

***Beesoni* Group**

Diagnosis. This group is characterized by the following combination of character states: size large; body black with apex of abdomen usually pale; eyes large, tempora about as long as eyes seen from above; no additional setiferous puncture between posterior frontal puncture and postero-medial margin of eye; posterior frontal and temporal punctures both situated closer to posterior margin of eye than to posterior margin of head; no additional setiferous punctures on disc of head; pronotum with lateral portions moderately explanate; scutellum impunctate, with transverse rugae on basal portion; elytra evenly punctate; apical portion of median lobe of aedeagus symmetrical, with one medial tooth on face adjacent to paramere; paramere without sensory peg setae; tergite 10 of female genital segment not modified.

Monophyly. This is a monophyletic group, based on two synapomorphies: the presence of transverse rugae on the basal portion of the impunctate scutellum, and the absence of sensory peg setae from the underside of the paramere of the aedeagus. These two synapomorphies are shared, each separately, by the Himalayan members of the *Flavocaudatus* and *Apicornis* groups (see SMETANA, 1995 c, 31 for details).

Comments. In most species of this group, the posterior puncture of the sublateral rows on the pronotum is situated behind the level of the large lateral puncture, but in *Q. acco* and *Q. noboruitoi* HAYASHI, 1992, the puncture is situated before or at the level of the large lateral puncture.

At present the group includes one Himalayan species (*Q. antennalis* CAMERON, 1932), one species occurring in the Himalaya, in several Chinese provinces and in Taiwan (*Q. beesoni*), one species occurring in Sichuan and Yunnan (*Q. acco*), and three species endemic to Taiwan (see SMETANA, 1995 c, 31 for details). All species occur from middle to high montane elevations (habitat data for *Q. antennalis* are not known).

Chinese species included: *Q. acco*, *Q. beesoni*.

Euryalus Group

Diagnosis. This group is characterized by the following combination of character states: size medium large; body color in general piceous to piceous-black with various parts variably paler, except for *Q. wrasei* which is entirely black; eyes large to very large, tempora less than half as long as eyes seen from above, except for *Q. myau*, with eyes moderately large and tempora more than half as long as eyes seen from above; posterior frontal and temporal punctures both situated quite close to postero-medial margin of eye; additional setiferous puncture present between posterior frontal puncture and temporal puncture at posterior margin of eye; no other additional setiferous punctures on disc of head; pronotum with lateral portions not explanate; posterior puncture of sublateral rows of pronotum situated behind level of large lateral puncture; scutellum glabrous, impunctate, without transverse rugae; elytra evenly punctate; apical portion of median lobe symmetrical; paramere of aedeagus with sensory peg setae; tergite 10 of female genital segment with at least slightly differentiated apical portion.

Monophyly. This is a monophyletic group, based on three synapomorphies: the presence of an additional puncture on the head between the posterior frontal puncture and the temporal puncture; the position of the posterior puncture of the sublateral rows on the pronotum which is situated behind the level of the large lateral puncture, and by the apical portion of tergite 10 of the female genital segment, which is at least slightly differentiated

Comments. This is the most speciose group of the subgenus *Microsaurus*. All species occur in forest habitats, from middle to high montane elevations. Most species look quite similar to each other in external characters; however, they can be distinguished by the sexual characters, particularly those of males. Their distributional ranges are not sufficiently known at present; however, at least some of them will very likely be found endemic to certain mountain ranges. It is notable that as many as six species of this group occur in the massive of Gongga Shan (Daxue Shan Range): *Q. ephialtes*, *Q. euander*, *Q. euryalus*, *Q. katerinae*, *Q. myau* and *Q. wrasei*.

Species included: *Q. duh*, *Q. echion*, *Q. emei*, *Q. ephialtes*, *Q. erythras*, *Q. euander*, *Q. euryalus*, *Q. faang*, *Q. farkaci*, *Q. guey*, *Q. haw*, *Q. katerinae*, *Q. koei*, *Q. myau*, *Q. songpan*, *Q. tronqueti*, *Q. wrasei*, *Q. yaoqi*, *Q. zheduo* (all from mainland China).

