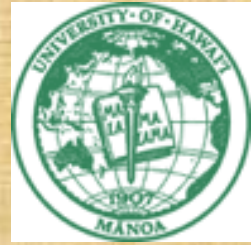




# University of Idaho



## Report on Recent Surveys of Fruit Flies (Diptera: Tephritidae: Dacinae) in the Solomon Islands.

By: Luc Leblanc<sup>1</sup>, Francis Tsatsia<sup>2</sup>, Roy Vaketo<sup>2</sup> and Camiel Doorenweerd<sup>3</sup>

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# Regional Fruit Fly Project in the Pacific (initiated 1990 and ongoing)

Fruit Fly Surveys by trapping and host fruit surveys

Improved Biosecurity      Prevention:      Establish quarantine surveillance  
                                         Preparedness:      Formulation of Emergency Response Plans (ERPs)  
                                         Public support:      Awareness about threats by invasive species

Increased Fruit Production by controlling fruit flies

Enhanced Fruit Trade by developing postharvest treatments



I worked for RFFP from 1994 to 2002, with 4 trips to Solomon Islands (1998-2000).



# Dacine Fruit fly Fauna in Solomon Islands

Drew (1989):  
29 species



Drew & Romig (2001) :  
48 species

*Australian Journal of Entomology* (2001) 40, 113–150

The fruit fly fauna (Diptera:Tephritidae: Dacinae) of Bougainville, the Solomon Islands and Vanuatu

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*Australian School of Environmental Studies, Griffith University, Nathan Campus, Qld 4111, Australia.*

**Abstract** The Bougainville, Solomon Islands and Vanuatu dacine fauna is revised and 12 new species are described: *Bactrocera atrifasciata*, *B. fuscipennula*, *B. hamaceki*, *B. hollingsworthi*, *B. naucleae*, *B. neoxanthodes*, *B. obliquivenosa*, *B. pacificae*, *B. parafraggatti*, *B. peneobscura*, *B. unitaeniola*, *Dacus tauti*. Two new synonymies are established: *Bactrocera honiarae* Drew = *Bactrocera confluens* (Drew); *Dacus varipes* Malloch = *Bactrocera quadrisetosus* (Bezzi). Information is given on attractant records, geographical distributions and taxonomic relationships. A key to species is also provided.

**Key words** *Bactrocera*, Bougainville, *Dacus*, Solomon Islands, Tephritidae, Vanuatu.

## INTRODUCTION

Only a few species of Dacinae were known from the Solomon Islands before the work of Malloch (1930), who recorded

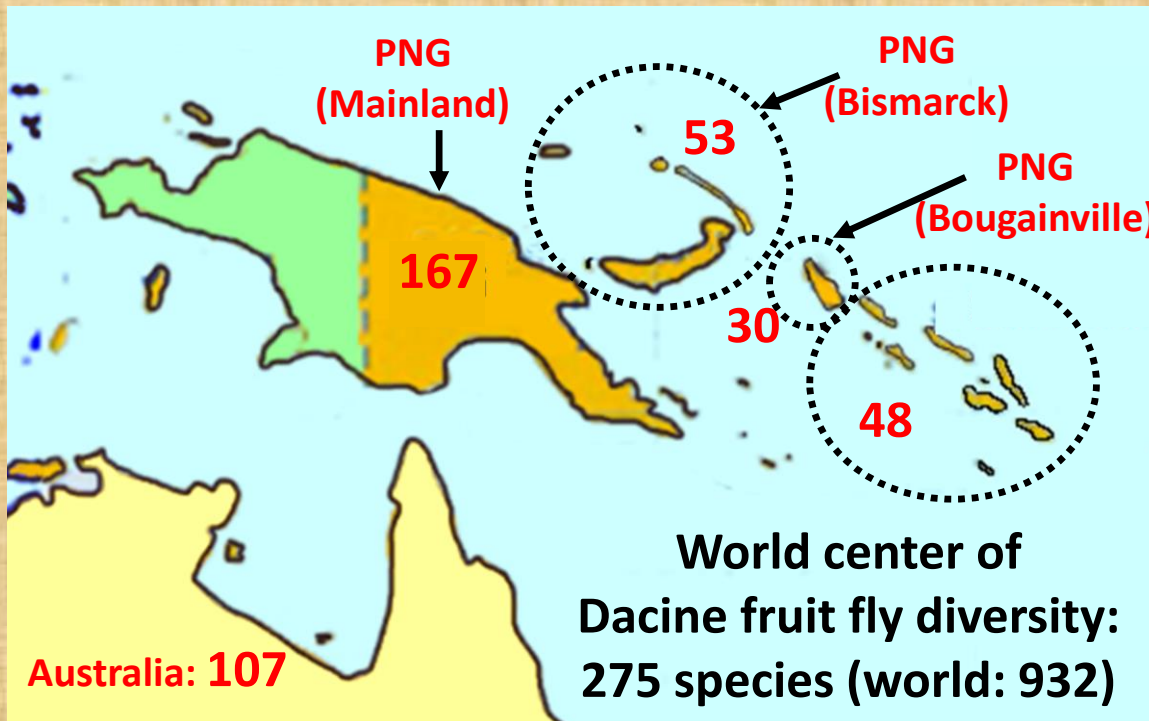
and host fruit sampling. Steiner-type fruit-fly traps, baited with either cue lure or methyl eugenol, were set in many localities on most islands. They were serviced at 2–4 week



