GOVERNMENT OF WESTERN AUSTRALIA

Department of
Primary Industries and Regional Development

MyPestGuide – grape related reports 2015-17

Primary authors

Hammond NE and McCarthy A

Department of Primary Industries and Regional Development, Western Australia – Agriculture and Food

Contributing authors

O'Leary R, Emery R, McCauley R, Hardie D, Cousins D, Wright D, Russell J, Cook D, Garel N, Webb C, Edwards L, Szito A, Widmer M, Moir M and Fagan LL.

Document citation

Hammond NE & McCarthy A, 2018. *MyPestGuide – grape related reports 2015-17*. Department of Primary Industries and Regional Development (DPIRD) – Agriculture and Food, South Perth.

Corresponding author:

Alec McCarthy
Agriculture and Food
Department of Primary Industries and Regional Development
Verschuer Place, Bunbury WA 6230
Telephone: +61 8 9780 6273
Email: alec.mccarthy@dpird.wa.gov.au
Post: PO Box 1231 Bunbury WA 6231

MyPestGuide – grape related reports 2015-17

Summary

- 122 reports on grapes or of known grape pests were made using MyPestGuide Reporter from 01 January 2015 to 10 September 2017.
- 103 reports were received from Western Australia; reports were also received from interstate (New South Wales and South Australia) and other countries (India, Portugal and United States of America).
- Report numbers have increased annually since the release of MyPestGuide Grapes app in September 2015 – from 24 in 2015 to 48 in 2017.
- Reports included fungal bunch rots, moths, caterpillars, sucking insects and beetles, as well as mechanical damage, nutritional deficiency, herbicide damage and physiological issues.
- No pests new to WA of biosecurity significance to grapes were identified during the reviewed period.
- Of significance, 27 reports of grapevine hawk moth (*Hippotion celerio*) were received in 2017 following a Facebook post about the striking caterpillar on 19th May 2017.
- Reports were submitted by a range of users including individuals, government staff and consultants.

Background

MyPestGuide is a family of biosecurity tools consisting of a reporting app, three pest identification field guides; MyPestGuide Grapes, MyPestGuide Crops (pests of grain crops) and MyPestGuide Diseases (diseases of grain crops), and a community website. The mobile apps are also replicated on-line for users without smartphones.

The main tool in the MyPestGuide family is MyPestGuide Reporter, a reporting tool which allows the user to photograph and report the presence or absence of organisms, including grape pests and diseases. Reports submitted to MyPestGuide Reporter are examined by experts and a response provided to the user via email and directly to the user's device via the Reporter app with an identification of the organisms reported and management options if possible. More than 30 000 reports have been made using MyPestGuide Reporter to August 2017.

MyPestGuide Grapes provides descriptions and management information on both pests and diseases of grapes and was first released in September 2015. MyPestGuide Grapes links directly with MyPestGuide Reporter and encourages users to reports pests they identify. The information collected via MyPestGuide Reporter (when shared) is integrated with the community reporting website to inform grape growers about pests and diseases across the grape growing industry.

This report summarises the reports received via MyPestGuide Reporter with relevance to grapes from January 2015 until September 2017.

Analysis of MyPestGuide reports

The MyPestGuide (MPG) data-set was downloaded and filtered to contain reports made during the reporting period (from 01 January 2015 to 10 September 2017 inclusive). Reports were also filtered to include the term ‘grape’ but not ‘grapefruit’ in the ‘Description’, ‘Looked In’ or ‘Response’ fields. Reports were validated manually by examining images, those identified as non-valid reports were excluded from the analysis.

MPG reports were summarised using the statistical software environment R (version 3.3.1), using the reshape2, tidyr, dplyr packages for data analysis; the ggplot2, ggmap and RColorBrewer packages for geocoding data and generating plots and maps of the results; and the knitr, pander and rmarkdown packages for generating this report (R Development Core Team 2008; Wickham 2009; Wickham 2012; Daróczi 2013; Kahle & Wickham 2013; Xie 2013; Wickham 2014; Allaire et al. 2015; Neuwirth 2015; Wickham & Francois 2015).

MyPestGuide grape related reports

A total of 122 reports were received via MPG Reporter that related to grapes. Of these, 113 included complete GPS co-ordinates and are included in the data summary below. Reports were made from several countries, and multiple states within Australia, the number of reports from each country and state are summarised in Table 1. The majority of reports were made from Western Australia.

Table 1 Number of grape related MyPestGuide reports received each year by country and state from 1 January 2015 to 10 September 2017

Country	State	2015	2016	2017	Total
Australia	New South Wales	0	1	1	2
Australia	South Australia	0	2	0	2
Australia	**Western Australia**	**24**	**31**	**48**	**103**
India	Karnataka	0	0	2	2
India	Maharashtra	0	2	0	2
Portugal	Aþores	0	1	0	1
United States	Florida	0	1	0	1

Western Australian grape related reports

There were 103 (out of 113) reports from Western Australia (WA) based on GPS co-ordinates provided during the reporting period. Pests reported were grouped by type of insect, disease or disorder as identified from the report. The most reported pest group was moths/butterflies/caterpillars (n=36), followed by sucking insects (n=21) and beetles (n=21). The reports were received from a wide range of locations across WA. Figure 1 displays the distribution of these reports for each group of pests during the reporting period. A full list of pests reported is provided in Appendix 2.