Inquietus Group

The single species of this group, *Q. inquietus*, is unique by the development of the antenna with the first three segments conspicuously short, and with the outer segments markedly subserrate.

Comments. The character state of the subserrate outer antennal segments is shared with *Q. holzschuhi*. However, the subserrate character of these segments is much less developed in *Q. holzschuhi* and is apparently just a matter of convergence, since the two species are not related and the relationship of the latter species remains

unclear at present.

***Kiangsiensis* Group**

Diagnosis. This group is characterized by the following combination of character states: size moderate to large; color of body variable; eyes small to moderately large, tempora longer than eyes seen from above; posterior frontal puncture situated closer to postero-medial margin of eye than to posterior margin of head; temporal puncture situated closer to posterior margin of head than to postero-medial margin of eye or midway; no additional setiferous punctures on head; pronotum with lateral portions no more than slightly explanate posteriorly; posterior puncture of sublateral rows of pronotum situated before level of large lateral puncture; scutellum punctate; elytra evenly punctate; apical portion of median lobe of aedoeagus symmetrical; paramere with sensory peg setae; tergite 10 of female genital segment pigmented medio-apically, with differentiated apical portion.

Monophyly. This is a monophyletic group, based on three synapomorphies: the position of the temporal puncture on the head, which is situated closer to the posterior margin of the head than to the posterior margin of the eye or midway; the punctate scutellum and the development of tergite 10 of the female genital segment, which is pigmented medio-apically and bears an abruptly narrowed, differentiated apical portion (female of one species not known at present).

Comments. This species-group contains two species (*Q. krali* and *Q. kishimotoi*) that live in caves and share the character state of markedly reduced eyes that are considerably shorter than the tempora.

Species included: *Q. kiangsiensis*, *Q. kishimotoi*, *Q. klapperichi*, *Q. krali*, *Q. kubani*, *Q. schuelkei* (all from mainland China).

***Mnemon* Group**

Diagnosis. This group is characterized by the following combination of character states: size moderate; body piceous-black to black; eyes moderately large, tempora somewhat longer than eyes seen from above; posterior frontal puncture on head situated either closer to postero-medial margin of eye (*Q. otho*, *Q. turnai*), or to posterior margin of head (*Q. feihuensis*, *Q. mnemon*), temporal puncture situated closer to posterior margin of head than to posterior margin of eye; pronotum with lateral portions not explanate and with posterior margin evenly arcuate; posterior puncture of sublateral rows of pronotum situated before level of large lateral puncture; scutellum glabrous, impunctate, without transverse rugae; elytra evenly punctate; apical portion of median lobe of aedoeagus symmetrical; paramere with sensory peg setae; tergite 10 of female genital segment with apical portion not differentiated (females of two species unknown).

Monophyly. The synapomorphy of this group is the position of the temporal

puncture on the head, which is situated closer to the posterior margin of the head than to the posterior margin of the eye. This character state is shared 1) with the members of the *Przewalskii* Group but members of the latter group share additional, derived character states used in the key to the species-groups, and 2) with the members of the *Kiangsiensis* Group but members of that group share the derived character state of the punctate scutellum.

Species included: *Q. feihuensis*, *Q. mnemon*, *Q. otho*, *Q. turnai* (all from mainland China).

***Mukuensis* Group**

Diagnosis. This group is characterized by the following combination of character states: size moderate; body uniformly black (but see *Comments*); eyes moderately large; with one or two (*Q. mukuensis*) additional setiferous punctures between posterior frontal puncture and postero-medial margin of eye, and, except for *Q. mukuensis*, with further additional setiferous punctures on disc of head; pronotum with lateral portions not explanate; posterior puncture of sublateral rows of pronotum situated behind level of large lateral puncture; one additional setiferous puncture between each dorsal and sublateral row on pronotum; scutellum glabrous, impunctate, without transverse rugae; elytra evenly punctate; apical portion of median lobe of aedeagus symmetrical; paramere with sensory peg setae; tergite 10 of female genital segment with apical portion at least slightly differentiated, sometimes rod-like (females of two species not known).