Richard A.I. Drew



Meredith C. Romig



## Solomon Islands:

922 islands

600,000 inhabitants

## Fruit fly fauna:

Endemic species: 14

Shared species:

26 with Bougainville

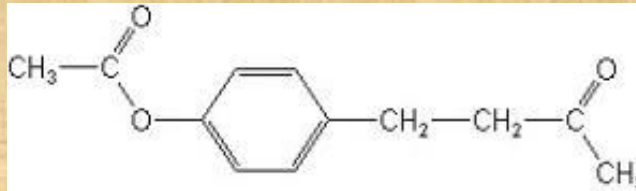
20 with Papua New Guinea

3 with Australia (Mainland)

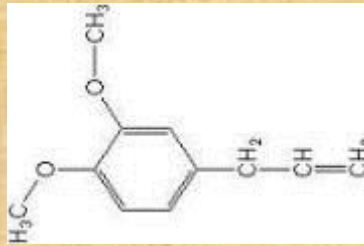
# Fruit Fly Sampling with Male Lures

Set traps baited with three different parakairomone male lures  
(and dichlorvos pesticide):

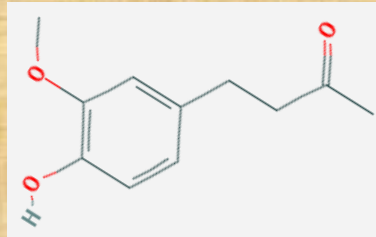
**Cue-lure (CL):** attracts melon fly  
(*Z. cucurbitae*) and 322 other species



