EUROPEAN WASP SPRING QUEEN TRAPPING PROGRAM 2022

TIDBINBILLA NATURE RESERVE

ACT PARKS & CONSERVATION SERVICES

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DIRECTORS SUMMARY

CoreEnviro Solutions European Wasp Spring Queen Trapping Program Report for 2021 to ACT Parks & Conservation Services. The information in this report is for the period 10 October to 5 December 2022.

About us

CoreEnviro Solutions is a Canberra-based service provider specialising in the delivery of noxious/environmental, agricultural, horticultural, aquatic pest and weed management, and pest control solutions.

Our main objective is to save our native species. We are committed to educating the public on invasive and beneficial species.

Notes on Data

Count is the number of European wasp queens trapped and removed from the trap station.
Count date is the date in which the European wasp queen count was conducted.
European wasp season runs from September through to April.

Acronyms

eWasp™	European wasp
eSQT	eWasp Spring Queen Trap
PCS	ACT Park & Conservation Services
TNR	Tidbinbilla Nature Reserve

eWasp Spring Queen Trap 27, The Sanctuary, Tidbinbilla Nature Reserve, ACT.

Directors Comments

Welcome to the inaugural European Wasp Spring Queen Trapping Program Report for 2022. The trapping program was conducted by CoreEnviro Solutions for ACT Parks & Conservation Services.

Canberra is the bush capital of Australia. It has 39 nature reserves in and around Canberra for the public to utilise and enjoy.

Tidbinbilla Nature Reserve is 54.5 square Kilometers of protected area. The area was gazetted as a nature reserve in 1971 but conservation effort occurred in 1936.

The Sanctuary is in Tidbinbilla Nature Reserve. It has a 2.1kilometre pathway, inter-connecting ponds, and a predator proof fence. It is a refuge for native animals.

The Sanctuary gives visitors the opportunity to view a variety of animals and birdlife in a natural habitat.

Over the past several years, the Sanctuary has been inundated with European wasp activity. European wasps have become a nuisance and safety risk to the public, they have also had a negative impact on the environment.

Through the European Wasp Awareness & Entomological Advice Service Hotline, 27 nests were treated and reported in Tidbinbilla, the Sanctuary, for 2021/2022.

The 2022 spring queen trapping program deployed 41 traps around the Sanctuary, Koala Path and the Parks & Conservations Services Depot. The program used a non-chemical product called Vespex by Sundew, see here for product information.

Results

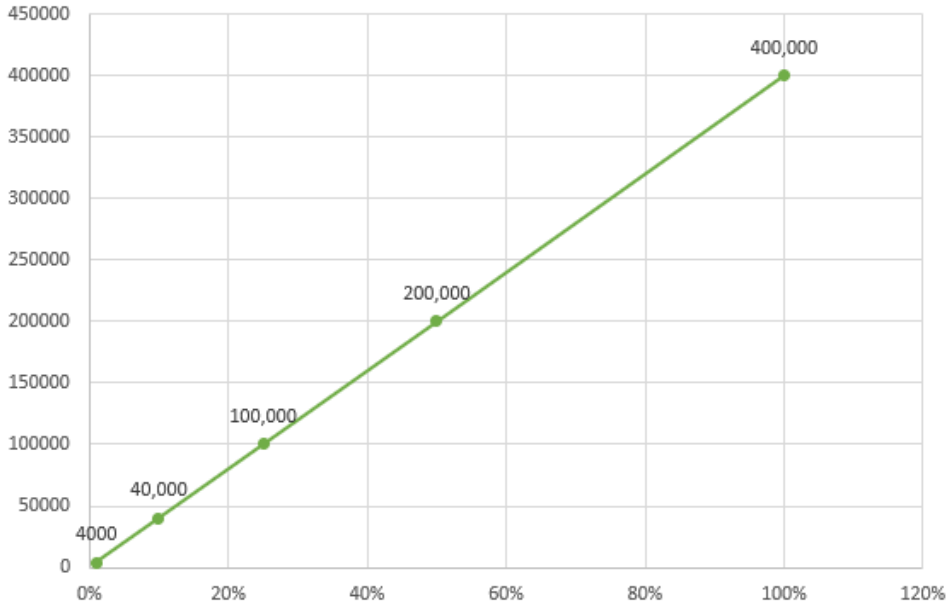
There were 41 European wasp spring queen traps deployed around the Sanctuary, Koala Path, and the PCS depot at Tidbinbilla Nature Reserve.

The program ran from 10 October - 5 December 2022. During the program period, 100 European wasp queens were captured and removed from the environment.

The trapping trial was successful in capturing 100 European wasp queens with very little impact to the environment and native species. By removing the queens from the environment, we have eliminated the potential of 100,000's of invasive wasps impacting the environment and the public's recreational use of The Sanctuary and the Koala Path.

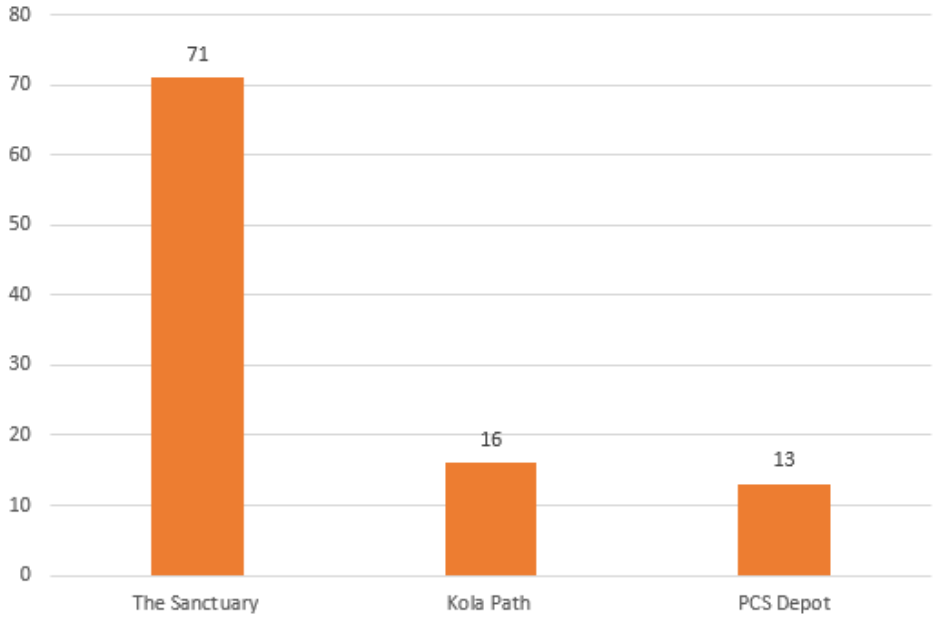
It is estimated, if all queens survived, there would be 400,000 European worker wasps, and 3,000 queens impacting the Sanctuary environment and the surrounding areas. By removing the queens from the environment, this has not only prevented the establishment of nests, but the production of next generation queens.

Chart 1 shows the number of eWasps' by queen's survival rate.



By removing the queens from Canberra's environment, it has prevented the possible establishment of 100 nests, that is an estimated 400,000 European worker wasps, and 3,000 next generation queens, from impacting the Sanctuary, Koala Path, and the PCS Depot.

Chart 2 shows the count of eWasp spring queens by location.



The Sanctuary had the most queens removed from the environment with 71, followed by the Koala Path, 16 , and the PCS Depot with 13. European wasp activity does not only impact these areas but also surrounding areas of the Tidbinbilla Nature Reserve.

This was the first Spring Queen Trapping Program, therefore, there is no comparison data for these locations.

CoreEnviro Solutions conducted two (2) additional eWasp spring queen trapping programs for Transport Canberra & City Services (TCCS), and Parks & Conservation Services, Jerrabomberra Wetlands. The results for the eWasp spring queen trapping program at Jerrabomberra Wetlands and TCCS are as follows; there were 18 traps deployed at Jerrabomberra Wetlands which saw a total of 217 spring queens, an increase of 108% from 2021, and there were 150 traps deployed around Canberra, for TCCS, which saw a total of 1,551 spring queens, an increase of 187% from 2021.