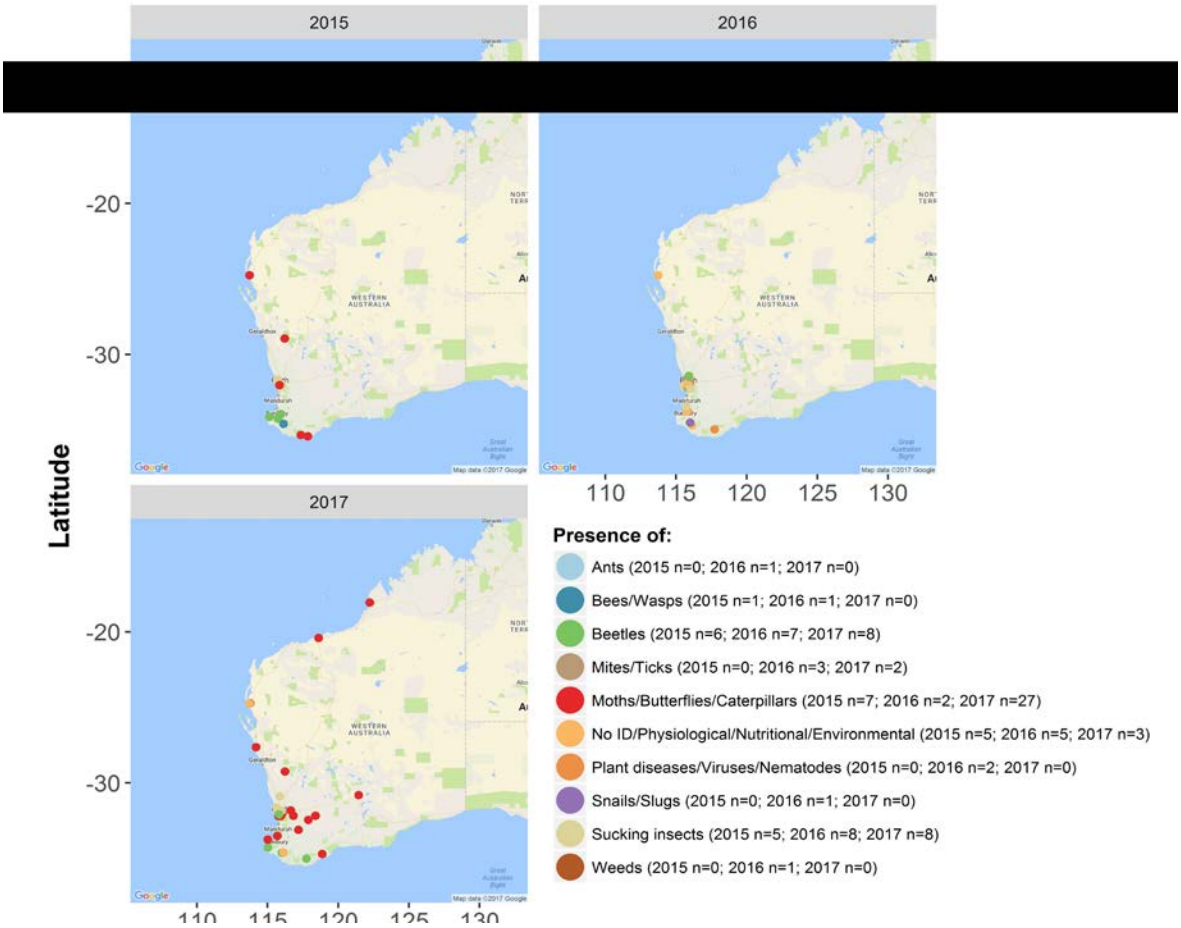

Figure 1 Grape related MyPestGuide reports from Western Australia by pest group from 1 January 2015 to 10 September 2017

The WA reports were filtered out by Statistical Area 3 (SA3) regions as defined by the Australian Bureau of Statistics (ABS 2016). The numbers of reports received from each region in WA are given in Table 2. The majority of reports were received from the Canning, Manjimup, Swan and Gascoyne regions, with 16, 12, 10 and 9 reports respectively from each region during the reporting period. Of these regions, Manjimup, Swan and Gascoyne contain commercial grape production businesses as well as non-commercial grape plantings, while the Canning region is an inner Perth suburban region with mostly non-commercial grape plantings and unlikely to contain commercial grape production.

Table 2 Number of grape related MyPestGuide reports received by region in Western Australia (SA3 regions) from 1 January 2015 to 10 September 2017

Region	2015	2016	2017	Total
Albany	2	1	2	5
Armadale	0	1	2	3
Augusta - Margaret River - Busselton	2	0	2	4
Bayswater - Bassendean	0	1	0	1
Belmont - Victoria Park	1	1	0	2
Bunbury	0	2	2	4
Canning	4	2	4	10
Cottesloe - Claremont	0	1	2	3
Fremantle	0	1	2	3
Gascoyne	2	1	5	8
Goldfields	0	0	1	1
Gosnells	0	0	1	1
Joondalup	1	0	0	1
Kalamunda	0	0	1	1
Kimberley	0	0	1	1
Manjimup	7	3	2	12
Melville	0	5	2	7
Mid West	1	0	2	3
Perth City	1	2	1	4
Pilbara	0	0	1	1
South Perth	1	2	1	4
Stirling	0	3	1	4
Swan	1	3	6	10
Wanneroo	1	1	1	3
Wheat Belt - North	0	1	4	5
Wheat Belt - South	0	0	2	2
Total	24	31	48	103

Reports were further filtered into suburbs (localities/shires). The top reporting suburb was South Plantations in Carnarvon (Gascoyne region); this suburb is a commercial horticultural region including table grape production. The top reporting suburbs are provided in Table 3 with the full list in Appendix 1.

