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SYNONYMY AND OTHER TAXONOMIC  
NOTES ON THE TWO COMMONEST  
BUMBLE BEES OF EASTERN ASIA

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The bumble bee fauna of Eastern Asia has been studied mainly by O. RADOSZKOWSKI, F. SMITH, J. PÉREZ, H. FRIESE, S. MATSUMURA, T. D. A. COCKERELL, H. BISCHOFF, W. F. REINIG, A. S. SKORIKOV and T. H. FRISON. Nevertheless much should be done before completing a monograph of these bees in Eastern Asia. Among many species found there, both *Bombus ardens* and *B. speciosus* have always been questionable to several Hymenopterologists who attempted to determine these bees. Further more Hymenopterologists were unable to determine distinctly or definitely such bumble bees as *Bombus harmandi* and *B. andreaei*, both of which had been described from Japan.

This is a part of my revisional studies of all the species and varieties of bumble bees known to occur in Japan. My fairly definite conclusions regarding the identity of most of the names proposed by several authors, which led to much confusions of the two commonest bumble bees mentioned above, are based upon a study of literature and a good number of specimens preserved in the collection of the Entomological Laboratory of the Kyushu University, Fukuoka.

Before going further I express my sincere gratitude to Professor TEISO ESAKI for his kind guidance and to Professor KUNIO IWATA for his kind advices given in the course of the present study. To Dr. KARL V. KROMBEIN I am deeply indebted for consulting some literature.

***Bombus (Pratobombus) ignitus* SMITH**

1869 *Bombus ignitus* SMITH, Entomologist, 4 : 207.

This species is very common in Japan (Hokkaido, Honshu, Shikoku, Kyushu, Tsushima, Yakushima), and is widely distributed in the Transbaikalian Region, Ussuri Region, Manchuria, Korea, Quelpart Island, N. China, E.

China, and W. China as far west as Tatsienlu, China-Tibet border. So far as my investigation goes *Bombus ignitus*, *B. harmandi*, *B. ardens* and *B. andreaei* are but one and the same species. The characters of *harmandi* and *andreaei* given by PÉREZ and FRIESE respectively may be regarded as mere variations within those of *ignitus*. The size of the malar space in the female sex is the differentiating character of *Bombus harmandi* from *B. ignitus*. But I think it is not necessary at the present time to regard it as an important character between the species in question. As to *Bombus ardens*, MEADE-WALDO published in 1916 such an incorrect opinion that *B. ardens* may prove to be the male of *B. muscorum* var. *tarsatus*, SMITH, also from Japan. In Kyushu there are found three species of bumble bees, viz., *Bombus ignitus*, *B. speciosus* and *B. diversus*. Although both *ignitus* and *diversus* occur in the low land, *speciosus* is on the wing only in mountainous regions (over 250 meters in altitude). From this fact it seems to be impossible to regard that *Bombus speciosus* is the male of *B. ignitus*. The circumstantial evidence that the only male bumble bee found in the low land, otherwise of *Bombus diversus*, is *B. ardens* seemed undoubtedly to confirm *B. ardens* as the male of *B. ignitus*. Fortunately Dr. IWATA observed that *Bombus ardens* (♂) and *B. ignitus* (♀) were in copula in Ikeda, Osaka Prefecture. Thus I may summarise my consideration in the following way.

*Bombus (Pratobombus) ignitus* SMITH, 1869

*Bombus ardens* SMITH, 1879, syn. nov.

*Bombus harmandi* PÉREZ, 1905, syn. nov.

*Bombus andreaei* FRIESE, 1910, syn. nov.

*Bombus andreaei* var. *unicinctus* FRIESE, 1910, syn. nov.

*Bombus ignitus* var. *subcollaris* SKORIKOV, 1914, syn. nov.

*Bombus ignitus* var. *balteatus* SKORIKOV, 1933, syn. nov.

*Bombus ignitus* var. *cancellatus* FRISON, 1935, syn. nov.

The subgeneric position of *Bombus ignitus* has been a problem of discussion. The authors who placed the species in the Subgenus *Bombus* are FRISON (1935) and BISCHOFF (1936). FRISON wrote that the characters of the female suggest that it is a member of the Subgenus *Bremus* (s. s.). In 1905 FRIESE placed *Bombus ardens* in "Arten, deren Stellung im System noch unsicher ist." In 1933, SKORIKOV placed both *Bombus ardens* and *B. andreaei* in the group "Bombi incertae sedis" and doubtfully regarded *B. harmandi*

as a representative of the Subgenus *Diversobombus*. In the same paper SKORIKOV published the opinion on the subgeneric position of *Bombus ignitus*, saying that "Die Zugehörigkeit dieser Art zur Gattung *Lapidariobombus* bedarf, meines Erachtens, Bestätigung." Unfortunately, however, the examination of the male genital appendages reveals that the species is very characteristic of the Subgenus *Pratobombus*.

The colour variation of this species is confined to the presence or absence of the yellowish hairs either on the pronotum or on the basal abdominal tergites in the female sex. The following key is offered for the separation of *ignitus* and all its individual variations hitherto named.

