A phylogeographic approach for *Glycaspis brimblecombei* (Hemiptera: Aphalaridae) and its parasitoids in Brazil

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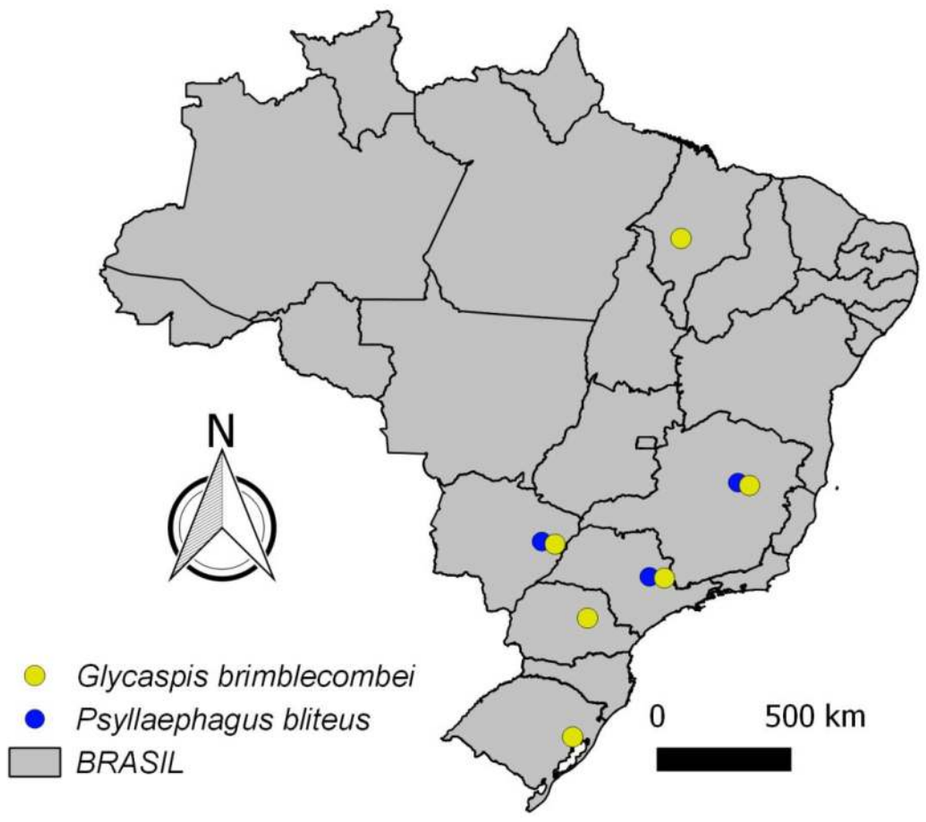
Introduction and Aims

Eucalyptus red gum lerp psyllid, *Glycaspis brimblecombei* (Hemiptera: Aphalaridae) is one of the most important *Eucalyptus* exotic pests. Its first report in Brazil was in 2003, in the state of São Paulo, damaging *Eucalyptus camaldulensis* plantations. The parasitoid, *Psyllaephagus bliteus* (Hymenoptera: Encyrtidae), was reported together with the psyllid and a new introduction of parasitoids from Mexico was performed to improve the efficiency of biological control programs of this pest. Our objectives were to evaluate the genetic diversity of the psyllid and its parasitoid in Brazil using mitochondrial genes sequencing.

Material and Methods

Insects of both species were collected from different regions in Brazil. Thirty-four individuals of *G. brimblecombei* and twelve samples of *Psyllaephagus* spp were successful sequenced.

Figure 1. Collection map of *Glycaspis brimblecombei* and *Psyllaephagus bliteus*



Results and Discussion

A single COI gene haplotype was found in *G. brimblecombei* populations from Brazil and this is the same haplotype that occurs in Portugal samples, indicating one (or few) introduction events of *G. brimblecombei* in Brazil is originated from an invasive lineage distributed in other regions from the world. This fact suggests that the invasion routes of *G. brimblecombei* in the world are interconnected, which seems to be a standard for invasive *Eucalyptus* pests.

Two distinct haplotypes, with a high genetic distance between them, were identified for the parasitoid. It confirms the presence of two parasitoid species in Brazil, one already identified, *P. bliteus*, and a second species of *Psyllaephagus* not morphologically identified. However, we can confirm that both parasitoid species collected in Brazil are exotic species originated from Australia

Figure 2. COI gene haplotype network for *Glycaspis brimblecombei* (Hemiptera: Aphalaridae) sampled in Brazil, Portugal and Australia.