Table 3 Top suburbs in Western Australia from which grape related MyPestGuide reports were received from 1 January 2015 to 10 September 2017

Suburb	2015	2016	2017	Total
South Plantations	2	1	5	8
Middlesex	5	0	1	6
Murdoch	0	3	0	3
Nedlands	0	1	2	3
The Vines	0	2	1	3
Willagee	0	2	1	3
Wilson	3	0	0	3
Beaconsfield	0	0	2	2
Bedfordale	0	0	2	2
Carabooda	1	1	0	2
Cowaramup	2	0	0	2
Kensington	0	1	1	2
Leschenault	0	1	1	2
Mount Barker	0	1	1	2

Reports of Biosecurity Significance

A key desired outcome of the MyPestGuide system is the early detection of incursions of pest of biosecurity significance. These are pests that have not previously been reported in WA and particularly those that pose a significant threat to WA's economy or environment. The Western Australian Organism List (WAOL) provides the status of organisms which have been categorised under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) (DPIRD 2017).

There were no pests of biosecurity significance to the grape industry in WA identified from the MyPestGuide reports received from WA during the reporting period. All of the grape related reports that could be identified down to Species and genus level, were of organisms either listed as Permitted (s.11) species under the BAM Act or not yet listed but known to be present in WA (APPD 2017).

During the reporting period, over 30 000 MyPestGuide reports were received in total. While there were no pests of biosecurity significance to the grape industry in WA from these reports, there were 10 organisms identified as new recordings to WA and 4 organisms with an identified extended range in WA than previously recorded. This demonstrates the capacity of MyPestGuide Reporter to capture new pest incursions.

Report demographics

Reports received by project over time

MyPestGuide Reporter provides the option to send in reports under a range of different 'Projects'. These projects are related to special activities or promotions. The number of grape related reports received in each year of the reporting period is provided for each project in Table 4. The number of reports per year has increased from 24 reports in 2015 to 48 reports received in 2017 (up to 10 September).

The majority of grape related reports were submitted to the general MyPestGuide project (n=64) and the Grapes Reports project (n=34) with only a few reports submitted via other MPG projects (Table 4).

Table 4 Number of MyPestGuide reports from WA with relevance to grapes received per project reporting group from 1 January 2015 to 10 September 2017

Project	2015	2016	2017	Total
MyPestGuide	16	15	33	64
Grapes Report	6	15	13	34
Carnarvon Growers Survey	0	1	2	3
Biosecurity Blitz	2	0	0	2
Total	24	31	48	103

Reports were received for most months during the reporting period, with small peaks from September to January in 2015 and 2016 that coincided with spring, the new grape season and increased promotional activities (Figure 2). There was also a lift in the frequency of reports received in May/June 2017 that coincided with a Facebook post on grapevine hawk moth that encouraged user to report sightings. This peak highlighted the value of targeted promotion to encourage users to look and report.

Figure 2 MyPestGuide reports to Biosecurity Blitz, Carnarvon Growers Survey, Grapes Reports and MyPestGuide, relevant to grapes, made each month during from 1 January 2015 to 10 September 2017

Identifications

MyPestGuide reports are identified by experts for each of the pest, disease and host crop groups and where possible identified to an appropriate taxonomic rank based on the images submitted. Eighty two percent of grape related reports from WA were able to be identified to species level based on the images and information submitted. The number and proportion of identifications made to each taxonomic rank during the reporting period is provided in Table 5.

Table 5 Number of MyPestGuide reports from Western Australia (with GPS) of relevance to grapes identified to each taxonomic rank from 1 January 2015 to 10 September 2017

Taxanomic rank	2015	2016	2017	Total	Percentage of total reports
Kingdom	0	1	0	1	0.97
Order	1	1	0	2	1.94
Family	0	1	0	1	0.97
Genus	1	0	1	2	1.94
Species	**17**	**24**	**44**	**85**	**82.52**
No Identification/Physiological	5	4	3	12	11.65

Reporters

MyPestGuide is able to be used by anyone to submit reports of pests and diseases. Grape related reports have been submitted by consultants, researchers, state government employees and private individuals in WA. The number of reports and users has increased over time in most of the user groups; however most users only made one or two grape related reports per year. Table 6 provides the number of reports, reporters and average number of reports per reporter for each reporter type.

Table 6 Number of users and reports per partner organisations of MyPestGuide reports of relevance to grapes

Reporter type	Year	Number of reports	Number of users	Range of number of reports per user	Average number of reports per user
Agronomist/Consultant	2017	1	1	1	1
DAFWA	2015	13	7	1-5	2
DAFWA	2016	15	8	1-5	2
DAFWA	2017	17	14	1-3	1
Private individual	2015	11	6	1-4	2
Private individual	2016	13	13	1	1
Private individual	2017	26	26	1	1
Teacher/Student	2016	3	1	3	3
Teacher/Student	2017	4	2	1-3	2

Most reported pest groups

The three most reported pest groups with relevance to grapes from WA during the reporting period were Moths/Butterflies/Caterpillars, Beetles, and Sucking insects. Summaries for these three pest groups follow. The annual number of reports received of each of the three pest groups from 2015-2017, is provided in Figure 3.