European Wasp Impact

European wasps have a negative impact on our native species and environment. The European wasp has no predators and puts pressure on native species by consuming large amounts of insects which are normally preyed upon by native insects, reptiles, and birds.

Image 1 by CoreEnviro Solutions, eWasp foraging on Kangaroo Carcass at Mulligans Flat Road, Forde. – Image 2 by Jenny Conolly, eWasp foraging on prey mantis, ACT.

Native scavenging animals find it difficult to feed off roadkill as large numbers of European wasps are present and prevent animals from feeding. Flies have been observed being attacked by European wasps and at times their heads decapitated.

Image by CoreEnviro Solutions – eWasp foraging on Brown snake at Googong Dam, ACT.

An average European wasp nest can contain an estimated 4,000 wasps during the peak of the season, which is between February - March, each nest can produce and additional 1,000 queens at the end of the season; survival rate for spring queens is unknown, Dr Philip Spradbery advised queen survival rate was around 30%, but further studies would need to be conducted.

Nuisance wasps that forage in large numbers prevent the public from enjoying outdoor areas such as nature reserves, parks, and open spaces, and poses a high safety risk to the public.

It is known that European wasps impact European honey bee hives, they prey on honey bees returning to the hive, rob the hive of honey and attack the brood which weakens the hive. There is no information or evidence that indicates they impact native bee hives/species.

It has been published in the New Zealand Journal of Zoology, 1991, that the European wasp's diet consists of Diptera (fly & mosquito species), lepidopteran larvae (caterpillars, moths, butterflies), and/or arachnids, this was also documented in Europe and North America. These insects are vital to the survival of our native species.

Benefits of a Spring Queen Trapping Program

Treating nests on average for a Ranger can take up to two hours, from set up to treatment. Tracking European wasps back to a nest is extremely time consuming and does not always pay off; most Rangers don't have the time and capacity for a time-consuming task. European wasp nests that go unreported and untreated can produce next generation queens which impact the area/environment.

From the 100 European wasp queens captured and removed from Tidbinbilla Nature Reserves environment, if 30% of the queens captured were to establish nests, 30 nests, the Ranger would have spent an estimated 60 hours or 7.5 working days treating nests, if a private company were to treat nests at a cost of $220 per nest, the total cost would be $6,600.

The European wasp spring queen trapping program has also reduced the quantity of insecticide used which greatly benefits the environment and reduces the cost of purchasing insecticides.

The Vespex lure is a non-chemical carbohydrate, luring and trapping European wasp spring queens, the trapping program has proven very low impact on the environment and native species.

Recommendation

There were 41 trap stations deployed in 3 areas, The Sanctuary, the Koala Path, and the PCS depot. At this stage, it is not clear when it is the optimum time for deploying traps at Tidbinbilla Nature Reserve.

If a program is to be conducted in late 2023, it is recommended that 2-3 spring queen traps be deployed in the Sanctuary to monitor queen activity, prior to deploying all traps.

Monitor the area through the eWasp hotline and conduct an inspection in late January, early February 2023. If eWasp activity is high in these locations, a baiting program or an autumn queen trapping program may be required.

It is recommended that all eWasp nests be reported to the eWasp Hotline, to capture data and monitor eWasp activity over the 2022/2023 wasp season.

The full success of the trial will be determined at the end of European wasp season, data will need to be collected throughout the season to give a clear indication of whether the spring queen trapping program was successful in reducing numbers/nests in The Sanctuary, Koala Path, and the PCS Depot.

If the data shows, at the end wasp season in April 2022, a reduction in European wasp nests and activity at Tidbinbilla Nature Reserve, it is highly recommended to expand the trapping program in 2023.

The eWasp mobile app is available at both app stores.

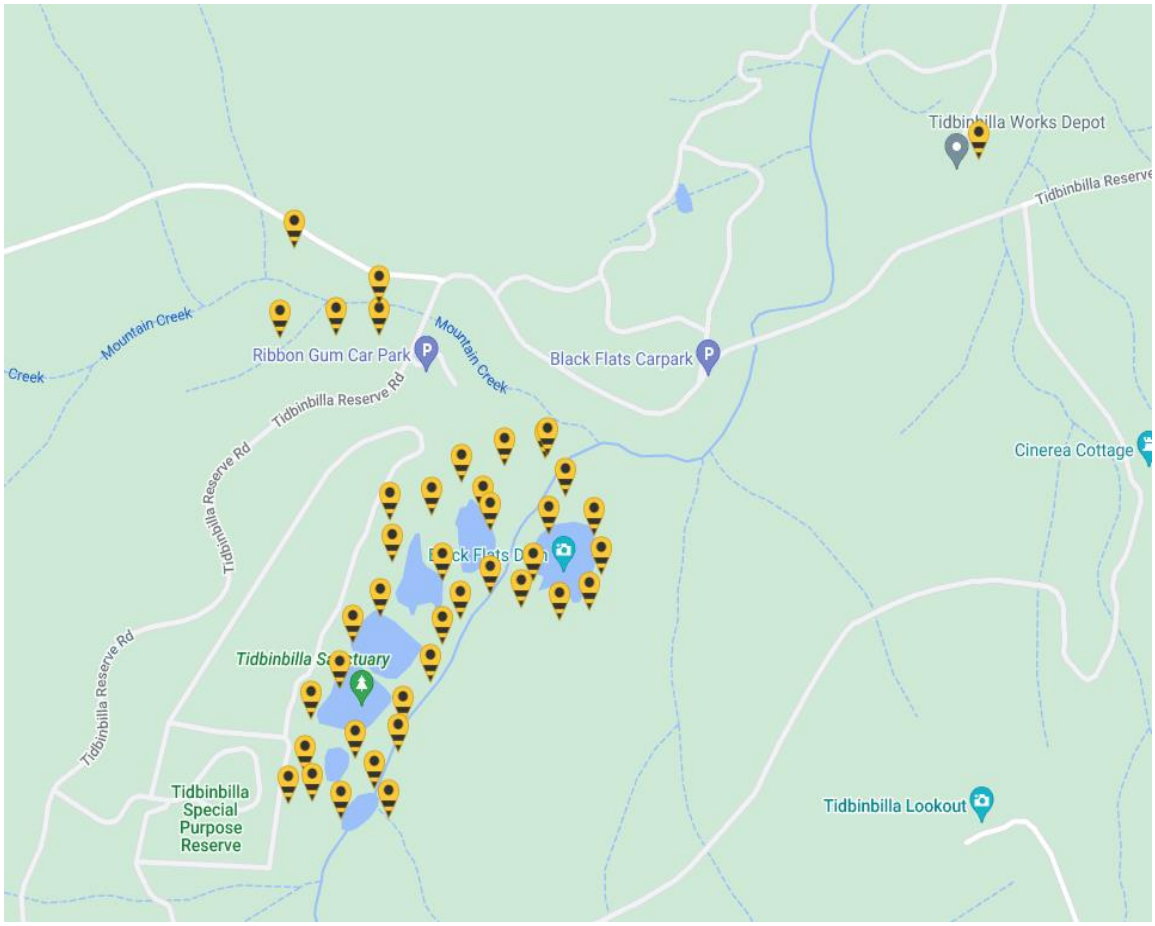
Table 1 shows the location, trap number, count date and count of eWasp queens at Tidbinbilla Nature Reserve.

