

RADAR AND AUDIO-VISUAL SURVEYS FOR MARBLED MURRELETS IN THE CEDAR RIVER MUNICIPAL WATERSHED, WASHINGTON, 2005–2007

FINAL REPORT

Prepared for City of Seattle Watershed Management Division 19901 Cedar Falls Road S.E., North Bend, WA 98045

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EXECUTIVE SUMMARY

- This report summarizes the results from the final year of a three-year effort to use a combination of ornithological radar and standard audio-visual (AV) methods to collect baseline information on distribution and abundance of Marbled Murrelets (*Brachyramphus marmoratus*) in the Cedar River Municipal Watershed (CRMW), Washington, 2005–2007.
- The purpose of the 2007 study was to use radar and audio-visual techniques to monitor trends in the distribution and abundance of murrelets in the CRMW. Specifically, the objectives of the 2007 study were: (1) to collect baseline radar information on numbers of Marbled Murrelets using the watershed in 2007 as the third year of a long-term monitoring effort; (2) to conduct audio-visual surveys for murrelets in the sub-basins identified by radar in 2006 as having murrelet presence, or in sites identified as having the best potential murrelet nesting habitat in the CRMW; and (3) to obtain a better understanding of interannual variation in radar counts of murrelets in the CRMW.
- We conducted a total of 23 mornings of radar observations during summer 2007. We used radar to sample four long-term sites used for monitoring purposes. Radar sampling was conducted for five mornings at all sites (not including mornings when sampling was cancelled by rain) during late June to July. Radar sampling occurred during the morning activity period for Marbled Murrelets, from 105 min before sunrise to 75 min after sunrise.
- We recorded a total of 25 pre-sunrise murrelet targets during 20 mornings of radar observation in the CRMW during summer 2007. An additional three mornings of radar sampling were cancelled by inclement weather. Of the 25 radar targets we observed, eight (32%) were flying in a landward direction, 15 (60%) were flying in a seaward direction, and 2 (8%) were flying in "other" directions. We had no audio-visual observations of Marbled Murrelets during radar sampling.

- Similar to 2005 and 2006, mean daily counts of landward radar targets generally were quite low in 2007. Mean landward counts ranged between 0 and 1 target per morning. The highest landward counts occurred at the Chester Morse site.
- Mean landward radar counts did not differ significantly between 2005, 2006, and 2007.
- We observed relatively high among-day variation in landward counts. Coefficients of Variation (CV's) ranged from 130% at Chester Morse to 173% at the three Powerline sites.
- We used Monte Carlo simulations to determine our power to detect increases in radar counts of murrelets as nesting habitat develops in the Cedar River drainage. This prospective power analysis indicated that we could expect to have adequate power (i.e., power > 0.8) to detect between a 2–3% annual increase in the murrelet counts at the Cedar River study sites in future years (i.e., in ~ 25–50 years).
- Mean landward flight directions generally were centered along the main axis of the valley near each radar site.
- During summer 2007, we conducted 54 mornings of standard audio-visual surveys (plus one tandem visit) at sites with the best murrelet habitat in CRMW, and/or in areas of suitable habitat where radar observations in 2006 suggested presence of marbled murrelets. We detected no murrelets at the nine sites (155.1A, Chester North, Lindsay Creek North, Lost Creek, Lower Rex East (Findley), Rack Creek, South Fork North, South Fork Northeast, and Taylor Ridge North) where we conducted five audio-visual surveys from late June through the end of July. Likewise, we did not detect any murrelets during our single late-July visit to the South Fork Taylor Creek site.
- In summary, during 2005–2007 we established four long-term radar monitoring stations in the CRMW for marbled murrelets. Baseline data were collected and power analyses indicated that we could expect to detect between a 2–3% annual increase in radar counts when surveys are conducted using similar methods in ~25

and 50 years. We also used a combination of radar and audio-visual techniques combined with murrelet nest habitat surveys to determine current nesting locations of murrelets in the CRMW and verified murrelet use at two sites (i.e., Rex River and confluence of North Fork and South Fork Cedar River). Additional radar sightings in areas that had some nesting habitat but were not surveyed for a full two years suggested that low numbers of murrelets also were possible at a few other areas within the CRMW (i.e., at West Fork, 155.1A, South Fork Northeast, and South Fork Taylor) besides the two documented sites.

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INTRODUCTION

The Marbled Murrelet (Brachyramphus marmoratus) is a seabird that nests in large trees in old-growth coastal forests throughout most of its range in North America (Nelson 1997). Marbled Murrelets fly at high speeds, visit their nests primarily during periods of low ambient light, and nest up to ~80 km inland. Because of their secretive behaviors, their semicolonial nesting behavior, and the difficulty of locating their nests in large trees, only limited information is available on their nesting behavior, habitat associations, population size in specific areas, and demography. Washington, Oregon, and population of the Marbled Murrelet was federally listed as a Threatened Species in 1992 because of excessive loss and fragmentation of nesting habitat and because of mortality associated with oil spills and gill-net fishing (USFWS 1992, 1997). The species also is classified as endangered at the state level in California and as threatened at the state level in Washington and Oregon and is listed as threatened in Canada. Comparison of historical and current data suggest that Marbled Murrelets have disappeared or become rare over much of their range south of Alaska, but current population trends of the species in the Pacific Northwest are unknown (Nelson 1997).

The current ground-based Inland Forest Survey Protocol (IFSP) for Marbled Murrelets depends on the use of audio-visual cues to detect birds in flight (Evans Mack et al. 2003). Collecting information on murrelets this way is difficult because of the low light conditions during their dawn and dusk peaks in inland activity and their small size, cryptic coloration, rapid flight speed, and habitat preference for old-growth, closed canopy forests. Further, because 85% of the murrelet detections are auditory (Paton et al. 1990), it is difficult to determine with accuracy the number of birds that actually are flying over a particular survey area. In fact, audio-visual surveys (Evans Mack et al. 2003) were not designed to provide an index of abundance and, even if they were used, the high variation in audio-visual counts would require a massive survey effort to detect trends (Jodice et al. 2001, Bigger et al. 2006).

Several studies have shown that radar is an excellent tool for observing Marbled Murrelets (Hamer et al. 1995; Cooper et al. 2001, 2006a; Cooper and Blaha 2002; Cooper and Hamer 2003; Burger 1997, 2001; Raphael et al. 2002; Burger et al. 2004). The main advantages of using radar for inventorying murrelets are that it works under all light conditions, does not have the auditory bias of audio-visual surveys, and can sample a large area. Although radar cannot be used at all stands because certain terrain types preclude its use, it can be used in appropriate locations to determine quickly and accurately whether murrelets are present in a forest stand. Radar is particularly useful for detecting birds at low-use sites, where murrelets often are missed completely by audio-visual observers (Cooper and Blaha 2002). Radar data also can be used to focus ground observers' efforts toward "hot-spots" of murrelet activity. Further, radar can improve survey efficiency because it samples a much larger area (up to a 1,500-m radius) than audio-visual observers do (up to a 200-m radius).

In addition to determining presence of murrelets in an area, radar can provide a good index of abundance for Marbled Murrelets on several scales, including a river-drainage-sized scale that can be used for monitoring (Hamer et al. 1995; Burger 1997, 2001; Cooper et al. 2001, 2005, 2006a; Raphael et al. 2002; Cooper and Blaha 2002; Evans Mack et al. 2003). Power analyses have revealed that radar-based monitoring of murrelets can produce statistically-sensitive results in a timely, cost-effective fashion because of the low among-day variation in counts (Cooper et al. 2001, 2006a; Burger et al. 2004; Bigger et al. 2006).

The Cedar River Watershed Habitat Conservation Plan commits Seattle Public Utilities to managing the Cedar River Municipal Watershed (CRMW) as an ecological reserve with active forest restoration. Monitoring Marbled Murrelet activity in the CRMW is designated by the Habitat Conservation Plan: over the 50-year course of the HCP, local population indices of murrelets are expected to provide a barometer to gauge how well the old-growth forests are being restored. In this program, the activity of murrelets will be assessed within both old-growth and second-growth forests of the CRMW during three time periods that

encompass the early (i.e., 2005–2007), middle, and late stages of the HCP. This report summarizes the results from the third year of the 2005–2007 effort to use radar and audio-visual methods to collect initial baseline information on murrelet distribution and abundance in the CRMW. Results of the first and second years of the study are summarized in Cooper et al. (2006b and 2007).

OBJECTIVES

The purpose of this study was to use radar and audio-visual techniques to monitor trends in the distribution and abundance of murrelets in the CRMW. Specifically, the objectives of the 2007 study were: (1) to collect baseline radar information on numbers of Marbled Murrelets using the watershed in 2007 as the third year of a long-term monitoring effort; (2) to conduct audio-visual surveys for murrelets in the sub-basins identified by radar in 2006 as having murrelet presence, or in sites identified as having the best potential murrelet nesting habitat in the CRMW; and (3) to obtain a better understanding of interannual variation in radar counts of murrelets in the CRMW.

STUDY AREA

The entire 90,546-acre Cedar River Municipal Watershed (CRMW) lies within 45 miles of Puget Sound and encompasses roughly 14,000 acres of old-growth forest and 71,500 second-growth forest (Figure 1). The elevation of the area ranges from ~400 to ~1,500 m above sea level. Currently managed under the 50-year Cedar River Watershed Habitat Conservation Plan. old-growth forest in the watershed is protected as a reserve and the second-growth forests are subject to limited habitat restoration with the objective of shortening the time to old-growth forest conditions. Marbled Murrelets were detected at one location in the CRMW in the mid-1990s (W. P. Ritchie, WDFW, pers. comm.); however, there has been no other systematic assessment of use of this area by murrelets until the current study. During summer 2007, we conducted radar-based sampling for Marbled Murrelets at four sites in the study area that provided good radar coverage over areas of interest (Figure 1, Table 1). All radar sites were

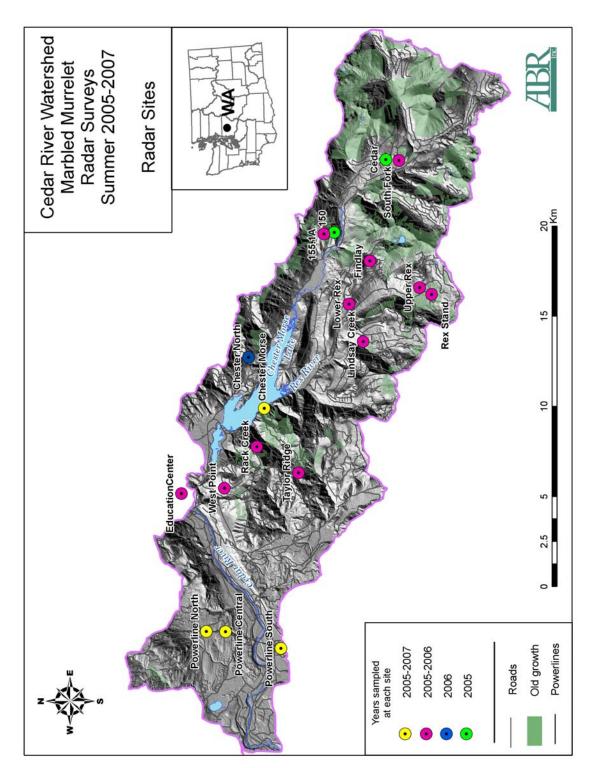
photo documented to help future observers compare suitability of the sites in the future with current suitability, in terms of the amount of screening of the radar view by nearby vegetation (Appendix 1). We also conducted audio-visual observations for murrelets at 10 sites within the CRMW (Figure 2, Table 2).

METHODS

DATA COLLECTION

We conducted a total of 23 mornings of radar observation and 54 mornings of audio-visual observations (plus one tandem visit) during summer 2007 (Tables 3 and 4). Radar sampling was conducted at the four long-term monitoring sites (i.e., the Powerline North, Powerline Central, Powerline South, and Chester Morse) on five mornings at each site from late June to July 2007 (Table 3). Radar sampling occurred during the morning activity period for Marbled Murrelets, from 105 min before sunrise to 75 min after sunrise. This period encompasses the known peak of daily murrelet activity (Burger 1997, Cooper et al. 2001, Cooper and Blaha 2002, Cooper and Hamer 2003).

During sampling, a single observer set up the radar and video recorder, and then attempted to obtain an audio-visual confirmation of each radar target to confirm the species identity of Marbled Murrelets and other species likely to be confused with murrelets on radar. Audio-visual observations were transmitted by voice directly to the videotape of the radar screen. For each radar target, we recorded date, time, flight direction (to the nearest 1°), transect quadrant, minimal distance to target, groundspeed (mi/h), flight behavior (straight-line, erratic, circling), overlap category (recorded only on radar, recorded only by audio-visual observer, recorded by both radar and audio-visual observer), species (if known), number of birds represented by that radar echo (if known), flight altitude (if known), and audio-visual detection category (not detected by audio-visual observer, heard only, seen only, both seen and heard). We also plotted the flight path of each target on a transparency overlay of the radar screen. We recorded the following weather information at the beginning of each session or when conditions changed during a



Map showing the locations of radar sampling sites in the Cedar River Municipal Watershed, Washington, during summer 2005, 2006, and 2007. Figure 1.

Table 1. Location of summer 2005, 2006, and 2007 radar sampling sites in the Cedar River Municipal Watershed, Washington.

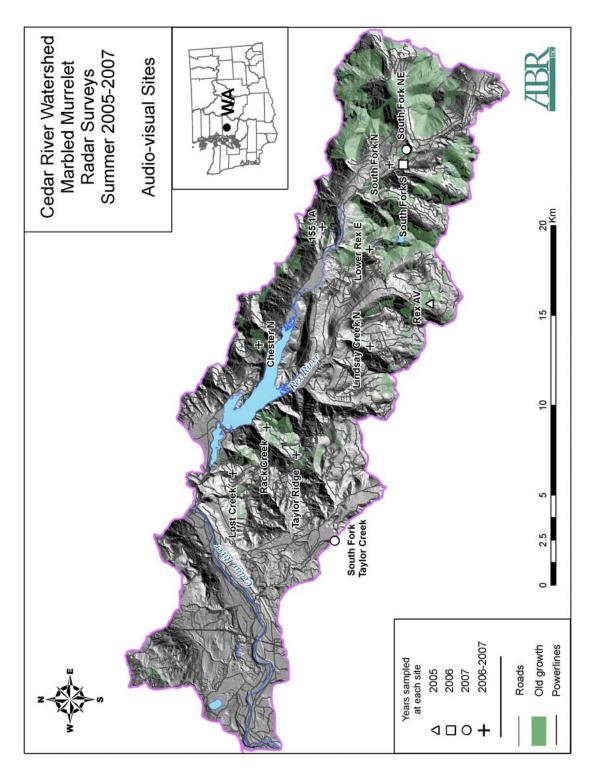
Site type/site name	UTM co	ordinates ¹	Elevation	Comments
LONG-TERM SITES	3			
Powerline North	584934 E	5251791 N	408 m	1.07 km north of Powerline Central.
Powerline Central	584945 E	5250723 N	333 m	At end of road, 3.15 km from Powerline South.
Powerline South	584115 E	5247628 N	280 m	On north side of Line 1, Mile 22, Tower 1; northern side of third set of poles south of road.
Chester Morse	597393 E	5248917 N	502 m	In largest pullout on lake side of road.
155.1A ⁴	607146 E	5245901 N	872 m	Park in Spur Road 155.1a.
South Fork ⁴	611339 E	5241839 N	767 m	At landing at end of Road 521.
SHORT-TERM SITE	ES			
Education Center ⁴	592538 E	5253385 N	275 m	In middle of northern lot at Education Center.
West Point ⁴	592897 E	5251013 N	799 m	On large landing at end of Road 820.
Taylor Ridge ⁴	593869 E	5246922 N	1065 m	At end of Spur Road #815.5.
Rack Creek ⁴	595244 E	5249277 N	961 m	Along Road 811, ~100 m before fork.
Lindsay ⁴	601245 E	5243557 N	817 m	100 m from end of Spur Road 205, adjacent to large log pile.
Chester North ³	600135 E	5249969 N	813 m	Along roadside, 400 m from end of road 110.8.
Upper Rex ⁴	604331 E	5240500 N	1,033 m	At end of Spur Road 730.1.
Rex Stand ⁴	603962 E	5239832 N	954 m	In opening next to log pile.
Lower Rex ⁴	603301 E	5244402 N	888 m	At end of Road 310.
Findley ⁴	605714 E	5243307 N	1,076 m	At end of Road 354.
150^{2}	607248 E	5245332 N	761 m	Park along road with downhill slant toward
2				the east.
Cedar ²	611373 E	5242572 N	748 m	Western end of opening with few trees alongside road.

¹UTM Zone 10; ²Site only sampled in 2005; ³Site only sampled in 2006; ⁴Site only sampled in 2005 and 2006.

session: wind direction, average wind speed at ground level, estimated cloud cover (%), average ceiling height (in meters) above ground level at the radar sampling site, visibility, precipitation, and air temperature (°C). See Appendix 2 for categories for each target and weather variable.

During summer 2007, we also conducted 54 mornings of standard audio-visual surveys (plus one tandem visit) at sites with the best murrelet habitat in CRMW, and/or in areas of suitable habitat where radar observations in 2006 suggested

presence of Marbled Murrelets. All surveys occurred from late June to July (Table 4). Except for the seasonal timing of surveys, the audio-visual survey methods followed standard protocols (Evans Mack et al. 2003). Survey conditions (e.g., ceiling height, wind conditions) met protocol requirements on all but eight surveys, which were later resurveyed (Table 4) so that all sites had a minimum of five survey visits, unless occupancy was determined before then. The exception to this occurred at South Fork Taylor Creek, which was



Map showing the locations of audio-visual sampling sites in the Cedar River Municipal Watershed, Washington, during summer 2005, 2006, and 2007. Figure 2.

Table 2. Location of summer 2005, 2006, and 2007 audio-visual sampling sites in the Cedar River Municipal Watershed, Washington.

Site	Station	UTM coo	ordinates ¹	Elevatio (m)
155.1A ²	1	607495 E	5245965 N	894
	2	607568 E	5245843 N	825
Chester North ³	2	601264 E	5249531 N	977
	3	600811 E	5249252 N	723
Lindsay Creek ³	1	601172 E	5243187 N	871
·	2	601032 E	5243132 N	826
	3	601178 E	5243286 N	849
Lost Creek ³	1	594882 E	5250301 N	739
Lower Rex E (Findley) ³	1	606326 E	5243160 N	958
, , ,	2	606438 E	5243247 N	832
Rack Creek ³	1	596219 E	5248719 N	934
	2	596282 E	5248774 N	914
	3	596403 E	5248698 N	887
$Rex AV^4$	1	603432 E	5240777 N	871
	2	603645 E	5239650 N	965
	3	603390 E	5239890 N	912
South Fork North ³	1	611067 E	5242333 N	659
	2	611306 E	5242332 N	724
	3	611251 E	5242146 N	728
South Fork Northeast ²	1	611924 E	5241408 N	801
South Fork South ⁵	1	611158 E	5241522 N	684
South Fork Taylor Creek ²	1	589807 E	5744497 N	434
Taylor Ridge North ³	1	594828 E	5247069 N	1053
	3	594696 E	5247009 N	1063

¹UTM Zone 10; ²New site that was not sampled in either 2005 or 2006; ³New site that was not sampled in 2005; ⁴Site only sampled in 2005; ⁵Site only sampled in 2006.

found to contain suitable Marbled Murrelet habitat towards the end of the survey season and was only sampled once.

RADAR EQUIPMENT AND OPERATION

Our mobile radar laboratories consisted of marine surveillance radars mounted on vans. The radars scanned the entire area around the labs and were used to obtain information on flight paths, movement rates, and ground speeds of murrelets. A similar radar laboratory is described in Gauthreaux (1985a, 1985b) and Cooper et al. (1991). The lab was powered by four 6-V batteries that were linked in series. The surveillance radar (Furuno Model

FCR-1510: Furuno Electric Company, Nishinomiya, Japan) is a standard marine radar transmitting at 9,410 MHz (i.e., X-band) through a slotted wave guide (i.e., antenna) 2 m long with a peak power output of 12 kW. The radar was operated at the 1.5-km range with the pulselength set at 0.07 µsec and the forward edge of the antenna elevated by ~15°. Figure 3 shows the approximate murrelet-sampling airspace for the Furuno FR-1510 marine radar at the 1.5-km range setting, as determined by field trials with Rock Pigeons, which are similar in size to Marbled Murrelets.

Table 3. Daily counts of radar targets observed at sites in the Cedar River Municipal Watershed, Washington, during summer 2007, by flight direction. Table counts include only targets recorded before sunrise.

			Number of	targets recorde	ed on radar
Date	Site	Sampling hours	Landward	Seaward	Other
19 June	Chester Morse	0324-0624	0	3	0
20 June	Powerline South	0325-0625	2	0	0
21June	Powerline Central*	0325-0625*			
22June	Powerline Central*	0325-0625*			
26 June	Powerline Central	0326-0626	0	4	0
27 June	Powerline North	0327-0627	1	0	0
28 June	Chester Morse	0327-0627	0	0	0
09 July	Powerline South	0335-0635	0	1	0
10 July	Powerline Central	0335-0635	0	0	1
11 July	Powerline North	0336-0636	0	0	0
12 July	Chester Morse	0337-0637	5	1	0
13 July	Powerline South	0338-0638	0	0	0
17 July	Powerline Central	0342-0642	0	0	0
18 July	Powerline North*	0343-0643*			
19 July	Powerline North	0344-0644	0	0	0
20 July	Chester Morse	0350-0650	0	0	0
24 July	Powerline South	0337-0637	0	3	0
25 July	Powerline Central	0351-0651	0	1	0
26 July	Powerline North	0352-0652	0	2	0
27 July	Chester Morse	0354-0654	0	0	0
28 July	Powerline South	0355-0655	0	0	0
29 July	Powerline Central	0356-0656	0	0	0
30 July	Powerline North	0357-0657	0	0	1

^{*} Sampling session cancelled by rain.

Whenever energy is reflected from the ground, surrounding vegetation, or other objects that surround the radar unit, a ground-clutter echo appears on the display screen. Because ground clutter can obscure bird targets on the radar display screen, we attempted to minimize it by parking the radar laboratory in a location that was surrounded closely by low vegetation or small hillsides. These objects acted as a radar fence that shielded the radar from low-lying objects farther away from the lab and that produced only a small amount of ground clutter in the center of the display screen. For further discussion of radar fences, see Eastwood (1967), Williams et al. (1972), and Skolnik (1980).

Maximal distances of detection of birds by the surveillance radar depends on body size of the birds, flock size, flight profile of the birds, distance between flying birds, atmospheric conditions, and, to some extent, the amount and location of ground clutter. Marbled Murrelets usually are detectable to at least 1.5 km, whereas single, small passerines are detectable to ~1 km (Figure 3; Cooper et al. 1991, 2001; Cooper, unpubl. data).

DATA ANALYSIS

For all analyses, we classified targets as "landward" or "seaward" if they were flying within 60° of the main axis of the valley in an landward (i.e., inbound flights from the ocean) or seaward (i.e., outbound) direction, respectively, and

Table 4. Daily counts of Marbled Murrelets recorded during audio-visual surveys of the Cedar River Municipal Watershed, Washington, during summer 2007.

			Survey	Number of	f detections
Site	Station	Date	to protocol?	Presence	Occupied ¹
155.1A	2	14 June	No	0	0
	1	22 June	No	0	0
	1	28 June	Yes	0	0
	1	06 July	Yes	0	0
	2	13 July	Yes	0	0
	2	20 July	Yes	0	0
	2	27 July	Yes	0	0
Chester North	3	13 Jun	Yes	0	0
	2	21 Jun	Yes	0	0
	3	08 Jul	Yes	0	0
	2	12 Jul	Yes	0	0
	2	28 Jul	Yes	0	0
Lindsay Creek North	1	12 June	Yes	0	0
	1	15 June	No	0	0
	1	19 June	Yes	0	0
	2	28 June	Yes	0	0
	3	12 July	Yes	0	0
	1	20 July	No	0	0
	1	25 July	Yes	0	0
Lost Creek	1	13 June	Yes	0	0
	1	21 June	Yes	0	0
	1	29 June	Yes	0	0
	1	09 July	Yes	0	0
	1	29 July	Yes	0	0
Lower Rex East (Findley)	1	13 June	Yes	0	0
	1	15 June	No	0	0
	1	20 June	Yes	0	0
	1	30 June	No	0	0
	1	07 July	Yes	0	0
	1	10 July	Yes	0	0
	2 audio	26 July	Yes	0	0
	2 visual	26 July	Yes	0	0

Table 4. Continued.

			Survey	Number o	f detections
Site	Station	Date	to protocol?	Presence	Occupied ¹
Rack Creek	2	12 June	Yes	0	0
	2	15 June	Yes	0	0
	2	26 June	Yes	0	0
	2	11 July	Yes	0	0
	2	18 July	No	0	0
	2	19 July	Yes	0	0
South Fork North	2	14 June	Yes	0	0
	3	22 June	Yes	0	0
	1	09 July	Yes	0	0
	3	13 July	Yes	0	0
	3	27 July	Yes	0	0
South Fork Northeast	1	20 June	Yes	0	0
	1	29 June	Yes	0	0
	1	10 July	Yes	0	0
	1	17 July	Yes	0	0
	1	25 July	Yes	0	0
South Fork Taylor Creek	1	30 July	Yes	0	0
Taylor Ridge North	3	12 June	Yes	0	0
	3	14 June	Yes	0	0
	3	27 June	Yes	0	0
	3	11 July	Yes	0	0
	3	18 July	No	0	0
	3	19 July	Yes	0	0

Murrelet detections, as defined by the PSG survey protocol (Evans Mack et al. 2003).

classified targets as "other" if they were not flying in a landward or seaward direction. Following Cooper et al. (2001, 2006a), we used radar counts of landward-flying targets as our daily index of murrelet abundance at a site.

Marbled Murrelet targets detected on radar were distinguished from other species by their flight speed, timing, and (sometimes) target signature. We have determined that a >40-mi/h (64-km/h) speed cutoff minimizes the number of non-murrelet species while eliminating a small percentage (~3%) of Marbled Murrelets (Cooper and Blaha 2002, Cooper et al. 2001). Thus, all targets with a flight speed greater than 40 mi/h (64 km/h) were considered to be Marbled Murrelets,

unless the target signature was typical of a flock of Band-tailed Pigeons (Columba fasciata) or the target was observed after sunrise. Band-tailed Pigeon flocks sometimes exhibit a characteristic signature that is large and composed of multiple targets that repeatedly break apart, and then coalesce. These targets are easily distinguished from a typical Marbled Murrelet target. In addition, we eliminated targets that were observed after sunrise to help eliminate single Band-tailed Pigeons from the data set. We have found that Band-tailed Pigeon activity generally does not start until a few minutes after sunrise (i.e., 105 min after our radar surveys begin). So, we have a higher degree of confidence in the radar identification of

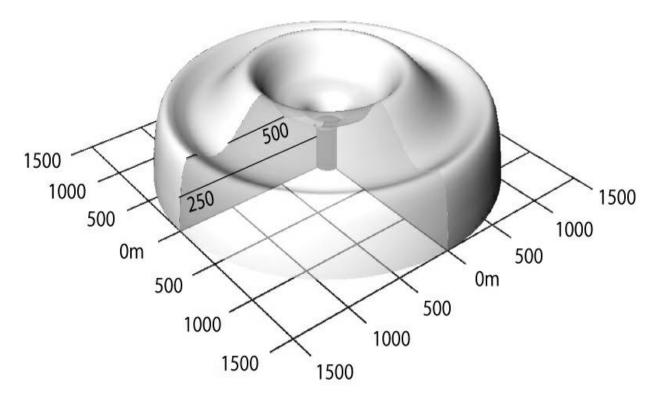


Figure 3. Approximate sampling airspace for the Furuno FR-1510 marine radar at the 1.5-km range setting, as determined by field trials with Rock Pigeons, which are similar in size to Marbled Murrelets. Note that the configuration of the radar beam within 250 m of the origin (i.e., the darkened area) was not determined.

murrelets before sunrise than after sunrise in areas like the CRMW where Band-tailed Pigeons are common. Nearly all murrelets fly into nesting stands well before sunrise (Cooper et al. 2001, Burger 1997). So, it is likely that few landward targets would be missed using this sunrise cutoff time. Further, a precedent for this method has been set by Burger (2001) and Burger et al. (2005), who used sunrise for their cutoff period to count murrelets.

We used a repeated measures Analysis of Variance to compare differences among all three study years (2005–2007) within sites. Following Bigger et al. (2006) and Cooper et al. (2006a), we used Monte Carlo simulations to conduct prospective power analyses to determine the level of murrelet population increase one could expect to detect if the four sites in the Cedar River drainage were resampled in 25 years (i.e., halfway through the CRMW HCP) and in 50 years (at the end of the HCP period) using methods that were identical to

the ones used in 2005–2007. We analyzed landward radar counts of murrelets using Mixed Models in SPSS 14.0 (SPSS Inc., Chicago, Illinois). Because the Chester Morse site had much higher counts than the other 3 sites, we modeled the among-year and within-year variances separately from the other three sites. For each of the two analyses we ran a mixed model with year as a random effect and assumed the variances were normally distributed. Because models with more complex covariance structures failed to converge, we used a variance components covariance structure to model the among-year variation.

The mixed model estimated the among-year variance and we assumed the within-year variance for each site was equal to the variance of the residuals. Because the means and variances were similar among sites, we assumed that the three lower count sites (i.e., the Powerline sites) had the same among year and within-year variances (Table 5). We assumed that the same sites would be

Table 5.	Baseline levels of among-site variance, within-year variance, total variance, and coefficient of
	variation (CV) used in the generation of simulation data sets for landward radar counts at four
	sites in the Cedar River Municipal Watershed, Washington, 2005–2007.

Site	Among-year variance	Within-year variance	Total variance	CV
Chester Morse	6.41	14.72	21.14	1.30
Powerline South	0.08	0.53	0.62	1.73
Powerline Central	0.08	0.53	0.62	1.73
Powerline North	0.08	0.53	0.62	1.73

surveyed in future years and therefore did not estimate among-site variances. We calculated the total variance as the sum of the among-year and the within-year variances. We calculated coefficients of variation (CV) for each site as the square root of the total variance divided by the mean landward count (Table 5).

Using the actual average landward counts for each site, the estimated among-year and within-year variances (Table 5), and annual rates of increase, we generated 1000 random data sets for each rate of increase (i.e., for a 0.5%, 1%, 2%, 3%, 4%, 5%, and 10% annual increase in radar counts; Table 6). In order to account for expected increases in the variance of landward counts with increasing mean values in future years, we increased the variances to levels that kept the CV's constant. We assumed that an identical sampling strategy would be used in 25 years and 50 years as was used during 2005–2007 and that the population increased at a constant annual rate.

We analyzed the 1000 data sets for each different rate using mixed models and site as a fixed effect, year as a linear covariate, and ln (count + 1) as the dependent variable. We modeled all counts conducted at a site during a year using an autoregressive (1) covariance structure to account for among-count covariance. Because we were only interested in detecting increases in landward counts we used one-sided significance tests. We therefore calculated the power as the proportion of the 1000 analyses that had a significant year term (p < 0.10) and a parameter estimate for the change in landward counts by year that was greater than zero. We conducted analyses over a 25-year time span and a 50-year time span.

RESULTS

We recorded a total of 25 pre-sunrise murrelet targets on 20 mornings of radar observation in the CRMW during summer 2007 (Table 3, Appendix 3). An additional three mornings of radar sampling were cancelled by inclement weather. Of the 25 radar targets, eight (32%) were flying in a landward direction, 15 (60%) were flying in a seaward direction, and two (8%) were flying in "other" directions. We had no audio-visual observations of Marbled Murrelets during radar sampling.

DISTRIBUTION AND ABUNDANCE

Similar to 2005 and 2006, mean daily counts of landward radar targets generally were quite low in 2007. Mean landward counts ranged between 0 and 1 target per morning (Figure 4, Table 7). As in 2005 and 2006, the highest landward counts occurred at the Chester Morse site, which is situated at the bottleneck formed by the valley along Chester Morse Lake. No landward targets were observed at Powerline Central in 2007. Mean landward counts did not differ significantly between 2005, 2006, and 2007 ($F_{2, 6} = 2.138$, P = 0.199; Table 5) at four long-term radar sites (i.e., Chester Morse, Powerline North, Powerline Central, Powerline South).

Even though the range of daily landward counts varied by only a few birds, we still observed relatively high among-day variation in landward counts because of the low counts. Coefficients of Variation (CV's) ranged from 130% at Chester Morse to 173% at the three Powerline sites (Table 5).

Table 6. The average landward radar counts by year for each annual rate of increase used in the generation of simulated data sets for the Cedar River Watershed, Washington.

				A	nnual Incre	ease		
Site	Years	0.5%	1%	2%	3%	4%	5%	10%
Chester Morse	2005–2007	3.55	3.55	3.55	3.55	3.55	3.55	3.55
	2030-2032	4.02	5.90	5.82	7.42	9.45	12.01	38.41
	2055–2057	4.55	7.56	9.54	15.54	25.20	40.66	416.20
Powerline South	2005–2007	0.45	0.45	0.45	0.45	0.45	0.45	0.45
	2030-2032	0.51	0.58	0.75	0.95	1.21	1.54	4.92
	2055–2057	0.58	0.75	1.22	1.99	3.23	5.21	53.36
Powerline Central	2005–2007	0.50	0.50	0.50	0.50	0.50	0.50	0.50
	2030-2032	0.57	0.64	0.82	1.05	1.33	1.69	5.42
	2055–2057	0.64	0.82	1.35	2.19	3.55	5.73	58.70
Powerline North	2005–2007	0.45	0.45	0.45	0.45	0.45	0.45	0.45
	2030-2032	0.51	0.58	0.75	0.95	1.21	1.54	4.92
	2055-2057	0.58	0.75	1.22	1.99	3.23	5.21	53.36

POWER TO DETECT INCREASES IN MURRELET COUNTS

We used Monte Carlo simulations to determine our power to detect increases in radar counts of murrelets as nesting habitat develops in the Cedar River drainage. This prospective power analysis indicated that we could expect to have adequate power (i.e., power > 0.8) to detect between a 2–3% annual increase in the murrelet counts at the Cedar River study sites in future years (i.e., in ~ 25–50 years; Figure 5). There were relatively minor differences in power detect annual increases >2% in radar counts between 25 years and 50 years (Table 8).

FLIGHT PATHS

Mean landward flight directions generally were centered along the main axis of the valley near each radar site (Figure 6). We also examined specific flight paths of all murrelet targets to obtain information on smaller-scale patterns of movement. At Powerline North, Powerline Central, and Powerline South, most of the movements were either inbound or outbound birds flying along the approximate axis of the Cedar River valley, although several targets traveling in "other" directions also were observed (Figure 7).

As in previous years, nearly all of the 2007 targets at Chester Morse were flying over the lake along the approximate axis of the valley (Figure 8).

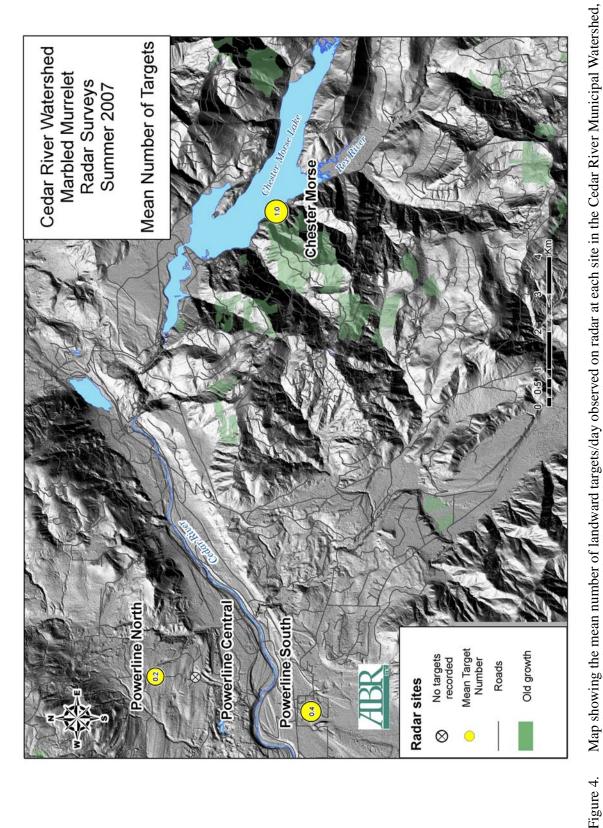
AUDIO-VISUAL SURVEYS

During summer 2007, we conducted 54 mornings of standard audio-visual surveys (plus one tandem visit) at sites with the best murrelet habitat in CRMW, and/or in areas of suitable habitat where radar observations in 2006 suggested presence of Marbled Murrelets (Figure 2, Table 4). We did not observe Marbled Murrelets during any of our five protocol survey visits at the 155.1A, Chester North, Lindsay North, Lower Rex East (Findley), Rack Creek, South Fork North, South Fork Northeast, and Taylor Ridge North sites (Table 4). We also did not detect any murrelets during our single, late season, visit to the South Fork Taylor Creek site.

