

Table 1. Cases of competitive displacement discussed and analyzed in text.

Order: Family ^a	Displacing species ^b	Displaced species ^b	Geographic location	Competitive mechanisms ^c	Mediating factors ^d	Extent ^e	References
1. Araneae: Theridiidae	<i>Steatoda capensis</i> e	<i>Latrodectus katipo</i> n	New Zealand	1, 2, 6	3	Localized habitats	(56)
2. Araneae: Theridiidae	<i>Steatoda bipunctata</i> e	<i>Steatoda borealis</i> n	Eastern North America	6	4	Localized habitats	(122)
3. Acari: Phytoseiidae	<i>Typhlodromus pyri</i> n/a	<i>Metaseiulus occidentalis</i> n/a	Oregon, USA	4, 8	1	Localized (when both species introduced as biocontrol agents)	(26, 102, 103)
4. Acari: Phytoseiidae	<i>Kampimodromus aberrans</i> n	<i>Typhlodromus pyri</i> n	Italy	3	-	Localized (when both species introduced as biocontrol agents)	(39)
5. Acari: Stigmaeidae, Phytoseiidae	<i>Zetzellia mali</i> n/a	<i>Typhlodromus pyri</i> , <i>Metaseiulus occidentalis</i> n/a	Oregon, USA	6, 8	-	Localized (when both species introduced as biocontrol agents)	(25, 26)
6. Acari:	<i>Eotetranychus</i>	<i>Tetranychus pacificus</i> n	California, USA	4, 5	2	Localized	(46, 74)

	Tetranychidae	<i>willamettei</i> n					
7.	Acari:	<i>Panonychus citri</i> n	<i>Panonychus mori</i> n	Japan	7	-	Large geographic area (50)
	Tetranychidae						
8.	Acari:	<i>Tetranychus urticae</i>	<i>Panonychus ulmi</i> na /	Experimental	1, 2	4	Localized habitats [Bekczewski, 1997
	Tetranychidae	na /	<i>Tetranychus urticae</i> na	orchard			#1697]
		<i>Panonychus ulmi</i> na					
9.	Homoptera:	<i>Bemisia argentifolii</i>	<i>Bemisia tabaci</i> e	Southern USA	2, 7	1	Large geographic area (6, 128, 130)
	Aleyrodidae	e					
10.	Homoptera:	<i>Aphis spiraecola</i> e	<i>Aphis pomi</i> e	Eastern North America	2	4	Large geographic area (13, 133)
	Aphididae						
11.	Homoptera:	<i>Pineus boernerii</i> e	<i>Pineus coloradensis</i> n	Northeastern USA	4, 5	4	Large geographic area (108, 109)
	Adelgidae						
12.	Homoptera:	<i>Matsucoccus</i>	<i>Pineus boernerii</i> e	Northeastern USA	1, 5	1	Large geographic area (110)
	Margarodidae:	<i>resinosae</i> e					
	Adelgidae						
13.	Homoptera:	<i>Aonidiella aurantii</i> e	<i>Aonidiella citrina</i> e	Southern California, USA	1, 2	1	Large geographic area (32)
	Diaspididae						
14.	Homoptera:	<i>Fiorinia externa</i> e	<i>Nuculaspis tsugae</i> e	Eastern North America	1, 4, 5	1, 2, 4	Large geographic area (106, 107)
	Diaspididae						
15.	Coleoptera:	<i>Sitophilus zeamais</i> e	<i>Sitotroga cerealella</i> e	Southern USA	8	3, 4	Localized habitats (1, 2, 18)
	Curculionidae						

