Redescriptions of *Habrobracon concolorans* (Marshall) and *Habrobracon crassicornis* (Thomson) (Hymenoptera: Braconidae: Braconinae)

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Papp, J.: Redescriptions of *Habrobracon concolorans* (Marshall) and *Habrobracon crassi-cornis* (Thomson) (Hymenoptera: Braconidae: Braconinae). [Återbeskrivning av *Habrobracon concolorans* (Marshall) och *Habrobracon crassicornis* (Thomson) (Hymenoptera: Braconidae: Braconinae).] – Entomologisk Tidskrift 129 (3): 165–172. Uppsala, Sweden 2008. ISSN 0013-886x.

Bracon concolor Thomson, 1894 is a junior homonym of Bracon concolor Walker, 1871, its emendated name is Bracon concolorans by Marshall (1900), now the species is assigned to the genus Habrobracon. The two species, Habrobracon concolorans comb. n. and H. crassicornis, are redescribed and compared with the nearest species H. stabilis (Wesmael) and H. ponticus (Tobias), respectively. Lectotypes are designated for Bracon concolor Thomson, 1894 and Bracon crassicornis Thomson, 1894. New synonyms: H. concolorans (Marshall, 1900) sen. syn. = H. nigricans Szépligeti, 1901 jun. syn. and H. crassicornis (Thomson, 1894) sen. syn. = H. flavosignatus Tobias, 1957 jun. syn. A checklist was compiled for the 21 valid Habrobracon species distributed in the western Palaearctic Region. With 37 original linedrawn figures.

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In his paper C. G. Thomson (1894) dealt with fifty-seven *Bracon* species taken in Sweden (mainly in several localities of Skåne). Of these fifty-seven species, three are representing the genus *Habrobracon* Ashmead whereas the rest of the species remains in the genus *Bracon* Fabricius. The three *Habrobracon* species are as follows: *H. concolor* (Thomson), *H. crassicornis* (Thomson) and *H. stabilis* (Wesmael).

Tobias earlier considered the taxon *Habrobracon* as a valid genus (Tobias 1957, 1958, 1959, 1976: 57–59), however, recently he assigned it as a subgenus of the genus *Bracon* (Tobias 1986: 115–119, 2000: 114–118). In the present paper *Habrobracon* received the valid generic status following Szépligeti's (1904: 146), Telenga's (1936: 27, 309), Tobias's (1976: 26) and Mason's (1978: 722) distinction between the genera *Bracon* and *Habrobracon*:

"Habrobracon Ashmead, 1895 — Fore wing: r,

2–SR and 3–SR equal in length (minute deviations feasible). Head and mesoscutum (eventually other parts of mesosoma) as well as tergites usually coriaceous.

Bracon Fabricius, 1805 — Fore wing: 3–SR clearly longer than r and usually longer than 2–SR. Body usually either polished or tergites (and eventually propodeum) sculptured (scrobiculate, rugose, rugulose etc.)."

The descriptions of the two *Habrobracon* species by Thomson (*H. concolor, H. crassicornis*) are fairly short and insufficient to separate them clearly from their nearest allies. The examination of the type specimens (one female each) of the two species makes it possible to recognize their true taxonomic position among the valid twenty-one *Habrobracon* species known up to now (see checklist of the *Habrobracon* species). Subsequently the redescription of the two species is presented completed with the distinction from their nearest species. Lectotypes were designated for the two Thomson's species in question fol-

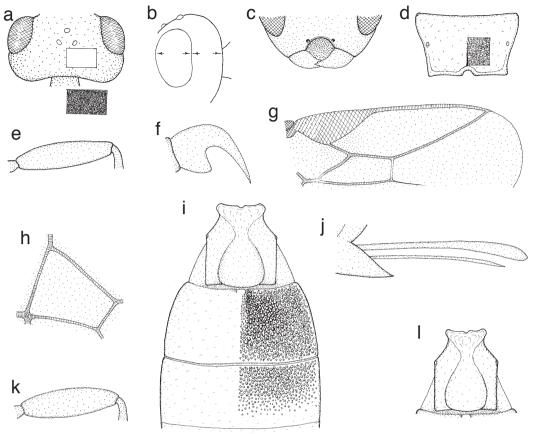


Figure 1. **Habrobracon concolorans** (Marshall) -a-j) female lectotype, -a) head in dorsal view with indication of its sculpture, -b) = head in lateral view, -c) lower half of head in frontal view, -d) propodeum with indication of its sculpture, -e) hind femur, -f) claw, -g) distal part of right fore wing, -h) first discal cell of right fore wing, -h) the right fore wing, -h) hind end of female metasoma, -h) hind femur of female, -h) first tergite of male

lowing the respective rule of the International Code of Zoological Nomenclature (2000, paragraph 74).

