솔수염하늘소와 깨다시수염하늘소의 분포유형

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Distribution patterns of *Monochamus alternatus* and *M. sutor* in Korea

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The pine wilt disease (PWD) has been rapidly spreading northward from southern infected regions since 2000 in Korea. The main vector insect of the disease, *Monochamus alternatus*, is known to be naturally distributed in southern part of Korea, whereas adults of an another *Monochamus* species, *M. sutor* have been usually collected in dead pine logs or twigs in northern part. If the northward spread of the tree disease continue, the disease intrude the distribution boundary of *M. sutor* in near years. This study was carried out to find distribution pattern of the two species of *Monochamus*, vector of pine wood nematode (PWN), *Bursaphelenchus xylophilus*, in Korea. The study pine stands were selected to cover the whole region of South Korea, and pine trees were killed in early April and had been left for 1 year in the pine stands to be egg-laid by female adults of *Monochamus* beetles. Adults of *Monochamus* beetles were collected from the logs or twigs of the killed pine trees from early April to late July in next year and identified. The beetles of *Monochamus alternatus* are found in all the nematode-infected pine forests in the southern areas of Korea, whereas those of *M. sutor* occurr abundantly in the northern areas where pine wood nematode does not invade yet. Coexistence of the two species has not been found yet. The thermal distribution boundary of the two species may be formed around ca. 13.2℃ of annual mean temperature line. As PWD spreads, the beetles of *M. alternatus* would invade the northern areas monopolized by *M. sutor*, resulting in resource competition between the two pine sawfly species. Accordingly, outcome of the competition would become one of the key factors in future spread of pine wilt disease in Korea. Considering the thermal distribution of *Monochamus alternatus* in Japan, we suggested the expected distribution of the two *Monochmus* species under the intervention of PWN.