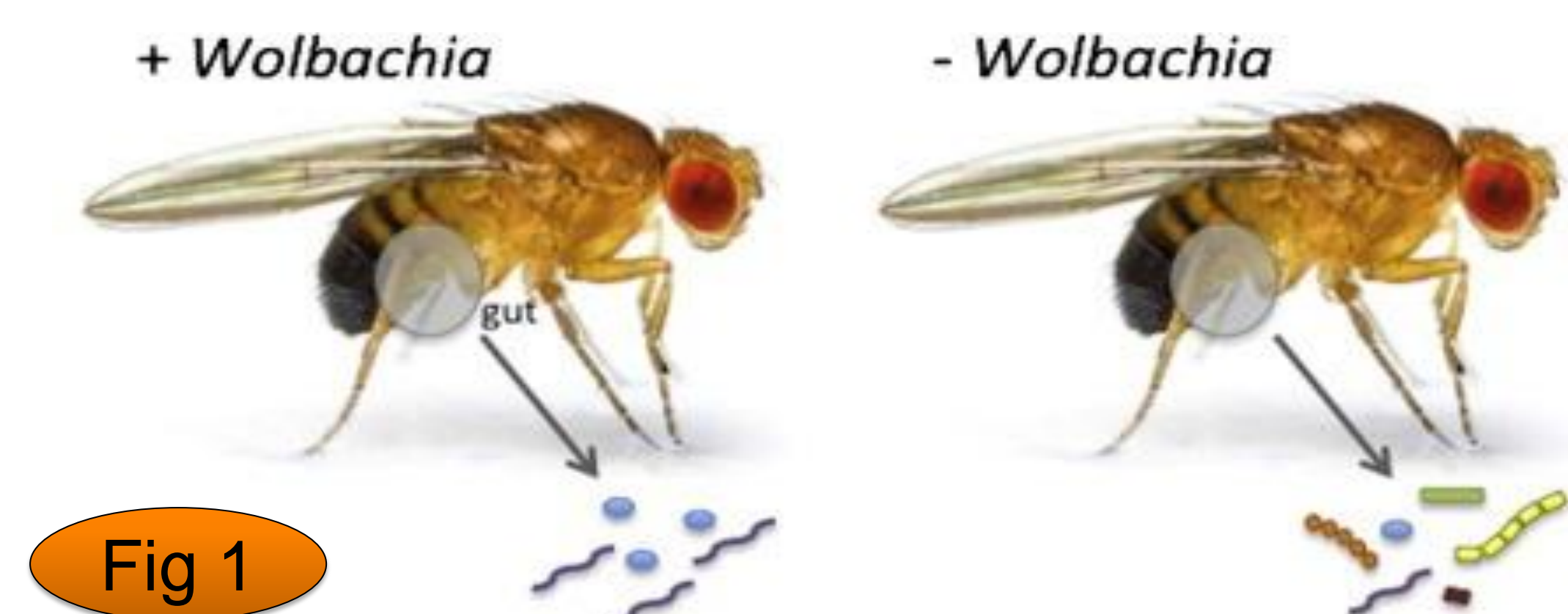


INTRODUCTION

Wolbachia pipientis is a natural bacterial endosymbiont present in 70% of insect species. *Wolbachia* has shown to increase host resistance to viruses in *Drosophila* hosts.



Understanding prevalence and pathogenicity of bacterial pathogens in natural populations is important for determining host response to pathogen pressures.

Drosophila species creates the perfect opportunity for this as they are easily collected from nature, reared in the lab and amenable to experimental manipulations for measurement of bacterial pathogenicity

Fig. 1. The fly on the right is infected with the *Wolbachia* bacteria while the fly on the left is unaffected. The *Wolbachia* infected fly is shown to carry fewer pathogen species.

METHODS

- Drosophila* spp. collected from mushroom baits in Oconee State Park
- Fly species identified morphologically
- Male flies rinsed with ethanol, crushed and then streaked onto LB agar plates