Location & Trap Number	Count 1 24/10/22	Count 2 7/11/22	Count 3 21/11/22	Count 4 5/12/22
The Sanctuary Tidbinbilla	1	6	24	40
eWasp Spring Queen Trap Station 1	0	0	0	0
eWasp Spring Queen Trap Station 2	0	0	0	0
eWasp Spring Queen Trap Station 3	0	0	0	0
eWasp Spring Queen Trap Station 4	0	0	2	1
eWasp Spring Queen Trap Station 5	0	0	0	0
eWasp Spring Queen Trap Station 6	0	0	0	0
eWasp Spring Queen Trap Station 7	0	0	0	0
eWasp Spring Queen Trap Station 8	0	0	0	0
eWasp Spring Queen Trap Station 9	0	0	0	0
eWasp Spring Queen Trap Station 10	0	0	0	0
eWasp Spring Queen Trap Station 11	0	0	0	0
eWasp Spring Queen Trap Station 12	0	0	1	2
eWasp Spring Queen Trap Station 13	0	0	0	0
eWasp Spring Queen Trap Station 14	0	0	0	0
eWasp Spring Queen Trap Station 15	0	0	0	0
eWasp Spring Queen Trap Station 16	0	0	0	0
eWasp Spring Queen Trap Station 17	1	2	3	5
eWasp Spring Queen Trap Station 18	0	0	0	1
eWasp Spring Queen Trap Station 19	0	0	3	4
eWasp Spring Queen Trap Station 20	0	0	0	0
eWasp Spring Queen Trap Station 21	0	0	0	0
eWasp Spring Queen Trap Station 22	0	0	0	1
eWasp Spring Queen Trap Station 23	0	1	0	0
eWasp Spring Queen Trap Station 24	0	0	0	0
eWasp Spring Queen Trap Station 25	0	1	2	9
eWasp Spring Queen Trap Station 26	0	1	6	5
eWasp Spring Queen Trap Station 27	0	1	5	8
eWasp Spring Queen Trap Station 28	0	0	0	0
eWasp Spring Queen Trap Station 29	0	0	0	0
eWasp Spring Queen Trap Station 30	0	0	0	0
eWasp Spring Queen Trap Station 31	0	0	0	0
eWasp Spring Queen Trap Station 32	0	0	2	4
eWasp Spring Queen Trap Station 33	0	0	0	0
eWasp Spring Queen Trap Station 34	0	0	0	0
eWasp Spring Queen Trap Station 35	0	0	0	0

Kola Path Tidbinbilla	0	0	0	7
eWasp Spring Queen Trap Station 36	0	0	0	0
eWasp Spring Queen Trap Station 37	0	0	0	2
eWasp Spring Queen Trap Station 38	0	0	0	5
Kola Path Tidbinbilla - Mountain Creek Road	0	1	5	3
eWasp Spring Queen Trap Station 39	0	0	0	0
eWasp Spring Queen Trap Station 40	0	1	5	3
Tidbinbilla PCS Depot	0	1	6	6
eWasp Spring Queen Trap Station 41	0	1	6	6
Grand Total	1	8	35	56

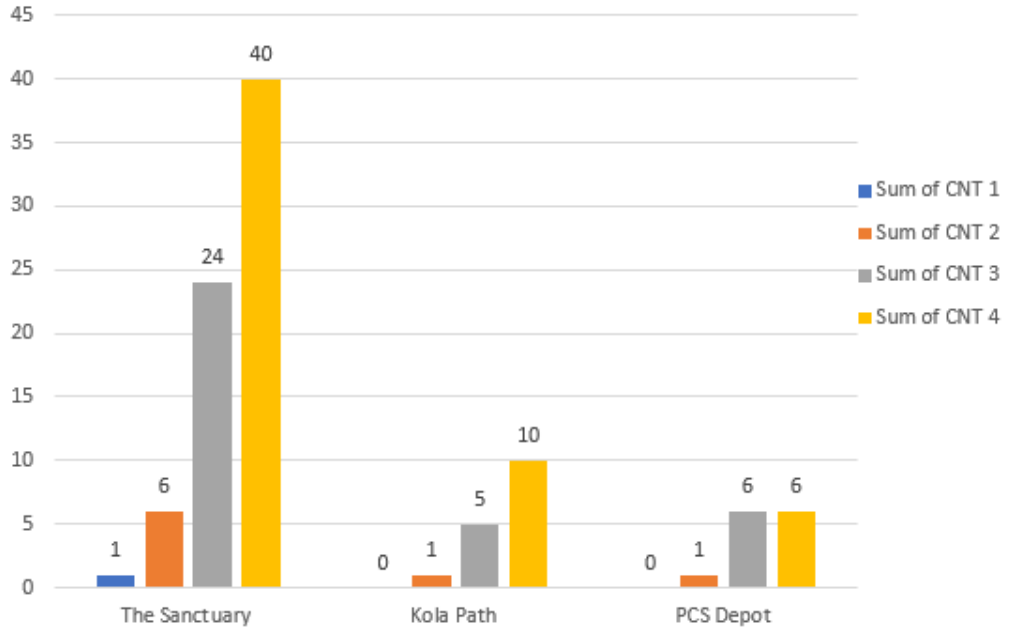
Trap Locations

The Sanctuary Koala Path PCS Depot



Locations of nest for 2021/2022.

Chart 2 shows the increase of European wasp queens from the first count to the third count.

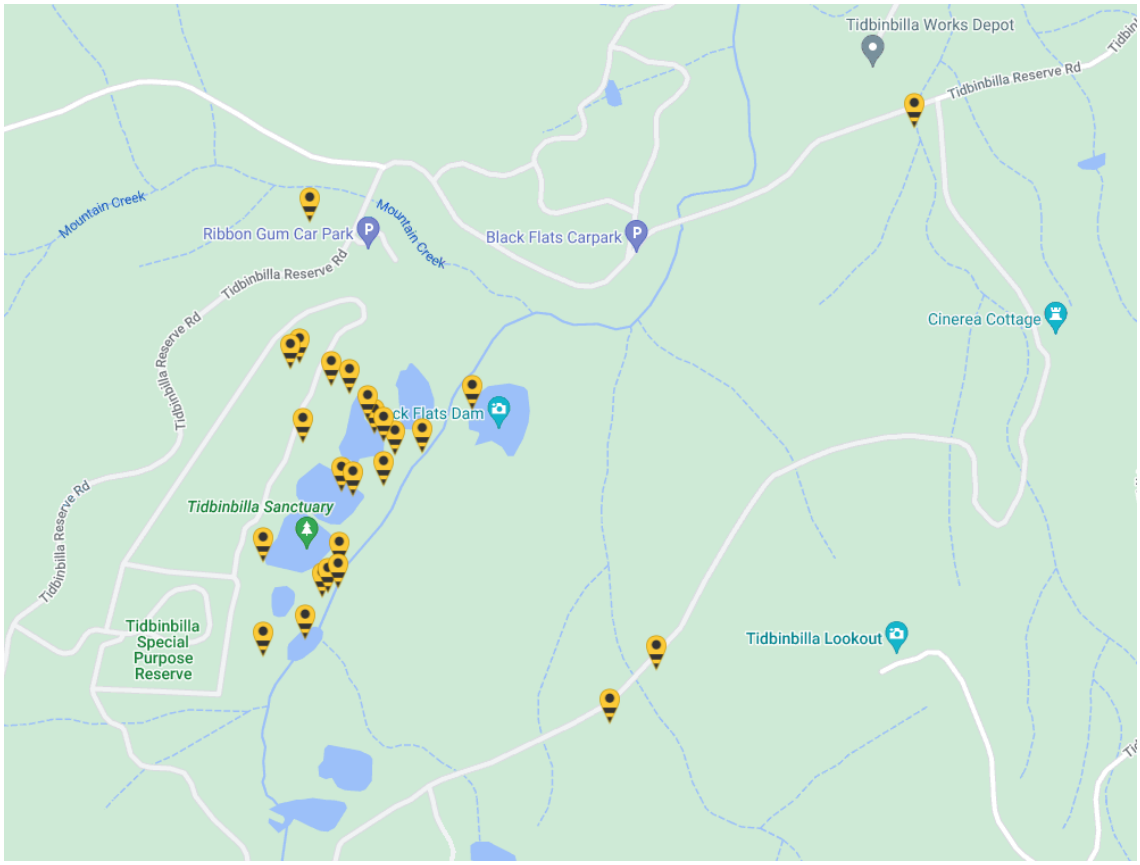


The 2020/2021 and 2021/2022 eWasp Hotline data for Paddy's River, ACT.

