

**PROJECT:** Bald Eagle Monitoring, 2010-2011

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Under task agreement with the National Park Service, Lake Mead National Recreation Area

## **EXECUTIVE SUMMARY**

- Winter counts of bald eagles on lakes Mead and Mohave were successfully conducted in early January of 2010 and 2011, under favorable weather conditions.
- The official count for 2010 was 163 bald eagles (62 adults and 99 immature), and for 2011 was 177 bald eagles (75 adults and 99 immature).
- The upward trend in bald eagles observed along lakes Mead and Mohave in recent years appears to reflect improvements in count methodology, as well as the number of bald eagles using the lakes.
- Continued adherence to methodology established in 2007 is recommended, as well as maintaining a qualified eagle count coordinator who is invested in the outcome.

## **INTRODUCTION**

The objective for the winter counts of bald eagles (*Haliaeetus leucocephalus*) at Lake Mead National Recreation Area (LMNRA) has been to document trends in the number of wintering individuals using lakes Mead and Mohave, and to identify important wintering areas. In more recent years, the annual count effort at LMNRA has grown to as many as 48 people and 8 boats. At this level of effort, the eagle counts also provide opportunities towards team building within units of the NPS and across both federal and state agencies.

Since the inception of the counts at LMNRA, dating back to the early 1980s, methodologies, level of effort, areas surveyed, and data recording have varied substantially. In 2007, following the National Park Service (NPS) partnership with the Public Lands Institute, University of Nevada, Las Vegas (UNLV), a standard operating procedures document (SOP) for the winter bald eagle count was created (see Fletcher 2007, updated 2009), and major changes were initiated to make the counts more rigorous and repeatable. Herein, we provide a final report for work performed towards bald eagle counts during 2010 and 2011 at LMNRA.

## **METHODS**

The eagle counts were conducted on standardized survey routes during the first two weeks of January, occurring within one or two target dates established by the U.S. Geological Survey (USGS) Snake River Field Station. For details on count methodology see Fletcher and Jaeger (2010), but in general all surveys were conducted by boat, and survey routes were planned to incorporate all shorelines of lakes Mead and Mohave, with the objective of minimizing double-counts by completing all routes during a single day. As established in the SOP, a skilled lead observer was designated on each route and a maximum boat speed of 15 mph was followed.

When an eagle was observed locations were officially recorded on hardcopy maps. The species and age class of each eagle, along with activity (flying or perch) were then recorded on standard datasheets. All data were then entered into a database managed by the NPS at LMNRA.

## **RESULTS**

In 2010 the eagle count took place on January 11, under favorable weather conditions (i.e. light winds and clear skies). All survey routes were completed on that day. The survey effort totaled approximately 52 hours of search time, with 45 people on 8 boats. The total eagle count was 163 bald eagles (62 adults, 99 immature and 2 of unknown age). In addition, 1 adult golden eagle, and 5 unknown eagles were also recorded (Table 1; Figure 1).

In 2011, the eagle count was conducted on January 6, also under favorable weather conditions. Participants on the surveys included 44 individuals on 8 boats, with a total survey effort of approximately 62 hours. The total count was 177 bald eagles (75 adults and 99 immature, and 3 unknown), 4 adult golden eagles and 1 immature golden eagle (Table 2; Figure 2). The 2011 count returned the most bald eagles recorded to date.

## **DISCUSSION**

In general, the increasing numbers of bald eagles at LMNRA appears to follow the trend observed across North America with bald eagle numbers increasing since the banning of DDT. Unfortunately, the inherent differences in methodology over the past three decades make drawing strong conclusions from the long-term data at LMNRA impossible. Over the last eleven years (Table 3), however, methodologies have been relatively similar and some level of comparisons can be made. In general, the data suggest an upward trend in the number of bald eagles counted. This, however, may partly be an artifact of the methodological change initiated in 2007. On average from 2000 until 2006, prior to initiation of the SOP, the number of bald eagles observed per count was  $65 \pm 10$  (1 SD). This jumped to 87 bald eagles in 2007 with an average during 2007-2011 of  $130 \pm 38$  (1 SD).

