2012 WESTERN YELLOW-BILLED CUCKOO SURVEY
DEVILS CANYON AND PINTO CREEK

RESOLUTION COPPER MINING

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EXECUTIVE SUMMARY

WestLand Resources, Inc. (WestLand) was retained by Resolution Copper Mining (RCM) to conduct surveys for the Western Yellow-billed Cuckoo (WYBC; *Coccyzus americanus occidentalis*) in portions of Devils Canyon and Pinto Creek in Pinal and Gila counties, Arizona. The objective of these surveys was to determine the presence and abundance of WYBC, based on habitat conditions considered most likely to support WYBC, in the vicinity of the Resolution Project, a proposed underground mine, ore processing operation, and associated facilities and infrastructure near Superior, Arizona. The WYBC is a federal candidate for listing as threatened or endangered under the Endangered Species Act (ESA). Pursuant to an agreement between the US Fish & Wildlife Service (USFWS) and WildEarth Guardians and Western Watersheds Project, the USFWS has agreed to publish a proposed rule to list the WYBC or to withdraw it from the candidate list by 2013.

Surveys for WYBC were conducted by crews of two WestLand field biologists for a total of 10 days between June 12 and August 17, 2012. The surveys were conducted in accordance with the USFWS accepted survey protocol for WYBC (Halterman et al. 2009). Surveys were conducted along three selected segments of Devils Canyon (Upper Devils Canyon, Middle Devils Canyon, and Lower Devils Canyon) located on Tonto National Forest (TNF), Arizona State Trust Land and along a portion of Pinto Creek located on TNF land.

WestLand detected four individual WYBC in the Pinto Creek survey area and made two unconfirmed detections during surveys in the Devils Canyon Survey Areas. Pinto Creek appears to provide suitable habitat for WYBC along most of the surveyed reach. Based on published criteria for determining breeding status for this species (Halterman et al. 2009), WestLand did not document any breeding activity within the Survey Areas during the 2012 survey. The identification of the birds observed in the Devils Canyon Survey Areas was unconfirmed, and neither bird was observed in previous or subsequent surveys. Therefore, WestLand cannot conclude that the WYBC was present in the Devils Canyon Survey Areas in 2012.

1. INTRODUCTION

WestLand Resources, Inc. (WestLand) was retained by Resolution Copper Mining (RCM) to conduct surveys for the Western Yellow-billed Cuckoo (WYBC) in portions of Devils Canyon and Pinto Creek, in Gila and Pinal Counties, Arizona (***Figures 1 and 2***). The WYBC was petitioned to be listed as endangered under the Endangered Species Act (ESA) in 1998 (Center for Biological Diversity 1998). In 2001, the US Fish & Wildlife Service (USFWS) issued a finding that the petitioned action was warranted but precluded by higher listing priorities, and subsequently added this bird to its list of candidate species (USFWS 2001). A settlement agreement between the USFWS and WildEarth Guardians filed in the United States District Court for the District of Columbia (Case 1:10-mc-00377-EGS Document 31 Filed 05/10/11) outlined a timetable for resolving decisions on 251 species. The WYBC is one of 24 species in Arizona affected by the settlement agreement, which requires the USFWS to publish proposed rules to list the WYBC as threatened or endangered or withdraw it from the candidate list in 2013. The WYBC is also a Tonto National Forest (TNF) sensitive species and a wildlife species of special concern in Arizona (TNF 2011).

The USFWS recognizes the WYBC as a distinct population segment (DPS) inclusive of all breeding Yellow-billed Cuckoos west of the Rocky Mountains (USFWS 2001). Morphological data suggest that WYBC are significantly larger than their eastern counterparts (Franzreb and Laymon 1993). Additionally, these cuckoos migrate later, breed later, and demonstrate different habitat preferences than their eastern counterparts (Franzreb and Laymon 1993). Pruett et al. (2001) found genetic divergence between the eastern and western subspecies, consisting of four fixed base changes in the cyctochrome b gene that resulted in conformational changes in the cyctochrome b protein.

Some have argued that in western North America, the WYBC experienced severe restrictions in its range during the twentieth century due to the destruction of riparian habitats and pesticide use (Hughes 1999). It is now extirpated from British Columbia, Washington, Oregon, Nevada, and most of its historical range in California (Laymon and Halterman 1987, Hughes 1999). However, results from the American Breeding Bird Survey demonstrate that this species (WYBC) has only had a 1.7 percent net reduction in its total population from 1966 to 2007 across all states (Sauer et al. 2007). Only data from three sites were reported from Arizona making this report less reliable for this state.