Originally the species *Habrobracon concolor* was arranged in the genus *Bracon*. However, the name *B. concolor* Thomson, 1874 is a junior homonym of *B. concolor* Walker, 1871; this homonymy was emendated by Marshall (1900: 345) as *B. concolorans*, now *H. concolorans* (Marshall) comb. n. Consequently this name by Marshall is accepted in conformity with the respective requirement of the Code.

Redescriptions

In the redescriptions the following abbreviations are applied (after van Achterberg 1993: 4–5):

Eyes — OOL = ocellar-ocular line, i.e. shortest distance between hind ocellus and compound eye; POL = postocellar line, i.e. the shortest distance between hind ocelli.

Alar venation — m–cu = transverse medio-cubital vein, r = transverse radial vein, I–M = basal vein, I–SR–M = first section of the cubital vein, 2–SR = first transverse cubital vein, 3–SR = second section of the radial vein, SRI = third section of the radial vein.

Habrobracon concolorans (Marshall) comb. n., ♀♂ (Figs 1 a–l)

Bracon concolor Thomson, 1894: 1807 ♀ (syntype series: one female), type locality: "Pålsjö nära Helsingborg" (Sweden), female lectotype (present designation) in Zoological Museum, Lund; examined.

Habrobracon concolor (Thomson, 1894): Szépligeti 1904 (1901): 156 (in key) comb. n. as valid species. Telenga 1936: 136 (as synonym of H. stabilis Wesmael, 1838). Shenefelt 1978: 1613 (as H. stabilis var. concolorans Marshall, 1900). Tobias 1986: not mentioned.

Bracon concolorans Marshall, 1900: 345 and 4* (homonym, new name for B. concolor Thomson, 1894 nec B. concolor Walker, 1871) [B. concolor Walker was emended by Brues in 1926 as Iphiaulax concolor (Walker)].

Habrobracon nigricans Szépligeti, 1901: 181 (in key) and 182 (description) (in Hungarian), 1904 (1901): 156 (in key) and 157 (description) (in German), ♂ (syntype series: one male), type locality: "Budapest: Svábhegy" (Hungary), male lectotype (designated by Papp 2004: 183) in Hungarian Natural History Museum, Budapest; examined, syn. n. — Telenga 1936: as valid species 126 (♀), 127 (♂) (in key), 135 (redescription) (in Russian) and 340 (♀), 341 (♂) (in key, in German). Shenefelt 1978: as valid species 1608 (literature up to 1971). Tobias 1986: as valid species 116 (in key, in Russian).

Designation of the female lectotype of *Bracon concolor*: (first label, handscript) "Hbg"; (second label attached by me) "Sweden" (printed) "Pålsjö nära Helsingborg" (my handscript); (third label with red frame, handscript) "concolor n."; fourth label is the lectotype card, fifth label is with the actual name *Habrobracon concolorans* (Marshall) given by me. – The lectotype is in good condition: (1) glued direct to the pin by the right-lateral part of hind 3–4 metasomal sternites; (2) both flagelli damaged; (3) tarsi of right middle and hind legs less visible owing to the mounting.

Redescription of the female lectotype of *Bracon concolor* Thomson. — Body 3 mm long. Both antennae deficient, right flagellum with 10 and left flagellum with 13 flagellomeres. First flagellomere clearly twice and and 13th flagellomere 1.6 times as long as broad. — Head in dorsal view (Fig. 1 a) transverse, 1.8 times as broad as long, eye 1.35 times longer than temple, temple strongly rounded, occiput weakly excavated. OOL twice as long as POL. Eye in lateral view 1.75 times as high as wide and as wide as temple, temple beyond eye evenly narrow (Fig. 1 b, see

arrows). Horizontal diameter of oral opening as long as shortest distance between opening and compound eye (Fig. 1 c). Head granulose (Fig. 1 a), temple with finer granulosity and subshiny.

