

Is invasive species is stabilized by natural enemy?: A case study for an invasive species, *Obolodiplosis robiniae* and its parasitoid

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Outbreak of invasive species in new habitat is explained by natural enemies release hypothesis because many invasive species is free from natural enemies in new habitat. Specialist natural enemies can be proper example to test natural enemies release hypothesis when its suppression is a key factor for regulation of prey population. Black locust gall midge (BLGM), *Obolodiplosis robiniae* (Haldeman), is a cecidomyiid insect forming roll-up galls on leaves of *Robinia pseudoacacia* L. (Fabaceae). It is known to be native to North America and was reported to have been introduced into Korea and Japan in 2002. A parasitoid, *Platygaster robiniae*, is specialist parasitoids on BLGM. It was reported as a new species in Italy, 2008 (Buhl and Duso, 2008) and they suggested that origin of *P. robiniae* is probably North America. This study was conducted to elucidate role of the specialist parasitoid to stabilize its host density through field census of BLGM density and parasitism in Osan, 2007 and 7 areas including Osan, 2010. Density of BLGM in Osan, 2007 was reached over 10 individuals per leaf in June and July and parasitism by *P. robiniae* was less than 1.5% until July 5 and then increased up to 54.3%. In May and June 2010, density of BLGM was less than 0.5 larvae per leaf whereas parasitism was ranged from 13.3 to 66.7% in 7 areas surveyed. Density of BLGM in Osan, 2007 was higher than that in 2010 whereas parasitism in 2007 was zero and 50.2% in 2010. This result suggested that density of BLGM was stabilized by its parasitoid, *P. robiniae*. Our results showed that change in density of BLGM in Korea is explained by natural enemy release hypothesis.

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