DISCUSSION

SUITABILITY OF CMRW FOR RADAR OBSERVATIONS

The CRMW is heavily forested and has very few natural or human-made openings, so there are few good radar sampling sites in the area.



Map showing the mean number of landward targets/day observed on radar at each site in the Cedar River Municipal Watershed, Washington, during summer 2007. Sizes of circles are proportional to the mean rate; numbers within the circles are the actual means.

Table 7. Mean counts (targets or flocks/day \pm 1 SE) of radar targets by flight direction at sites in the Cedar River Municipal Watershed, Washington, during summer 2005, 2006, and 2007. Table excludes data for days with high winds or persistent precipitation; counts only include targets recorded before sunrise. n=number of sampling days.

		Mean number of targets recorded on radar			
		Landward-		Other	
Site	Year	flying	Seaward-flying	directions	n
LONG-TERM SITES					
Powerline North	2005	0.7 ± 0.7	0.0 ± 0.0	0.0 ± 0.0	3
	2006	0.7 ± 0.3	1.0 ± 0.6	1.0 ± 0.6	3
	2007	0.2 ± 0.2	0.4 ± 0.4	0.2 ± 0.2	5
Powerline Central	2005	1.0 ± 0.4	1.8 ± 0.9	0.0 ± 0.0	4
	2006	0.7 ± 0.7	0.3 ± 0.3	1.3 ± 0.9	3
	2007	0.0 ± 0.0	1.0 ± 0.8	0.2 ± 0.2	5
Powerline South	2005	1.0 ± 0.6	0.3 ± 0.3	0.3 ± 0.3	3
	2006	0.0 ± 0.0	3.7 ± 2.7	0.7 ± 0.3	3
	2007	0.4 ± 0.4	0.8 ± 0.6	0.0 ± 0.0	5
Chester Morse	2005	7.3 ± 3.5	2.7 ± 1.5	0.0 ± 0.0	3
	2006	4.0 ± 2.1	1.7 ± 0.7	0.0 ± 0.0	3
	2007	1.0 ± 1.0	0.8 ± 0.6	0.0 ± 0.0	5
155.1A	2005	2	0	0	1
	2006	0.0 ± 0.0	2.0 ± 0.6	0.3 ± 0.3	3
South Fork	2005	0	1	1	1
	2006	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	3
SHORT-TERM SITES					
Education Center	2005	1	2	0	1
	2006	0.0 ± 0.0	0.0 ± 0.0	0.5 ± 0.5	2
West Point	2005	1	2	0	1
	2006	2.0 ± 2.0	0.5 ± 0.5	1.5 ± 0.5	2
Taylor Ridge	2005	0	0	0	1
	2006	0.0 ± 0.0	0.0 ± 0.0	1.0 ± 1.0	2
Rack Creek	2005	4	0	0	1
	2006	1.0 ± 1.0	0.5 ± 0.5	0.0 ± 0.0	2
Lindsay	2005	0	0	0	1
	2006	1.0 ± 1.0	1.0 ± 1.0	0.0 ± 0.0	2
Chester North	2006	0.5 ± 0.5	0.0 ± 0.0	0.0 ± 0.0	2
Upper Rex	2005	1	0	0	1
	2006	1.5 ± 0.5	0.0 ± 0.0	0.5 ± 0.5	2
Rex Stand	2005	0	1	0	1
	2006	1.0 ± 0.0	1.0 ± 1.0	0.0 ± 0.0	2
Lower Rex	2005	0	0	1	1
	2006	0.5 ± 0.5	1.0 ± 1.0	0.0 ± 0.0	2
Findley	2005	0	0	0	1
•	2006	2.5 ± 0.5	0.5 ± 0.5	0.5 ± 0.5	2

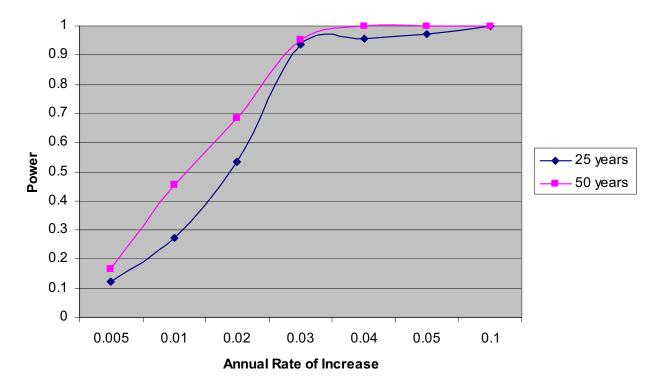
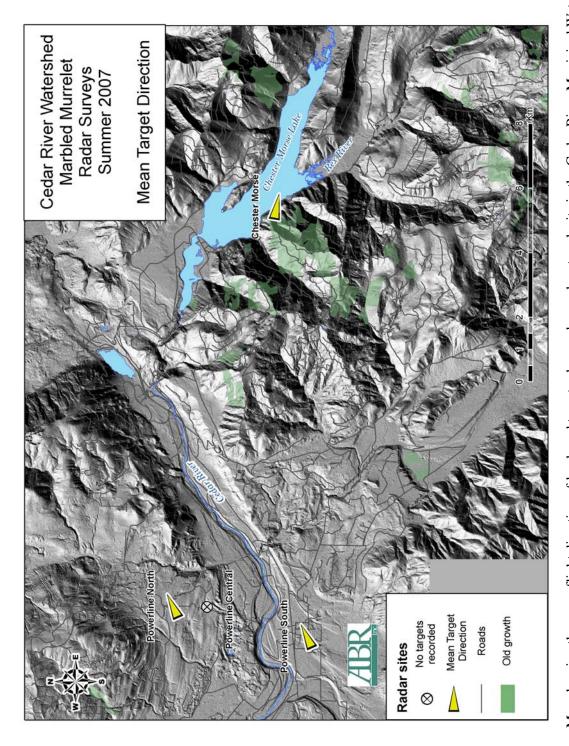


Figure 5. Estimates of statistical power to detect annual increases in landward radar counts at four sites in the Cedar River Municipal Watershed, Washington, in 25 years and in 50 years.

Table 8. Estimates of statistical power to detect increases in landward radar counts at four sites in the Cedar River Municipal Watershed, Washington, in 25 years (i.e., 2030–2032) and in 50 years (i.e., 2055–2057).

	Power to detect increase		
Annual Increase (%)	In 25 years	In 50 years	
0.5	0.121	0.166	
1	0.272	0.456	
2	0.535	0.685	
3	0.936	0.954	
4	0.956	1.000	
5	0.973	1.000	
10	1.000	1.000	



Map showing the mean flight direction of landward targets observed on radar at each site in the Cedar River Municipal Watershed, Washington, during summer 2007. Arrows indicate the mean direction of flight; sites without an arrow are locations where no landward targets were detected.

Figure 6.

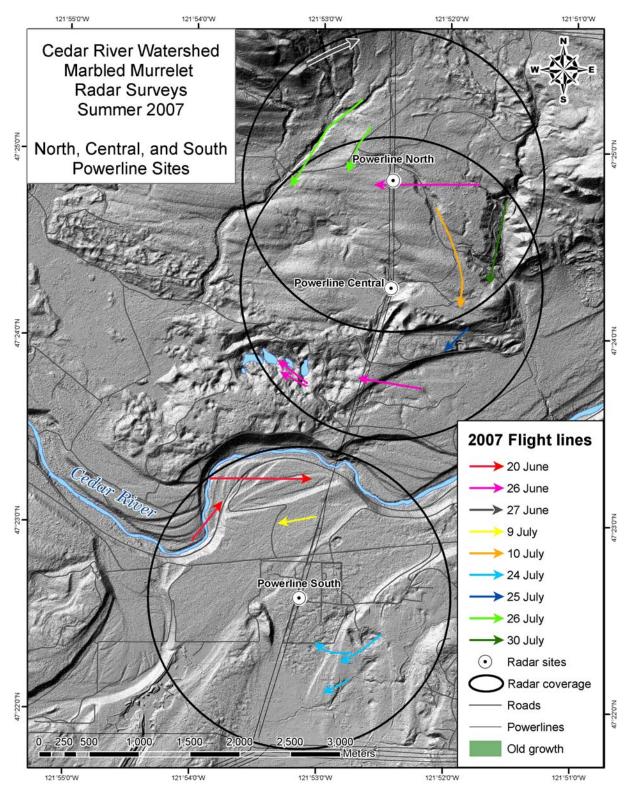


Figure 7. Map showing the flight paths of radar targets observed before sunrise at the Powerline North, Powerline Central, and Powerline South sites in the Cedar River Municipal Watershed, Washington, during summer 2007. Note that the 1.5-km ring denotes the maximal range of the radar, but there were gaps in radar coverage within that range because of radar shadows and ground clutter.

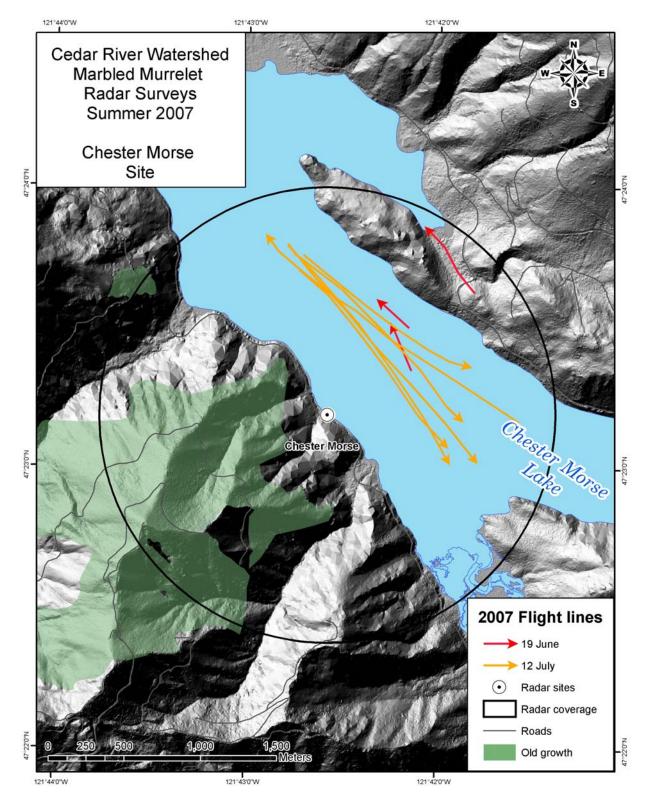


Figure 8. Map showing the flight paths of radar targets recorded before sunrise at the Chester Morse site in the Cedar River Municipal Watershed, Washington, during summer 2007. Note that the 1.5-km ring denotes maximal range of the radar, but there were gaps in radar coverage within that range because of radar shadows and ground clutter.

Fortunately, we were able to find excellent sites at key locations for long-term sampling. The three long-term sites located along the wide powerline corridor near the western border of the CRMW (i.e., Powerline North, Powerline Central, and Powerline South) are good sampling sites, but will have good radar-sampling views in the future only if there is long-term maintenance of a wide powerline corridor. The Chester Morse site offers an excellent view over Chester Morse Lake, across the entire width of the Cedar River Valley, and should remain a good sampling site well into the future with minimal management effort. Along with the good radar view over the lake, an additional benefit of the Chester Morse site is that it is located at a topographical bottleneck that helps funnel most Marbled Murrelets in the area through the radar-sampling zone.

The three Powerline sites were placed to provide the best possible radar coverage of the western edge of the CRMW. The Powerline North and Powerline Central sites are within 1.5 km of each other, so there is some overlap in radar coverage, but there was no spatial overlap in targets detected at the two sites during concurrent sampling in 2005 or in 2006 (Cooper et al. 2006b, 2007). This apparent lack of overlapping targets probably occurred because of differences in altitudinal bands that were sampled and because ground-clutter patterns differed between the two sites; therefore, we did not conduct concurrent sampling at the two sites during 2007.

Judging by the higher counts at Chester Morse (~7, ~4, and ~1 targets/day in 2005, 2006, and 2007 respectively) than at all three powerline sites combined (~3, ~2, and ~0 targets/day in 2005, 2006, and 2007 respectively), it is likely that some murrelets are entering and exiting the western end of the CRMW over areas not covered by the three Powerline sites (e.g., areas to the north or south of those sites). Unfortunately, no additional radar sites were available to cover those areas to the north or south of the existing Powerline sites; however, the Powerline sites should still provide a good index of abundance for monitoring.

All short-term radar sites sampled in 2005 and 2006 were in locations where trees will grow large enough to obscure the radar view within a few years. There are only a few additional sites where radar observations are currently possible in the

CRMW besides those sampled in 2005 and 2006, with each of them being likely to be obscured by tree cover in the future. Thus, both those additional sites and the short-term radar sites probably are of minimal value for future monitoring purposes.

SPECIES IDENTIFICATION

Band-tailed Pigeons were common in the CRWM, and Common Loons (Gavia immer) were seen flying over Chester Morse Lake. Both of these species can be confused with Marbled Murrelet targets on radar, suggesting the need to continue the dawn cutoff time for observations and the continued need for target confirmation by audio-visual observers during radar surveys. We have found that Band-tailed Pigeon activity generally does not start until a few minutes after sunrise (i.e., 105 min after our radar surveys begin), so a sunrise cutoff time is very effective in minimizing contamination of the radar data. Further, nearly all murrelets fly into nesting stands well before sunrise (Burger 1997, Cooper et al. 2001), so there is little risk of missing the majority of landward flights, even with a sampling-cutoff time of sunrise. Others also have used sunrise for their cutoff time for radar monitoring of Marbled Murrelets (Burger 2001, Burger et al. 2005). In future years, we recommend that observers continue to attempt to get visual verification on as many targets as possible, however, and not solely rely on the timing of sampling to eliminate non-murrelet targets from the radar data.

DISTRIBUTION AND ABUNDANCE

Our radar counts in the CRMW were lower than those at most locations on the Olympic Peninsula (Cooper et al. 2001; 2006a), the Oregon coast (Cooper et al. 2000), and California (Cooper et al. 2005), which is no surprise given the much smaller amount of nesting habitat in the CRMW and the large distance from many parts of the CRMW to ocean foraging areas. In contrast, our CRMW radar counts generally were similar to those at other sites far inland in the Washington Cascades (Cooper et al. 1999; Cooper and Blaha 2001a, 2001b; ABR, Inc. 2005). In Washington, the most-inland known Marbled Murrelet nest location is 35 km, and the most-inland occupied site is 84 km (Evans Mack et al. 2003). The upper

reaches of the CRMW is ~70 km inland (i.e., approaching the limit of murrelet distribution in Washington).

The lack of nesting platform structure is another possible explanation for the low number of targets in the CRMW. Much of the current old-growth habitat in CRMW is above 1,000 m in elevation and lacks abundant nest platforms. Nests normally occur below 1,000 m because the trees at higher elevations often lack the structural features that form platforms (Nelson 1997, Burger 2002). Because of this general relationship between altitude and nest platform densities, it is likely that the lower-elevation lands in the western portion of the CRMW ultimately could develop higher platform densities than the eastern (higher) half of the CRMW. Note that nests have been found up to 1,530 m asl, however, so elevation per se should not be used to assess habitat suitability in the future. Instead, habitat suitability should be based on the availability of nesting platforms and other features common to known nest sites. For example, sites with the highest likelihood of nesting murrelets generally have more potential nesting platforms, larger trees, and greater moss cover on tree limbs than do other sites (Grenier and Nelson 1995, Hamer 1995, Kuletz et al. 1995, Nelson 1997, Burger 2002). Specifically, murrelet nesting and activity usually is positively associated with: older stands of trees, tree diameter (dbh), density of large (dbh >80 cm) trees/ha, areas with larger basal area of trees, areas with greater vertical complexity in canopy structure, areas with greater epiphyte cover on branches, areas with a higher density of potential nesting platforms, areas in lower elevations and areas >500 m from the coastline.

The flight directions that we observed on radar mostly followed the main axis of valleys, except in some cases where local movements into, or toward, patches of potential nesting habitat suggested possible use of those patches by nesting or prospecting murrelets. For example, our 2005 radar data suggested that Marbled Murrelets might be using old-growth patches in West Point, Rack Creek, Rex Stand, Upper Rex, and South Fork (and perhaps the old-growth patch southwest of the Lower Rex site). The 2006 radar data suggested possible murrelet use of habitat near West Point, Rack Creek, Taylor Ridge, Chester North, 155.1A,

Findley, Rex Stand, Upper Rex, and Lindsay Creek. When habitat with nesting platforms was found in these areas, we conducted audio-visual surveys to help verify presence of murrelets. Murrelet presence (and occupancy) was verified in Rex River drainage in 2005 (Cooper et al. 2006b) and near the confluence of the North Fork and South Fork of the Cedar River in 2006 (Cooper et al. 2007). No murrelets were detected during audio-visual surveys in 2007. Thus, documented murrelet occupancy in two areas of the CRMW during these studies, but radar observations in additional areas (especially West Fork, 155.1A, South Fork Northeast, and South Fork Taylor Creek where audio-visual were not conducted for a full two years) suggest the possibility that there could be low numbers of murrelets nesting in a few additional areas of the CMRW besides the two documented sites.

USE OF RADAR TO MONITOR TRENDS OF MURRELETS

Factors known to affect murrelet activity during the breeding period include human activities (e.g., recreation and timber harvesting; Carter and Erickson 1992, Hebert and Golightly 2006), oceanic conditions (Ainley et al. 1994, Oedekoven et al. 2001), and predator activity (Hebert and Golightly 2007). In particular, changes in ocean conditions, such as those that occur as the result of the El Niño-Southern Oscillation (ENSO) and the Pacific Decadal Oscillation, (PDO) have been linked to changes in diet, productivity, survival, and distribution of Marbled Murrelets along the Pacific coast (Ainley et al. 1995, Becker 2001, Becker and Beissinger 2003, Peery et al. 2006, Becker et al. 2007) and has been associated with widespread reproductive failure in several species of seabirds in the northeastern Pacific (Hodder and Graybill 1985, Ainley Boekelheide 1990, Wilson 1991). There is evidence from central California indicating that nonbreeding murrelets rarely fly inland during the breeding season, which suggests that lower radar-based counts should occur during years of poor breeding effort and that they are essentially indices of the potential breeding effort in that area (Peery et al. 2004, Bigger et al. 2006). In contrast, Cooper et al. (2006a) did not find a relationship

between oceanographic conditions and radar counts on the Olympic Peninsula, Washington, during 1996–2004, which included the strong 1998 ENSO event. In combination, the Cooper et al. (2006a) results and lack of a strong ENSO event in 2005–2007 suggest to us that radar counts should have been somewhat average in the study area during 2005–2007. Not surprisingly, no statistically significant differences in radar counts of Marbled Murrelets in the CRMW were detected during the course of our study (i.e., during 2005–2007).

In this first three years of study, we found high Coefficients of Variation (CVs) in landward radar counts at our long-term sites (i.e., 130-170%). These values suggest that there generally was high among-day variation in CRMW radar counts compared to counts at many other locations. For example, CVs of landward radar counts were 28% in the Olympic Peninsula (Cooper et al. 2001), 10-55% in Oregon (Cooper et al. 2000, Cooper and Augenfeld 2001), and 23-25% in California (Cooper et al. 2005, Bigger et al. 2006). Note that most of the sites in these cited studies had much higher daily counts than the extremely low counts that we observed in the CRMW, which could have contributed to the higher percent variation we had in the current study. To help put some of those CV's into perspective, power analyses on the Olympic Peninsula radar data (Cooper et al. 2006a) indicated that they had high power (≥80%) to detect a 2%/yr decline in 15 years with ~3 surveys/year at their seven sites. Bigger et al. (2006) did a radar study in northern California and determined it would take 22 sites surveyed 4 times/yr to detect a 2.5%/yr decline in 10 years, with the same ($\geq 80\%$) power.

In spite of the fact that our CVs at CRMW suggest that we have much lower power than other radar studies to detect changes in radar counts, our prospective power analysis indicated that we could expect to have adequate power (i.e., power > 0.8) to detect between a 2–3% annual increases in the murrelet counts at the Cedar River study sites in future years (i.e., in 25–50 years). Thus, it appears that the radar technique will be able to detect fairly small annual changes in murrelet numbers in future years.

Interestingly, there were not dramatic differences in power to detect increases in radar

counts between the 25-year sampling interval and the 50-year sampling interval. We speculate that the likely reason for this was that with small rates of increase, there was little increase in populations even after 50 years, and with large rates of increase the increases were so large that the power was high even at 25 years. The relatively small differences in power at intermediate rates may have been, in part, due to random variation in the results of a power analysis with 1000 simulations.

MONITORING TRENDS IN DIFFERENT AREAS OF THE WATERSHED

Although the western portion of the CRMW currently is largely devoid of Marbled Murrelet nesting habitat, it will likely have significant amounts of habitat develop over the next 50 years. Thus, there is interest in being able to separately determine local population trends of murrelets between the western portion and the eastern portion of the watershed. The Chester Morse site should provide good trend information for the eastern half of the CRMW. Trends in the western half of the CRMW could be difficult to determine. however, since the Powerline sites would sample murrelets using the eastern half of the CRMW in addition to birds using the western half. During 2005 and 2006, we attempted to use the mean landward count at Chester Morse as an index of murrelet levels in the eastern side of the CRMW and the difference between the Chester Morse site and the sum of the three Powerline sites as an index of murrelet abundance in the western side. The major problem with this approach is that it assumes that the Powerline site samples all the birds that later pass by the Chester Morse site, which we have found is not true; the mean count at the Chester Morse site always was higher than the sum of counts at the three Powerline sites. Thus, it is likely that some murrelets are accessing the CRMW over areas that are not sampled by the Powerline sites. In 2005 and 2006, we attempted to correct the Powerline counts for a "detectability" factor to help account for the proportion of birds flying into the western portion of CRMW beyond the radar coverage of the three powerline sites (i.e., either north of, south of, or between the three sites), however, that detectability metric could not be used in future years without making the assumption that murrelet flight paths would not

change in future years (i.e., that the proportion of birds using the CRMW that also flew over the three Powerline sites would remain the same). This assumption is unlikely to be true in the future, because habitat development in new areas will almost certainly affect murrelet flight path locations in and out of the area. Thus, the monitoring scheme we have developed for the CRMW will be applicable to the entire area in future years, but probably will not provide solid insights into separate trends for the eastern and western portions of the area.

SUMMARY OF 2005–2007 STUDIES

During 2005-2007, we established four long-term radar monitoring stations in the CRMW for marbled murrelets. Baseline data were collected and power analyses indicated that we could expect to detect between a 2-3% annual increase in radar counts when surveys are conducted using similar methods in ~25 and 50 years. We also used a combination of radar and audio-visual techniques combined with murrelet nest habitat surveys to determine current nesting locations of murrelets in the CRMW. We verified murrelet use at two sites (i.e., Rex River and confluence of North Fork and South Fork Cedar River). Additional radar sightings in areas that had some nesting habitat but were not surveyed for a full two years suggested that low numbers of murrelets also were possible at a few other areas within the CRMW (i.e., at West Fork, 155.1A, South Fork Northeast, and South Fork Taylor) besides the two documented sites.

For future radar monitoring efforts, it is imperative that wide openings are maintained around the Powerline radar sites and at the Chester Morse radar site, so that vegetation does not obscure the radar view and thus impede radar sampling. We also suggest continuing to use the sunrise sampling cut-off time to eliminate Band-tailed Pigeons from the data during future radar sampling. Further, we suggest continued efforts to get visual confirmation of all radar targets to help eliminate waterfowl (e.g., loons) over Chester Morse Lake and the occasional Band-tailed Pigeon that is active prior to sunrise. Sampling methodology and radar specifications used in the future obviously need to remain

consistent with those used in 2005–2007, so that future data will be comparable to findings from the first three years of study.

LITERATURE CITED

- ABR, Inc. 2005. Radar observations of Marbled Murrelets in Mt. Rainier National Park, Washington, 2005. Unpublished report prepared for Mt. Rainier National Park, WA, by ABR, Inc.—Environmental Research & Services, Forest Grove, OR. 17 pp.
- Ainley, D.G., S.G. Allen, and L.B. Spear. 1995.
 Offshore occurrence patterns of Marbled
 Murrelets in central California. Pages
 361–369, *in* C.J. Ralph, G.L. Hunt Jr., M.G.
 Raphael, and J. F. Piatt [eds.], Ecology and
 conservation of the Marbled Murrelet. USDA
 Forest Service General Technical Report
 PSW-GTR-152.
- Ainley, D.G., and R.J. Boekelheide. 1990. Seabirds of the Farallon Islands: ecology, dynamics, and structure of an upwelling-system community. Stanford University Press, Stanford, CA.
- Ainley, D.G., W.J. Sydeman, S.A. Hatch, and U.W. Wilson. 1994. Seabird population trends along the west coast of North America: causes and extent of regional concordance. Studies in Avian Biology 15:119–133.
- Becker, B.H. 2001. Effects of oceanographic variation on Marbled Murrelet diet and habitat selection. Ph.D. dissertation, University of California, Berkeley, CA.
- Becker, B.H., and S.R. Beissinger. 2003. Scale-dependent habitat selection by a nearshore seabird, the Marbled Murrelet, in a highly dynamic upwelling system. Marine Ecology Progress Series 256:243–255.
- Becker, B.H., Z.M. Peery, and S.R. Beissinger. 2007. Ocean climate and prey availability affect the trophic level and reproductive success of the Marbled Murrelet, an endangered seabird. Marine Ecology Progress Series 329: 267–279.

- Bigger, D., M. Z. Peery, J. Baldwin, S. Chinnici, and S. P. Courtney. 2006. Power to detect trends in Marbled Murrelet breeding populations using audiovisual and radar surveys. Journal of Wildlife Management 70: 493–504.
- Burger, A. E. 1997. Behavior and numbers of Marbled Murrelets measured with radar. Journal of Field Ornithology 68: 208–223.
- Burger, A. E. 2001. Using radar to estimate populations and assess habitat associations of Marbled Murrelets. Journal of Wildlife Management 65: 696–715.
- Burger, A. E. 2002. Conservation assessment of Marbled Murrelets in British Columbia: review of the biology, populations, habitat associations, and conservation of this threatened species. Technical Report Series No. 387, Canadian Wildlife Service, Delta, BC.
- Burger, A. E., T. A. Chatwin, S. A. Culler, N. P. Holmes, I. A. Manley, M. H. Mather, B. K. Schroeder, J. D. Steventon, J. E. Duncan, P. Arcese, and E. Selak. 2004. Application of radar surveys in the management of nesting habitat of Marbled Murrelets *Brachyrhamphus marmoratus*. Marine Ornithology 32: 1–11.
- Carter, H.R., and R.A. Erickson. 1992. Status and conservation of the Marbled Murrelet in California, 1892–1987. Pages 92–108 *in* H.R. Carter and M.L. Morrison (eds). Status and conservation of Marbled Murrelets in North America. Proceedings of the Western Foundation of Vertebrate Zoology. Volume 5.
- Cooper, B. A., and K. H. Augenfeld. 2001. Radar surveys for Marbled Murrelets in the Elliott State Forest, Oregon, 2001. Unpublished report prepared for Oregon Department of Forestry, Salem, OR, by ABR, Inc.—Environmental Research & Services, Forest Grove, OR. 24 pp.
- Cooper, B. A., Jeff B. Barna, R. J. Blaha, and Peter M. Sanzenbacher. 2006b. Radar and audio-visual surveys for Marbled Murrelets in the Cedar River Municipal Watershed, Washington, 2005. Unpublished report

- prepared for City of Seattle Watershed Division, North Bend, WA, by ABR, Inc.—Environmental Research & Services, Forest Grove, OR. 33 pp. + appendices.
- Cooper, B. A., Jeff B. Barna, R. J. Blaha, and Corey M. Grinnell. 2007. Radar and audio-visual surveys for Marbled Murrelets in the Cedar River Municipal Watershed, Washington, 2006. Unpublished report prepared for City of Seattle Watershed Division, North Bend, WA, by ABR, Inc.—Environmental Research & Services, Forest Grove, OR. 34 pp. + appendices.
- Cooper, B. A., and R. J. Blaha. 2001a. Audio-visual and radar surveys of Marbled Murrelets in the Titicaed Creek drainage, Washington, 2001. Unpublished report prepared for Cugini Land and Timber Company, Renton, WA, by ABR, Inc.—Environmental Research & Services, Forest Grove, OR. 13 pp.
- Cooper, B. A., and R. J. Blaha. 2001b. Audio-visual and radar surveys of Marbled Murrelets in the Hancock Creek drainage, Washington, 2001. Unpublished report prepared for Cugini Land and Timber Company, Renton, WA, by ABR, Inc.—Environmental Research & Services, Forest Grove, OR. 59 pp.
- Cooper, B. A., and R. J. Blaha. 2002. Comparison of radar and audio-visual counts of Marbled Murrelets during inland forest surveys. Wildlife Society Bulletin 30: 1182–1194.
- Cooper, B. A., R. J. Blaha, and J. H. Plissner. 2005.

 Determining local population trends of Marbled Murrelets in that portion of Conservation Zone Four North of the Palco HCP Area, 2004. Unpublished report prepared for Palco, Scotia, CA, U.S. Fish and Wildlife Service, Arcata, CA, and California Dept. of Fish and Game, Arcata, CA, by ABR, Inc.—Environmental Research & Services, Forest Grove, OR. 26 pp.
- Cooper, B. A., R. J. Blaha, H. Stabins, and D. R. Herter. 1999. Radar surveys of Marbled Murrelets in the upper Green River drainage, Washington, 1999. Unpublished report

- prepared for Plum Creek Timber Company, Seattle, WA, by ABR, Inc.—Environmental Research & Services, Forest Grove, OR. 23 pp.
- Cooper, B. A., R. H. Day, R. J. Ritchie, and C. L. Cranor. 1991. An improved marine radar system for studies of bird migration. Journal of Field Ornithology 62: 367–377.
- Cooper, B. A., and T. E. Hamer, 2003. Use of radar for Marbled Murrelet surveys, Appendix H. In Evans, D. R., W. P. Ritchie, S. K. Nelson, E. Kuo-Harrison, P. Harrison, and T. E. Hamer Methods for surveying Marbled (eds.). Murrelets in forests: a revised protocol for land management and research. **Pacific** unpublished Seabird Group document, available website: http://www. at pacificseabirdgroup.org.
- Cooper, B. A., M. G. Raphael, and D. R. Evans Mack. 2001. Radar-based monitoring of Marbled Murrelets. Condor 103: 219–229.
- Cooper, B. A., M. G. Raphael, and Z. M. Peery. 2006a. Trends in radar-based counts of Marbled Murrelets in the Olympic Peninsula, Washington, 1996–2004. Condor 108: 936–947.
- Cooper, B. A., C. Strong, and L. Folliard. 2000. Radar-based monitoring of Marbled Murrelets in Oregon, 1996–1999. Unpublished report prepared for U.S. Fish and Wildlife Service, Portland, OR, by ABR, Inc.—Environmental Research & Services, Forest Grove, OR. 46 pp.
- Eastwood, E. 1967. Radar ornithology. Methuen and Co., Ltd., London, United Kingdom. 278 pp.
- Evans Mack, D. M., W. P. Ritchie, S. K. Nelson, E. Kuo-Harrison, P. Harrison, and T. E. Hamer (eds.). 2003. Methods for surveying Marbled Murrelets in forests: a revised protocol for land management and research. Pacific Seabird Group unpublished document; available at website: http://www.pacificseabirdgroup.org.

- Gauthreaux, S. A., Jr. 1985a. Radar, electro-optical, and visual methods of studying bird flight near transmission lines. Unpublished Final Report prepared for Electric Power Research Institute, Palo Alto, CA, by Clemson University, Clemson, SC. 76 pp.
- Gauthreaux, S. A., Jr. 1985b. An avian mobile research laboratory: hawk migration studies. Pages 339–346 *in* M. Harwood (ed.). Proceedings of Hawk Migration Conference IV. Hawk Migration Association of North America, Washington, CT.
- Grenier, J. J., and S. K. Nelson. 1995. Marbled Murrelet habitat associations in Oregon. Pages191–201 *in* Ralph, C. J., G. L. Hunt, Jr., M. G. Raphael, and J. F. Piatt (tech. eds.). Ecology and conservation of the Marbled Murrelet. USDA Forest Service, Albany, CA. General Technical Report No. PSW-GTR-152.
- Hamer, T. E., B. A. Cooper, and C. J. Ralph. 1995. Use of radar to study the movements of Marbled Murrelets at inland sites. Northwestern Naturalist 76: 73–78.
- Hamer, T. E. 1995. Inland habitat associations of Marbled Murrelets in western Washington.
 Pages 163–175 in Ralph, C.J., G.L. Hunt, Jr.,
 M.G. Raphael, and J.F. Piatt (tech. eds.).
 Ecology and conservation of the Marbled Murrelet. USDA Forest Service, Albany, CA.
 General Technical Report PSW-GTR-152.
- P.N., Hebert, and R.T. Golightly. 2006. Movements. nesting, and response disturbance of anthropogenic marbled murrelets (Brachyramphus marmoratus) in Redwood National and State Parks. California. Unpublished report, Department of Wildlife, Humboldt State University, Arcata, CA and California Department of Fish and Game report 2006-02, Sacramento, CA.
- Hebert, P.N., and R.T. Golightly. 2007. Observations of predation by corvids at a Marbled Murrelet nest. Journal of Field Ornithology 78: 221–224.

- Hodder, J., and M.R. Graybill. 1985. Reproduction and survival of seabirds in Oregon during the 1982–1983 El Niño. Condor 87: 535–541.
- Jodice, P. G. R., S. L. Garman, and M. W. Collopy. 2001. Using resampling to assess reliability of audio-visual survey strategies for Marbled Murrelets at inland forest sites. Waterbirds 24: 331–344.
- Kuletz, K. J., D. K. Marks, N. L. Naslund, N. J. Goodson, and M. B. Cody. 1995. Inland habitat suitability for Marbled Murrelets in southeastern Alaska. Pages 141–149 *in* Ralph, C.J., G.L. Hunt Jr., M.G. Raphael, and J.F. Piatt (tech. eds.). Ecology and conservation of the Marbled Murrelet. USDA Forest Service, Albany, CA. General Technical Report PSW-GTR-152, Albany, CA.
- Nelson, S. K. 1997. Marbled Murrelet (*Brachyramphus marmoratus*). *In* A. Poole and F. Gill (eds.). The Birds of North America, No. 276. Academy of Natural Sciences, Philadelphia, PA, and American Ornithologists' Union, Washington, D.C. 32pp.
- Oedekoven, C.S., D.G. Ainley, and L.B. Spear. 2001. Variable responses of seabirds to change in marine climate: California Current, 1985–1994. Marine Ecology Progress Series 212: 265–281.
- Paton, P. W., C. J. Ralph, H. R. Carter, and S. K. Nelson. 1990. Surveying Marbled Murrelets at inland forest sites: a guide. USDA Forest Service, Pacific Southwest Research Laboratory, Arcata, CA. General Technical Report No. PSW-120. 9 pp.
- Peery, M.Z., S.R. Beissinger, B.H. Becker, E. Burkett, and S.H. Newman. 2004. Inland flight behavior of Marbled Murrelets: implications for population monitoring with radar. Condor 106: 344–353.
- Peery, M.Z., S.R. Beissinger, E. Burkett, and S.H. Newman. 2006. Local survival rates of Marbled Murrelets: roles of oceanographic conditions, sex, and radio-tagging. Journal of Wildlife Management 70: 78–88.

- Skolnik, M. I. 1980. Introduction to radar systems. McGraw-Hill, New York, NY. 581 pp.
- Raphael, M. G., D. Evans Mack, and B. A. Cooper. 2002. Use of radar to investigate landscape-scale relationships between abundance of Marbled Murrelets and nesting habitat. Condor 104: 331–342.
- USFWS (U.S. Fish and Wildlife Service). 1992. Endangered and threatened wildlife and plants determination of threatened status for the Washington, Oregon, and California population of the Marbled Murrelet. Federal Register 61: 26,256–26,320.
- USFWS (U.S. Fish and Wildlife Service). 1997. Recovery Plan for the Marbled Murrelet (Washington, Oregon, and California population). U.S. Fish and Wildlife Service, Portland, OR. 203 pp.
- Williams, T. C., J. Settel, P. O'Mahoney, and J. M. Williams. 1972. An ornithological radar. American Birds 26: 555–557.
- Wilson, U.W. 1991. Responses of three seabird species to El Niño events and other warm episodes on the Washington coast, 1979–1990. Condor 93: 853–858.

