

Mechanisms for caste-fate determination in temperate paper wasps: workers do not necessarily emerge as workers, and the same is true for queens

Yoshihiro Y. Yamada (Mie University, Japan)

The physiology and morphology of newly-emerged females and the response of females to day length during the adult stage suggested that the first brood emerged with a preimaginal bias toward the worker caste while the second and third broods emerged without a caste-fate-related bias in the paper wasp *Polistes jokahamae*: the first brood, reared by only the founding queen; the second and third broods, reared by the queen and workers; the second brood, emerging before the first male. Interestingly, this pattern in the caste-fate-related bias was not found in the two other paper wasps *P. rothneyi* and *P. snelleni*. According to experiments on the response of females to day length during the adult stage, a preimaginal worker-caste-bias was not found in any brood, but a strong preimaginal gyne-caste-bias was found in the third brood in *P. rothneyi*: gyne, queen candidate in the next spring. Whereas, no preimaginal caste-fate-related bias was found in *P. snelleni*, but among the females without mature eggs, larger females were more likely to store lipids after emergence.