**Methyl eugenol (ME):** attracts  
Oriental fruit fly (*B. dorsalis*) and  
122 other species



**Zingerone (vanillylacetone):**  
attracts 42 species, including many  
not drawn to the above lures



**Solomon Islands lure records:**

**Cue-lure:** 26 species

**Methyl eugenol:** 13 species

**No known lure:** 9 species

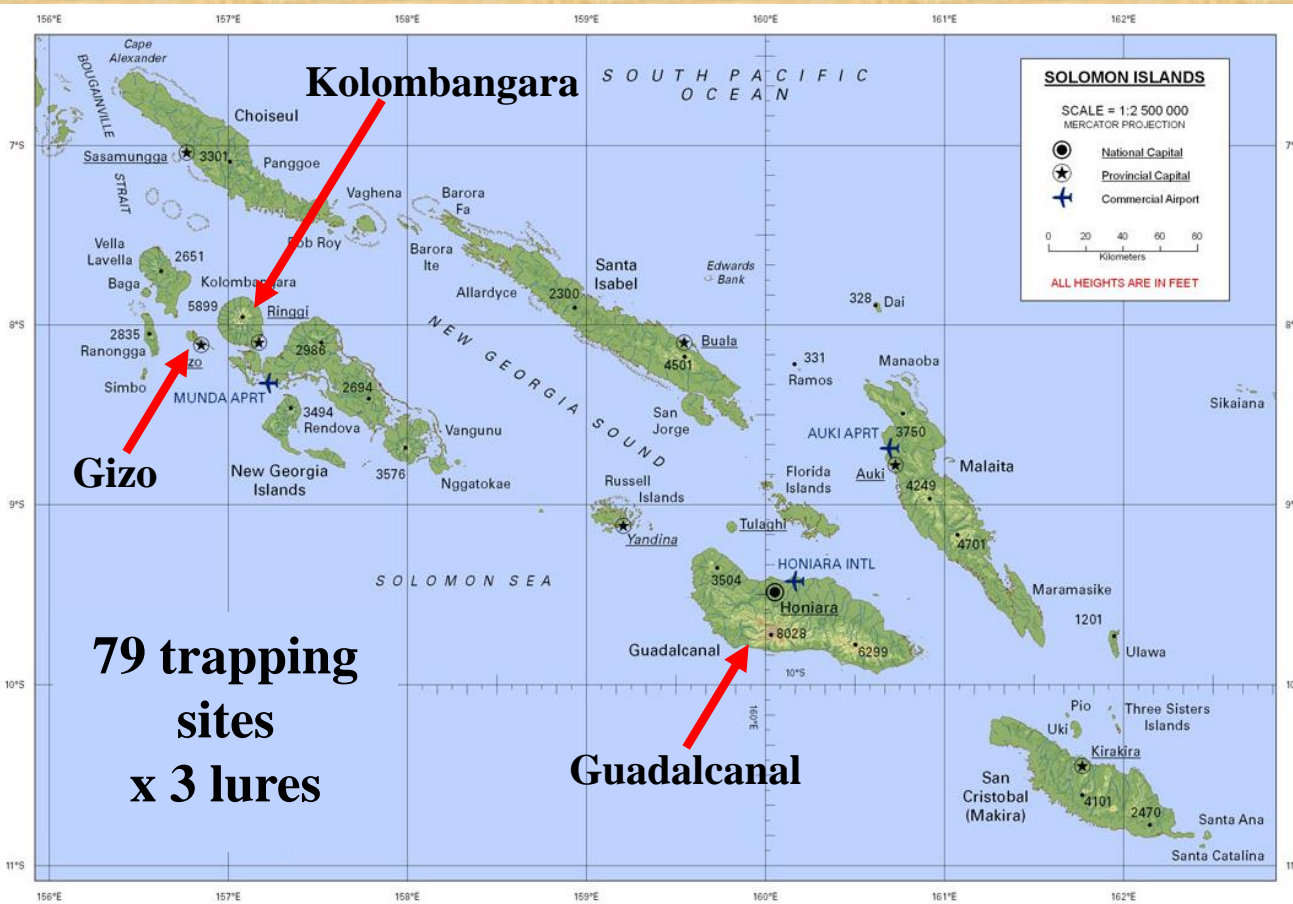
**Zingerone:** no record



# April 2018 Survey in Solomon Islands



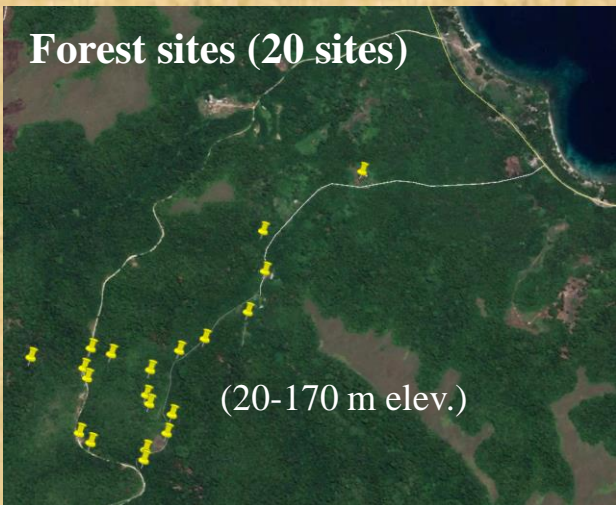
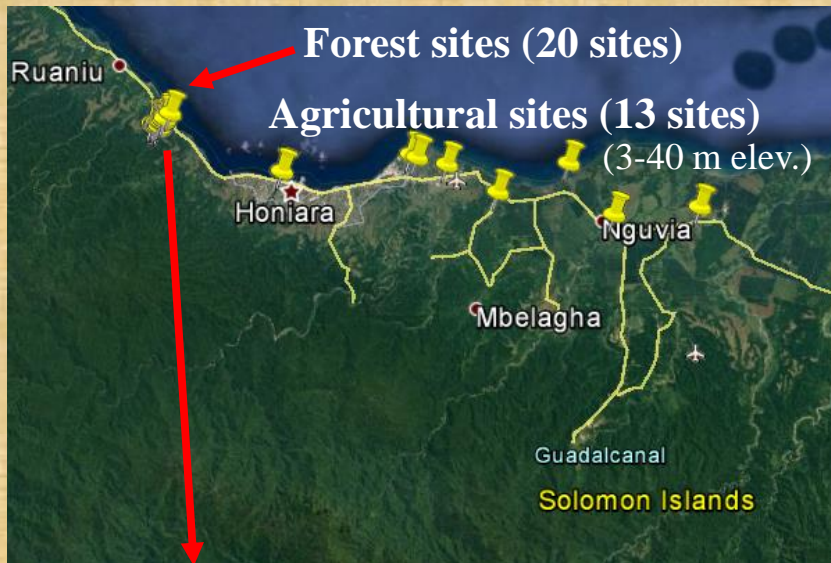
**Francis Tsatsia**  
Director of Biosecurity