Mesosoma in lateral view 1.55 times as long as high. Notaulix indistinct. Pronotum and mesoscutum granulose, scutellum finely granulose and subshiny; mesopleuron smooth and shiny, only its upper third granulose. Propodeum basally with a medio-longitudinal and very weak keel, otherwise propodeum granulose (Fig. 1 d). Hind femur 3.8 times as long as broad proximally (Fig. 1 e). Hind basitarsus as long as hind tarsomeres 2–3 combined. Claw downcurved and with a fairly large basal lobe (Fig. 1 f).

Fore wing about one-sixth longer than body. Pterostigma (Fig. 1 g) 2.5 times as long as wide and issuing r just proximally from its middle, r 0.6 times as long as width of pterostigma; second submarginal cell short, 3–SR and 2–SR equal in length; SRI just bent, 2.5 times longer than 3–SR and ending before tip of wing (Fig. 1 g). First discal cell high, I–M 2.2 times as log as m–cu, I–SR–M 1.4 times as long as I–M and straight (Fig. 1 h).

First tergite (Fig. 1 i) a bit longer than broad behind, beyond pair of spiracles parallel-sided, smooth and subshiny to shiny. Second tergite 2.1 times as broad as long and 1.2 times as long as third tergite. Second and further tergites granulose to subgranulose. Hypopygium small and pointed, ovipositor sheath as long as hind tibia (Fig. 1 j).

Ground colour of body black. Scape black, flagellum brown. Margin of eye and mandible yellow, a pair of small maculae of face close below antennae darkening yellow. Tegula black, parategula brown. Tergites brownish black. Sternites yellow, second and further sternites medially with brown maculae. Legs black, Femorae apically and tibiae proximally yellowish brown, tarsi light brownish. Wings subhyaline, pterostigma light brown and basally yellow, vein light brown.

Variable features of the female ($8 \circlearrowleft \mathbb{Q}$). — Body 2.9–3.1 mm long. Antenna one-sixth shorter than body and with 21–22 antennomeres. Flagellum very finely attenuating, first flagellum twice and penultimate flagellum 1.85–2 times as long as broad. Head in dorsal view 1.75–1.8 times as broad as long. Mesosoma in lateral view 1.5–1.6 times as long as high. Hind femur 3.6–3.8 times longer than broad proximally or just before middle (Figs 1 e, k). Pterostigma 2.5–2.6 times as long as wide and issuing r just to distinctly proximally from its middle. Scutum of first tergite finely granulose. Ovipositor sheath slightly shorter than hind tarsus.

Deviating features of the male $(17 \circlearrowleft 7)$. — Similar to the female. Body (2-)2.7-3.1 mm long. An-

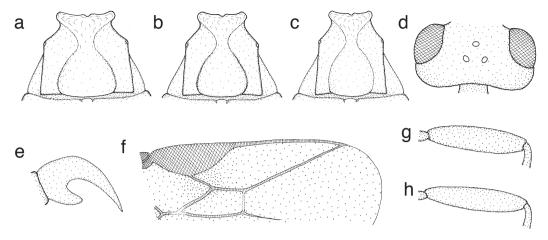


Figure 2. **Habrobracon stabilis** (Wesmael): -a-b) first tergite of male, -c) first tergite of female, -d) head in dorsal view, -e) claw, -f) distal part of right fore wing, -g) hind femur of female and male, -h) hind femur of male.

tenna as long as body and with 22-28 antennomeres. Pterostigma issuing r proximally from its middle to (almost) from its middle. First tergite longer than broad behind (Fig. 1 k), less usually as long as broad behind.

Distribution: Scotland, Sweden, Denmark, Hungary, Romania, Bulgaria, Greece, Turkey, Turkmenia.

