

PLATYLOMIA OPERCULATA DISTANT, 1913, A CICADA THAT TAKES WATER FROM HOT SPRINGS AND BECOMES VICTIM OF THE PEOPLE (RHYNCHOTA: CICADOMORPHA: CICADIDAE)

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Abstract – Males of the Asian cicada *Platylomia operculata* Distant, 1913, mysteriously sense the need to absorb some water from rather frequent hot springs in North Thailand (notably those of Jaesorn National Park), and come to sources only at night adding an unusual element to the behaviour of normally diurnal and crepuscular insects. This imperative followed in unison by the males of the same population, finds an anthropic and tragic end, the cicada in question representing a proteinic manna appreciated by Thais. In the addendum, we give a provisional list of the Jaesorn N.P. cicadofauna, of which two other species take some drinks from mud or humid sand (first records).

KEY WORDS: Rhynchota, Cicadomorpha, Cicadidae, Cicadinae, *Platylomia*, *Leptopsaltria*, *Balinta*, ethology, ethnology (entomophagous people), tropical Asia, Thailand.

Izvleček – *PLATYLOMIA OPERCULATA* DISTANT, 1913, ŠKRŽAD, KI PIJE VODO IZ TOPLIH VRELCEV IN POSTANE ŽRTEV LJUDI (RHYNCHOTA: CICADOMORPHA: CICADIDAE)

Samci azijskega škržada vrste *Platylomia operculata* Distant, 1913, skrivnostno začutijo potrebo po pitju vode iz precej pogostih toplih vrelcev na severu Tajske (posebno v narodnem parku Jaesorn). Do vrelcev prihajajo le ponoči, kar je nenavadno za žuželko, ki je navadno dejavna podnevi in v mraku. Ta klic, ki mu družno sledijo samci iste populacije, se konča s tragičnim zaključkom, saj postanejo obravnavani škržadi beljakovinska mana, cenjena pri Tajcih. V dodatku je podan začasen seznam škržadov Jaesornskega n. p. Še dve drugi vrsti prihajata po nekaj požirkov z blata ali vlažnega peska (prvi podatki).

KLJUČNE BESEDE: Rhynchota, Cicadomorpha, Cicadidae, Cicadinae, *Platylomia*, *Leptopsaltria*, *Balinta*, etologija, etnologija (entomofagi ljudje), tropska Azija, Tajska.

Introduction

From March till May in Northern Thailand, there is, roughly speaking, a break between the dry and rainy seasons. It is also during this period that, for the greater part, the mature nymphoids of numerous cicadan species leave their postembryonic burrow and go outdoors to accomplish the moulting that delivers perfect winged cicadas (*cf.* Boulard, 2006a; 2007a). Depending on the species, the cycle can be annual or pluri-annual, but we know little about the periodic rhythms of most species.

One of them, however, *Platylomia operculata* Distant, 1913, nymphoids of which appear every year, presents a particularly high population peak this year, 2008.

This large species¹ with brown dominant, strong hyaline wings ribbed with bistre, with costa green (Fig. 1) is characterized, in males, by the hypertelic development of latero-ventral opercula (Fig. 2), which accounts for the sensible nominal attribute given by the describer (Distant, 1913. See also Boulard, 2005). Besides this surprising morphological peculiarity, which, however, is not exceptional in the Asian cicadofauna, this species offers a singular ethological phase with ethnological consequences, at first sight unexpected, but taking place according to a dramatic scenario.

The theatre, setting

Our observations were made by chance, near three open air hot springs – which are found sparsely and of varying sizes in Thailand: the gushing spring at San Kamphaeng, the smaller spring which spouts up at Ban Pong Din, both located in Chiang Mai province, and especially the spring which spouts up also at Jaesorn National Park in Lampang province. In these sites, relatively limited in area, where the hot springs are composed of characteristic landscapes, although today these are more or less modified for touristic purposes, the ground vegetation is dug up by rocky brooks and shallow bowls of water approaching 80°C (Fig. 3 and 4). What is extraordinary here is that these sites are an annual ethnozoology theatre introduced by nature from the middle of March to the beginning of May, when cicadas become victims of human activity, in a spectacle that always takes place by night.