European Wasp Nest 2021/2022	Total
Paddys River	27
European Wasp Total	27

European Wasp Nest 2020/2021	Total
Paddys River	5
European Wasp Total	5

In 2021/2022 there were 27 eWasp nests reported at Paddy's River, ACT, via the eWasp Hotline.



Locations of nest for 2021/2022.

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RESULTS BY LOCATION

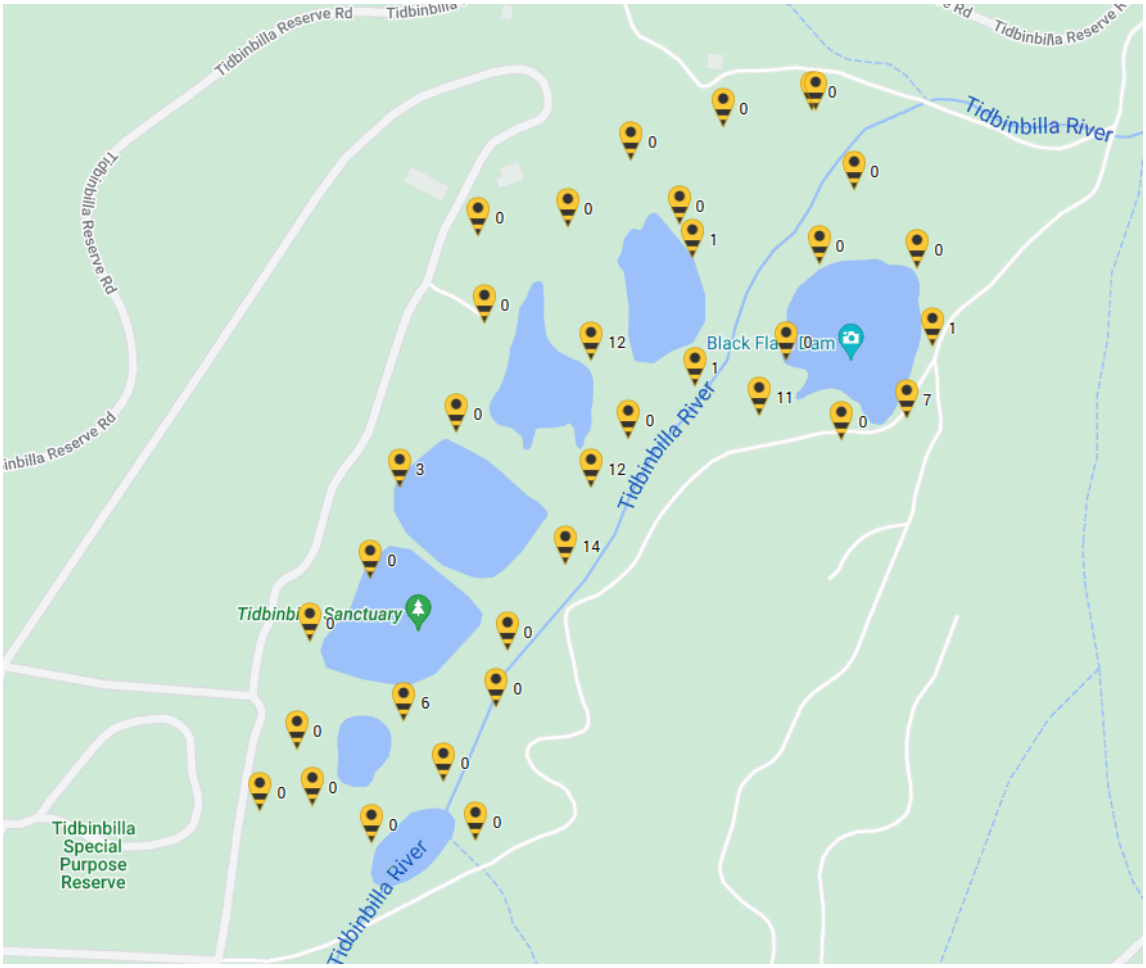
The Sanctuary

The Sanctuary is located in the Tidbinbilla Nature Reserve, it has a 2.1-kilometer pathway with inter-connected ponds. The Sanctuary offers an up-close experience with flora and fauna and is very popular with Canberrans and tourist to the ACT.

2022 eWasp Spring Queen Trap Location

Trap Number	Latitude	Longitude	Location
eWasp Spring Queen Trap Station 1	-35.466432	148.905136	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 2	-35.465691	148.905243	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 3	-35.465267	148.905754	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 4	-35.464645	148.905998	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 5	-35.464267	148.906474	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 6	-35.463525	148.906705	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 7	-35.462937	148.906655	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 8	-35.462869	148.907405	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 9	-35.462422	148.907932	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 10	-35.462189	148.908703	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 11	-35.46208	148.909443	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 12	-35.462076	148.909473	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 13	-35.462616	148.909797	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 14	-35.463148	148.910325	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 15	-35.463128	148.909503	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 16	-35.463783	148.909233	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 17	-35.464154	148.909006	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 18	-35.463687	148.91045	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 19	-35.464176	148.910236	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 20	-35.464321	148.909693	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 21	-35.462858	148.908335	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 22	-35.463081	148.908447	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 23	-35.463953	148.908465	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 24	-35.46431	148.907912	The Sanctuary Tidbinbilla

eWasp Spring Queen Trap Station 25	-35.46378	148.907599	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 26	-35.464647	148.907602	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 27	-35.465174	148.907385	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 28	-35.465753	148.906899	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 29	-35.466139	148.906807	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 30	-35.46665	148.906367	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 31	-35.46705	148.906633	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 32	-35.466233	148.906033	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 33	-35.467067	148.905767	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 34	-35.466817	148.905267	The Sanctuary Tidbinbilla
eWasp Spring Queen Trap Station 35	-35.46685	148.904833	The Sanctuary Tidbinbilla



Mapped traps at The Sanctuary, TNR, ACT.

2022 eWasp Spring Queen Count

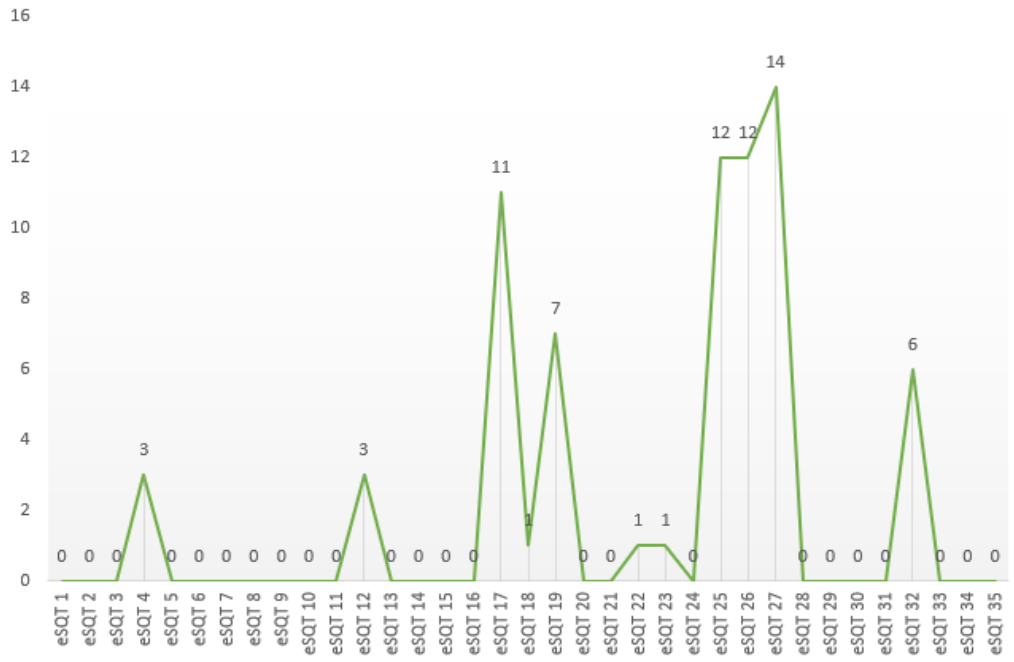
Trap Number	CNT Date	CNT 1	CNT Date	CNT2	CNT Date	CNT 3	CNT Date	CNT 4	Totals
eWasp Spring Queen Trap Station 1	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 2	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 3	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 4	24/10/22	0	7/11/22	0	21/11/22	2	5/12/22	1	3
eWasp Spring Queen Trap Station 5	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 6	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 7	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 8	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 9	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 10	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 11	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 12	24/10/22	0	7/11/22	0	21/11/22	1	5/12/22	2	3
eWasp Spring Queen Trap Station 13	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 14	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0