Monophyly. This is a monophyletic group, based on three synapomorphies: the presence of additional setiferous punctures on the disc of the head, the position of the posterior puncture of the sublateral rows of pronotum behind the level of the large lateral puncture, and the presence of an additional setiferous puncture between each dorsal and sublateral row on the pronotum

Comments. *Quedius mukuensis* lacks any additional setiferous punctures on the head, except for the two situated between the posterior frontal puncture and the postero-medial margin of the eye (see above), but all other characters confirm its close alliance with the remaining species of the group. Since it is the first species to be described, its name was used for the name of this species-group. *Quedius kabateki* differs from all other members of the group by the markedly bicolored body with the elytra testaceo-brunneous, but otherwise it shares all the synapomorphies of the group.

Species included: *Q. antoni*, *Q. epytus*, *Q. haemon*, *Q. kabateki*, *Q. mukuensis*, *Q. nireus* (all from mainland China).

***Pallens* Group**

The single species of this group, *Q. pallens*, is characterized by a combination of several obvious apomorphies: body bicolored; posterior puncture of sublateral rows of

pronotum situated behind level of large lateral puncture; median lobe of aedoeagus of characteristic shape, with broadly arcuate additional sclerite; paramere without sensory peg setae; tergite 10 of female genital segment characteristically modified, subdivided medially and with differentiated, rod-like apical portion.

Comments. Most of the above character states are shared with members of other species-groups (particularly the position of the posterior puncture of the sublateral rows of the pronotum, and the absence of the sensory peg setae on the paramere), but the modifications of the median lobe and tergite 10 of the female genital segment are unique autapomorphies at present.

***Placidus* Group**

Diagnosis. This group is characterized by the following combination of character states: size small to moderate; body color variably brownish to brownish-piceous; eyes variable, small to large; no additional setiferous puncture between posterior frontal puncture and postero-medial margin of eye; posterior frontal and temporal punctures both situated closer to posterior margin of eye than to posterior margin of head, temporal puncture rarely almost midway; no additional setiferous punctures on disc of head; posterior puncture of sublateral rows on pronotum situated before level of large lateral puncture; lateral portions of pronotum not explanate; scutellum glabrous, impunctate, without transverse rugae on basal portion; elytra each with three additional, inconspicuous longitudinal rows of three or four coarser punctures, apical portion of median lobe of aedoeagus symmetrical; paramere with sensory peg setae; tergite 10 of female genital segment not modified.

Comments. The status of this group was discussed in SMETANA, 1995 c, 49. The group at present includes two species in the Himalaya (*Q. placidus* CAMERON, 1932, *Q. lesagei* SMETANA, 1988), four endemic species in Taiwan (*Q. miwai* BERNHAUER, 1943, *Q. yean* SMETANA, 1995 c, *Q. shibatai* SMETANA, 1995 c, and *Q. inexpectatus* SMETANA, 2001 a), one species in northern Vietnam (*Q. zeuxis* SMETANA, 1997 b), and one undescribed species (known only from one female specimen) from Yunnan. The latter species may be identical with *Q. zeuxis*, but males are needed for confirmation.

***Przewalskii* Group**

Diagnosis. This group is characterized by the following combination of character states: size large; body color from pale reddish-brown to dark brownish-piceous; eyes very small and flat, tempora therefore considerably longer than eyes seen from above; no additional setiferous puncture between posterior frontal puncture and postero-medial margin of eye (but see *Comments*), temporal puncture situated closer to posterior margin of head than to postero-medial margin of eye, or about midway; no additional setiferous punctures on disc of head; posterior puncture of sublateral rows of pronotum situated before level of large lateral puncture; dorsal rows of pronotum re-

duced to one or two punctures, at least unilaterally, and punctures of both dorsal and sublateral rows very fine; lateral portions of pronotum markedly explanate posteriorly; basal margin of pronotum subtruncate; scutellum glabrous, impunctate, without transverse rugae on basal portion; elytra evenly punctate; apical portion of median lobe of aedoeagus symmetrical; paramere of aedoeagus with sensory peg setae; tergite 10 of female genital segment characteristically modified in two species (*Q. moeris* and *Q. przewalskii*), but not so in the remaining two species (see below).

