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On a Colony of *Ceracupes fronticornis* (Coleoptera, Passalidae) Observed in Northern Thailand, with Reference to the Known Microhabitats of the Genus *Ceracupes*

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Abstract The colony composition and microhabitat are reported for *Ceracupes fronticornis* from northern Thailand. The colony comprises a bisexual pair, one 3rd instar, five 2nd instars and one 1st instar. They were living in the gallery excavated into the detritus-like wood substance in a dead stump. The known microhabitats of the genus *Ceracupes* are also discussed.

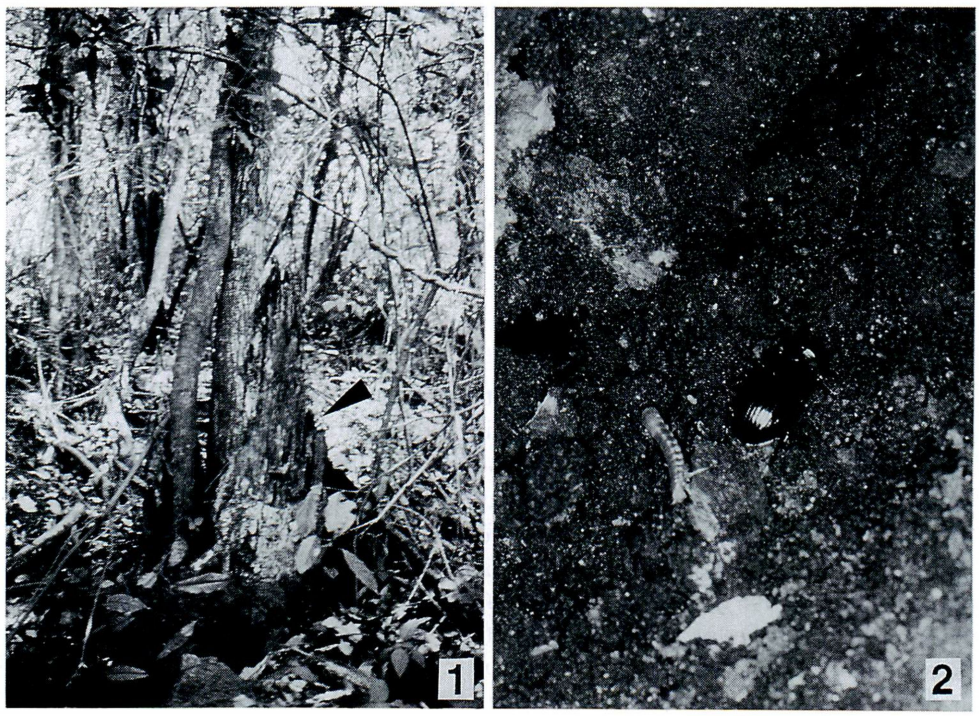
The genus *Ceracupes* Kaup is one of the most peculiarly formed passalid genera, characterized by having three horns projecting strongly forward and a little upward. Up to the present, only four species have been known as the members of this genus from Southeast Asia: *C. arrowi* Heller, 1911 from Taiwan, *C. chingkini* Okano, 1988 from Taiwan, Thailand and Vietnam, *C. fronticornis* (Westwood, 1842) from the eastern Himalayas, Myanmar, Thailand and Vietnam, and *C. yui* Okano, 1988 from Taiwan (Kon & Johki, 1995). Of these, *C. arrowi* in Taiwan and *C. fronticornis* in Vietnam have been reported to live in colonies in detritus among the rhizomes of epiphytic ferns (Kabakov, 1967; Johki & Kon, 1989). For *C. fronticornis*, it has also been reported that a single adult of this species was collected from detritus-like wood substance in a fallen tree on Doi Suthep, northern Thailand (Ôbuchi, pers. comm.). On the other hand, insufficient information is available of the microhabitats and colony composi-

tions of *C. chingkini* and *C. yui*; the former likely to have been collected from a hole of a living tree, whereas the latter from decayed wood (OKANO, 1988).

We had an opportunity to observe a colony of *C. fronticornis* on Doi Chiang Dao in the course of the Kyoto University Expedition to Thailand in May, 1997. We herein report the colony composition and microhabitat of this species.

On Doi Chiang Dao (1,800 m in altitude), North Thailand, on May 28th, 1997, two of the authors (K. ARAYA and S. PANHA) observed a colony of *C. fronticornis* in detritus-like wood substance accumulated under the bark of a dead stump (Figs. 1–2). The colony composition is summarized in Table 1. Adults and larvae were living in the vertically long gallery (10 cm long, 6 cm broad and 1 cm high from floor to ceiling) excavated into the detritus-like wood substance, which appeared to have been made by the past feeding activities of wood-feeding insect larvae, probably Cerambycidae. There was no trace of the adults of *C. fronticornis* digging a tunnel into wood.

All the *Ceracupes* species have wide front tibiae which are probably related to living in the detritus-like microhabitats (JOHKI & KON, 1989). Furthermore, all of them have two long horns on the mandibles and one long horn on the head which must inhibit them from digging a tunnel into wood. Thus, it is supposed that both *C. chingkini*



Figs. 1–2. —— 1. Habitat of *Ceracupes fronticornis* on Doi Chiang Dao (*Quercus* forest at 1,800 m in altitude), northern Thailand; arrow shows the stump in which the colony of *C. fronticornis* was observed. —— 2. Adult and 2nd instar larva of *C. fronticornis* in detritus-like wood substance.

Table 1. Colony composition of *Ceracupes fronticornis* living in detritus-like wood substance accumulated under the bark of a dead stump on Doi Chiang Dao (1,800 m in altitude), northern Thailand, on May 28th, 1997.

