

**Miracle Mile Complex
Del Norte County, California**

**Marbled Murrelet Surveys
2011-2012**

Prepared for: Save the Redwoods League
Submitted to: Ruskin K. Hartley
Director of Conservation and Education
114 Sansome Street, #1200
San Francisco, CA 94104

Prepared by: Adam C. Brown
E-mail: abrown@epicislands.org
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Executive Summary

We performed Marbled Murrelet (*Brachyramphus marmoratus*) surveys within the Miracle Mile Complex in accordance with the Pacific Seabird Group Methods for Surveying Marbled Murrelets in Forests: A Revised Protocol for Land Management and Research”, dated January 6, 2003, and the Marbled Murrelet Survey Protocol Guidelines developed by the California Department of Fish and Game. These surveys were performed as part of a long-term monitoring program that will track Marbled Murrelet activity within this old growth stand.

Marbled Murrelet Surveys were conducted between 10 May and 2 August 2011 and 7 May and 30 July 2012. A total of 54 protocol surveys at 12 survey stations resulted in 78 detections of Marbled Murrelets. Of these, two were visual detections of birds flying below canopy, indicating occupied behavior.

I. Introduction

In April 2012, Save the Redwoods League (SRL) contracted Adam Brown to conduct Marbled Murrelet (*Brachyramphus marmoratus*) surveys for a period of fifteen year (2012-2027), as part of a long-term monitoring program within the Miracle Mile Complex in southwest Del Norte County, California. Surveys took place in the Miracle Mile Complex comprised of the U-600 stand, the Miracle Mile stand, and the T-300 stand (Maps 1 and 2). Surveys were designed to cover all appropriate Marble Murrelet habitat within the complex.

II. Methods

Marbled Murrelet surveys were conducted following the methods established in Evans *et al.* (2000), Pacific Seabird Group Methods for Surveying Marbled Murrelets in Forests: An Update To The Protocol For Land Management And Research, Pacific Seabird Group.

Survey areas were chosen so as to ensure coverage of all potential murrelet habitat within the Miracle Mile Complex (Map 1, Map 2, Map 3). This complex was divided into three survey sites, U-600, Miracle Mile, and T-300. For this monitoring program, a site was defined as a contiguous stand of old-growth timber.

Thirteen survey stations were established in 2006, the original year of this long-term monitoring program, with the intent of completely covering the designated sites (Map 1). In 2011 and 2012, station 11 in the Miracle Mile site was not surveyed due to high water of Terwer Creek hindering access to this station. A total of 27 surveys were conducted in 2011 and 27 in 2012 for a grand total of 54 protocol surveys for the entire 2-year survey period.

In summary, the methods employed for surveying for Marbled Murrelets require that each survey station must be visited at least once per year for a minimum of 9 survey visits per year to each survey site. These surveys must occur between 15 March and 5 August. There must be a minimum of 6 and a maximum of 30 days between survey visits to a given site. When 9 visits

are needed, survey efforts should be spaced as evenly as possible throughout the breeding season.

A trained observer must arrive at each survey site prior to the beginning of surveys which are to commence 45 minutes before local sunrise and continue for 2 hours, during which surveyors are to record specific information on all murrelets seen or heard from the survey station. These observations are known as detections. Visual detections are categorized by the behavior of the murrelet. Certain behaviors are classified as “occupied”, indicating that such behaviors are believed to be associated with stands in which murrelets are nesting. Occupied behaviors generally involve birds seen flying at or below the forest canopy and are assumed to indicate a special significance of the forest stand to Marbled Murrelets. Forest stands within which murrelets are observed displaying occupied behaviors receive special management consideration in an attempt to reduce or eliminate the possibility that project activities may result in a “take” of this federally Endangered species.

III. Results

Habitat surveyed within the study area generally consisted of redwood (*Sequoia sempervirens*) and Douglas (*Pseudotsuga menziesii*) fir. Perhaps the best habitat for Marbled Murrelet occurs within and around the Miracle Mile stand where the ratio of large residual trees appears to be higher than elsewhere within the project area. Marbled Murrelets were detected at all three sites within the project area - Sites U-600, Miracle Mile, and T-300.

The results for each Marbled Murrelet survey site are presented below. A ‘Y’ in the “Occupied?” column indicates at least one detection of occupied behavior during the survey, an ‘N’ indicates that neither occupancy or presence were confirmed during the survey, and a ‘P’ indicates presence of Marbled Murrelet(s) (but not occupancy) was confirmed during the survey.