Monophyly. This is a monophyletic group, based on three synapomorphies: the position of the temporal puncture on the head, which is situated closer to the posterior margin of the head than to the posterior margin of the eye, the reduction of the dorsal rows on the pronotum, and the subtruncate basal margin of the pronotum.

Comments. This species-group seems to be close to the *Abnormalis* Group (SMETANA, 1995, 45) with numerous species in Japan and three species in Taiwan and the two may actually prove to be identical. The two species without modified tergite 10 of the female genital segment (*Q. fonteius* and *Q. petilius*) may have to be moved to another species-group in the future, particularly *Q. fonteius* with an additional puncture on the head between the posterior frontal puncture and the postero-medial margin of the eye.

Species included: *Q. fonteius*, *Q. moeris*, *Q. petilius*, *Q. przewalskii* (all from mainland China).

Ripicola Group

Diagnosis. This group is characterized by the following combination of character states: size moderate; body uniformly piceous-black to black; eyes moderately large; posterior frontal puncture on head situated close to postero-medial margin of eye; temporal puncture situated at least slightly closer to posterior margin of eye than to posterior margin of head; no additional setiferous punctures on head; pronotum with lateral portions not explanate; posterior puncture of sublateral rows of pronotum situated behind level of large lateral puncture; scutellum glabrous, impunctate, without transverse rugae; elytra evenly punctate; apical portion of median lobe of aedoeagus of characteristic shape in lateral view (fig. 12 in SMETANA, 1996 b, 117); paramere without sensory peg setae on apical portion characteristically developed and situated (fig. 11 in SMETANA, 1996 a, 117); tergite 10 of female genital segment with fine longitudinal carina along each lateral margin.

Monophyly. This is a monophyletic group, based on several strong synapomorphies: posterior puncture of sublateral rows of pronotum situated behind level of large lateral puncture; apical portion of median lobe of aedoeagus of characteristic shape; paramere without sensory peg setae; apical portion of paramere with apical setae characteristically developed and situated; tergite 10 of female genital segment with fine longitudinal carina along each lateral margin.

Species included: *Q. becvari* (mainland China), *Q. ripicola* CAMERON, 1926 and

Q. milansaar SMETANA, 1988 (from the Himalaya).

Szechuanus Group

Diagnosis. This group is characterized by the following combination of character states: size moderate to small; color of body variable; eyes moderately large to large; posterior frontal puncture on head situated closer to postero-medial margin of eye than to posterior margin of head; temporal puncture situated closer to posterior margin of eye than to posterior margin of head or almost midway; no additional setiferous punctures on head; pronotum with lateral portions not explanate; posterior puncture of sublateral rows of pronotum situated before level of large lateral puncture; scutellum glabrous, impunctate, without transverse rugae; elytra evenly punctate; apical portions of median lobe and paramere of aedoeagus both asymmetrical; paramere with sensory peg setae.

Monophyly. Monophyly of this group is weakly supported by the asymmetrical apical portions of both the median lobe and the paramere of the aedoeagus.

Comments. This is the weakest of the species-groups proposed in this paper and it is possible that two different groups are combined here. More material is needed to clarify this relationship.

Species included: *Q. amicum*, *Q. hailuogou*, *Q. liau*, *Q. szechuanus* (all from mainland China).

The following four species are not assigned to any species-group at present: *Q. douglasi*, *Q. germanorum*, *Q. holzschuhi*, *Q. liang*.

Key to Species-groups

1. Scutellum punctate or with sculpture consisting of irregular transverse rugae in middle of basal portion. 2
- Scutellum impunctate, smooth. 3
2. Scutellum with sculpture consisting of irregular transverse rugae in middle of basal portion. *Beesoni* Group
- Scutellum punctate. *Kiangsiensis* Group
3. First three segments of antenna very short, slightly longer than wide and combined about as long as three following segments combined, outer segments markedly subserrate. *Inquietus* Group
- First three segments of antenna moderately long to long, distinctly longer than wide and combined longer than three following segments combined, outer segments no more than slightly subserrate. 4
4. Posterior puncture of sublateral rows on pronotum situated before level of large lateral puncture. 5
- Posterior puncture of sublateral rows on pronotum situated behind level of large

