

Table S1: Complete List of Species Collected

The following list is a compilation of every species of Drosophilidae collected during our study, with details on the number of sites in which each species was collected within each transect, and the cluster position of each species in Figures 10 and 11 in the main paper.

Taxonomic groupings and species	Hawai'i						Maui			
	% of total endemics (Hawai'i)	Stainback # endemic sites (of 4)	Stainback # non-endemic sites (of 5)	Saddle # sites (of 15)	Kohala # sites (of 6)	Waimea # sites (of 5)	Group on Figure 10	% of total endemics (Maui forest)	Maui Forest # sites (of 38)	Kula orchard sites # sites (of 9)

Drosophila (Antopocerus)

<i>D. adunca</i> Hardy, 1965								2.31	28		C
<i>D. cognata</i> Grimshaw, 1901	1.71	4		7	3		B				
<i>D. diamphidopoda</i> (Hardy, 1965)								3.63	36		C
<i>D. orthoptera</i> (Hardy, 1965)								0.12	8		C
<i>D. tanythrix</i> (Hardy, 1965)	37.16	4		9	6		C				
<i>D. villosa</i> (Hardy, 1965)								0.01	1		C
<i>D. yooni</i> Hardy, 1977	0.34			4			C				

Drosophila (Bristle tarsus)

<i>D. brunneisetae</i> Hardy, 1965	0.01	1 ^b					C	0			
<i>D. expansa</i> Hardy, 1965	0							0.01	1		C
<i>D. petalopeza</i> Hardy, 1965								0.04	3		C
<i>D. trichetosa</i> Hardy, 1965	0.05	0 ^a		2	0 ^a		C				

Drosophila (Ciliate tarsus)

<i>D. imparisetae</i> Hardy, 1965	0.01	0 ^a		1	0 ^a		C				
<i>D. latigena</i> Hardy, 1965	0	0 ^a		0 ^a	0 ^a			0.06	4		C
<i>D. medialis</i> Hardy, 1966	0.18	0 ^a		4	1		C				
<i>D. nigritarsus</i> Hardy, 1965	0.01	0 ^a		1			C				

Drosophila (Split tarsus)

<i>D. ancyla</i> Hardy, 1965								0.37	20		C
<i>D. cnecopleura</i> Hardy, 1965	4.70	3		4	6	1	C				
<i>D. cracens</i> Hardy, 1965	0.00							0.01	1		C
<i>D. fundita</i> Hardy, 1965								0.06	6		C
<i>D. paracracens</i> Hardy & Kaneshiro, 1979	0.30			3	2		C				
<i>D. paucitarsus</i> Hardy & Kaneshiro, 1979								0.08	10 ^c		D
<i>D. proprio-facies</i> Hardy, 1965	0.71			3	0 ^a		C	0.00			
<i>D. variabilis</i> Hardy, 1965								0.48	19		C

Taxonomic groupings and species	Hawai'i						Maui			
	% of total endemics (Hawai'i)	Stainback # endemic sites (of 4)	Stainback # non-endemic sites (of 5)	Saddle # sites (of 15)	Kohala # sites (of 6)	Waiimea # sites (of 5)	Group on Figure 10	% of total endemics (Maui forest)	Maui Forest # sites (of 38)	Kula orchard sites # sites (of 9)

Drosophila (Split tarsus)

<i>D. ancyla</i> Hardy, 1965								0.37	20		C
<i>D. cneoppleura</i> Hardy, 1965	4.70	3		4	6	1	C				
<i>D. cracens</i> Hardy, 1965	0.00							0.01	1		C
<i>D. fundita</i> Hardy, 1965								0.06	6		C
<i>D. paracracens</i> Hardy & Kaneshiro, 1979	0.30			3	2		C				
<i>D. paucitarsus</i> Hardy & Kaneshiro, 1979								0.08	10 ^c		D
<i>D. proprio-facies</i> Hardy, 1965	0.71			3	0 ^a		C	0.00			
<i>D. variabilis</i> Hardy, 1965								0.48	19		C

Drosophila (Spoon tarsus)