Site U-600

Marbled Murrelets were detected on three occasions at U-600; twice in 2011 and once in 2012. Survey results follow:

2011

<u>Date</u>	<u>Station</u>	<u>#Detections</u>	<u>Occupied?</u>
5/10/11	2	0	N
5/20/11	3	0	N
5/31/11	2	0	N
6/8/11	3	0	N
6/15/11	2	0	N
6/30/11	3	2	Y
7/6/11	3	3	P
7/13/11	2	0	N
7/28/11	3	0	N

2012

Date	Station	#Detections	Occupied?
7 May 2012	02	0	N
17 May 2012	03	0	N
24 May 2012	02	0	N
6 June 2012	03	0	N
11 June 2012	02	0	N
20 June 2012	03	1	P
27 June 2012	02	0	N
17 July 2012	03	0	N
25 July 2012	02	0	N

Site Miracle Mile

Marbled Murrelets were detected on five occasions at the Miracle Mile site; three times in 2011 and twice in 2012. Survey results follow:

2011

Date	Station	#Detections	Occupied?
5/10/11	6	0	N
5/20/11	6	0	N
5/31/11	10	0	N
6/8/11	7	0	N
6/15/11	8	0	N
6/30/11	9	1	P
7/6/11	10	1	P
7/20/11	8	27	P
7/28/11	10	0	N

2012

Date	Station	#Detections	Occupied?
7 May 2012	02	0	N
16 May 2012	08	1	P
22 May 2012	09	0	N
30 May 2012	07	5	P
5 June 2012	06	0	N
19 June 2012	09	0	N
28 June 2012	09	0	N
18 July 2012	10	0	N
26 July 2012	07	0	N

Site T-300

Marbled Murrelets were detected on six occasions at the T-300 site; once in 2011 and five times in 2012. Survey results follow:

2011

Date	Station	#Detections	Occupied?
5/10/11	3	0	N
5/20/11	3	0	N
5/31/11	3	0	N
6/8/11	1	0	N
6/15/11	3	0	N
6/30/11	1	0	N
7/6/11	3	0	N
7/20/11	3	11	P
8/2/11	1	0	N

2012

Date	Station	#Detections	Occupied?
9 May 2012	02	1	P
15 May 2012	02	6	P
30 May 2012	03	0	N
12 June 2012	02	7	P
26 June 2012	01	0	N
2 July 2012	03	10	P
10 July 2012	01	0	N
24 July 2012	01	2	P
30 July 2012	01	0	N

IV. Discussion

Overall detections during this recent two-year survey period have increased since the 2006-2007 survey period. During the 2006-2007 survey period, we detected nine (2006) and five (2007). During this most recent survey period, we detected 45 (2011) and 33 (2012).

During the 2006-2007 survey periods, all 14 of the detections were of observed birds. In 2006, six of those observed birds were additionally observed to be showing occupied behavior. In 2007, all five of the detections were of observed birds, however none of the birds were observed to be displaying occupied behavior. During the recent two years, none of the 78 detections were of observed birds.

The higher number of overall detections is very encouraging. The sample size of years surveyed are too few to know if there is an increasing trend in overall local population. However, comparing these current detection numbers with those in future years, will allow us to begin inferring local population trends and better gauge the importance of the Miracle Mile Complex to the population of the Marbled Murrelet.

Following the current survey methods (nine visits to each of three sites annually totaling 27 surveys) will allow us to capture an accurate picture of murrelet activity in the Miracle Mile Complex. However, to capture even further accuracy with local murrelet populations, the League should consider adding radar surveys to its suite of survey methods. Radar surveys are becoming

more common as a method to detect murrelet activity in low density areas, similar to those at the Miracle Mile Complex. Radar can capture birds that are flying silently out of sight of observers and are likely missed. There are numerous sites along the Terwer Creek flyway that would allow us to detect activity into and out of the Miracle Mile Complex. We have the equipment and expertise to be able to complete this aspect of monitoring.