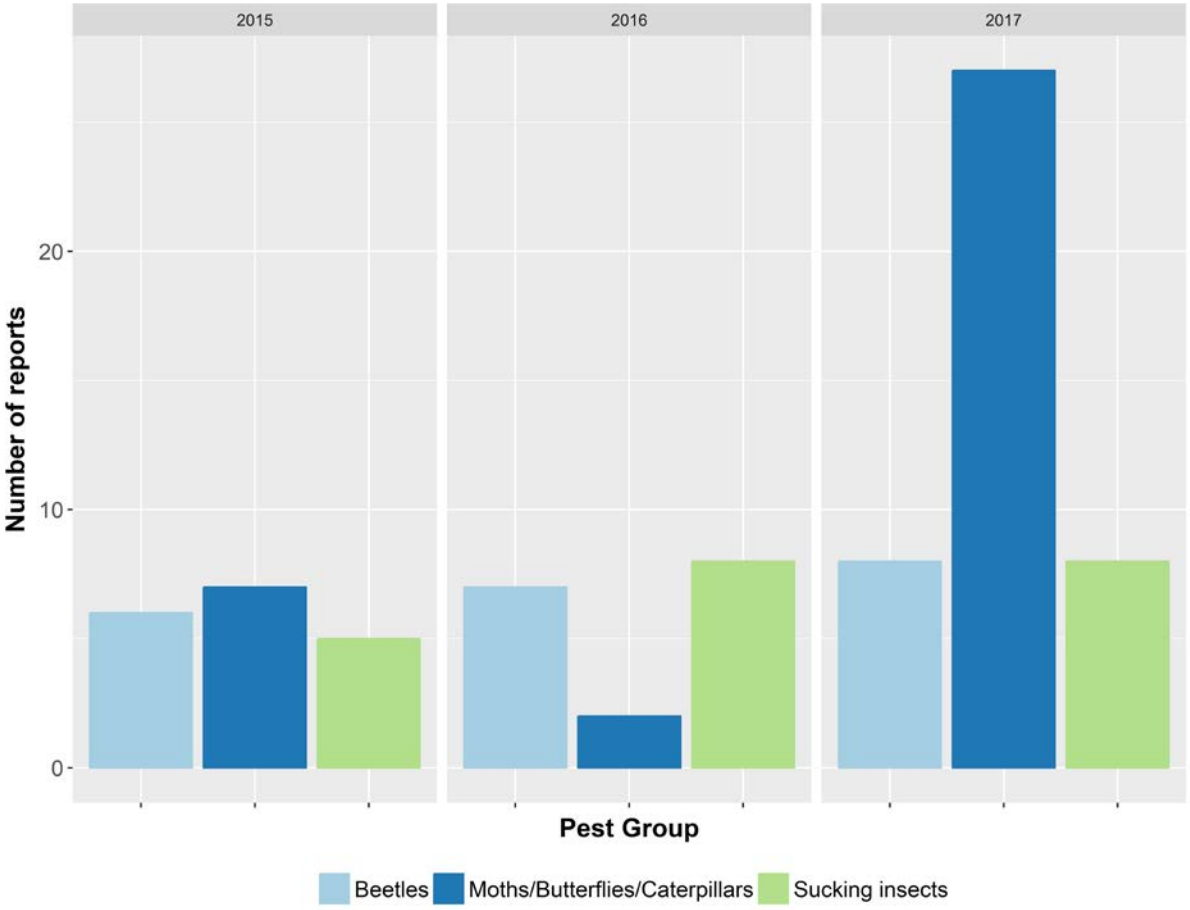

Figure 3 MyPestGuide reports of the three main pest groups related to grapes, received from Western Australia each year from 1 January 2015 to 10 September 2017

Moths/Butterflies/Caterpillars

This group includes reports of cutworm moths (n=4), hawk moths (n=28), leaf roller moths (n=2) and looper moths (n=1). The distribution of reports of moths/butterflies/caterpillars relevant to grapes from WA during 2015-2017 is provided in Figure 4. The most reported group of moths was hawk moths, with 27 reports of the grapevine hawk moth (*Hippotion celerio*) and one report of the white-lined hawk moth (*Hyles livornicoides*).

Reports of the grapevine hawk moth increased after a Facebook post on the pest on 19th May 2017, with reports from a wide range of locations across Western Australia (Figure 4). The caterpillar of this moth is distinctive with markings that look like large

painted on eyes (Figure 5). Although a minor pest of grapevines, damage caused by chewing of leaves, it can be a significant pest of taro and sweet potato.