eWasp Spring Queen Trap Station 15	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 16	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 17	24/10/22	1	7/11/22	2	21/11/22	3	5/12/22	5	11
eWasp Spring Queen Trap Station 18	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	1	1
eWasp Spring Queen Trap Station 19	24/10/22	0	7/11/22	0	21/11/22	3	5/12/22	4	7
eWasp Spring Queen Trap Station 20	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 21	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 22	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	1	1
eWasp Spring Queen Trap Station 23	24/10/22	0	7/11/22	1	21/11/22	0	5/12/22	0	1
eWasp Spring Queen Trap Station 24	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 25	24/10/22	0	7/11/22	1	21/11/22	2	5/12/22	9	12
eWasp Spring Queen Trap Station 26	24/10/22	0	7/11/22	1	21/11/22	6	5/12/22	5	12
eWasp Spring Queen Trap Station 27	24/10/22	0	7/11/22	1	21/11/22	5	5/12/22	8	14
eWasp Spring Queen Trap Station 28	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 29	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0

eWasp Spring Queen Trap Station 30	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 31	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 32	24/10/22	0	7/11/22	0	21/11/22	2	5/12/22	4	6
eWasp Spring Queen Trap Station 33	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 34	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 35	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
	TOTAL NUMBER OF QUEENS								71

Results

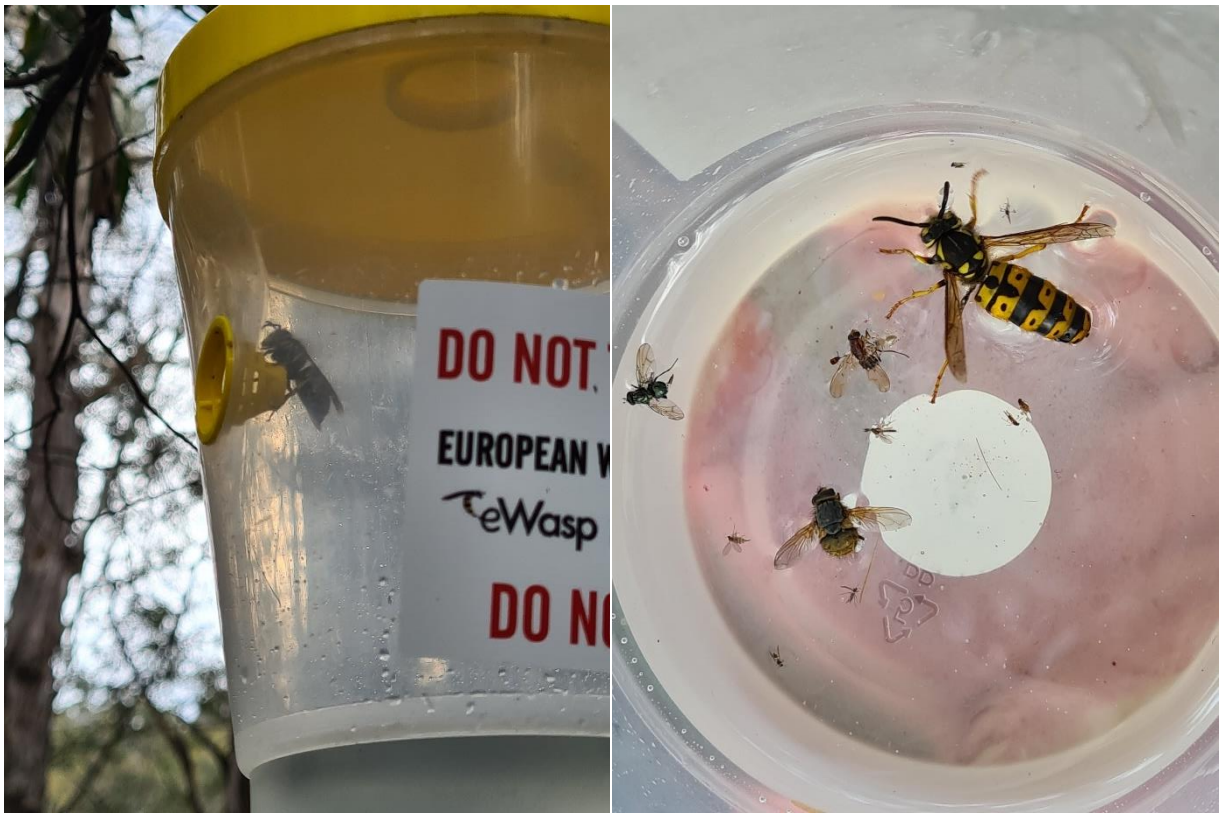
Chart 3 shows the number of eWasp queens by trap number.



There were thirty-five (35) traps deployed at The Sanctuary, which saw a total of 71 spring queens' traps and removed from the environment during the trapping program.

Data Comparison & Charts

The 2022 eWasp spring queen trapping program at the Sanctuary counted a total of 71 queens trapped and removed from the environment. This is the first trapping program, therefore, there is no comparison data for this location.



eWasp Spring Queen Trap Number 27

The above image shows how a queen is trapped in the lure station; once she gains access into the trap, she is unable to get out due to the unique one-way entrance of the trap.

The Koala Path

The Koala Path is in Tidbinbilla Nature Reserve and is home to several koala bears. It is a popular location for Canberrans and tourists to get up and close to a koala bear.

2022 eWasp Spring Queen Trap Location

Trap Number	Latitude	Longitude	Location
eWasp Spring Queen Trap Station 36	-35.460383	148.90645	Kola Path Tidbinbilla
eWasp Spring Queen Trap Station 37	-35.460383	148.905683	Kola Path Tidbinbilla
eWasp Spring Queen Trap Station 38	-35.460417	148.904683	Kola Path Tidbinbilla
eWasp Spring Queen Trap Station 39	-35.45995	148.90645	Kola Path Tidbinbilla - Mountain Creek Road
eWasp Spring Queen Trap Station 40	-35.459183	148.904933	Kola Path Tidbinbilla - Mountain Creek Road

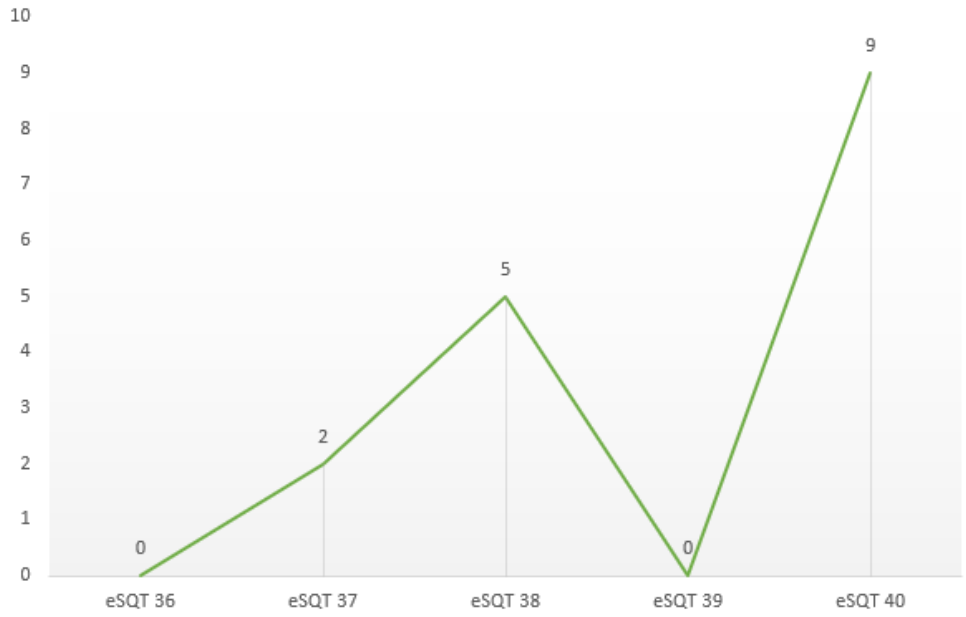
Mapped traps at the Koala Path, TNR, ACT.