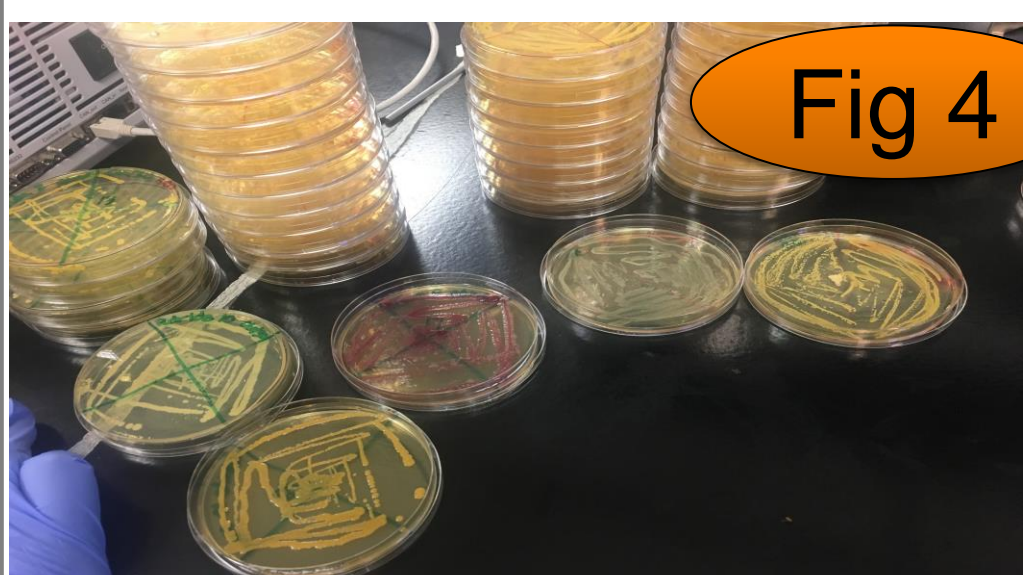


Fig. 2. Mushroom bait placed in Oconee State Park used to attract *Drosophila*. Fig. 3. *Drosophila* species being identified under microscope, later classified as *Drosophila putrida*. Fig. 4. Bacterial Isolates of streaked *D. putrida* and *D. tripunctata* species. Fig. 5. Agarose gel of PCR of 16S from bacterial isolates.

- LB agar plates incubated 48 hours to allow bacterial colonies to grow
- Bacterial colonies were isolated by species to their own plate
- Each bacterial isolate identified morphologically
- PCR tests ran on diluted bacterial isolates

RESULTS

Drosophila putrida

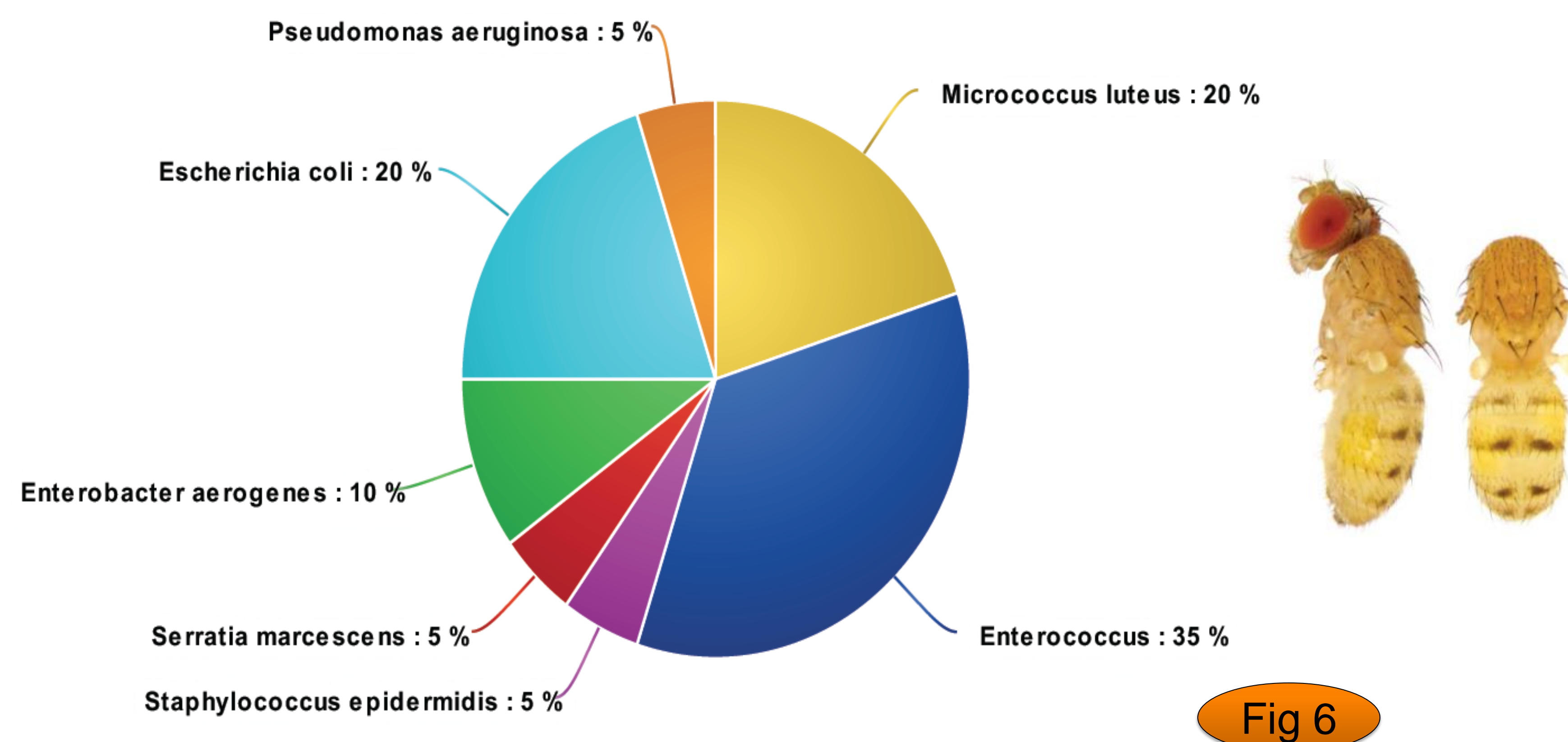


Fig.6: The seven different bacterial species found within the captured male *D. putrida* flies. The three most abundant species were; *Micrococcus luteus*, *Enterococcus* and *Escherichia coli*.