<i>D. conformis</i> Hardy, 1965	1.86	3		2	0 ^a		C				
<i>D. contorta</i> Hardy, 1965								0.01	1		C
<i>D. dasyncnemias</i> Hardy, 1965	2.78	4		3	5		C				
<i>D. incognita</i> Hardy, 1965	0.01	1					C				
<i>D. mimiconformis</i> Hardy, 1965								0.01	2		C
<i>D. neutralis</i> Hardy, 1965	6.78	4		3	6		C				
<i>D. percnosoma</i> Hardy, 1965	8.67	4		6	6		C				
<i>D. sordidapex</i> Grimshaw, 1901	0.84	4		4	3		C				
<i>D. waddingtoni</i> Basden, 1976	0.09	0 ^a		2	0 ^a		C	10.27	28		C

Drosophila (Picture wing)

<i>D. adia-stola</i> Hardy, 1965								0.08	5		C
<i>D. clavisetae</i> (Hardy, 1966)								0.01	2		C
<i>D. cyrtoloma</i> Hardy, 1969								0.06	4		C
<i>D. discreta</i> Hardy & Kaneshiro, 1968								0.11	12		D
<i>D. disjuncta</i> Hardy, 1965								0.06	5		C
<i>D. fasciculisetae</i> Hardy, 1965								1.54	27		D
<i>D. grimshawi</i> Oldenberg, 1914								0.16	16		D
<i>D. lanaiensis</i> Grimshaw, 1901								0.01	1		D
<i>D. limitata</i> Hardy & Kaneshiro, 1968								0.24	11		D
<i>D. melanocephala</i> (Hardy, 1966)								0.03	2		C
<i>D. murphyi</i> Hardy & Kaneshiro, 1969	0.11	1	1	1	3		C				
<i>D. neopicta</i> Hardy & Kaneshiro, 1968								0.01	1		C
<i>D. obscuripes</i> (Grimshaw, 1901)								0.01	1		C
<i>D. ochracea</i> Grimshaw, 1901	1.08	4	4	0 ^a	0 ^a		C				
<i>D. orphnopeza</i> Hardy & Kaneshiro, 1968								0.12	9		D
<i>D. pilatisetae</i> Hardy & Kaneshiro, 1968								0.03	4		D
<i>D. planitibia</i> (Hardy, 1966)								0.19	11		D
<i>D. recticilia</i> Hardy & Kaneshiro, 1968								0.17	11		C
<i>D. silvestris</i> (Perkins, 1910)	0.13			3			C				
<i>D. sproati</i> Hardy & Kaneshiro, 1968	0.34	2		1	5		C				

Taxonomic groupings and species	Hawai'i							Maui			
	% of total endemics (Hawai'i)	Stainback # endemic sites (of 4)	Stainback # non-endemic sites (of 5)	Saddle # sites (of 15)	Kohala # sites (of 6)	Waimea # sites (of 5)	Group on Figure 10	% of total endemics (Maui forest)	Maui Forest # sites (of 38)	Kula orchard sites # sites (of 9)	Group on Figure 11

Drosophila (haleakalae)

<i>D. bipolita</i> Hardy, 1965	3.04	4	2	4	2	1	C
<i>D. brunneicrus</i> Hardy & Kaneshiro, 2001	0.04			1			C
<i>D. canipolita</i> Hardy, 1965	0.12	0 ^a		2			C
<i>D. cilifemorata</i> Hardy, 1965	0.05	0 ^a		1	0 ^a		C
<i>D. demipolita</i> Hardy, 1965	0.20			4			C
<i>D. dolichotarsis</i> Hardy, 1966							
<i>D. fungiperda</i> Hardy, 1965	0.16	0 ^a		4			C
<i>D. fuscifrons</i> Hardy, 1965							
<i>D. iki</i> Bryan, 1934	0.00						
<i>D. illusipolita</i> Hardy, 1965	0.24	4			0 ^a		C
<i>D. inciliata</i> Hardy & Kaneshiro, 1968							
<i>D. longiperda</i> Kambysellis, 1993	0.17			5	0 ^a		C
<i>D. macrochaetae</i> Hardy, 1965	0.28			4 ^b			C
<i>D. melanoloma</i> Hardy, 1965							
<i>D. multiciliata</i> Hardy & Kaneshiro, 2001	1.05	1		6			C
<i>D. nigella</i> Hardy, 1965							
<i>D. nigra</i> Grimshaw, 1901							
<i>D. ochropleura</i> Hardy & Kaneshiro, 2001	0.36			4			C
<i>D. polita</i> Grimshaw, 1901	0.00				0 ^a		
<i>D. quinquerosa</i> Hardy & Kaneshiro, 2001							
<i>D. stenoptera</i> Hardy, 1965							