Lepidoptera:							
Gelechiidae							
16. Coleoptera:	<i>Coccinella</i>	Nearctic species of	Eastern North	8	-	Large geographic area	(44, 111)
	Coccinellidae	<i>septempunctata</i> e	Coccinellidae n	America			
17. Coleoptera:	<i>Harmonia axyridis</i> e	<i>Coccinella</i>	Eastern North	8	-	Large geographic area	(14, 67, 176, 177)
	Coccinellidae	<i>septempunctata</i> e	America				
18. Coleoptera:	<i>Phoracantha</i>	<i>Phoracantha</i>	California, USA	1, 2	2	Large geographic area	TD Paine, pers. comm.
	Cerambycidae †	<i>recurva</i> e	<i>semipunctata</i> e				
19. Diptera: Culicidae	<i>Aedes albopictus</i> e	<i>Aedes aegypti</i> e	Southern USA	1, 5, 7	-	Large geographic area	(3, 40, 68, 73, 81, 118, 143)]
20. Diptera: Culicidae	<i>Aedes albopictus</i> e	<i>Aedes triseriatus</i> n	Eastern USA	1	4	Localized habitats	(95, 162)
21. Diptera: Culicidae	<i>Culex</i>	<i>Culex tarsalis</i> n	California, USA	1, 5	1, 4	Large geographic area	(161)
		<i>quinquefasciatus</i> n					
22. Diptera: Tephritidae	<i>Bactrocera dorsalis</i>	<i>Ceratitis capitata</i> e	Hawaii	1, 2, 5	4	Localized habitats	(83, 120, 170)
		e					
23. Diptera:	<i>Drosophila</i>	<i>Drosophila</i>	Western USA	1, 2	4	Large geographic area	(121, 127)
	Drosophilidae †	<i>subobscura</i> e	<i>pseudoobscura</i> n				
24. Diptera:	<i>Liriomyza trifolii</i> e	<i>Liriomyza sativae</i> e	Western USA	1, 2	4	Large geographic area	(126, 168)
	Agromyzidae †						
25. Diptera:	<i>Liriomyza</i>	<i>Liriomyza trifolii</i> e	California, USA;	1, 2	1, 3, 4	Large geographic areas	(164, 175, SR Reitz &

Agromyzidae †	<i>huidobrensis</i> n, e		Israel				JT Trumble, unpublished)
26. Diptera: Glossinidae	<i>Glossina palpalis</i> n	<i>Glossina fuscipes</i> n	Central Africa	2, 7	4	Large geographic area	(51)
27. Lepidoptera: Pyralidae, Noctuidae	<i>Chilo partellus</i> e	<i>Busseola fusca</i> n	Southern Africa	1, 4, 5	-	Large geographic areas	(85)
28. Lepidoptera: Daniidae: Heteroptera: Lygaeidae	<i>Danaus plexippus</i> e	<i>Oncopeltus</i> <i>sandarachatus</i> e	Barbados	4	1	Large geographic area	(10)
29. Lepidoptera: Arctiidae / Diptera: Anthomyiidae	<i>Tyria jacobaeae</i> n	<i>Pegohylemyia seneciella</i> n	United Kingdom	4	3	Localized habitats	(24)
30. Lepidoptera: Noctuidae, Geometridae	<i>Penicillaria</i> <i>jocosatrix</i> e	<i>Nanaguna brevisuscula</i> n <i>Anisodes illepidaria</i> n <i>Chloroclystis</i> sp. n ; <i>Thalassodes</i> sp. n	Guam	4	2	Large geographic area	(151)
31. Hymenoptera: Braconidae	<i>Aphidius ervi</i> e	<i>Aphidius smithi</i> e	North America	3, 5, 6	1, 4	Large geographic area.	(19, 101, 105)
32. Hymenoptera:	<i>Cotesia rubecula</i> e	<i>Cotesia glomerata</i> e	Western North	6	1, 4	Large geographic area	(12, 178)