V. Literature Cited

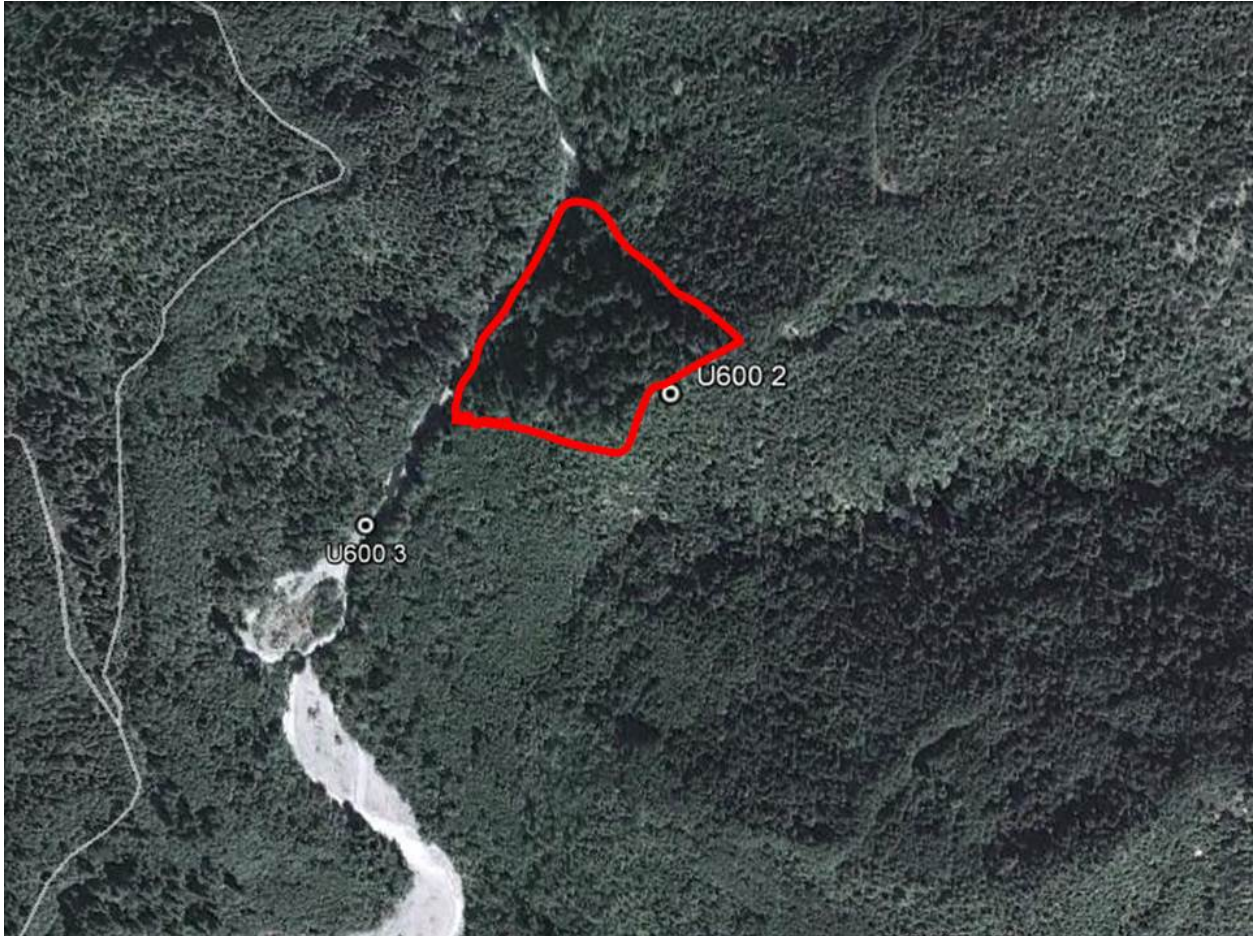
- Evans, D. M., W. P. Ritchie, S. K. Nelson, E. Kuo-Harrison, P. Harrison, and T. E. Hamer. 2000. Methods for surveying Marbled Murrelets in forests: an update to the protocol for land management and research. Pacific Seabird Group, unpublished document. 15 April 2000. Available at www.nmnh.si.edu/BIRDNET/PacBirds/
- United States Fish and Wildlife Service (USFWS). 1992. Protocol for surveying proposed management activities that may impact northern spotted owls. 16pp.