3.36	21		C
1.86	33		D
0.00	0 ^a		
0.23	14		C
0.20	9	2	D
1.72	33		C
0.20	16		C
0.00	0 ^a		
0.04	3		C
23.24	37		D
2.15	29		C
0.03	3	2	D
0.04	4	2	D
0.01	1		C

Drosophila (Modified mouthparts)

<i>D. comatifemora</i> Hardy, 1965							
<i>D. desallei</i> Magnacca & O'Grady, 2009	0.11			3	3		C
<i>D. furva</i> Hardy, 1965							
<i>D. hirtitarsus</i> Hardy, 1965							
<i>D. infuscata</i> Grimshaw, 1901	0.24	2	2	0 ^a	3		C
<i>D. mitchelli</i> Hardy, 1965	0.03	0 ^a		0 ^a	1		C
<i>D. nigrocirrus</i> Hardy, 1965	0.08	0 ^a		2	0 ^a		C

6.15	30		D
0.01	1		C
0.71	26	1	D

Drosophila (Nudidrosophila)

<i>D. makawao</i> Magnacca & O'Grady, 2008							
<i>D. pohaka</i> Magnacca & O'Grady, 2008	0.46	3		3			C

0.67	21		D
0.00			

Taxonomic groupings and species	Hawai'i						Maui			
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Drosophila (unplaced)

<i>D. joycei</i> Hardy, 1965											
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0.06	5		C
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Scaptomyza (Alloscaptomyza)

<i>S. buccata</i> Hackman, 1962	0.00										
<i>S. mutica</i> Hardy, 1965	0.13			2 ^b							D

0.17	15	1	C
0.00	0 ^a		

Scaptomyza (Bunostoma)

<i>S. bryanti</i> Hackman, 1959	0.00										
<i>S. confusa</i> Hardy, 1965											
<i>S. palmae</i> Hardy, 1965					0 ^a	1					D
<i>S. xanthopleura</i> Hardy, 1965											

0.04	4		C
n.a.		3	B
0.01	2 ^c	3 ^c	D

Scaptomyza (Elmomyza)

<i>S. affinispidata</i> Hardy, 1965											
<i>S. articulata</i> Hardy, 1965	0.00			0 ^a							
<i>S. basiloba</i> Hardy, 1965	0.00			0 ^a							
<i>S. concinna</i> Hardy, 1965											
<i>S. cryptoloba</i> Hardy, 1965	8.76	4 ^b	2 ^b	9 ^b	6 ^b						C
<i>S. cuspidata</i> Hardy, 1965	0.00	0 ^a									
<i>S. cyrtandrae</i> Hardy, 1965	0.22	1		1							C
<i>S. decepta</i> Hardy, 1965											
<i>S. diaphorocerca</i> Hardy, 1965											
<i>S. domita</i> Hardy, 1965											
<i>S. exigua</i> (Grimshaw, 1901)	9.14			11	2						C
<i>S. hackmani</i> Hardy, 1965	0.09			3	0 ^a						C
<i>S. inaequalis</i> (Grimshaw, 1901)	4.74	0 ^a		7							D
<i>S. intricata</i> Hardy, 1965											
<i>S. levata</i> Hardy, 1965	0.00				0 ^a						
<i>S. lobifera</i> Hardy, 1965	0.01				1	3					D
<i>S. longipecten griseonigra</i> Hardy, 1965											
<i>S. ochromata</i> Hardy, 1965											
<i>S. retusa</i> Hardy, 1965											
<i>S. silvicola</i> Hardy, 1965	0.00										
<i>S. tumidula</i> Hardy, 1965	0.67			9							C
<i>S. umbrosa</i> Hardy, 1965	0.00										

0.05	4		C
0.02	2 ^c		D
3.23	17 ^d		C
0.04	3		C
0.00			
0.08	7		C
7.13	30	2	C
0.04	4 ^c	1 ^c	C
0.01	1		D
0.00	0 ^a		
0.01	1	1	C
0.00	0 ^a		
1.55	24		C
n.a.		1 ^c	B
0.01	1		C
13.14	37		C
0.01	1		C
0.64	19		C
0.01	2		C