Habrobracon concolorans (Marshall) is nearest to *H. stabilis* (Wesmael), their specific distinction is presented as follows:

- -. Mesoscutum granulose and with a pair of polished streaks along imaginary notaulix. First tergite usually broader behind than long, rarely (male) as long as to somewhat (and exceptionally) longer than broad behind (Figs 2 a-c). Temple in dorsal view more rounded, i.e. eye 1.7–1.8 times as long as temple (Fig. 2 d). Basal lobe of claw slightly more pointed (Fig. 2 e). Fore wing: 3–SR shorter than 2–SR (Fig. 12 f). Hind femur relatively thin, 4–4.3 times as long as broad (Figs 2 g–h).

Habrobracon crassicornis (Thomson) ♀♂ (Figs 3 a-k, 4 a-b)

Bracon crassicornis Thomson, 1894: 1806 ♀ (type series: one female), type locality: "Arrie in Skåne" (Sweden), female lectotype (present designation) in Zoological Museum, Lund; examined.

Habrobracon crassicornis (Thomson): Szépligeti 1901: 181 comb. n. (in key, in Hungarian), 1904 (1901): 156 ♀ (in key, in German). Fahringer 1928: 536 (♀), 539 (♂) (in key) and 543 (♀♂, redescription). Telenga 1936: 126 (♀), 127 (♂) (in key), 134 (redescription) (in Russian) and 340 (♀), 341 (♂) (in key, in German). Shenefelt 1978: 1593 (literature up to 1953). Tobias 1986: not mentioned.

Habrobracon flavosignatus Tobias, 1957: 478 ♀♂ (in Russian), type locality: Turkmenia, Tashkepri, female holotype (and many female and male paratypes) in Zoological Institute, Sankt Petersburg; one female + two male paratypes in Hungarian Natural History Museum, Budapest); examined, syn. n. – Tobias 1986: as valid species 116 (in key, in Russian).

Designation of the female lectotype of *Bracon crassi-cornis*: (first label, handscript) "Ar" (=Arrie), (second label attached by me) "Sweden" (printed) "Arrie

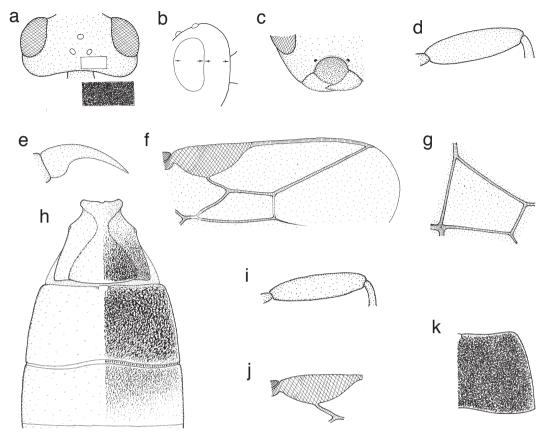


Figure 3. **Habrobracon crassicornis** (Thomson) – a–h) female lectotype): – a) head in dorsal view with indication of its sculpture, – b) head in lateral view, – c) lower half of head in frontal view, – d) hind femur, – e) claw, – f) distal part of right fore wing, – g) first discal cell of right fore wing, – g) hind femur ($Q \circlearrowleft h$), – g) pterostigma of female, – g) right half of second tergite ($Q \circlearrowleft h$).

i Skåne" (my handscript); (third label with red frame, handscript) "crassicornis"; fourth label is the lectotype card, fifth label is with the actual name *Habrobracon crassicornis* (Thomson) given by me. – Lectotype is in fairly poor condition: (1) pinned by mesosoma; (2) both flagelli deficient; (3) fore pair of wings missing (present only their basal stubs); (4) metasoma glued (by sterni) on a separate small card.

One female specimen without type status. — In the Thomson's Collection (in Lund) under *Bracon crassicornis* and besides the female lectotype there is a second female specimen with the locality label "Gall." (=Gallia or France). It was, certainly, identified by Thomson himself, however, the name label was additionally attached by me. — The specimen is glued on a small rect-angled card. Condition of the specimen: (1) flagelli distally deficient, (2) legs (tarsi

+ tibiae) less visible owing to the mounting.