The play

The fading daylight sees the curtain rise (towards 18:50 / 19h) on the performance: *Platylomia operculata* males, playing their tymbals and their abdominal "bass drum" produce a fantastic prologue, which is going to sound in the demi sphere of the theatre during the dusk preceding the extinction of the "sunlight". Figure 5 transcribes the music score interpreted identically by multiple performers...

¹ Measurements of a male taken at random: total length, from the summit of the head to the tegmina apex = 72 mm; wingspan = 138 mm; opercula length = 23 mm.

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Then, total silence, the night has settled in, without moon. It is then that on the stage numerous star-like lights begin to glow and soon innumerable tymbalized cries rise, deeply moving in their dramatic authenticity... What has happened? What is happening? The explanations will be given in two acts:

- 1) From the end of the twilight an exceptional and, to be honest, a mysterious cicadologic phenomenon is set in motion. *Platylomia operculata*, in large numbers, moved by the same imperative impulse, are going to try, in a disorganised manner, to settle if not to fall here and there, on wet fringes lining the hot water reticulum composing the stage. There, immobile once more or after some steps, they go "to drink", the rostrum (or proboscis) planted into the wet ground (Fig. 6, 7 and 8), or even directly in the streams, clinging to an adjacent stone (Fig. 9).
- 2) In Thailand, generally speaking, as in most of the Southeast Asian countries, different cicadas participate in the human food supply, in the larval as in imaginal states (Bergier, 1941; Boulard, 2003, 2007c). And in this case, *Platylomia operculata* constitutes an important protein manna. So, every possible evening of the above-mentioned period, the Thais who live near "*namphu ron*" (hot springs) equip themselves with electric torches, and collect "*Chakkachan namrae*" (cicadas of the mineralized waters), bringing back several kilograms (!), in cloth or plastic bags (Fig. 10), from which emanate such distressing cries...

Critical analysis

According to the Jaesorn N.P. staff, it has "always been like this", at least since well before the creation of the park². By tradition, Thais know the precise time of "the arrival" of these cicadas in "*namphu ron*", and that they represent a flavourful food.

This peculiar phenomenon provokes several comments and questions which remain for the greater part unanswered.

a) First of all concerning the insect:

- All the cicadas in question are males, without exception!
- Are they sensitive to weakly sulphurized emanations from the springs, and not females?
- Why do males, blind at night like many cicadas, allow themselves to fall exactly on the thermal reticulum, all compelled by the same rather astounding genetic impulse? To the point where it turns out that some of them crash straight into the rocks which are scattered in the area surrounding the springs, and retain the marks of the impact (fig. 9).
- Why do males, normally opotroph, i.e. sucking plant juices, need thermal waters? And this at night? Let us add here, deepening the mystery, that no *Platylomia operculata*, male or female, shows such a behaviour in broad daylight. When, early the following morning, we were able to see some survivors from the night's

² Jaesorn (or Chae Sorn) National Park was designed the 58th national park of Thailand on July 28, 1988.

- fateful play, they returned silently to the foliage, activated by the first sunbeams.
- Among commensal species living in the surrounding area, none, with very rare individual exceptions, feel at night the imperative impulse which *Platylomia operculata* males submit to³.
 - Except for the nocturnal captures of some quickly satisfied big toads, the natural predation has no negative impact on the often plethoric populations of *Platylomia operculata*.

b) Anthropic Impacts:

Certain cicadas, like other insects, are edible, notably those without coloured wings, including *Platylomia operculata*, which, besides, can be appreciated gustatorily, as I can bear out! Cicadas are prepared boiled and salted, sampled accompanied with different "phêt" (chilli, hot pepper) sauces or they are in their entirety done fricassé, coated with a fine crust of yellowish dough, making a crunchy delicacy and so offered on markets in large plates (Figs. 11 and 12).

Around brooks and bowls of warm waters, vegetation is periodically pruned for tourism purposes; as a consequence, cicadas are easily detectable and collected en masse, what is possible without restriction at the hot springs of Ban Pong Din and San Kamphaeng, sites without any particular protection, but also in the Jaesorn National Park, where a special directorial decree allows the villagers (and guests) to collect cicadas every night, all night (!) if they wish – which explains the bags filled with insects – except "weekends, when the park is full of tourists"... This last sentence is not really respected, nature being swindled in this Park which in other ways is very punctilious.

