

Abstract

Cuckoo bees behave similarly to the well-known birds, cuckoos - they lay eggs in the nests of other bees. Proposed thesis charts the evolution of host specialization within the strictly cuckoo genus *Sphecodes*. According to the classical view based on the Red Queen hypothesis, parasites should gradually specialize during evolution to keep pace in the “arms race” with their hosts. Specialization is also perceived as an evolutionary dead end - narrow adaptation prevents change of host. To test these hypotheses phylogeny of tribus Sphecodini based on the partial sequences of five genes was constructed. For each ancestor has been by two methods of mapping ancestral characters (Bayesian method, Maximum Parsimony) specified, whether it was specialist or generalist and which kind of host or hosts it had. The results show that the original strategy of genus *Sphecodes* is specialization and generalists originated from specialized ancestors only recently. The results also show that the jumps between the hosts are common. These findings are inconsistent with the Red Queen hypothesis as well as with the view that specialization is an evolutionary dead end. Falsity of these hypotheses within the genus *Sphecodes* established also likelihood ratio test, in which the likelihood of model allowing two-way transition between specialists and generalists have significantly higher value, than likelihood of the model allowing only a one-way transition from generalists to specialists.