Redescription of the female lectotype of *Bracon crassicornis* Thomson. — Body 3.2 mm long. Both antennae deficient: left antenna with 13 and right antenna with 9 antennomeres. First flagellomere 1.25

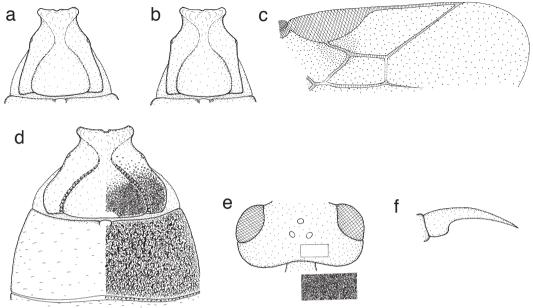


Figure 4. a-b) **Habrobracon crassicornis** (Thomson): -a) first tergite $\mathcal{D} - b$) same for $\mathcal{D} : 4b - c - f$. **Habrobracon ponticus** (Tobias): -c) distal part of right fore wing, -d) tergites 1-2, -e) head in dorsal view with indication of its sculpture, -f) claw.

times and 11th flagellomere cubic or as long as broad. – Head in dorsal view transverse (Fig. 3 a), twice as broad as long, eye also twice longer than temple, temple rounded, occiput excavated. Eye in lateral view 1.8 times as high as wide and slightly wider than temple, temple beyond eye evenly broad (Fig. 3 b, see arrows). Horizontal diameter of oral opening somewhat longer than shortest distance between opening and compound eye (Fig. 3 c). Head densely granulose.

Mesosoma in lateral view 1.4 times as long as high, granulose (granulation somewhat less strong than that of head). Notaulix indistinct. Propodeum granulose like vertex of head, without carination. – Hind femur 3.5 times as long as broad medially (Fig. 3 d). Claw weakly curved, its basal lobe small (Fig. 3 e).

Fore wing of the lectotype missing, for its description it served the female specimen identified by Thomson (of it details see before). – Fore wing about as long as body. Pterostigma (Fig. 3 f) 2.5 times as long as wide and issuing r before middle of pterostigma; 3–SR and 2–SR equal in length, SR1 straight, 2.3 times as long as 3–SR and approaching tip of wing. First discal cell somewhat pointed upwards. 1–M twice as long as m–cu, 1–SR–M slightly bent and 1.2 times longer than 1–M (Fig. 3 g).

First tergite (Fig. 3 h) strongly broadening posteriorly, its hind width one-fifth (or 1.25 times) longer than its length. Second tergite 1.3 times longer than third tergite medially; suture between them bisinuate, finely crenulate. Tergites rugo-rugulose (Fig. 3 h). Hypopygium pointed and ovipositor sheath as long as middle tibia + basitarsus combined or somewhat shorter than hind tibia.

Body with antenna black with faint greyish tint. Palpi brown. Yellow to orange: orbit, margin of clypeus, mandible and sternites. Legs black, tibiae and tarsis brownish yellow with more or less brownish pattern. Wings subhyaline, pterostigma light brown with distinct yellow macula basally (Fig. 3 f); veins opaque brown.

Variable features of the female $(38 \ Q\ Q)$. — Body 2.3–3.2 mm long. Antenna as long as or somewhat longer than body and with (19-)21-24 antennomeres. First flagellomere (1.2-)1.3-1.7 times and penultimate flagellomere (1.3-)1.4-1.6 times as long as broad, flagellum distally just attenuating. Head in dorsal view (1.8-)1.9-2 times as broad as long. Mesoscutum and propodeum less granulose. Hind femur (3.5-)3.8-4.1 times as long as broad medially (Figs 3 d, i). Pterostigma 2.5–2.8 times as long as wide and issuing r more or less before its middle or (just) from

its middle (Fig. 3 j). Fore wing: 3–SR as long as to somewhat shorter than 2–SR. First tergite less usually as broad behind as long. Tergites either rugo-rugulose (Fig. 3 h) or, frequently, densely granulose (Fig. 3 k).

Variable features of the male (10 o'o'). — Similar to the female. Body 2–3.2 mm long. Antenna more or less shorter than to as long as body and with 23–33 antennomeres, flagellomeres 1.5–1.6 times longer than broad. First tergite broader behind than long to (less frequently) just longer than broad (Figs 4 a–b).