The WYBC is a habitat specialist that prefers continuous areas of dense riparian habitat dominated by native tree species, especially cottonwoods and willows, for breeding (Johnson 2009). This species may also use mesquite bosques and smaller stands of isolated cottonwoods mixed with mesquites (Arizona Game and Fish Department [AGFD] 2002). Within Arizona, this species ranges throughout the central and southern portions and the extreme northeastern corner of the state at elevations from 90 - 6,170 ft (27 - 1,881 m) above mean sea level (AGFD 2002). Cuckoos have been reported along the Gila and San Pedro Rivers in Pinal County, on Pinal Creek, Pinto Creek, Tonto Creek, and the Salt River in Gila County, and on the Salt and Verde Rivers in Maricopa County (AGFD 2004, Johnson et al. 2006).

The objective of the 2012 surveys was to determine the presence and abundance of WYBC in areas, based upon habitat conditions, considered the most likely to support WYBC in the vicinity of the Resolution Project (***Figures 1 and 2***). These habitat conditions are present in the riparian stands of alders and cottonwoods in Devils Canyon and the cottonwood/willow riparian forest along portions of Pinto Creek downstream from the Iron Bridge. The middle and lower reaches of Devils Canyon surveyed in this study are dominated by Arizona alder (*Alnus oblongifolia*), velvet ash (*Fraxinus velutina*), Arizona sycamore (*Platanus wrightii*), and Fremont cottonwood (*Populus fremontii*). The upper reach of Devils Canyon is more arid and is dominated by velvet mesquite (*Prosopsis vuluntina*), white oak (*Quercus arizonica*), Emory oak (*Quercus emoryi*), and scrub oak (*Quercus turbinella*). The well-developed riparian habitat along Pinto Creek includes Fremont cottonwood, Goodding's willow (*Salix gooddingii*), Bonpland willow (*Salix bonplandiana*), velvet ash, tamarisk (*Tamarix* spp.), netleaf hackberry (*Celtis reticulata*) and Arizona sycamore.

Previously conducted surveys and AGFD occurrence records have not indicated a presence of WYBC in Devils Canyon and Pinto Creek in the riparian areas considered for this survey. No WYBC were found during point counts for birds conducted by WestLand in Devils Canyon in 2008. However, these surveys were general avian surveys and were not specifically conducted for detecting WYBC (WestLand 2009). In addition, there were no confirmed WYBC sightings during surveys conducted in Devils Canyon in 2011 (WestLand 2011). AGFD's Heritage Database Management System (HDMS) reports no records of WYBC within 3 mi (4.8 km) of the riparian habitats of Devils Canyon. HDMS does not have records of WYBC occurrence within 5 mi (8 km) of Pinto Creek (AGFD 2011; 2012).

2. METHODS

Surveys were conducted in accordance with the protocol outlined by Halterman et al. (2009) as described below. The survey areas were selected based upon the following criteria:

- Proximity to the Resolution Project;
- Presence of dense riparian vegetation consistent with that which is known to harbor WYBC; and,
- Accessibility

WestLand biologists surveyed for WYBC along three selected segments of Devils Canyon: Upper Devils Canyon [redacted] Middle Devils Canyon [redacted] and Lower Devils Canyon [redacted]), measured from its confluence with Mineral Creek (***Figure 3, 4, and 5***). Surveys were also conducted along the portion of Pinto Creek flowing through TNF land, [redacted] (measured from its confluence with Haunted Canyon) (***Figure 6***). The three segments of Devils Canyon (totaling approximately 3.6 mi [5.8 km]) were selected due to the relatively dense riparian forest in these areas that provide potentially suitable habitat for this species. The available riparian habitat in these sections of Devils Canyon is narrow enough (≤ 110 yd [100 m]) that WYBC could be detected across the breadth of the riparian zone. As such, these sections could be surveyed by a single transect. Between 35 and 52 calling points were needed, based upon the required distance between calling stations,

to cover the linear extent of the surveyed habitat in Devils Canyon over the four survey periods (***Figures 3, 4 and 5***).

The segment of Pinto Creek within the Survey Area is approximately 1.5 mi (2.4 km) in length [redacted]. Available riparian habitat along Pinto Creek is sufficiently narrow to allow calling points to be placed along a single transect. Surveys at Pinto Creek required between 17 and 22 calling points to cover the linear extent of the suitable habitat (***Figure 6***).

Each survey was conducted on transects through the suitable riparian habitat, with calling points spaced about 110 yd (100 m) apart. At each point, five calls were broadcast at one minute intervals, with the observers listening and watching for cuckoos during this period. If an unsolicited detection of a cuckoo was made while walking between points or in response to playbacks at a sample point, the next calling point was located approximately 330 yd (300 m) away from the detection to reduce the risk of drawing the same individual away from its nest area. Therefore, the number of calling points varied between surveys if birds were detected. [redacted] of all calling points were recorded on the data forms during each survey. Survey stations were varied during repeat surveys to maximize coverage of the stream segment in accordance with USFWS Survey Protocol. Calling surveys began at sunrise and continued until noon or until the temperature reached 104ºF (40ºC).

