

Project: Mission Blue

January – August 2012 Report



Overview

Project: Mission Blue is a progressive plan using adaptive management practices to combat the continual decline of Mission blue butterflies due to the loss of lupine patches and the decrease of lupine diversity. This project is a collaboration between the National Park Service, The Golden Gate National Parks Conservancy and the California Garden Clubs Incorporated. While this project will work to save the endangered butterfly it will also meet secondary goals such as furthering an interest in gardening and plant nurseries and promoting environmental awareness and community engagement. To understand more about the project and what we have done please see the 2011 report.

This is the second year of Project: Mission Blue. The first year of the project was dedicated to getting all of the participating bodies on board and setting up the necessary procedures. This second year was dedicated to growing more lupines, increasing education, and establishing monitoring practices. This year we more than doubled the amount of lupines grown and increased our education to the community about Project: Mission Blue. While monitoring has already started it will not be until next year that plants will be mature enough and monitoring information will be substantial enough that we will begin to see the impacts of this project.

It is with a great sense of accomplishment that we present to you the 2012 Project: Mission Blue Report.

Monitoring Last Year's Success

In December of 2011 we planted 162 lupine plants at Milagra Ridge and Wolfback Ridge. In early March 2012, we monitored the lupines at Wolfback Ridge and found that 65% of all of the lupines planted survived the three-month period (See Map in Appendix 1).

Last year we reported that we would monitor the lupine patches every six months. March is a great time to monitor survival because it is the height of the lupine growing season. Unfortunately the next six-month monitoring point occurs in September, when the lupines go dormant to withstand the summer dry season. With many plants dying back to their roots, it becomes hard to determine accurate survivorship data. We have decided to change the monitor program to once a year in March so our monitoring will not be affected by the dormancy period.

Milagra Ridge was monitored in December 2011, and will be monitored again in March 2013.

Seed Collection Training

We are growing two lupine species for this project: summer lupine (*Lupinus formosus*) and varied lupine (*Lupinus variicolor*). Summer lupine historically has been a challenge to grow in the nursery. Last year, we determined that one of the factors that prevented a high germination rate of seeds at the nursery was the collection of lupine seeds from the park before or after the “peak” stage of seed development. To remedy this problem, we created a day long seed collection training where volunteer managers and seed collection volunteers studied the appearance of ripe lupine seeds and learned based on color, shape, and texture, how to identify

lupine pods that hold ripe seeds. By training ourselves on the correct stage of seed development and lupine seed pod identification we can increase our rate of seed germination at the nursery. Last year we calculated our seed germination rate at 33%, but this year we increased our seed germination rate to 51%. This was primarily due to our increased understanding of how and when to properly collect these lupine seeds.

Seed Collection

During the lupine seed collection season we had many volunteers out collecting seed in the park. We follow a strict guideline set by the park so as not to damage the lupine patches by over-collecting seed. Six dedicated, trained volunteers harvested lupine seed pods across the park in eight site visits. We would not have been able to do this without their immense help. See Appendix 2 for details on the number of seeds collected at each site.

During the summer we also involved thirteen high school students from all across the bay area. These students spent two days learning about the Mission blue butterfly and worked to save it. They spent one full day at Milagra Ridge visiting the lupine patches and collecting varied lupine seed. They then spent another day at Oceana Nursery planting the seeds they collected. During this time, they not only learned about the Mission blue butterfly, but also learned about plant propagation and native plants. On the second day they went home with hand lotion they made from the native plants they can find in the park.

We documented two interesting observations during the collection phase of the program. Varied lupine seed pods were cut off of the plants before they could ripen and before we could collect them. We suspect that deer and/or bush rabbits are the most likely culprits due to the nature of the cuts. Unfortunately, we did not observe any actual feeding by wildlife. Another interesting observation was the amount of larva that we found within the seed pods, feeding on the lupine seeds. In most seed collection events or batches 30% of seed pods opened by our volunteers had larva in them. These larva are yet to be identified. After the collection of seed pods and cleaning the seeds we found that there were on average less than two viable seeds per pod.

Lupine Propagation

Once we collect and clean the seeds, we immediately plant them. This is possible because we collect the seeds before the seed coat hardens. We changed our potting soil mixture from last year. This year we used potting soil which we amend with 10% perlite. We did this because these lupines normally grow in well drained and poor nutrient soil. Too much water and or nutrients and the roots are susceptible to root rot. We also covered the tops of the planted seeds with ½ inch rinsed sand. This sand will prevent the growth of moss or fungus on the top of the soil, and prevent the lupines from being attacked by soil gnats. We sowed varied lupine directly into pots because of its higher germination rate while we sowed summer lupine into a flat before transplanting the germinated seeds into pots. Before we plant the lupines in the field we will count the survival rate of the lupine's in the nursery and know whether our potting soil was more effective than last years.