Drosophila tripunctata

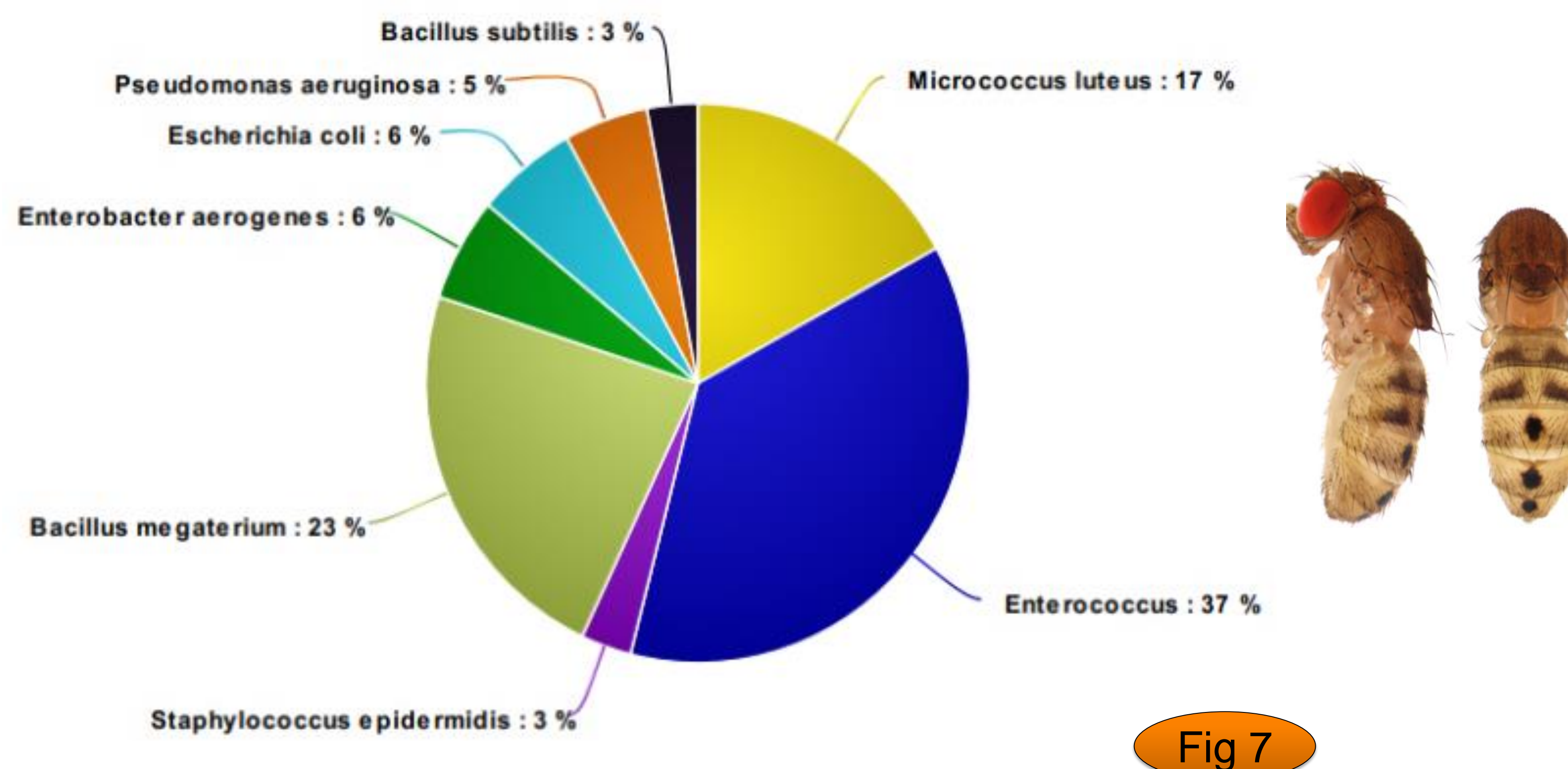


Fig.7: The eight different bacterial species found within the captured male *D. tripunctata* flies. The three most abundant species were; *Micrococcus luteus*, *Enterococcus* and *Bacillus megaterium*.

DISCUSSION

- 18 *D. tripunctata* males streaked across LB agar plates produced 35 bacterial isolates
- 10 *D. putrida* males streaked across LB agar plates produced 20 bacterial isolates
- A total of nine different bacterial species were identified between the two *Drosophila* species caught at Oconee State Park.
- Between the two species 7 of the 9 bacteria morpho-species were found in both fly species
- Two of the most common bacteria were the same between the fly species.
- Morphological identification was used to identify the bacteria, but is not 100% accurate

Future Directions

- For future studies, 16S gene sequencing is needed to confirm identification of bacterial species
- The next step is to test whether the bacteria I identified are pathogenic
- Ultimately, after testing pathogenicity I would test whether *Wolbachia* has an effect on pathogenicity

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