According to the survey protocol, detections more than 330 yd (300 m) apart are considered detections of separate cuckoos. Conversely, detections less than 330 yd (300 m) of each other should be considered detections of the same cuckoo, even if they were made on different days.

The WYBC protocol calls for four survey periods for each site, with a specific schedule of survey times between mid-June and mid-August (***Table 1***). The protocol also requires a minimum of 12 days and no more than 20 days between surveys. Two optional survey periods are also identified: A pre-survey (late May to mid-June) and a fifth survey (mid-August to mid-September). WestLand initiated pre-survey period studies on June 12, 2012; however, these were aborted due to a wildfire and resulting forest closure that same day.

Table 1. 2012 Western Yellow-billed Cuckoo Survey Dates

Time Period	Upper Devils Canyon	Middle Devils Canyon	Lower Devils Canyon	Pinto Creek
Pre-Survey – Late May to mid-June (Optional)*	June 12	None	None	None
Survey 1 – Early June to late June (Required)	June 27	June 25	June 28	June 26
Survey 2 – Late June to mid-July (Required)	July 20	July 17	July 19	July 18
Survey 3 – Mid-July to early August (Required)	August 3	July 31	August 2	August 1
Survey 4 – Early August to early September (Required)	August 17	August 14	August 16	August 15
Survey 5 – Early September to mid-September (Optional)	None	None	None	None

* Surveys were completed during the Pre-survey period along Upper Devils Canyon. However, these Pre-surveys were terminated for the remaining survey areas on June 12, 2012 due to a wildfire that resulted in a Forest closure.

3. RESULTS AND DISCUSSION

WestLand documented four confirmed and two unconfirmed WYBC contacts during the 2012 survey which are presented in ***Table 2***.

No contacts with WYBC occurred in Upper Devils Canyon (***Table 2, Figure 3***). The single potential WYBC detection in Middle Devils Canyon during the 2012 survey season is unconfirmed. The bird was only briefly observed through dense foliage and could not be positively identified as a WYBC (***Table 2; Figure 4***). In addition, this bird did not respond vocally to the playback. WYBC was not detected during any of the other visits to the surveyed portions of Middle Devils Canyon. A second unconfirmed detection occurred in Lower Devils Canyon on August 16, 2012 (***Table 2; Figure 5***). In that case, a faint series of distant notes similar to a WYBC call was heard during the survey. However, the audible observation lacked clarity and was not definitive for making a positive identification.

Western Yellow-billed Cuckoos were detected in the riparian corridor along Pinto Creek on the second and third survey dates (***Table 2; Figure 6***). Four visually confirmed observations of cuckoos were made along Pinto Creek on two separate days. Three were observed on July 18, 2012, and one was observed on August 1, 2012. The spatial distribution of the survey results in Pinto Creek suggest that up to three different cuckoos were detected. ***Figure 6*** shows that there are three distinct groups of detections that do not overlap: a single detection in the north side of the Survey Area, two proximate detections near the center, and a single detection in the southern portion of the Pinto Creek survey area. Thus, according to the guidance for interpreting results provided in the survey protocol (Halterman et al. 2009), three individual birds were likely detected along Pinto Creek.

Little is known about the breeding behaviors of the WYBC, and determining the breeding status of cuckoos encountered is usually not possible (Halterman et al. 2009). However, breeding status can be determined using behavior and can be estimated by repeated observation and the timing of observations. In particular, Halterman et al. (2009) points out that most cuckoos detected during the third survey period are mated. In this survey, none of the cuckoos detected displayed any behaviors that definitively indicated breeding.

Based on this study, Pinto Creek appears to provide suitable habitat for WYBC along most of the surveyed reach and this location potentially supports breeding pairs, although no nests were located during the 2012 survey.

Table 2. 2012 Western Yellow-billed Cuckoo Survey Results

Survey Period	Survey Dates	Detection Location [redacted]	Visual Detection	Call-back Detection
Upper Devils Canyon				
Pre-Survey *	June 12, 2012		No	No
1	June 27, 2012		No	No
2	July 20, 2012		No	No
3	August 3, 2012		No	No
4	August 17, 2012		No	No
Middle Devils Canyon				
1	June 25, 2012		No	No
2	July 17, 2012	[redacted]	Unconfirmed	No
3	July 31, 2012		No	No
4	August 14, 2012		No	No
Lower Devils Canyon				
1	June 28, 2012		No	No
2	July 19, 2012		No	No
3	August 2, 2012		No	No
4	August 16, 2012	[redacted]	No	Unconfirmed
Pinto Creek				
1	June 26, 2012		No	No
2	July 18, 2012	[redacted]	Yes	No
	July 18, 2012		Yes	No
	July 18, 2012		Yes	No
3	August 1, 2012		Yes	No
4	August 15, 2012		No	No

* This Pre-survey period was completed at Upper Devils Canyon. However, surveys were terminated for the remaining survey areas on June 12, 2012 due to a wildfire that resulted in a Forest closure.

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FIGURES