Taxonomic groupings and species	Hawai'i							Maui			
	% of total endemics (Hawai'i)	Stainback # endemic sites (of 4)	Stainback # non-endemic sites (of 5)	Saddle # sites (of 15)	Kohala # sites (of 6)	Waiamea # sites (of 5)	Group on Figure 10	% of total endemics (Maui forest)	Maui Forest # sites (of 38)	Kula orchard sites # sites (of 9)	Group on Figure 11
<i>Scaptomyza (Engiscaptomyza)</i>											
<i>S. crassifemur</i> (Grimshaw, 1901)								12.77	35	1	C
<i>S. nasalis</i> (Grimshaw, 1901)								0.04	3	1	C
<i>Scaptomyza (Exalloscaptomyza)</i>											
<i>S. mauiensis</i> (Grimshaw, 1901)								0.01	1	2	B
<i>Scaptomyza (Grimshawomyia)</i>											
<i>S. undulata</i> (Grimshaw, 1901)	1.38	1		7			C				
<i>Scaptomyza (Tantalia)</i>											
<i>S. brunnimaculata</i> Hardy, 1965								0.01	1 ^c		C
<i>S. nigrosignata</i> Hardy, 1965	0.00							0.01	1 ^c		D
<i>Scaptomyza (Titanochaeta)</i>											
<i>S. bryani</i> (Wirth, 1952)	0.00				0 ^a			0.03	4		C
<i>S. chauliodon</i> (Hardy, 1965)	0.01			1 ^b		1 ^b	C	0.01	1		D
<i>S. setosiscutellum</i> (Hardy, 1965)	0.00				0 ^a			0.04	5 ^c		C
<i>Scaptomyza (Unplaced)</i>											
<i>S. parva</i> (Grimshaw, 1901)	0.30	4		4	4		C				

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Taxonomic groupings and species	Maui		
	% of total endemics (Maui forest)	Maui Forest # sites (of 38)	Kula orchard sites # sites (of 9)

Introduced Drosophilidae

<i>Cacoxenus perspicax</i> (Knab, 1914)							
<i>Chymomyza procnemis</i> (Williston, 1896)							
<i>Dettopsomyia nigrovittata</i> (Malloch, 1924)					1	1	C
<i>D. ananassae</i> Doleschall, 1858 and/or <i>D. kikkawai</i> Burla, 1954			4	1	1		A
<i>D. bizonata</i> Kikkawa & Peng, 1938					3	5	D
<i>D. busckii</i> Coquillett, 1901			2		5	3	B
<i>D. cardini</i> Sturtevant, 1916						1	D
<i>D. hydei</i> Sturtevant, 1921							D
<i>D. immigrans</i> Sturtevant, 1921		4	5	8	6	4	A
<i>D. lutzii</i> Sturtevant, 1916				3	2	3	D
<i>D. melanogaster</i> Meigen, 1830		1	2			1	
<i>D. quadrilineata</i> deMejeire, 1911		2	3		5	2	
<i>D. repleta</i> Wollaston, 1858 and/or <i>D. mercatorum</i> Patterson & Wheeler, 1942							
<i>D. simulans</i> Sturtevant, 1919		1	1		1	3	C
<i>D. sulfurigaster bilimbata</i> Bezzi, 1928		3	5	6	2	4	A
<i>D. suzukii</i> (Matsumara, 1931)		4	5	15	6	5	B
<i>Hirtodrosophila</i> sp. nr. <i>unicolorata</i> Wheeler, 1959				4	3	2	C
<i>Leucophenga maculosa</i> (Coquillett, 1895)			1	1	1	3	C
<i>Scaptodrosophila</i> sp			2				D
<i>Scaptomyza elmoi</i> Takada, 1970				1	5	3	B
<i>Zaprionus ghesquierei</i> Collart, 1937			2				D

		3	B
	1	7	B
	8	7	A
	31	9	D
		3	B
			B
	19	8	D
	12	7	B
		4	B
	4	1	D
		5	B
		6	B
	1	1	C
	37	8	D
	2	3	B
	2	9	B
	8	5	C
	1	6	B

^a Known to be present in sampled area but not collected during our surveys

^b New island record for Hawai'i Island

^c New island record for Maui Island

^d *S. basiloba* is a new island record for Maui Island, or it may be an undescribed closely related species