	Braconidae		America				
33.	Hymenoptera:	<i>Lysiphlebus</i>	<i>Lysiphlebus fabarum</i> n ;	Italy,	2, 6	4	Large geographic area (104, 167)
	Braconidae	<i>testaceipes</i> e	<i>Lysiphlebus confusus</i> n	Mediterranean Region			
34.	Hymenoptera:	<i>Bathyplectes anurus</i>	<i>Bathyplectes curculionis</i>	Eastern USA	2, 3, 6	4	Large geographic area (19, 38, 58, 59, 86)
	Ichneumonidae	e	e				
35.	Hymenoptera:	<i>Encarsia tricolor</i>	<i>Encarsia inaron</i> n/a	Laboratory	8	-	Laboratory experiments; (179)
	Aphelinidae	n/a					potential in field
36.	Hymenoptera:	<i>Aphytis holoxanthus</i>	<i>Pseudhomalopoda prima</i>	Florida, USA	1, 5		Localized (7, 155)
	Aphelinidae;	e	n				
	Encyrtidae						
37.	Hymenoptera:	<i>Aphytis melinus</i> e	<i>Aphytis lingnanensis</i> e	California, USA	2, 4	1	Large geographic area (31, 34, 99, 117)
	Aphelinidae						
38.	Hymenoptera:	<i>Apoanagyrus lopezi</i>	<i>Apoanagyrus</i>	Central,	2, 3, 6	1, 4	Large geographic area (53, 134, 136)
	Encyrtidae	e	<i>diversicornis</i> e	Southern Africa			
39.	Hymenoptera:	<i>Neodusmetia</i>	<i>Anagyrus antoninae</i> e	Texas, USA	4	4	Large geographic area (153)
	Encyrtidae †	<i>sangwani</i> e					
40.	Hymenoptera:	<i>Copidosoma</i>	<i>Trichogrammatoidea</i>	New Zealand	5, 6?	-	Large geographic area (75)
	Encyrtidae,	<i>floridanum</i> e	spp. n				
	Trichogrammatidae						
41.	Hymenoptera:	<i>Linepithema humile</i>	<i>Pheidole megacephala</i>	Bermuda	2, 3, 6	2, 4	Large geographic area (27, 62, 63, 72, 76, 94,

Formicidae	e	<i>Pheidole grallipes</i> , <i>Pogonomyrmex californicus</i> , <i>Veromessor pergandei</i> and other species n, e	California, USA Southern Europe				172, 173)
42. Hymenoptera: Formicidae	<i>Solenopsis invicta</i> e	Various native ant species in southern USA and other scavengers n, e	Southern USA	2, 3, 6	2	Large geographic area	(79, 116, 138, 154)
43. Hymenoptera: Formicidae	<i>Wasmannia auropunctata</i> e	Various native and previously established exotic ant species n, e	Galapagos Islands, Ecuador	1, 2, 6	2, 4	Large geographic area	(21, 98)
44. Hymenoptera: Formicidae	<i>Atta sexdens</i> n	<i>Atta robusta</i> n	Brazil	2, 3	4	Localized	(49)
45. Hymenoptera: Vespidae	<i>Vespula vulgaris</i> e	<i>Vespula germanica</i> e	New Zealand	6	4?	Large geographic area	(60, 61)
46. Hymenoptera: Vespidae	<i>Polistes chinensis</i> e	<i>Polistes humilis</i> e	New Zealand	6	-	Localized Habitats	(20)
47. Hymenoptera: Apidae	<i>Apis mellifera</i> e	<i>Melipona</i> spp., <i>Trigona</i> spp. n	Panama	6	-	Experimental demonstration, potential occurrence over large geographic area	(145, 146)

48. Hymenoptera:	<i>Apis mellifera</i>	<i>Apis mellifera scutellata</i>	Southern Africa	2	-	n/a	(4)
Apidae †	<i>capensis</i> n, e	n, e					

a – taxonomic affiliation of displacing species is listed first.

b – **e**: exotic species, **n**: native species to region where displacement has occurred, or is occurring, **n/a**: not applicable to laboratory, experimental situations.

c – mechanisms that could contribute to displacement and for which experimental or observational data have been collected. 1- Scramble competition, 2 – differential fecundity, 3 – differential searching, 4 – resource preemption, 5 – resource degradation, 6 – agonistic interactions, 7 – reproductive interference, 8 – intraguild predation.

d – factors mediating competition. 1 – availability of alternative hosts, 2 – differential impact of natural enemies, 3 – metapopulation structure, 4 – differential adaptation to local conditions.

e – scale of displacement: Localized habitats – occurring only on a small spatial scale, or from certain microhabitats previously occupied by displaced species. Displaced species may still exist other sympatric microhabitats; Large geographic areas – occurring across significant habitat ranges; Experimental demonstration – experimental evidence for displacement which could occur under field conditions.

† – potential cases of displacement