Feeding, foraging and food transport in social wasps (Vespidae)

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Vespinae and Polistinae are sister taxa within the Vespidae which both are eusocial. They construct paper nests, exploit several forms of carbohydrate sources, hunt and scavenge actively to provision the colony offspring with meat. Before feeding meat, social wasps malaxate it to form a small meatball. However previous studies are discordant if this is performed inside or outside of the nest. In the late thirties the gnathal pouch, a hypopharyngeal invagination close to the mouth opening, was described in Vespinae. This organ is described to store dirt, dust and detritus. However first preliminary tests showed possible other materials in the gnathal pouch. The oral pecten, a row of comb like setae, right in front of the mouth opening leads solid particles into the gnathal pouch. The morphology and function of the whole organ system is not completely understood, as for example the mechanism to empty it could not be found. Furthermore no behaviour related to this organ in social wasps can be found in previous studies. This study focuses on the morphology and function of the gnathal pouch using LM, SEM and µCT data. These data will be analysed comparatively between several genera of central European Vespinae and Polistinae. Additional aims are to assign behaviour to this organ and to test if the malaxation site is depending on the size of prey.