2022 eWasp Spring Queen Count

Trap Number	CNT Date	CNT 1	CNT Date	CNT2	CNT Date	CNT 3	CNT Date	CNT 4	Totals
eWasp Spring Queen Trap Station 36	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 37	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	2	2
eWasp Spring Queen Trap Station 38	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	5	5
eWasp Spring Queen Trap Station 39	24/10/22	0	7/11/22	0	21/11/22	0	5/12/22	0	0
eWasp Spring Queen Trap Station 40	24/10/22	0	7/11/22	1	21/11/22	5	5/12/22	3	9
	TOTAL NUMBER OF QUEENS								16

Results

Chart 4 shows the number of eWasp queens by trap number.



There were five (5) traps deployed at the Koala Path, which saw a total of 16 spring queens' traps and removed from the environment during the trapping program.

Data Comparison & Charts

The 2022 eWasp spring queen trapping program at the Koala Path counted a total of 16 queens trapped and removed from the environment. This is the first trapping program, therefore, there is no comparison data for this location.

eWasp Spring Queen Trap Number 40

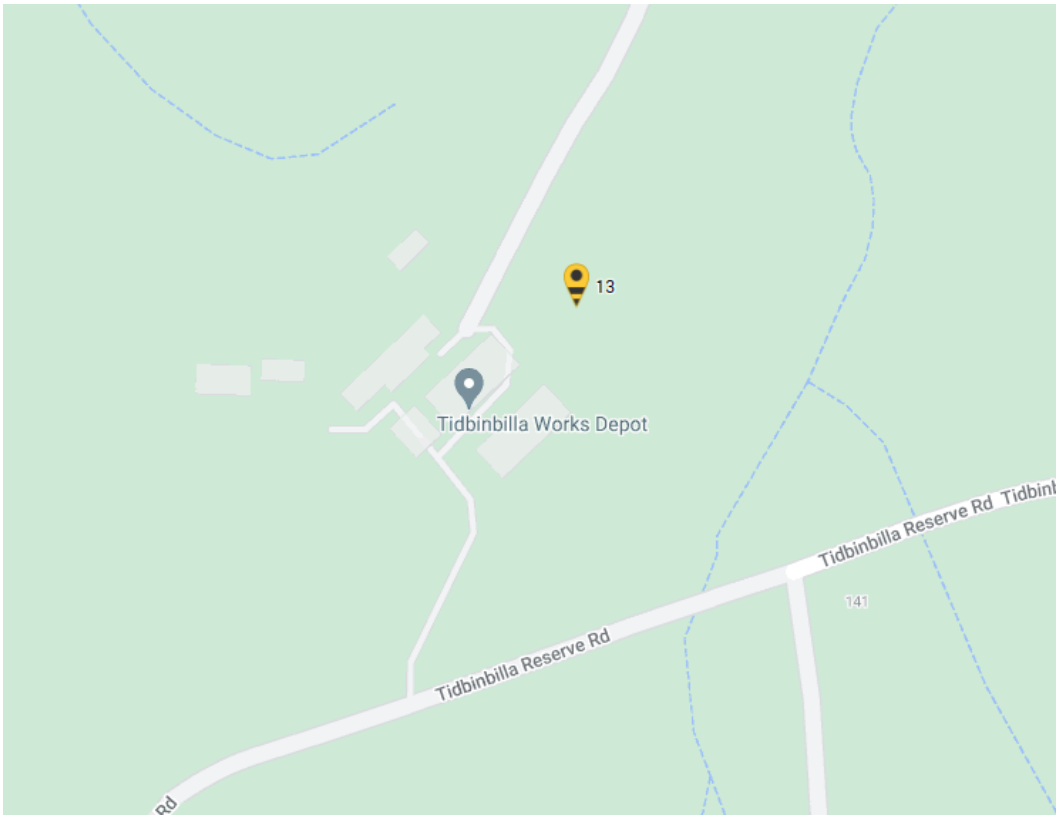
eWasp Spring Queen Trap Number 37

Tidbinbilla PCS Depot

The Parks and Conservation Services Depot is centrally located in Tidbinbilla. It is a base for the Rangers, and a storage facility for goods and motor equipment.

2022 eWasp Spring Queen Trap Location

Trap Number	Latitude	Longitude	Location
eWasp Spring Queen Trap Station 41	-35.457967	148.917233	Tidbinbilla PCS Depot



Mapped traps at the PCS Depot, TNR, ACT.

2022 eWasp Spring Queen Count

Trap Number	CNT Date	CNT 1	CNT Date	CNT 2	CNT Date	CNT 3	CNT Date	CNT 4	Totals
eWasp Spring Queen Trap Station 41	24/10/22	0	7/11/22	1	21/11/22	6	5/12/22	6	13
	TOTAL NUMBER OF QUEENS								13

Results

There was one (1) trap deployed at the PCS Depot, which saw a total of 13 spring queens' traps and removed from the environment during the trapping program.

Data Comparison & Charts

The 2022 eWasp spring queen trapping program at the PCS Depot counted a total of 13 queens trapped and removed from the environment. This is the first trapping program, therefore, there is no comparison data for this location.

eWasp Spring Queens from the 2022 spring queen trapping program, Tidbinbilla Nature Reserve.

Canberra, Australian Capital Territory
October 2022 Daily Weather Observations

Observations from Canberra Airport.