**Roy Vaketo**  
Agriculture Research Officer



# Guadalcanal Survey



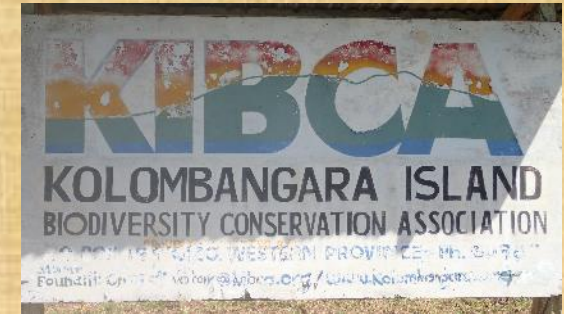
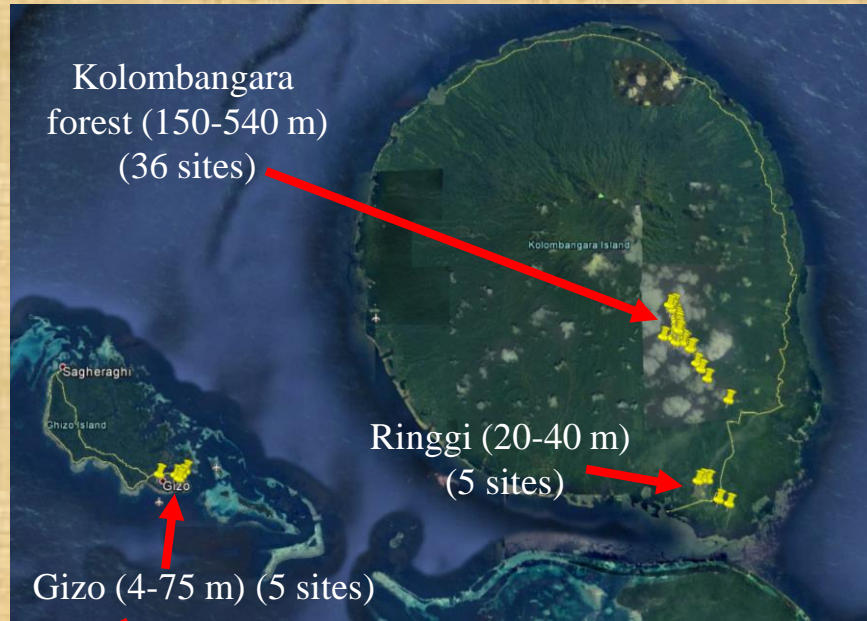