1. Pronotum with a band of yellowish hairs ..... var. *subcollaris* SKORIKOV, 1914  
    Pronotum without a band of yellowish hairs ..... 2
2. Hairs on the basal abdominal tergites entirely black .....  
    ..... *ignitus* SMITH, 1869; *andreaei* FRIESE, 1910  
    Hairs on the first or second tergite not entirely black ..... 3
3. Hairs on the first or second tergite mixed with some yellowish ones .....  
    ..... var. *cancellatus* FRISON, 1935  
    Second tergite with a band of yellowish hairs .....  
    ..... *harmandi* PÉREZ, 1910; *andreaei* var. *unicinctus* FRIESE, 1910

In Kyushu the male (*ardens* auct.) occurs only in late spring or early summer.

### ***Bombus (Bombus) speciosus* SMITH**

1873 *Bombus speciosus* SMITH, Trans. Ent. Soc. London, 1873 : 205.

In Japan this species is also very common in Hokkaido, Northern part of Honshu, mountainous regions of Central and Western Honshu and Kyushu. The distribution of the species in Eastern Asia is very wide, being found in the Transbaikal Region, Manchuria, Korea, Quelpart Island, Saghalien and N. China.

It is a strange fact that during sixty years or more no one has attempted to compare *Bombus speciosus* with *B. sapporoensis*. In 1935 FRISON suggested that *speciosus* SMITH (*Bremus* s. s.), known only in the male, is possibly the male of *ignitus*. On the other hand, SKORIKOV was of the same opinion as FRISON. Thus in 1938, I erroneously regarded *Bombus speciosus* as the male of *B. ignitus*. Recently I have noticed the fact that the bumble bees found only in mountainous regions of Kyushu are *Bombus speciosus* (♂) and *B.*

*sapporoensis*. After my careful comparison of these two forms, I came to the conclusion that these two forms are one and the same species, namely *Bombus speciosus* being the fresh male of *B. sapporoensis*. In the male of this

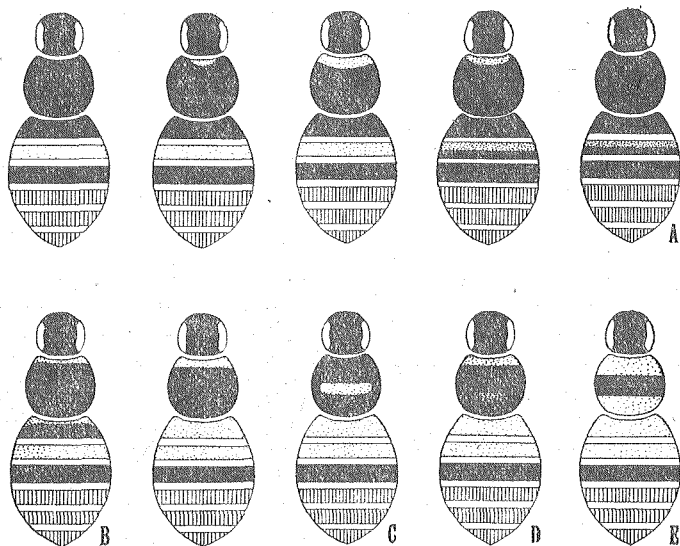


Fig. 1. Colour variation of *Bombus speciosus* (females and workers). Hairs black (black portion). Hairs yellowish, greyish or pale red (dotted portion). Hairs red (longitudinally striped portion). A : *ganjsuensis*. B : *ikonnikovi*. C : *invitabilis*, *catagraphus*. D : *hypocrita*. E : *vanus*.

species the colour variation is found only in the pubescence on the head, and the variation is transitional between yellow and brownish-black. In the female the individual colour variations are as shown in the text-figure. In the following lines I may summarise my consideration on *Bombus speciosus*.

*Bombus* (*Bombus*) *speciosus* SMITH, 1873

*Bombus ignitus* var. *hypocrita* PÉREZ, 1905, syn. nov.

*Bombus sapporoensis* COCKERELL, 1911, syn. nov.

*Bombus sapporoensis ganjsuensis* SKORIKOV, 1913, syn. nov.

*Bombus fraterculus* var. *esakii* SKORIKOV, 1933, syn. nov.

*Bombus lapidarius* var. *Kalinowski* RADOSZKOWSKI, 1887

*Bombus Kalinowskii* RADOSZKOWSKI, 1890

*Bombus alticola* MATSUMURA, 1908 (nec KRIECHBUMER)

*Bombus jesoensis* MATSUMURA, 1911

*Bombus ikonnikovi* SKORIKOV, 1913

- Bombus ikonnikovi* var. *mariae* SKORIKOV, 1913  
*Bombus ikonnikovi* var. *catagraphus* SKORIKOV, 1913  
*Bombus ikonnikovi* var. *invitabilis* SKORIKOV, 1913  
*Bombus ikonnikovi* var. *vamus* SKORIKOV, 1913  
*Bombus formosulus* SKORIKOV, 1913  
*Bombus fraterculus* SKORIKOV, 1922

The male of this species occurs in late summer or early autumn in Kyushu. Mr. Y. KUROSAWA collected a single female of this species which was hibernating in decaying wood of a *Cryptomeria* tree (4. v. 1947, Takizawa Pass, Itsuki-mura, near Wakamatsu City, Fukushima Prefecture).

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