

Taxonomic study of the smut fungi (*Ustilaginomycetes*)
on *Cyperaceae* in Japan and South Korea

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Summary

Thirty two species belonging to seven genera, *Anthracoidea*, *Cintractia*, *Farysia*, *Moreaua*, *Schizonella*, *Tolyposporium*, and *Ustanciosporium*, are recognized in this treatment of the smut fungi on *Cyperaceae* in Japan and South Korea.

Being a cosmopolitan genus, more widely distributed in temperate and subarctic regions of the Northern Hemisphere, *Anthracoidea* is insufficiently studied in East Asia, particularly in Japan and the Korean Peninsula. A comprehensive account of the species composition and distribution of the *Anthracoidea* species in Japan and South Korea is presented herein. Four new smut fungi are described and illustrated as follows: *Anthracoidea blepharicarpae* on *Carex blepharicarpa*, *Anthracoidea caricis-grallatoriae* on *Carex grillatoria*, and *Anthracoidea dispalatae* on *Carex dispalata* from Japan, and *Anthracoidea lanceolatae* on *Carex lanceolata* from South Korea. For *Cintractia japonica* on '*Carex capillacea*', a new combination, *Anthracoidea japonica*, is proposed. *Anthracoidea grillatoriae* Vánky is a superfluous name and a synonym of *A. japonica*. The existence of the type specimen of *Cintractia subglobosa* S. Ito makes the lectotypification of *C. subglobosa* redundant. Similarly, a lectotype of *Cintractia variabilis* S. Ito is also made redundant. Based on a comparative morphological investigation, 20 *Anthracoidea* species were established in Japan, all of them on host plants of *Carex*. In addition to the new species described from Japan, six other species, *A. capillaris*, *A. humilis*, *A. irregularis*, *A. karij*, *A. michelii*, and *A. sempervirentis*, are reported for the first time from Japan. Eight plant species are reported as new hosts of *Anthracoidea* species in Japan: *Carex gmelinii* with *Anthracoidea buxbaumii*; *Carex foliosissima*, *C. mitrata*, *C. morrowii*, *C. nervata*, and *C. subbracteata* with *Anthracoidea caryophylleae*; *Carex fernaldiana* and *C. tenuinervis* with *Anthracoidea microsora*. Ten fungus-host combinations, *Anthracoidea capillaris* on *Carex tenuiformis*, *A. caryophylleae* on *Carex leucochlora*, *A. caryophylleae* on *Carex mitrata*, *A. caryophylleae* on *Carex*

foliosissima, *A. caryophylleae* on *Carex morrowii*, *A. humilis* on *Carex lanceolata*, *A. karii* on *Carex omiana* var. *monticola*, *A. microsora* on *Carex fernaldiana*, *A. microsora* on *Carex tenuinervis*, and *A. sempervirentis* on *Carex makinoensis*, are new for science. Additional distribution records are given for some *Anthracoidea* species hitherto known from Japan. The genus *Anthracoidea* is recorded for the first time from the Korean Peninsula, with three species from South Korea: *A. caryophylleae* on *Carex leucochlora*, *A. lanceolatae* on *Carex lanceolata*, and *A. siderostictae* on *Carex siderosticta*. *Anthracoidea variabilis* is a new species for Russia. The study further found that four fungus-host combinations had been wrongly recorded in the literature, specifically, *Carex cespitosa* is not a host of *Anthracoidea variabilis*; *Carex foliosissima* and *C. conica* are not hosts of *Anthracoidea microsora*; and *Carex tarumensis* is not a host of *Anthracoidea buxbaumii*.

Moreaua aterrima is reported for the first time from Japan and South Korea. *Carex callitrichos* var. *nana*, *C. mira*, and *C. tenuiformis* are new host records for this smut fungus.

The genus *Farysia* is recorded for the first time from the Korean Peninsula, with *F. thuemarii* on *Carex scabrifolia* from South Korea.