# Forest Survey on Guadalcanal

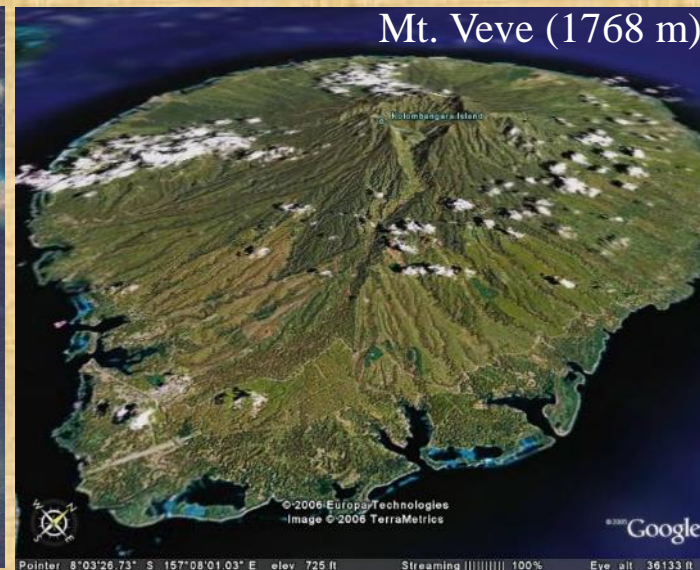




# Western Province Survey



<http://www.kolombangara.org>





# Gizo





# Kolombangara Forest

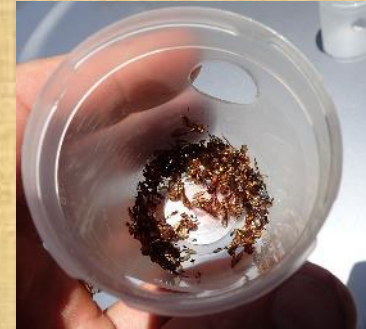




# Results

16,843 specimens collected, all identified to species level  
29 described (out of 48) and 7 new species collected

|                | Described species | New species |
|----------------|-------------------|-------------|
| Cue-lure       | 20                | 4           |
| Methyl eugenol | 8                 | 0           |
| Zingerone      | 1                 | 3           |



*Bactrocera pagdeni*: 1,174 specimens collected in zingerone  
(previously known from Holotype only)

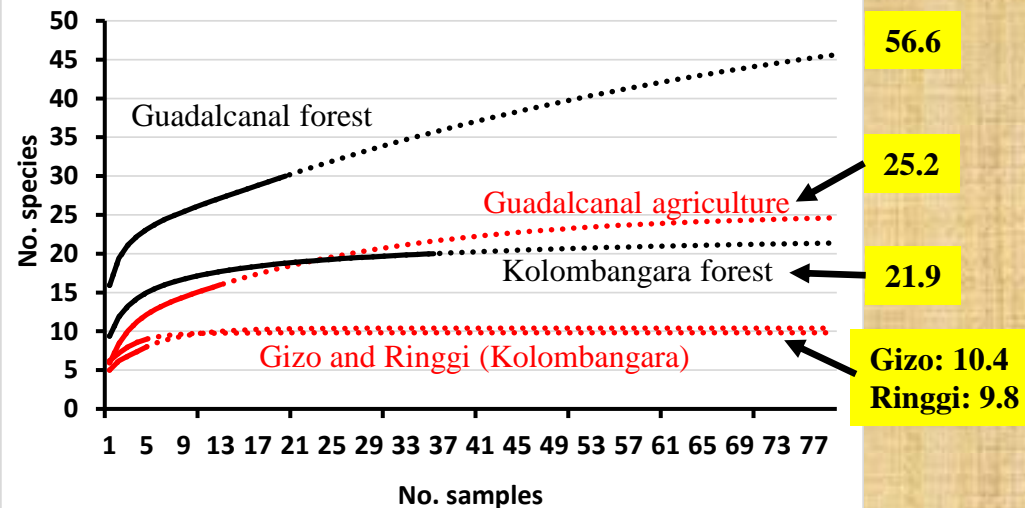
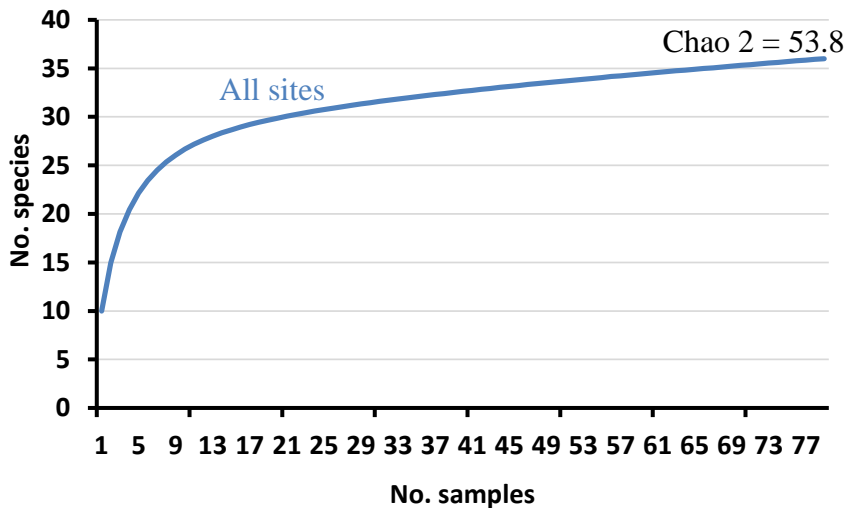
Chao 2 estimates