Appendix 1. Photographs of radar sampling sites in Cedar River Watershed, Washingtion, 2007.

View toward the east at the Powerline North site.

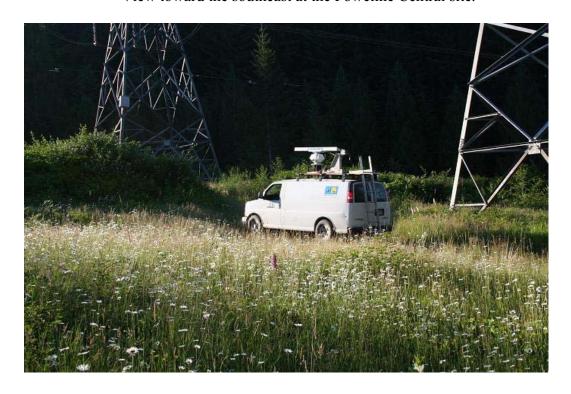


View toward the north at the Powerline North site.



Appendix 1. Continued.

View toward the southeast at the Poweline Central site.



View toward the south at the Powerline South site.

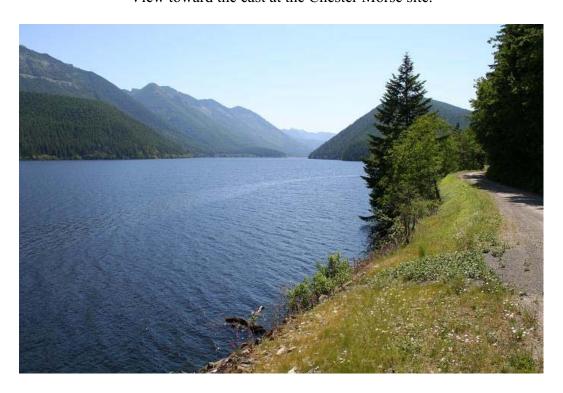


Appendix 1. Continued.

View toward the east at the Chester Morse site.

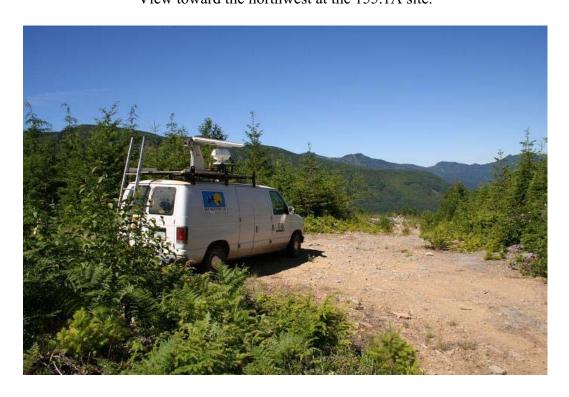


View toward the east at the Chester Morse site.

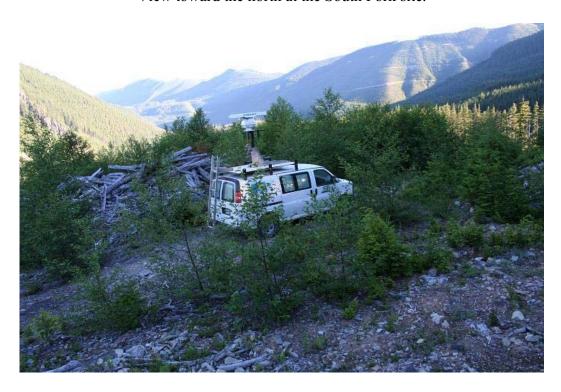


Appendix 1. Continued.

View toward the northwest at the 155.1A site.



View toward the north at the South Fork site.



Appendix 1. Continued.

View toward the southwest at the Education Center site.



Appendix 1. Continued.

View toward the northwest at the West Point site.



View toward the northwest at the West Point site.



Appendix 1. Continued.

View toward the west at the Taylor Ridge site.



View toward the north at the Lindsay site.



Appendix 1. Continued.

View toward the north at the Rack Creek site.



View toward the north at the Rack Creek site.



Appendix 1. Continued.

View toward the northwest at the Chester North site.

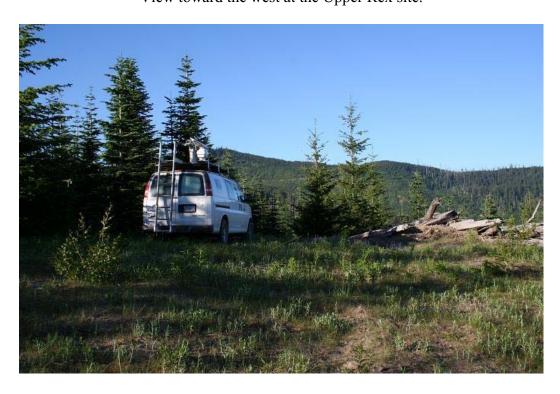


View toward the southeast at the Chester North site.



Appendix 1. Continued.

View toward the west at the Upper Rex site.



View toward the southwest at the Lower Rex site.



Appendix 1. Continued. View toward the west at the Rex Stand site.



View toward the east at the Rex Stand site.



Appendix 1. Continued.

View toward the southwest at the Findlay site.



View toward the northeast at the Findlay site.



Appendix 2. Coding information for radar surveys of Marbled Murrelets in the Cedar River Municipal Watershed, Washington, summer 2007.

GENERAL CODES

OBSERVER

1 = Brian A. Cooper (BAC) 5 = Corey M. Grinnell (CMG)
2 = Richard J. Blaha (RJB) 6 = Jon H. Plissner (JHP)
3 = Peter M. Sanzenbacher (PMS) 7 =
4 = Jeff Barna (JBB) 8=

STUDY SITE

1 =Chester Morse 11 = Taylor Ridge2 =Cedar 12 =Site 150 3 = Power Line South 13 = Rex Stand4 = Power Line Central 14 = Rack Creek 5 = Power Line North15 = Findlay6 = South Fork 16 = Site 155.1A7 =Cedar 17 = Lindsay8 = Upper Rex18 = Education Center 9 = Lower Rex19 = AV1

10 = West Point 20 = AV2

21 = Chester North

SESSION NUMBER (IF USED AT ALL)

(Write as the three-digit Julian date, a decimal point, and a two-digit number counting from 1 through n that represents the sequential sample taken. For example, the fifth sampling period on Julian date 182 would be 182.05. Format is XXX.XX; write XXX.00 if the session has to be canceled [e.g., because of weather], then continue the next session with the same number that you had been trying to use.)

TIME

(Write in 24-hour clock. Remember--midnight is 0000 h, not 2400 h.)

DATE

(People writing on forms should enter as, for example, "6 MAR" or "8 APR." Keypunchers should enter as mo/dy/yr, as in 9/30/95.)

JDATE

(Enter the Julian date +2,006,000)

Appendix 2, continued.

WEATHER CODES AND MEASUREMENTS

WIND DIRECTION

(**Direction** on the ground **from which the wind is blowing**, to the nearest ordinal point. Be sure to use the local declination to correct the compass reading.)

0 = unknown/default

1 = North 6 = Southwest 2 = Northeast 7 = West 3 = East 8 = Northwest

4 =Southeast 9 =direction is variable or no wind

5 = South

WIND SPEED (mph)

(Sustained average speed at ground level, -9 = default/unknown)

0 = Calm

1 = 1-5 mph 5 = 21-25 mph 2 = 6-10 mph 6 = 26-30 mph 3 = 11-15 mph 7 = 31-35 mph 4 = 16-20 mph etc., etc...........

ESTIMATED CLOUD COVER (to the nearest 5%)

(Estimated for the area from the coast to the mountains north of the site.)

-9 = unknown/default

CEILING HEIGHT

(An average height, taken from where you are in m agl, so either in a particular section or at the radar lab. Haze that allows a distinct shadow to be cast is counted as clear sky, whereas haze that causes indistinct shadows is counted as clouds. The same is true at night, when you can see stars and the moon through the haze.)

-9 = clear sky -99 = unknown/default

MINIMAL VISIBILITY

(Record the minimal distance you can see. If you are high on a ridge, use the minimal horizontal distance, for you may be able to see lower elevations clearly but nothing up high.)

0 = unknown/default

 $\begin{array}{lll} 1 = 0\text{-}50 \text{ m} & 5 = 1001\text{-}2500 \text{ m} \\ 2 = 51\text{-}100 \text{ m} & 6 = 2501\text{-}5000 \text{ m} \\ 3 = 101\text{-}500 \text{ m} & 7 = >5000 \text{ m} \end{array}$

4 = 501-1000 m

Appendix 2, continued.

WEATHER CODES AND MEASUREMENTS (CONTINUED)

PRECIPITATION

(Precipitation is considered to occur if it is recorded anywhere within ~5 km of the site.)

99 = unknown/default

0 = none 6 = snow flurries 1 = fog 7 = light snowfall2 = drizzle (heavy mist) 8 = heavy snowfall

3 = light rain (continuous drops of rain) 9 = sleet 4 = heavy rain 10 = hail

5 =scattered showers

AIR TEMPERATURE (to the nearest 1°C)

(Be sure to keep the thermometer out of direct sunlight.)

99 = unknown/default

RADAR CODES AND MEASUREMENTS

TIME

(Write in 24-hour clock. Remember--midnight is 0000 h, **not** 2400 h.)

TARGET MULTIPLIER

(Record the number of targets flying "in a similar direction and fashion" and crossing the same segment. This category will be "1" for times when movement rates are so slow that you can record data for individual targets but will be, for example, "7" for seven targets flying the same direction and fashion during periods of high movement rates.)

0 = default

DIRECTION OF FLIGHT (to the nearest 1°)

(Measured on the radar display with the Electronic Bearing Line [EBL].)

999 = default

TRANSECT CROSSED

(That primary transect line that a bird did cross or would have crossed if you extrapolated its directional flight pattern.

Transect lines are extrapolated all the way off the screen.)

0 = default

1 = Northern Transect5 = Southern Transect3 = Eastern Transect7 = Western Transect

MINIMAL DISTANCE (to the nearest meter)

(The smallest distance to the radar lab that a target became or would become if you extrapolated its flight direction.) 999 = default

VELOCITY (to the nearest 5 mph) Speeds NOT to be recorded in KPH!!

(Measured on the radar display with the hand-held speed scales.) 0 = default

Appendix 2, Continued.

RADAR MEASUREMENTS AND CODES (CONTINUED)

FLIGHT BEHAVIOR

(Some erratically-flying or circling birds still may have an overall direction of movement; if so, record that overall direction. Otherwise, their direction is 999.)

0 = default/unknown 4 = 1 = straight-line (directional) 5 = 2 = circling (NOTE: Direction may be 999.) 6 = 3 = erratic (NOTE: Direction may be 999.) 7 =

OVERLAP

0 = default/unknown

1 = seen on radar only

2 = observed on radar and audiovisually

3 = observed audiovisually only

SPECIES (if known)

(Write in the 4-letter code in the field; If the species is unknown, leave the space blank. If have a target that is fast enough to be a murrelet (i.e., >40 mph), but you have a strong indication by target shape or behavior that it is not, enter "NOMU" and note reasons for classification in margin.)

NUMBER OF BIRDS IN THAT TARGET (if known)

0 = default (If the number of birds is not counted, leave the space blank.)

DATE

JDATE (add a 2006 before the idate, e.g., 1 Jan 1999 = 2006001)

OBSERVER 1 (BAC = 1, RJB = 2, etc.).

OBSERVER 2 (Enter 0 if only one observer.)

FLIGHT ALTITUDE If flight altitude is \leq 25 m agl, estimate it as closely as possible to the nearest meter; if it is 26-50 m, estimate it to the nearest 2-3 m; if it is >50 m agl, your estimate will be more approximate and in categories of at least 5 m.) 0 = default

HEARSEE

Was bird heard, seen, or both? (0 = default or radar only, S = seen only, H = Heard only, B = Both seen and heard)

Appendix 3. Data file for Marbled Murrelet targets recorded on radar in the Cedar River Municipal Watershed, Washington, during summer 2007. See Appendix 2 for coding information. Also, note that Appendix 3 does not contain the weather data, data on targets that were non-murrelets or that were recorded after sunrise, or data from dates when weather or other factors cancelled sampling.

TIME	MULT	DIR	TRAN	MINDIS	VEL	BEH	OV.LAP	SPP	NO	FLTALT	HEARSEE	DATE	JDATE	SITE
324	0	0	0	999	0	0	0 7	WDAT	0	0	0	19-Jun-2007	2,007,170	1
359	1	302	1	579	45	1	1		0	0	0	19-Jun-2007	2,007,170	1
407	1	272	1	864	50	1	1		0	0	0	19-Jun-2007	2,007,170	1
442	1	283	1	1280	52	1	1		0	0	0	19-Jun-2007	2,007,170	1
325	0	0	0	999	0	0	0 7	WDAT	0	0	0	20-Jun-2007	2,007,171	3
332	1	39	7	1177	42	1	1		0	0	0	20-Jun-2007	2,007,171	3
406	1	91	1	1211	45	1	1		0	0	0	20-Jun-2007	2,007,171	3
326	0	0	0	999	0	0	0 7	WDAT	0	0	0	26-Jun-2007	2,007,177	4
359	1	279	5	946	65	1	1		0	0	0	26-Jun-2007	2,007,177	4
404	1	271	1	1043	56	1	1		0	0	0	26-Jun-2007	2,007,177	4
455	1	313	5	1223	65	1	1		0	0	0	26-Jun-2007	2,007,177	4
456	1	311	5	1257	65	1	1		0	0	0	26-Jun-2007	2,007,177	4
326	0	0	0	999	0	0	0 7	WDAT	0	0	0	27-Jun-2007	2,007,178	5
506	1	65	1	1426	42	1	1		0	0	0	27-Jun-2007	2,007,178	5
335	0	0	0	999	0	0	0 7	WDAT	0	0	0	9-Jul-2007	2,007,190	3
520	1	259	1	822	42	1	1		0	0	0	9-Jul-2007	2,007,190	3
335	0	0	0	999	0	0	0 7	WDAT	0	0	0	10-Jul-2007	2,007,191	4
425	1	167	3	647	52	1	1		0	0	0	10-Jul-2007	2,007,191	4
337	0	0	0	999	0	0	0 7	WDAT	0	0	0	12-Jul-2007	2,007,193	1
420	1	268	1	737	42	1	1		0	0	0	12-Jul-2007	2,007,193	1
456	1	102	1	600	46	1	1		0	0	0	12-Jul-2007	2,007,193	1
457	1	88	1	837	49	1	1		0	0	0	12-Jul-2007	2,007,193	1
458	1	102	1	712	47	1	1		0	0	0	12-Jul-2007	2,007,193	1
502	1	108	1	546	42	1	1		0	0	0	12-Jul-2007	2,007,193	1
511	1	103	1	520	41	1	1		0	0	0	12-Jul-2007	2,007,193	1
347	0	0	0	999	0	0	0 7	WDAT	0	0	0	24-Jul-2007	2,007,205	3
523	1	232	3	760	44	1	1		0	0	0	24-Jul-2007	2,007,205	3
524	1	238	5	929	50	1	1		0	0	0	24-Jul-2007	2,007,205	3
530	1	288	5	419	50	1	1		0	0	0	24-Jul-2007	2,007,205	3
351	0	0	0	999	0	0	0 7	WDAT	0	0	0	25-Jul-2007	2,007,206	4
408	1	223	3	800	42	1	1		0	0	0	25-Jul-2007	2,007,206	4
352	0	0	0	999	0	0	0 7	WDAT	0	0	0	26-Jul-2007	2,007,207	5
436	1	228	8	752	45	1	1		0	0	0	26-Jul-2007	2,007,207	5
538	1	215	8	426	50	1	1		0	0	0	26-Jul-2007	2,007,207	5
357	0	0	0	999	0	0	0 7	WDAT	0	0	0	30-Jul-2007	2,007,211	5
522	1	192	3	1107	80	1	1		0	0	0	30-Jul-2007	2,007,211	5

Data sheets for all audio-visual surveys for Marbled Murrelets in the Cedar River Municipal Watershed, summer 2007 (attached). Appendix 4.

WASHIN MARBLE **FOREST**

WASHINGTON	Survey Visit to Protocol	Page $\underline{1}$ of $\underline{\lambda}$
MARBLED MURRELET	(Y or N, initials): y cat-	Total Detections:
FOREST SURVEY FORM	Species of Concern (circle one,	details on last pg.): (Y) or N
		Day 12 Year 2007
Area Name: Tedar River Watershed Site Name /	Number: Taylon Ridge	Station Number:
Station Location - T 22 N, R 8 (circle one) (E)	or W, S 26, QQ (1/16) NW	_, of Q (1/4) <u>NE</u>
UTM zone: 10 E(x) coordinate: 594828 N(y) coord	inate: 5247 069 Source: 6PS	Datum: [V4] 83 FOM:
Observer (s) Name: Corey M. Grinnell Initials: CM	Affiliation: ABR Inc.	Phone: (503) 359-2535
Station Elevation: Ft / M Position on Slope (cir Station Placement (circle one): Inside, Outside	cle one): Bottom/plain, Lower 1/3,	Mid 1/3, Upper 1/3 Ridgetop
Distance from Survey Site Boundary: Units of Mea	sure for ALL Horizontal Distances:	exen
Station Canopy Cover (circle one): $1 = 0$ to 25%, $2 = 26$ to 50 %	3 = 51 to 75%, 4 = 76 to 100%	
ENVIRONMENTAL CONDITIONS:		

						ONDITION								2/1-
Of	ficia	d S	uni	ise Ti	ime: _	0810	Table	: North Ban	d F	Begin St	ırvey Tim	e: <u>092</u>	<u> </u>	End Survey Time: 0625
Te	mpe	erati	иге	at Sur	nrise:	3 1	^I Temp	erature at End	of Surv	ey:	<u>4</u> 0	(circle or	ne) 🕜	or F revised: 2/2000
Γ	TII	ΜE		VE	RTICA	L VIEWING	HORIZ.	AUDIBILITY		ECIPITA		WIND	NOISE	NOTES
				CEILING	CLOUD	VISIBILITY TO 2 CANOPY	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			
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Ceiling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to \(\le 2.0 \) canopy height, LO = \(\le 1.25 \) canopy height, U = Unknown. Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%.

Vertical Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Horizontal Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Audibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection).

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Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (explain in Notes).

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Pg. 2 Detections - This Side Page Total: 0

Area Name: Cedar River Dathorted Site Name / No: Year 2007 Month June Day 12

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Station Number: Units of Measure (circle one): U.S. / (Metric) Data Reference Number (Observer (s) Initials: $\frac{C}{A}$

SERIOR S	SURVEY ACYIVITY:			쇎	gnificant V	/eather	Significant Weather Changes on Page 1**	ge 1**				revised: 2 / 2000
	Q L	INITIAL ETECTION JRECTION	TYPE	AUDITORY CAL SERIES End # OL		BEHAVIOR	INTIAL FLIGHT DIRECTION		CLOSEST DIST. TO BIRDS SEEN (***********************************	DEPART FLIGHT DIRECTION	FINAL DETECTION DIRECTION	
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AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J. **IYPE:** H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

(Check Reverse Side When Using 2-Sided Forms) BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (≤ 1.0), B = Circle At or Below Canopy (≤ 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

WASHINGTON				Survey	Visit to I	Protocol		Page $\underline{1}$ of $\underline{2}$
MARBLED MURF	ELET			(Y or N	(, initials): Y (~	6	Total Detections:
FOREST SURVEY	/ FORM			Specie	s of Conc	ærn (cire	ele one,	details on last pg.): (Y) or N
Geor River	Watershed	•		er: <u> </u>	ack G	Month_	06	Day 12 Year 2007 Station Number:
UTM zone: 10 E (x) coordinate								
1 11 -	/					_		Phone: (53) 359-7525
Station Elevation: 939 F Station Placement (circle one): In Distance from Survey Site Bound Station Canopy Cover (circle one) ENVIRONMENTAL CONDITION	Positionside, Outside ary: /0 1 = 0 to 25% ONS:	on on Slope (c	easure f	e): B ot or ALL = 51 to ?	tom/plain, Horizonta	Lower	: 1/3, (M	lid 1/3, Upper 1/3, Ridgetop
Temperature at Sunrise: 3.2				_				or F revised: 2 / 2000
TIME VERTICAL VIEWIN CCI CO VISIBILI TO 2 CANOR	HORIZ. VIS. TO 100 M	AUDIBILITY TO 200 M		FOG		WIND	NOISE	
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DCIDULO Y	Ý	7	N	4		i	RAL	Suncise for overlake
0625U0 Y	Y	Y	N	L		1	RAL	End Survey for over lake
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Wind: 0 = <1 mph (calm), 1 = 1-3 m motion), 4 = 13-18 mph (sm. branche mph (whole trees move), 8 = 39-46 m Noise: N = None, A = Aircraft, B = E (explain in Notes).	66%, 3 = 100%. lections may be midetections may be may be missed dune, L = Light, M = bh (leaves barely r s move), 5 = 19-24 ph (twigs & sm. b ird song/calls, C =	issed due to cone missed due to ce to conditions), Moderate, H = nove), 2 = 4-7 m I mph (lg. brancranches break). Creek/water dr	ditions), condition Y = Uni Heavy nph (leave hes & sm	Y = Unin s), Y = U impaired Other: I es rustle, i. trees st M = Macl	mpaired (contimpaired (conditions I = Hail, S sm. twigs I art to sway)	enditions a (conditions allow for sallow for some some move), 3 = 0, 6 = 25-3 Rain/hail	llow for meas allow for reliable de Indicate in 8-12 mpl (1g T = Tree	eliable detection), U = Unknown. or reliable detection), U = Unknown. letection). ntensity using same codes for rain & fog.
Data Entry Initials	Data Entry (Date Review ** WDFW	Date	* 1797	C Initials	\$ 1 5.05	Highes	Data QC Date t Biological Status (t

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Detections - This Side Page Total:

Data Reference Number Observer (s) Initials: Units of Measure (circle one): _Day_ 13 Station Number: Site Name / No: Area Name:

SURVEY ACYIVITY:		╢	**Note Significant Weather Changes on Page 1**	cant Weat	her	Changes on Pa	ge 1**			
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AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

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Species of lonear : lommon

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MARBI			FT		(Y or N	, initials):	y C-6	7	Total Detections:
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						-	N	Month -	Tune	Day 12 Year 7007
Aras Name	Cedar	Riva L	atershed	Site Name /	Numbe	r: 4.	ndsag	Cree 4		Station Number:3
Station Locati	ion - T	N. I	e 9 ((circle one) $\hat{\mathbf{E}}$) or W	, S	<u>∕</u> , Q	Q (1/16)	NW	, of Q (1/4) <u>JZ</u>
	10 8 (-) -	di	01178	N (v) coor	dinate	524	3286	Source:	G15	Datum: NAD 85 FOM:
Observer (s) l	Name:/	4lden J.	Miller	Initials: 🕂	JM A	ffiliatio	n: <u>41</u>	3R I	۱ <u>ر ،</u> ۲	Phone: (503) 359-7525
									_	id 1/3, Upper 1/3, Ridgetop
Station Elevar Station Placer					iicie oik	<i>).</i> D ON	onv piam,	Dower	,	, , , , , , , , , , , , , , , , , , ,
Distance from	nem (chcle Survey Si	te Boundary:	, Outside	Units of Me	easure fo	or ALL	Horizonta	1 Distanc	es: Mt	eters
Station Canon	ov Cover (c	ircle one): 1	= 0 to 25%,	2 = 26 to 50	%, 3 =	= 51 to 7	5%, 4=	76 to 10	0%	
ENVIRONM			E.							∧(¬ ~
Official Sunr	ise Time: _	0510		. North Bei	nd b	legin Su	rvey Tim	e: <u>047</u>	- <u>></u>	and Survey Time: 0625
Temperature	at Sunrise:	3.5	^l Temp	erature at End	of Surv	ey:	.5	(circle or	ie) (C)	or F revised: 2 / 2000
TIME	VERTICA	L VIEWING	HORIZ.	AUDIBILITY	PR	ECIPITA	TION	MND	NOISE	NOTES
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The 1 14 14 14 14 15	D O. T.	an N - None 1	ſ— Tiacht Ma∷	te to conditions) Moderate, H =	: Heavv	()ther:	H = Hau. S	= 5now.	maicate n	illensity using same codes for fam & ros.
motion). 4 = 1	3-18 m ph (s	m, branches m	ove), 5 = 19-2	4 mph (ig. branc	ches æ si	res rustle m. t rees s	, sm. twigs tart to sway	move), 3 = 25-	- 8-12 mp 31 <mark>mph</mark> (lg	h (leaves & sm. twigs in constant b. branches in constant motion), 7 = 32-38
	\ r	40.4/		secondhan brook)						edrip, $V = Vehicle$, $W = Wind$, $O = Other$
(explain in No	otes).									The state of the s
Occurrence	的 在一直的 化二甲基磺胺	era voi a suspinies i		No.		Sequ	ence No	gruppine state		Reference No.
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Survey Visit to Protocol

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SURVEY ACYIVITY: Pata Rasigence Number Observer (s) Initials: Units of Measure (circle one): U.S. Month June Day **Note Significant Weather Ch Metric

Area Name: Cedy Area Various

Site Name / No:

Station Number:

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JTATE	DETEC	DETECTON TIME	INITIAL DETECTION	TYPE	AUDITORY	BIRDS	AH38	FLIGHT	BIRD HEIGHT	CLOSEST DIST. TO	DEPART FUGHT	FINAL	NOTES
ı- sr	NOITO		DIRECTION	'' '	VOCAL SERIES OTHER	SEEN	ROIV	DIRECTION	SEE N	BIRDS		DIRECTION	Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)
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WASHINGTON MARBLED MURRELET **FOREST SURVEY FORM**

Survey Visit to Protocol

Page 1 of 2

(Y or N, initials): y (AF)

Total Detections: ________

Species of Concern (circle one, details on last pg.): Y or (N)

	Month Jone Day 13 Year 2007 Lost Creek Station Number: 1
Station Elevation: 737 Ft / M Position on Slope (circle one): Inside, Outside Distance from Survey Site Boundary: Units of Measure for Al Station Canopy Cover (circle one): 1 = 0 to 25%, (2 = 26 to 50%), 3 = 51	Bottom/plain, Lower 1/3, Mid 1/3, Upper 1/3, Ridgetop LL Horizontal Distances: Meters

ENVIRONMENTAL CONDITIONS:

Official Sunrise Time: 0509

Table: North Bead

Begin Survey Time: 0424 End Survey Time: 0624

Temperature at Suprise:

Temperature at End of Survey: 9 (circle one) © or F

revised: 2 / 2000

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Cciling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤2.0 canopy height, LO = ≤1.25 canopy height, U = Unknown.

Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%. Vertical Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Horizontal Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Audibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection).

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Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other

(explain in Notes).				
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NASHINGTON MARBLED MURRELET FOREST SURVEY FORM	ET FOREST SURVEY FORM	Detections - This Side Page Total:	Pg. 2 of d
Observer (s) Initials: (M	Month June Day 13 Year 2002	Site Name/No: Lost Cree 6	
Ma Reference Number	Units of Measure (circle one): U.S. / Metric Station Number:	Station Number:	
URVEY ACYIVITY:	**Note Significant Weather Changes on Page 1**		0000 / 6 / 0000

SUR	VEY	SURVEY ACYIVITY:	7.		**Note	te Signifi	cant We	ather (Significant Weather Changes on Page 1**	ge 1**				revised: 2 / 2000
STATU		DETECTON TIME	INITIAL DETECTION	TYPE	AUDITORY		# BIRDS		INITIAL FLIGHT	BIRD HEIGHT	CLOSEST DIST TO	DEPART FIIGHT	FINAL	NOTES
J\$ -1/O	CTION #		DIRECTION		VOCAL SERIES Start End # OL	OTHER W/J	SEEN	VIOR	z	SEEN Canopy≈ 1.0	BIRDS SEEN (****) units	DIRECTION	DIRECTION	Heard Only Dist. To Birds (L= Loud, M≃ Moderate, F≃ Faint)
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200	1	4 6 9 0												bank life
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	E: H	= Heard On	v (no visual)	S = S	TYPE: $H = Heard Only (no visual)$. $S = Seen Only (silent) B = I$		Both Seen and Heard	Heard						

TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

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(Check Reverse Side When Using 2-Sided Forms)

Potental Predatory: CORA STJA

MI	١ (SHI	NG	TC	N			S	Survey	Visit to P	rotocol		Page <u>1</u> of <u>2</u>
					URRE	FΤ		(Y or N	, initials)	y (~	F	Total Detections:
					RVEY F			·	Species	of Conc	ern (circ	ᆜ le one, d	letails on last pg.): Y or N
ГО	רוי	E		JUI	/AF!!	CIXI			X.	N	Aonth -	Tune	Day 13 Year 2007
Aran	Νo	ma.	Ceda	- 1	River	Waterland	Site Name /	Numbe	r: Fu	1/e, (ree 4		Station Number:
Static	n l	ocat	ion -	T	21 N. B	l /0 ((circle one) / ${f E}$	or W	, S <u>6</u>	, Q	Q (1/16)	700	, or Q(1/4) / / / /
T I'T'N A	70	ma.	10 E	(v) c	oordinate: 6	01.326	N (v) coor	dinate:	524	3160	Source:	Grs	_ Datum: // 4083 FOM:
Ohse	rve	er (s)]	Name:	() <u>/</u>	Alden J.	Miller	Initials: A	JM A	ffiliatio	n: <u>AB</u>	R In	<u>ر.</u> ا	Phone: (503) 359-7525
Statio Statio Dista	on i	Eleva Place e fron	tion: _ ment (n Surv	9£ circle ey Sit	one): Inside	Position Pos	on on Slope (ci	rcle one	e): Bott	tom/plain, Horizonta	Lower	1/3, M	id 1/3, Upper 1/3, Ridgetop
							2 = 26 to 50	%, 3	= 31 to /	7376, 4-	70 10 10	070	
Offic	ial	Suni	ise Ti	me: _	ONDITIONS	Table							and Survey Time: 0624
Tem	per	ature	at Sur	rise:	8.5	Temp	erature at End	of Surv	ey: <u> </u>	0	(circle or	ne) (C /	or F revised: 2 / 2000
	TIM	E	VE	RTICA	L VIEWING	HORIZ.	AUDIBILITY	PR	ECIPITA	TION	WIND	NOISE	NOTES
			CEILING	CLOUD	VISIBILITY TO 2 CANOPY	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			
ol	+	2	141	3	Υ	Υ	Y	7	N	7	0	Z	Begin Survey
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Vert Hori Aud Prec Win moti mph Nois	id (izor ibil ipi d: (on) (w	Cover I Visi ntal V lity: N tation 0 = <1	: 0 = 0° bility: isibilit = Imp - Rair mph (3-18 rees moone, A	%, 1 = N = In y: N = naired (n & Fo calm), nph (so	33%, 2 = 66% apaired (detecti Impaired (detections may ag: N = None, 1 1 = 1-3 mph (1 m. branches ma = 39-46 mph (craft, B = Bird;	ons may be meetions may be to be missed du L = Light, M = leaves barely 1 ove), 5 = 19-2 twigs & sm. besong/calls, C	nissed due to core missed due to due to conditions) = Moderate, H = move), 2 = 4-7 n 4 mph (lg. brancoranches break). = Creek/water d	ditions), condition , Y = Un Heavy. nph (leav hes & sn	Y = Uni us), Y = U impaired Other: ces rustle in, trees s M = Mac	mpaired (or Jnimpaired (condition H = Hail, S , sm. twigs tart to sway chinery, P =	conditions a (conditions allow for = Snow. move), 3 c), 6 = 25-	allow for none allow for reliable de Indicate in a 8-12 mp 31 mph (lg	eliable detection), U = Unknown. or reliable detection), U = Unknown.
	CCI	ureno	e No.	1		Date Point			Sequ	ence No.	-1 - D		Reference No. 33 18 18 18 18 18 18 18 18 18 18 18 18 18

General Location

Data QC Initials

Data QC Date

Highest Biological Status

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Data Entry Date

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Deta Entry Initials

Protocol Review Initials

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Observer (s) Initials: Data Russence Number Units of Measure (circle one): U.S. / Month JUNE Day Metric Station Number: Site Name / No: Area Name: Find (24)

[YPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

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(Check Reverse Side When Using 2-Sided Forms)

WASHINGTON	
MARBLED MURRELET	
FOREST SURVEY FORM	A

MARBL	ED N	MURRE	_ET		(Y or N	initials)	Y Con	-]	Total Detections:
		RVEY F				Species	of Conc	ern (circ	le one, d	letails on last pg.): Y or (N)
. 0.1.							, , N	Month _	06	Day <u>/3</u> Year <u>2007</u>
Area Name:	Cedar	Cock h	latershed	Site Name /	Numbe	r: <u>C</u>	ester/	Vorth		Station Number: 3
Station I ocati	on - T	22 N. E	9	(circle one) (E	or W	, S /	6_, Q	Q (1/16)	NB	, of Q (1/4) <u>Sw</u>
UTM zone:	10_E(x)	coordinate:	600811	N (y) coor	dinate: _	52 Y9	32 <u>y</u>	Source:	GPS	Datum: NADB FOM:
		leil Jense							I	Phone: (63) 359-7525
· · · · · · · · · · · · · · · · · · ·				on on Slope (ci	rala an	s): Rott	om/nlain	Lower	1/3 M	id 1/3) Upper 1/3, Ridgetop
Station Eleva			\geq		iicie om	<i>5).</i> D ON	onv præm,	LIOWOL	1/3,	office and
		e one): In side ite Boundary:	- 1	Units of Me	easure fo	or ALL	Horizonta	l Distanc	es: Ne	ters
Station Canor	u Cover (circle one).	= 0 to 25%	2 = 26 to 50						
		CONDITION		, , , , , , , , , , , , , , , , , , , ,						
Official Sunr		-	 Table	North Be	-4 E	Begin Su	ı rvey Tim	e: <u>042</u>	<u>/</u> E	and Survey Time: <u>0624</u>
Temperature			l Temp	erature at End	of Surv	ey: <u>7</u>	5	(circle or	ne) (C)	or F revised: 2 / 2000
TIME		AL VIEWING	HORIZ	AUDIBILITY	PR	ECIPITA	TION	WIND	NOISE	NOTES
THAIC	T	VISIBILITY	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			
	CLOUD COYER CEILING	TO 2 CANOPY	10 100 1	200						
	ر و	CANOPY					,			
0424	HI 3	Y	<u> </u>	Y	N	N,	N	0	<u></u>	Regin Survey
0435	HI 3	<u>Y</u>	<u> Y</u>	Y	N	N	1/,-	0	C,R	ົ້າ /
0439	HI 3	Y_	Y	Υ	L	N	N	0	(,K_	Dazze
0446	HI 3	Υ	Y	Υ	N	N	N_	0	(, <u>S</u>	
p5 p7	HI 3	1-7	<u> </u>	<i>Y</i>	1/_	1	N	/	C,B C,R	
0509	HI 3	 		<u> </u>	N	N	N	1	C, B	Sunsise
0605	11/3	1 7	7	1	N	N/	N_	2	4.B	End Survey
0624	HI 3	1 7	· /	<i></i>	N	N	1/			LAD SURVEY
╟┼┼┼		 			<u> </u>	-			-	
Coiling: III	- Unlimited	(clear) HI = >	2 O canopy he	ight. MID = >1.	25 to < 2	.0 canop	y height, L	O = ≤1.25	canopy h	eight, U = Unknown.
AL 10	A A9/ 1	- 220/ 2 - 660/	3 ≈ 100%							reliable detection), U = Unknown.
Hammontal W	ioihilitus N	= Impaired (det	ections may be	e missed due to (conditioi	1S), Y = (Jnimpaired	(conoino	us anow r	of tenante detections, o continue
* * * * * * * * * * * * * * * * * * * *	Data 0. 1	Come NI - NIona	I— Tiαht Mi∶	e to conditions) Moderate, H =	= Heavv	Other:	H = Haii. S	= Snow.	indicate i	HERESTLY DESIRES SERVICE CORRES FOR TORM OF TABLE
A-14 - A .1	1 / 1	\ 4 1 2 L /	laaasaa kawalee s		nnn leat	/ec micrie	em ruide	THEOREM A	~ n=12 1110	th (leaves & sm. twigs in constant branches in constant motion), $7 = 32-38$
1. / 1. 1. 4.		$0 \sim 10.46 \text{ mmh}$	twice krem i	aranches haeak i						e drip, $V = Vehicle$, $W = Wind$, $O = Other$
Noise: N = No (explain in No		rcraft, B = Bird	song/calls, C	= Creek/water u	ramage,	IVI – IVIAC	Junery, 1	Kambian	., 1 1100	, unp,
	vija tek	Constant Constant	ermen d a estra	e dan madalah seriasan	and states		ence No.			Reference No. 1
Occurrenc	\$2.00 B	i	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	No.			rai Locatio			
Quad: Co	A. T.		Data Entry			Committee Committee	QC initials	10. 90. 10		Data QC Date 19 20
Protocol F	ven e. de a	ajs 💮		Review	Date_			Calda mate	Highes	st Biological Status
15 A. C.	13			** WDFW	/ DATAE	BASE U	SE ONLY			