Finally, collecting carried out excessively, one can even say redentlessly – to the point where by the middle of the night it becomes very difficult to find an *operculata* – does it not put the species in danger?

This last question is today the only one to find an answer, and this from two points of view. The first belongs to ethnozoology, the fact exposed by Thais themselves: in human memory, the annual cigalicious razia has always taken place and it does not seem to interfere with the vital potential of the *Platylomia*, except for some weak negative variations in the average amount of collected specimens. The second point is a question of biology: the cicadas targetted are only males (other mystery), some of which, one can suppose, were able before the disaster occurred to fertilize females, which afterwards can lay some 2000 eggs each.

Epilogue

In conclusion, the mysterious behaviour of *Platylomia operculata* males points to their need for medication (!), a feeling motivated by the ethnological angle presented by the phenomenon: normally *operculata* males, at least the rare survivors of the

³ Two other cicada species and a large Jassidae belonging to the same place drink gladly in the day on humific ground bordering more or less widely the thermal ramifications. See the proposed list in addendum. I add that from the middle of May, *Platylomia operculata* has disappeared and the role of the large noisy cicadas has been taken over by *Pomponia fuscooides* Boulard, which does not need to take the waters...

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disastrous drama, return to trees in the morning following their nocturnal “cure” of mineral water! It is to be noted that around forested springs about eight species of cicadas live “normally”, without going to the waters at night!

Furthermore, in the localities prospected and mentioned above, the *Platylomia operculata* cicadas reveal an exceptional degree of the behaviour described, annually offering to the people of the region a little more than one month of food rich in proteins.

During my (already long) career as a world traveling cicadologist, I have never come across such a phenomenon: a cicada that, at night, takes the water by genetic compulsion, and which is – one could say from human standpoint – altruistic, evidently in spite of itself!

Provisional list of the cicada species encountered in the Jaesorn National Park (with * species accustomed to drink & feed on humific or wet ground)

Cryptotympana mandarina Distant, 1891
Salvazana mirabilis Distant, 1913
Tosena melanoptera (White, 1846)
Tosena albata Distant, 1878
Tosena splendida Distant, 1878
Ayuthia spectabile Distant, 1919
Platylomia bocki (Distant, 1882)
**Platylomia operculata* Distant, 1913
Orientopsaltria cantavis Boulard, 2003
Megapomponia intermedia (Distant, 1905)
Pomponia linearis (Walker, 1850)
Pomponia fuscooides Boulard, 2002
**Leptopsaltria* n. sp. (in description), Fig. 13 (original)
Tanna yanni Boulard, 2003
**Balinta tenebricosa* (Distant, 1888), Fig. 14 (original)

It is necessary to add one *Chremistica* and several *Purana*, as yet undetermined, to the list.

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Sujet

Les mâles d’une Cigale asiennne, *Platylomia operculata* Distant, 1913, mystérieusement mus par le besoin de boire de l’eau sourdant de sources chaudes fréquentes dans le Nord Thaïlande (et notamment dans le Jaesorn National Park), et

de n'éprouver ce besoin que nuitamment, ce qui ajoute de l'insolite à ce comportement suivi par des Insectes normalement diurnes et crépusculaires. Ce besoin impérieux subi de concert, par les mâles d'une même population, trouve une fin anthropique tragique, la cigale en question représentant une manne protéinique appréciée par les Thaïs. En addendum, on donne une liste provisoire concernant la cicadofaune du Jaesorn N.P., dont deux autres espèces prennent aliments dans la boue ou le sable humide (premières signalisations).