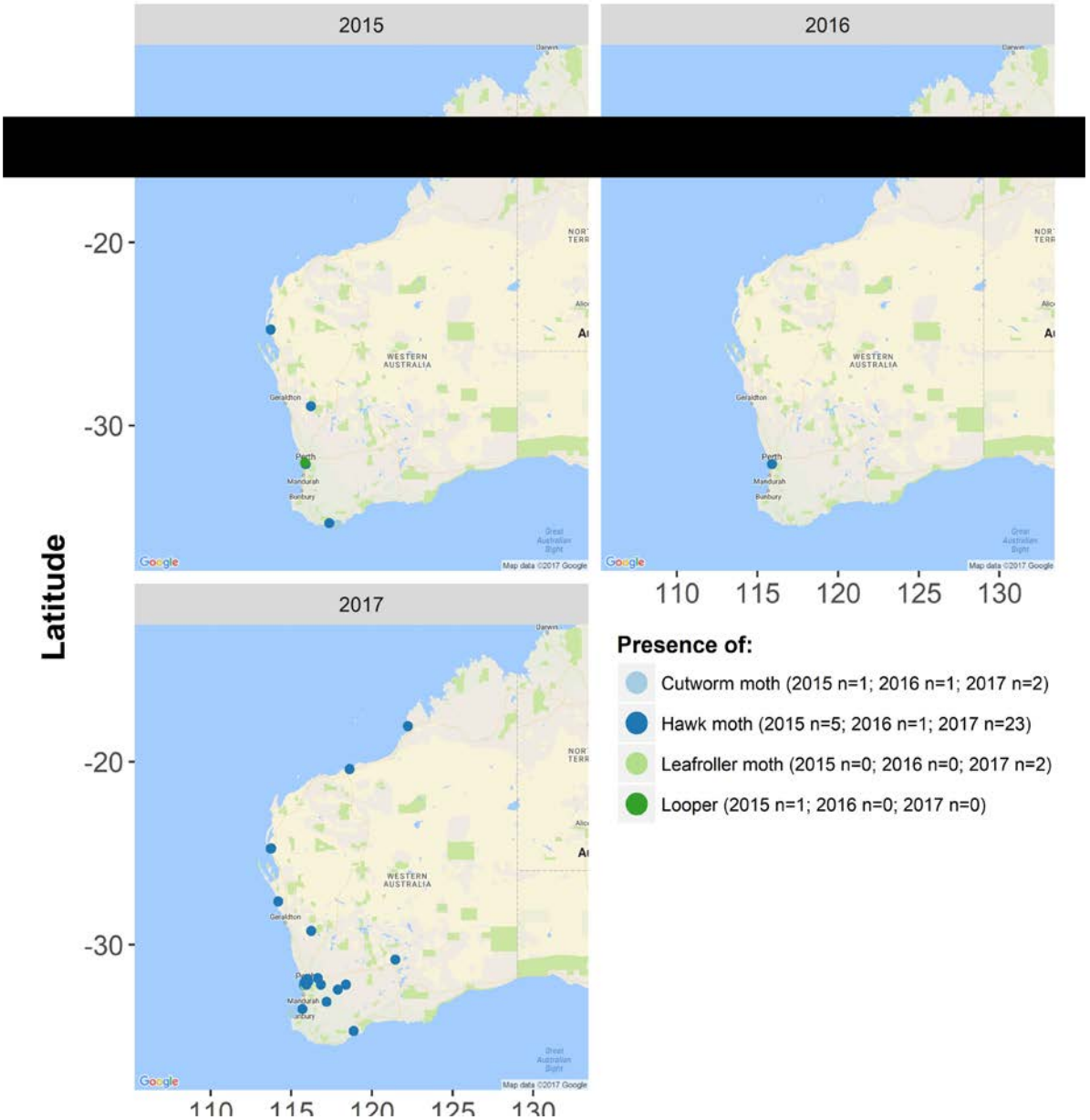

Figure 4 MyPestGuide reports received from Western Australia of moths/butterflies/ caterpillars with relevance to grapes from 1 January 2015 to 10 September 2017

Figure 5 Grapevine hawk moth caterpillar (*Hippotion celerio*), known to feed on leaves and are a minor pest of grapevines (*Vitis vinifera*) (image courtesy of MyPestGuide, report: 29401)

Beetles

This pest group includes reports of weevils (n=17), auger beetles (n=2), a ladybird (n=1), and a leaf beetle (n=1). Figure 6 provides the number of reports of beetles received each year and the distribution of reports. Weevils were the most reported pests within the beetles group with 16 reports of the garden weevil (*Phlyctinus callosus*, Figure 7). The garden weevil is an introduced pest to WA, originating from South Africa, but is now distributed across the south west region and is a major pest of grapevines and other horticultural crops. On grapevines, garden weevil will skeletonise leaves and chew the bark on new shoots and bunch stalks. They are particularly damaging to young vines.

