Leaf litter in temperate forests represents an important input of carbon into the soil. Main players in the decomposition of leaf litter are fungi and bacteria. While the role of fungi in litter decomposition was repeatedly addressed, there are just a few field studies where litter-associated bacteria were also considered. The aim of this work was to summarize available literature studying the structure and function of bacterial community during litter degradation. The nature of different possible substrates is discussed. Genetic approach is briefly outlined. Factors such as diversity, spatially distribution and abiotic factors that can influence community are also considered. It can be supposed that community composition changes with the change of litter chemistry and nutrient availability. The development of bacterial community might be driven by the decreasing availability of nutrients in litter. Labile compounds are utilised at the beginning of decomposition, while recalcitrant substrates are utilised later by specialist taxa. Members of the phyla Actinobacteria, Acidobacteria, Bacteroidetes and Proteobacteria seem to be dominant during decomposition. Different types of relationships between fungi and bacteria also most likely influence the composition of community. This review shows that the bacterial communities on decomposing litter are influenced by many factors and therefore are highly complex and dynamic.