- lateral puncture. 9
5. Punctuation of elytra not uniform, each elytron with three inconspicuous longitudinal rows of three or four coarser punctures. *Placidus* Group
- Punctuation of elytra uniform, without longitudinal rows of coarser punctures. 6
6. Temporal puncture on head situated closer to posterior margin of head than to posterior margin of eye, or at most about midway. 7
- Temporal puncture situated closer to posterior margin of eye than to posterior margin of head. 8
7. Posterior margin of pronotum subtruncate, lateral margins conspicuously narrowed anteriorly in apical third. Eyes quite small and flat, tempora considerably longer than eyes from above. Body at least partially brownish. *Przewalskii* Group
- Posterior margin of pronotum broadly arcuate, lateral margins moderately narrowed anteriorly. Eyes moderately large and convex, tempora somewhat longer than eyes from above. Body piceous-black to black. *Mnemon* Group
8. Aedoeagus conspicuously asymmetrical, underside of paramere with sensory peg setae. Smaller species, length not exceeding 7.2 mm. *Szechuanus* Group
- Aedoeagus symmetrical, underside of paramere without sensory peg setae. Larger species, length not below 9.0 mm. *Apicicornis* Group
9. Posterior frontal puncture situated away from postero-medial margin of eye, separated from it by distance at least twice as large as diameter of puncture but usually markedly more so. 10
- Posterior frontal puncture situated quite close to postero-medial margin of eye, separated from it by distance not larger than diameter of puncture, or even touching it, rarely distance may be around 1.5 times diameter of puncture. 11
10. One additional setiferous puncture between posterior frontal puncture and temporal puncture, situated at posterior margin of eye, no other additional setiferous punctures around posterior frontal puncture. No additional setiferous puncture between each dorsal and sublateral row on pronotum. Median lobe of aedoeagus with three (one medial and two lateral) teeth on face adjacent to paramere (fig. 30 in SMETANA, 1988, 397). *Adjacens* Group
- More additional setiferous punctures around posterior frontal puncture, represented sometimes only by two punctures between it and postero-medial margin of eye, but punctures also present anteriorly, medially and/or posteromedially of it. One additional setiferous puncture between each dorsal and sublateral row on pronotum. Median lobe of aedoeagus with one or two teeth on face adjacent to paramere (figs. 5, 11 in SMETANA, 1995 b, 235). *Mukuensis* Group
11. Punctuation of abdominal tergites more or less dense, almost evenly covering each tergite. One small additional setiferous puncture on head between posterior frontal puncture and temporal puncture, situated at posterior margin of eye, always present. Paramere of aedoeagus with sensory peg setae. *Euryalus* Group

- Punctuation of abdominal tergites sparse, middle portion of first visible tergite and apical portions of all tergites almost impunctate. No additional setiferous puncture on head between posterior frontal puncture and temporal puncture. Paramere of aedoeagus without sensory peg setae. 12
12. Body black, appendages predominantly piceous-black to black. Median lobe of aedoeagus without additional sclerite (fig. 10 in SMETANA, 1996 b, 117). Tergite 10 of female genital segment with fine longitudinal carina along each lateral margin (fig. 13 in SMETANA, 1996 b, 117). *Ripicola* Group
- Body bicolored, elytra almost entirely pale testaceous, appendages pale testaceous to testaceous. Median lobe of aedoeagus with broadly arcuate accessory sclerite (fig. 37 in SMETANA, 1996 b, 129). Tergite 10 of female genital segment subdivided medially, without longitudinal carina along each lateral margin (fig. 39 in SMETANA, 1996 b, 129). *Pallens* Group

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要 約

A. SMETANA : 中国産ツヤムネハネカクシ亜族に関する知見. 20. ツヤムネハネカクシ属 *Microssaurus* 亜属の12. — 中国およびその隣接地域の一部から記録された *Microssaurus* 亜属のツヤムネハネカクシ類を検索表にまとめ, 種群の特徴を要約するとともに, それぞれの種群に含まれる種を列挙した. わずか5~6年前の時点で5種しか知られていなかった中国産のこの亜属のツヤムネハネカクシ類は, 現在の既知種数が60に達し, なお多くの新種の発見が期待される.

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