Survey Visit to Protocol

Page <u>1</u> of <u>7</u>

WASHINGTON MARBLED MURRELET FOREST SURVEY FORM

Observer (s) Initials:

Data Reference Namber

Month 06 Day 13 Year 2007 Units of Measure (circle one): U.S. Metric Station Number: Site Name / No: <a>C Area Name: (Caba Detections - This Side Page Total

	YEV	SURVEY ACYIVITY:			**Note Signif	icant Wea	ther	**Note Significant Weather Changes on Page 1**	ge !**				revised: 2 / 2000
JTATS	этэо	DETECTON TIME	INITIAL	∃dYT	AUDITORY	BIRDS	/H38	FLIGHT	BIRD	CLOSEST	DEPART	FINAL	NOTES
0/I- sr	# NOILC		DIRECTION		VOCAL SERIES OTHER	SEEN	ROIV	DIRECTION	SEEN Canopy=	BIRDS SEEN	Ž	DIRECTION	Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)
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V. S		1410											17271
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		0 5 22											11/30 +1
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									•				LAG SULVEY
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TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

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(Check Reverse Side When Using 2-Sided For (Check Reverse Side When Using 2-Sided Forms)

WASHINGTON	
MARBLED MURRELET	
FOREST SURVEY FORM	A

MARBI	LED N	IURRE	LET		•	Y or in	i, initiais)	y Jo	16	Total Detections:
FORES	ST SU	RVEY F	ORM			Specie	s of Conc	ern (circ	ele one, o	letails on last pg.): Y or (N)
Area Name: - Station Locat UTM zone: _	Cedar Lecter ion - T_ 10 E(x) c	-Ceek la 22 N, I	Vatersher R 8 194828	N (y) coor	or W	, s <u>, , .</u> 52 y 7	26, Q	Ridge Q (1/16) Source:	N.W GPS	Day/4Year/
_ 		-	ev _	IIItiais. 70			<u>/ ///</u>	+ - LP.VI		
Station Eleva	tion:/05	3 Ft / (M Positi	on on Slope (c	ircle one	e): B ot	tom/plain,	Lower	1/3, M	lid 1/3, Upper 1/3) Ridgetop
Station Place			e, Outside							1
Distance fron	n Survey Si	te Boundary:	_NA	Units of M	easure f	or ALL	Horizonta	l Distanc	es: <u>Me</u>	tes
Station Cano	py Cover (c	ircle one): 1	1 = 0 to 25%	2 = 26 to 50	3:	= 51 to 1	75%, 4 =	= 76 to 10	00%	
ENVIRONM	IENTAL (CONDITION	<u>s</u> :	.n	1					,
Official Sunr	ise Time: _	0509		North Ben		_			_	End Survey Time: <u>0624</u>
Temperature	at Sunrise:	6.5	Temp	erature at End	of Surv	ey: <u>&</u>	ا ک	(circle or	ne) (C)	or F revised: 2 / 2000
TIME	CEILING	VISIBILITY TO 2 CANOPY	HORIZ. VIS. TO 100 M	AUDIBILITY TO 200 M	PR RAIN	FOG	OTHER	WIND	NOISE	NOTES
0424	HI 3	Y	Y	Y	N	N	N	1	B,C	Begin Survey
0521	HI 3	Y	Y	Ý	N	4	N	1	R,C	7
0533	HI 3	Y	4	Y	N	N	N	/	Ř,C	
0541	HI 3	Y	Y	Y	N		N	1	B,C	
0615	HI 3	Y	7	4	\mathcal{N}	4	N	/	B,C,A	
0624	HI 3	Y	Y	¥ .	N	<u>L</u>	N	<u>/</u>	Ř, L, A	End Survey
					<u> </u>					
								<u> </u>		
Cloud Cover: Vertical Visib Horizontal Vi	0 = 0%, 1 = oility: N = In isibility: N = = Impaired (33%, 2 = 66% npaired (detecti Impaired (detections may	, 3 = 100%. ions may be meetions may be to be missed du	uissed due to con e missed due to e to conditions) = Moderate, H =	nditions), condition , Y = Uni Heavy.	Y = Uni s), Y = U impaired Other: 1	mpaired (co Inimpaired (conditions H = Hail, S	onditions a (condition s allow for = Snow.	allow for none allow for reliable d Indicate in	eight, $U = Unknown$. eliable detection), $U = Unknown$. or reliable detection), $U = Unknown$. letection). ntensity using same codes for rain & fog. by deaves & sm. twics in constant

Survey Visit to Protocol

Page <u>1</u> of <u>2</u>

Wind: 0 = <1 mph (calm), 1 = 1-3 mph (leaves barely move), 2 = 4-7 mph (leaves rustle, sm. twigs move), 3 = 8-12 mph (leaves & sm. twigs in constant motion), 4 = 13-18 mph (sm. branches move), 5 = 19-24 mph (lg. branches & sm. trees start to sway), 6 = 25-31 mph (lg. branches in constant motion), 7 = 32-38mph (whole trees move), 8 = 39-46 mph (twigs & sm. branches break).

Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other

(explain in Notes).

Occurrence No.	Data Point No. Sequence No. Reference No.
Quad: Code	Photo Gode General Location
Data Entry Initials	Data Entry Date Data QC Initials Data QC Date
Protocol Review Initials	Réview Date Highest Biological Status :
	**WDFW DATABASE USE ONLY **

WASHINGTON MARBLED MURRELET FOREST SURVEY FORM

SURVEY ACYIVITY: Data Reference Number Observer (s) Initials: **Note Significant Weather Changes on Page I** Units of Measure (circle one): Month 06 _ Day_ Station Number: Site Name / No: Detections - This Side Page Total Area Name:

SUKVEY	SUKVEY ACYIVITY:			**Note Signifi	cant Wea	the	**Note Significant Weather Changes on Page I**	ge [**				revised: 2 / 2000
DETEC	DETECTON TIME	INITIAL DETECTION	∃dYT	AUDITORY	BIRDS	А НЭ8	INITIAL FLIGHT	ᆿ		DEPART FLIGHT	FINAL	NOTES
		DIRECTION		VOCAL SERIES OTHER	SEEN	AOIV.	DIRECTION	SEEN	BIRDS		DIRECTION	Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)
				Start End # OL W/J			-	Canopy= 1.0	units)			
	0424											Romin Circle Lit hullon
1	0424					\coprod		•			1	H1V1 / H2D F1
	0435							4				K+ DF II)
	0 4 38							4				141.KI./P
	1440							•				1.+ R/ CH
	0442							•				14 415-4
	9740											HPRAIL
	0000											1+ RFCR
	0504	1										I'A RIHI
	0509		<u> </u>									C. Mile
28:36°	0/5/1/8							•				カンフナバ
Articol	1250							•				K+ HAIN
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4 ''								•				
TVPE- H	TVDF: H = Heard Only (no rignal)	,	ĺ			1						

TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

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(Check Reverse Side When Using 2-Sided For (Check Reverse Side When Using 2-Sided Forms)

W	Δ	SI	41	NG	TC	N			5	Survey	Visit to P	rotocol		Page $\underline{1}$ of $\underline{\checkmark}$
_						URRE	LET		(Y or N	, initials):	Wa	-	Total Detections:
	\ E) E	:0	т (2116	OVEV E	OPM			Species	s of Conc	ern (circ	le one, d	letails on last pg.): Y or (N)
•	, , ,	`_			<i>-</i>	***	O 1 (111)				N	Aonth フ	me	Day $\frac{19}{\text{Year}} = \frac{2007}{2}$ Station Number: $\frac{2}{\sqrt{2}}$, of Q (1/4) $\frac{\sqrt{5}}{\sqrt{5}}$
Ares	N.	ame	a .	Tela	b R√	e Wate	rshed	Site Name /	' Numbe	er: /s	5. 1A			Station Number: 2
Stati	on	Lo	cati	on -	T .)) N. F	3 10	(circle one) (Ê	or w	, s <u> </u>	o, Q	Q (1/16)	Sur	_, of Q (1/4) <u>SF</u>
TTN	/ zc	ane	· 1	0 E	 (x) c	oordinate:	607568	N (y) coor	dinate:	5245	873	Source:	GPS	Datum: NAD 83 FOM:
Obs	erve	er (i Ma	Vame:	Co.	rey M. G.	innell	Initials: (//	6 A	 Affiliatio	n: <u>ABR</u>	Inc,	I	Phone: (503) 359-2525
Stat	on	Ele	evat	ion: _	873		M Positi	on on Slope (c						id 1/3, Upper 1/3 Ridgetop
Dist	anc	e fi	rom	Surv	ev Sit	e Boundary:	_	Units of Me	easure fo	or ALL	Horizonta	l Distanc	es: me	ten_
Stat	ion	Ca	nop	y Co	ver (c	ircle one):	= 0 to 25%,	2 = 26 to 50	3:	= 51 to '	75%, 4=	76 to 10	0%	
						ONDITION	<u>S</u> :							
						0509	Table	North Bon	d E	Begin Sı	ırvey Tim	e: 04d	<u> </u>	and Survey Time: 0634
Ten	Temperature at Sunrise: 5,5 0 Temperature at End of Survey: 5,5 0 (circle one) O or F revised: 2/2000													
	TIN	TF.		VE	RTICA	L VIEWING	HORIZ.	AUDIBILITY	PR	RECIPITA	TION	WIND	NOISE	NOTES
	1 114	-				VISIBILITY	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			·
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Ceiling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤ 2.0 canopy height, $LO = \le 1.25$ canopy height, U = Unknown.

Cloud Cover: $\theta = 0\%$, 1 = 33%, 2 = 66%, 3 = 100%.

Vertical Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Horizontal Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown.

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Precipitation - Rain & Fog: N = None, L = Light, M = Moderate, H = Heavy. Other: H = Hail, S = Snow. Indicate intensity using same codes for rain & fog. Wind: 0 = <1 mph (calm), 1 = 1-3 mph (leaves barely move), 2 = 4-7 mph (leaves rustle, sm. twigs move), 3 = 8-12 mph (leaves & sm. twigs in constant motion), 4 = 13-18 mph (sm. branches move), 5 = 19-24 mph (lg. branches & sm. trees start to sway), 6 = 25-31 mph (lg. branches in constant motion), 7 = 32-38 mph (whole trees move), 8 = 39-46 mph (twigs & sm. branches break).

Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (explain in Notes)

(explain in Noics).	
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Guad Code	Delta Point No: Sequence No Reference No Photo Code General Location
Dafa Entry Initials	Data Entry Date Data QC Initials Data QC Dates
Projectol Review Initials	Review Date Highest Biological Status
	** WOEW DATABASE USE ONLY **!

WASHINGTON MARBLED MURRELET FOREST SURVEY FORM	ET FOREST SURVEY FORM	Detections - This Side Page Total:	Pg. 2 of
Observer (s) Initials: $(m \ell)$	Month June Day 14 Year 2007	Area Name: Ledus Rose Inspendent Site Name / No. 155/19	
Data Referențe Numbera	Units of Measure (circle one): U.S. / Metric Station Number.	Station Number: 2	
SURVEY ACVIVITY:	**Note Cimificant Weather Pressed as Day 1**		

SUR	VEY,	SURVEY ACYIVITY:			**Note	Signific	ant Wea	ther C	Significant Weather Changes on Page 1**	e 1**				revised: 2 / 2000
STATUS -1/O	DETECTION #	TIME	INITIAL DETECTION DIRECTION	TYPE	AUDITORY VOCAL SERIES O Start End # OL V	OTHER W/J	# BIRDS SEEN	BEHAVIOR	INITIAL FLIGHT DIRECTION	BIRD HEIGHT SEEN Canopy=	CLOSEST DIST. TO BIRDS SEEN (***/**/) units	DEPART FLIGHT DIRECTION	FINAL DETECTION DIRECTION	nd Ond d, M= f
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TYPE	-H :	= Heard Only	v (no visual),	S = S	TYPE: $H = Heard Only$ (no visual), $S = Seen Only$ (silent), $B = I$	Both See	Both Seen and Heard	eard.						

TYPE: H = Heard Only (no visual), S = Seen Only (stlent), B = Both Seen and Heard.

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown. AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, -- = None or N/A. If both are heard write W / J.

(Check Reverse Side When Using 2-Sided Forms)

Potestial Predators: Bosplas Squirel

FORES Area Name: Station Locati UTM zone:	LED NOST SUI	RVEY F RVEY F RVET U Proordinate: 04	FORM Watersha R 10 011306	(circle one) (E) N (y) coord	/ Numbe	Species Souder: Co., s _ //	s of Conc th Fork edar o 2332	ern (circ Month \sim C ₁ Ver N Q (1/16) Source:	le one, d Tune Vorth M GPS	Page 1 of 2 Total Detections: 6 details on last pg.): Y or N Day 14 Year 7007 Station Number: 2 , of Q (1/4) 1/2 Datum: 1/40/3 FOM: 6 Phone: (503) 359-7525
Station Placer Distance fron	ment (circle n Survey Sit	one): Inside	e, Outside		easure fo	or ALL	Horizonta	l Distance	es: <u>M</u> e	id 1/3, Upper 1/3, Ridgetop
ENVIRONM Official Sunr	INVIRONMENTAL CONDITIONS: Official Sunrise Time: 0509 Table: North Bend Begin Survey Time: 0474 Temperature at Sunrise: 6.5 Temperature at End of Survey: 7.0 (circle one) (C) or F revised: 2/2000								nd Survey Time: 0624 or F revised: 2/2000	
TIME	VERTICA CLOUD CEILING	VIEWING VISIBILITY TO 2 CANOPY	HORIZ. VIS. TO 100 M	AUDIBILITY TO 200 M	PR RAIN	FOG	TION OTHER	WIND	NOISE	NOTES
0424 0509 0624	H1 3 H1 3	Y Y Y	Y Y Y	Y	722	727	222	- 00	222	Begin survey Survise End survey

Ceiling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤ 2.0 canopy height, $LO = \le 1.25$ canopy height, U = Unknown. Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%.

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Occurrence No.	Data Point No. Sequence No. Reference No.
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Protocol Review Initials	Review Date Highest Biological Status # WDFW DATABASE USE ONLY **
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WASHINGTON MARBLED MURRELET FOREST SURVEY FOR
ORM Detections

Data Reference Number Observer (s) Initials:

Month June Day 14

Units of Measure (circle one): U.S. / (Metric Food rear_

> Area Name: Ledar Rie Water Led This Side Page Total:

Site Name / No: South forh Cede

Ru Nota

Station Number:

SURVEY ACYIVITY: O / I - SUTATS DETECTION $\overline{\Box}$ DETECTON 47 <u>c</u> 6 5 DETECTION INITIAL **TYPE** Start VOCAL SERIES End AUDITORY # **Note Significant Weather Changes on Page 1** ဝ OTHER ٧/٧ BIRDS SEEN **BEHAVIOR** FLIGHT DIRECTION NITIAL BIRD HEIGHT SEEN Canopy= CLOSEST DIST, TO BIRDS SEEN units DIRECTION DEPART FLIGHT DETECTION DIRECTION FINAL (L= Loud, M= Moderate, F= Faint) Fra Besir Heard Only Dist. To Birds Steller Jag NOTES Survey revised: 2 / 2000 Survey

TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, - = None or N/A. If both are heard write W / J. heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N) AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type

Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown. BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (≤1.0), B = Circle At or Below Canopy (≤1.0), L = Seen Landing in or (Check Reverse Side When Using 2-Sided Forms)

WASHINGTON MARBLED MURRELET **FOREST SURVEY FORM**

Survey Visit to F	Protocol	Page

(Y or N, initials): WCM

Total Detections:

<u>1</u> of)

Species of Concern (circle one, details on last pg.): Y or (N

				Month Jone	Day / J	_ Year <u> </u>
Area Name: Cedar River	Watershed	Site Name / Number:	Findle,	(1ee 4	Station Nur	mber:
Station Location - T 31		(circle one) (E) or W, S	6,	QQ (1/16) <u>∫</u> ₩	_, of Q (1/4) _	NE
UTM zone: 10 E (x) coordina		N (y) coordinate: 53		Source: LPJ	_ Datum: <u>NAV</u>	'8' FOM:
Observer (s) Name: Lorey					Phone: (54)	359-7525

Station Elevation: 958 Upper 1/3, Ridgetop Ft / Position on Slope (circle one): Bottom/plain, Lower 1/3, Mid 1/3,

Station Placement (circle one): Inside, Outside)

Distance from Survey Site Boundary: _____ Units of Measure for ALL Horizontal Distances: ______ Mercy

Station Canopy Cover (circle one): (1 = 0 to 25%), (2 = 26 to 50%), (3 = 51 to 75%), (4 = 76 to 100%)

ENVIRONMENTAL CONDITIONS:

Table: North Bond Begin Survey Time: 0424 End Survey Time: 0628 Official Sunrise Time: 0509

Temperature at End of Survey: 7 (circle one) (C) or F Temperature at Sunrise:

Γ	TII	ΜE		VE	RTICA	L VIEWING	HORIZ.	AUDIBILITY	PR	ECIPITA	TION	WIND	NOISE	NOTES
				CEILING	CLOUD COVER	VISIBILITY TO 2 CANOPY	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			
0	4	J	y	H1	3	У	У	У	L	N	N	0	N	Begin Survey
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v	Y	4	2	ΗI	3	N	У	N	H	N	N	0	þ	heavy rain impairs hearty
0	5	o	5	HI	3	У	У	y	L	N	N	0	N	rain no longe impairs
0	5	7	ŝ	HI	3	y	У	7	M	N	N	ø	N	moderate ruin
0	5	2	4	HI	3	N	У	N	14	N	N	Ø	p	heavy rain impaining
v	8	3	y	l.	3	N	N	N	H	Y	N	0	p	for rolls in
0	5	y	5	HI	3	У	У	y	17	N	N	0	N	tog years / ruin devenes
o	6	0	3	HI	3	y	4	4	Ŀ	N	N	0	N	light rush
0	6	2	8	#1	3	N	У	N	14	N	N	٥	P	heavy run impairing

Ceiling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤2.0 canopy height, LO = ≤1.25 canopy height, U = Unknown.

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Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (evolain in Notes)

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WASHINGTON MARBLED MURRELET FORES	ET FOREST SURVEY FORM	Detections - This Side Page Total: O Pg	Pg. 2 of 2
December (2) Training 1.		Area name: Veder A. C. Layer 1 hog	
Josepher (s) minals. C//	Month Jon C Day / J Year a 60/ Site Name / No. /14/6, (rec	Site Name / No. 1-1-4/e, (recy	
oda Reference Number	Units of Measure (circle one): U.S. / (Metric) Station Number:	Station Number:	
SURVEY ACYIVITY:	**Note Significant Weather Changes on Page 1**	191	revised: 2 / 2000

						20101					2					ICVISCU. 2 / 2000	.
STATU	DETE	DETECTON		TYPE	AUE	AUDITORY	<u> </u>	# BIRDS	BEHA	INITIAL FLIGHT	BIRD HEIGHT			DEPART	FINAL	NOTES	
JS - I	CTIOI				VOCAL SERIES		SE OTHER			DIRECTION	SEEN	BIRDS		DIRECTION	DIRECTION	Heard Only Dist. To Birds (L= Loud, M= Moderate, F≃ Faint)	
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TYPE	: H	= Heard Onl	TYPE : $H = \text{Heard Only (no visual)}$, $S = \text{Seen Only (silent)}$, $B =$) = S	een Only (sil	lent), B = B(Both Seen and Heard	and H	eard.								71

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N).

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(Check Reverse Side When Using 2-Sided Forms)

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FC	RES	T S	IIR\	JFY	FORM

MARBLED MURRELET (Y or N, initials): W (rt) Total Detections: O (v)										
FOREST SURVEY FORM Species of Concern (circle one, details on last pg.): Y or (N) Month Of Day / Year 7007										
			, ,	1			, N	Month _	06	Day 15 Year 2007
Area Name	Coda	(Ceck	Watersh	Site Name	Numbe	er: _ <i>L</i> /	ndsay	Ceek		Station Number:
Station Locati	on - T	21 N. I	R 9	(circle one) $\widehat{\mathbf{E}}$	or W	$,s_{-}^{\prime}$	(Q (1/16)	SE_	_, of Q (1/4)
UTM zone	10 E(x)	coordinate:	69172	N (y) coor	dinate:	52437	87	Source:	GPS	Datum: <u>NAD 83</u> FOM:
Ohearver (s) N	Jame: 1	leil lense	~ <u> </u>	Initials: 1	E) A	ffiliatio	n: ABB	2 Inc	I	Phone: (503) 359-7525
			_				<u> </u>		R	
Station Elevat	tion:	/ Ft / (M Positi	on on Slope (c	ircle one	e): Bot	tom/plain,	Lower	1/3, (M	id 1/3, Upper 1/3, Ridgetop
Station Placer	nent (circl	e one): Insid	Outside						,	1
Distance from Survey Site Boundary: WA Units of Measure for ALL Horizontal Distances: Meters										
Station Canopy Cover (circle one): $1 = 0$ to 25%, $(2 = 26 \text{ to } 50\%)$, $(3 = 51 \text{ to } 75\%)$, $(4 = 76 \text{ to } 100\%)$										
ENVIRONMENTAL CONDITIONS: Official Sunrise Time: 0509 Table: North Bed Begin Survey Time: 0424 End Survey Time: 0624										
Official Sunr	ise Time:	0509								
Temperature	at Sunrise:	8.5	[]] Temp	erature at End	of Surv	ey: <u>//, /</u>	2"	(circle o	ne) (C)	or F revised: 2 / 2000
TIME	VERTIC	AL VIEWING	HORIZ.	AUDIBILITY	PR	RECIPITA	TION	WIND	NOISE	NOTES
,,,,,,			VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			
	CLOUD COVER CEILING	TO 2 CANOPY					<u> </u> -			
	G R	CANOPI				ļ	, , ,			
0424	HI 3	Y	Y	N	<i>H</i>	N	N,	1	T,C	Regin Survey
0441	HI 3	Y	Υ	N	<i>H</i>	N	N	/	T, C, B	
0501	HI 3	Y	Υ	Υ,	<u></u>	N	N	/	T, L, B, A	7
0509	HI 3	Y	Υ	Υ	4	N	N	<u>/</u>	T,L,KA	Sunlise
0515	HI 3	Y	Υ	N_	H	N	<i>N.,</i>	/	T, C, R, A	
0547	$HT \mid 3$	Y	Υ,	: 6. <u>Y</u>	1	N	N	/	7, C,K,A	
0607	HI 3	<u>Y</u>	Υ	Υ	M	1/_	N	<i>/</i>	T,C,KA	
0624	HI 3	<u> </u>	<i>Y</i>	<i>Y</i>	<u> </u>	<u> </u>	<i>N</i>	/	4,C,KA	En Survey
						 		ļ		, , , , , , , , , , , , , , , , , , ,
			<u> </u>	<u> </u>	<u> </u>	1				1
Classed Commen	$\Delta = \Delta \theta / 1$	~ 220% 2 = 660%	3.2 = 100%							cight, U = Unknown.
\$7451 \$72-2b	2124 NI — I	manimad (datant	ione may be n	nissed due to cor	iditions),	Y = Uni	mpaired (co	onditions :	allow for r	eliable detection), U = Unknown.
A 351.2554 BT	7	(dotootions mo	ı, ha miccəd dı	(agorthogo at an	. V = lln	ennaire.	teondition	oi wolls a	г генаон с	or reliable detection), U = Unknown. letection).
Precipitation	- Rain & F	$\mathbf{N} = \mathbf{N} = \mathbf{N} $	L = Light, M	= Moderate, H = move) 2 = 4.7 r	= Heavy. nnh (leav	Other: . es rustle	H = Hau, S . sm. twigs	= 5лоw. move). 3	moneate n = 8-12 mp	h (leaves & sm. twigs in constant
motion). $4 = 1$	3-18 mph (sm. branches m	ove), 5 = 19-2	4 mph (ig. branc	ches & si	n. trees s	tart to sway), 6 = 25-	31 mph (lg	g. branches in constant motion), $7 = 32-38$
mph (whole tr	ees move),	8 = 39-46 mph moraft B = Bird	(twigs & sm. l song/calls. C	branches break). = Creek/water d	rainage,	M = Mac	chinery, P =	Rain/hai	l, T = Tree	e drip, $V = Vehicle$, $W = Wind$, $O = Other$

Survey Visit to Protocol

(explain in Notes) Data Point No. Occurrence No. Sequence No. Reference No General Location Quad Code Photo Code Data QC Initials Data QG Date Date Entry Initials Data Entry Date Highest Biological Status Review Date
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VASHINGTON MARBLED MURRELET FOREST SURVEY FORM	ET FOREST SURVEY FORM	Detections - This Side Page Total:	Pg. 2 of 2
observer (s) Initials: ME)	Month 06 Day // Year 2007	Site Name / No. Linkey (Ceck	
dia Kelerande Nipolika 💮 💮 💮	Units of Measure (circle one): U.S. / Metric > Station Number:	Station Number:	
URVEY ACYIVITY:	**Nota Cinnificant Weather Change on Dece 1**		

SUR	VEY	SURVEY ACYIVITY		l li		*	**Note Sign	uficant W	eather	Significant Weather Changes on Page 1**	ge 1**				revised: 2 / 2000
STATUS -1/O	DETECTION #	DETECTON TIME	INITIAL DETECTION DIRECTION	TYPE	VOCA Start E	AUDITORY VOCAL SERIES art End # OL	≿ ित	SEEN SEEN	BEHAVIOR	INITIAL FLIGHT DIRECTION	BIRD HEIGHT SEEN Canopy=	CLOSEST DIST. TO BIRDS SEEN (DEPART FLIGHT DIRECTION	FINAL DETECTION DIRECTION	NOTES Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)
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1YFE: H = Heard Unly (no visual), S = Seen Unly (silent), B = Both Seen and Heard.
AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N).

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BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided Forms)

Station Locati	ED M T SUI Cedar 1	RVEY F River Wa	ORM Hersher 2 8 36 282	(circle one)	'Numbe	Y or N. Species r: Rac , s J	N <u>K Cree</u> 4, Q1 3 714	Y Contern (circulation) Month J K Q (1/16)	le one, d Une M PS	Page 1 of 2 Total Detections: 9 etails on last pg.): Y or N Day 15 Year 2007 Station Number: 1 of Q (1/4) NE Datum: MDBJ FOM: 1 Phone: (503) 359-7525
Station Elevat Station Placer Distance from	tion: <u>9/9</u> ment (circle a Survey Sit	Ft / (Inside the Boundary:	Position Outside	on on Slope (c	ircle one	e): Bott	om/plain, Horizonta	Lower	1/3, (Mi	id 1/3, Upper 1/3, Ridgetop
ENVIRONM Official Sunr Temperature	IENTAL C	conditions 0509	<u>S</u> : Table	North Be	بر ه امن	Begin Su	rvey Time	e: <u>04</u>	ZI_E	nd Survey Time: 0628 or F revised: 2 / 2000
TIME		L VIEWING VISIBILITY TO 2 CANOPY	HORIZ. VIS. TO 100 M	AUDIBILITY TO 200 M	PR RAIN	ECIPITA FOG	TION :	WIND	NOISE	NOTES
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Cloud Cover: Vertical Visit	: 0 = 0%, 1 = oility: N = In	: 33%, 2 = 66% npaired (detect) : Imported (det	o, 3 = 100%. ions may be n ections may b	sissed due to con	nditions), condition	Y = Uni s), Y = (mpaired (co Inimpaired	onditions a	illow for roas	cight, U = Unknown. cliable detection), U = Unknown. r reliable detection), U = Unknown. etection).

Precipitation - Rain & Fog: N = None, L = Light, M = Moderate, H = Heavy. Other: H = Hail, S = Snow. Indicate intensity using same codes for rain & fog. Wind: 0 = <1 mph (calm), 1 = 1-3 mph (leaves barely move), 2 = 4-7 mph (leaves rustle, sm. twigs move), 3 = 8-12 mph (leaves & sm. twigs in constant motion), 4 = 13-18 mph (sm. branches move), 5 = 19-24 mph (lg. branches & sm. trees start to sway), 6 = 25-31 mph (lg. branches in constant motion), 7 = 32-38 mph (whole trees move), 8 = 39-46 mph (twigs & sm. branches break).

Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (explain in Notes)

(CXDIAIN IN INDICS).		
Occurrence No	Data Point No. Sequence No. Reference No. 3	
Quad-Code	Photo Code General Location Data QC Date Dat	
Data Entry Initials Protocol Review Initials	Review Date Highest Biological Status	one at the
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WASHINGTON MARBLED MURRELET FOREST SURVEY FORM	ET FOREST SURVEY FORM	Detections - This Side Page Lotal: Bg. 2 of 2
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Observer (s) Initials:	Month June Day 15 Year 607	Year 607 Site Name / No: Rack Creek
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	RVEY	SURVEY ACYIVITY					*	**Note S	Signific	ant We	eather	Significant Weather Changes on Page 1**	це 1**				revised: 2 / 2000
STATUS -1/O	DETECTION #	DETECTON TIME	INITIAL DETECTION DIRECTION	TYPE	VO	G GA	AUDITORY VOCAL SERIES art End # OL	≿ ज त	OTHER W/J	# BIRDS SEEN	BEHAVIOR	INITIAL FLIGHT DIRECTION	BIRD HEIGHT SEEN Canopy=	CLOSEST DIST. TO BIRDS SEEN ()	DEPART FLIGHT DIRECTION	FINAL DETECTION DIRECTION	NOTES Heard Only Dist, To Birds (L= Loud, M≃ Moderate, F= Faint)
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AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, -- = None or N/A. If both are heard write W / J. seen Only (silent), $\mathbf{b} = \mathbf{Both}$ seen and Heard.

(Check Reverse Side When Using 2-Sided Forms) BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

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WASHINGTON
MARBLED MURRELET
FOREST SURVEY FORM

MA	RBI	_EI	M C	URRE	_ET		(Y or N	, initials):	Y Cm	<i>[</i> -	Total Detections:
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Th		10-1	- 0. The	A N - None I	⊤Liαht Mi≘	e to conditions) Moderate, H =	Heavv	Other:	H = Hail. S	= Snow.	Indicate ii	illelizity fightig same codes for ram or rog.
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Noise (expla	: N = N ain in N	one, A otes).	= Air	craft, B = Bird	song/calls, C	= Creek/water o	rainage,	vi – iviac	iniciy, r –	Kanvian	, 1 1100	uip, , voilioto,
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WASHINGTON MARBLED MURRELET FOREST SURVEY FORM

SURVEY ACYIVITY: Data Reference Number Observer (s) Initials: Units of Measure (circle one): Month Of . Day ∠ 19 U.S. Year 2007 / Metric Station Number. Site Name / No: Area Name: (edo)

Detections - This Side Page Total

	YΞY	SURVEY ACYIVITY:			**Note Signif	icant Wes	ther	**Note Significant Weather Changes on Page 1**	ge]**				revised: 2 / 2000
SUTATS	DETECTI	DETECTON TIME	INITIAL DETECTION DIRECTION	∃d∤T	AUDITORY	BIRDS SEEN	NAH38	INITIAL FLIGHT DIRECTION	BIRD HEIGHT SEEN	CLOSEST DIST. TO BIRDS	DEPART FLIGHT DIRECTION	FINAL DETECTION DIRECTION	NOTES Heard Only Diet To Rink
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TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, -- = None or N/A. If both are heard write W / J.

Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown. BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (≤ 1.0), B = Circle At or Below Canopy (≤ 1.0), L = Seen Landing in or (Check Reverse Side When Using 2-Sided Forms)

WASHINGTON	
MARBLED MURRELET	
FOREST SURVEY FOR	M

			FI		URRE	FT		(Y or N	, initials)	· Y Con	<u>~</u>]	Total Detections:
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Observ	/er (s) N	lame	Ne	eil Jense	n	Initials: <u>//</u>	EL A	ffiliatio	n: <i>ARK</i>	Inc	I	Phone: (503) 359-7525
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Survey Visit to Protocol

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Pg. 2 of 2 Detections - This Side Page Total: Area Name: Cedar Site Name / No. Station Number: Units of Measure (circle one): U.S. / Metric Year 2007 Day 20 Month 06 Data Reference Vanaber 1 SURVEY ACYIVITY Observer (s) Initials:

revised: 2 / 2000 Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint) NOTES Real Survey Z (2) HALLO ACRCH 1H/12 + 25/100 £1/45h DETECTION DIRECTION FINE DEPART FLIGHT DIRECTION CLOSEST DIST. TO BIRDS SEEN ŹĘ Canopy= BIRD HEIGHT SEEN **Note Significant Weather Changes on Page 1** INITIAL FLIGHT DIRECTION IYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard **BEHAVIOR** # BIRDS SEEN OTHER C/W AUDITORY 占 VOCAL SERIES * End Start INITIAL DETECTION DIRECTION DETECTON TIME 8 0 0 ¢ 6 7 6 **DETECTION #** STATUS -1/0

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, -- = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

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WASHINGTON"		Survey V	isit to Pr	otocol		Page 1 of 2				
MARBLED MURRELI	ET	(Y or N,	initials):	y (M	<u>F</u>	Total Detections:				
FOREST SURVEY FO	NORA	Species	of Conce	rn (circl	le one, d	etails on last pg.): Y or N				
<u>.</u> . 1		South	FOCK M	onth _	une	Day <u>10 Year 200 +</u>				
Area Name: Cear River Water	Site Name	Number:	edur k	Civer_	Northe	Day 70 Year 7007 Station Number: 1				
Station Location - T <u>\frac{\frac{1}{2}} N, R</u>	(circle one)	or W , S	, QQ	(1/16)	r De	, of Q (1/4) <u>SE</u>				
UTM zone: 10 E (x) coordinate: 6/	N (y) coor	dinate: <u>547/7</u>	106	Source: 5	(91)	hone: (503) 359-7525				
Observer (s) Name: Alden J. N	Initials:	Affiliation	: /+51	1/\(P	hone: (<u>503) 557 1303</u>				
		ircle one): Botto	om/plain,	Lower	1/3, Mi	id 1/3, Upper 1/3, Ridgetop				
Station Placement (circle one): Inside	Outside	easure for ALL F	Jorizontal	Dietance	as Mt	eters				
Distance from Survey Site Boundary:	Onits of Mi	easure for ALL r	30/2 (A = '	76 to 10	790					
Station Canopy Cover (circle one): 1=			•			······································				
ENVIRONMENTAL CONDITIONS: Official Sunrise Time: 05/0	Table North Ber	d Regin Sur	vev Time	040	2 E	nd Survey Time: 06 25				
Temperature at Sunrise: 10.0	Temperature at End									
				WIND		NOTES				
TIME VERTICAL VIEWING	HORIZ. AUDIBILITY VIS. TO	PRECIPITAT		VVIIVD	NOISE					
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Calling III = Unlimited (clear). HI =>20	canery height MID = >1.	.25 to < 2.0 canopy	height, LO	= ≤1.25	canopy he	eight, U = Unknown.				
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Vertical Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Horizontal Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Audibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection).										
The state of the Name I and I am I a	· Light M = Moderate H :	: Heavy (Mher: H	I= Ha⊪ S⁼	= Snow.	indicate ii	Religity using same codes for family tog.				
Wind: 0 = <1 mph (calm), 1 = 1-3 mph (lea motion), 4 = 13-18 mph (sm. branches move		man (legger turtle	em ronde n	HIVE:	- 0-12 mm	HICAVCS OF SHIP THIES IN COMMING				
mph (whole trees move), 8 = 39-46 mph (tw Noise: N = None, A = Aircraft, B = Bird son	iae & em hmnchet hægk).									
(explain in Notes).	agreatis, C Citots mater o	8*,				CONTROL OF THE PROPERTY OF THE				
Occurrence No D	eta Point No:	- Segue	nce No	elemend a sk	1 - 2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	Reference No.				
	hoto Code	Carrier to the second of the second	el Location	1 - 4 2	444					
	eta Entry Date	CONTRACTOR AND	C Initials		and the same of th	Data QC Dale 3				
Protocol Réview Initials	Review •• MOEW	Date V DATABASE US	E ONLY **		Highes	t Biological Status				
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WASHINGTON MARBLED MURRELET F(T FOREST SURVEY FORM	Detections - This Side Page Total: Pg. Zof
1	<i>y</i>	WATESTE
Observer (s) Initials:	Month JUNE Day 60 Year 600 +	Site Name / No South Fork Cedar River
Data Receive Number 1	Units of Measure (circle one): U.S. / Metric Station Number:	Station Number:
SURVEY ACYIVITY:	**Note Significant Weather Changes on Page 1**	revised: 2/2

SURV	SURVEY ACYIVITY:	Υ:		**Note Sign	uficant We	ather	**Note Significant Weather Changes on Page 1**	3e 1**				revised: 2 / 2000
	DETECTON #	NINITIAL DETECTION DIRECTION	TYPE	AUDITORY VOCAL SERIES OTHER Start End # OL W/J	R BIRDS SEEN	BEHAVIOR	INITIAL FLIGHT DIRECTION	BIRD HEIGHT SEEN Canopy=	CLOSEST DIST, TO BIRDS SEEN (units	DEPART FLIGHT DIRECTION	FINAL DETECTION DIRECTION	NOTES Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)
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76 P. W.								•				
TVPE.	H = Heard On	hy (no vienal)		TVPF. H = Heard Only (no vienn) S = Som Only (villant) B = Dat	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							

heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N).

AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided Forms) AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, -- = None or N/A. Indicate the Vocal type TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

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MARBL	.ED M	URRE	_ET				, initials):			
FORES	T SUF	RVEY F	ORM			Species	of Conce	ern (circ	le one, đ	etails on last pg.): Y or (N)
							. N	Ionth 🗻	<u>une</u>	Day 2 Year 2007
Area Name:	Cedar 1	River Wa	itershe.	Site Name /	Numbe	er: <u> </u>	rester	Nor	th_	Station Number: 2
Station Location	on - T	21 N. F	9 ((circle one)) or W	, s <u>/</u>	<u>6</u> , q	Q (1/16)	SE	Station Number: 2 , of Q (1/4) NE
LITM zone: 1	0 F(x) co	ordinate.	60/264	N (v) coor	dinate:	5249	53/	Source:	GPS	Datum: NAD &3 FOM:
Ohearver (s) N	Iame: 4	Alden I	Miller	Initials: A	77n Ā	ffiliatio	n: Al	BR I	nc. I	Datum: NAD 83 FOM:
									<i></i>	id 1/3, Upper 1/3, Ridgetop
Station Placen	nent (circle	one) Chride	Outside							,
Distance from	Survey Sit	e Boundary:		Units of Me	easure fo	or ALL	Horizonta	l Distanc	es: <u>/11</u>	eters
Station Canop	y Cover (ci	ircle one): 1	= 0 to 25%,	2 = 26 to 50	%, 3=	= 51 to 7	5% 4 =	76 to 10	0%)	
ENVIRONM			-				·	_		0125
Official Sunri	ise Time: _	0510	Table	North ba	nd B	egin Su	rvey Time	e: <u>040</u>	<u>></u> E	and Survey Time: 0625
Temperature a	at Sunrise:	8.5	Temp	erature at End	of Surv	ey: <u> </u>	. D 0	(circle or	ie) (C) (or F revised: 2 / 2000
		L VIEWING	HORIZ	AUDIBILITY	PR	ECIPITA	MOIT	WIND	NOISE	NOTES
TIME	· · · · · · · · · · · · · · · · · · ·		VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			,
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]	6 80	CANOPY								
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0510	#13	Y	Y	Υ	7	N	7	1	2	Sunrise
0559	HI Z	Ÿ	γ	Y	7	N	N	<u> </u>	2	
0611	H1 1	Ÿ	Y	Y	N	N	N	7	N	
	625 HI I Y Y Y N N N Z N End Survey									
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Ceiling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to \leq 2.0 canopy height, LO = \leq 1.25 canopy height, U = Unknown.										
Cloud Cover: $0 = 0\%$, $1 = 33\%$, $2 = 66\%$, $3 = 100\%$. Vertical Visibility: $N = 1$ Impaired (detections may be missed due to conditions), $Y = 1$ Unimpaired (conditions allow for reliable detection), $Y = 1$ Unimpaired (conditions allow for reliable detection), $Y = 1$ Unimpaired (conditions allow for reliable detection), $Y = 1$ Unimpaired (conditions allow for reliable detection), $Y = 1$ Unimpaired (conditions allow for reliable detection), $Y = 1$ Unimpaired (conditions allow for reliable detection).										
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10. 1.14.41	Data & Da	- N - None I	— Light Mis	= Moderate H =	: Heavv	Other:	HI≃ Hatt.S	= Snow.	indicate ii	mensity using same codes for ram of rog.
Wind: $0 = <1$	mph (calm), 3-18 mph (si	1 = 1-3 mph ()	eaves barely 1000	move), 2 = 4-7 n 4 mph (lg. branc	nph (leav hes & sr	es rustie n. trees s	, sm. twigs tart to sway), 6 = 25-3	- 0-12 mp 31 mph (lg	h (leaves & sm. twigs in constant branches in constant motion), 7 = 32-38
1 / 1 - 1 - 4	0	- 20 46 mah 6	tuniere Prem b	ranches hreak)						drip, $V = Vehicle$, $W = Wind$, $O = Other$
(explain in No		rait, b - bliu	song/cans, C	- CICCIO Water G	ininigo,				,	
		SECTION SECTIO	The second secon	A.W. C. T.	ene secono					Reference No.
Decurrence	San Carlotte		Data Point	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	and the	4.134	ence No; <u>.</u> rai Locatio	n	स्त्रम स्थाप	
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WASHING

Detections - This Side Page Total: 1 Pg. 2 of 2 Area Name: Ledar River Watershul CASA POSA Site Name / No: Station Number: Units of Measure (circle one): U.S. //Metric Month June Day 21 Year 2007 Data Reference Numbers Observer (s) Initials: CIIDI/EV A CVIVI

	DETECTON TIME		TYPE	AL	AUDITORY		# BIRDS	BEHA	INITIAL FLIGHT	BIRD HEIGHT	CLOSEST DIST. TO	DEPART	FINAL	NOTES
JION	CTION	DIRECTION		VOCAL SERIES	RIES	OTHER	SEEN	VIOR	DIRECTION	SEEN	BIRDS SEEN	DIRECTION	DIRECTION	Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)
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AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided Forms)

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Protogol Review Initials

WASHINGTON			S	Survey	Visit to P	rotocol	٠	Page 1 of Z		
MARBLED MURRE	FT		(Y or N	, initials):	N CM	<u>[</u>]	Total Detections:		
FOREST SURVEY F								etails on last pg.): Y or N		
FUREST SURVETT	CIXIV			- [Day ZZ Year Z007		
Area Name: Cedar River	NaterSh	le Site Name /	Numbe	r. 15	5.1A			Station Number:		
	- 10	· · · · · · · · · · · · · · · · · · ·	**/	e 20		0 (1/16)	NW	of 0 (1/4) SE		
IITM zone: 10 E(x) coordinate:	607 495	N (y) coor	dinate:	544 59	165	Source:	6P3	Datum: NAD 83 FOM:		
Station Location - T <u>JJ</u> N, I UTM zone: 10 E (x) coordinate: Observer (s) Name: Alden J. /	Willer	Initials: A	JM A	ffiliatio	n: <u>AB</u>	RI	ic. I	Phone: <u>503</u> 359-7525		
Station Elevation: 894 Ft /							-			
Station Placement (circle one) (Inside	Outside						_			
Distance from Survey Site Boundary:	ے 	Units of Me	easure fo	or ALL	Horizonta	l Distanc	es: <u>M</u> (EACKS		
Station Canopy Cover (circle one): 1	= 0 to 25%,	2 = 26 to 50	‰, 3 =	= 51 to 7	5%, 4=	76 to 10	0%			
ENVIRONMENTAL CONDITION	D.							194		
Official Sunrise Time: 0510	Table	Worth BE	nd B	egin Su	rvey Time	e: <u>040</u>	<u> </u>	nd Survey Time: 0655		
Temperature at Sunrise: 9	Temp	erature at End	of Surv	ey: 1 .	<u> 5 °</u>	(circle or	ne) (C	or F revised: 2 / 2000		
TIME VERTICAL VIEWING	HORIZ.	AUDIBILITY	PR	ECIPITA	TION	CINIW	NOISE	NOTES		
	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER					
C DC VISIBILITY TO 2 CANOPY	10 100 101	200 141	100114		01/1 L IX			l l		
S S CANOPY										
0425413 Y	Y	Υ	L	7	Ν		N	Begin Survey		
0448 MID 3 N	_Υ	Υ	<u> </u>	7	7	<u> </u>	N			
0452 LO3 N	Y	Υ	<u> </u>	<u>L.</u>	7	1	N	Distant fog		
0456403 N N Y L L N 1 N 1 SHANSE										
0510M173 N	Y	Y	<u> </u>	N	N	1	N	Sunrise		
0625H13 Y	<u>Y</u>	Y	N	N	N	1	N			
0655H13 Y	Υ	Y	N	N	<u>N</u>	<u> </u>	L N	End Survey		
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Ceiling: UL = Unlimited (clear); HI =>2.0 canopy height, MID =>1.25 to ≤ 2.0 canopy height, LO = ≤1.25 canopy height, U = Unknown. Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%. Vertical Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection). U = Unknown.										
Vertical Visibility: N = Impaired (detect Horizontal Visibility: N = Impaired (det	one may be n	nissed due to cor	iditions), condition	$\mathbf{Y} = \mathbf{U}$ ni 18). $\mathbf{Y} = \mathbf{I}$	mpaired (co Inimpaired	onditions a (condition)	allow for r as allow fo	eliable detection), U = Unknown. or reliable detection), U = Unknown.		
a serence of the color of the c	. ha miccod di	in to conditione)	. V = Lin	nanaren.	reamound	s arow to		eccions.		
Precipitation - Rain & Fog: N = None, Wind: 0 = <1 mph (calm), 1 = 1-3 mph (Ansiec harets:	movel 7 = 4 - 7 f	ททท แคลง	es mistie	SID. 1W125	шоусі. э	- 0-12 mp	ii (teaves be sin, twigo in donstant		
motion), 4 = 13-18 mph (sm. branches m	ove), 5 = 19-2	4 mph (lg. branc sranches break)	thes & sn	n. trees s	art to sway), 6 = 23	ուրու (դ <u>ա</u>	g. Granches in constant monony, 7 32 30		
Noise: N = None, A = Aircraft, B = Bird	song/calls, C	= Creek/water d	rainage, l	M = Mac	hinery, P =	Rain/hail	i, T = Tree	drip, $V = Vehicle$, $W = Wind$, $O = Other$		
(explain in Notes).	MANY PROPERTY	a and a second second second	Na west	(30 00 4 7 7 6 7 1	a area or as a c					
Occuprence No.	Data Point	No	-1	- Sequ	ence No: _		edericed	Reference No. 188 1 1		
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Detections - This Side Page Total: Area Name: (

Station Number:

Site Name / No:

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STATUS -1/O	DETECTION #	DETECTON	INITIAL DETECTION DIRECTION	TYPE	AUDITORY VOCAL SERIES Start End # OL	FORY ES OTHER OL W/J	BIRDS SEEN	BEHAVIOR	INITIAL FLIGHT DIRECTION	BIRD HEIGHT SEEN Canopy=	CLOSEST DIST. TO BIRDS SEEN ()	DEPART FLIGHT DIRECTION	FINAL DETECTION DIRECTION	NOTES Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)
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IXEE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree. S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided Forms)

WASHINGTON
MARBLED MURRELET
FOREST SURVEY FORM

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Data Entry Date

MARBL	ED M	URREI	_ET		(Y or N	, initials)	y cm	4	Total Detections:
FORES	T SUF	RVEY F	ORM			Species	of Conc	ern (circ	le one, d	letails on last pg.): Y or (N)
			<i>t</i> 1	ſ			. N	Aonth	06	Day 2/ Year 2007
Area Name:	adar.	River In	at-cilve	Site Name /	'Numbe	er: /_o	st Ca	ek		Station Number:
Station Location	n - T 1	2.2. N. F	2	(circle one) (E	or w	\mathbf{s}	/ , Q	Q (1/16)	SW	_, of Q (1/4)
LITM zone: 16	n +	ordinate: 5	94889	N (v) coor	dinate:	525 63	0/	Source:	GPS	Datum: NAD\$3 FOM:
Ohm zone. 10					$F \mid A$	ffiliatio	n: ARK	The]	Phone: (503) 359-7525
Observer (s) IN	arne//c	ell Jevi	sev_	пппшэ//	<i></i>		··· -Z-JE-JZ-S			
Station Elevation	on: 73 9	Ft / ((I) Positio	on on Slope (c	ircle one	e): Bott	om/plain,	Lower	1/3, (M	id 1/3, Upper 1/3, Ridgetop
Station Placeme	ent (circle	one): Inside	Outside						. 1	1
Distance from	Survey Site	e Boundary:	Om	Units of Me	easure fo	or ALL	Horizonta	l Distanc	es: <u>M</u>	eters_
Station Canopy	Cover (ci	rcle one): 1	= 0 to 25%,	2 = 26 to 50	%,(3=	= 51 to 7	5%,) 4=	76 to 10	0%	
ENVIRONME										
Official Sunris			Table	North Ben	- E	Begin Su	rvey Tim	e: <u>042</u>	<u> </u>	and Survey Time: <u>625</u>
Temperature at	t Sunrise:	12.5	Temp	erature at End	of Surv	ey:/	4,0 0	(circle or	1e) (C)	or F revised: 2 / 2000
				AUDIBILITY		ECIPITA		WIND		NOTES
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	CLOUD	VISIBILITY TO 2	TO 100 M	200 M	RAIN	FOG	OTHER			
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0440	HT 3	Ý	Y	Y	N	N	N	0	ν	
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0/12/2	HT 1	Y	Y	Y	1/	N	N	1	<i>N</i> _	
0544	HIO	Y	Y,	Y	N	N	N	1/	√	
0625	HIO	Y	Y	Y	N	N	N	1.	N	EndSurvey
		•						<u> </u>		/
Ceiling: UL =	Unlimited (clcar), HI = >2	2.0 canopy hei	ight, MID = >1.	$25 \text{ to } \leq 2$.0 canop	y height, L	0 = ≤1.25	canopy h	eight, U = Unknown.
Cloud Cover: 9) = 0%, 1 = 	33%, 2 = 66%	, 3 = 100%. one may be m	rissed due to cor	ditions)	V = Uni	mnaired (co	onditions a	allow for r	eliable detection), U = Unknown.
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Dunginitation	Dain & Va.	a N = None I	.= Iioht Mi=	≂ Moderate Hi=	: Heavy	Other:	H = Hail. S	= Snow.	Indicate ii	ntensity using same codes for ram & rog.
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manh (mihala tesa	on morral Q	- 20.46 mpb (toriae & em h	rranches break)						e drip, $\mathbf{V} = $ Vehicle, $\mathbf{W} = $ Wind, $\mathbf{O} = $ Other
Noise: N = Non (explain in Note		raft, B = Bird :	song/calls, C	Creek/Water d	tanage, l	DEIVI — AVI	minory, F -	Manyidi	, 1 1100	Tank, V Tanas, TV Train, G Gara

Sequence No.

General Location

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Survey Visit to Protocol

Page <u>1</u> of <u>2</u>

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WASHINGTON MARBLED MURRELET FOREST SURVEY FORM	ET FOREST SURVEY FORM	Detections - This Side Page Total: O	Pg. 2 of 2
Observer (s) Initials: AE	Month 26 Day 21 Year 2007	Site Name / No. Lost Creek	
Data Reference Number 1	Units of Measure (circle one): U.S. / (Metric) Station Number:	Station Number:	
SURVEY ACYIVITY:	**Note Significant Weather Changes on Page 1**		revised: 2 / 2000

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101304: 21 200	NOTES Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)	R. C.C.	171/1/1/	0 11 1	11 CT 1	W/1 15	LA DIE	1.1751.1	Kt We JU	145W/H	14 RTPT	14 NOF	IN RICH	100	KI SLLK, UMA. acupite	End Survey	_						
	FINAL DETECTION DIRECTION												}										
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	BIRD HEIGHT SEEN Canopy=	-		-			•							-		•	•	•	-	-	-	-	•
	INITIAL FLIGHT DIRECTION																	-					
	BEHAVIOR	T									T			\Box		┪				 	1	╁	
	# BIRDS SEEN											-				1							
	VOCAL SERIES OTHER Start End # OL W/J																						
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	INITIAL DETECTION DIRECTION												1										
	DETECTON	0425	0428	0422	レクレク	クレフ	200	0004	7		0 7 3 0	0 7 9	0601	6677	ファン	7 6 4 3							
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TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N).

AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J

BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided Forms)

WASHINGTON
MARBLED MURRELET
FOREST SURVEY FORM

Quad-Qode ___

Data Entry Initials

Project Review Initials

Photo Code

Date Entry Date _

MARBI	LED N	IURRE I	LET		(Y or N	, initials)	: y (1	<u>-</u>	Total Detections:
FORES	T SU	RVEY F	ORM			Species				letails on last pg.): Y or (N)
			, 1	1			, N	Month _	06	Day <u>22</u> Year <u>2007</u>
Area Name:	Codar	River W	Vaterish	Site Name	Numbe	er: 🚄	th Fo	d Ce	de Ri	Station Number: 3
Station Locat	ion - T_	2/ N, I	R_/O_	(circle one) (E	Oor W	, s /	2, Q	Q (1/16)	SE	_, of Q (1/4) <u>NU</u>
UTM zone:	10_E(x) c	oordinate:6	11251	N (y) coor	dinate: _	524	2146	Source:	GPS	Datum: NAD SU FOM:
Observer (s) I	Name: _//	eil Eac	Jensen	Initials:	EJ A	ffiliatio	n: <u>ABR</u>	Inc.	1	Phone: (563) 359-7525
Station Eleva					ircle one	e): Boti	om/plain,	Lower	1/3.) M	fid 1/3, Upper 1/3, Ridgetop
		one):(Inside			•		TT	l Tilatana	1	1 a
Distance fron										Jels_
				(2 = 26 to 50)	<u>. د</u> ر%ا	= 51 to /	5%, 4 =	- 70 to 10	076	
		CONDITION	∑: Table	Idl P.	11/10	togin Su	oway Tim	. H1		End Survey Time: <u>625</u>
Official Sunr				erature at End	,			-		
Temperature	at Sunrise:	8.5	1 emp	eratine at End	or surv	су. <u></u>		(circic ci		
TIME		L VIEWING	HORIZ. VIS.	AUDIBILITY TO	PR	ECIPITA	TION	WIND	NOISE	NOTES
	CLOUD COVER CEILING	VISIBILITY TO 2	TO 100 M	200 M	RAIN	FOG	OTHER			
ĺ	S B b	CANOPY								
	UT 2	Y	Y	Y	1/	/	1/	1	N	Regin Sulvey
0420	NT 2	Y	Y	Y	1	1	1/	1	N	light dizzle could see
0 4 0 1	HT 3	Y	Ý	Y	1/	1	1/	1	\mathcal{N}	dizzle stonoca
1 4/2	HT 3	Ŷ	Y	Y	N	N	N	1	N_	foo lifted
0510	HI 3	Y	Y	Y	N	N	N	1	N _	Cunrise
0501	HI 3	Υ.	Y	Y	N	N	N	2	N.	
0607	HI 3	Y	Y	Y	N	N	N	0_	N	
0625	HI 3	Y	Y	Υ	\mathcal{N}	N	N	0	N _	End Survey
						ļ <u>-</u>		<u> </u>		
								<u> </u>		
Ceiling: UL	Unlimited	(clear), HI = >2 33%, 2 = 66%	2.0 canopy hc 3 = 100%	ight, $MID = >1$.	$25 \text{ to } \leq 2$.0 canopy	height, L	0 = ≤1.25	canopy h	eight, U = Unknown.
Vertical Visib	silite• N ≔ In	nnaired (detecti	ons may be m	issed due to con	ditions),	$\mathbf{Y} = \mathbf{U}\mathbf{n}\mathbf{i}$	mpaired (co	nditions a	allow for r	eliable detection), U = Unknown. or reliable detection), U = Unknown.
Audibilitys N	= Immaired	(detections may	he missed dr	e to conditions).	$\mathbf{Y} = \mathbf{U} \mathbf{n}$	impaired	(conditions	s allow to	rehable (letection).
Wind: 0 = <1	mah (colm)	1 = 1.3 moh (1	eavec harely 1	move) $2 = 4-7 \text{ n}$	nnh (leav	es mstle.	sm. twigs:	move). 3 ?	= 8-12 mp	ntensity using same codes for rain & fog. h (leaves & sm. twigs in constant
motion). $4 = 1$	3-18 mph (s	m, branches me	vc), 5 = 19-2	4 mph (lg. branc branches break).	hes & sn	n. trees st	art to sway), 6 = 25-3	31 mph (lg	branches in constant motion), $7 = 32-38$
Noise: N = No	one, $A = Ain$	craft, B = Bird	song/calls, C	= Creek/water d	rainage, l	M = Mac	hinery, P =	Rain/hail	, T = Tree	drip, $\mathbf{V} = $ Vehicle, $\mathbf{W} = $ Wind, $\mathbf{O} = $ Other
(explain in No		errok o kologisko	Anticopy (BULL Theorem)			****		aresta versi susani.	(Constitution Shiptory)	
Occurenc	A 18 18 1	ing a specifican and a second	Data Point I	No		Beque	nce No; <u>:</u>	agreen proper	10 PM	Reference No

General Location

Data QC initials

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Pg. 2 of 2 Site Name / No. South Forth Cedar R. Lo Mosth Detections - This Side Page Total:
Area Name: Lebol Killer In Station Number: Units of Measure (circle one): U.S. / (Metric) Month 06 Day 22 Year 2007 Data Reference Number Observer (s) Initials:

SURVE	SURVEY ACYIVITY:				**Note	te Signifi	cant Wea	ther C	Significant Weather Changes on Page 1**	ge]**				revised: 2 / 2000
DETECTION # STATUS - I/O	DETECTON TIME	INITIAL DETECTION DIRECTION	TYPE	AUDITOF VOCAL SERIES Start End # 6	AUDITORY SERIES d # OL	OTHER W/J	# BIRDS SEEN	BEHAVIOR	INITIAL FLIGHT DIRECTION	BIRD HEIGHT SEEN Canopy=	CLOSEST DIST. TO BIRDS SEEN ()	DEPART FLIGHT DIRECTION	FINAL DETECTION DIRECTION	NOTES Heard Only Dist. To (L= Loud, M= Moderate,
	0425													Rain Survey 1st Sw7H 1st COUT
	7 7 7													KT KUHU KT VATH IST OSFL
	10 10 10 10 10 10 10 10 10 10 10 10 10 1													Ist MRO Ist we SP Survey
**************************************	2000 0000													IN PRA IN PRAVI IN STOM
														Ict CKCH Ict SPTO End Survey
										• • •				

TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

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WASHINGTON

MARBI	_E[) M	URRE	LET				, initials)	<u> </u>		Total Detections:
FORES	T S	SUF	RVEY F	ORM			Species	of Conc	ern (circ	ele one, o	letails on last pg.): $(\overline{\mathbf{Y}})$ or \mathbf{N}
					,		_	, 1	Month _	06	Day 26 Year 2007
Area Name:	Cer	lar	River W	Vatershe	Site Name	/ Numbe	er: <i>Ra</i>	ck Ci	eck		Station Number: 2
Station Locati	ion -	T	22 N, I	8	(circle one) (E	Oor w	, s_2	<u>4,</u> Q	Q (1/16)	NW	, of Q (1/4) <u>NE</u>
UTM zone	10 E	(x) co	oordinate: 5	96282	N (v) coor	dinate:	5248	774	Source:	6PS	Datum: NAD FOM:
Observer (s) l	Name:	NA	il Eac	Jenser	↓ √ Initials:/_	E A	Affiliatio	n: <i>AR</i>	P. Inc	<u> </u>	Phone: (503) 359-7525
***										جر	lid 1/3) Upper 1/3, Ridgetop
Station Places	nent (circle	one): (Inside	Outside					÷	,	-
Distance from	ı Surv	ey Sit	e Boundary:	0 km	Units of Mo	easure fe	or ALL	Horizonta	l Distanc	es: <u>M</u>	eters
					2 = 26 to 50						
ENVIRONM	ENT	AL C	ONDITION	<u>S</u> :	م ان	n .					_
Official Sunr	ise Ti	me: _	0571			~,	_	-		~	End Survey Time: <u>0625</u>
Temperature	at Sun	rise:	6.5	Temp	erature at End	of Surv	ey: 8	. <u>o</u> "	(circle o	ne) 🕜	or F revised: 2 / 2000
TIME	VFI	RTICA	L VIEWING	HORIZ.	AUDIBILITY	PR	ECIPITA	TION	WIND	NOISE	NOTES
''''-		$\overline{}$	VISIBILITY	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			
	CEILING	COVER	TO 2 CANOPY	10 100 111	250 1	70 314					
0426	UL	0	Y	Y	Y	N	N	N	2	N	Begin Survey
0478	UI	0	Y	Y	Y	1/	N	N	2	N	
001	1//	0	Y	Y	Y	N	N	N	2	N _	Sunase
0010	1)/	0	Y	Y	Y	N	N	N	2	N.	wind austs to 3
			, 								7
	-										
					ght, MID = >1	25 to ≤ 2	.0 canopy	height, L	O = ≤1.25	canopy h	eight, U = Unknown.
Cloud Cover:	ility: I	V = Im	naired (detecti	ons may be m	issed due to con	ditions).	Y = Unit	mpaired (co	nditions a	allow for r	eliable detection), U = Unknown.
Horizontal Vi	sihility	v: N =	Impaired (dete	ections may be	e missed due to o	condition	is), Y ≔ L	Inimpaired	(condition	is allow fo	or reliable detection), U = Unknown.
Precinitation	- Rain	& Fo	g: N = None. I	. = Light. M =	e to conditions). Moderate, H ==	Heavy.	Other: 1	H = Hail, S	= Snow.	Indicate 11	ntensity using same codes for rain & log.
Wind: $0 = <1$	mnh (c	(mla:	1 = 1-3 mph (1	eaves harely r	nove). $2 = 4-7 \text{ m}$	iph (leav	es rustle.	sm, twigs:	move), 3 =	= 8-12 mp	h (leaves & sm. twigs in constant 5. branches in constant motion), $7 = 32-38$
mnh (whole to	ees ma	ve) 8	= 39-46 mph (twies & sm. h	ranches break)						
Noise: N = No (explain in No		= Airc	ratt, B = Bird s	song/calls, C =	= Creek/water di	amage, I	va = IVlac	шкіу, Р=	Kanvan	, 1 – 1166	drip, $V = Vehicle$, $W = Wind$, $O = Other$
Occurrenc	(4) 性 ((4)5 7 07		Data Point	vo:		Seque	nce No			Reference No.
Quad Cod	0			Photo Code			a compression	al Locatio	ni.	An indicate in	
Date Entry	Initial	<u>\$</u>		Deta Entry	Date		Data (2C Intials	al and sections		Data QG Date
Protocol R	eview	Initial	S		Review	Date	ASE US	E ONLY		Highes	t Biological Status

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Pg. 2 of 2 Detections - This Side Page Total: Area Name: Cedar Site Name / No: Station Number: Units of Measure (circle one): U.S. / (Metric Year 2007 Day 25 Month 06 Data Reference Number Observer (s) Initials: ME

revised: 2 / 2000 **Note Significant Weather Changes on Page 1** SURVEY ACYIVITY:

Heard Only Dist, To Birds (L= Loud, M≈ Moderate, F= Faint) NOTES 0700 DF 1 18/2 000 DETECTION DIRECTION FLIGHT DIRECTION DEPART CLOSEST BIRDS SEEN Canopy= 1.0 BIRD HEIGHT SEEN DIRECTION INITIAL FLIGHT BEHAVIOR #BIRDS SEEN OTHER N/J 占 AUDITORY VOCAL SERIES # Ш Start TYPE INITIAL DETECTION DIRECTION DETECTON TIME $\overline{\mathcal{Q}}$ ~ 7 STATUS - 170

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N) AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J. **IYPE:** H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard

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WASHINGTON	
MARBLED MURRELET	
FOREST SURVEY FORM	1

WASHI	NGTO	N			5	Survey \	Visit to P	rotocol		Page <u>1</u> of <u>7</u>
MARBL			FT		(Y or N,	initials):	TY 100	6	Total Detections:O
FORES						Species	of Conc	ern (circ	— le one, d	letails on last pg.): Y or 🔊
FURES	1 301	/A I 1	O I KINI			•				Day <u>27</u> Year <u>2007</u>
Aran Nama:	Cadar	Riber les	Stercher	Site Name /	Numbe	r: Tai	ilor Ri	de		Station Number:
Alea Naille Station I ocati	on - T	77 N. R	2	(circle one)	or w	$\cdot s = \frac{7}{2}$	6 , Q	Q (1/16)	NW	, of Q (1/4) <u>NE</u>
FTM zone:	10 F(v) c	ordinate: 5	94878	N (y) coor	dinate:	5247	069	Source:	CPS	Datum: NAD B FOM:
Ohooryor (c) N	Jomes 1	I Fol	Lincon	Initials: 1	FJA	ffiliation	1: ARK	Inc	I	Phone: ((68) 359-7525
<u> </u>			-							
Station Elevat			₹	on on Stope (c	ircie one	е): вои	omvpram,	FOWEI	113, 141	lid 1/3, Upper 1/3, Ridgetop
Station Placer			_	Units of Me		ATT 1	Uarizanta	l Dietone	as: 1/2	tor
Distance from										<u> </u>
				2 = 26 to 50	70, 73	- 31 10 /	J /0, -	701010	070	
ENVIRONM			<u>5</u> : 	North Be	11/1	togin Su	way Tim	e. 047	/ F	End Survey Time: 0627
Official Sunr				erature at End						
Temperature	at Sunrise:	15.0	remp	erature at Esiu	or surv	су. <u>/_</u> _	, ,			
TIME	VERTICA	L VIEWING	HORIZ. VIS.	AUDIBILITY TO	PR	ECIPITA	TION	WIND	NOISE	NOTES
	CLOUD COVER CEILING	VISIBILITY	TO 100 M	200 M	RAIN	FOG	OTHER			
	JNG PRO	TO 2 CANOPY								
01/0/	111 0	V	V		4/	4/	N	0	N	Regin Sulvey
0426	UL O	Y		-/-	1/	1/	1/	0	N	
01110	it 1	7	- / /	Y	1/	1/	1/	0	//	Very high cloud cover
	<i>[] []</i>	7	4	<i>Y</i>	4/	1/	1/	0	N	(una
0/3/	111 1	Y	7	7	1/	1/	N	7	N	
2 4 9	W 7	7	Y	Y	N	1/	N	7	N	1
0/27	<i>III</i> ?	Ý	Y	Y	1/	1/	N	1	\mathcal{N}	En Sulvey
DE T	<u> </u>	<i></i>								
Ceiling: UL	= Unlimited	(clear), HI = >	2.0 canopy ho	ight, MID = >1.	25 to ≤ 2	.0 canopy	height, L	O = ≤1.25	canopy h	eight, U = Unknown.
Cloud Cover:	0 = 0%, 1 =	33%, 2 = 66%	, 3 = 100%.	sissed due to cor	iditione)	V = I îni	mnaired (co	anditions:	allow for r	eliable detection), U = Unknown.
Horizontal Vi	isibility: N =	Impaired (dete	ections may b	e missed due to	condition V = Un	15), Y = L impoined	nimpaired (condition	. (conditio s allow fo	ns allow 10 r reliable 6	ietection).
Th	D-1- 0 D-	wa M - Nono I	Γ – Tiαht Mi	≖Moderate H =	Heavv	(Mher: I	H = Han. 5	= Show.	marcare 1	inclisity using same codes for fam to log.
Wind: $0 = <1$ motion): $4 = 1$	mph (calm), 3-18 m oh (si	1 = 1-3 mph (1 m. branches mo	leaves barely ove), 5 = 19-2	move), 2 = 4-7 r 4 mph (lg. branc	npn (leav thes & sr	es misue	SIII IWIES	HRIVEL 3	- 0-12 1110	th (leaves & sm. twigs in constant branches in constant motion), $7 = 32-38$
4 / 1 1 /		- 20 16 mah (territore for con 1	arranchee break)						e drip, $V = Vehicle$, $W = Wind$, $O = Other$
Noise: N = No		лан, н – вий	зопеусано, С	CIVED HILLOI G			,,-			-

Occurrence No. Reference N Sequence No. Data Roint No: General Location Photo Code Quad-Code Data QC Date Data QC Initials Data Entry Date Data Entry Initials Review Date :-- WORW DATABASE USE ONLY *** Highest Biological Status Protogot Review Initials

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SqC	ervei	Observer (s) Initials:	WEI	[Month 0%	Day 27	27	Year 2007	77	Site Name / No.	No: Taylor	Ridge	ater shed
		Data Reference Number		32%		Units of Measu	of Measure (circle one):		u.s. /	Metric	Station Number:	1 '	7	
5	₹ K	SURVEY ACYIVITY:	ïY:			**Note Significant Weather Changes on Page 1**	cant Wea	her Cha	nges on Pa	ge 1**				revised: 2 / 2000
STATU		DETECTON	N INITIAL DETECTION	TYPE	AU	AUDITORY	# BIRDS	BEHA	INITIAL FLIGHT	BIRD	CLOSEST DIST TO	DEPART	FINAL	NOTES
JS -1/0	CTION #		DIRECTION		VOCAL SERIES	RIES OTHER # OL W/J	SEEN		DIRECTION	SEEN Canopy= 1.0	SEEN SEEN OUT OF THE PROPERTY	DIRECTION	DIRECTION	Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)
isat s		7	9							•				Row (Cher 1414)
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(Check Reverse Side When Using 2-Sided Forms)

WASHINGTON

MARBLED MURRELET		(Y o	т N, initials)	: y (~	b	Total Detections:
FOREST SURVEY FORM		Spe	cies of Conc	ern (circ	le one, d	letails on last pg.): Y or N
FUREST SURVET FURIN		~pv				Day 28 Year 2007
Area Name: Cedar River Watershed			155 IA	v10111111 <u>~</u>	W. C.	Station Number:
Area Name: CECAY KNET WATER SNEO	Site Name /	Number: _	10 0		NE	Station Number
Station Location - T 22 N N, R 10	(circle one) (E	or \mathbf{W} , \mathbf{S}	<u> 30 </u>	Q (1/16)	1 DC	_, or Q (1/4) 5 0
UTM zone: 10 E (x) coordinate: 607495	N (y) coor	dinate: _5_	175 165	Source:	Gro	Datum: VHD 85 FOM:
Observer (s) Name: Alden J. Miller	Initials: 4	J/N Affili	ation: <u>/48</u> /	R In	<u>C.</u> 1	Phone: (593) 359-4505
Station Elevation: 894 Ft (M) Positi	on on Slope (c	ircle one):	Bottom/plain,	Lower	1/3, M	id 1/3, Upper 1/3, Ridgetop
Station Placement (circle one): Inside Outside	:					
Distance from Survey Site Boundary: 0	Units of Mo	easure for A	LL Horizonta	l Distanc	es: Me	ters.
Station Canopy Cover (circle one): $1 = 0$ to 25%	2 = 26 to 50	9%, (3=51)	to 75%,) 4 =	= 76 to 10	0%	
ENVIRONMENTAL CONDITIONS:			-			
Official Sunrise Time: 0512 Table	e: North Be	nd Begin	Survey Tim	e: 0 4	C+ E	and Survey Time: 0657
	perature at End					
Tomportual of the state of the						
TIME VERTICAL VIEWING HORIZ.	AUDIBILITY TO	PRECI	PITATION	WIND	NOISE	NOTES
B B은 VISIBILITY TO 100 M	200 M	RAIN FO	G OTHER	-		
CANOPY CANOPY						
	V	N	JN		N	Ragin Sucula
0427 H 3 Y Y			1.	Z	N	Begin Survey
0452H13 Y Y	<i>Y</i>		V N	0		Sunrise
	1	N			N	SUNT ISE
0607H13 Y	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		<u> </u>	0_	N	Elevan
0657 H13 Y Y	<u> </u>		1 N	0	N	End Survey
				ļ		
						
				ļ		
				1		
				<u> </u>		
Ceiling: UL = Unlimited (clear), HI = >2.0 canopy he	ight, MID = >1.	$25 \text{ to} \le 2.0 \text{ ca}$	nopy height, L	O = <u>≤1.25</u>	canopy h	eight, U = Unknown.
Cloud Cover: $\theta = 0\%$, $1 = 33\%$, $2 = 66\%$, $3 = 100\%$. Vertical Visibility: $N = \text{Impaired (detections may be n}$	nissed due to cor	ditions), Y =	Unimpaired (c	onditions :	illow for r	eliable detection), U = Unknown
Horizontal Visibility: N = Impaired (detections may be missed distributed by Impaired (detections may be missed dis	e missed due to (conditions), Y V = Unimos	' = Unimpaired ired (condition	s allow for	is allow ic reliable d	letection).
Descriptation Dain & Fore N = None I = I ight M	= Moderate H =	Heavy. Oth	er: H = Hail. S	= Snow.	indicate ii	mensity using same codes for ram & rog.
Wind: 0 = <1 mph (calm), 1 = 1-3 mph (leaves barely motion), 4 = 13-18 mph (sm. branches move), 5 = 19-2	move), 2 = 4-7 n 4 mph (lg. branc	npn (leaves n hes & sm. tre	istie, sm. twigs cs start to sway	niove), 3 · /), 6 = 25-:	- 0-12 mp 31 mph (lg	to branches in constant motion), $7 = 32-38$

Survey Visit to Protocol

mph (whole trees move), 8 = 39-46 mph (twigs & sm. branches break).

Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (explain in Notes)

PT WING Reference No Sequence No: Data Point No. Occurrence No. Photo Code General Location Quad. Code Data QC Date Data QC Initials **Date Entry Date** Data Entry Initials Highest Biological Status Protocol Review Initials

Review Date 1
** WORW DATABASE USE ONLY **

WASHING I ON MARBLED MURK	WASHINGTON MARBLED MURRELET FOREST SURVEY FORM	Detections - This Side Page, Total & Pg C of C
1-1-1/	1.21	
Observer (s) Initials: ////	Month JUNE Day 28 Year COC+	Site Name / No: 155
Data Reference Numberal	Units of Measure (circle one): U.S. / Metric Station Number.	Station Number.
SURVEY ACYIVITY:	**Note Significant Weather Changes on Page 1**	revised: 2 / 2000

SC	RVEY	SURVEY ACYIVITY:				**No	te Signifi	cant W	eather	**Note Significant Weather Changes on Page 1**	ge 1**				revised: 2 / 2000
STATUS -1/O	DETECTION #	DETECTON TIME	INITIAL DETECTION DIRECTION	TYPE	AUDITOR VOCAL SERIES Start End #	AUDITORY SERIES	OTHER W/J	BIRDS SEEN	BEHAVIOR	INITIAL FLIGHT DIRECTION	BIRD HEIGHT SEEN Canopy=	CLOSEST DIST. TO BIRDS SEEN ()	DEPART FLIGHT DIRECTION	FINAL DETECTION DIRECTION	NOTES Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)
	1	42年0						$\parallel \parallel$							Reach Sunley
		4590													
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23.000 /1											•				The To Chouck
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212								-			•				
	E H	TYPE: H = Heard Only (no visual), S = Seen Only (silent). B = Both Seen and Heard	v (no visual),	S = S	een Only (silent). B	= Both Se	en and	Hearc	į.					

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

(Check Reverse Side When Using 2-Sided Forms) BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

WASHINGTON	
MARBLED MURRE	LET
FOREST SURVEY	FORM

MARBLED MURREL	ET	(Y or N, initials)	y cat	Total Detections:
FOREST SURVEY FO		Species of Conc	ern (circle one, c	letails on last pg.): Y or (N)
		, , N	Month <u>06</u>	Day <u>28</u> Year <u>2007</u>
Area Name: <u>Cedar River Wa</u>	atershed Site Name	Number: Lindsey (reck	Station Number:
Station Location - T 21 N, R	$\underline{9}$ (circle one) $\overline{\mathbf{E}}$	or w , s <u>4 /,</u> Q	Q (1/16) <u>Sb/</u>	, of Q (1/4) <u>NE</u>
UTM zone: 10 E (x) coordinate: 60	103 L N (y) coor	dinate: 5743 132	Source: []	_ Datum: <u>N40 33</u> FOM:
Observer (s) Name: Neil Eric	ensen Initials: N	EJ Affiliation: ARK	Inc.	Phone: (63) 359-7525
Station Elevation: 476 Ft / 6	Position on Slope (c	ircle one): Bottom/plain,	Lower 1/3, M	(id 1/3) Upper 1/3, Ridgetop
Station Placement (circle one): Inside	_		(m)	leters
Distance from Survey Site Boundary:		easure for ALL Horizonta		<u>lelers</u>
Station Canopy Cover (circle one): 1 =		3 = 51 to $75%$, $4 = 6$	= 76 to 100%)	
ENVIRONMENTAL CONDITIONS:	make 1/d/ P	/ Borin Survey Tim	a: 1277 I	End Survey Time: <u>0627</u>
Official Sunrise Time: 05/2	Tamparature at End	of Survey: <u>16.5</u>	(circle one)	or F revised: 2 / 2000
Temperature at Sunrise:	Temperature at End	or survey		
TIME VERTICAL VIEWING	HORIZ. AUDIBILITY TO	PRECIPITATION	WIND NOISE	NOTES
C C VISIBILITY TO 2	TO 100 M 200 M	RAIN FOG OTHER		
S D CANOPY				
0427453 Y	YY	NNN	1 N	Regin Survey
0447 HI 3 Y	Y Y	NNN	1 N _) /
0 (12 HI3 Y	YY	NNN	1 N_	Suncise
OSSOHI3 Y	Y Y	LNN	1 N	
OSCRHI3 Y	YY	N N N	1N	
0627 HI 3 Y	YY	NNN	/	End Survey
			<u> </u>	
Ceiling: UL = Unlimited (clear), HI = >2.0	1216 1000 - 51	25 to < 2.0 company height 1.0	0 = <1.25 canony h	cight II = Unknown
Cloud Cover $0 = 00$, $1 = 33\%$, $2 = 66\%$, 3	t = 100%			
Vertical Visibility: N = Impaired (detection Horizontal Visibility: N = Impaired (detection	tions may be missed due to o	conditions), $Y = Unimpaired$	(conditions allow it	or remadie detection), U - Onknown.
Audibility: N = Impaired (detections may be Precipitation - Rain & Fog: N = None, L=	e missed due to conditions)	Y = Unimpaired (condition)	s allow for tehable c	letection).
$\mathbf{X}\mathbf{Y}_{i}^{\mathbf{L}} \mathbf{A} = \mathbf{A} - \mathbf{A} \mathbf{B} \mathbf{B} \mathbf{A} \mathbf{A} \mathbf{B} \mathbf{A} \mathbf{A} \mathbf{B} \mathbf{A} \mathbf{A} \mathbf{B} \mathbf{A} \mathbf{A} \mathbf{B} \mathbf{A} \mathbf{A} \mathbf{B} \mathbf{A} \mathbf{A} \mathbf{A} \mathbf{A} \mathbf{A} \mathbf{A} \mathbf{A} A$	wee harely move) $2 = 4.7 \text{ n}$	nnh (leaves nistle, sm. twigs)	move), $3 = 8-12$ mp	n (leaves & sin. twigs in constain
		tics of sin. lives state to sway	7), 0 – 23-31 mpn (18	5. Diamonos in Communic microsco.,;
motion), 4 = 13-18 mph (sm. branches movemph (whole trees move), 8 = 39-46 mph (tw	rige & em branches break)			
mph (whole trees move), 8 = 39-46 mph (tw Noise: N = None, A = Aircraft, B = Bird so	rige & em branches break)			
mph (whole trees move), 8 = 39-46 mph (tw Noise: N = None, A = Aircraft, B = Bird so (explain in Notes).	rige & em branches break)			

Data QC Initials

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Protocol Review Initials

Survey Visit to Protocol

Page <u>1</u> of <u>2</u>

Data QC Date

Highest Biological Status

Pg. 2 of 2 Detections - This Side Page Total: *ud* Area Name: Cedar Site Name / No. Station Number: Units of Measure (circle one): U.S. / Metric Day 28 Year 2007 WASHINGTON MARBLED MURRELET FOREST SURVEY FORM Month O Data Reference Number : Observer (s) Initials: A/E SURVEY ACYIVITY:

revised: 2 / 2000 Heard Only Dist. To Birds (L≃ Loud, M= Moderate, F= Faint) 15. ON UNKNOWN Kat NOTES 24/16 RRUL ロシング DETECTION DIRECTION DEPART FLIGHT DIRECTION Canopy= BERD HEIGHT SEEN **Note Significant Weather Changes on Page 1** DIRECTION INITIAL FLIGHT BEHAVIOR # BIRDS SEEN OTHER ۲/ X 占 AUDITORY VOCAL SERIES * Ë Start TYPE INITIAL DETECTION DIRECTION DETECTON ſ 1 47 7 ~ 0 9 **STATUS** -1/0

IVPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, -- = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N) **BEHAVIOR:** F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided For AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A If both are heard write W / J.

(Check Reverse Side When Using 2-Sided Forms)

WASHINGTON	
MARBLED MURRELE	Γ
FOREST SURVEY FOR	₹M

WASHINGTON MARBLED MURREI	FT	(Y or N, initia	s): Y (196	Total Detections:	0_
FOREST SURVEY F	:		<u> </u>	ne, details on last pg.): Y	or (N)
Area Name: <u>Celar River War</u> Station Location - T 2 N, I UTM zone: 10 E (x) coordinate: 6 Observer (s) Name: <u>Neil Eac</u>	Site Na 10 (circle one 11924 N (y)	ume / Number: <u>S. Ft. Ce</u> e) (E) or W , S /0, coordinate:	Month <u>06</u> QQ (1/16) <u>\$ 1</u> Source: <u>6 P</u>	Day <u>29</u> Year <u>2</u> E Station Number: <u>1</u>	<u>2007</u>
Station Elevation: Ft / (Station Placement (circle one): Inside Distance from Survey Site Boundary:	Outside Om Units o	of Measure for ALL Horizo	ntal Distances: _	Mid 1/3, Upper 1/3, Rid	getop
Station Canopy Cover (circle one): 1 ENVIRONMENTAL CONDITION Official Sunrise Time: 05/2 Temperature at Sunrise: 12.0	<u>S</u> : Table: <u>MoAh</u>		ime: <u>0427</u>	End Survey Time:	27
TIME VERTICAL VIEWING COCO VISIBILITY TO 2 CANOPY	HORIZ: AUDIBILI VIS. TO TO 100 M 200 M	PRECIPITATION	WIND NO		
0427HI 3 Y 0445HI 3 Y 0512HI 3 Y 0520HI 3 Y 0530HI 2 Y 0548HI 3 Y 0615HI 3 Y	Y Y Y Y Y Y Y Y Y Y				edup,
Cciling: UL = Unlimited (clear), HI => Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66% Vertical Visibility: N = Impaired (detect Horizontal Visibility: N = Impaired (detect), 3 = 100%.	to conditions) V = Unimpaired	L (conditions allow	for reliable detection), U = Unkn	own. sknown.

Survey Visit to Protocol

Page <u>1</u> of <u>2</u>

Audibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection).

Precipitation - Rain & Fog: N = None, L = Light, M = Moderate, H = Heavy. Other: H = Hail, S = Snow. Indicate intensity using same codes for rain & fog. Wind: $\theta = <1$ mph (calm), 1 = 1-3 mph (leaves barely move), 2 = 4-7 mph (leaves rustle, sm. twigs move), 3 = 8-12 mph (leaves & sm. twigs in constant motion), 4 = 13-18 mph (sm. branches move), 5 = 19-24 mph (lg. branches & sm. trees start to sway), 6 = 25-31 mph (lg. branches in constant motion), 7 = 32-38 mph (whole trees move), 8 = 39-46 mph (twigs & sm. branches break).

Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other

(explain in Notes).	
Occurrence No. Data Point No.	Sequence No: Reference No:
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Supricopole Photo Code	General Location
Qued-Code Photo Code	the control of the state of the
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Detections - This Side Page Total: Area Name: Celor Station Number: Site Name / No: / Metric Year 2007 Units of Measure (circle one): U.S. Day 29 Month Q Observer (s) Initials: ME Data Reformer Numbers

Pg. 2 of 2

SO	KVE	SURVEY ACYIVITY	٧;		**Note Si	gnificant \	Veather	**Note Significant Weather Changes on Page 1**	ge 1**				revised: 2 / 2000
STATUS -1/O	DETECTION #	DETECTON	INITIAL DETECTION DIRECTION	TYPE	AUDITORY VOCAL SERIES Start End # OL W/J	BBRDS BRDS SEEN	BEHAVIOR S Z	INITIAL FLIGHT DIRECTION	BIRD HEIGHT SEEN Canopy=	CLOSEST DIST, TO BIRDS SEEN (A)	DEPART FLIGHT DIRECTION	FINAL DETECTION DIRECTION	NOTES Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)
Service	1	0427											
***		10434					\prod		•				1.4 115-11/14 /41/04
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**	+	72/0											7,
海湖	1	8/1/10		\sqcap					•				1.7 C. (T)
		6440					\prod		•				17, 10
100		11240							-				17 W + W \
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		0612											17 P. 111. 12
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TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). **BEHAVIOR:** F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (≤ 1.0), B = Circle At or Below Canopy (≤ 1.0), L = Seen Landing in or AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

(Check Reverse Side When Using 2-Sided Forms) Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

WASHINGTON	·
MARBLED MURRELE	T
FOREST SURVEY FO	RM

WASHINGTON MARBLED MURRE FOREST SURVEY I	FORM		(Y Sp	or N, in	nitials): f Conce	ern (circ	Ele one, d	Page 1 of C Total Detections: O letails on last pg.): Y or N Day 29 Year 2007
Area Name: Cedar River Station Location - T 22 N, UTM zone: 10 E (x) coordinate: 5 Observer (s) Name: Alden J	R <u>8</u> 94882	(circle one) (È	or W , S	s <u>11</u> 25030	<u>+ cre</u> , o o	Q (1/16) Source:	su GPS	Station Number:, of Q (1/4) \(\sum_{\text{VW}} \) Datum: \(\mathcal{NAD} \) \(\begin{cases} \begin{cases} \ 83 \end{cases} \] Total (1/4) \(\sum_{\text{VM}} \)
Station Elevation: 739 Ft / (Station Placement (circle one): Inside Distance from Survey Site Boundary: Station Canopy Cover (circle one):	M Positi e Outside	on on Slope (ci	ircle one):	Botton ALL Ho	n/plain, orizontal	Lower Distance	1/3, M	id 1/3, Upper 1/3, Ridgetop
ENVIRONMENTAL CONDITION Official Sunrise Time: 0513 Temperature at Sunrise: 10.5	<u>S</u> : Table	North B	end Beg	gin Surv	ey Time	. 042	<u>8</u> E	and Survey Time: <u>0628</u>
TIME VERTICAL VIEWING O O O VISIBILITY TO 2 CANOPY	HORIŽ. VIS. TO 100 M	AUDIBILITY TO 200 M		FOG O	ON OTHER	WIND	NOISE	NOTES
0 H Z 8 MID 3 Y 0 5 I 3 H Z Y 0 5 I 7 H Z Y 0 5 Z 7 MID Z Y	Y Y Y	Y Y Y	7777	<u> </u>	7222	0	2222	Begin Survey Sunrise

Ceiling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤ 2.0 canopy height, LO = ≤1.25 canopy height, U = Unknown.

Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%. Vertical Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Horizontal Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown.

Audibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection).

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Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other

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			Reference No.
Occuprence No.	Data Point No.	Sequence No.	
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WASHINGTON MARBLED MURRELET FOREST SURVEY FORM	ET FOREST SURVEY FORM	Detections - This Side Page Total: B. Z of Z	
VL-1/	1,000	75,68	
Observer (s) Initials:	Month June Day C7 Year COUT Site Name / No. LOST Cree	Site Name / No. LOST CLERK	
Daia Reference Number	Units of Measure (circle one): U.S. / Metric Station Number.	Station Number:	
SURVEY ACYIVITY:	**Note Significant Weather Changes on Page 1**	revised: 2 / 2000	Ç

	200	**************************************	7.			1			١,	1					
Y L	14	SURVEI ACTIVILY:				ž	ote Signiti	cant wea	ther	**Note Significant Weather Changes on Page 1**	зе]**				revised: 2 / 2000
STATU		DETECTON		TYPE		AUDITORY		# BIRDS	BEHA	INITIAL	BIRD	CLOSEST DIST. TO	DEPART	FINAL	NOTES
J\$ -1/	CTION		DIRECTION		VOCAL SERIES	ERIES	OTHER	SEEN	VIOR	DIRECTION	SEEN	BIRDS SEEN	DIRECTION	DIRECTION	Heard Only Dist, To Birds (L= Loud, M= Moderate, F= Faint)
0	#				Start End	# OL	W/J				1.0	units			
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IZI	H	= Heard Onl	TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard	= S	Seen Only (s	ilent), B	= Both Se	en and H	eard.						

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N).

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(Check Reverse Side When Using 2-Sided For

(Check Reverse Side When Using 2-Sided Forms)

Predator: Steller's Jay

WASHINGTON

Protocol Review Initials

MADRI	ED M	IURREL	FT		(Y or N,	initials):	NICAL	月	Total Detections:
		RVEY F					of Conce	ern (circl	— le one, d	letails on last pg.): Y or N
-UKES	11 301	VAE 1 1	CITIE			•	N	Ionth 🗍	une.	Day 30 Year 2007
tuan Nama:	Cedor	River Wal	tershed	Site Name /	Numbe	r: Fi	ndley 1	Creek		Station Number:
tation I ocati	ion - T	71 N. B	2 1D ((circle one) (E	or w	, S	6_,°Q0	Q (1/16)	<u>>w</u>	_, of Q (1/4)/V <u>F</u>
TOTAL C	10 E (v) a	aardinata: lat	N 376	N (v) coord	dinate:	524	3160	Source:	6175	Datum: MID 8 SFOM:
Thearver (c) N	Jame: A	Iden J	Miller	Initials:	JMA	ffiliatio	n: <i>ABI</i>	P. Ini	<u>ٿ</u>	Phone: (503 359-7525
						-				
		_		~	rcle one	;): Bott	om/plain,	Lower	1/3, M	lid 1/3) Upper 1/3, Ridgetop
		one). Inside)					м	olove
Distance from	ı Survey Sit	te Boundary:	10	Units of Me	asure fo	or ALL	Horizontal	Distance	es: <u>////</u>	ofer >
				2 = 26 to 50	%, 3=	= 51 to 7	5%, 4=	76 to 10	U%0	
		CONDITIONS	<u>\$</u> :	Macu Re	ا اداما	Santa Cu	way Tim	047	28 r	End Survey Time: 0678
Official Sunr	ise Time: _	0513 0 6		: NUTTO DE	et com	ægin su /C	.5 0	circle or	(C)	or F revised: 2 / 2000
Temperature	at Sunrise:	9.5	Temp	erature at End	OI SUIVE	ву		(CITCLE OIL		
TIME	VERTICA	L VIEWING	HORIZ.	AUDIBILITY TO	PR	RECIPITA	TION	WIND	NOISE	NOTES
	CLOUD COVER CEILING	VISIBILITY	TO 100 M	200 M	RAIN	FOG	OTHER			
	CLOUD COVER CEILING	TO 2 CANOPY		•	ļ]
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0502	H1 Z	V	Ÿ	Ÿ	N	N	N	1	N	Sunrise End Survey
0628	11/1	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Ÿ	Y	N	17	7		7	End Survey
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		†								
									<u> </u>	
					<u> </u>			<u> </u>	<u> </u>	
										cight, U = Unknown.
		= 33%, 2 = 66% npaired (detecti	· 1 -	nissed due to cor	nditions),	Y ≃ Uni	mpaired (co	onditions a	allow for r	reliable detection), U = Unknown.
Horizontal V	isibility: N =	= Impaired (dete	ections may be	e missed due to	CONDITION V = Un	ns), Y = (impoined	Condition	s allow for	r reliable d	detection).
Precipitation	- Rain & Fo	og: N = None, l	L = Light, M	= Moderate, H =	= Heavy. nnh (lass:	otner: .	n ≖ nan, o em twice	move) 3:	maicae n = 8-12 mp	oh (leaves & sm. twigs in constant
motion) $4 = 1$	13-18 mob (s	m, branches me	ovc), 5 = 19-2	4 mph (ig. branc	enes & si	n. trees s	tart to sway), 6 = 25-	31 mph (l̄́́́́́	g. branches in constant motion), $7 = 32-38$
										e drip, $V = Vehicle$, $W = Wind$, $O = Other$
(explain in No	otes).		· · · · · · · · · · · · · · · · · · ·	ance and the control of the control		and the second	Marian Carre	an Andreas		The State of the S
Occurrent	Salar Salar Salar Salar Salar		Data Point	No:		- Sequ	ence No	4-1-	4	Reference No.
Quad: Co			Photo Code	和人名斯特特勒拉尔德亚		Genê	rai Locatio	m	1-7	
Data Entr	y Initia js	k it land been <u>Lindad</u> been	Data Entry	Date	ariaformi for	Data	QC initials	i <u>I</u>		Data QC Date

Review Date
--- WOFW DATABASE USE ONLY ---

Highest Biological Status

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Month June Day 30 Dala Reference Number Observer (s) Initials: S

Metric Year 2007 Units of Measure (circle one): U.S.

アスタラ ひょう Detections - This Side Page Total:
Area Name: Cook Kill Site Name / No: Station Number

SUR	VEY	SURVEY ACYIVITY:				**Note	Signific	ant We	ather (Significant Weather Changes on Page 1**	ige 1**				1000 / C - pesticad
STATUS -1/0	DETECTION #		INITIAL DETECTION DIRECTION	TYPE	AUDITOR VOCAL SERIES Start End # (, ե	OTHER W/J	# BIRDS SEEN	BEHAVIOR	INITIAL FLIGHT DIRECTION	BIRD HEIGHT SEEN Canopy=	CLOSEST DIST. TO BIRDS SEEN ()	DEPART FLIGHT DIRECTION	FINAL DETECTION DIRECTION	NOTES NOTES Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)
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IYPE: H = Heard Only (no visual), S = Seen Only (silent), <math>B = Both Seen and Heard

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, -- = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided For

(Check Reverse Side When Using 2-Sided Forms)

WASHINGTON	
MARBLED MURRELET	
FOREST SURVEY FORM	ħ

_ : :	FD	/URRE	FT		(Y or N	, initials):	y CA	ন	Total Detections:
		RVEY F			;	Species	of Conce	ern (circ	le one, d	letails on last pg.): Y or (N)
roke3	1 30	LYALLI				•				Day <u>06</u> Year <u>2007</u>
Area Name	1 das	River W	toched	Site Name /	Numbe	r: <i>[</i> 5				Station Number:/
Station Locati	on - T	72 N. I	R 10 ((circle one)	or w	, s_3	<u>O,</u> Qe	Q (1/16)	NW	, of Q (1/4) <u>SE</u>
LITM zone:	10 E(x)	coordinate: 6	07495	N (y) coore	dinate: _	524 59	65	Source:	EPS	_ Datum: NAN 83 FOM:
Observer (s) N	Name: _/	6.1 Eac.	ensen	Initials: <u>//</u>	<u> </u>	ffiliatio	n: <i>ARR</i>	Inc.	1	Phone: (63) 359-7525
		Ft /		on on Slope (c	ircle one	e): B oti	om/piain,	Lower	1/3, 141	(id 1/3, Upper 1/3, Ridgetop
		e one): Inside		Units of Me	ancura fo	or AT.I.	Horizonta	l Distanc	es M	tore
		ite Boundary: circle one): 1								
		CONDITION		2 201000	70, 0					
		517		: North Beach	1, WA B	egin Su	rvey Time	e: <u>043</u> 2	<u>2</u> E	End Survey Time: <u>0632</u>
		10.0		erature at End	of Surv	ey: <u>/</u>	2.0	(circle or	ie) (C)	or F revised: 2 / 2000
		AL VIEWING	HORIZ.	AUDIBILITY		ECIPITA		WIND	NOISE	NOTES
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	ଜ	CANOPY		<u></u>					,	
0432	ULO	I Y	Y	Y	N	N	N	0_		Begin Survey
2510	ULO	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Y	<u> </u>	1	N	N	 	N/	/ /
0517	UL O	 	. Y	1	1/	\mathcal{N}	\mathcal{N}_{\perp}	<u> </u>	. <u>N</u>	Sunke.
0632	0/0	Υ	Υ	<u> </u>	<i>N</i>	N	\mathcal{N}_{-}	/	<i>N</i>	Find Survey
								-		/
╟╌┼╌┼╌╎┈					ļ			<u> </u>	-	
Ceiling: UL	= Unlimited	l (clcar), HI = >	2.0 canopy ho	ight, MID = >1.	25 to ≤ 2	.0 canop	y height, L	O = ≤1.25	canopy h	cight, U = Unknown.
W7421 W73-3L	. 1614 NI 1	= 33%, 2 = 66% Impaired (detect	ione may be m	nissed due to cor	ıditions),	Y = Uni	mpaired (co	onditions a	illow for r	reliable detection), U = Unknown.
Horizontal Vi	isibility: N	= Impaired (det	ections may be	e missed due to	condition V ≈ Ha	ls), Y≃ t impsired	/condition	(condition) s allow for	reliable e	letection).
Precipitation	- Rain & l	Fog: N = None,	L = Light, M :	= Moderate, H =	: Heavy. anh (leav	es nistle	H= Hall, S sm twigs	= Snow. move), 3 :	maicate i = 8-12 mp	h (leaves & sm. twigs in constant
motion), $4 = 1$	3-18 mph	sm. branches m	ove), 5 = 19-2	4 mph (lg. branc	hes & sn	n. trees s	art to sway), 6 = 25-	31 mph (l	g. branches in constant motion), $7 = 32-38$
Noise: N = No	one, A = A	8 = 39-46 mph ircraft, B = Bird	song/calls, C	= Creek/water d	rainage, l	M = Mac	hinery, P =	Rain/hail	T = Tree	e drip, $\mathbf{V} = \mathbf{Vehicle}$, $\mathbf{W} = \mathbf{Wind}$, $\mathbf{O} = \mathbf{Other}$
(explain in No	ites).	Martine American	carce and a second	The state of the s	***			reservation (C	CONTRACTOR	The state of the s
Occupanc	d No.		Data Point	No. <u>i - ; </u>	rekeratio	100	ence No		edis-men.	Reference No.
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Protocol R	eyiew.init	815 		** WDFV	(DATAE	iase u	E ONLY	id Marketine		

Survey Visit to Protocol

Page <u>1</u> of <u>2</u>

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Pg. 2 of 2 Detections - This Side Page Total:

Area Name: Log Rie W Site Name / No: / (<, / Station Number: Metric Day _06_ Year 2007 Units of Measure (circle one): U.S. Month 07 Data Reference Number : Observer (s) Initials:

Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint) revised: 2 / 2000 NOTES End Succes 080 +DUG 88 Since CTT DETECTION DIRECTION FINAL DIRECTION DEPART FLIGHT CLOSEST DIST. TO BIRDS Źä ≅ BIRD HEIGHT SEEN Canopy= 0 **Note Significant Weather Changes on Page 1** DIRECTION INITIAL FLIGHT BEHAVIOR # BIRDS SEEN OTHER ۲/<u>%</u> 占 AUDITORY VOCAL SERIES * End Start TYPE INITIAL DETECTION DIRECTION SURVEY ACYIVITY: DETECTON 7 7 7 ٨ 3 \sim ⋾ コ **DETECTION #** STATUS -1/0

IYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). **BEHAVIOR:** F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, - None or N/A. If both are heard write W / J. Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided Forms)

WASHINGTON
MARBLED MURRELET
FOREST SURVEY FORM

Occurrence No. Quad/Code

Data Entry Initials

Protocol Review Initials

Photo Code

Data Entry Date

MARBLED MURRE	LET				, initials):			Total Detections:
FOREST SURVEY	FORM		5	Species	of Conc	ern (circ	le one, d	letails on last pg.): (Y) or N
101(201 001(121)	, , ,				N	/Ionth	07	Day <u>07</u> Year <u>2007</u>
Area Name: Cedar River Wat	ched	Site Name /	Number	r: <i>Fin</i>	Mex C	ack		Station Number:
Station Location - T 21 N.	R . 9	(circle one)	or w	, s	<u>6</u> , q	Q (1/16)	SEV	, of Q (1/4) <u>NE</u>
UTM zone: 10 E (x) coordinate:	606326	N (y) coor	dinate:	52431	60	Source:	6 PJ	_ Datum: <u>N40 83</u> FOM:
Observer (s) Name: 1/eil Eric		Initials: <u>///</u>		ffiliatio	n: <i>ABR</i>	Inc.	I	Phone: (563) 359-7525
Observer (b) France: Marie Deliver	· · · · · ·							
Station Elevation: 95% Ft /	M Positi	on on Slope (c	ircle one): B ott	om/plain,	Lower	1/3, (M	lid 1/3, Upper 1/3, Ridgetop
Station Placement (circle one): Inside, Outside Distance from Survey Site Boundary: 20 m Units of Measure for ALL Horizontal Distances: Meters								
Distance from Survey Site Boundary:	20m	Units of Mo	easure fo	r ALL	Horizonta	l Distanc	es:	etels
Station Canopy Cover (circle one):		2 = 26 to 50	%, 3=	51 to 7	5%, 4=	76 to 10	0%	
ENVIRONMENTAL CONDITION	<u>IS</u> :	110	1 ,	_		~	· ·	1 to Time 0/22
Official Sunrise Time: <u>05/8</u>			-,				_	End Survey Time: <u>0633</u>
Temperature at Sunrise: 9.5	^п Тетр	erature at End	of Surve	y: _ <i>]]</i>	.0	(circle or	1e) (C)	or F revised: 2 / 2000
TIME VERTICAL VIEWING	HORIZ.	AUDIBILITY	PRI	ECIPITA	TION	MND	NOISE	NOTES
유 응은 VISIBILITY	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			
C C VISIBILITY TO 2 CANOPY								
G)								
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0444040	Y	Y	\mathcal{N}	N_{-}	N	/	\mathcal{N}_{-}	/
05/8/1/0	7	7	N	N	N	/,	<u>~</u> _	Sunrise
0524060			N	N	N	/	المراجع	EnlSurvey
0633 UL O Y	<u> </u>		N	N	<i>N</i>	/	<i>/</i> /	EM Survey
		<u> </u>				<u> </u>	<u> </u>	
		<u></u>						
	 					 -		
Cciling: UL = Unlimited (clear), HI =>	2.0 canony ho	ioht MID = >1	25 to < 2.	0 canon	v height, L	0 = <1,25	сапору һ	cight, U = Unknown.
Cloud Cover $0 - 00$ /, $1 = 330$ /, $2 = 669$	% 3k ≈ 100%.							
Vertical Visibility: N = Impaired (detect Horizontal Visibility: N = Impaired (detect	tections may b	e missed due to (conditions	s). Y = (nimpaired	(conditio	ns allow ic	or remadie detection), o - onknowit
Audibility: N = Impaired (detections ma	y be missed do $I = I \text{ in } M$:	ue to conditions) = Moderate H =	, Y = Uni : Heavv	mpaired Other: l	(conditions) H = Hail, S	s allow 10: == Snow.	r renaote d Indicate ii	ntensity using same codes for rain & fog.
33/2 = 4.0 = 21 mph (colm) 1 = 1.3 mph 6	deaves harely :	move) $2 = 4.7 \text{m}$	nnh (leave	es mistle.	sm. twigs	move)、ゞ	= 8-12 mp	h (leaves & sm. twigs in constant branches in constant motion), $7 = 32-38$
much (reshalo trace massa) 8 = 30-46 mmh	(twice & cm)	hranches break)						
Noise: N = None, A = Aircraft, B = Bird (explain in Notes).	song/calls, C	= Creek/water d	rainage, N	и = Mac	hinery, P =	Rain/hail	, T = Tree	e drip, $V = Vehicle$, $W = Wind$, $O = Other$
Oggurence No.	Data Point	Not		Sequi	ence No.	1	a ser comme	Reference No.

General Location

Data QC Date

Highest Biological Status

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WA Obse	SH ST	WASHINGTON MA Observer (s) Initials:	RBL	ED M		REL!	Mo Uni	OREST S Month Units of Mez	ST SURVEY FORM 1 02 Day 07 of Measure (circle one):	Y FC	JRM (3) Y (3) (3) (4) (6) (7) (7)	ST SURVEY FORM 1 07 Day 07 Year 07 of Measure (circle one): U.S. //Metric.	^	Detections - This Side I Area Name: Cabo Site Name / No: Frac Station Number:	Detections - This Side Page Total: Area Name: Ledor Kiver Wate Site Name / No: Findley (Leck Station Number:	ge Total: C	Jeshed Pg. 2 of 2	7
SUR	VEY	SURVEY ACYIVITY	Y:				*	Vote Sign	ificant W	/eathe	ır Chang	**Note Significant Weather Changes on Page 1**	1				revised: 2 / 2000	2000
STATU	DETE	DETECTON			TYPE		AUDITORY	 	# BIRDS	BEHA	ΞŪ	INITIAL FLIGHT	BIRD	CLOSEST DIST TO	DEPART	FINAL	NOTES	
JS -1/O	CTION #	i :	DIRECTION	Z		VOCAL S	# ER	OTHER OL W/J				DIRECTION	SEEN Canopy=	BIRDS SEEN (>)	DIRECTION	DIRECTION	Heard Only Dist. To Birds (L≂ Loud, M≍ Moderate, F= Faint)	s aint)
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AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). **IYPE**: **H** = Heard Only (no visual), **S** = Seen Only (silent), **B** = Both Seen and Heard

(Check Reverse Side When Using 2-Sided Forms) BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown. AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

Wordpecker Species of Concern: Pilarted

10/4

WASHINGTON	
MARBLED MURRELET	
FOREST SURVEY FOR	И

MARBLED MURREL	ET		(Y or N	initials):	y Con	.]	Total Detections:	
FOREST SURVEY F			;	Species	of Conce	ern (circ	le one, d	etails on last pg.): (Y) or (N)	
		,			. λ	1onth	07	Day 08 Year 2007	
Area Name: Ledar River 1	Natech	Site Name /	Numbe	r: <u>Ch</u>	eter	Nott	1	Station Number:	
Station Location - T 22 N, R		(circle one) E	or W	, s /	6, Q	Q (1/16)	NE	_, of Q (1/4)	
UTM zone: 10 E(x) coordinate: 6								Datum: NAD SI FOM:	
Observer (s) Name: Neil Fric	encen	Initials: 4/2	51 A	ffiliatio	n: ARR	Inc.		Phone: (503) 359-7525	
Station Elevation: 733 Ft / 6		on on Slone (ci	rcle one	e): Bott	om/plain.	Lower	1/3. (M	id 1/3, Upper 1/3, Ridgetop	
Station Placement (circle one) Inside	<						*****		
Distance from Survey Site Boundary: On Units of Measure for ALL Horizontal Distances: Meters									
Station Canopy Cover (circle one): $1 = 0$ to 25%, $2 = 26$ to 50%, $3 = 51$ to 75%, $4 = 76$ to 100%									
ENVIRONMENTAL CONDITIONS	<u>:</u>								
Official Sunrise Time: 0519	Table							and Survey Time: 0634	
Temperature at Sunrise:	Temp	erature at End	of Surv	ey: <u>/</u>	3.0_"	(circle or	ie) (Ĉ) (or F revised: 2 / 2000	
	HORIZ.	AUDIBILITY	PR	ECIPITA	TION	WIND	NOISE	NOTES	
	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			·	
C C VISIBILITY TO 2 TO 2 CANOPY	10 100 101	200 111	147411	, 00					
G NO CANOPY								0 / 1/0 /	
0434 HL 3	<u> </u>	Y	₩_	N	N	0	N	Begin Survey, High Fag	
0438 HI 3 Y	Y	<u> </u>	N	N	N	0	. N		
0507 HT 3 Y	<i>Y</i>	<i>y</i>	1/	N	1/	<u>@</u> /	N_	(()	
0519HT3 Y	Y	<u> </u>	N,	M	<i>N</i>	2	\ N	Suntige	
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						<u> </u>			
				 	 				
		1	1	1	1	1			
Ceiling: III. = Unlimited (clear). HI = >2	.0 canopy he	ight, MID = >1.	25 to ≤ 2	.0 сапор	l y height, L	0 = ≤1.25	canopy h	eight, U = Unknown.	
Colling: UL = Unlimited (clear), HI = >2 Cloud Cover: $\theta = 0\%$, 1 = 33%, 2 = 66%,	3 = 100%.	singod dva to cor	ditione)	V = Uni	mnaired (co	anditions :	allow for r	eliable detection), U = Unknown.	
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Survey Visit to Protocol

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5 revised: 2 / 2000 Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint) Pg. 2 of 2 NOTES Milal on un ロンナ 2000 ot CBCH of WINK of HAWO Ct RRVL 4 RYPI MISO FINAL DETECTION DIRECTION 180 Detections - This Side Page Total: Site Name / No. Checter DEPART FLIGHT DIRECTION Area Name: Cedar Station Number: CLOSEST DIST. TO BIRDS SEEN STILL Canopy= 1.0 BIRD HEIGHT SEEN Metric **Note Significant Weather Changes on Page 1** Day 08 Year 2007 DIRECTION INITIAL FLIGHT Units of Measure (circle one): U.S. BEHAVIOR # BIRDS SEEN Month 07 OTHER 7/8 占 AUDITORY VOCAL SERIES # End Start TYPE Data Reference Number : INITIAL DETECTION DIRECTION SURVEY ACYIVITY: DETECTON TIME Observer (s) Initials: 0 0 1 1 J DETECTION STATUS -1/0 3

IYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

(Check Reverse Side When Using 2-Sided Forms) **BEHAVIOR:** F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

1007 Species of losters: Common

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				inale: _		1PC	2 T.	<u></u>	Phone: (63) 369 - 7525
Observer (s) Name:	Neil Elic	Jensen	Initials: <u>N</u>	A	mnanoi	1:	INC		Tione. (303) 337 (2023)
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Station Placement (• •					_	
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									or reliable detection), U = Unknown. letection).
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motion) $4 = 13-18 \text{ m}$	anh (sm. branches m	ove), 5 = 19-2	4 mph (lg. branc	hes & sn	n trees s	art to sway), 6 = 25-	31 mph (lg	g. branches in constant motion), $7 = 32-38$
mph (whole trees mo	ove), 8 = 39-46 mph	(twigs & sm. l	oranches break).			1 D			$\mathbf{v} = \mathbf{v}$

Survey Visit to Protocol

(explain in Notes) Reference Séquence No. Data Point No. Occurrence No. General Location Photo Code Quad - Code Data QC:Da Data QC Initials Date Entry Initials Data Entry Date Highest Biological Status Review Date WDFW DATABASE USE ONLY " Protocol Review Initials

Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other

≩	YSH	INGTO	Z Z	IARBL	Ä	₹	WASHINGTON MARBLED MURRELET FOREST SURVEY FORM	FOR	EST SL	IRVEY	<u>Ğ</u>	R ₩		Detections -	Detections - This Side Page Total:	ge Total:	Pg. 2 of 2
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	XE)	SURVEY ACYIVITY:	VITY					**NC	te Signif	icant We	ather	ote Significant Weather Changes on Page 1**	Page 1**				revised: 2 / 2000
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BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J. Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided Forms)

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Observer (s) N	Name: <u>A</u>	lden J.	Miller	Initials <u>A</u>	M A	Affiliatio	on: <u>AB</u>	R'In	<u>د</u>	Phone: (503) 359-7525
Station Flavor	tion: (o ^L	29 Rt 8	M Positi	on on Slone (c	ircle on	e). Rot	tom/nlain	Lower	1/3 (M	lid 1/3, Upper 1/3, Ridgetop
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Official Sunr	ise Time: _	0520	Table	e: North Bev	VJ B	legin St	rvey Time	e. <u>04</u> 5	<u> </u>	and Survey Time: 0635
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Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (explain in Notes).