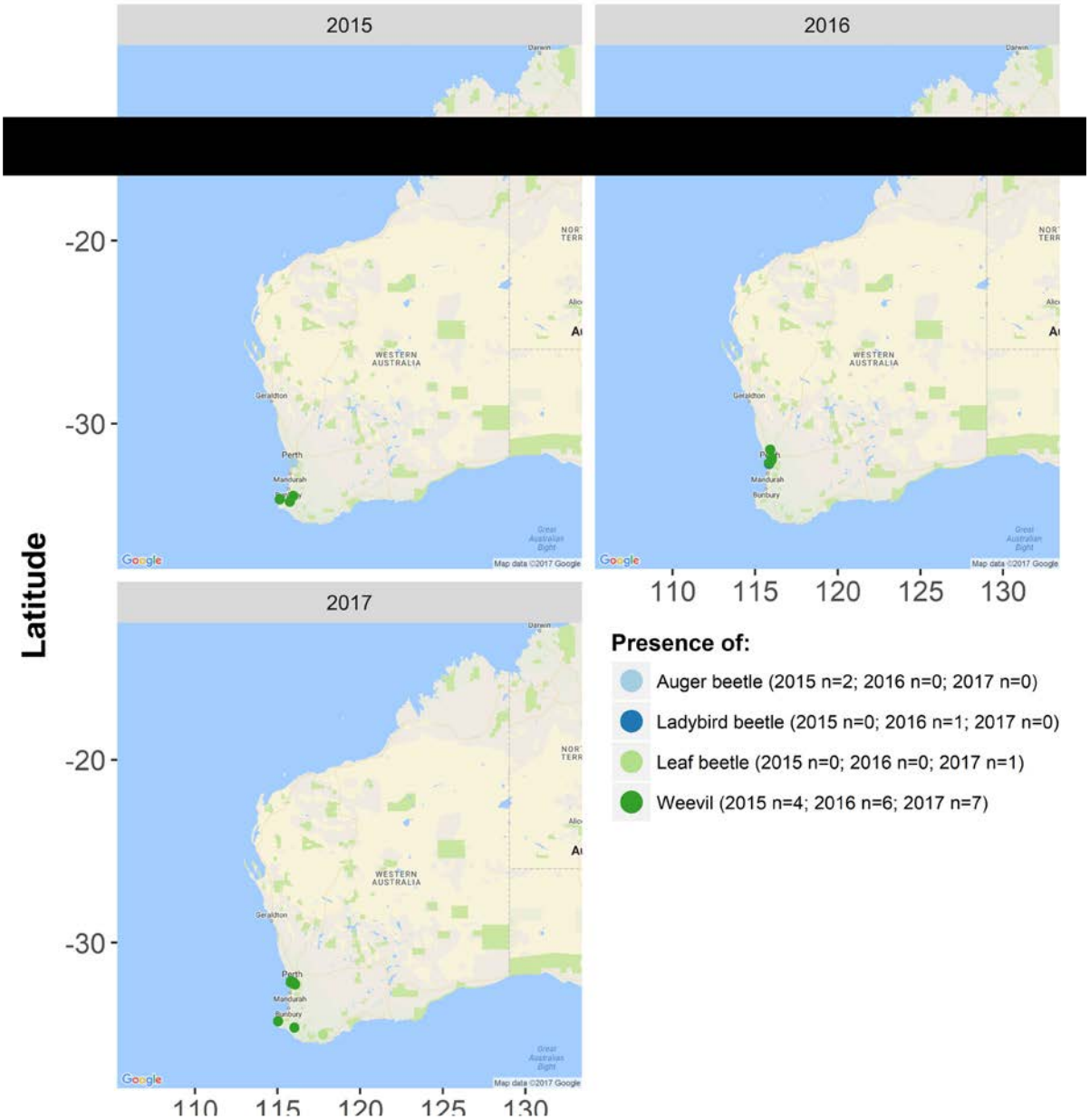

Figure 6 MyPestGuide reports of Beetles with relevance to grapes received from Western Australia 2015-2017 from 1 January 2015 to 10 September 2017

Figure 7 Garden weevil adults (*Phlyctinus callosus*) can skeletonise leaves and damage young shoots and bunch stalks of grapevines (image courtesy of MyPestGuide, report: 19565)

Sucking insects

This pest group includes reports of soft scales (n=13), thrips (n=4), and single reports of a cixiid planthopper, a mealybug, a seed bug, and a squash bug. The distribution and number of reports received of sucking insects is provided in Figure 8.

The most commonly reported scale was the fig wax scale (*Ceroplastes rusci*, n=13). The fig wax scale (Figure 9) is a cosmopolitan pest of horticultural crops including grapevines and is a recent detection in WA (first reported in 2013). While they can reduce the vigour of grapevines if in high numbers, they are considered a minor pest of grapevines. However, they can transmit grapevine leaf roll virus.