There is some evidence, however, to suggest that the upward trend in bald eagles is at least partly caused by increasing numbers of these birds using lakes Mead and Mohave. In the past, adult bald eagle numbers tended to be higher than immature; however, within the last few years there has been an increase in the number of immature eagles recorded (Table 3). The high percentage of immature eagles using these lakes may be an indicator of good regional recruitment and population expansion; although, we really do not know the structure of the population, or populations, using these lakes or whether the high numbers of juveniles simply reflects a bias in the use of this wintering area by younger eagles. Regardless of historical differences in count methodologies, or in our lack of knowledge about the bald eagles using lakes Mead and Mohave, it is clear that these lakes are important wintering areas for regional bald eagles.

## **ACKNOWLEDGMENTS**

The bald eagle winter counts would not be possible without the personnel and volunteers from all the various agencies that participate. Joe Hutcherson and Mark Sappington should be

recognized for their work on GPS organization, map and datasheet production, and data management.

#### **LITERATURE CITED**

Fletcher, D. M. 2007. Winter bald eagle counts on Lakes Mead and Mohave, Lake Mead National Recreation Area guidelines and field protocols. Unpublished document (updated 2009), submitted by the Public Lands Institute, University of Nevada, Las Vegas to Lake Mead National Recreation Area, National Park Service, Boulder City, Nevada.

Fletcher, D. M. and J. R. Jaeger. 2010. Bald Eagle Monitoring, 2008-2009. Unpublished report submitted by the Public Lands Institute, University of Nevada, Las Vegas to Lake Mead National Recreation Area, National Park Service, Boulder City, Nevada.

**Table 1.** Number of eagles recorded during surveys of Lakes Mead and Mohave on January 11, 2010.

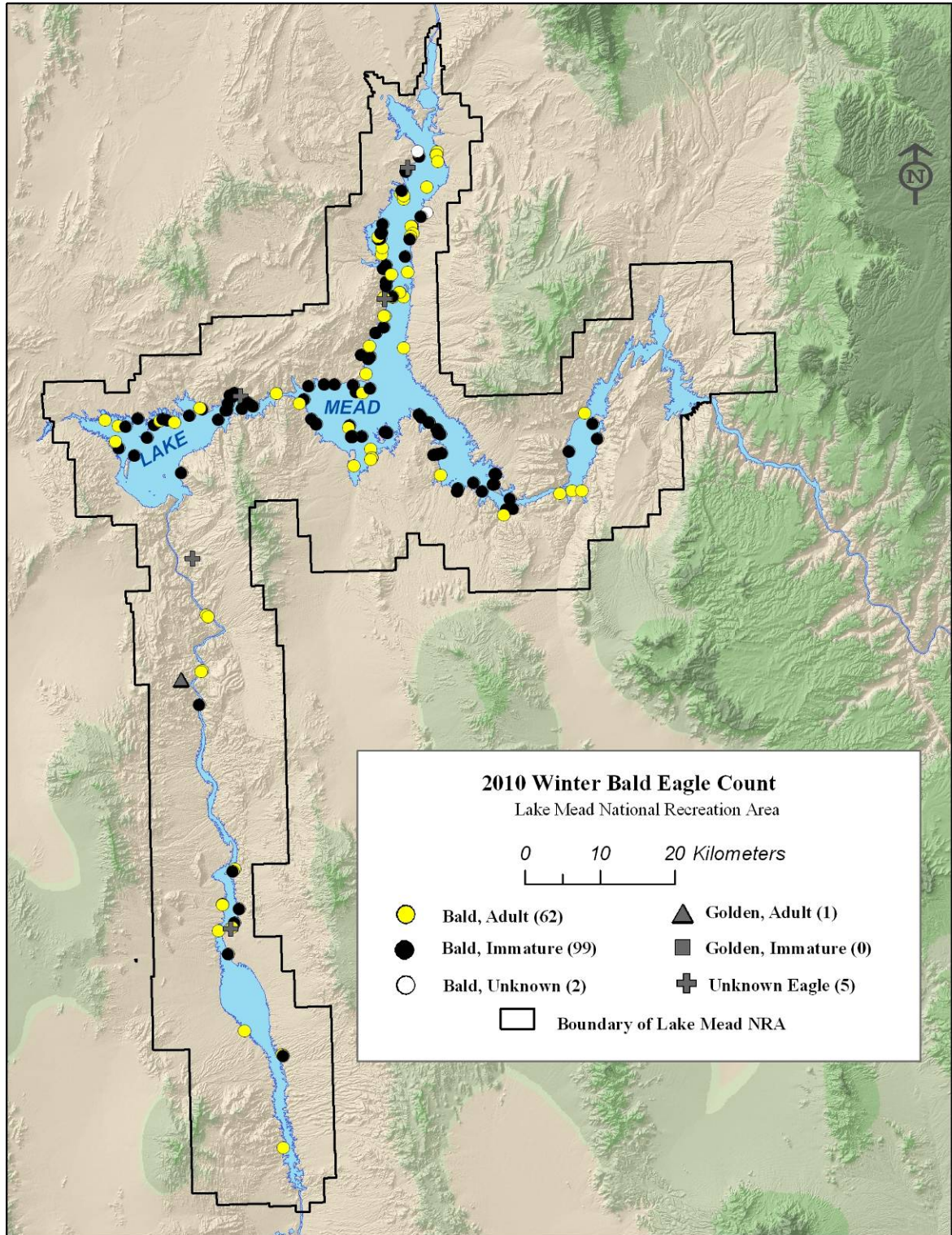
Route	Total Bald	Adult Bald	Immature Bald	Unknown Bald	Adult Golden	Immature Golden	Unknown Golden	Unidentified Eagle
Boulder Basin	15	5	10	0	0	0	0	0
Boulder Canyon	35	12	23	0	0	0	0	1
Overton	40	20	18	2	0	0	0	2
Temple Bar West	36	9	27	0	0	0	0	0
Temple Bar East	19	5	14	0	0	0	0	0
Willow Beach	7	5	2	0	1	0	0	1
Cottonwood	8	4	4	0	0	0	0	1
Katherine	3	2	1	0	0	0	0	0
Total	163	62	99	2	1	0	0	5

