[Distribution and genetic diversity of five invasive pests of](https://link.springer.com/article/10.1007/s10530-020-02250-4)*[Eucalyptus](https://link.springer.com/article/10.1007/s10530-020-02250-4)*[in sub-Saharan Africa](https://link.springer.com/article/10.1007/s10530-020-02250-4)

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# Abstract

*Eucalyptus* is one of the most planted tree genera across the world, but is heavily challenged by invasive insect pests originating from the native range of these trees. The rate of introduction of non-native *Eucalyptus*-feeding insects has increased globally, including in sub-Saharan Africa where *Eucalyptus* trees have an important socio-economic role. In this study, we mapped the distribution and examined the genetic diversity of non-native *Eucalyptus* insect pests in 14 countries across sub-Saharan Africa. We focused on five foliage-feeding insect pests of *Eucalyptus* which are known to be present in the region, namely the bluegum chalcid wasp, *Leptocybe invasa*; the redgum lerp psyllid, *Glycaspis brimblecombei*; the bronze bug, *Thaumastocoris peregrinus*; the Eucalyptus weevil, *Gonipterus* sp.n.2; and the Eucalyptus gall wasp, *Ophelimus maskelli*. Insect samples were collected through structured surveys and small-scale sampling which were both combined with published literature to determine the distribution of these insect pests. Genetic diversity of each of these insect pests was estimated/assessed based on mitochondrial cytochrome oxidase I (COI) or cytochrome b (Cyt b) sequence data. Except *O. maskelli*, which is a relatively recent arrival, the other insect pests were found broadly distributed across the sampled countries, with first reports in many countries. Analysis of genetic diversity confirmed a common origin of geographically distant populations for *G. brimblecombei* and *O. maskelli*, moderate diversity for *T. peregrinus* and *Gonipterus* sp.n.2 and at least two distinct lineages for *L. invasa*. Two divergent haplogroups of *L. invasa*, with overlapping geographic range were confirmed in Ghana, Malawi, Sierra Leone, South Africa and Zimbabwe. Compared to published literature, new haplotypes were detected for *T. peregrinus*, *Gonipterus* sp.n.2 and *L. invasa*, suggesting multiple introduction of those pests in the region. Results of this study will have implications for quarantine, management and future research of *Eucalyptus* insect pests in the region and beyond.

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