56.6

25.2

21.9

Gizo: 10.4  
Ringgi: 9.8





# Established Pest Species



Mango fly  
*Bactrocera frauenfeldi*  
Native  
Polyphagous fruit pest  
100 hosts in 33 families



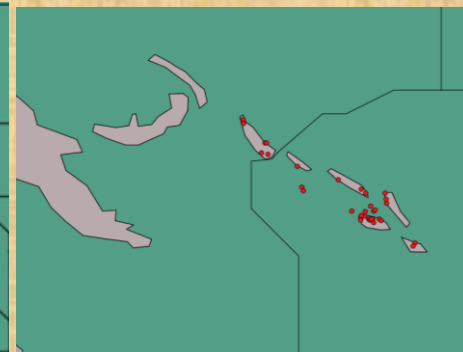
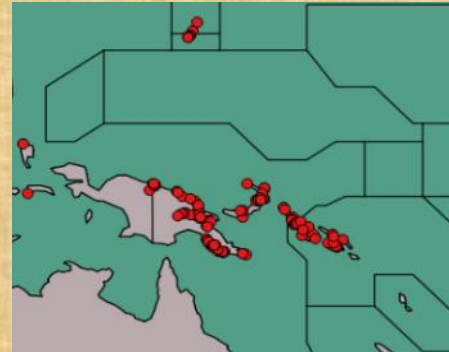
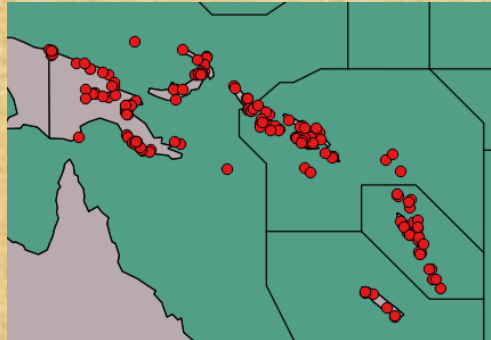
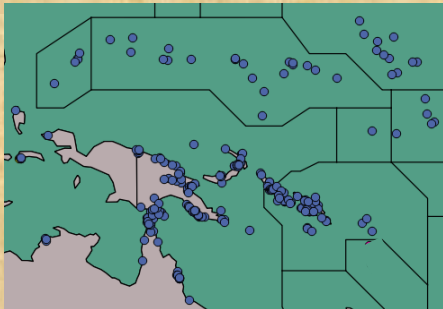
Breadfruit fly  
*Bactrocera umbrosa*  
Native  
Polyphagous fruit pest  
3 hosts in Moraceae



Melon fly  
*Zeugodacus cucurbitae*  
Introduced in 1984  
Cucurbit (primarily)  
fruit and flower pest  
50 hosts in 15 families



Solomon fruit fly  
*Dacus solomonensis*  
Endemic  
Cucurbit fruit pest  
5 hosts in Cucurbitaceae





# Major Pest Species Absent from Solomon Islands



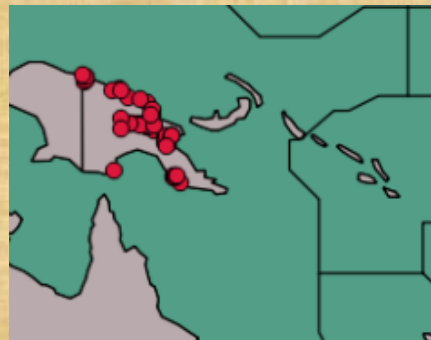
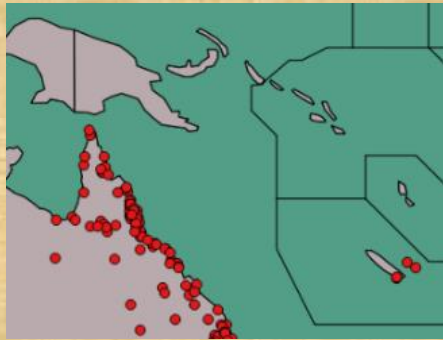
Queensland fruit fly  
*Bactrocera tryoni*  
Polyphagous fruit pest  
244 hosts in 52 families