**Table 2.** Number of eagles recorded during surveys of Lakes Mead and Mohave on January 6, 2011.

Route	Total Bald	Adult Bald	Immature Bald	Unknown Bald	Adult Golden	Immature Golden	Unknown Golden	Unidentified Eagle
Boulder Basin	13	4	9	0	0	0	0	0
Boulder Canyon	29	19	9	1	2	0	0	0
Overton	41	11	29	1	0	0	0	0
Temple Bar West	29	13	16	0	0	0	0	0
Temple Bar East	26	12	14	0	0	0	0	0
Willow Beach	23	8	15	0	2	1	0	0
Cottonwood	12	6	5	1	0	0	0	0
Katherine	4	2	2	0	0	0	0	0
<b>Total</b>	<b>177</b>	<b>75</b>	<b>99</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>

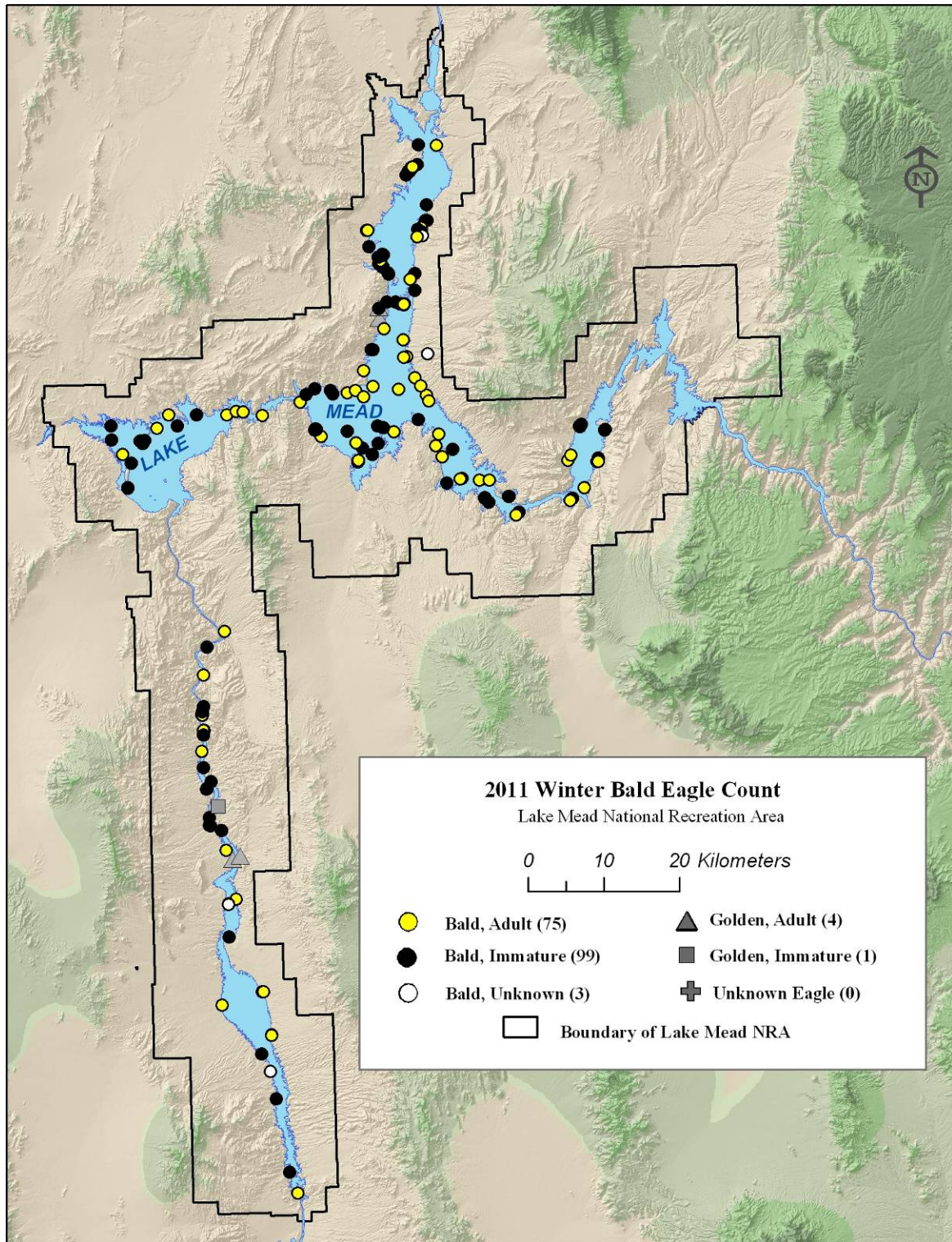
**Table 3.** Number of eagles recorded from 2000 through 2011 during the winter count of Lakes Mead and Mohave. Note that methodologies have changed through time with routes standardized in 2000, and standard operating procedures implemented in 2007.

Year	Total Bald	Adult Bald	Immature Bald	Unknown Bald	Adult Golden	Immature Golden	Unknown Golden	Unidentified Eagle
2000	47	32	15	0	7	1	0	4
2001	60	29	31	0	1	1	0	7
2002	79	41	38	0	2	1	0	3
2003	68	37	31	0	2	7	0	8
2004	60	36	24	0	2	0	0	3
2005	67	42	25	0	3	2	0	15
2006	67	31	36	0	1	1	0	3
2007	87	30	57	0	0	1	0	4
2008	116	49	66	1	2	1	0	6
2009	108	49	59	0	3	0	0	6
2010	163	62	99	2	1	0	0	5
2011	177	75	99	3	2	1	0	0



**Figure 1.** Map of eagle locations documented during the January 11, 2010 winter bald eagle count conducted within Lake Mead National Recreation Area.





**Figure 2.** Map of eagle locations documented during the January 6, 2011 winter bald eagle count conducted within Lake Mead National Recreation Area.