Appendix

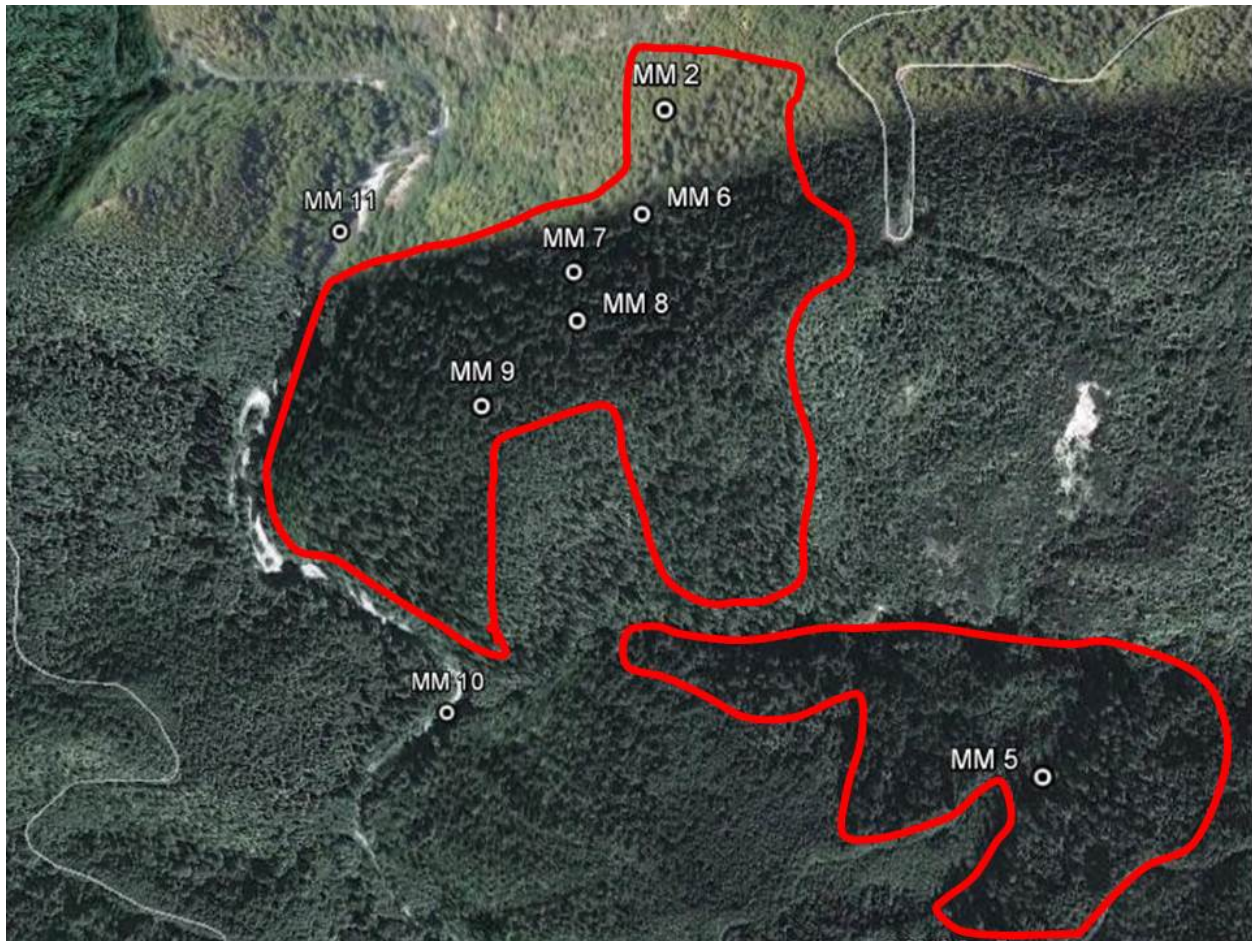
UTM Coordinates for Marbled Murrelet Survey Stations (NAD 83)

Site	Station	UTM Zone	Easting	Northing
U-600	2	10T	419333	4599753
U-600	3	10T	418994	4599637
Miracle Mile	2	10T	419580	4601152
Miracle Mile	5	10T	419921	4600362
Miracle Mile	6	10T	419456	4601017
Miracle Mile	7	10T	419372	4600951
Miracle Mile	8	10T	419291	4600864
Miracle Mile	9	10T	419160	4600765
Miracle Mile	10	10T	419155	4600411
Miracle Mile	11	10T	419022	4601039
T-300	1	10T	418960	4602143
T-300	2	10T	419240	4601497
T-300	3	10T	418928	4601479
T-300	4	10T	418696	4601230