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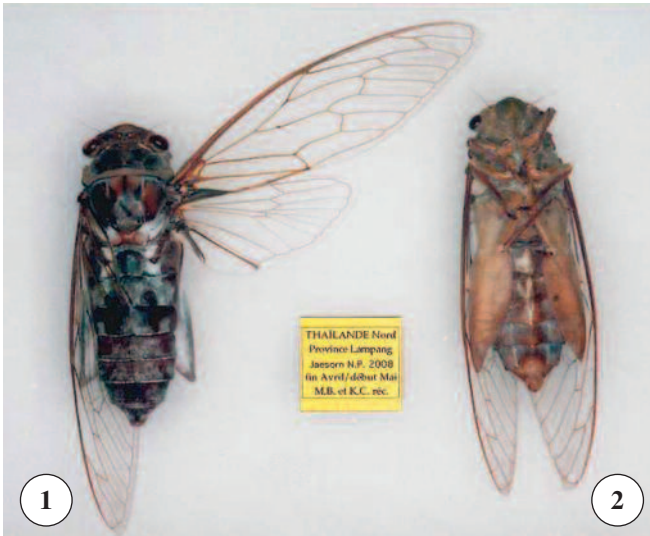
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Figs. 1 & 2: Morphology in dorsal view (1), then in ventral view centred on hypertelic opercula (2).



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Figs. 3 & 4: Jaesorn N.P. Panoramic views of the "thermal springs", often clouded with very slightly sulphurized vapours.

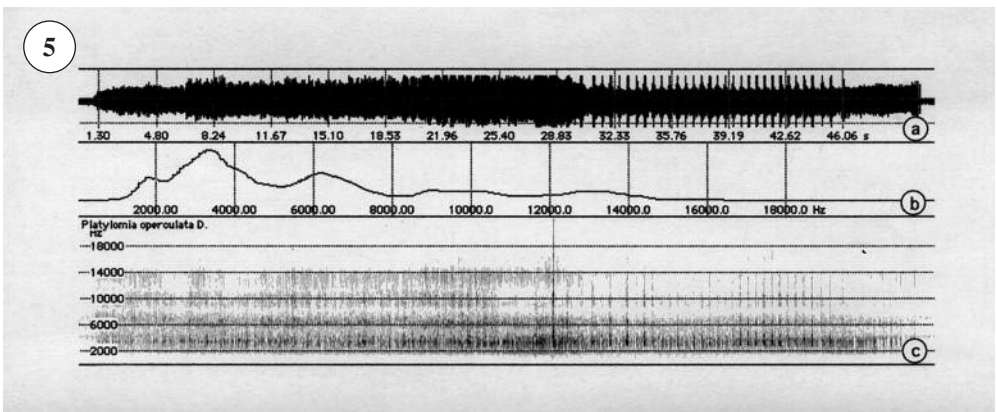


Fig. 5: "Allegro ma non troppo"... Score common to all *Platylomia operculata* performers (= C.I.A., species Acoustic ID card: **a**, temporal oscillogram; **b**, average spectrum; **c**, spectrogram).



Figs. 6 to 9: *Platylomia operculata* Distant. Close-up of the "cicadas taking the waters". **6**, "birds' eye" view of two males which have fallen on the rocky bed of the springs. **7**, subfrontal view of one of the males drinking between damp stones. **8**, frontal view of a male, its rostrum perpendicularly planted between wet stones; **9** (from VDO), in spite of the postclypeus being crushed by a supposed collision with a rock "during a badly calculated landing" this male drinks, the rostrum is kept on the lateral fringe of the spring near which the cicada alighted.

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Fig. 10 (from VDO): Estimate of cigalicid bags; in each of them, several hundred, even more than a thousand agonizing males.





Figs. 11 & 12: On a neighbouring market, sale of fricassée cicadas offered in voluminous dishes. In 11, Kwankanok Chueata (to the left) speaking with the saleswoman; in 12, close-up view of one of the baked cicada dishes.



Figs. 13 & 14: *Leptopsaltria* sp. (in description) on mud (13, from VDO) and *Balanta tenebricosa* Distant, on humific sand (14), two species encountered near the same hot springs during the day, and accustomed to drink (see arrow) water more or less charged with mineral salts, but also with different organic molecules. The evidence of this: the yellowish colour of urine which, every 7 to 9 seconds, *Leptopsaltria* ejected with spectacular micturations (see arrow). It should be emphasised that the specimens encountered were also males! Photographs & VDO: Michel Boulard & Khuankanok Chueata.

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