Hosts — Lepidoptera: Scrobipalpa acuminatella Sircom (its foodplant: Circium vulgare), Anacampsis populella Clerck / temeralla Lienig et Zeller (its foodplant: Salix repens) (both hosts by M. R. Shaw) (Gelechiidae); Sparganothis pilleriana Denis et Schiffermüller (Tortricidae); Ephestia kuehniella Zeller (Pyralidae).

Distribution: Scotland, England, Denmark, France, Spain, Tunisia, Italy, Hungary, Romania, Bulgaria, Macedonia, Greece, Turkey, Armenia, Jordan, Turkmenia, Mongolia.

Habrobracon crassicornis (Thomson) is nearest to *H. ponticus* (Tobias) viewing their broad first tergite and densely granulose body, however, the two species are distinguished by a few features keyed:

1. Marginal cell of fore wing short, i.e. *SR1* ending clearly before tip of wing or *I-R1* as long as pterostigma (Fig. 4 c). First tergite unusually broad, about 1.3–1.5 times broader behind than long (Fig. 4 d). Temple in dorsal view more rounded, its granulation slightly less rough (Fig. 4 e). Claw gracile, slightly less downcurved (Fig. 4 f). Pterostigma usually with hardly distinct yellowish basal macula or pterostigma entirely dark coloured. ♀♂: 2.3–3.8 mm. – Southern half of the western Palaearctic Region......

......Habrobracon crassicornis (Thomson, 1894)

Checklist of the species of Habrobracon Ashmead, 1895 in the western Palaearctic Region

Currently twenty-one *Habrobracon* species are registered as valid in the western Palaearctic Region. Among them three species (*H. didemiae*, *H. kitcheneri*, *H. labrator*) are in need to clear up their taxonomic position. Twelve names are junior synonyms. In the list they are in brackets and, after the sign "=", the valid species name is presented. Valid and synonymous names are listed in their alphabetic order. The synonymous names are also added to the valid names with the sign "=". The name *H. lineatellae* Fischer proved to be a junior synonym of *Bracon variegator* Spinola.

(brevicornis Wesmael, 1838) = hebetor (Say, 1836)

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breviradiatus Tobias, 1957
(brunnea Szépligeti, 1901) = hebetor (Say, 1836)
(concolor Thomson, 1894) = concolorans (Marshall,
    1900)
concolorans (Marshall, 1900) comb. n.
   = concolor (Thomson, 1894)
   = mongolicus Telenga, 1936
   = nigricans Szépligeti, 1901
crassicornis (Thomson, 1894)
    = flavosignatus Tobias, 1957
didemiae (Beyarslan, 2002)
(dorsator Say, 1836) = hebetor (Say, 1836)
excisus Tobias, 1957
(flavosignatus Tobias, 1957) = crassicornis (Thom-
    son, 1894)
(flavus Telenga, 1936) = hebetor (Say, 1836)
gelechiae (Ashmead, 1889)
hebetor (Say, 1836)
   = brevicornis (Wesmael, 1838)
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= vernalis Szépligeti, 1901

= brunnea Szépligeti, 1901

= juglandis Ashmead, 1889

= pectiniphorae Watanabe, 1935

= dorsator (Say, 1836)

= flavus Telenga, 1936

iranicus Fischer, 1972

(juglandis Ashmead, 1889) = hebetor (Say, 1836) kitcheneri (Dudgeon et Gought, 1914)

kopetdagi Tobias, 1957

labrator (Ratzeburg, 1844)

[lineatellae Fischer, 1968 → Bracon variegator Spinola, 1808 syn. n.]

lissothorax Tobias, 1966

(mongolicus Telenga, 1936) = concolorans (Marshall, 1900)

(nigricans Szépligeti, 1901) = concolorans (Marshall, 1900)

notatus Szépligeti, 1914

nygmiae Telenga, 1936

(pectiniphorae Watanabe, 1935) = hebetor (Say, 1836)

pillerianae Fischer, 1979

(plotnicovi Bogoljubov, 1914) = hebetor (Say, 1836) ponticus (Tobias, 1986)

radialis Telenga, 1936

simonovi Kokujev, 1914

stabilis (Wesmael, 1838)

telengai Mulvarska, 1955

(turkestanicus Telenga, 1936) = hebetor (Say, 1836) (vernalis Szépligeti, 1901) = hebetor (Say, 1836) viktorovi Tobias, 1961

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