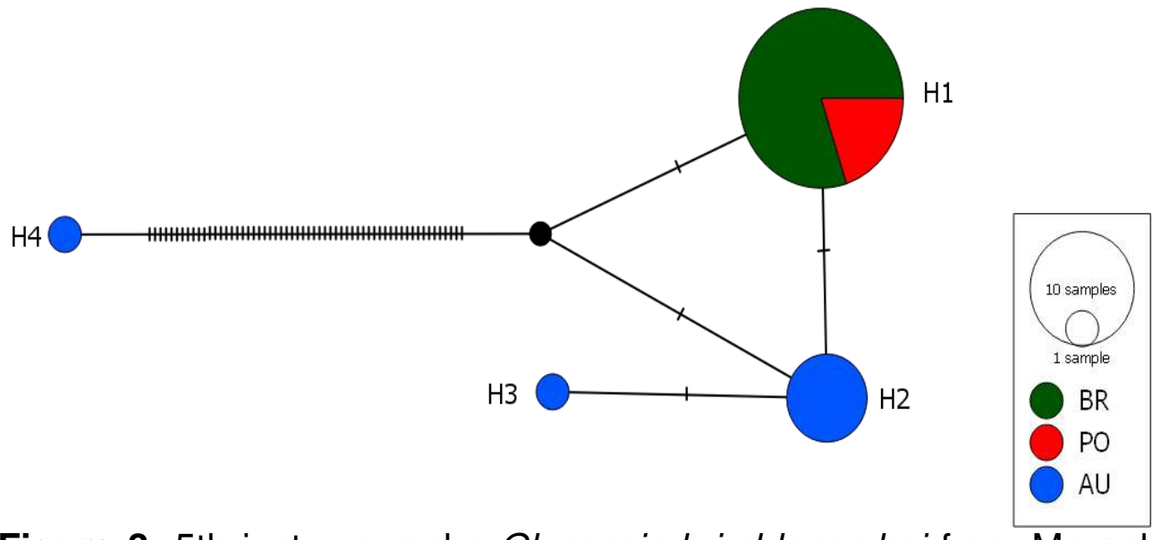
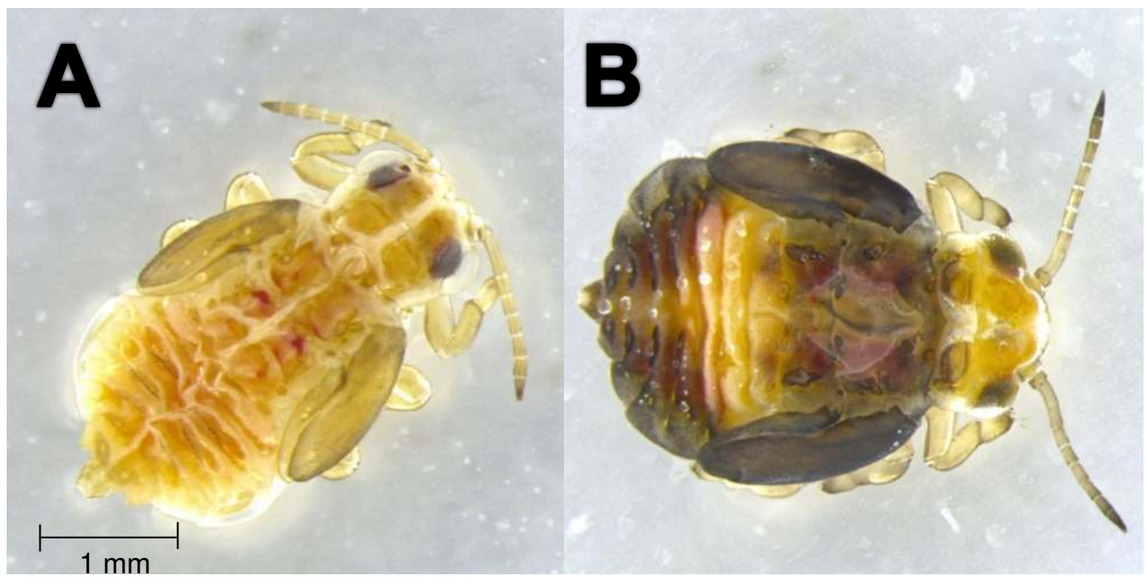


Figure 3. 5th instar nymphs *Glycaspis brimblecombei* from Maranhão A and Paraná B



Conclusions

In Brazil there is only one *Glycaspis brimblecombei* haplotype and only one or a few invasions, Brazil and Portugal have the same *G. brimblecombei* haplotype.

It was found the presence of distinct regional phenotypes of *G. brimblecombei* in Brazil, but without connection with mitochondrial lineages.