Australian Government
Bureau of Meteorology

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9am						3pm					
		Min	Max				Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	Temp	RH	Cld	Dirn	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Sa	7.7	14.7	0.4			E	31	10:02	11.0	70	8	ESE	20	1025.9	13.6	55	8	SW	9	1020.5
2	Su	4.1	18.4	0.6			E	31	18:30	9.0	70		SSW	9	1020.4	16.8	43	2	NNE	7	1016.2
3	Mo	2.3	19.2	0			NW	31	16:07	8.8	91	8	ENE	2	1022.7	18.8	45	1	NW	13	1018.2
4	Tu	4.1	19.0	0			ESE	41	22:30	10.4	83	8		Calm	1022.7	18.4	45	8	E	7	1020.4
5	We	9.3	12.0	2.2			E	33	15:29	10.6	90	7	ESE	7	1027.5	10.8	94	8	ESE	15	1024.6
6	Th	8.6	15.7	25.2			ESE	24	23:06	10.4	99	7	SE	11	1023.1	14.0	89	8	SW	9	1019.8
7	Fr	6.7	15.2	2.8			NE	26	15:23	13.0	96	8	SSE	6	1015.4	14.3	99	7		Calm	1013.2
8	Sa	11.7	19.0	19.6			NNW	30	12:11	14.9	85	1	N	11	1015.4	14.9	87	8	N	19	1014.3
9	Su	4.2	13.3	34.8			S	39	00:27	7.1	67	7	S	26	1020.7	11.2	57	8	WNW	15	1020.1
10	Mo	2.2	16.4	0			E	33	18:47	7.4	73	7	ESE	11	1026.7	14.9	46	1	ENE	11	1023.3
11	Tu	7.0		0			ENE	31	19:28	11.1	67	6	E	9	1025.3	18.0	48	6	N	17	1021.0
12	We	9.8	18.9	0			NE	33	17:31	13.6	72		SW	7	1023.5	18.2	55	8	ENE	20	1020.2
13	Th	10.6	18.1	0			ENE	37	12:41	13.6	71	8	E	13	1019.5	16.9	59	8	ENE	24	1014.4
14	Fr	11.5	15.7	12.8			WNW	56	12:11	12.2	66		WNW	31	1009.1	13.7	63	3	WNW	33	1011.3
15	Sa	4.2	18.7	0.8			N	39	13:13	11.8	80		ENE	6	1018.6	17.1	46	5	N	26	1016.9
16	Su	2.8	18.5	0			ESE	37	21:31	10.5	77	6	N	6	1020.0	17.9	47	1	NNE	13	1017.3
17	Mo	4.9	16.8	0			NE	28	14:58	11.3	69	7	SE	9	1022.7	15.5	56	8	N	9	1020.8
18	Tu	8.5	19.8	0			NNE	24	11:38	12.6	78	7	ESE	9	1021.3	19.0	53	8	NW	6	1017.6
19	We	6.9	23.0	0.2			E	37	18:34	15.1	82		S	11	1018.9	21.8	52	8	E	26	1016.2
20	Th	11.3	20.7	0			ESE	39	15:31	16.7	69	1	ESE	15	1018.2	19.7	63	8	ESE	22	1016.0
21	Fr	15.1	22.7	0.8			NE	35	12:16	17.7	83	7	NE	9	1015.5	21.5	62	8	NE	24	1010.8
22	Sa	12.8	21.1	23.0			N	37	11:09	15.6	99	8	NNE	13	1012.5	18.4	91	8	N	24	1010.0
23	Su	12.9	20.1	31.0			ESE	37	17:29	15.9	93	8	SE	9	1014.5	17.8	80	8	ESE	19	1013.2
24	Mo	13.7	19.1	0.4			ESE	41	11:50	15.9	81	8	ESE	15	1014.4	18.2	70	8	SE	24	1010.1
25	Tu	13.2	22.7	2.6			NNW	48	12:45	17.2	84	8		Calm	1006.1	21.1	50	6	NNW	30	1002.7
26	We	12.4	20.6	2.4			W	59	13:56	14.8	99	8	NNW	19	1002.6	18.6	64	8	WNW	35	1000.7
27	Th	10.7	20.1	0.4			W	63	13:36	15.4	78	8	NNW	30	1002.5	16.4	81	4	WNW	17	1000.9
28	Fr	10.8	15.6	3.4			W	74	13:08	12.3	52	8	WNW	33	1003.4	14.1	51	5	W	43	1001.7
29	Sa	8.5	17.0	0			WNW	56	11:49	11.3	59	1	WNW	28	1005.5	15.7	43	2	WNW	30	1004.9
30	Su	2.3	18.9	0			NNW	46	17:10	12.2	67		NNW	9	1010.9	18.3	49	3	NW	17	1008.4
31	Mo	11.0	18.0	2.8			N	80	22:34	15.5	87	8	NNW	28	1001.2	15.8	96	8	N	24	995.4
Statistics for October 2022																					
Mean		8.4	18.3							12.7	78	6		13	1016.3	16.8	62	6		18	1013.6
Lowest		2.2	12.0							7.1	52	1		Calm	1001.2	10.8	43	1		Calm	995.4
Highest		15.1	23.0	34.8			N	80		17.7	99	8	WNW	33	1027.5	21.8	99	8	W	43	1024.6
Total				166.2																	

Observations were drawn from Canberra Airport {station 070351}

Some cloud observations are from automated equipment; these are somewhat different to those made by a human observer and may not appear every day.

IDCJDW2801.202210 Prepared at 16:00 UTC on 2 Dec 2022

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Weather statistics provided by the Bureau of Meteorology, Australian Government.

Canberra, Australian Capital Territory
November 2022 Daily Weather Observations

Observations from Canberra Airport.

Australian Government
Bureau of Meteorology

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9am						3pm					
		Min	Max				Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	Temp	RH	Cld	Dirn	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Tu	8.5	13.9	40.4			NNW	80	23:13	10.0	84	8	NW	31	991.8	11.2	69	7	NW	28	992.0
2	We	4.3	13.3	3.2			WNW	52	12:31	7.7	62	1	WNW	28	1001.8	11.7	47	1	WNW	33	1005.7
3	Th	5.5	17.2	0			W	41	13:24	11.1	67	4	NW	19	1014.5	15.2	49	8	NW	22	1015.2
4	Fr	6.3	19.7	0			E	30	19:34	11.5	71		W	9	1025.8	18.1	45	8	NW	11	1024.4
5	Sa	10.6	20.7	0			N	24	14:54	13.8	69	8	ESE	13	1028.3	19.7	43	6	N	11	1024.9
6	Su	6.2	23.2	0			W	33	12:11	15.2	75		SSE	7	1025.4	22.2	39	1	W	17	1021.5
7	Mo	8.7	23.3	0			SSW	48	13:37	16.2	66		S	7	1022.2	14.5	81	8	SSW	28	1020.0
8	Tu	7.6	23.0	9.0			N	28	14:42	15.1	72		SSW	9	1021.0	22.0	44	1	WNW	7	1018.0
9	We	9.0	24.0	0.2			E	35	16:00	15.7	73		SW	7	1022.0	22.9	46	8	NE	17	1018.8
10	Th	8.2	23.0	0			NE	37	10:27	14.2	65		NE	9	1021.9	22.1	37		NNE	13	1017.1
11	Fr	9.4	22.0	0			NNW	35	10:51	17.1	70	8	N	9	1013.9	19.8	69	8	NW	15	1011.4
12	Sa	10.5	26.8	0			E	50	17:58	19.6	72		SW	2	1012.0	25.8	42	3	NNW	20	1009.6
13	Su	14.8	23.3	14.4			NNW	50	10:40	15.7	100	8	ENE	11	1008.6	21.2	75	8	NW	17	1003.9
14	Mo	11.9	19.0	21.0			WNW	65	09:51	15.2	67	8	NW	41	999.8	16.6	56	8	WNW	39	1001.1
15	Tu	10.1	17.0	1.2			NW	50	13:59	13.6	64	1	NNW	20	1007.4	14.6	45	6	NW	35	1007.0
16	We	3.0	14.5	0			WSW	48	08:57	9.2	62	8	WNW	17	1009.1	12.7	41		W	17	1009.1
17	Th	3.3	18.2	0.6			S	35	08:51	9.8	52		S	20	1014.3	16.8	36		S	15	1012.3
18	Fr	2.6	21.1	0			NNE	30	15:50	12.2	59		SSE	7	1015.8	19.8	36	1	NE	13	1011.3
19	Sa	7.8	22.4	0			NW	39	15:10	13.2	75	8	SSE	4	1009.9	21.0	52	8	NW	22	1004.5
20	Su	11.7	18.3	6.2			WNW	70	14:48	15.1	67	4	WNW	33	997.1	17.0	40		WNW	46	999.3
21	Mo	8.3	12.9	2.2			WNW	74	17:16	10.4	55	1	WNW	43	1002.5	11.6	50	3	W	31	1002.5
22	Tu	3.6		1.8						10.2	55	1	WNW	30	1010.8	14.3	60		WNW	30	1011.3
23	We	9.0	19.5	0			NW	50	14:43	14.4	62		WNW	31	1012.8	18.4	51	1	WNW	31	1013.6
24	Th	4.4	22.9	0			NNW	48	14:52	13.7	65		N	6	1018.1	21.9	51	7	N	26	1015.5
25	Fr	5.0	24.0	0			WNW	50	15:52	13.8	79		WNW	4	1018.3	23.2	34		NW	30	1013.8
26	Sa	5.6	24.0	0			N	37	14:35	14.2	66		SSE	4	1014.9	22.8	43	6	N	22	1009.7
27	Su	10.2	25.2	0			NW	56	13:00	18.1	64	7	WSW	7	1003.9	23.7	41	8	NNW	31	1001.2
28	Mo	7.8	21.7	0			NW	57	13:12	16.6	75	3	NNW	11	1006.2	20.5	44	1	NW	31	1004.5
29	Tu	5.0	22.1	0			E	46	17:32	15.2	52		W	15	1011.6	21.2	42		N	15	1011.1
30	We	11.6	23.8	0			E	35	17:12	13.3	72	8	NNE	9	1018.2	22.2	39		NE	11	1013.1
Statistics for November 2022																					
Mean		7.7	20.7							13.7	67	5		15	1012.7	18.8	48	5		22	1010.8
Lowest		2.6	12.9							7.7	52	1	SW	2	991.8	11.2	34	1	WNW	7	992.0
Highest		14.8	26.8	40.4			NNW	80		19.6	100	8	WNW	43	1028.3	25.8	81	8	WNW	46	1024.9
Total				100.2																	

Observations were drawn from Canberra Airport {station 070351}
Some cloud observations are from automated equipment; these are somewhat different to those made by a human observer and may not appear every day.

