**Supplementary S1:**

To assemble a global list of insect pests, all records from a range of global sources (Supplementary S1) EPPO global database (<https://gd.eppo.int/>), EPPO Qbank (<https://qbank.eppo.int>), the Global invasive species database (<http://www.iucngisd.org/gisd/>), the Global register of introduced or invasive species (<http://www.griis.org/>), CABI invasive species compendium (https://www.cabi.org/cpc), VectorBase (<https://www.vectorbase.org/>), Australian department of agriculture top 40 priority pests (<http://www.agriculture.gov.au/pests-diseases-weeds/plant>), Plant health Australia national biosecurity status report (<http://www.planthealthaustralia.com.au/national-programs/national-plant-biosecurity-status-report/>), Delivering invasive alien species inventories Europe (<http://www.europe-aliens.org>), and the list from (Ashfaq et al., 2016).

**Reaction information**

Each 25µl reaction consisted of 5 μL 5X MyFi reaction buffer, 1uL of 10 nM forward and reverse primer, 0.8 μL MyFi DNA polymerase, 11.2 μL BSA and 2μL of variable concentration template DNA. Cycling conditions were 94°C for 2 min, 30 cycles of 94°C for 30s, 50°C for 45s, and 72°C for 45s, followed by a final extension step of 2 min at 72°C.

**Insect rearing**

To create these mock communities, isofemale lines (David et al., 2005) of *D. melanogaster*, *D. simulans*, *D. hydei* and S*captodrosophila lattivitata* were started from individual female drosophila caught in banana baited traps (Batista et al., 2017) around Victoria, Australia. F1 offspring from all isofemale lines were identified via DNA barcoding using the primers described by (Folmer et al., 1994). Following identification, all isofemale lines that were identified to be from the same species were combined to form larger ongoing colonies. *D. melanogaster*, *D. simulans* and *D. hydei* were maintained at 25c on a diet of instant drosophila medium (Carolina Biological Supply) and live brewer’s yeast, while *S. lattivitata* was maintained at 25c on a Scaptodrosophila specific diet described by Bock & Parsons (1980). Specimens of adult flies were collected weekly into absolute ethanol and a subset of which were further barcoded to confirm colony purity.

**Field sampling:**

For field trapping of drosophila, red cup traps with holes similar to (Lee et al., 2012) were used, containing one of 4 attractants (Table 4). 57 Traps were deployed in a cherry orchard located in Mornington, Victoria in transects with alternating treatments at each step in the transect (Fig 7A). Trap catches were collected, and attractants replaced every 2 weeks for a total period of 10 weeks. A stone fruit orchard located in Tatura, Victoria was selected to provide comparison of native communities associated with an alternative *D. suzukii* host. Traps were deployed consecutively as different varieties of stone fruit in the orchard ripened over the course of a 10-week trapping period. Traps were deployed as sets with 3 treatments around a single tree and trap catch collected and attractants replaced every 2 weeks (Fig 7B). Trap set 1-3 were deployed in a row of Ice Princess Peaches and Trap set 4-6 were deployed in a row of August Flame Peaches and were maintained for 10 weeks total. Trap set 7-10 were deployed in a row of Autumn Bright Nectarines and Trap set 11-14 were deployed in a row of September Bright Nectarines and maintained for 6 weeks total. Finally, trap set 15-18 were deployed in a further row of September Bright Nectarines that still retained ripe fruit on the tree and maintained for 2 weeks total. In addition to trapping of adult specimens, recently fallen and damaged fruits were collected every 2 weeks from the trees surrounding the deployed traps to retrieve larvae. These fruits were crushed in salt solution, and drosophila larvae agitated out and collected using methods described by (Van Timmeren et al., 2017). Metabarcoding of larvae retrieved from fruit provides an alternative method of monitoring to field trapping, as larvae are the most common life stages to be intercepted in fruit produce.