Over the seed collection season approximately 584 seed pods were collected and 1054 seeds were cleaned and planted into pots taking a total of 50 man hours to complete.

Currently we have 533 lupines in our nurseries getting ready to be planted and more are growing. This amount is over three times the amount we were able to grow last year.

Our ability to report all of our numbers comes from careful record keeping that helps us make better decisions in the future. Documenting germination success, hours of collections, soil mixtures, are just some of the ways we can record our work at the nursery.

Education

Throughout the year we are working at Milagra Ridge and Wolfback Ridge, performing the invasive plant removal that is so important to maintaining Mission blue butterfly habitat. Through the year we had 24 volunteer days at Milagra Ridge and a total of 367 volunteers came out on these days. These volunteers are made up of high school students, college students, kids of all ages, businesses, and community members. On every volunteer habitat restoration day we take 15 minutes to tell the story about the Mission blue butterfly and the work that we are doing to save this species, but this is not the only way we get the information out about the work that we are doing.

At the San Francisco Flower and Garden Show in March we won first place for our educational display explaining Project: Mission Blue. As a result, we garnered an April article in the *Natural Resources and Science Monthly Update*, a newsletter sent out to all of the natural resource managers of the San Francisco bay area national parks.

This year we updated the Parks Conservancy website. People who want to know about the Mission blue butterfly on our website will now be able learn about the work the California Garden Club is doing to help save this butterfly.

Our big educational and planting events will happen during the planting season in December where we will assemble many community members to come out to the parks to learn about the Mission blue butterfly and plant all of the lupine plants that we have grown over the year.

Rebuilding Tables

This year, we have harnessed the power of three nurseries to handle the propagation of our 500+ lupine plants. Fort Funston Nursery, Marin Headlands Nursery, and Oceana Nursery are each taking care of a portion of these young lupine plants. Oceana Nursery is run in partnership with Oceana High School, and provides the unique opportunity for high school students to become involved with this project. Every Wednesday at Oceana Nursery, students come out for three hours and help run the nursery.

Over the summer, five high school students worked at the Oceana Nursery. They spent their time learning how to grow a garden and how to run a plant nursery. One Saturday, these students, as well as community members, built four new nursery tables to replace the ones falling apart. Without these tables we would not be able to perform many of the most basic nursery operations. This experience was a great opportunity for students to learn how to design work tables and learn how to use power tools.

Project Budget

California Garden Clubs Incorporated has raised money for this project through many means. Since the program has started we have acknowledged 63 individual donations. For a person who gives an accumulative donation of \$100.00, a CGCI Mission blue pin will be presented to the donor. At this point 49 mission blue butterfly pins have been given.

It is important that the CGCI understands how their money is spent. Below are tables to show how money is being used.

Table 1.

CGCI's Donations	
Date	Amount
11/15/2010	\$200.00
7/30/2011	\$1,500.00
10/12/2011	\$100.00
11/7/2011	\$200.00
1/15/2012	\$1,500.00
6/13/2012	\$2,000.00
TOTAL	\$5,500.00

Table 2.

Money Spent		
	Year 2011	Year 2012
Plants Grown	161	533
Cost to grow plants (3/per plant)	\$483	\$1599
Table Construction		\$500
Yearly Total	\$483	\$2,099
Grand Total		\$2,582.00