Adults		Pupae	Larvae			Eggs
Male	Female		3rd ins.	2nd ins.	1st ins.	
1	1	0	1	5	1	0

and *C. yui* also live in detritus-like wood substance accumulated in a hole of living trees and in decayed wood, respectively, as was observed for Thai *C. fronticornis*.

As reported above, the microhabitat observed for Thai *Ceracupes fronticornis* was different from that reported by KABAKOV (1967) for Vietnamese one, the detritus among the rhizomes of epiphytic ferns. The difference is also known in the morphology of the male genitalia between Thai and Vietnamese populations of *C. fronticornis* (KON & JOHKI, 1995): in males from Thailand, the basal piece is distinctly separated from the parameres, whereas in males from Vietnam the former is united with the latter on the ventral side.

Further field studies are required to ascertain whether the difference in the microhabitats between Thai and Vietnamese *Ceracupes fronticornis* is due to geographic variation or to facultative living of *C. fronticornis* in both types of microhabitats.

In closing this brief report, we wish to express our hearty thanks to Dr. M. MATSUI, Kyoto University, for giving us opportunities to make field research in Thailand. We also thank Dr. T. HIKIDA and Mr. M. TODA, Kyoto University, and Mr. H. OTA, University of the Ryukyus, for their continuous support during the field research. Thanks are also due to Mr. T. OCHI, Toyono, for literature and Mr. T. ÔBUCHI, Himeji, for useful information on the microhabitat of *C. fronticornis* in northern Thailand. The survey within Thailand was conducted under the permission from the National Research Council of Thailand (NRCT), and we also express our gratitude to Mrs. C. EIAMSUPAN of this council for her kind support. This study was supported in part by the Grants-in-Aid from the Ministry of Education, Science and Culture, Japan: Overseas Researches No. 08041144, No. 09839030 for M. KON and No. 09740639 for K. ARAYA.

要　　約

荒谷邦雄・Somsak PANHA・近　雅博：タイ北部で観察されたミツノクロツヤムシ属の1種 *Ceracupes fronticornis* のコロニーについて，および *Ceracupes* 属4種の生息環境に関する知見のまとめ．—— タイの北部にあるチェンダオ山の標高1,800 m付近の照葉樹林内で，ミツノクロツヤムシ属の1種 *Ceracupes fronticornis* のコロニーを観察する機会を得た．観察したコロニーは，斜面上の枯株の樹皮下に溜まった泥状の木屑起源（おそらくカミキリムシの幼虫によって生産

されたものだろうと考えられる）の腐植物中に造られていて，雌雄の成虫と3令1頭，2令5頭，1令1頭の各幼虫から構成されていた．各個体は，腐植物中に垂直に掘られた比較的幅の広い空間（縦10 cm，横6 cm，床から天井までの高さ1 cm）の中で生活していたが，枯株の材部にまで侵入している様子は観察されなかった．

Ceracupes fronticornis の生息環境については，今回のわれわれの報告以外にも，やはりタイ北部のステープ山で，倒木中に溜まった泥状の腐植物中に成虫が生息していたという観察例がある一方で，台湾の *C. arrowi* と同様に，樹上の着生シダの根元に溜まった腐植物中に生息していたというベトナムでの調査結果も報告されている．現時点では報告例が少なく，こうしたタイ産とベトナム産の *Ceracupes fronticornis* にみられる生息環境の違いが，地域変異であるのか，両方の環境に生息しうるような本種の食性の幅広さを示すものなのかを結論づけることはできない．タイ産とベトナム産の *Ceracupes fronticornis* では，雄の交尾器の形態に軽微ではあるが差異があることも報告されている．*Ceracupes fronticornis* は *Ceracupes* 属の中でも分布域が広く，こうしたタイ産とベトナム産に見られる差異は，あるいは生息環境を異にするいくつかの隠蔽種が存在している可能性を示唆するものかもしれず，今後のさらなる調査が期待される．

Ceracupes 属には *Ceracupes fronticornis* と *C. arrowi* のほか，*C. yui* と *C. chingkini* の2種が知られているが，後者2種に関しては，それぞれ腐朽材と生木のうろから成虫は採集されるらしいという報告があるに過ぎず，それらの生息場所やコロニーの構成などに関する詳しい知見は得られていない．しかし，*Ceracupes* 属の種が，いずれも長い角と，腐植物様の環境に生息するクロツヤムシ類に共通した特徴である，幅広い前肢脛節を備えていることから推測して，*C. yui* と *C. chingkini* も材そのものではなく，腐朽材や生木のうろの中にたまった 泥状の腐植物の中に生息している可能性がきわめて高い．

References

JOHKI, Y., & M. KON, 1987. Morpho-ecological analysis on the relationship between habitat and body shape in adult passalid beetles (Coleoptera, Passalidae). *Mem. Fac. Sci. Kyoto Univ.,* (Ser. Biol.), **12**: 119–128.

——— & ——— 1989. Ecology of Passalidae in Taiwan. *Nat. & Ins., Tokyo,* **24** (11): 9–12. (In Japanese.)

KABAKOV, O. N., 1967. Coleoptera living in epiphytous plants in tropical forest of Viet-Nam. *Ent. obozr.,* **46**: 690–698. (In Russian with English summary.)

KON, M., & Y. JOHKI, 1995. The male genitalia of the genus *Ceracupes* (Coleoptera, Passalidae), with new records of *Ceracupes chingkini* from Thailand and Vietnam. *Spec. Bull. Jpn. Soc. Coleopterol., Tokyo,* **4**: 371–375.

OKANO, K., 1988. Descriptions of two new species of Formosan Passalidae (Coleoptera), with the illustrated list of Formosan Passalidae. *Entomo Shirogane*, **1**: 1–10.