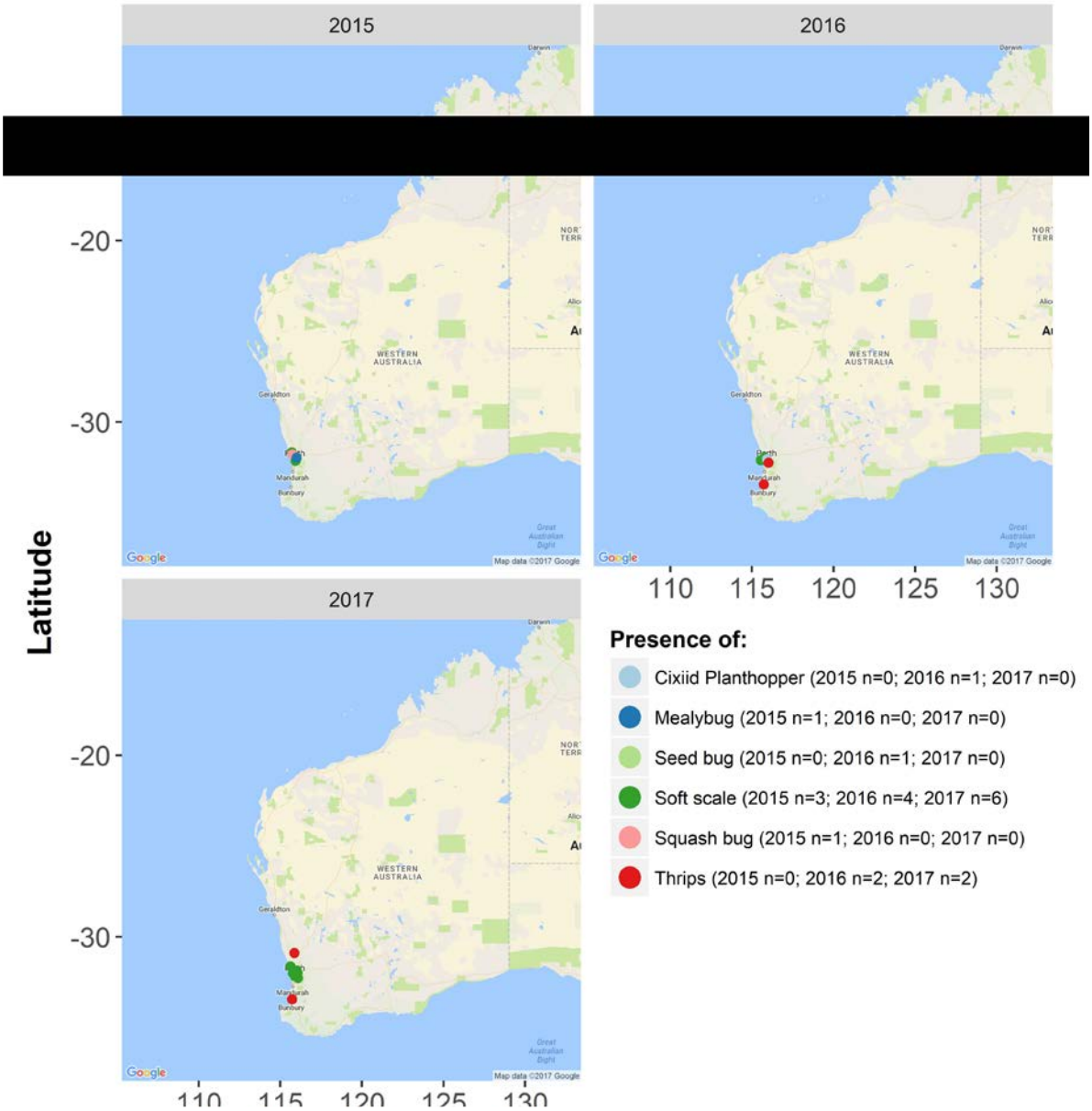

Figure 8 MyPestGuide reports of sucking insects with relevance to grapes from Western Australia from 1 January 2015 to 10 September 2017

Figure 9 Fig wax scale (*Ceroplastes rusci*) on *Ficus* sp., a minor pest of grapevines that can reduce the vigour of vines (image courtesy of MyPestGuide, report: 18533)

References

ABS 2016, 1270.0.55.001 – Australian Statistical Geography Standard (ASGS): Volume 1 – Main Structure and Greater Capital City Statistical Areas, July 2016.

Allaire J, Cheng J, Xie Y, McPherson J, Chang W, Allen J, Wickham H & Hyndman R 2015, rmarkdown: Dynamic Documents for R.

APPD 2017, Australian Plant Pest Database (APPD), Australian Plant Pest Database (APPD), online database. Plant Health Australia. <http://appd.ala.org.au/appd-hub/index> [2017].

Daróczi G 2013, pander: an R Pandoc Writer. URL *http://cran* r-project org/package= pander.

DPIRD 2017, Western Australian Organism List (WAOL), online database. Department of Primary Industries and Regional Development, Division of Agriculture and Food (DPIRD). < https://www.agric.wa.gov.au/bam/western-australian-organism-list-waol.> [September 2017].

Kahle D & Wickham H 2013, ggmap: Spatial Visualization with ggplot2. The R Journal, **5**: 144-161.

Neuwirth E 2015, RColorBrewer, ColorBrewer Palettes 2014.

R Development Core Team 2008, R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria.

Wickham H 2009, ggplot2: elegant graphics for data analysis. Springer, New York.

Wickham H 2012, reshape2: Flexibly reshape data: a reboot of the reshape package.

Wickham H 2014, Tidyr: easily tidy data with spread and gather functions.

Wickham H & Francois R 2015, dplyr: A grammar of data manipulation.

Xie Y 2013, A General-purpose Package for Dynamic Report Generation in R. R Package Version 1.1.

Appendices

Appendix 1: Suburbs in Western Australia with grape related reports sent in via MyPestGuide, 1 January 2015 to 10 September 2017

Suburbs	Number of reports
Aveley	1
Beaconsfield	2
Bedfordale	2
Beedelup	1
Belhus	1
Beverley	1
Boxwood Hill	1
Broome	1
Canning Vale	1
Cannington	1
Carabooda	2
Corrigin	1
Cowaramup	2
Denmark	1
Donnybrook	1
East Cannington	1
East Victoria Park	1
Eastbrook	1
Forrestfield	1
Gingin	1
Glenoran	1
Greenmount	1
Guildford	1
Gutha	1
Gwindinup	1
Highgate	1
Joondalup	1
Joondanna	1
Kalbarri	1
Kelmscott	1
Kensington	2
Kenwick	1
Kirup	1
Koolanooka	1
Langford	1
Leeming	1
Leschenault	2

Suburbs	Number of reports
Marmion	1
Maylands	1
Middlesex	6
Midland	1
Mount Barker	2
Mount Hawthorn	1
Murdoch	3
Nannup	1
Narembeen	1
Narrogin	1
Naturaliste	1
Nedlands	3
North Beach	1
North Perth	1
Pelican Point	1
Redgate	1
Rivervale	1
Robinson	1
Rottnest Island	1
Saint James	1
Salter Point	1
Shenton Park	1
Somerville	1
South Hedland	1
South Perth	1
South Plantations	8
Spencers Brook	1
Swan View	1
The Vines	3
Thornlie	1
Wembley Downs	1
West Swan	1
Willagee	3
Willetton	1
Wilson	3
Yanchep	1
Yathroo	1

Appendix 2: Number of reports of each pest with relevance to grapes sent into MyPestGuide from Western Australia from 1 January 2015 to 10 September 2017

Pest Type	Common name	Pest	Number of reports
ant	native ant	*Iridomyrmex chasei*	1
auger beetle	common auger beetle	*Xylopsocus gibbicollis*	1
auger beetle	powderpost beetle	*Tristaria grouvellei*	1
bee/wasp	parasitic wasp	Hymenoptera	1
bee/wasp	wasp	Hymenoptera	1
cixiid planthopper	planthopper	*Candicarina pulchra*	1
cutworm moth	cluster caterpillar	*Spodoptera litura*	1
cutworm moth	grapevine moth	*Phalaenoides glycinae*	3
fungus	botrytis bunch rot | grey mould	*Botrytis cinerea*	1
fungus	grape anthracnose | grapevine black spot	*Elsinoë ampelina*	1
hawk moth	coprosma hawk Moth	*Hippotion scrofa*	1
hawk moth	grapevine hawk moth	*Hippotion celerio*	27
hawk moth	whitelined hawk moth	*Hyles livornicoides*	1
ladybird beetle	ladybird beetle	Coccinellidae	1
leaf beetle	Australian leaf beetle	*Paropsisterna sp.*	1
leaf roller moth	light brown apple moth | LBAM	*Epiphyas postvittana*	2
looper	apple looper	*Phrissogonus laticostata*	1
mealybug	mealybug	*Pseudococcus sp.*	1
mite	grape leaf blister mite | grape erineum mite | grape gall mite | erineum | leaf mite | grape blister mite | grape bud mite	*Colomerus vitis*	5
other	environmental	Physiological/Nutritional/ Environmental	1
other	nutritional	Physiological/Nutritional/ Environmental	3
other	physiological	Physiological/Nutritional/ Environmental	1
other	unknown	unknown	7
seed bug	coon bug	*Oxycarenus arctatus*	1
snail	common garden snail | European snail | brown snail	*Cornu aspersum*	1