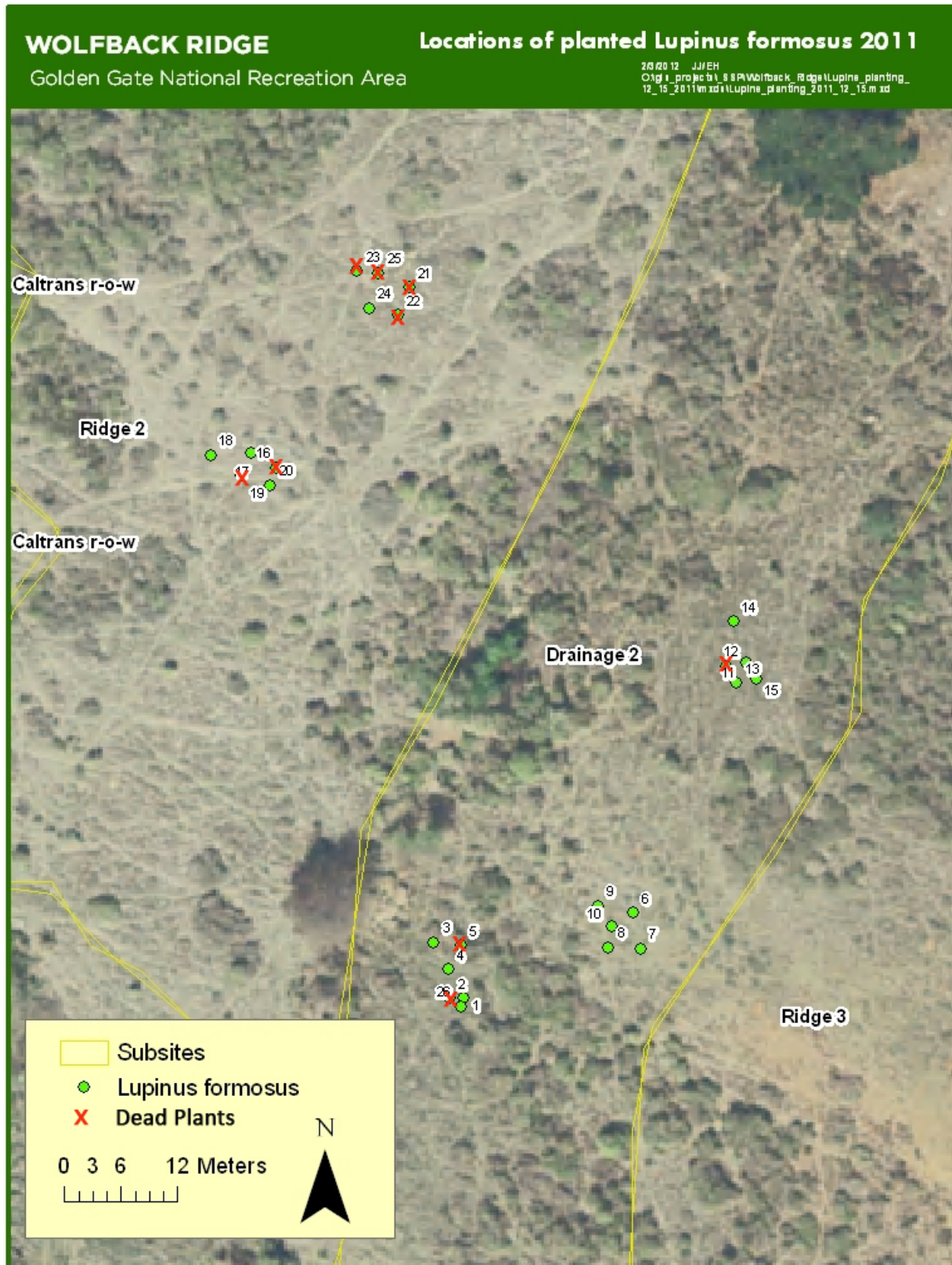
Conclusion

If you would like to learn more about Project: Mission Blue, or help out please contact Price Sheppy at psheppy@parksconservancy.org or call 1-415-561-3073.

In addition, all aspects of Project: Mission Blue will be photo monitored. An online photo database has been created for CGCI to stay updated with project activities. Contact Price Sheppy for permission to access photos.

Appendix 1

This map shows the lupines planted at Wolfback ridge. The “X” mark lupines that died.



Appendix 2

Below is a table charts the seed collection events throughout the year and how many plants were grown from each of these events. Some seeds have not finished germinating by the time this report was created so our total lupines grown will be higher than what this table shows.

Events	Species	Location Seed Collected	Site of 2012 Planting	Collection and Cleaning Hours	# Pods	# Seeds	# Germinated
1	Lupinus formosa	Oakwood Valley	Wolfback Ridge	4.5	55	101	62
2	Lupinus formosa	Oakwood Valley	Wolfback Ridge	4.5	80	183	77
3	Lupinus formosa	Oakwood Valley	Wolfback Ridge	3	46	70	44
4	Lupinus formosa	Oakwood Valley	Wolfback Ridge	4.5	84	149	25
5	Lupinus formosa	Mori Point	Milagra Ridge	2.5	11	16	3
6	Lupinus formosa	Mori Point	Milagra Ridge	2	15	15	3
7	Lupinus formosa	Private Parcel	Milagra Ridge	2.5	48	63	22
8	Lupinus formosa	Private Parcel	Milagra Ridge	2.5	48	64	35
9	Lupinus variicolor	Milagra Ridge	Milagra Ridge	24	197	393	262
Total				50	584	1054	533