Oriental fruit fly  
*Bactrocera dorsalis*  
Polyphagous fruit pest  
305 hosts in 61 families



Banana fly  
*Bactrocera musae*  
Banana pest (primarily)  
13 hosts in 9 families

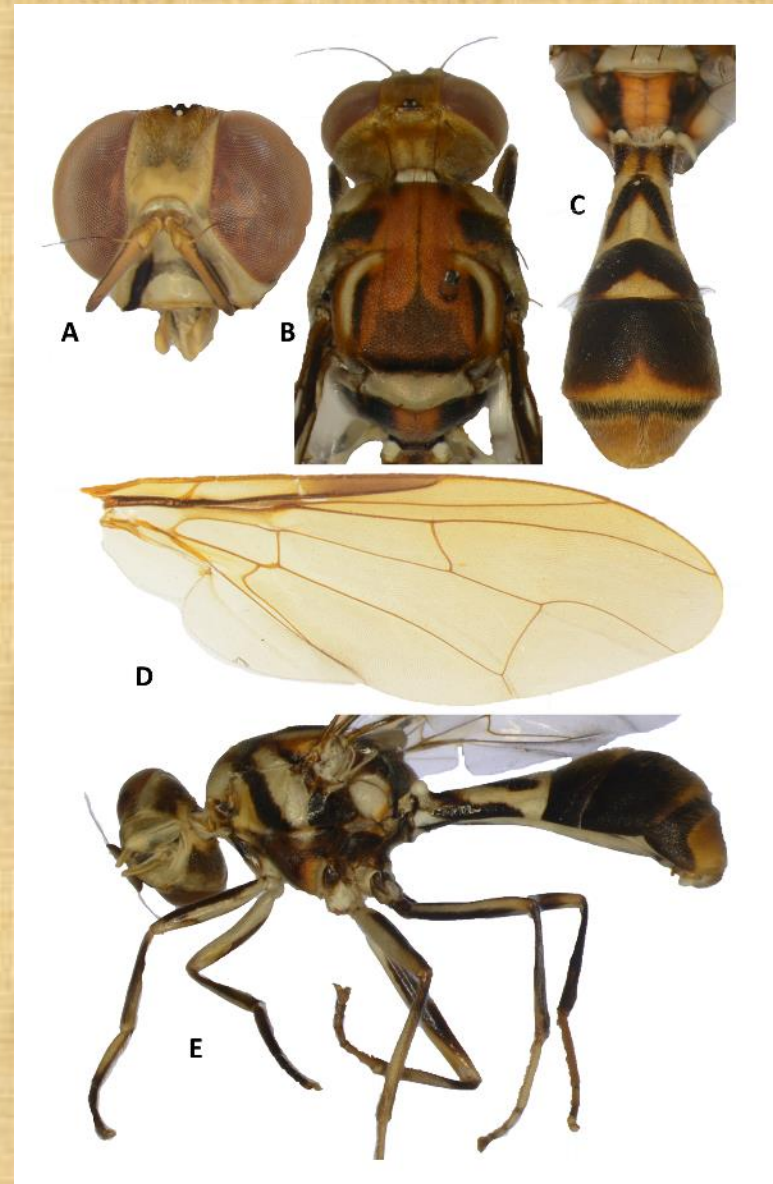




## Next steps...

**Publish descriptions of the 7 new species**

**Publish in Zookeys a key to all Pacific Islands\* species with detailed color plates for all 83 species**



\* excluding PNG and Australia



# Acknowledgements

**Project funded by USDA Farm Bill Section 10007 Plant Pest and Disease Management and Disaster Prevention Program 3.0497-FY17, managed as cooperative agreement between USDA APHIS and the University of Idaho's College of Agriculture and Life Sciences (8130-0665-CA).**