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Year 2007 Month July Day 09 Data Reference Industrial Observer (s) Initials:

Detections - This Side Page, Total: B Pg. C of Z Area Name: Lecony RIVE Walesha

Ceder River North Site Name / No. Sowll Pork

Station Number: Units of Measure (circle one): U.S. / (Metric

revised: 2 / 2000 Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint) Skroch SUSSE NOTES Besin なな DETECTION DIRECTION FLIGHT DIRECTION DEPART CLOSEST DIST. TO BIRDS SEEN units Canopy= 1.0 BIRD HEIGHT SEEN **Note Significant Weather Changes on Page 1** DIRECTION INITIAL FLIGHT BEHAVIOR # BIRDS SEEN OTHER \ \ \ 9 AUDITORY VOCAL SERIES # End Start TYPE DETECTION
DIRECTION NHAL SURVEY ACYIVITY: DETECTON TIME S S 63 ω 7 0 $\overline{\circ}$ **DETECTION #** STATUS - I/O

IYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard

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Common Kaven College of Local A change of the second Predators: Stellers Jay

WASH	INGTO	ON				Survey	Visit to I	Protocol		Page 1 of	f_2
		IURRE	LET			(Y or N	I, initials)	: <u> </u>	.6	Total Detections:	<u>Ø_</u>
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Ceiting: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤ 2.0 canopy height, $LO = \le 1.25$ canopy height, U = Unknown.

Cloud Cover: $\theta = 0\%$, 1 = 33%, 2 = 66%, 3 = 100%.

Vertical Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Horizontal Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Audibitity: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection).

Precipitation - Rain & Fog: N = None, L = Light, M = Moderate, H = Heavy. Other: H = Hail, S = Snow. Indicate intensity using same codes for rain & fog. Wind: 0 = <1 mph (calm), 1 = 1-3 mph (leaves barely move), 2 = 4-7 mph (leaves rustle, sm. twigs move), 3 = 8-12 mph (leaves & sm. twigs in constant motion), 4 = 13-18 mph (sm. branches move), 5 = 19-24 mph (lg. branches & sm. trees start to sway), 6 = 25-31 mph (lg. branches in constant motion), 7 = 32-38mph (whole trees move), 8 = 39-46 mph (twigs & sm. branches break).

Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (explain in Notes).

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revised: 2 / 2000 Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint) Detections - This Side Page Total: Pg. Z of Z Area Name: Cecar River Watershad SUCUR 22/2/25 NOTES Begin 72 tirdia Cr DETECTION DIRECTION FINAL DIRECTION DEPART FLIGHT Site Name / No: Station Number: CLOSEST DIST. TO BIRDS SEEN units BIRD HEIGHT SEEN Canopy= Units of Measure (circle one): U.S. / Metric 10 **Note Significant Weather Changes on Page 1** Year 2007 INITIAL FLIGHT DIRECTION Month July Day 10 BEHAVIOR # BIRDS SEEN OTHER **∑**/× 익 AUDITORY VOCAL SERIES # ם Start Data Reference Number INITIAL DETECTION DIRECTION SURVEY ACYIVITY: M DETECTON Observer (s) Initials: 3 3 0 **DETECTION #** STATUS -1/O

TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, -- = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

(Check Reverse Side When Using 2-Sided Forms) **BEHAVIOR:** F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

Predator: Stellers Lan

WASHINGTON			i	Survey	Visit to P	rotocol		Page <u>1</u> of <u>7</u>
MARBLED MURRE	LET		((Y or N	, initials)	: y 6	b	Total Detections:
FOREST SURVEY I				Species	s of Conc	ern (circ	le one, c	details on last pg.): Y or N
Area Name: <u>Codar River W</u> Station Location - T <u>Zl</u> N, I JTM zone: <u>10</u> E (x) coordinate: Observer (s) Name: <u>Neil Eric</u>	late (she c R 10 611924	(circle one) (E N (y) coor	or W	,s_/ 524	th For 10, Q	k <i>Ced</i> Q (1/16) Source:	av Rive NW GPS	_, of Q (1/4) <u>SE</u> _ Datum: <u>\(\lambda \) AD83</u> FOM: <u>\(\text{O} \)</u>
Station Elevation: Ft / (Station Placement (circle one) Inside Distance from Survey Site Boundary: Station Canopy Cover (circle one):	M Positi Outside	on on Slope (c	ircle one	e): Bott	om/plain ₍ Horizonta	Lower I Distance	1/3) M es:	(id-173, Upper 1/3, Ridgetop
ENVIRONMENTAL CONDITION Official Sunrise Time: 0520 Temperature at Sunrise: 17,0	<u>S</u> : Table		d,WAE	legin Su	ı rvey Tim	e: <u>043</u>	<u>/</u> E	Ond Survey Time: <u>0635</u>
TIME VERTICAL VIEWING COCCUSION TO 2 CANOPY	HORIZ VIS. TO 100 M	AUDIBILITY TO 200 M		ECIPITA		WIND	NOISE	NOTES
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Ceiling: UL = Unlimited (clear), HI = >: Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66% Vertical Visibility: N = Impaired (detecti Horizontal Visibility: N = Impaired (detections may Precipitation - Rain & Fog: N = None, 1 Wind: 0 = <1 mph (calm), 1 = 1-3 mph (the colon), 4 = 13-18 mph (sm. branches may mph (whole trees move), 8 = 39-46 mph (sm. branches may	ons may be mections may be mections may be to be missed dual = Light, M = leaves barely 1 ove), 5 = 19-2	uissed due to cone missed due to conditions), Moderate, H = move), 2 = 4-7 n mph (lg. brane	ditions), condition Y = Uni Heavy. noh (leav	Y = Units), Y = Units), Y = Units impaired Other: I es rustle,	mpaired (co inimpaired (conditions I = Hail, S sm. twigs	onditions a (condition allow for = Snow. move), 3 =	allow for reliable de Indicate in 8-12 mpl	eliable detection), U = Unknown. or reliable detection), U = Unknown. etection). ntensity using same codes for rain & fog.

Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (explain in Notes).

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WASHINGTON MARBLED MURRELET FOREST SURVEY FORM

Observer (s) Initials: ME
Data Reference Number:

Pg. 2 of 2 Detections - This Side Page Total. Area Name: *Cela*, Site Name / No: 5 Year 2007 _ Day _/O Month 07

Station Number:

Units of Measure (circle one): U.S. / Metric

revised: 2 / 2000 (L≂ Loud, M= Moderate, F= Faint) Heard Only Dist. To Birds NOTES NOF OCFL 105/701 DETECTION FINAL DIRECTION DEPART FLIGHT CLOSEST DIST, TO BIRDS SEEN Źij Canopy= BIRD HEIGHT SEEN **Note Significant Weather Changes on Page 1** INITIAL FLIGHT DIRECTION **BEHAVIOR** # BIRDS SEEN OTHER ۲/ X 占 AUDITORY VOCAL SERIES # End Start TYPE INITIAL DETECTION DIRECTION SURVEY ACYIVITY: DETECTON TIME 7 ゲ 9 7 0 5 **DETECTION #** STATUS -1/O

TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

--- = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

(Check Reverse Side When Using 2-Sided Forms) BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

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WASHINGTON MARBLED MURRELET FORE	T FOREST SURVEY FORM	Detections - This Side Page Total: 6 7 Pg Z of Z
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Observer (s) Initials: HJM	Month July Day / Year 1807 Site Name / No:	Site Name / No. TAYlor Ridge
Data Reference Number	Units of Measure (circle one): U.S. / Metric Station Number.	Station Number.
SURVEY ACXIVITY:	**Note Significant Weather Changes on Page 1**	revised: 2 / 2000

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TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, --- = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown. AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, -- = None or N/A. If both are heard write W / J.

(Check Reverse Side When Using 2-Sided Forms)

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mph	(wh	ole t	rees n	nove) \$	R = 39-46 mnh / 6	twigs & sm. b	ranches break).						drip, $\mathbf{V} = \mathbf{Vehicle}$, $\mathbf{W} = \mathbf{Wind}$, $\mathbf{O} = \mathbf{Other}$
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Survey Visit to Protocol

Page <u>1</u> of <u>2</u>

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WASHINGTON MARRIED MURRELET

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Survey Visit to Protocol

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Detections - This Side Page Total: Site Name / No: Lindley Area Name: Ledor Station Number: Units of Measure (circle one): U.S. / Metric) Year 2007 Day Month_07 Data Reference Number Observer (s) Initials: SURVEY ACYIVITY:

Pg. 2 of 2 revised: 2 / 2000 Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint) DEIV, IGRAL NOTES 4 NRO 1/00/k LCBCH 7 1262 IN HAWO スタグナ 201/02 FINAL DETECTION DIRECTION DEPART FLIGHT DIRECTION CLOSEST DIST. TO BIRDS Canopy= BIRD HEIGHT SEEN **Note Significant Weather Changes on Page 1** INITIAL FLIGHT DIRECTION **BEHAVIOR** # BIRDS SEEN OTHER N/ 占 **AUDITORY VOCAL SERIES** # End Start TYPE INITIAL DETECTION DIRECTION DETECTON TIME r

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-- = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, -- = None or N/A. If both are heard write W / J. **IYPE:** H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

(Check Reverse Side When Using 2-Sided Forms) **BEHAVIOR:** F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

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WASHINGTON

Protocol Review Initials

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WASHINGTON MARBLED MURRELET FORE	FOREST SURVEY FORM	Detections - This Side Page Total: Pg. 2 of 6
1 7 82		Area Name: LEART KIVE MARKShed
Observer (s) Initials:	Month July Day 16 Year 600 +	Site Name / No: Chester North
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revised: 2 / 2000 Heard Only Dist, To Birds (L= Loud, M= Moderate, F= Faint) Swrugg SKruey NOTES Begin FINAL DETECTION DIRECTION DIRECTION DEPART FLIGHT CLOSEST DIST. TO BIRDS SEEN units Canopy= 1.0 BIRD HEIGHT SEEN **Note Significant Weather Changes on Page 1** INITIAL FLIGHT DIRECTION **IYPE:** H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard. BEHAVIOR # BIRDS SEEN OTHER ر/× 9 AUDITORY VOCAL-SERIES # E E Start TYPE INITIAL DETECTION DIRECTION SURVEY ACYIVITY DETECTON Ν <u>M</u> 9 AND DOOR AND THE SEA SEA DOOR STATE OF THE SEA OF THE SEA STATUS -1/O

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Fredator: Gray Jan

WASHINGTON

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Data Entry	OF 1866.	364	and in the department	Data Entry	Date Review	Dote	uala!	DC Initials		Highes	t Biological Status
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STATUS -1/O

Pg. 2 of 2 Detections - This Side Page Total: Area Name: Cedar Site Name / No: Station Number: Units of Measure (circle one): U.S. / Metric Year 2007 Day_ Month_07 Data Reference Number Observer (s) Initials:

revised: 2 / 2000 Heard Only Dist. To Birck (L= Loud, M= Moderate, F= Faint) HRECRIHETE 115 ON UNKNOWN N NOTES ANIM t RCCH ADE 11 STCBLH H (TIA insise HOSFI FINAL DETECTION DIRECTION DEPART FLIGHT DIRECTION CLOSEST DIST. TO BIRDS SEEN Ź.<u>Ę</u> ₹ Canopy= 1.0 BIRD HEIGHT SEEN **Note Significant Weather Changes on Page 1** INITIAL FLIGHT DIRECTION **BEHAVIOR** # BIRDS SEEN OTHER ۲/ X 심 AUDITORY VOCAL SERIES * Find Start TYPE INITIAL DETECTION DIRECTION SURVEY ACYIVITY: DETECTON 27 ⋾ Ö ~ 7 7 J DETECTION #

--- = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, --- = None or N/A. If both are heard write W / J. Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown. $p_T \omega O$ IYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard

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Species of loncon

(Check Reverse Side When Using 2-Sided Forms)

TATE TORES Area Name: tation Locati TTM zone:	ED NOT SUIT	IURRE RVEY F River W 22 N, 1 coordinate: 6	FORM Latershee R_10 07-\$68	N (y) coor	/ Numbe	Y or N Species er:	55.1A 30,0 5843	ern (circ	le one, of July SW GPS	Page 1 of 7 Total Detections: details on last pg.): Y or N Day 13 Year 2007 Station Number: 2 , of Q (1/4) 5 = Datum: NAD 83 FOM: Phone: (503) 357-7525
tation Eleva tation Placer Distance fron	tion: <u>82</u> nent (circle n Survey Si	Ft (inside the Boundary:	M Positi	on on Slope (c	ircle one	e): Bott	tom/plain, Horizonta	L ower	1/3, M	iid 1/3, Upper 1/3, Ridgetop
	IENTAL C	CONDITION	<u>S</u> : Table		end o	Begin Su	rvey Time	e: <u>047</u>	33 _E	and Survey Time: 07-08 or F revised: 2/2000
TIME	CEILING	VISIBILITY TO 2 CANOPY	HORIZ. VIS. TO 100 M	AUDIBILITY TO 200 M	PR	FOG	TION OTHER	WIND	NOISE	NOTES
0433 0523 0604 0626 0632 0639 0707 0707	LO 3 LO 3	Y	> > > > > > > > > >	Y Y Y Y Y Y	ZZZZLT3ZZ	333772222	7777777	2 1 1 1	727	Begin Survey Sunrise **survey extended 30 min, due to weather. End survey
Cl oud Cover: Vertical Visib Torizontal Vi	0 = 0%, 1 = ility: N = In sibility: N =	33%, 2 = 66% apaired (detecti Impaired (detect	, 3 = 100%. ons may be m ections may be	issed due to con	ditions), condition	Y = Unit s), Y = U	npaired (co	nditions a	llow for re	eight, U = Unknown. cliable detection), U = Unknown. r reliable detection), U = Unknown. etection).

Precipitation - Rain & Fog: N = None, L = Light, M = Moderate, H = Heavy. Other: H = Hail, S = Snow. Indicate intensity using same codes for rain & fog. Wind: $\theta = <1$ mph (calm), 1 = 1-3 mph (leaves barely move), 2 = 4-7 mph (leaves rustle, sm. twigs move), 3 = 8-12 mph (leaves & sm. twigs in constant motion), 4 = 13-18 mph (sm. branches move), 5 = 19-24 mph (lg. branches & sm. trees start to sway), 6 = 25-31 mph (lg. branches in constant motion), 7 = 32-38 mph (whole trees move), 8 = 39-46 mph (twigs & sm. branches break).

Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (explain in Notes).

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Detections - This Side Page Total: Pg. Z of Z Area Name: Ledar Kiver Withershald > Station Number: Site Name / No: / Metric Month July Day 13 Year 2007 Units of Measure (circle one): U.S. , and Data Reference Number Observer (s) Initials: 3

revised: 2 / 2000	NOTES Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)	Begin Survey	FIND SULVE																		
	FINAL DETECTION DIRECTION																				
	DEPART FLIGHT DIRECTION																				
	CLOSEST DIST. TO BIRDS SEEN ()																				
ge 1**	BIRD HEIGHT SEEN Canopy=	+	-	·	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Note Significant Weather Changes on Page 1	INITIAL FLIGHT DIRECTION																				
ather	BEHAVIOR														_						
icant We	# BIRDS SEEN																	· 			
**Note Signi	AUDITORY VOCAL SERIES OTHER Start End # OL W/J																				
ı	TYPE																				
	INITIAL DETECTION DIRECTION																				
SURVEY ACYIVITY:	DETECTON TIME	0433	0708																		
VEY	DETECTION #	1																			
SU	STATUS -1/O	A) fi	XIII			79.8				3 (29)			erate	TO DE	. .	(20%) (20%)		e Spirit		# 5	(4) (4)

TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, -- = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, -- = None or N/A. If both are heard write W / J.

BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Denarting From a Tree. S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided Forms)

WASHINGTON	Survey Visit to Protocol	Page $\underline{1}$ of \underline{Z}
MARBLED MURRELET	(Y or N, initials): Y (At	Total Detections:
FOREST SURVEY FORM	Species of Concern (circle one, d	etails on last pg.): Y or N
	South Fork Month July	Day 1+ Year 2007
Area Name: Cedar River water Shed Site Name / Num	ber: Cedar River Northeast	Station Number:
Station Location - T 7 N. R / O (circle one) Por V	v.s /0 ,00 (1/16) NW	, of Q (1/4) SE
LITM zone: 10 E(x) coordinate: 611974 N(v) coordinate	5241408 Source: GPS	Datum: NAD 83 FOM:
Observer (s) Name: Alden J. Miller Initials: AJM	Affiliation: ABR Inc. F	Phone: (503) 359 - 75 28
Station Elevation: 801 Ft /M Position on Slope (circle of	one): Bottom/plain, Lower 1/3, M	id 1/3, Upper 1/3, Ridgetop
Station Placement (circle one) Inside, Outside		
Distance from Survey Site Boundary: Units of Measure	for ALL Horizontal Distances: M	eters
Station Canopy Cover (circle one): $1 = 0$ to 25% $2 = 26$ to 50% .	3 = 51 to 75%, 4 = 76 to 100%	
ENVIRONMENTAL CONDITIONS:		0/1/0
Official Sunrise Time: 0527 Table: North Bend	Begin Survey Time: 0440 E	nd Survey Time: 0642
Temperature at Suprise: 110.5 Temperature at End of Su	rvev: 17.5 (circle one) (C) c	or F revised: 2 / 2000

Temperature	at Sun	rise:	16.2	Temp	erature at End	of Surv	ey:		(circle of	ie) (C)	or F revised: 2 / 2000
пме	VEI	RTICA	L VIEWING	HORIZ.	AUDIBILITY	PR	ECIPITA	TION	WIND	NOISE	NOTES
	CEILING	COVER	VISIBILITY TO 2 CANOPY	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			
0440	141	3	Υ	Ÿ	Υ	7	N	7	1	Z	Begin Survey
0577	H	3	Y	Ý	Y	N	N	7	1	Z	Begin Survey Survise
0624	HI	7_	Ý	Ÿ	Ý	N	N	7	1	N	•
0642	И	Z	Ý	Ý	Ÿ	N	N	N)	N	End survey
	•										
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Ceiling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤2.0 canopy height, LO = ≤1.25 canopy height, U = Unknown.

Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%.

Vertical Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Horizontal Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Audibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection).

Precipitation - Rain & Fog: N = None, L = Light, M = Moderate, H = Heavy. Other: H = Hail, S = Snow. Indicate intensity using same codes for rain & fog. Wind: 0 = <1 mph (calm), 1 = 1-3 mph (leaves barely move), 2 = 4-7 mph (leaves rustle, sm. twigs move), 3 = 8-12 mph (leaves & sm. twigs in constant motion), 4 = 13-18 mph (sm. branches move), 5 = 19-24 mph (lg. branches & sm. trees start to sway), 6 = 25-31 mph (lg. branches in constant motion), 7 = 32-38 mph (whole trees move), 8 = 39-46 mph (twigs & sm. branches break).

Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (explain in Notes).

			quence No:	Reference No	
Occurrence No. [Quadr Code	Deta Point No Photo Code	THE RESERVE OF THE PARTY OF THE PARTY.	neral Location	7727	
Data Entry (nitials	Data Entry Date	ik wederedelende is de Di Di	na QC Inicals	Data QC Date	THE RESERVE THE PERSON NAMED IN COLUMN TWO IN COLUMN TO SERVE THE PERSON NAMED IN COLUMN TO SERVE THE
Protogol Review initials _		Review Date WDFW DATABASE	USE ONLY -	Highest Biological State	(8)

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Month July Day 17 Data Reference Number Observer (s) Initials: ⋛

Detections - This Side Page Total: Detections - This Side Page Total: Detections - This Side Page Total: Detection of Site Name / No. Stuff for Kilder River Northeast Station Number:

Metric Year 2007 Units of Measure (circle one): U.S. /

SUR	IVEY	SURVEY ACYIVITY:			**Note	te Signifi	cant We	ather (Significant Weather Changes on Page 1**	ge 1**				revised: 2 / 2000
STATUS -1/O	DETECTION #	DETECTON TIME	INITIAL DETECTION DIRECTION	TYPE	AUDITORY VOCAL SERIES Start End # OL	отнек w/J	# BIRDS SEEN	BEHAVIOR	INITIAL FLIGHT DIRECTION	BIRD HEIGHT SEEN Canopy=	CLOSEST DIST. TO BIRDS SEEN ()	DEPART FLIGHT DIRECTION	FINAL DETECTION DIRECTION	NOTES Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)
32	V	9440								•				Begin Survey
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TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, -- = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N).

(Check Reverse Side When Using 2-Sided Forms) AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (≤ 1.0), B = Circle At or Below Canopy (≤ 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

NASHI	NGTON			;	Survey	Visit to F	rotocol		Page <u>1</u> of <u>2</u>
	ED MURRE	LET		((Y or N	I, initials)	WG	m	Total Detections:
	T SURVEY				Specie	s. of Conc	егn (circ	ele one, c	letails on last pg.): Y or (N)
Area Name:	Cedar River	Watersh	Site Name	/ Numbe	er: <u>Ta</u> y	dor Ri	dae -		Day _/8 Year _2007 Station Number:3
									, of Q (1/4) <u>NE</u>
									Datum: <u>\(\AD83\) FOM:</u>
Observer (s) i	Name: Neil Ecc	Jensen	Initials:	ELA	Affiliatio	on: ASK	Inc.		Phone: (63) 359-7525
	tion: <u>1063</u> Ft (ircle one	e): B ot	tom/plain,	Lower	1/3, M	id 1/3, Upper 1/3. Ridgetop
	ment (circle one): Insi			•			1250	11	1.
	n Survey Site Boundary	_							<u>7265</u>
Station Canop	by Cover (circle one):	1 = 0 to 25%	2 = 26 to 50)%, 3:	= 51 to '	75%, (4 =	76 to 10	0%)	
	IENTAL CONDITION Tise Time:	Table		,				_	and Survey Time:
remperature [at Sunrise://	⁰ Temp	erature at End	of Surv	ey: _ <i></i>	2.5_"	(circle o	ne) (C)	or F revised: 2 / 2000
TIME	VERTICAL VIEWING O CO VISIBILITY TO 2 CANOPY	HORIZ. VIS. TO 100 M	AUDIBILITY TO 200 M	PR RAIN	FOG	OTHER	Wind	NOISE	NOTES
	S S D CANOPY								
0442	10 3 N	N	N	M	H	N	1	T	Regin Sulvey
0456	MID 3 N	N	N	7H_	Н	N	1	T	-J /
	4177 7	./	V	. /	\overline{H}	./)	./	i

TIME	VERTICA	L VIEWING	HORIZ.	AUDIBILITY	PR	ECIPITA	TION	WIND	NOISE	NOTES
	CLOUD COVER CEILING	VISIBILITY TO 2 CANOPY	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			
0442	103	N	N	N	M	Н	N	1	\mathcal{I}	Begin Sulvey
0456	MD 3	N	N	N	ML	H	N	1	T	J /
	MIT) 3	N	N	Y	$\sqrt{}$	Н	N	/	N	
0018	MID 3	N	1/	Y	1	#	N	1	1/	
0522	MIT 3	N_	N	N	M	H	N	1	T	
0533	WII 3	1/	N	Y		H	N	1	N	
0541	LO 3	N	N	Y	<u></u>	#	1/	/	N	
0622	103	N	N	Y	N	#	N	1	N	
0658	103	N	N	Y	N	#_	N	1	N	End Sulvey
		<u> </u>								

Cciling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤ 2.0 canopy height, LO = ≤1.25 canopy height, U = Unknown. Cloud Cover: $\theta = 0\%$, 1 = 33%, 2 = 66%, 3 = 100%.

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Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (explain in Notes).

Occurrence No.	Dáta Point No	Sequence No	Refere	once No. 1
Quad Code	Photo Code	General Location		
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Pg. 2 of 2 Detections - This Side Page Total: Area Name: Ceda Station Number: Site Name / No: Metric Year 2007 Units of Measure (circle one): U.S. Day 18 Month 07 Observer (s) Initials: Data Reference Number

SURV	/EY	SURVEY ACYIVITY:			**Note Significant Weather Changes on Page 1**	ficant Weat	ther Ch	ranges on Pa	ge 1**				revised: 2 / 2000
STATUS -1/O	DETECTION #	DETECTON TIME	INITIAL DETECTION DIRECTION	TYPE	AUDIT VOCAL SERIE Start End #	# BIRDS SEEN	BEHAVIOR	INITIAL FLIGHT DIRECTION	BIRD HEIGHT SEEN Canopy=	CLOSEST DIST. TO BIRDS SEEN ()	DEPART FLIGHT DIRECTION	FINAL DETECTION DIRECTION	NOTES Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)
	H	0442											Bain Survey
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TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, -- = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or **AUDITORY - Other** (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, $\longrightarrow N/A$. If both are heard write W/J.

(Check Reverse Side When Using 2-Sided Forms) Departing From a Tree, S = Stationary Caling (fixed-point multiple calls <100 m), U = Unknown.

Potential Predates: STSA

WASHINGTON MARBLED **FOREST SI**

WASHINGION	Survey (Lorentz - 1	<u> </u>
MARBLED MURRELET		Total Detections:
EODEST SLIDVEY EODM	Species of Concern (circle one,	details on last pg.): Y or (N)
	Month July	
Area Name: Cedar River water Shed Site Name	Number: ROCK Creek	Station Number: Z
Station Location - T LL N. R & (circle one)	E/or W .S ノン 、00 (1/16) ジベ	, of $Q(1/4)$ $\rightarrow L$
UTM zone: 10 E (x) coordinate: 596782 N (y) coordinate	ordinate: 5248774 Source: GP	Datum: NAD 03 FOM:
Observer (s) Name: Alden J. Miller Initials:	JM Affiliation: ABK Inc.	Phone: (503) 359-7525
Station Elevation: 914 Ft (M) Position on Slope (circle one): Bottom/plain, Lower 1/3,	Mid 1/3 Upper 1/3, Ridgetop
Station Placement (circle one). (Inside) Outside		10 e / a - c
Distance from Survey Site Boundary: Units of M	Measure for ALL Horizontal Distances:	ritters
Station Canopy Cover (circle one): $(1 = 0 \text{ to } 25\%)$ 2 = 26 to 5	50%, 3 = 51 to 75%, 4 = 76 to 100%	

Survey Visit to Protocol

1 of Z

ENVIRONMENTAL CONDITIONS: Begin Survey Time: 0443 End Survey Time: 0643 Official Sunrise Time: 052 (circle one) Temperature at End of Survey: Temperature at Sunrise:

TIME	VE	RTICA	L VIEWING	HORIZ.	AUDIBILITY	PF	RECIPITA	TION	WIND	NOISE	NOTES
	CEILING	CLOUD	VISIBILITY TO 2 CANOPY	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			
0443	LO	3	Ν	Z	Y	L	M	7		Z	Begin Survey
0500	10	3	7	N	Y	7	M	7	2	N	
0520	10	3	N	7	Υ	<u>L</u>	M	N	1	N	
0528	10	3	7	N	Υ	L	M	7	İ	N	Sunrise End Survey
0643	10	3	7	Z	Y	L,	M	N	١	7	End Survey
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Ceiling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤2.0 canopy height, LO = ≤1.25 canopy height, U = Unknown. Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%.

Vertical Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown.

Horizontal Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Audibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection).

Precipitation - Rain & Fog: N = None, L = Light, M = Moderate, H = Heavy. Other: H = Hail, S = Snow. Indicate intensity using same codes for rain & fog. Wind: 0 = <1 mph (calm), 1 = 1-3 mph (leaves barely move), 2 = 4-7 mph (leaves rustle, sm. twigs move), 3 = 8-12 mph (leaves & sm. twigs in constant motion), 4 = 13-18 mph (sm. branches move), 5 = 19-24 mph (lg. branches & sm. trees start to sway), 6 = 25-31 mph (lg. branches in constant motion), 7 = 32-38 mph (whole trees move), 8 = 39-46 mph (twigs & sm. branches break).

Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other

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(explain in Notes).				
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SURVEY ACYIVITY: Data Rejerence Nimber Observer (s) Initials: Units of Measure (circle one): U.S. Month July Day 100 Year 2007 Metric

Area Name: Leday Detections - This Side Page Total:

Site Name / No:

Cack

Station Number:

O \ 1 - SUTATS DETECTION # \mathcal{O} DETECTON キャッ હ TIME DIRECTION DETECTION INITIAL TYPE Start VOCAL SERIES End AUDITORY # **Note Significant Weather Changes on Page 1** ဝ OTHER ر ا BIRDS **REHAVIOR** DIRECTION FLIGHT NITIAL BIRD HEIGHT SEEN Canopy= CLOSEST DIST. TO BIRDS DIRECTION DEPART FLIGHT DETECTION DIRECTION (L≃ Loud, M= Moderate, F= Faint) ひのふ ITAC Heard Only Dist. To Birds NOTES Survey SASK K revised: 2 / 2000

TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, --- = None or N/A. If both are heard write W/J.heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type

BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree. S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided Forms)

WASHINGTON
MARBLED MURRELET
FOREST SURVEY FORM

WASHINGTON	Survey Visit to Protocol	Page 1 of 2
MARBLED MURRELET	(Y or N, initials): Y Car	Total Detections:
FOREST SURVEY FORM	Species of Concern (circle one,	details on last pg.): (Y) or N
	Month July	Day 19 Year 2007
Area Name: Cedar River Water Shed Site Name/Num	ber: Rack Overk	Station Number: Z
Station Location - T ZZ N, R 8 (circle one) (E) or V	v, s = 13, QQ(1/16) = 5W	_, of Q(1/4)_ <u>SE</u>
UTM zone: 10 E(x) coordinate: 596787 N(y) coordinate	: 5248774 Source: GPS	Datum: NAD 83 FOM:
Observer (s) Name: Alder J. Miller Initials: AJM	Affiliation: ABR Inc.	Phone: (503) 359-7525
Station Elevation: 914 Ft /M Position on Slope (circle o	ne): Bottom/plain, Lower 1/3,	lid 1/3. Upper 1/3, Ridgetop
Station Placement (circle one) Inside Outside		
Distance from Survey Site Boundary: Units of Measure	for ALL Horizontal Distances:	eters
Station Canopy Cover (circle one): $1 = 0$ to 25%) $2 = 26$ to 50%,	3 = 51 to 75%, 4 = 76 to 100%	
ENVIRONMENTAL CONDITIONS:	m1120	$\sim 1/U$
	Begin Survey Time: 0438	
Temperature at Compies: 10 Temperature at End of Su	rvev: (Circle one)	br F revised: 2 / 2000

<u>T</u>	empe	ratur	re a	at Sur	rrise:	<u> 10 </u>	Temp	erature at End	of Surv	ey:	' <u>'</u>	(circle of	ne) (C)	or F revised: 27 2000
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		-		CEILING	CLOUD	VISIBILITY TO 2 CANOPY	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			
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Cciling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤ 2.0 canopy height, $LO = \le 1.25$ canopy height, U = Unknown.

Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%.

Vertical Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Horizontal Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Audibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection).

Precipitation - Rain & Fog: N = None, L = Light, M = Moderate, H = Heavy. Other: H = Hail, S = Snow. Indicate intensity using same codes for rain & fog. Wind: 0 = <1 mph (calm), 1 = 1-3 mph (leaves barely move), 2 = 4-7 mph (leaves rustle, sm. twigs move), 3 = 8-12 mph (leaves & sm. twigs in constant motion), 4 = 13-18 mph (sm. branches move), 5 = 19-24 mph (lg. branches & sm. trees start to sway), 6 = 25-31 mph (lg. branches in constant motion), 7 = 32-38 mph (whole trees move), 8 = 39-46 mph (twigs & sm. branches break).

Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (explain in Notes).

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Observer (s) Initials: Dala Refered Number Month July Day Units of Measure (circle one): Year 7607

Detections - This Side Page Total:
Area Name: Close River

TASK ZERK

Site Name / No:

SURVEY ACYIVITY: **Note Significant Weather Changes on Page 1** Station Number: revised: 2 / 2000

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TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

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Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

Fredutors: Steller's Jay (on mon Roulen

Species of Concern: P. Lonted Which Orlhor Common BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Denarting From a Tree. S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided Forms)

WASHINGTON	
MARBLED MURRELET	
FOREST SURVEY FORM	1

MARBI	LED N	IURRE	LET		1	(Y or N	, initials)	: Y (M	/	Total Detections:
FORES						Species	of Conc	ern (circ	le one, d	letails on last pg.): Y or N
Area Name:	<u>Cedac k</u> ion - T_ <u>10</u> E(x) c	Ner Wate 22 N, I	94696	(circle one) E N (y) coor	or W	,s <u>/</u>	ilor Ri 26 , Q 2009	Q (1/16) Source:	NE GPS	Day/9 Year
Station Eleva Station Place Distance fron	tion: <u>////</u> ment (circle n Survey Si	Ft /6 one): Inside	N Positi Outside	on on Slope (c	ircle on	e): Bott	om/plain, Horizonta	Lower I Distanc	1/3, M es: <u></u>	id 1/3, Upper 1/3, Ridgetop
ENVIRONM Official Sunr Temperature	IENTAL C	CONDITION 529	<u>S</u> : Table	: Nodh Bend, erature at End	WA I	Begin Su	rvey Tim	e: <u>044</u>	<u>/</u> E	or F revised: 2 / 2000
TIME		VISIBILITY TO 2 CANOPY	HOŘIZ. VIS. TO 100 M	AUDIBILITY TO 200 M	PR RAIN	FOG	TION OTHER	WIND	NOISE	NOTES
0 4 4 4 0 4 C 2 0 C 0 3 0 C 1 4 0 C 2 9 0 C 5 1 0 C 5 1 0 C 6 0 8	MID 3 HI 3 HI 3 HI 3 HI 3 HI 3 HI 3 HI 2	X Y Y Y Y Y	Y Y Y Y Y Y Y Y Y	Y Y Y Y Y Y Y Y	N N N N L N		N N N N N N	0000000		Regin Survey Very light for Very light fog, very lightion
0600	HT 2	Y	Y	Y	N	N		1	N	End Survey

Survey Visit to Protocol

Ceiling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤2.0 canopy height, LO = ≤1.25 canopy height, U = Unknown.

Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%.

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Detections - This Side Page Total:

SURVEY ACYIVITY: Observer (s) Initials: Month_ **Note Significant Weather Changes on Page 1** Units of Measure (circle one): ō Metric) Station Number: Site Name / No: /ay /a Area Name: (eda) revised: 2 / 2000

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Murice let Pieda to 15: 575 A (Steller's by)

Species of Concern: Spe BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (\leq 1.0), B = Circle At or Below Canopy (\leq 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided Forms)

(Spotted Towkee), PIwo (Pileated Woodpecker)

WASHINGTON

	.ED M	URRE	LET		(Y or N	, initials):	W CA	<u>'</u>	Total Detections:
FORES						Species	of Conc	ern (circ	le one, d	letails on last pg.): (Y) or N
Area Name:	<u>Cedar</u>	River W	atershed	(circle one)	Numbe	er: Li	ndsay	Month Cree	uly ext SE	Day <u>70</u> Year <u>7007</u> Station Number: 1 , of Q (1/4) <u>NE</u> Datum: <u>NAS 83 FOM:</u> Phone: (573) 359-7525
Station Elevat Station Placer Distance from	ion: Sinent (circle	one): Inside	M Position	on on Slope (c	ircle one	e): Bott	om/plain, Horizonta	Lower	1/3, M	ud 1/3 Upper 1/3, Ridgetop
ENVIRONM Official Sunr	ENTAL C	ONDITION	<u>S</u> : Table	North B	end B	legin Su	rvey Time	. <u>044</u>	<u>5</u> e	and Survey Time: <u>0715</u>
Temperature	at Sunrise:		Temp	erature at End	of Surv	ey:		(circle or	e) [C]	or F revised: 2 / 2000
TIME	VERTICA	L VIEWING	HORIZ	AUDIBILITY	PR	ECIPITA	ПОИ	WIND	NOISE	NOTES
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0 445		TO2		200 M				1	77	Begin Survey
0 445 0503	ML D	TO 2 CANOPY		200 M	2	7 7 1	222	4	77	
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0445 0503 0522 0530 0645	UL D MID Z	TO 2 CANOPY		200 M	222	7 7 1	222	~	77	

Survey Visit to Protocol

Page 1 of Z

Cciling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to \leq 2.0 canopy height, LO = \leq 1.25 canopy height, U = Unknown.

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(explain in Notes)

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Observer (s) Initials: Month July Day To Year 2007 Units of Measure (circle one): U.S. Site Name / No: Station Number: Area Name:

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12	DETECTION #		3							_			-	-		_		-	<u>.</u>		
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Note Significant Weather Changes on Page 1	INITIAL FLIGHT DIRECTION																				
ge 1**	BIRD HEIGHT SEEN Canopy= 1.0	4	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
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revised: 2 / 2000	N Heard Only (L= Loud, M= N	Besin Survey	1																		

TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, --- = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, --- = None or N/A. If both are heard write W / J

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(Check Reverse Side When Using 2-Sided Forms) trealmoss: SAMES Jan Theres of concern: Vahx's Swift

WASHINGTON MARBLED MURRELET FOREST SURVEY FORM

Area Name: Cedar River Waters

UTM zone: 10 E(x) coordinate: 607668

Station Canopy Cover (circle one): (1 = 0 to 25%)

Station Location - T 22 N, R

Station Elevation: <u>82</u> Ft M Station Placement (circle one) Inside

Distance from Survey Site Boundary:

ENVIRONMENTAL CONDITIONS:

Official Sunrise Time: 0(30

Observer (s) Name: Neil Fac

Survey Visit to Protocol Page 1 of 2
(Y or N, initials): Y Car Total Detections:
Species of Concern (circle one, details on last pg.): Y or N
Month <u>07</u> Day <u>20 Year 2007</u>
Site Name / Number: 155.14 Station Number: 2
rcle one) (E) or W, S 30, QQ (1/16) 54, of Q (1/4) 5E
N(y) coordinate: 5245847 Source: 6PS Datum: 1/4D83FOM: 0
Initials: WE Affiliation: ARR, Tac. Phone: (503) 789-7525
on Slope (circle one): Bottom/plain, Lower 1/3, Mid 1/3, Upper 1/3, Ridgetop Units of Measure for ALL Horizontal Distances: 2 = 26 to 50%, 3 = 51 to 75%, 4 = 76 to 100%
white at End of Survey: 12.5 (circle one) C or F revised: 2/2000
UDIBILITY PRECIPITATION WIND NOISE NOTES TO 200 M RAIN FOG OTHER

Temperature at Sunrise://,u			Temp	erature at End	of Surve	<u>y:/_</u>	<u> </u>	(CITCLE OF	1e) (C)	or F revised: 27 2000								
TIME	VERTICAL VIEWING CO C VISIBILITY TO 2 TO 2 CANOPY		C C VISIBILITY								HORIZ. VIS. TO 100 M	AUDIBILITY TO 200 M		FOG	TION OTHER	WIND	NOISE	NOTES
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Colling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤ 2.0 canopy height, LO = ≤ 1.25 canopy height, U = Unknown. Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%.

Vertical Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown.

Horizontal Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown.

Audibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection).

Precipitation - Rain & Fog: N = None, L = Light, M = Moderate, H = Heavy. Other: H = Hail, S = Snow. Indicate intensity using same codes for rain & fog. Wind: 0 = <1 mph (calm), 1 = 1-3 mph (leaves barely move), 2 = 4-7 mph (leaves rustle, sm. twigs move), 3 = 8-12 mph (leaves & sm. twigs in constant motion), 4 = 13-18 mph (sm. branches move), 5 = 19-24 mph (lg. branches & sm. trees start to sway), 6 = 25-31 mph (lg. branches in constant motion), 7 = 32-38 mph (whole trees move), 8 = 39-46 mph (twigs & sm. branches break).

Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (explain in Notes).

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WASHINGTON MARBLED MURRELET FOREST SURVEY FORM

Detections - This Side Page Total:

SURVEY ACYIVITY: Observer (s) Initials: Month 07 **Note Significant Weather Changes on Page 1** Units of Measure (circle one): U.S. _Day_ 20 Year Station Number: Site Name / No. Area Name: (cda/ revised: 2 / 2000

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																	Fad Survey	~ ` `	Begin luner	Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint)	NOTES

TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, - = None or N/A. If both are heard write W / J. heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N).

Departing From a Tree, S = Stationary Calling (fixed-point multiple calls < 100 m), <math>U = Unknown. BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Denarting From a Tree. S = Stationary Calling (fixed-point multiple calls < 100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided Forms)

WASHINGTON
MARBLED MURRELET
FOREST SURVEY FORM

MARBI	_ED M	IURREI	LET		(Y or N, initials): Y (At Total Detections:								
FORES	T SUI	RVFY F	ORM		Species of Concern (circle one, details on last pg.): Y or N								
Area Name: Station Locati	Ceda	r River	watersho	(circle one) (E N (v) coor	or W	,s <u> </u>	<u>+</u> , 0 3187	Q (1/16) _ Source: _	6PS	Day <u>75</u> Year <u>2007</u> Station Number: <u>1</u> , of Q (1/4) <u>NE</u> Datum: <u>NAD 83</u> FOM: Thone: (503) <u>359-7525</u>			
Station Placer Distance fron	nent (circle 1 Survey Si	one Inside	Outside		easure fo	or ALL	Horizontal	Distance	es: <u>M</u>	d 1/3, Upper 1/3, Ridgetop			
ENVIRONM Official Sunr Temperature	IENTAL C	onditions 0536	<u>S</u> : Table		ind B	Segin Su	rvey Time	. 044	<u>19</u> E	nd Survey Time: 0651 or F revised: 2/2000			
TIME	COVER CEILING	L VIEWING VISIBILITY TO 2 CANOPY	HORIZ VIS. TO 100 M	AUDIBILITY TO 200 M	PR RAIN	ECIPÎTA FOG	TION OTHER	WIND	NOISE	NOTES			
0 4 4 9 0 5 1 3 0 5 3 0 0 5 3 0 0 6 5 1	W D HI 1 HI Z HI 3 HI Z HI Z	Y	Y	Y Y Y Y	77272	77777	22222	00000	22222	Begin Survey Sun rise End Survey			

Survey Visit to Protocol

Celling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤2.0 canopy height, LO = ≤1.25 canopy height, U = Unknown.

Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%.

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(explain in Notes).

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25/0/23

276	WASHING FON WARDER
	TING ON MAXINED MORXELE FOREST SORVEY FORM
)	
Area Name: Leokir Kiver W	Detections - This Side Page Total:

Observer (s) Initials: Month July Day US Year 700 + Units of Measure (circle one): U.S.

Site Name / No:

SURVEY ACYIVITY: **Note Significant Weather Changes on Page I** (Metric Station Number: revised: 2 / 2000

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TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, —= None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N).

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tredutes: Stellars Jan

Species of concer. Vanx's swifts

WASHINGTON
MARBLED MURRELET
FOREST SURVEY FORM

MARBLED MURRE	LET	(Y or N, initials): Y (n/r	Total Detections:						
FOREST SURVEY F		Species of Concern (circle one, details on last pg.): Y or N								
Area Name: Certar River Watershed Site Name / Number: Station Location - T 2/ N, R 10 (circle one) (E) or W, S 10 , QQ (1/16) NW, of Q (1/4) SE UTM zone: 10 E (x) coordinate: 6/1924 N (y) coordinate: 524/408 Source: 6PS Datum: 1/4083 FOM: 0 Observer (s) Name: Neil E(x) ensen Initials: NEI Affiliation: ARR, Inc. Phone: (503) 359-7525										
Station Elevation: Ft Position on Slope (circle one): Bottom/plain, Lower 1/3, Mid 1/3, Upper 1/3, Ridgetop Station Placement (circle one) Inside, Outside Distance from Survey Site Boundary: Units of Measure for ALL Horizontal Distances: Station Canopy Cover (circle one): 1 = 0 to 25%, 2 = 26 to 50%, 3 = 51 to 75%, 4 = 76 to 100%										
ENVIRONMENTAL CONDITION		1								
Official Sunrise Time: 0536	Table: North Bear	Begin Survey Tir	ne: <i>045</i> /1	End Survey Time: 065/						
Temperature at Sunrise:		d of Survey: <u>/Q. Q</u>								
TIME VERTICAL VIEWING CO CO VISIBILITY TO 2 CANOPY	HÖŘIZ. AUDIBILITY VIS. TO TO 100 M 200 M	PRECIPITATION RAIN FOG OTHER	WIND NOISE	NOTES						
0 4 6 1 UL 0 Y 0 5 3 6 UL 0 Y 0 6 6 1 HI 3 Y 0 6 6 1 HI 3 Y Ceiling: UL = Unlimited (clear), HI =>	Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y		O N O N I N I N	En Suncy En Suncy						
Colling: UL = Unlimited (clear), $H1 = 2$ Cloud Cover: $0 = 0\%$, $1 = 33\%$, $2 = 66\%$	2.0 canopy neight, will = >. , 3 = 100%.			lishle detection) II - Unknown						

Survey Visit to Protocol

Vertical Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U Horizontal Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Audibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection).

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Month 07

Day 25 Year 2007

Site Name / No: S

Detections - This Side Page Total:

Area Name: Cedal

River Watershed

edol Kiles NE

Observer (s) Initials:

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). **TYPE:** H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard. SURVEY ACYIVITY: Dataikeierencedymnbar O \ 1 - SUTATS DETECTION # DETECTON TIME INITIAL
DETECTION
DIRECTION TYPE Start **VOCAL SERIES** End AUDITORY **Note Significant Weather Changes on Page 1** Units of Measure (circle one): U.S. / (Metric ք OTHER ¥. BIRDS SEEN **BEHAVIOR** INITIAL FLIGHT DIRECTION Canopy= SEEN BIRD Station Number: CLOSEST DIST. TO BIRDS SEEN () DEPART FLIGHT DIRECTION DETECTION DIRECTION Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint) Morrise DE CRCH lown sond NOTES (Ve) revised: 2 / 2000

Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

Murrelet Predators: Stellers Jay Common Raven, Townsend's Common Raven, Townsend's Common Raven, Townsend's Common Raven.

BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (≤ 1.0), B = Circle At or Below Canopy (≤ 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown. (Check Reverse Side When Using 2-Sided Forms)

species of Green: Spotted to her Pillet !

AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

WASHINGT	ON
MARBLED	MURRELET
FOREST SI	JRVEY FORM

WASH	ING	TC	N				Survey	Visit to F	rotocol		Page <u>1</u> of <u>2</u>		
MARBI				LET			(Y or N	, initials)	y on	7	Total Detections:		
FORES		-	·				Species of Concern (circle one, details on last pg.): Y or (N)						
					4			Ŋ	Month _	July	Day 76 Year 7007		
Area Name: Cectar River Watershed Site Name / Number: Findley Creek Station Number: ** Z(UiSua Station Location - T ZI N, R ID (circle one) (E) or W, S 6, QQ (1/16) SW, of Q (1/4) NW													
Station Locat	ion -	T	21 N. I	10	(circle one) (Ē	or w	, S	6, Q	Q (1/16)	SW	_, of Q (1/4) <u>N W</u>		
UTM zone:	10 E	(x) co	ordinate: lo	06438	N (v) coor	dinate:	574	3247	Source:	GPS			
Observer (s) l	Name:	1	Iden J.	mille.	Initials:	JM	Affiliatio	n: <u>AB</u>	R IN	<u>vc.</u>	Phone: (503) 359 - 7525		
Station Florin	tion	82	7 Ft (Positi	on on Slone (c	ircle on	e)· Bott	tom/nlain	Lower	1/3. M	lid 1/3. Upper 1/3, Ridgetop		
Ctation Blaco	mant (sirola	analy Inside	Outside									
Distance from	n Surve	ev Sit	e Boundary:		Units of Mo	easure f	or ALL	Horizonta	l Distanc	es: M	esers		
Station Cano	py Cov	er (ci	rcle one): 1	= 0 to 25%,	2 = 26 to 50	%, 3	= 51 to 7	75%, (4 =	76 to 10	0%)			
ENVIRONM				e.							0(7		
Official Sunr	ise Tir	ne:	0537	Table	: North Be	<i>ND</i> 1	Begin Su	irvey Time	e: <u>04</u>	$\geq \frac{U}{2}$	End Survey Time: 065Z		
Temperature	at Sun	rise: _	10 "	Temp	erature at End	of Surv	ey:	1.5	(circle or	ne) (C)	or F revised: 2 / 2000		
TIME	VEF	RTICAI	LVIEWING	HORIZ.	AUDIBILITY	PF	RECIPITA	TION	WIND	NOISE	NOTES		
		<u> </u>	VISIBILITY	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER					
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Data Reference Number Observer (s) Initials: Month July Day 26 Year Units of Measure (circle one): U.S. (Metric

Area Name: Detections - This Side Page Jotal:

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Site Name / No:

Station Number:

SURVEY ACYIVITY: O11- SUTATS DETECTION # Ō DETECTON DETECTION DIRECTION NITIAL TYPE Start **VOCAL SERIES** 튑 AUDITORY **Note Significant Weather Changes on Page 1** ဥ OTHER V/J SEEN SEEN **BEHAVIOR** INITIAL FLIGHT DIRECTION BIRD HEIGHT SEEN Canopy= CLOSEST DIST. TO BIRDS SEEN unist DIRECTION DEPART FLIGHT DETECTION DIRECTION FINAL (L= Loud, M= Moderate, F= Faint) 5 Heard Only Dist. To Birds NOTES revised: 2 / 2000 なくとり

<u>TYPE</u>: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, -- = None or N/A. If both are heard write W / J. neard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type

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WASH	NGTON				5	Survey	Visit to P	rotocol		Page <u>1</u> of <u>Z</u>
	ED MU		LET		(Y or N	, initials)	y (m	6	Total Detections:
•	T SURV				1	Species	s of Conc	ern (circ	le one, c	letails on last pg.): (Y) or (N)
Area Name:	Cedar R'	ver h	atersher	Site Name	' Numbe	er: Fi	rdley C	seck		Day <u>26</u> Year <u>2007</u> Station Number: <u>2a</u>
Station Locati	ion - T <u>2/</u>	N, F	· <u>/0</u>	(circle one) (E	or W	, S6	2, Q	Q (1/16)	SW	, of Q (1/4) 1/w
UTM zone: 10 E(x) coordinate: 60643R N(y) coordinate: 5243200 Source: 6PS Datum: ADRS FOM: D										
Observer (s) l	Name: Neil	Elic	lensen	Initials: 1/2	<u> </u>	ffiliatio	n: <u>AR</u> R	Inc.]	Phone: (503) 359-2525
Station Placer Distance fron	tion: <u>897</u> ment (circle one n Survey Site Boy Cover (circle	e): Inside oundary: _	Outside	Units of Me	easure fo	or ALL	Horizonta	l Distanc	es: <u>M</u>	tid 1/3, Upper 1/3, Ridgetop
	IENTAL CON									
	ise Time: _0	_		No the Read	WA B	egin Su	rvey Time	e: <i>045</i>	2 E	and Survey Time: <u>0652</u>
	at Sunrise:	_	Temp	erature at End	of Surve	ey: <u>9</u>	5 1	(circle or	ne) (C)	or F revised: 2 / 2000
TIME	VERTICAL VIII		HOŘIZ. VIS. TO 100 M	AUDIBILITY TO 200 M	PR RAIN	ECIPITA FOG	TION OTHER	WIND	NOISE	NOTES
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0529	ULO	Y	Y	Y	N	N	N	2	0	7
B. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	L []		. /	/		t . 1				5 <i>6</i>

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Ceiling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤2.0 canopy height, LO = ≤1.25 canopy height, U = Unknown	-
Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%.	

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Precipitation - Rain & Fog: N = None, L = Light, M = Moderate, H = Heavy. Other: H = Hail, S = Snow. Indicate intensity using same codes for rain & fog. Wind: 0 = <1 mph (calm), 1 = 1-3 mph (leaves barely move), 2 = 4-7 mph (leaves rustle, sm. twigs move), 3 = 8-12 mph (leaves & sm. twigs in constant motion), 4 = 13-18 mph (sm. branches move), 5 = 19-24 mph (lg. branches & sm. trees start to sway), 6 = 25-31 mph (lg. branches in constant motion), 7 = 32-38 mph (whole trees move), 8 = 39-46 mph (twigs & sm. branches break).

Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (explain in Notes)

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SURVEY ACYIVITY: Observer (s) Initials: _ Data Rejerance Number **Note Significant Weather Changes on Page 1** Units of Measure (circle one): Month 07 Day 26 Year 2001 U.S. Metric

Detections - This Side Page Total:

Area Name: Lean Kive Wate Cha

Day 26 Year 2007 Site Name / No: Findley (Get circle one): U.S. / Metric Station Number: 20

ONI- SUTATS **DETECTION #** DETECTON 2 0 DIRECTION DETECTION NITIAL 크러시 Start VOCAL SERIES End AUDITORY ဝ OTHER ∑ } BIRDS **BEHAVIOR** DIRECTION NITIAL FLIGHT SEEN SEEN Canopy= BIRD BIRDS SEEN () () () () () () () () () CLOSEST FLIGHT DIRECTION DEPART FINAL DETECTION DIRECTION Heard Only Dist, To Birds (L= Loud, M= Moderate, F= Faint) 454 suntise NOTES revised: 2 / 2000

TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

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WASHING MARBLED **FOREST S**

WASHINGTON MARBLED MURRELET FOREST SURVEY FORM	Survey Visit to Protocol Page 1 of 2 (Y or N, initials): Y Total Detections: Or N Species of Concern (circle one, details on last pg.): Y or N							
Area Name: <u>Cedar River Watershod</u> Site Name / Num Station Location - T 22 N, R 10 (circle one) E or UTM zone: 10 E (x) coordinate: 607568 N (y) coordinate Observer (s) Name: <u>Meil Eric Jensen</u> Initials: <u>MEI</u>	Month <u>0</u> 7 Day <u>27</u> Year <u>2007</u> The: <u>/\lambda / A</u> Station Number: <u>2</u> W, S <u>30</u> , QQ (1/16) \(\lambda \lambda / \lambda							
Station Placement (circle one) Inside, Outside	one): Bottom/plain, Lower 1/3, Mid 1/3, Upper 1/3, Ridgetop e for ALL Horizontal Distances: Meters 3 = 51 to 75%, 4 = 76 to 100%							
ENVIRONMENTAL CONDITIONS: Official Sunrise Time: 0539 Table: North Rend W Begin Survey Time: 0454 End Survey Time: 0654 Temperature at Sunrise: 9.5 0 Temperature at End of Survey: 10.0 0 (circle one) © or F revised: 2/2000								
TIME VERTICAL VIEWING HORIZ. AUDIBILITY VIS. TO VISIBILITY TO 100 M 200 M RAI TO 2 CANOPY	PRECIPITATION WIND NOISE NOTES N FOG OTHER							

Temperature at Sunrise: 9.5	e at Sunrise: 9.5 Temperature at End of Survey: 70.0 (ci				(circle or	ne) (C)	or F revised: 2/2000		
TIME VERTICAL VIEWS	VIS. TY TO 100 M	AUDIBILITY TO 200 M	PRECIPITATION RAIN FOG OTHER		RAIN FOG OTHER		WIND	NOISE	NOTES
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	V								

Ceiling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤2.0 canopy height, LO = ≤1.25 canopy height, U = Unknown.

Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%

Vertical Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Horizontal Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown. Audibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection).

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Noise: N = None, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other (explain in Notes)

Reference Re sejujeniselvie क्षेत्र । । स्रोतिक स्थान March 18 18 18 18 18 Contact the Contact of the Contact o 131004200 79:18:30[0.[9]:11 aprili (e(=ipliirik (19)6[6 (20)04 (196)[ane redivionite វិទ្យា(១៤១) និត្តិសុក្សស្តែង ជាព្រះ ៤

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AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, -- = None or N/A. Indicate the vocal type **[YPE:** H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and HeardSURVEY ACYIVITY: Data Neterenyet Number Observer (s) Initials: ONI- SUTATS DETECTION # DETECTON TIME 9 Ö 0 INITIAL DETECTION DIRECTION TYPE Start VOCAL SERIES E E AUDITORY **Note Significant Weather Changes on Page 1** Units of Measure (circle one): U.S. Month 67 ρ OTHER ۲/ ۸ BIRDS Day 22 **BEHAVIOR** INITIAL FLIGHT DIRECTION __ Year_*2007* Metric BIRD HEIGHT SEEN Canopy= Station Number: Site Name / No. Area Name: Ledan Detections - This Side Page Total:
Area Name: CLOSEST DIST. TO BIRDS naits ZEEN DIRECTION DEPART FLIGHT FINAL DETECTION DIRECTION Beain Survey, let COM Heard Only Dist. To Birds (L= Loud, M= Moderate, F= Faint) NOTES revised: 2 / 2000

Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown. Elet Hedatois: Douglas Tree Squire! heard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N). BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (≤ 1.0), B = Circle At or Below Canopy (≤ 1.0), L = Seen Landing in or AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J.

Species of Concern: Pilleated Woodpecker

(Check Reverse Side When Using 2-Sided Forms)

WASHINGTON	
MARBLED MURRELET	
FOREST SURVEY FORM	ı

WASHINGTON	Species of Concern (circle one, do South FolkMonth July er: Codar River North , s 10, QQ (1/16) NW 524246 Source: 675	Day <u>77</u> Year <u>7007</u> Station Number: <u>3</u> , of Q (1/4) <u>NW</u> Datum: NAD 83 FOM:
Station Canopy Cover (circle one): $1 = 0$ to 25%, $2 = 26$ to 50%, 3	for ALL Horizontal Distances:	
Official Sunrise Time: 0539 Table: North Bend	Begin Survey Time: 0450 E	nd Survey Time: 0654

Official Sunrise Time	0539	Table	NOTAL DE	mot E	Begin Su	. 1			and Survey Time: 0659
Temperature at Sunris	se: [[Temp	erature at End	of Surv	ey:	ט ט	(circle or	1e) (C	or F revised: 2 / 2000
TIME VERT COVER	CAL VIEWING VISIBILITY TO 2 CANOPY	HORIZ. VIS. TO 100 M	AUDIBILITY TO 200 M	PR RAIN	FOG	OTHER	WIND	NOISE	NOTES
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Ceiling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤ 2.0 canopy height, $LO = \le 1.25$ canopy height, U = Unknown.

Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%.

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ノー	WASHINGTON MARBLED MURRELET FOREST SURVEY FORM
Area Name: Codar River watched	Detections - This Side Page Total: Pg. 2 of 2

Dala Reference Number Observer (s) Initials: Units of Measure (circle one): U.S. Month JR14 Day CT Year COOT Metric Site Name / No. South For K Cedar River North Station Number:

SURVEY ACYIVITY: **Note Significant Weather Changes on Page 1** revised: 2 / 2000

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WASHINGTON			Survey	Visit to P	rotocol		Page <u>1</u> of <u>/-</u>			
MARBLED MURREL	_ET			I, initials)			Total Detections:			
FOREST SURVEY F			Specie	s of Conc	ern (circ	le one, d	letails on last pg.): (Y) or N			
Area Name: Clar River watershed Site Name / Number: Chester North Station Number: Z Station Location - T ZZ N, R 9 (circle one) (E) or W, S 16, QQ (1/16) SE, of Q (1/4) NE UTM zone: 10 E (x) coordinate: 601764 N (y) coordinate: 5249531 Source: GPS Datum: NAD 83 FOM: Observer (s) Name: Alder J. Miller Initials: AJM Affiliation: ABR Inc. Phone: (583) 359-7525										
Station Elevation: 977 Ft / N Station Placement (circle one): Inside Distance from Survey Site Boundary:	Position Outside	on on Slope (ci	ircle one): Bot	tom/plain, Horizonta	Lower	1/3, M	id 1/3, Upper 1/3, Ridgetop			
Station Canopy Cover (circle one): 1 = 0 to 25%, 2 = 26 to 50%, 3 = 51 to 75%, 4 = 76 to 100% ENVIRONMENTAL CONDITIONS: Official Sunrise Time: 0540 Table: North Bend Begin Survey Time: 0457 Temperature at Sunrise: 13.5 Temperature at End of Survey: 12.5 (circle one) 6 or F revised: 2/2000										
TIME VERTICAL VIEWING CO OC VISIBILITY TO 2 CANOPY	HORIZ VIS. TO 100 M	AUDIBILITY TO 200 M	PRECIPITA RAIN FOG		WIND	NOISE	NOTES			
0452 UL 0 Y 0540 UL 0 Y 0655 W 0 Y	Y Y Y	Y Y Y	277	2 2 2	000	000	Begin Survey Survise End Survey			

Ceiling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤2.0 canopy height, LO = ≤1.25 canopy height, U = Unknown.

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(explain in Notes)

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> Area Name: Ledar Detections - This Side Page Total:

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Site Name / No.

SURVEY ACYIVITY: O11- SUTATS DETECTION # DETECTON 6 イン S V DETECTION DIRECTION NITIAL TYPE Start VOCAL SERIES End AUDITORY # **Note Significant Weather Changes on Page 1** ဝ OTHER ر ا BIRDS SEEN **BEHAVIOR** INITIAL FLIGHT DIRECTION BIRD HEIGHT SEEN Canopy= CLOSEST DIST. TO BIRDS SEEN units DIRECTION DEPART FLIGHT DETECTION (L= Loud, M= Moderate, F= Faint) Besin Heard Only Dist. To Birds NOTES Survey Survey revised: 2 / 2000

TYPE: H = Heard Only (no visual), S = Seen Only (silent), B = Both Seen and Heard.

AUDITORY - Vocal Series (Vocalizations): K = KEER calls, G = Groan (alternate) calls, O = Whistle or Soft Que calls, U = Unknown, — = None or N/A. Indicate the vocal type AUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, -- = None or N/A. If both are heard write W / J. neard at both the start and end if calls grade between different types during the detection. Indicate the number heard 1-5 or M = Multiple. OL = Overlapping Vocalizations (Y or N)

BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

(Check Reverse Side When Using 2-Sided Forms)

species of concern: Common loon

WASHINGTON	
MARBLED MURRELET	
FOREST SURVEY FORM	l

FORES Area Name: (Station Locat	LED NOT SUI	IURREI RVEY F Liver Wa 72 N. I	trshed	N (sr) coord	Numbe	Y or N. Species er: L , s 1 578	0St C1 4, Q1 0301	Y Carrent (circle Month) (eek Q (1/16) Source:	le one, duly NE GPS	Page 1 of 2 Total Detections: etails on last pg.): Y or N Day 79 Year 700+ Station Number: 1 of Q (1/4) NE DatumNAP 83 FOM: Phone: (503) 359- 7575
Station Eleva Station Place Distance fron	tion: <u>72</u> ment (circle n Survey Si	Ft (1) e one): Inside te Boundary:	Positic	on on Slope (ci	rcle one	e): Bott	tom/plain, Horizontal	Lower	1/3, Mi	id 1/3, Upper 1/3, Ridgetop
ENVIRONM Official Sum	TENTAL C	CONDITION	<u>S</u> : Table	North Be	and B	Begin Su	n vev Time	e: 04	SO E	or F revised: 2/2000
TIME		VISIBILITY TO 2 CANOPY	HORIZ. VIS. TO 100 M	AUDIBILITY TO 200 M		FOG	пои	WIND	NOISE	NOTES
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Ceiling: UL = Unlimited (clear), HI = >2.0 canopy height, MID = >1.25 to ≤ 2.0 canopy height, $LO = \le 1.25$ canopy height, U = Unknown.

Cloud Cover: 0 = 0%, 1 = 33%, 2 = 66%, 3 = 100%.

Vertical Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown, Horizontal Visibility: N = Impaired (detections may be missed due to conditions), Y = Unimpaired (conditions allow for reliable detection), U = Unknown.

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Noise: N = Noise, A = Aircraft, B = Bird song/calls, C = Creek/water drainage, M = Machinery, P = Rain/hail, T = Tree drip, V = Vehicle, W = Wind, O = Other

(explain in Notes).

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とろうとり 22022 Heard Only Dist. To Birds

NOTES

revised: 2 / 2000

Departing From a Tree, S = Stationary Calling (fixed-point multiple calls <100 m), U = UnknownAUDITORY - Other (Non-Vocal Sounds): W = Wing Sound, J = Jet Sound, — = None or N/A. If both are heard write W / J. BEHAVIOR: F = Flight Over Canopy, C = Circle Over Canopy, T = Fly-Through At or Below Canopy (< 1.0), B = Circle At or Below Canopy (< 1.0), L = Seen Landing in or Denarting From a Tree. S = Stationary Calling (fixed-point multiple calls <100 m), U = Unknown.

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Hollers Jan

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WASHINGTON
MARBLED MURRELET
FOREST SURVEY FORM

WASHINGTON	Survey Visit to Protocol	Page 1 of 2
MARBLED MURRELET	(Y or N, initials): Y Car	Total Detections:
FOREST SURVEY FORM	Species of Concern (circle on	e, details on last pg.): (Y) or N
2 1 0 1 1 1 2 2	South Fork Month July	Day 30 Year 7007
Area Name: Clodar Kiver Water Shed	Site Name / Number: Taylor Creek	Station Number:
tation Location - T A N, R 8 (c	rcle one) (E) or W , S 32, QQ (1/16) Nw	, of Q (1/4) <i>SE</i>
JTM zone: 10 E (x) coordinate: 58780+	N(y) coordinate: 574449 + Source: GP	S Datum: NAD 83 FOM:
Total Detections: OREST SURVEY FORM Species of Concern (circle one, details on last pg.): (v) or N South Fork Month July Day 30 Year 7007 Total Detections: Or N Species of Concern (circle one, details on last pg.): (v) or N South Fork Month July Day 30 Year 7007 Taylor Creek Station Number: 1 Author Creek Station Number: 1 Author Creek Station Number: 1 Total Detections: Or N N Total Detections: Or N N Total Detections: Or N N Total Detections: Or N N Total Detections: Or N N Total Detections: Or N N N Total Detections: Or N N N Total Detections: Or N N N Total Detections: Or N N N Total Detections: Or N N N Total Detections: Or N N N Total Detections: Or N N N N Total Detections: Or N N N N Total Detections: Or N N N N Total Detections: Or N N N N Total Detections: Or N N N N N Total Detections: Or N N N N N Taylor Creek Station last pg.): (v) or N Species of Concern (circle one, details on last pg.): (v) or N N South Fork Month July Day 30 Year 7007 Station Location - T & J. N, R Station Number: 1 Author Creek Station Number: 1 Total Detections: Or N N North Begin Survey Time: Or N Total Detections: Or N N N N N Total Detections: Or N N N N N N N Total Detections: Or N N N N N Total Detections: Or N N N N Total Detections: Or N N N Total Detections: Or N N N Total Detections: Or N N N Total Detections: Or N N N Total Detections: Or N N N Total Detections: Or N N N Total Detections: Or N N N Total Detections: Or N N N Total Detections: Or N N N Total Detections: Or N Total Detections: Or N Total Detections: Or N N N Total Detections: Or N Total Detections: Or N Total Detections: Or N Total Detections: Or N Total Detections: Or N Total Detections: Or N Total Detections: Or N Total Detections: Or N Total Detections: Or N Total Detections: Or N Total Detections: Or N Total Detections: Or N Total Detections: Or N Total Detections: Or N Total Detections: Or N Total Detections:		
tation Elevation: 434 Ft (M) Position	on Slope (circle one) Bottom/plain, Lower 1/3,	Mid 1/3, Upper 1/3, Ridgetop
tation Placement (circle one): Inside Outside	A second	. 4
Distance from Survey Site Boundary:	Units of Measure for ALL Horizontal Distances:	neters
tation Canopy Cover (circle one): $1 = 0$ to 25%,	2 = 26 to 50%, $3 = 51 to 75%$, $4 = 76 to 100%$)
ENVIRONMENTAL CONDITIONS:		
ARBLED MURRELET (Y or N, initials): Total Detections: D Species of Concern (circle one, details on last pg.): (Y) or N Species of Concern (circle one, details on last pg.): (Y) or N Sull fork Month July Day 30 Year 700 7 Station Number: 1 Station Number: 1 Station Number: 1 Station Number: 1 M zone: 10 E(x) coordinate: 58780 7 N(y) coordinate: 574449 7 Source: Gf S Datum: NAD 83 FOM: Server (s) Name: 10 E(x) coordinate: 58780 7 N(y) coordinate: 574449 7 Source: Gf S Datum: NAD 83 FOM: Server (s) Name: 10 E(x) coordinate: 58780 7 N(y) coordinate: 574449 7 Source: Gf S Datum: NAD 83 FOM: Server (s) Name: 10 E(x) coordinate: 58780 7 N(y) coordinate: 574449 7 Source: Gf S Datum: NAD 83 FOM: Server (s) Name: 10 E(x) coordinate: 58780 7 N(y) coordinate: 574449 7 Source: Gf S Datum: NAD 83 FOM: Server (s) Name: 10 E(x) coordinate: 58780 7 N(y) coordina		
emperature at Sunrise: Tempera	ature at End of Survey: (circle one)	or F revised: 2 / 2000

Temperature	ai buii	u13C.		remp	erature at 12110	OLDMA	су		(Circle Oi	01 F 16VISEU. 27 2000	
TIME	VERTICAL VIEWING			HORIZ.	AUDIBILITY	PR	ECIPITA	TION	CINIW	NOISE	NOTES
	CEILING	COVER	VISIBILITY TO 2 CANOPY	VIS. TO 100 M	TO 200 M	RAIN	FOG	OTHER			
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0610	HC	7	Ý	Υ	Y	2	N	7	Ō	7	
0617	HI		Y	Υ	Y	2	2	2	0	N	1
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0657	H	2	Y	Υ	Ý	N	N	7	D.	N	End Survey
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Project Review Initials Review Date Highest Biological Status
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Observer (s) Initials: _ Dala Reference Numbers Month July Day 30 Year 2 Units of Measure (circle one): U.S.

> Detections - This Side Page Total: Pg. Z of Z Area Name: Color KINES Water Shoe

Site Name / No: South 16th Taylor Co

Station Number:

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Species of concern; Pileated woodpecker predator: Gray Jay