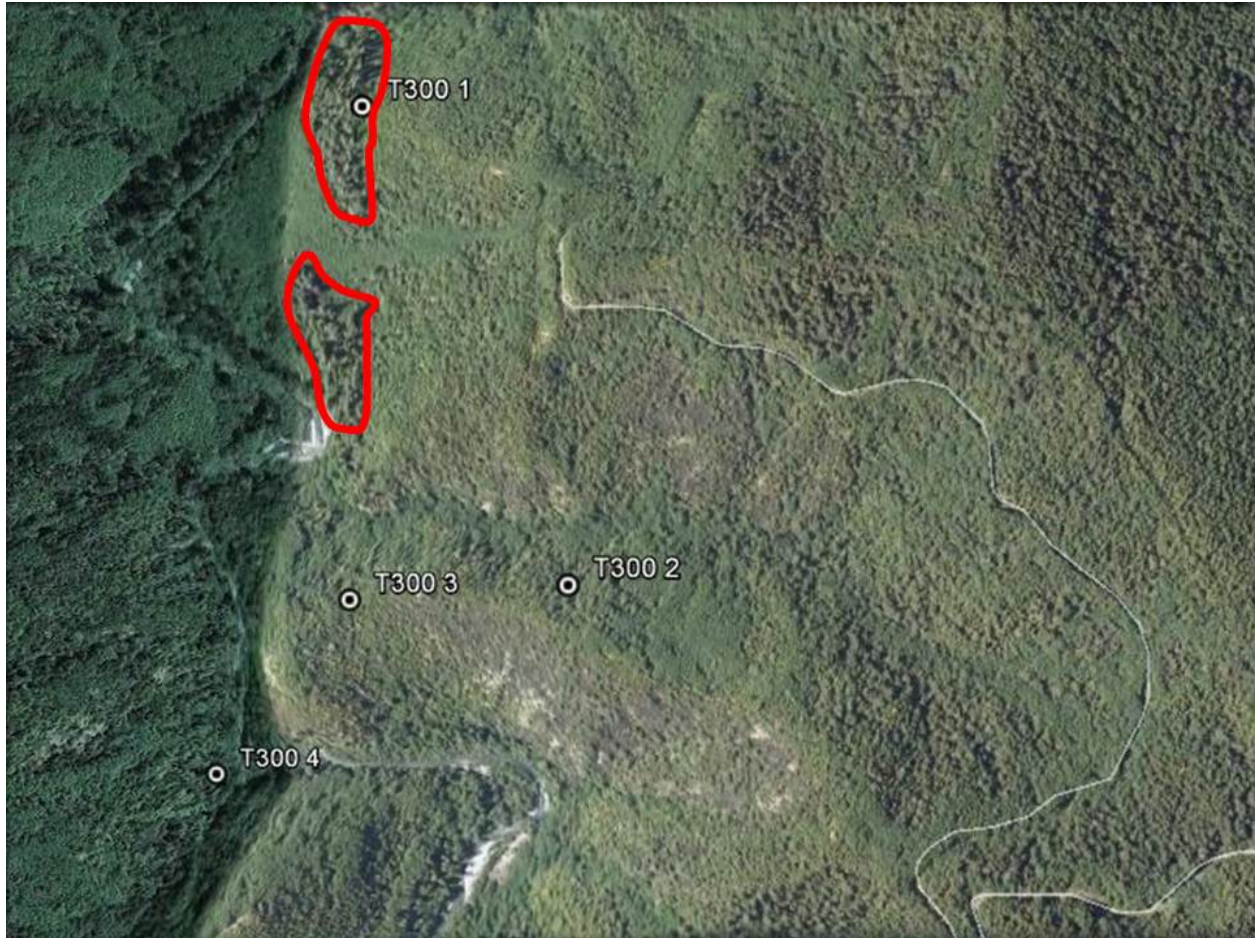
Maps



Map 1. U-600 Site and stations in the Miracle Mile Complex. Google Earth Image.



Map 2. Miracle Mile site and stations within the Miracle Mile Complex. Google Earth Image.



Map 3. T-300 site and stations within the Miracle Mile Complex. Google Earth Image.