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Weather statistics provided by the Bureau of Meteorology, Australian Government.

Canberra, Australian Capital Territory
December 2022 Daily Weather Observations

Observations from Canberra Airport.

Australian Government
Bureau of Meteorology

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9am						3pm					
		Min	Max				Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	Temp	RH	Cld	Dirn	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Th	9.8	20.3	0			ENE	35	17:27	15.9	63	7	E	9	1016.6	18.9	54	8	E	19	1013.4
2	Fr	9.5	21.2	0			NE	35	13:46	15.9	72	8	ESE	13	1016.6	19.5	55	8	NE	22	1014.2
3	Sa	6.8	26.4	0			E	30	18:29	15.8	65		NE	6	1017.7	25.1	46	4	NNE	9	1013.6
4	Su	8.9	28.1	0			NW	37	16:50	18.7	71		NNW	7	1015.4	27.3	32	7	NE	13	1011.1
5	Mo	9.8	27.7	0			NW	50	10:57	21.3	57		NNW	19	1008.0	25.2	48	7	N	19	1003.2
6	Tu	8.7	23.4	0			NNW	39	13:55	17.1	51	1	S	19	1006.7	22.6	40	8	NW	22	1004.1
7	We	6.0	24.9	0			NW	50	11:42	16.9	60		NE	7	1004.5	23.0	34	2	NNW	35	1001.7
8	Th	10.5	19.4	0			W	48	11:52	13.6	53		WNW	19	1004.8	17.2	30	6	W	19	1005.4
9	Fr	0.9	20.9	0			E	44	18:18	11.3	49		SE	13	1013.1	19.7	33	2	SW	11	1010.5
10	Sa	7.5	23.0	0			NNW	26	13:07	13.0	58		ESE	7	1017.1	20.8	33		W	9	1013.2
11	Su	7.0	28.4	0			NNW	48	13:43	14.7	75		NNE	7	1011.4	25.6	34	3	WNW	28	1006.7
12	Mo	14.2	18.8	20.6			W	72	13:52	14.4	92	8	N	33	1000.1	15.3	44		W	43	999.8
13	Tu	7.2	18.8	5.4			NW	48	09:03	12.7	65	2	NW	22	1008.7	16.8	42	2	WNW	26	1007.1
14	We	7.9		0.2						11.5	45	3	WNW	26	1007.3	15.3	48	6	WNW	31	1006.3
Statistics for the first 14 days of December 2022																					
Mean		8.2	23.2							15.2	62	4		14	1010.6	20.9	40	5		21	1007.9
Lowest		0.9	18.8							11.3	45	1	NE	6	1000.1	15.3	30	2	#	9	999.8
Highest		14.2	28.4	20.6			W	72		21.3	92	8	N	33	1017.7	27.3	55	8	W	43	1014.2
Total				26.2																	

Observations were drawn from Canberra Airport {station 070351}
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IDCJDW2801.202212 Prepared at 05:36 UTC on 14 Dec 2022
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Weather statistics provided by the Bureau of Meteorology, Australian Government.

VESPEX® european wasp lure

A versatile tool in European Wasp management.

TECHNICAL BULLETIN

ECO FRIENDLY NON TOXIC

NUMBER 26

WHAT IS VESPEX EUROPEAN WASP LURE?

VESPEX European Wasp Lure is a specially formulated, nontoxic liquid lure which is attractive to European Wasps (*Vespula germanica*) throughout all stages of their lifecycle, including newly emerging queens in Spring.

HOW TO USE

VESPEX European Wasp Lure has been developed to use in two versatile ways; for use in bottle/bag/dome traps, and remote baiting of European wasp nests.

VESPEX DOMINATOR BOTTLE TRAP

VESPEX European Wasp Lure is ideal for use in suitable bottle, bag or dome traps. During development of the liquid lure, testing was conducted in the field using a variety of bottle, dome and bag traps commercially available. Efficiency of tested traps was vastly variable between designs.

As a result Sundew Solutions sought to bring to the market a trap that had the attributes of the successful design elements of others, while incorporating innovative features that took advantage of the habits of European wasps and their foraging behaviours. The result was the **VESPEX Dominator™ Bottle Trap**.

TRAPPING WITH VESPEX EUROPEAN WASP LURE

Using **VESPEX Lure** with the **Dominator Bottle Traps** is a versatile tool when targeting European wasps. Used together they are valuable for:

- Monitoring population distribution spread
- Measuring pest pressure
- Spring trapping of queens to reduce nesting
- Weakening of colony worker numbers
- Environmentally friendly trapping option
- Chemical free option for sensitive areas

WHERE TO SET TRAPS

Correct positioning of traps is essential to the success of consistently trapping European wasps in significant numbers.

The best positioning for traps is in open direct sunlight areas where wasp activity is high.

Do not position traps amongst foliage just because you observe wasps feeding in these locations.

If European wasps are observed in a location and the traps are not trapping wasps within 3 days of deployment, it is recommended to relocate the trap/s in an alternative open space and repeat the process until capture occurs.

HOW LONG DOES IT LAST?

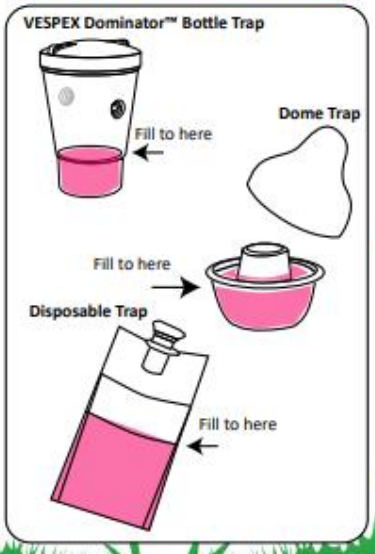
VESPEX European Wasp Lure must be replaced every 14 days or when levels drop due to evaporation. Inspect the trap regularly and remove dead insects.

If the trap is full and there is no free liquid, remove the contents and rinse with clean water before refilling with **VESPEX European Wasp Lure**.

NOT ATTRACTIVE TO BEES

When used as directed, **VESPEX European Wasp Lure** is not attractive to bees. The product contains volatiles which mask the lure and make it unattractive. It is critical that the directions for use are followed.

Better Performance. Better Value.



PRODUCT SPECIFICATIONS

Name: VESPEX European Wasp Lure

Formulation type: Liquid lure

Schedule: Nonpoisonous - unscheduled

Pack sizes: - 250 mL foil pouch, and
- 5 L Jerry pack

Market segments: For use in bottle, bag or suitable insect traps to lure wasps into the station where they are unable to escape and drown in the liquid lure.

® Vespex is a registered trade mark of Sundew Solutions Pty Ltd.
™ Dominator is a trade mark of Sundew Solutions Pty Ltd.

sundew PROFESSIONAL SOLUTIONS

A family owned 100% Australian business.

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website: www.ewasp.com.au