Pest Type	Common name	Pest	Number of reports
soft scale	fig wax scale	*Ceroplastes rusci*	13
soil fungi	mushrooms	Fungi	1
squash bug	crusader bug	*Mictis profana*	1
thrips	greenhouse thrips	*Heliothrips haemorrhoidalis*	3
thrips	plague thrips	*Thrips imaginis*	1
weed	lesser broomrape	*Orobanche minor*	1
weevil	apple weevil	*Otiorhynchus cribricollis*	2
weevil	garden weevil | banded fruit weevil (South Africa) | vine calendra	*Phlyctinus callosus*	15

Appendix 3: Number of reports by host, host type and pest relevant to grapes sent into MyPestGuide from Western Australia from 1 January 2015 to 10 September 2017

Host	Host type	Pest	Number of reports
Allium cepa	Garden	*Phlyctinus callosus*	1
Ananas comosus	Garden	*Hippotion celerio*	1
Boerhavia diffusa	Crop	*Hyles livornicoides*	1
Chaenomeles superba	Garden	*Ceroplastes rusci*	1
Citrus sinensis	Garden	*Epiphyas postvittana*	1
Citrus sinensis	Residential building	*Phlyctinus callosus*	1
Dahlia	Garden	*Phlyctinus callosus*	1
Eucalyptus	Garden	*Tristaria grouvellei*	1
Eucalyptus	Garden	*Xylopsocus gibbicollis*	1
Ficus	Garden	*Ceroplastes rusci*	4
Ficus carica	Garden	*Ceroplastes rusci*	5
Jacksonia	Park/Public Place	*Mictis profana*	1
Magnolia	Garden	*Ceroplastes rusci*	1
Malus	Garden	*Phlyctinus callosus*	1
Malus	Orchard	*Phlyctinus callosus*	1
Mangifera	Garden	*Hippotion celerio*	2
Mesembryanthemum	Garden	*Hippotion celerio*	1
Phaseolus vulgaris	Crop	*Phlyctinus callosus*	1
Triadica sebifera	Park/Public Place	*Ceroplastes rusci*	1
Tropaeolum majus	Garden	*Orobanche minor*	1
Vaccinium corymbosum	Garden	*Epiphyas postvittana*	1
Vitis vinifera	Garden	*Colomerus vitis*	2
Vitis vinifera	Garden	*Heliothrips haemorrhoidalis*	2
Vitis vinifera	Garden	*Hippotion celerio*	6
Vitis vinifera	Garden	*Iridomyrmex chasei*	1
Vitis vinifera	Garden	*Phalaenoides glycinae*	1
Vitis vinifera	Garden	Physiological/Nutritional/ Environmental	1
Vitis vinifera	Orchard	*Ceroplastes rusci*	1
Vitis vinifera	Orchard	*Colomerus vitis*	1
Vitis vinifera	Orchard	*Spodoptera litura*	1
Vitis vinifera	Park/Public Place	*Colomerus vitis*	1
Vitis vinifera	Trial	*Botrytis cinerea*	1

Host	Host type	Pest	Number of reports
Vitis vinifera	Trial	Physiological/Nutritional/ Environmental	2
Vitis vinifera	Trial	Unknown	3
Vitis vinifera	Vineyard	*Candicarina pulchra*	1
Vitis vinifera	Vineyard	*Colomerus vitis*	1
Vitis vinifera	Vineyard	*Cornu aspersum*	1
Vitis vinifera	Vineyard	*Elsinoë ampelina*	1
Vitis vinifera	Vineyard	Fungi (Mushroom)	1
Vitis vinifera	Vineyard	*Otiorhynchus cribricollis*	2
Vitis vinifera	Vineyard	*Oxycarenus arctatus*	1
Vitis vinifera	Vineyard	*Paropsisterna*	1
Vitis vinifera	Vineyard	*Phlyctinus callosus*	2
Vitis vinifera	Vineyard	Physiological/Nutritional/ Environmental	2
Vitis vinifera	Vineyard	*Pseudococcus*	1
Vitis vinifera	Vineyard	*Thrips imaginis*	1
Zea mays	Garden	*Heliothrips haemorrhoidalis*	1
Zingiber officinale	Residential building	*Phlyctinus callosus*	1
NA	Garden	*Hippotion celerio*	12
NA	Garden	*Phalaenoides glycinae*	1
NA	Garden	*Phlyctinus callosus*	2
NA	Garden	*Phrissogonus laticostata*	1
NA	Other	*Phlyctinus callosus*	1
NA	Park/Public Place	*Phalaenoides glycinae*	1
NA	Residential building	*Hippotion celerio*	2
NA	Residential building	*Hippotion scrofa*	1
NA	Residential building	*Phlyctinus callosus*	3
NA	Weeds	*Hippotion celerio*	2
NA	NA	*Hippotion celerio*	1